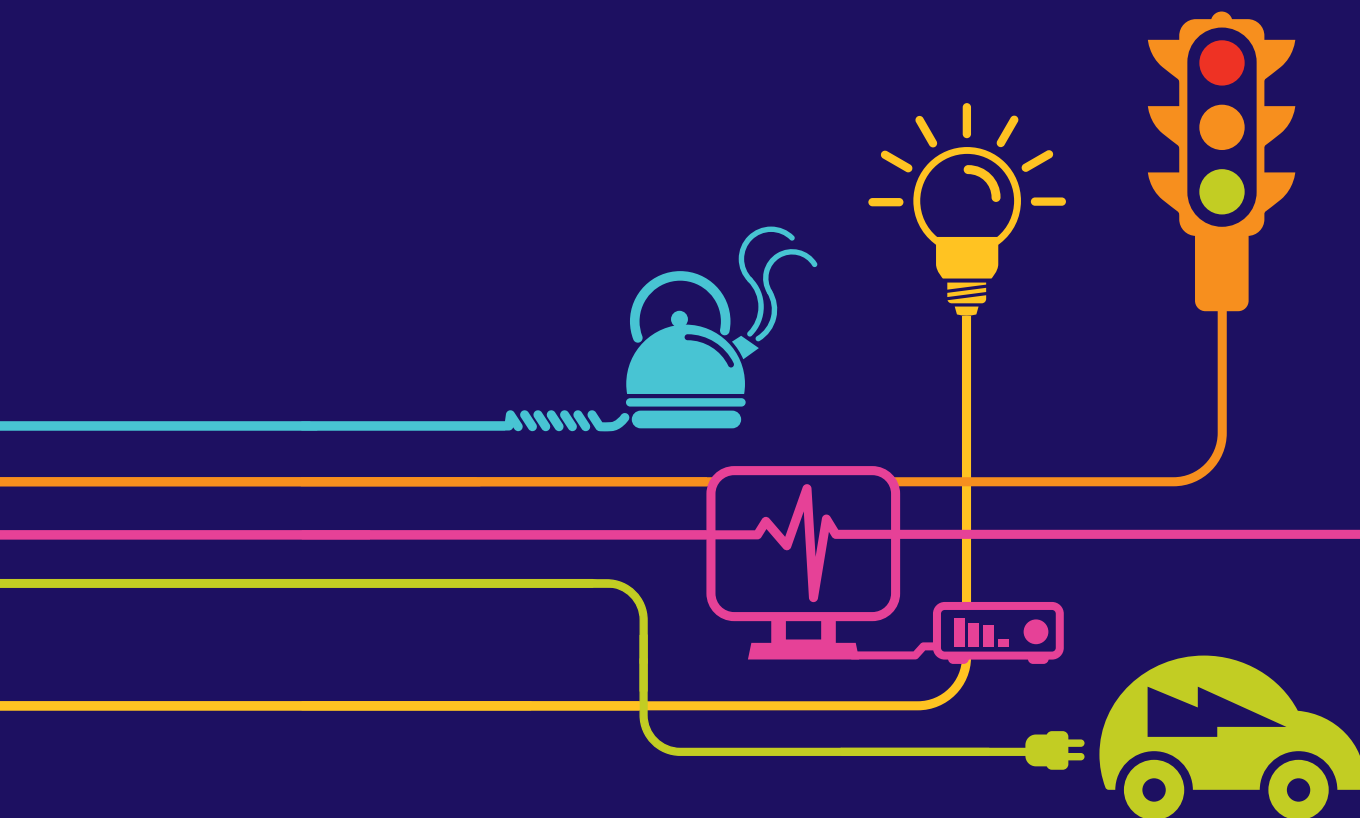


Environmental Statement Sensitivity Test

Hinkley Point C Connection Project

*Regulation 5(2)(q) of the Infrastructure Planning
(Applications: Prescribed Forms and Procedure)
Regulations 2009*



Hinkley Point C Connection Project

ENVIRONMENTAL STATEMENT SENSITIVITY TEST – OCTOBER 2014

VOLUME 5.29.1.1- ENVIRONMENTAL STATEMENT SENSITIVITY TEST

Document Control			
Document Properties			
Organisation		National Grid	
Author		Hilary Brett and all ES Technical Chapter Authors	
Approved By		Ian Grimshaw	
Title		Environmental Statement Sensitivity Test	
Document Reference		Volume 5.29.1.1	
Version History			
Date	Version	Status	Description/Changes
01/10/2014	A	Live	Final Submission to PINS

Table of Contents

Executive Summary	11
1 Introduction	25
1.1 General Introduction	25
1.2 Project Overview	26
1.3 Consultation and Engagement	27
1.4 Policy and Legislation.....	27
1.5 Structure of the Environmental Statement Sensitivity Test	27
1.6 Supporting Documents	29
2 Project Need and Alternatives	31
2.1 Introduction	31
2.2 Project Development Process	31
2.3 The Need Case	31
2.4 Project Alternatives	31
2.5 Conclusions.....	32
3 Project Description	33
3.1 Introduction	33
3.2 Location of the Proposed Development.....	33
3.3 Summary of the Proposed Development	34
3.4 Requirement for Changes in the Revised Construction Programme Duration.....	34
3.5 Revised Construction Programme	35
3.6 Order Limits.....	43
3.7 Detailed Description of the Proposed Development.....	43
4 Planning Policy Context	45
4.1 Update to Planning Policy Context	45
5 EIA Approach and Method.....	47
5.1 Introduction	47
5.2 Approach to the Construction Programme Changes.....	47
5.3 Format of the ES Sensitivity Test Chapters	47
5.4 Submitted ES Sensitivity Analysis	48
6 LANDSCAPE	49
6.1 Introduction	49
6.2 Legislation, Policy and Guidance.....	50
6.3 Method	50
6.4 Baseline Environment.....	53
6.5 Prediction and Assessment of Significance of Potential Effects.....	54
6.6 Inter-relationship of Potential Effects	62
6.7 Mitigation.....	62
6.8 Residual Effects	63
6.9 Cumulative Effects	63
6.10 Conclusion	65
7 Visual Effects.....	67
7.1 Introduction	67
7.2 Legislation, Policy and Guidance.....	68
7.3 Method	68
7.4 Baseline Environment.....	71
7.5 Prediction and Assessment of Significance of Potential Effects.....	73
7.6 Inter-relationship of Potential Effects	90
7.8 Residual Effects	91
7.9 Cumulative Effects	92
7.10 Conclusion	93

8	Biodiversity and Nature Conservation.....	95
8.1	Introduction	95
8.2	Policy and Legislation.....	96
8.3	Method	96
8.4	Baseline Environment.....	98
8.5	Prediction and Assessment of Significance of Potential Effects Prior to Mitigation	98
8.6	Inter-relationship of Effects.....	119
8.7	Mitigation.....	120
8.8	Residual Effects	122
8.9	Additional Mitigation Measures	122
8.10	Cumulative Effects	124
8.11	Conclusions.....	124
9	Ground Environment.....	127
9.1	Introduction	127
9.2	Legislation, Policy and Guidance.....	127
9.3	Method	127
9.4	Baseline Environment.....	128
9.5	Prediction and Assessment of Significance of Potential Effects.....	128
9.6	Inter-relationship of Potential Effects	129
9.7	Mitigation.....	129
9.8	Residual Effects	129
9.9	Cumulative Effects	130
9.10	Conclusion	130
10	Hydrology and Water Resources	131
10.1	Introduction	131
10.2	Legislation, Policy and Guidance.....	131
10.3	Method	131
10.4	Baseline Environment.....	132
10.5	Prediction and Assessment of Significance of Potential Effects.....	132
10.6	Inter-relationship of Potential Effects	133
10.7	Mitigation.....	134
10.8	Residual Effects	134
10.9	Cumulative Effects	134
10.10	Conclusion	134
11	Historic Environment	137
11.1	Introduction	137
11.2	Legislation, Policy and Guidance.....	137
11.3	Method	137
11.4	Baseline Environment.....	137
11.5	Prediction and Assessment of Significance of Potential Effects.....	138
11.6	Inter-relationship of Potential Effects	138
11.7	Mitigation.....	138
11.8	Residual Effects	138
11.9	Cumulative Effects	139
11.10	Summary of Significant Historic Environment Effects	139
11.11	Conclusion	139
12	Traffic and Transport	141
12.1	Introduction	141
12.2	Legislation, Policy and Guidance.....	141
12.3	Method	142
12.4	Baseline Environment.....	142
12.5	Prediction and Assessment of Significance of Potential Effects.....	142
12.6	Inter-relationship of Potential Effects	146
12.7	Mitigation.....	146
12.8	Residual Effects	147

12.9	Cumulative Effects	147
12.10	Conclusion	148
13	Air Quality and Emissions	149
13.1	Introduction	149
13.2	Legislation, Policy and Guidance.....	149
13.3	Method	149
13.4	Baseline Environment.....	156
13.5	Prediction and Assessment of Significance of Potential Effects.....	157
13.6	Inter-relationship of Potential Effects	175
13.7	Mitigation.....	175
13.8	Residual Effects	176
13.9	Cumulative Effects	177
13.10	Conclusion	177
14	Noise and Vibration.....	179
14.1	Introduction	179
Part 1-	Construction and Decommissioning Noise and Vibration.....	179
14.2	Legislation, Policy and Guidance.....	179
14.3	Method	179
14.4	Baseline Environment.....	180
14.5	Prediction and Assessment of Significance of Potential Effects.....	180
14.6	Inter-relationship of Potential Effects	181
14.7	Mitigation.....	182
14.8	Residual Effects	182
14.9	Cumulative Effects	182
14.10	Conclusion - Construction Effects.....	182
Part 2-	Operational Noise and Vibration.....	182
14.11	Legislation, Policy and Guidance.....	182
14.12	Method	183
14.13	Baseline Environment.....	183
14.14	Prediction and Assessment of Significance of Potential Effects.....	183
14.15	Inter-relationship of Potential Effects	183
14.16	Mitigation.....	183
14.17	Residual Effects	183
14.18	Cumulative Effects	184
14.19	Conclusion - Operational Effects	184
Part 3 –	Summary of Noise and Vibration Effects.....	184
14.20	Conclusion	184
15	Socio-Economics and Land Use	185
15.1	Introduction	185
15.2	Legislation, Policy and Guidance.....	185
15.3	Method	185
15.4	Baseline Environment.....	186
15.5	Prediction and Assessment of Significance of Potential Effects.....	186
15.6	Inter-relationship of Potential Effects	196
15.7	Mitigation.....	196
15.8	Residual Effects	196
15.9	Cumulative Effects	197
15.10	Conclusion	197
16	Electric and Magnetic Fields	199
16.1	Introduction	199
16.2	Legislation, Policy and Guidance.....	199
16.3	Method	199
16.4	Baseline Environment.....	199

16.5	Prediction and Assessment of Significance of Potential Effects.....	199
16.6	Inter-relationship of Potential Effects	200
16.7	Mitigation.....	200
16.8	Residual Effects	200
16.9	Cumulative Effects	200
16.10	Conclusion	200
17	Cumulative Effects	201
17.1	Introduction	201
17.2	Method	202
17.3	Assessment of Potential Cumulative Effects.....	214
18	Photomontages	287
19	Non- Technical summary.....	289
19.1	Introduction	289
19.2	Background to the Project	292
19.3	Description of the Proposed Development.....	292
19.4	Planning Policy.....	294
19.5	EIA Sensitivity Test Approach and Method.....	294
19.6	Landscape.....	295
19.7	Visual Effects	297
19.8	Biodiversity and Nature Conservation.....	300
19.9	Ground Environment	301
19.10	Hydrology and Water Resources.....	302
19.11	Historic Environment	303
19.12	Traffic and Transport	304
19.13	Air Quality and Emissions.....	306
19.14	Noise and Vibration	307
19.15	Socio-economics and Land Use	310
19.16	Electric and Magnetic Fields.....	311
19.17	Cumulative Effects	312

INSETS (VOLUME 5.29.1.1)

Inset 0.1: Location Plan illustrating the Geographical Extent of Section C within the 3km Study Area

Inset 0.2 Significance of Visual Effects on Receptors C1.F22, C1.H56, C1.H57, C1.H65, C1.H68 and C1.B3 to C1.B5 within 1km during Construction

Inset 0.3: Location Plan illustrating the Geographical Extent of Section D within the 3km Study Area

Inset 0.4 :Significance of Visual Effects on Receptors D1.R1, D1.H4, D1.H5 and D1.H6 within 1km during Construction

Inset 0.1: Total Employment Profile Type of the Proposed Development (associated with the Revised Construction Programme), alongside the total employment profile included in the submitted ES

Inset 0.2: Total Employment Profile by Job Type (associated with the Revised Construction Programme)

Inset 15.3: Indicative Local Employment Profile of the Proposed Development (associated with the Revised Construction Programme)

Inset 15.4: Accommodation Bedspace Demand (associated with the Revised Construction Programme), alongside the total bedspace demand included in the submitted ES

APPENDICES (VOLUME 5.29.1.2)

Appendix 3B- Revised Construction Programme- Issue B ES Sensitivity Test

Appendix 7A: Section A: Visual Assessment Tables- Issue B ES Sensitivity Test

Appendix 7C: Section C: Visual Assessment Tables - Issue B ES Sensitivity Test

Appendix 7D: Section D: Visual Assessment Tables - Issue B ES Sensitivity Test

Appendix 13A: 1km² Background Pollutant Concentration Estimates – Issue B ES Sensitivity Test

Appendix 14B: Construction Traffic Noise Assessment – Issue B ES Sensitivity Test

Appendix 15G: Planning Allocations within Local Area of Influence – Issue B ES Sensitivity Test

Appendix 15H: Planning Permissions within Local Area of Influence – Issue B ES Sensitivity Test

Appendix 17C: Cumulative Assessment – Other Major Development Proposals Indicative Programmes- Issue B ES Sensitivity Test

Appendix 17D: Cumulative Assessment – Scoped Out Major Development Proposals- Issue B ES Sensitivity Test

FIGURES (VOLUME 5.29.1.3)

Figure 7.35.6: Advance planting at Sandford Substation – Issue A ES Sensitivity Test

Figure 13.1: Construction Emissions Receptor Zones – Issue B ES Sensitivity Test

Figure 17.1: Cumulative Assessment – Other Major Development Proposals- Issue B ES Sensitivity Test

EXECUTIVE SUMMARY

ES1.1 Introduction

- ES1.1.1 National Grid Electricity Transmission plc (National Grid) has submitted an application under the Planning Act 2008 to seek powers to construct, operate and maintain a new 400,000 volt (400kV) connection between Bridgwater, Somerset and Seabank Substation, north of Avonmouth, together with various associated development and other works ('the Proposed Development'). The application was submitted to the Planning Inspectorate (PINS) on the 28 May 2014. PINS confirmed that the application has been accepted for examination on 17 June 2014 (reference number. EN020001).
- ES1.1.2 Under the terms of its transmission licence, National Grid is obliged to make an offer of connection in response to each valid application made. In September 2007, National Grid received an application from EDF Energy for the connection of a proposed new nuclear power station at Hinkley Point, Somerset (Hinkley Point C Power Station) to the high voltage electricity transmission system. This connection, as well as others in the South West and South Wales, triggered the need for new transmission capacity in the region.
- ES1.1.3 That part of the Proposed Development that comprises an electric line above ground within section 16 of the Planning Act 2008 is a Nationally Significant Infrastructure Project (NSIP) for the purposes of that Act. Under Section 31 of the Planning Act 2008, development consent is required for development to the extent that it is or forms part of an NSIP. Development consent is granted by the making of a Development Consent Order (DCO) for which application may be made under section 37 of the Planning Act 2008.
- ES1.1.4 An Environmental Statement (ES) was submitted as part of the DCO application (the submitted ES) and comprises **Volumes 5.1 to 5.27** of the DCO application submission.

ES1.2 Modification to Connection Date

- ES1.2.1 National Grid has received an application from EdF Energy for a modification to the connection date for the Hinkley Point C Power Station that seeks connection two years later than the present connection date described in the submitted DCO application.
- ES1.2.2 As a result of the application from EdF Energy, on the 19 August 2014 a formal offer for a revised connection date was made by National Grid to EdF Energy.
- ES1.2.3 EdF Energy has advised National Grid that, although technically this offer is confidential until signed, National Grid can inform PINS that an offer has been made.
- ES1.2.4 To meet the revised connection date offered, the construction programme, as presented and assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**), has also been revised.

ES1.2.5 The revisions to the construction programme are greater than moving the start of construction to a later date than presented in the submitted ES. The duration of the construction of the various individual proposed development components has changed; the duration of some development components have increased, others have decreased.

ES1.3 Requirement for Changes in the Revised Construction Programme Duration

ES1.3.1 National Grid's transmission licence requires it to ensure the security of the supply of high voltage electricity. Part of National Grid's role involves balancing the supply of electricity between generators and users. This supply of electricity has to be delivered in combination with the need to allow for works on the National Grid transmission system (such as maintenance operations, carrying out repairs and making new connections).

ES1.3.2 To ensure the safety of those working on or near overhead power lines during works to the transmission system, the electricity flowing through the lines is usually turned off. These periods are known as "outages" and refer to when the normal power operation of the overhead lines is interrupted by some of the live electricity circuits being temporarily turned off, whilst at all times allowing sufficient power to continue to flow through other parts of the transmission system to maintain supply.

ES1.3.3 All outages have to be co-ordinated nationally and regionally within National Grid and with affected Distribution Network Operators (DNOs). The outages have to be "booked" several years in advance of need and normally can only occur during British Summer Time from March to October, when there is a lower power demand on the National Grid system.

ES1.3.4 To ensure that the Hinkley Point C Connection Project can be delivered by the revised connection date offered, a Revised Construction Programme has been developed which is spread over a number of known and planned outage periods, having regard to the need to continue to provide high voltage electricity efficiently and reliably whilst works progress and also the need to carry out work in a safe manner.

ES1.3.5 Accordingly, the revisions to the construction programme arising from a later connection date are greater than simply moving the start of construction to a later date than presented in the submitted ES. The Revised Construction Programme has to be planned to fit within the existing outages periods already scheduled by National Grid and the DNO (Western Power Distribution (South West) plc (WPD)). There are changes in the construction duration for a number of individual proposed development components (both increases and decreases in duration) and the length of the overall construction programme increases because of the different outages that apply to the Revised Construction Programme.

ES1.4 Revised Construction Programme

ES1.4.1 In order to achieve the revised connection date offered, National Grid would start construction in December 2015, two months later than the Preliminary Construction

Programme set out in the submitted ES. Construction of the Proposed Development is anticipated to be complete by March 2022.

ES1.4.2 The duration of the total Revised Construction Programme is 76 months which is 25 months longer than the Preliminary Construction Programme detailed and assessed in the submitted ES.

ES1.4.3 The Proposed Development does not alter from that described in the submitted ES as a result of the revised connection date offered; the only change is to the duration of the construction phase.

ES1.5 Purpose of the Sensitivity Test

ES1.5.1 In light of the modifications to the connection date and the Revised Construction Programme to be employed, a review of the Environmental Impact Assessment (EIA) and submitted ES and Supporting Documentation has been undertaken by National Grid.

ES1.5.2 The ES Sensitivity Test has been undertaken to consider where there are changes to the environmental effects described in the submitted ES as a result of the Revised Construction Programme. The sensitivity test comprises the following documents:

- Environmental Statement Sensitivity Test (**Volume 5.29.1**)- provides a sensitivity test of the submitted ES
- Supporting Documents Sensitivity Test (**Volume 5.29.2**) – provides a sensitivity test of the submitted Supporting Documents

ES1.6 Summary of changes to submitted ES and Supporting Documents as a result of the Revised Construction Programme

ES1.6.1 Following the revised connection offer, all chapters of the submitted ES were examined to determine whether any updates to the assessments were required as a result of the Revised Construction Programme.

ES1.6.2 For the majority of the assessments presented in the submitted ES, no further work was required, as changes in the construction programme would not influence the assessments already undertaken.

ES1.6.3 Where potential material changes to the assessment findings were identified, these have been updated with further assessment work and provided as part of the ES Sensitivity Test (**Volume 5.29.1**). **Table ES.1.6.1** summarises the impact of the Revised Construction Programme and identifies where the assessments presented in the submitted ES differ as a result of the revised connection offer date.

ES1.6.4 A sensitivity test was also undertaken on the Supporting Documents (**Volume 5.29.2**). **Table ES 1.6.2** summarises the submitted Supporting Documents and identifies changes to the documents as a result of the revised connection offer.

Table ES 1.6.1- Summary of Changes to Submitted ES as a result of the Revised Construction Programme

Volume of Submitted ES	Title of submitted ES Document	Changes to submitted ES as a result of the Revised Construction Programme	Additional mitigation measures/design considerations required as a result of the Revised Construction Programme	Changes to residual effects as a result of the Revised Construction Programme	Location of ES Sensitivity Test Analysis	Location of ES Sensitivity Test Revised Figures and Appendices
Volume 5.1	Introduction	Description of the change to the construction programme and connection date added. Revised introduction provided in ES Sensitivity Test.	N/A	N/A	Volume 5.29.1.1, ES Sensitivity Test Chapter 1	No change to submitted figures and appendices
Volume 5.2	Project Need and Alternatives	No change: the Project Need and Alternatives remain as stated in the submitted ES.	N/A	N/A	Volume 5.29.1.1, ES Sensitivity Test Chapter 2	No change to submitted figures and appendices
Volume 5.3	Project Description	Overall construction phase of Proposed Development increases in duration; construction would commence in December 2015 and be completed by March 2022. This equates to a 25 month increase in duration. Construction duration of individual proposed development component have changed. Construction methods remain as stated in the submitted ES with the exception of the 400kV underground cable construction through the Mendip Hills. The operation and decommissioning of the Proposed Development does not change.	The 400kV underground cable construction works would be delivered in a phased manner. The active working area would be limited to a maximum 3km length at any one time. As detailed in the submitted ES the working area along the length of the underground cables route would be approximately 100m wide and would be protected by post and wire fencing. Once the cables have been laid and trenches backfilled, habitat reinstatement would be phased as works are completed in each length. Note that whilst the cables will be laid in a phased manner the haul road for this development component is assessed to remain in place for the duration of works.	N/A	Volume 5.29.1.1, ES Sensitivity Test Chapter 3	Volume 5.29.1.2- Appendix 3B- Revised Construction Programme- Issue B ES Sensitivity Test
Volume 5.4	Planning Policy Context	No change: the Planning Policy Context remains as stated in the submitted ES.	N/A	N/A	Volume 5.29.1.1, ES Sensitivity Test Chapter 4	No change to submitted figures and appendices
Volume 5.5	Environmental Impact Assessment Approach and Method	No change: the approach to the EIA remains as stated in the submitted ES. The assessment of effects of the Revised Construction Programme is assessed against the criteria as set out in the submitted ES.	N/A	N/A	Volume 5.29.1.1, ES Sensitivity Test Chapter 5	No change to submitted figures and appendices

Volume of Submitted ES	Title of submitted ES Document	Changes to submitted ES as a result of the Revised Construction Programme	Additional mitigation measures/design considerations required as a result of the Revised Construction Programme	Changes to residual effects as a result of the Revised Construction Programme	Location of ES Sensitivity Test Analysis	Location of ES Sensitivity Test Revised Figures and Appendices
Volume 5.6	Landscape	Despite the longer overall duration of the Revised Construction Programme, the duration of each individual proposed development component within each Section (A to H), typically is similar to that considered in the submitted ES and does not exceed 5 years (60 months). Landscape effects arising from construction operations would be experienced for a similar timescale (i.e. temporary and short-term 0 to 5 years) to that considered in the submitted ES, albeit at different commencement and completion dates. The Revised Construction Programme would not alter the landscape effects of the Proposed Development predicted in the submitted ES.	No change to mitigation proposed in submitted ES.	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 6	No change to submitted figures and appendices

Volume of Submitted ES	Title of submitted ES Document	Changes to submitted ES as a result of the Revised Construction Programme	Additional mitigation measures/design considerations required as a result of the Revised Construction Programme	Changes to residual effects as a result of the Revised Construction Programme	Location of ES Sensitivity Test Analysis	Location of ES Sensitivity Test Revised Figures and Appendices
Volume 5.7	Visual Effects	Despite the longer overall duration of the Revised Construction Programme, the duration of each individual proposed development component within each Section (A to H), typically is similar to that considered in the submitted ES and does not exceed 5 years (60 months). Some visual receptors with inter-visibility of construction works in both Section C and Section D would experience visual effects for a greater duration, increasing to medium-term (5 to 15 years). These visual receptors are within 1km of the LoD for the Proposed Development near Sandford and Towerhead. The significance of visual effect predicted for these receptors is largely as a result of the temporary and short-term (0 to 5 years) construction works anticipated being visible in each Section. The magnitude and significance of visual effects of construction works in the adjacent Section would not be greater than assessed in the submitted ES and would be visible in a moderate or low proportion of views or in distant views, where only a small proportion of the view would be affected. These would be a high degree of filtering, screening or backgrounding. The increase in duration of construction works from short-term (0 to 5 years) to medium-term (5 to 15 years) would not increase the magnitude and significance of visual effects predicted for these receptors in the submitted ES. The variations in construction programme would not alter the visual effects of the Proposed Development predicted in the submitted ES.	No change to mitigation proposed in submitted ES. Additional details provided on the phased landscape planting at Sandford substation in response to effects on habitat loss.	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 7	Volume 5.29.1.2, Appendix 7C: Section C: Visual Assessment Tables - Issue B ES Sensitivity Test Volume 5.29.1.2, Appendix 7D: Section D: Visual Assessment Tables - Issue B ES Sensitivity Test Volume 5.29.2.3, Figure 7.37.1: Sandford Substation – Landscape Mitigation Phasing Plan- Issue A ES Sensitivity Test

Volume of Submitted ES	Title of submitted ES Document	Changes to submitted ES as a result of the Revised Construction Programme	Additional mitigation measures/design considerations required as a result of the Revised Construction Programme	Changes to residual effects as a result of the Revised Construction Programme	Location of ES Sensitivity Test Analysis	Location of ES Sensitivity Test Revised Figures and Appendices
Volume 5.8	Biodiversity and Nature Conservation	The submitted ES assessed construction effects as temporary medium-term based on a construction period of four years. This increases the overall duration of the construction phase to 76 months. Despite the longer overall duration, the duration for each individual proposed development component typically would be similar to that considered in the submitted ES. The Revised Construction Programme would result in an increased duration of the activity of installing 400kV underground cables through the Mendip Hills; the Revised Construction Programme would require a total working period of up to 57 months (Q1 2016 to Q3 2020 spanning five bat active seasons), in contrast to the four years (spanning four bat active seasons) previously assessed. Accordingly the construction would be phased to avoid complete loss of habitats for the full duration of works. The Revised Construction Programme would result in an increased duration of the construction work at Sandford substation; the duration of works would increase by 9 months. To minimise the period of habitat loss at Sandford substation associated with the Revised Construction Programme, early reinstatement of some habitats would be undertaken in 2017. An overall increase in the duration of construction works related to the haul roads to 76 months would not increase the category of magnitude or significance of effects predicted for the ecological receptors in the submitted ES. With the implementation of the phased working through the Mendip Hills and early reinstatement works at Sandford Substation, the Revised Construction Programme would not alter the significance of effects of the Proposed Development on ecological receptors from that predicted in the submitted ES.	To avoid complete loss of all hedgerows throughout the entire 8.5km length, the 400kV underground cable construction works would be delivered in a phased manner under with the Revised Construction Programme. The active working area would be limited to a maximum 3km length at any one time. As detailed in the submitted ES the working area along the length of the underground cables route would be approximately 100m wide and would be protected by post and wire fencing. Once the cables have been laid and trenches backfilled, habitat reinstatement would be phased as works are completed in each length. Note that whilst the cables will be laid in a phased manner, the haul road for this development component is assessed to remain in place for the duration of works. However this does not increase the category of magnitude or significance of effects predicted for the ecological receptors in the submitted ES. To minimise the period of habitat loss at Sandford substation associated with the Revised Construction Programme is, early reinstatement of some habitats would be undertaken in 2017. Figure 7.35.6 presents the Sandford Substation Landscape Mitigation Phasing Plan which would be followed.	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 8	No change to submitted figures and appendices
Volume 5.9	Ground Environment	No change: the Revised Construction Programme has no implications for the assessed significance of effects on the ground environment of the Proposed Development. This remains as stated in the submitted ES.	No change to mitigation proposed in submitted ES	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 9	No change to submitted figures and appendices

Volume of Submitted ES	Title of submitted ES Document	Changes to submitted ES as a result of the Revised Construction Programme	Additional mitigation measures/design considerations required as a result of the Revised Construction Programme	Changes to residual effects as a result of the Revised Construction Programme	Location of ES Sensitivity Test Analysis	Location of ES Sensitivity Test Revised Figures and Appendices
Volume 5.10	Hydrology and Water Resources	No change: the Revised Construction Programme has no implications for the assessed significance of effects on hydrology and water resources of the Proposed Development. This remains as stated in the submitted ES.	No change to mitigation proposed in submitted ES	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 10	No change to submitted figures and appendices
Volume 5.11	Historic Environment	No change: the Revised Construction Programme would have no implications for the assessed significance of effects on the historic environment of the Proposed Development. This would remain as stated in the submitted ES.	No change to mitigation proposed in submitted ES.	No change to residual effects.	Volume 5.29.1.1, ES Sensitivity Test Chapter 11	No change to submitted figures and appendices
Volume 5.12	Traffic and Transport	The construction traffic data used in the submitted ES was based on the anticipated opening and closing dates of bell mouths associated with the construction of each of the individual proposed development components. The anticipated bell mouth opening and closing dates change as a result of the Revised Construction Programme. The traffic assessment has therefore been updated with the revised dates. The assessment of the effects remains unchanged from that presented in the submitted ES as a result of the Revised Construction Programme.	As part of the mitigation package of measures contained within the submitted Construction Traffic Management Plan (Volume 5.26.5), it has been agreed, through discussions and consultation with the LPAs, that construction traffic from the Proposed Development will not use any junctions operating over its practical capacity in either the Future Baseline or Future Baseline with Development scenarios. The CTMP identifies 12 junctions that will have complete peak period HGV movement restrictions in place. These restricted hours will be secured by a DCO requirement. As a result of the Revised Construction Programme an additional junction, the M5/A4/Avonmouth Way, is predicted to operate above its practical capacity level. This junction would be subject to the peak period HGV vehicles restrictions and added to the CTMP and DCO requirements.	No change to residual effects.	Volume 5.29.1.1, ES Sensitivity Test Chapter 12	No change to submitted figures and appendices
Volume 5.13	Air Quality and Emissions	The baseline data from Defra has been updated since the submitted ES and there has been a change in the guidance for assessing the effects of dust during construction. The Sensitivity Test has used the most recent guidance and baseline data in the assessment of effects of the Revised Construction Programme. The assessment also has been updated to take account of the change in construction traffic associated with the Revised Construction Programme. The assessment of effects remains unchanged from that presented in the submitted ES.	No change to mitigation proposed in submitted ES.	No change to residual effects.	Volume 5.29.1.1, ES Sensitivity Test Chapter 13	Volume 5.29.1.2, Appendix 13A: 1km² Background Pollutant Concentration Estimates – Issue B ES Sensitivity Test Volume 5.29.1.3, Figure 13.1: Construction Emissions Receptor Zones – Issue B ES Sensitivity Test

Volume of Submitted ES	Title of submitted ES Document	Changes to submitted ES as a result of the Revised Construction Programme	Additional mitigation measures/design considerations required as a result of the Revised Construction Programme	Changes to residual effects as a result of the Revised Construction Programme	Location of ES Sensitivity Test Analysis	Location of ES Sensitivity Test Revised Figures and Appendices
Volume 5.14	Noise and Vibration	The assessment of construction noise and vibration has been updated to take account of the change in construction traffic associated with the Revised Construction Programme. The assessment of the effects of construction noise and vibration remain unchanged from that presented in the submitted ES. There would be no change in the assessment of operational noise from that presented in the submitted ES as a result of the Revised Construction Programme.	No change to mitigation proposed in submitted ES	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 14	Volume 5.29.1.2, Appendix 14B: Construction Traffic Noise Assessment – Issue B ES Sensitivity Test
Volume 5.15	Socio-economics and Land Use	A review of any new relevant planning allocations and planning permissions granted within the Local Area of Influence was undertaken to ensure the Revised Construction Programme was assessed against the most up to date baseline situation and to take account of any changes arising in the intervening period between the submission of the ES and the Sensitivity Test. The employment data used in the submitted ES assessment was based on the anticipated timings for the construction of each of the individual proposed development components. The data used in the assessment has been updated to reflect the revised employment profile associated with the Revised Construction Programme. The assessment of the effects remains unchanged from that presented in the submitted ES as a result of the Revised Construction Programme.	No change to mitigation proposed in submitted ES	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 15	Volume 5.29.1.2, Appendix 15G: Planning Allocations within Local Area of Influence – Issue B ES Sensitivity Test Volume 5.29.1.2, Appendix 15H: Planning Permissions within Local Area of Influence – Issue B ES Sensitivity Test Volume 5.29.1.2, Appendix 15J: Amenity Assessment – Issue B ES Sensitivity Test
Volume 5.16	Electric and Magnetic Fields	No change: the Revised Construction Programme has no implications for the assessed significance of potential electric and magnetic fields (EMFs) effects of the Proposed Development. This remains as stated in the submitted ES.	No change to mitigation proposed in submitted ES	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 16	No change to submitted figures and appendices

Volume of Submitted ES	Title of submitted ES Document	Changes to submitted ES as a result of the Revised Construction Programme	Additional mitigation measures/design considerations required as a result of the Revised Construction Programme	Changes to residual effects as a result of the Revised Construction Programme	Location of ES Sensitivity Test Analysis	Location of ES Sensitivity Test Revised Figures and Appendices
Volume 5.17	Cumulative Effects	A review of any new relevant planning permissions, planning applications and EIA Screening/Scoping requests within 10km of the DCO boundary was undertaken to ensure the Revised Construction Programme was assessed against the most up to date baseline situation and to take account of any changes arising in the intervening period between the submission of the ES and the Sensitivity Test. The assessment of the effects remains unchanged from that presented in the submitted ES.	No change to mitigation proposed in submitted ES	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 17	Volume 5.29.1.2, Appendix 17C: Cumulative Assessment – Other Major Development Proposals Indicative Programmes- Issue B ES Sensitivity Test Volume 5.29.1.2, Appendix 17D: Cumulative Assessment – Scoped Out Major Development Proposals- Issue B ES Sensitivity Test Volume 5.29.1.3, Figure 17.1: Cumulative Assessment – Other Major Development Proposals- Issue B ES Sensitivity Test
Volume 5.18	Environmental Statement Photomontages	No change to the assessment and information provided in submitted ES	N/A	No change to residual effects	Volume 5.29.1.1, ES Sensitivity Test Chapter 18	No change to submitted figures and appendices
Volume 5.19	Environmental Statement Non-Technical Summary	A non-technical summary of the ES Sensitivity Test is provided.	N/A	N/A	Volume 5.29.1.1, ES Sensitivity Test Chapter 19	No change to submitted figures and appendices

Table ES 1.6.2- Summary of Changes to Submitted Supporting Documents as a result of the Revised Construction Programme

Volume of Submitted Supporting Document	Title of submitted Supporting Document	Changes to submitted Supporting Document as a result of the Revised Construction Programme	Location of Supporting Document Sensitivity Test
Volume 5.20	The Applicant's Report to Support Habitats Regulations Assessment	No change to the assessment. Additional cumulative sites added to assessment table.	Volume 5.29.2.1 Supporting Documents Sensitivity Test
Volume 5.21	Arboricultural Impact Assessment	No change to submitted Supporting Document. Two years of additional crown expansion and height growth has been applied to the existing tree management zones to identify any new infringements as a result of the Revised Construction Programme; this has identified that there are no changes to the assessment presented in the submitted report.	No further document provided; no change to information submitted.
Volume 5.22	Transport Assessment	The construction traffic data used in the submitted ES was based on the anticipated opening and closing dates of bell mouths associated with the construction of each of the individual proposed development components. The anticipated bell mouth opening and closing dates change as a result of the Revised Construction Programme. The traffic assessment has therefore been updated with the revised dates. As a result of the Revised Construction Programme, an additional junction, the M5/A4/Avonmouth Way, is predicted to operate above its practical capacity level. This junction would be subject to the peak period HGV vehicles restrictions and added to the CTMP and DCO requirements. The assessment of the effects remains unchanged from that presented in the submitted Transport Assessment.	Volume 5.29.2.2.1 Transport Assessment Sensitivity Test
Volume 5.23	Flood Risk Assessments	No change to assessment and information provided in submitted ES. No additional mitigation measures required.	Volume 5.29.2.3 Flood Risk Assessment Sensitivity Test
Volume 5.23.1	Bridgwater Tee CSE Compounds FRA		
Volume 5.23.2	South of the Mendip Hills CSE Compound FRA		
Volume 5.23.3	Sandford Substation FRA		
Volume 5.23.4	Seabank Substation FRA		
Volume 5.23.5	Hinkley Point C Connection Route FRA		
Volume 5.24	Statement of Statutory Nuisance	No change to submitted Supporting Document	No further document provided; no change to information submitted.
Volume 5.25	Off-site Planting and Enhancement Scheme	No change to submitted Supporting Document	No further document provided; no change to information submitted.

Volume of Submitted Supporting Document	Title of submitted Supporting Document	Changes to submitted Supporting Document as a result of the Revised Construction Programme	Location of Supporting Document Sensitivity Test
Volume 5.26.1	Construction Environmental Management Plan	The following additional mitigation measures/design considerations will be added to the draft Construction Environmental Management Plan: To avoid complete loss of all hedgerows throughout the entire 8.5km length during the Revised Construction Programme, the 400kV underground cable construction works would be delivered a phased manner. The active working area would be limited to a maximum 3km length at any one time. As detailed in the submitted ES the working area along the length of the underground cables route would be approximately 100m wide and would be protected by post and wire fencing. Once the cables have been laid and trenches backfilled, habitat reinstatement would be phased as works are completed in each length. Note that whilst the cables will be laid in a phased manner, the haul road for this development component is assessed to remain in place for the duration of works. To minimise the period of habitat loss at Sandford substation, early reinstatement of some habitats would be undertaken in 2017. Figure 7.35.6 presents the Sandford Substation Landscape Mitigation Phasing Plan which would be followed as a result of the Revised Construction Programme. As a result of the Revised Construction Programme, the M5/A4/Avonmouth Way, is predicted to operate above its practical capacity level. This junction would be subject to the peak period HGV vehicles restrictions and added to the CTMP and DCO requirements	Volume 5.29.2.4 CEMP Sensitivity Test
Volume 5.26.2	Appendix 1 – Outline Waste Management Plan	No change to submitted Supporting Document	No further document provided; no change to information submitted.
Volume 5.26.3	Appendix 2 - Biodiversity Mitigation Strategy	The following additional mitigation measures/design considerations will be added to the draft Construction Environmental Management Plan as a result of the revised the construction programme: To avoid complete loss of all hedgerows throughout the entire 8.5km length, the 400kV underground cable construction works would be delivered a phased manner. The active working area would be limited to a maximum 3km length at any one time. As detailed in the submitted ES the working area along the length of the underground cables route would be approximately 100m wide and would be protected by post and wire fencing. Once the cables have been laid and trenches backfilled, habitat reinstatement would be phased as works are completed in each length. Note that whilst the cables will be laid in a phased manner, the haul road for this development component is assessed to remain in place for the duration of works. To minimise the period of habitat loss at Sandford substation, early reinstatement of some habitats would be undertaken in 2017. Figure 7.35.6 presents the Sandford Substation Landscape Mitigation Phasing Plan which would be followed as a result of the Revised Construction Programme.	Volume 5.29.2.4 CEMP Sensitivity Test
Volume 5.26.4	Appendix 3 – Outline Written Scheme of Investigation for the Mitigation of Effects on Archaeological Remains	No change to submitted Supporting Document	No further document provided; no change to information submitted.

Volume of Submitted Supporting Document	Title of submitted Supporting Document	Changes to submitted Supporting Document as a result of the Revised Construction Programme	Location of Supporting Document Sensitivity Test
Volume 5.26.5	Appendix 4 – Draft Construction Traffic Management Plan	As part of the mitigation package of measures contained within the submitted Construction Traffic Management Plan (Volume 5.26.5), it has been agreed, through discussions and consultation with the LPAs, that construction traffic from the Proposed Development will not use any junctions operating over its practical capacity in either the Future Baseline or Future Baseline with Development scenarios. The CTMP identifies 12 junctions that will have complete peak period HGV movement restrictions in place. These restricted hours will be secured by a DCO requirement. . As a result of the Revised Construction Programme, an additional junction, the M5/A4/Avonmouth Way, is predicted to operate above its practical capacity level. This junction would be subject to the peak period HGV vehicles restrictions and added to the CTMP and DCO requirements	Volume 5.29.2.4 CEMP Sensitivity Test
Volume 5.26.6	Appendix 5 - Public Rights of Way Management Plan	No change to submitted Supporting Document	No further document provided; no change to information submitted.
Volume 5.27	Schedule of Operational Mitigation and Enhancement Measures	No change to submitted Supporting Document	No further document provided; no change to information submitted.

1 INTRODUCTION

1.1 General Introduction

Background

- 1.1.1 National Grid Electricity Transmission plc (National Grid) has submitted an application under the Planning Act 2008 to seek powers to construct, operate and maintain a new 400,000 volt (400kV) connection between Bridgwater, Somerset and Seabank Substation, north of Avonmouth, together with various associated development and other works ('the Proposed Development'). The application was submitted to the Planning Inspectorate (PINS) on the 28 May 2014. PINS confirmed that the application has been accepted for examination on 17 June 2014 (reference number. EN020001).
- 1.1.2 Under the terms of its transmission licence, National Grid is obliged to make an offer of connection in response to each valid application made. In September 2007, National Grid received an application from EDF Energy for the connection of a proposed new nuclear power station at Hinkley Point, Somerset (Hinkley Point C Power Station) to the high voltage electricity transmission system. This connection, as well as others in the South West and South Wales, triggered the need for new transmission capacity in the region.
- 1.1.3 That part of the Proposed Development that comprises an electric line above ground within section 16 of the Planning Act 2008 is a Nationally Significant Infrastructure Project (NSIP) for the purposes of that Act. Under Section 31 of the Planning Act 2008, development consent is required for development to the extent that it is or forms part of an NSIP. Development consent is granted by the making of a Development Consent Order (DCO) for which application may be made under section 37 of the Planning Act 2008.
- 1.1.4 An Environmental Statement (ES) was submitted as part of the DCO application (the submitted ES). The submitted ES was prepared in accordance with the Planning Act 2008, The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (SI 2009/2263) ('the 2009 Regulations') and The Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009. The submitted ES comprises **Volumes 5.1 to 5.27** of the DCO application submission.

Modification to Connection Date

- 1.1.5 National Grid has received an application from EdF Energy for a modification to the connection date for the Hinkley Point C Power Station that seeks connection two years later than the present connection date described in the submitted DCO application.
- 1.1.6 As a result of the application from EdF Energy, on the 19 August 2014 a formal offer for a revised connection date was made by National Grid to EdF Energy.
- 1.1.7 EdF Energy has advised National Grid that, although technically this offer is confidential until signed, National Grid can inform PINS that an offer has been made.

- 1.1.8 To meet the revised connection date offered, the construction programme, as presented and assessed in the submitted ES (**Volume 5.3.2, Appendix 3.B**), has also been revised.
- 1.1.9 The revisions to the construction programme are greater than moving the start of construction to a later date than presented in the submitted ES. The duration of the construction of the various individual proposed development components has changed; the duration of some development components have increased, others have decreased. The changes are described and explained in Chapter 3 of this sensitivity test.

Purpose of this Document

- 1.1.10 In light of the modifications to the connection date and the Revised Construction Programme to be employed, a review of the Environmental Impact Assessment (EIA) and submitted ES has been undertaken by National Grid.
- 1.1.11 The purpose of this document is to provide a sensitivity test of the submitted ES to consider where there would be changes to the environmental effects described in the submitted ES as a result of the Revised Construction Programme. The approach to the ES Sensitivity Test is presented in detailed in Chapter 5 of this document.
- 1.1.12 The document should be read in conjunction with the submitted ES (**Volumes 5.1.1 to 5.27**).

Updates to Ecological Information

- 1.1.13 In addition to the sensitivity test, a number of further ecological studies have been undertaken since the submission of the DCO application. These further surveys cover geographic areas not previously surveyed due to site access restrictions and survey timing constraints. Reference to this outstanding information was made within the submitted ES where the intention was stated to provide an update to address them.
- 1.1.14 The outstanding baseline information has been requested by PINS in s51 Advice dated 19 June 2014. This information has been submitted to PINS under a separate cover (**Volume 5.28**). The updated surveys are also referenced within Chapter 8 of this document and do not materially change the baseline assessed within the submitted ES.

1.2 Project Overview

- 1.2.1 The Proposed Development has not changed from that presented within the submitted DCO application as a result of the revised connection offer date; the only change is to the submitted construction programme.
- 1.2.2 **Volume 5.1.2, Figure 1.1 and Volume 5.3.3, Figures 3.1 and 3.2** of the submitted ES illustrate the Proposed Development. The Proposed Development consists of the following principal components and activities:
- construction of a 57km 400kV electricity transmission connection between Bridgewater in Somerset and Seabank, near Avonmouth, comprising:
 - installation of a 400kV overhead line; and

- installation of 400kV underground cables.
- modifications to existing overhead lines at Hinkley Point, Somerset;
- construction of three 400kV cable sealing end (CSE) compounds along the route of the connection;
- construction of a 400/132kV substation at Sandford, North Somerset;
- extension of the existing 400kV substation at Seabank;
- the removal of existing 132kV overhead lines and the construction of replacement 132kV overhead lines and 132kV underground cables;
- extensions/modifications to existing 132kV substations at Churchill, Portishead, Avonmouth and Seabank; and
- associated works, for example temporary access roads, highway works, temporary construction compounds, scaffolds, work sites and ancillary works.

1.2.3 A description of the Revised Construction Programme required to meet the revised connection offer date is provided in Chapter 3 of this document.

1.3 Consultation and Engagement

1.3.1 Extensive pre-application consultation has been undertaken by National Grid over the past four years. National Grid has used this consultation to help shape the route and design of the Proposed Development and the Environmental Impact Assessment of it. The consultation is summarised in Chapter 1 of the submitted ES (**Volume 5.1.1, section 1.5**) with further details provided in the Consultation Report at **Volume 6.1** of the DCO application.

1.4 Policy and Legislation

1.4.1 The EIA process and the submitted ES are subject to a number of legislative and policy requirements. The submitted ES identifies each of these requirements and provides detail on how the EIA and ES comply with those requirements (**Volume 5.1.1, Tables 1.1 to 1.4**). The legislative and policy requirements have not change since the submission of the ES as to require re-assessment as part of this sensitivity test.

1.5 Structure of the Environmental Statement Sensitivity Test

1.5.1 The ES Sensitivity Test is split into 19 chapters numbered in accordance with the submitted ES. **Table 1.1** below identifies the location of the ES Sensitivity Test chapter and to which Volume of the submitted ES this relates.

Table 1.1 ES Sensitivity Test Structure

ES Sensitivity Test Chapter (Volume 5.29.1.1)	Chapter Name	Corresponding Volume within Submitted ES
1	Introduction	Volume 5.1.1
2	Project Need and Alternatives	Volume 5.2.1
3	Project Description	Volume 5.3.1
4	Planning Policy Context	Volume 5.4.1
5	Environmental Impact Assessment Approach and Method	Volume.5.1.5
6	Landscape	Volume 5.6.1
7	Visual Effects	Volume 5.7.1
8	Biodiversity and Nature Conservation	Volume 5.8.1
9	Ground Environment	Volume 5.9.1
10	Hydrology and Water Resources	Volume 5.10.1
11	Historic Environment	Volume 5.11.1
12	Traffic and Transport	Volume 5.12.1
13	Air Quality and Emissions	Volume 5.13.1
14	Noise and Vibration	Volume 5.14.1
15	Socio-economics and Land Use	Volume 5.15.1
16	Electric and Magnetic Fields	Volume 5.16.1
17	Cumulative Effects	Volume 5.17.1
18	Environmental Statement Photomontages	Volume 5.18.1
19	Environmental Statement Sensitivity Test Non-Technical Summary	Volume 5.19.1

- 1.5.2 Chapters 1 to 5 present the ‘upfront’ chapters, describing the purpose of this document; the need case; a detailed description of the Revised Construction Programme; planning policy update review and sensitivity test method and approach respectively.
- 1.5.3 Chapters 6 to 16 provide a sensitivity test of the Revised Construction Programme against each of the EIA topics. Where the Revised Construction Programme has resulted in a change to the assessment provided in the submitted ES, this is described. Further detail on the structure of each topic chapter is provided in Chapter 5 of this document.
- 1.5.4 Chapter 17 sets out changes to the cumulative effects assessments as a result of the Revised Construction Programme and Chapter 18 describes any changes to the photomontages. The Non-Technical Summary of the ES Sensitivity Test is included at Chapter 19.

Figures and Appendices

- 1.5.5 Where required updated figures and appendices have been prepared for the sensitivity test. The ES Sensitivity Test figures and appendices are labelled according to the corresponding figure or appendix in the submitted ES and with the suffix ‘Issue B – ES Sensitivity Test’.

- 1.5.6 Where new figures have been produced for the sensitivity test these are named with the next available figure number relevant to the topic area and with the suffix 'Issue A- ES Sensitivity Test'.
- 1.5.7 The ES Sensitivity Test appendices and figures are provided in **Volume 5.29.1.2** and **Volume 5.29.1.3** of the sensitivity test submission.

1.6 Supporting Documents

- 1.6.1 The submitted ES suite of documents also includes a number of supporting documents. **Table 1.2** below identifies the supporting documents which have been subject to a sensitivity test; the sensitivity test has been undertaken to determine any changes to the submitted documents as a result of the Revised Construction Programme and are provided in **Volume 5.29.2** of the sensitivity test submission.

Table 1.2 Supporting Documents Sensitivity Test

Sensitivity Test Volume	ES Sensitivity Supporting Document Name	Corresponding Volume within Submitted ES
Volume 5.29.2.1	The Applicant's Report to Support Habitats Regulations Assessment Sensitivity Test	Volume 5.21
Volume 5.29.2.2.1	Transport Assessment Sensitivity Test	Volume 5.22
Volume 5.29.2.3	Flood Risk Assessment Sensitivity Test	Volume 5.23
Volume 5.29.2.3	Draft CEMP Sensitivity Test	Volume 5.26

- 1.6.2 All other supporting documents which formed part of the DCO application remain unchanged as a result of the revised connection offer date and Revised Construction Programme.

2 PROJECT NEED AND ALTERNATIVES

2.1 Introduction

- 2.1.1 This chapter describes the changes to the project need and alternatives assessment in light of the revised connection offer date and the Revised Construction Programme.
- 2.1.2 This chapter should be read in conjunction with Chapter 2 of the submitted ES and the relevant appendices (**Volume 5.2.2**) and figures (**Volume 5.2.3**). No changes to these appendices or figures are required as a result of the Revised Construction Programme.

2.2 Project Development Process

- 2.2.1 Chapter 2, section 2.2 of the submitted ES (**Volume 5.2.1**) provides the Project Development Process which has been undertaken by National Grid. This identifies the steps taken in the lead up to the submission of the application.
- 2.2.2 National Grid has received an application for a modification to the offer to connect Hinkley Point C Power Station which envisages the connection being made two years later than the present offer and as described in the DCO application and submitted ES.
- 2.2.3 In order to achieve the revised connection offer date the construction programme assessed within the ES has changed. Consequently National Grid has undertaken a sensitivity test of the submitted ES to identify where the assessments have changed in light of the Revised Construction Programme.

2.3 The Need Case

- 2.3.1 The need for the proposed development is delayed by two years from that presented in Chapter 2, section 2.3 of the submitted ES (**Volume 5.2.1**). The details of the changes required to the construction programme to meet the revised connection offer date are provided in Chapter 3 of this document.

2.4 Project Alternatives

- 2.4.1 Chapter 2 of the submitted ES describes the main alternatives considered to the Proposed Development including alternatives to an overhead line solution, alternative overhead line routes and alternative sites for associated developments.

- 2.4.2 As detailed in Chapter 2 of the submitted ES, for the purposes of the assessment of alternatives, the Proposed Development was split into two principal components. These comprise works associated with the 400kV connection, and works associated with the reconfiguration of the 132kV network. For each of these project components the alternative options considered at the following stages of project development were as follows:
- strategic alternatives;
 - outline route options;
 - detailed route options (including pylon types), and
 - detailed alignment and infrastructure siting.
- 2.4.3 Where relevant, the assessment of alternatives included a consideration of the main methods of construction (i.e. underground cables, Gas Insulated Lines connections or overhead line).
- 2.4.4 The assessment of alternatives in the submitted ES has not considered alternatives to the duration of construction activities. Construction activities for each of the component parts of the Proposed Development are generally fixed within a range; the submitted ES focuses on the enduring effects of the presence of infrastructure rather than the temporary effects of construction.
- 2.4.5 The submitted ES identified the potential for changes to the construction programme to arise due to the DCO being determined later than 2015 or changes to connection agreements or a combination of both of these influences. The submitted ES considered, at a high level, the potential for environmental effects to occur for a variety of alternative construction programme scenarios.
- 2.4.6 The revised connection offer date and construction programme does not alter the project alternatives and the findings of Chapter 2 of the submitted ES remain unchanged as a result of the revised connection offer date and construction programme.

2.5 Conclusions

- 2.5.1 As a result of the revised connection offer date, the need for the proposed development is delayed by two years from that presented in Chapter 2, section 2.3 of the submitted ES (**Volume 5.2.1, section 2.2**). The revised connection offer date and construction programme has no implications for the alternatives set out in Chapter 2 of the submitted ES (**Volume 5.2.1**).

3 PROJECT DESCRIPTION

3.1 Introduction

- 3.1.1 This chapter provides a description of the Revised Construction Programme required to meet the revised connection offer date. The chapter provides a comparison of the Revised Construction Programme against the Preliminary Construction Programme detailed and assessed within the submitted ES (**Volume 5.3.1, Table 3.3 and Volume 5.3.2, Appendix 3B**).
- 3.1.2 This chapter provides a description of the Revised Construction Programme only; all other aspects of the Proposed Development remain as described in Chapter 3 of the submitted ES (**Volume 5.3.1**) as a result of the revised connection offer date.
- 3.1.3 This chapter should be read in conjunction with Chapter 3 of the submitted ES. The Revised Construction Programme is provided in **Appendix 3B** and in **Table 3.1** of this document and supersedes the Preliminary Construction Programme describes in Chapter 3 and provided in **Volume 5.3.2, Appendix 3B** of the submitted ES. All other figures and appendices referenced in Chapter 3 of the submitted ES do not change as a result of the revised connection offer date.

3.2 Location of the Proposed Development

- 3.2.1 There are no changes to the location of the Proposed Development as a result of the revised connection offer date and construction programme; the boundary of the Order Limits remains the same as detailed within the submitted ES.
- 3.2.2 The 'Sections' illustrated with the submitted ES at **Volume 5.1.2, Figure 1.1** and described at **Volume 5.3**, paragraph 3.2.2, remain as follows:
- Section A – Puriton Ridge;
 - Section B – Somerset Levels and Moors South;
 - Section C – Mendip Hills;
 - Section D – Somerset Levels and Moors North;
 - Section E – Tickenham Ridge;
 - Section F – Portishead;
 - Section G – Avonmouth; and
 - Section H – Hinkley Line Entries

Summary of Environmental Characteristics

- 3.2.3 Specific baseline environments relevant to the topics covered in this ES Sensitivity Test are summarised in the specialist topic chapters of this document.
- 3.2.4 The submitted ES identifies the requirements for further ecological surveys to be submitted. These surveys could not be undertaken previously due to site access restrictions and survey timing constraints. The outstanding baseline information has been requested by PINS in the s51 Advice (dated 19 June 2014). This information has been submitted to PINS under a separate cover (**Volume 5.29**). The updated surveys are also referenced within Chapter 8 of this document. This information does not materially alter the baseline conditions as described in the submitted ES Chapter 3 and **Volumes 5.6.1 – 5.16.1**

3.3 Summary of the Proposed Development

3.3.1 As detailed in the submitted ES, the proposed Hinkley Point C Connection project includes the following principal elements:

- construction of a 57km 400kV electricity transmission connection (see submitted ES **Volume 5.3.3, Figure 3.1** and **Figure 3.2**) between Bridgwater in Somerset and Seabank, near Avonmouth, comprising:
 - installation of a 400kV overhead line; and
 - installation of 400kV underground cables.
- modifications to existing overhead lines at Hinkley Point, Somerset (see submitted ES **Volume 5.3.3, Figure 3.1.20**);
- construction of three 400kV cable sealing end (CSE) compounds along the route of the connection (see submitted ES **Volume 5.3.3, Figure 3.1.2** and **Figure 3.1.6**);
- construction of a 400/132kV substation at Sandford, North Somerset (see submitted ES **Volume 5.3.3, Figure 3.1.9**);
- extension of the existing 400kV substation at Seabank (see submitted ES **Volume 5.3.3, Figure 3.1.19**);
- the removal of existing 132kV overhead lines and the construction of replacement 132kV overhead lines and 132kV underground cables (see submitted ES **Volume 5.3.3, Figure 3.1**);
- extensions/modifications to existing 132kV substations at Churchill, Portishead, Avonmouth and Seabank (see submitted ES **Volume 5.3.3, Figures 3.1.10, 3.1.16, 3.1.18** and **3.1.19**); and
- associated works, for example, temporary access roads, highway works, temporary construction compounds, scaffolding, work sites and ancillary works (see submitted ES **Volume 5.3.3, Figure 3.1**).

3.3.2 The Proposed Development has not altered from that described in the submitted ES as a result of the revised connection offer date. However, as described previously, the duration of the construction phase has changed to meet the revised connection offer date. The Revised Construction Programme and the reasons for the changes are described below.

3.4 Requirement for Changes in the Revised Construction Programme Duration

3.4.1 National Grid's transmission licence requires it to ensure the security of the supply of high voltage electricity. Part of National Grid's role involves balancing the supply of electricity between generators and users. This supply of electricity has to be delivered in combination with the need to allow for works on the National Grid transmission system (such as maintenance operations, carrying out repairs and making new connections).

- 3.4.2 To ensure the safety of those working on or near overhead power lines during works to the transmission system, the electricity flowing through the lines is usually turned off. These periods are known as “outages” and refer to when the normal power operation of the overhead lines is interrupted by some of the live electricity circuits being temporarily turned off, whilst at all times allowing sufficient power to continue to flow through other parts of the transmission system to maintain supply.
- 3.4.3 All outages have to be co-ordinated nationally and regionally within National Grid and with affected Distribution Network Operators (DNOs). The outages have to be “booked” several years in advance of need and normally can only occur during British Summer Time from March to October, when there is a lower power demand on the National Grid system.
- 3.4.4 To ensure that the Hinkley Point C Connection Project could be delivered by the proposed revised connection offer date, a Revised Construction Programme has been developed which is spread over a number of known and planned outage periods, having regard to the need to continue to provide high voltage electricity efficiently and reliably whilst works progress and also the need to carry out work in a safe manner.
- 3.4.5 Accordingly, the revisions to the construction programme arising from a later connection offer date are greater than simply moving the start of construction to a later date than presented in the submitted ES. The Revised Construction Programme has to be planned to fit within the existing outages periods already scheduled by National Grid and the DNO (Western Power Distribution (WPD)). There are changes in the construction duration for a number of individual proposed development components (both increases and decreases in duration) and the length of the overall construction programme increases because of the different outages that apply to the Revised Construction Programme.

3.5 Revised Construction Programme

- 3.5.1 To meet the revised connection offer date, National Grid would start construction in December 2015, two months later than the Preliminary Construction Programme set out in the submitted ES (**Volume 5.3.1, Table 3.3** and **Volume 5.3.2, Appendix 3B**). Construction of the Proposed Development is anticipated to be complete by March 2022.
- 3.5.2 The duration of the total Revised Construction Programme is 76 months which is 25 months longer than the Preliminary Construction Programme detailed in the submitted ES. As described above, this extension in duration is due to the need to connect the Hinkley Point C Power Station to the National Grid system within EdF’s requested revised connection programme. This requires re-planning of the construction programme assessed in the submitted ES.
- 3.5.3 The construction methods described in Chapter 3 of the submitted ES do not alter as a result of the Revised Construction Programme, with the exception of the 400kV Underground Cables through the Mendip Hills and construction at Sandford substation where works would be undertaken in a phased manner and restricted to a maximum working stretch of 3km. Further information is provided at paragraph 3.5.8 to 3.2.11 and 3.5.17 below and within the Draft Construction Environmental Management Plan Sensitivity Test (**Volume 5.29.2.4**).

- 3.5.4 The total construction vehicle movements associated with each of the individual proposed development components of the Proposed Development do not change as a result of the Revised Construction Programme; this is discussed in more detailed in Chapter 12 of this document and the supporting Transport Assessment Sensitivity Test (**Volume 5.29.2.2**).

The Revised Construction Programme is set out below in **Table 3.1** and provided in **Appendix 3B** of this document. The table below also provides a comparison with the Preliminary Construction Programme assessed in the submitted ES. In some instances the Revised Construction Programme provides further detail as to the timing of each development component when compared to the Preliminary Construction Programme and this is identified in the table below.

Table 3.1 Revised Construction Programme

Proposed Development Component	Revised Start Date	Revised Finish Date	Duration of works in submitted ES (months)	Revised Duration of works (months)
400kV Overhead Line 400kV Route (South)	Q2 2018	Q2 2020	45 (total route)	27
400kV Overhead Line 400kv Route (North)	Q3 2018	Q3 2021	45 (total route)	39
400kV Overhead Line 400kV Route (Huntspill to Bridgewater Tee)	Q3 2019	Q2 2020	45 (total route)	12
400kV Cable Mendip Hills Route- works between A38 Bristol Road to Tower head Road (including South of Mendip Hills CSE Compound, A38 Bristol Road (UGC) Compound and haul Road	Q1 2016	Q2 2020	48 (all works between Sandford Substation and A38)	54
400kV Cable Mendip Hills Route – works between Towerhead Road and Sandford Substation	Q1 2018	Q2 2020	48 (all works between Sandford Substation and A38)	30
400kV Cable – works between Towerhead Road and Sandford Substation (haul road and compound only)	Q1 2017	Q3 2021	48 (all works between Sandford Substation and A38)	45
Bridgewater Tee 400kV Cable Route	Q3 2019	Q3 2020	12	27

Proposed Development Component	Revised Start Date	Revised Finish Date	Duration of works in submitted ES (months)	Revised Duration of works (months)
AT Route Underground and Overhead Line	Q4 2019	Q3 2020	12	12
W Route	Q2 2017	Q2 2019	24	27
BW Route Avonmouth Option A	Q4 2018	Q2 2019	21	9
BW Route Portishead Option B	Q4 2018	Q4 2019	21	15
G Route	Q3 2019	Q3 2020	13	15
Seabank Line Entries BW Route	December 2015	Q2 2016	30 (all Seabank Line Entries)	9
Seabank Line Entries G Route	Q1 2016	Q3 2016	30 (all Seabank Line Entries)	9
Seabank Line Entries DA Route	Q1 2018	Q3 2018	30 (all Seabank Line Entries)	9
N Route Overhead Line (including disconnection and removal)	Q3 2019	Q2 2020	9 (all N route works)	12
Hinkley Line Entries	Q3 2018	March 2022	36	45
Y Route Churchill	Q1 2018	Q4 2018	12	12
W Route Churchill	Q3 2018	Q3 2018	12	3
Sandford 400/132kV Substation	Q1 2018	Q3 2020	24	33
Seabank 400/132kV Substation	Q4 2019	Q4 2021	24	24
Churchill 132/33kV WPD Substation	December 2015	Q4 2018	24	39 (works from Q4 2015 to Q1 2017 within substation boundary only)
Portishead 132/33kV WPD Substation	Q3 2018	Q2 2019	8	12
Avonmouth 132/33kV WPD Substation	Q3 2019	Q2 2020	9	12
Removal of Southern Half F Route	Q3 2019	Q4 2019	12	6
Removal of Northern Half F Route	Q2 2020	Q2 2021	27	15

Proposed Development Component	Revised Start Date	Revised Finish Date	Duration of works in submitted ES (months)	Revised Duration of works (months)
Removal of 132kV G Route	Q3 2019	Q3 2020	13	15

- 3.5.5 As described above, all of the construction works for the individual development components of the Proposed Development have been rescheduled to fit within the total Revised Construction Programme, taking account of the system outages available within the transmission region. This results in variations to the construction programme in the submitted ES, with some development components being constructed over a longer duration and others over a shorter duration.

Proposed Development Component – Increased Construction Duration

- 3.5.6 Under the Revised Construction Programme, the duration of a number of development components of the Proposed Development increases. These development components are set out below with an explanation as to why the duration of construction is greater than that described in the submitted ES.

400kV Cable Mendip Hills Route

- 3.5.7 The overall duration of works for the 400kV cable Mendip Hills route would increase from that described in the submitted ES. However this development component is separated out into two stages which align with Section C and D as follows and detailed in **Table 3.1**:

- 400kV Cable Mendip Hills Route- works between A38 Bristol Road to Tower head Road (including South of Mendip Hills CSE Compound, A38 Bristol Road (UGC) Compound and haul Road- (Section C)
- 400kV Cable Mendip Hills Route – works between Towerhead Road and Sandford Substation- (Section D)

- 3.5.8 Work in each Section is typically similar to that assessed in the submitted ES, however to reduce the duration of habitat loss under the Revised Construction Programme, the 400kV cable construction works would be delivered in a phased manner. The active working area would be limited to a maximum 3km length at any one time.

- 3.5.9 As detailed in the submitted ES, the working area along the length of the underground cables route would be approximately 100m wide and protected by post and wire fencing. Once the cables have been laid and trenches backfilled, habitat reinstatement would be phased as works are completed in each length. Whilst the cables would be laid in a phased manner, the haul road for this development component would remain in place for the duration of works.

Bridgwater Tee 400kV Cable Route

- 3.5.10 The works associated with the Bridgwater Tee cable sealing end compounds and 400kV cable include the construction of a new 400kV tower, which for safety and security of supply requires a temporary diversion of the existing high voltage electricity route, with one circuit diverted at a time. The diversion can only be

removed following the installation, commissioning and testing of the proposed underground cable route and sealing end compounds. System constraints and the availability of outages required for construction have resulted in this development component being programmed over a longer duration than detailed in the submitted ES.

W Route

- 3.5.11 A temporary diversion of WPD circuit is required to allow the construction of a new tower with a cable sealing end platform. The extended duration of these works is required to maintain the regional high voltage supply within the constraints of the programmed outages available to both National Grid and WPD, which has resulted in this development component being programmed over a longer duration than detailed in the submitted ES.

G Route (including 132kV overhead removal)

- 3.5.12 The works to remove and underground the 132kV overhead line and construction of the 400kV overhead line have been programmed to be accommodated within the power demand requirements and outages of both National Grid and WPD over the Revised Construction Programme. This has resulted in this development component being programmed over a longer duration than detailed in the submitted ES.

Seabank BW, G, DA Routes

- 3.5.13 The extended duration of the Revised Construction Programme for this development component is due to constraints arising from access to outages on the WPD transmission system. The Revised Construction Programme incorporates a gap between construction works on the DA, G and BW routes. This was not required by the construction programme in the submitted ES, which had allowed the development component to be completed within a single system outage.

N Route Overhead Line

- 3.5.14 This component of the proposed development can only be constructed following the completion of overhead line refurbishment works programmed by WPD, which are not part of the DCO application. The revised duration responds to changes in WPD programmed works and the outages available to meet the revised connection offer date.

Hinkley Line Entries

- 3.5.15 The final connections from Hinkley Point C Power Station onto the National Grid high voltage electricity transmission system would occur later than programmed in the submitted ES; this is due to the later completion of the required connection infrastructure within Hinkley Point C Power Station.

Sandford 400/132kV Substation

- 3.5.16 The Revised Construction Programme for this development component has extended in duration. Construction is required to start earlier to prepare the land for the 132kV substation and to allow for the energisation of the 132kV substation when system access will permit. To minimise the period of habitat loss at Sandford Substation associated with the extended duration of works under the Revised Construction Programme, the initial site clearance and levelling works would be

undertaken during 2018 thereby facilitating early reinstatement of some habitats. **Figure 7.35.6 (Volume 5.29.1.3 of ES Sensitivity Test)** presents the Sandford Substation Landscape Mitigation Phasing Plan which identifies the timings of habitat reinstatement.

Churchill 132/33kV WPD Substation

- 3.5.17 The duration of works for this development component has increased due to constraints associated with the available outages. The total active construction site time would not alter although the works have to be carried out over a longer construction period. All construction works from Q4 2015 to Q1 2017 would take place entirely within the substation boundary.

Portishead 132/33kV WPD Substation

- 3.5.18 The duration of works for this development component has increased. The construction is linked directly to the W route works (as described above). The extended duration for works on the W route would necessitate a corresponding extension to the duration of the works for the Portishead substation.

Avonmouth Substation

- 3.5.19 The duration of works for this development component has increased. The construction is linked directly to the G route works (as described above). The extended duration for works on the G route necessitates a corresponding extension to the duration of the works for the Avonmouth substation.

Proposed Development Component – Decreased Construction Duration

- 3.5.20 Under the Revised Construction Programme, the duration of a number of development components of the Proposed Development decreases. These development components are set out below with an explanation as to why the duration of construction is less than that described in the submitted ES.

400kV Overhead Line Route

- 3.5.21 The decrease in duration is due to efficiencies identified in the revised outage programme which allows for the building of certain sections offline where there is no interface with the WPD F Route.

BW Route Avonmouth Option A

- 3.5.22 Under the Revised Construction Programme the construction of this development component would move from 2016 to 2018/19. This is to utilise an outage sequence on the WPD Network that is more efficient. Accordingly construction for this development component is programmed over a shorter duration than detailed in the submitted ES.

BW Route Portishead Option B

- 3.5.23 Although construction of this development component would be longer than Option A above, it is still shorter than the construction programme duration in the submitted ES due to the utilisation of outage sequences on the WPD network which allows more efficient working. The overall increase in duration over that for Option A is due to the requirement to install a longer length of cable into Portishead Substation.

W Route Churchill

- 3.5.24 The availability of outages to allow safe working access to the system has allowed a shorter duration of construction period to be utilised for this component of the proposed development than that included within the construction programme in the submitted ES.

Removal of Southern Half F Route

- 3.5.25 Timing of the release of this part of the route is very close to the completion date of the Southern LD Route, which necessitates a shorter removal time than that included within the construction programme in the submitted ES.

Removal of Northern Half F Route

- 3.5.26 The timing of the release of this route is very close to the completion date of the Southern LD Route, which provides for a shorter removal period than that included within the construction programme in the submitted ES

Proposed Development Component – No Change in Construction Duration

- 3.5.27 The duration of works at the AT Route (Underground and Overhead Line), Y Route Churchill and Seabank Substation remain the same in the Revised Construction Programme as that detailed in the submitted ES.

Summary Construction Methods

- 3.5.28 As detailed in the submitted ES, construction of all components of the Proposed Development would commence with the preparation and installation of temporary access roads and working areas, where necessary improvements to the existing highway network would be undertaken to facilitate construction access and activities. Temporary contractor's compounds, offices and welfare facilities would also be established along the proposed route to house the staff, equipment and materials for the works. This does not alter as a result of the Revised Construction Programme. However, the temporary construction compounds start dates as detailed in **Table 3.2** of the submitted ES alter to reflect the revised start date for each of the components parts of the development. The revised temporary construction compound start dates required as a result of the Revised Construction Programme are set out in **Table 3.2** and **Appendix 3B**:

Table 3.2 Revised Temporary Construction Compounds Start Dates

Compound Name	Local Authority	Proposed Development Component	Anticipated Revised Start Date
1: Bridgwater Tee (Bath Road)	Sedgemoor District Council	Bridgwater Tee	July 2019
2: A38 Bristol Road (underground cables)	Sedgemoor District Council	400kV underground cables	March 2016

Compound Name	Local Authority	Proposed Development Component	Anticipated Revised Start Date
3: A38 Bristol Road (overhead lines)	Sedgemoor District Council	400kV overhead lines	April 2018
4: South of the Mendip Hills (Hams Lane)	Sedgemoor District Council	400kV underground cables	March 2016
5: Barton Road	Sedgemoor District Council	400kV underground cables	April 2016
6: Castle Hill	North Somerset Council	400kV underground cables	March 2016
7: Towerhead Road	North Somerset Council	400kV underground cables	January 2017
8: Sandford Substation	North Somerset Council	Sandford	March 2016
9: AT Route	North Somerset Council	AT Route	November 2019
10: Churchill	North Somerset Council	Churchill	January 2017
11: Engine Lane	North Somerset Council	W Route underground cables	March 2018
12: Nailsea	North Somerset Council	W Route	March 2018
13: Church lane	North Somerset Council	W Route	March 2018
14: Clevedon Road	North Somerset Council	W Route underground cables	March 2018
15: Whitehouse Lane	North Somerset Council	W Route underground cables	March 2018
16: Caswell Hill	North Somerset Council	W Route	March 2018
17: Sheepway	North Somerset Council	W Route	March 2018
18: BW Route (west)	North Somerset Council	BW Route	April 2018
19: BW Route (east)	North Somerset Council	BW Route	April 2018
20: St Andrews Road	Bristol City Council	400kV overhead lines	April 2018

Compound Name	Local Authority	Proposed Development Component	Anticipated Revised Start Date
21: Kings Weston Lane	Bristol City Council	G Route	June 2018
22: G Route (east of M49)	Bristol City Council	G Route underground cables	June 2018
23: Seabank (Severn Road)	Bristol City Council	Seabank	October 2019

- 3.5.29 As detailed in the submitted ES, any topsoil and subsoil excavated would be stored separately along the working area in accordance with the Draft Construction Environmental Management Plan (CEMP) (see **Volume 5.26.1** of the submitted ES) so that it can be put back once construction activities are complete. The construction compounds would take approximately four weeks to establish and would be in use for the same duration as the Revised Construction Programme of the associated development component set out in **Table 3.1** above.
- 3.5.30 All other construction works associated with the Revised Construction Programme remain the same as stated in the submitted ES.

Decommissioning

- 3.5.31 As set out in the submitted ES, if the connection is no longer required the Proposed Development would be decommissioned and project components may be removed. The decommissioning timescales, methods and access remain as stated in the submitted ES and do not change as a result of the revised connection offer date and construction programme.

3.6 Order Limits

There are no changes to the location of the Proposed Development or Order Limits as a result of the revised connection offer date and construction programme.

3.7 Detailed Description of the Proposed Development

- 3.7.1 The detailed description of the Proposed Development remains as set out in the submitted ES, this does not change as a result of the revised connection offer date. The only change to the Proposed Development is to the commencement and completion of the construction works and the duration of the construction of various components parts of the development.
- 3.7.2 The Revised Construction Programme required to meet the revision connection offer date is described at section 3.4 of this chapter; no other changes to Proposed Development are proposed.

4 PLANNING POLICY CONTEXT

4.1 Update to Planning Policy Context

- 4.1.1 There have been no changes to the national and local planning policy context relevant to the Proposed Development since the submission of the DCO application. The Revised Construction Programme and revised connection offer date do not alter the planning policy context.
- 4.1.2 The planning policy which has framed National Grid's approach to identifying the environmental effects to consider, and the significance of those effects is as described in Chapter 4 of the submitted ES (**Volume 5.4.1**). Specific planning policies relevant to the environmental topics covered in this ES Sensitivity Test are summarised in the specialist topic chapters.

5 EIA APPROACH AND METHOD

5.1 Introduction

- 5.1.1 Following the revised connection offer date, as described in Chapter 1, all chapters of the submitted ES were examined to determine whether any updates to the assessments are required as a result of the Revised Construction Programme.
- 5.1.2 For majority of the assessments presented in the submitted ES, no further work is required as changes in the construction programme do not influence the assessments already undertaken. This is detailed within each relevant chapter of this sensitivity test.
- 5.1.3 Where potential material changes to the assessment findings were identified as a result of the Revised Construction Programme, these have been updated with further assessment work. Where such additional assessment work has been undertaken, the approach and findings are specified in the relevant sections of this ES Sensitivity Test.
- 5.1.4 The ES Sensitivity Test should be read in conjunction with the submitted ES.

5.2 Approach to the Construction Programme Changes

- 5.2.1 The approach taken in producing the ES Sensitivity Test was as follows:
- Each topic author reviewed the content of their submitted ES chapter against the Revised Construction Programme. The review included:
 - future baseline conditions;
 - planning policy context; and
 - conclusions
 - If further assessment was considered necessary, or it was considered that further environmental information should be provided as a result of the Revised Construction Programme, this is included within the relevant ES Sensitivity Test topic chapter; and
 - If no further assessment was considered necessary, a commentary is provided on the approach to the sensitivity test and an explanation as to why the conclusions of the submitted ES remain applicable in light of the construction programme changes.

5.3 Format of the ES Sensitivity Test Chapters

- 5.3.1 Within each ES Sensitivity Test topic chapter the information is presented under the following sub headings:
- **Introduction** - Brief introduction to the chapter
 - **Legislation, Policy and Guidance** – Describes any significant changes to planning policy or guidance that are relevant to the technical assessment and updates as appropriate.

- **Method** - Defines the method used in the sensitivity test and how the assessments of the changes to construction programme have been undertaken (i.e. professional judgement, qualitative assessment etc).
- **Baseline Environment** - Reviews whether there are any significant changes in the baseline condition and updates as appropriate.
- **Prediction and Assessment of the Significance of Potential Effects** - Reviews the potential effects, prior to mitigation, previously identified in respect of the construction phase and provides a discussion on the impact of the Revised Construction Programme on the conclusions in the submitted ES. Where the Revised Construction Programme alters the construction phase assessment, a revised assessment of effects is provided.
- **Prediction and Assessment of Inter-relationship of Potential Effects** - Reviews the inter-relationship of potential effects previously identified in respect of the construction phase and describes any changes to these findings as a result of the Revised Construction Programme.
- **Mitigation** - Reviews the mitigation measures previously identified in respect of the construction phase and identifies any further mitigation necessary as a result of the Revised Construction Programme.
- **Residual Effects** - Presents either a statement confirming that the Revised Construction Programme has no material effect on the residual impacts, or identifies where the residual effects would change from the submitted ES. It should be noted that the Revised Construction Programme does not alter any residual effects described in the submitted ES.
- **Cumulative Effects** - Identifies any changes to the cumulative effects assessment as the result of the Revised Construction Programme.
- **Conclusion** - Summarises the findings of the sensitivity test of the Revised Construction Programme.

5.4 Submitted ES Sensitivity Analysis

- 5.4.1 The submitted ES included sensitivity analysis which allowed for the potential for environmental effects to occur in three different construction programme scenarios (as detailed at **Volume 5.5.1**, paragraph 5.6.25 and 5.6.25 of the submitted ES). The sensitivity analysis set out the potential for changes to the construction programme to arise due to the DCO being determined later than 2015 or changes to connection agreements, or a combination of both of these influences.
- 5.4.2 The sensitivity analysis included for the start of construction to commence three years later than the dates presented in the submitted Preliminary Construction Programme, to allow for variance in the connection offer date. However the sensitivity analysis did not include for a revised construction start date in combination with an increase in the duration of the construction programme. Therefore it is appropriate to undertake the sensitivity test of the Revised Construction Programme as this variance has not previously been considered in the submitted ES.

6 LANDSCAPE

6.1 Introduction

- 6.1.1 This chapter of the ES Sensitivity Test provides an assessment of the likely significant effects of the Proposed Development on landscape character as a result of the Revised Construction Programme. This assessment should be read in conjunction with Chapter 6 of the submitted ES (**Volume 5.6.1**).
- 6.1.2 The method for this landscape assessment sensitivity test follows the method of the submitted ES **Volume 5.6.1** and is based on the 'Guidelines for Landscape and Visual Impact Assessment – Third Edition' (Ref. 6.1), Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA), 2013 (GLVIA3) guidance.
- 6.1.3 In order to achieve the revised connection offer date, the Proposed Development would be constructed between December 2015 and March 2022. This results in the duration of the construction phase of the Proposed Development increasing by just over two years (25 months) when compared to the construction timescale assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**).
- 6.1.4 This sensitivity test assesses what the likely significant effects on the landscape would be during construction of all components of the Proposed Development as a result of the Revised Construction Programme. The sensitivity test identifies where the significance of effect on landscape character is to be considered to be different during construction to that assessed in the submitted ES at **Volume 5.6.1**. This has included assessment of the removal of 132kV overhead lines.
- 6.1.5 The sensitivity test has also considered the significance of effect on landscape character during operation and decommissioning of the Proposed Development. There are no changes to landscape effects during operation and decommissioning from that previously presented in the submitted ES as a result of the Revised Construction Programme.
- 6.1.6 This chapter should be read in conjunction with the figures in the submitted ES (**Volume 5.6.2**) as they assist the understanding of the descriptions and updated assessments presented in this chapter. There are no changes to these Figures as a result of the Revised Construction Programme.
- 6.1.7 There are no changes as a result of the Revised Construction Programme to tree and hedgerow removal required to construct the Proposed Development and replacement planting from that previously presented in the submitted ES Arboricultural Impact Assessment (AIA) at **Volume 5.21.1**, sections 7 - 9, and at submitted ES **Volume 5.21.3, Figures 21.2 and 21.3**. Two years of additional crown expansion and height growth has been applied to the existing tree management zones to identify any new infringements associated with the Revised Construction Programme; this has identified no changes to the assessment presented in the submitted AIA.
- 6.1.8 There are no changes as a result of the Revised Construction Programme to embedded mitigation measures that National Grid will deliver in accordance with the Development Consent Order (DCO) from that previously presented in the submitted ES **Volume 5.6 and 5.7**.

- 6.1.9 There are no changes as a result of the Revised Construction Programme to the enhancement measures that National Grid has proposed in the Hinkley Point C Connection project Off-site Planting and Enhancement Scheme (OSPES) presented in the submitted ES **Volume 5.25**.
- 6.1.10 There are no changes as a result of the Revised Construction Programme to the verified photomontages provided in the submitted ES **Volume 5.18**.
- 6.1.11 As set out in the submitted ES (**Volume 5.3.1, section 3.2 and 3.7**) and summarised in Chapter 3 of this document, ‘Sections’ have been identified in the study area through which the Proposed Development is proposed, based on landscape character, and are referenced as Sections A to H. **Volume 5.3.1** of the submitted ES provides a detailed description of Sections A to H and the works proposed in each Section. The assessment of landscape effects contained within Chapter 6 of the submitted ES was prepared with reference to each of these Sections; accordingly this sensitivity test also references the Sections.

6.2 Legislation, Policy and Guidance

- 6.2.1 There has been no change to planning policy relevant to landscape (and views) from that previously presented in the submitted ES (**Volume 5.6.1, section 6.2**).
- 6.2.2 Scottish Natural Heritage (SNH) has recently published updated guidelines on the visual representations of wind farms (‘Visual Representations of Windfarms’, Scottish Natural Heritage (SNH) July 2014). The previous SNH guidance was used to inform the production of photomontages for the operational phase of the Proposed Development contained within the submitted ES (**Volume 5.18**). The updated SNH guidance does not change the assessment of effects presented in the submitted ES as a result of the Revised Construction Programme.
- 6.2.3 Accordingly the legislation, policy and guidance of relevance to the assessment of the Revised Construction Programme are as described in the submitted ES.

6.3 Method

- 6.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.
- 6.3.2 The sensitivity test of the likely significant effects on landscape character of the Proposed Development has been undertaken by Chartered Landscape Architects from The Environment Partnership (TEP) Ltd who are experienced in landscape assessment.
- 6.3.3 The method for the assessment of effects has been undertaken in accordance with the method presented in the submitted ES (**Volume 5.6.1, section 6.3**) and is based on GLVIA3 (Ref. 6.1) guidance. In accordance with the approach in the submitted ES, a reasonable worst case scenario has been assessed as part of the ES Sensitivity Test.

Establishing the Landscape Baseline

Desk Based Assessment

- 6.3.4 There has been no change to relevant information, guidance and planning policy relating to electricity transmission and the landscape (and views) from that previously presented in the submitted ES (**Volume 5.6.1, section 6.3**).

Site Assessment

- 6.3.5 There has been no further field survey work undertaken as part of this ES Sensitivity Test of the Revised Construction Programme from that previously presented in the submitted ES (**Volume 5.6.1, section 6.3**).
- 6.3.6 Detailed site assessment undertaken as part of the submitted ES between December 2011 and January 2014 was recorded in winter, spring and summer. Landscape character and views are not considered to have changed materially since then and further field survey work was not deemed necessary as part of this sensitivity test to determine the possible effects of the Revised Construction Programme on landscape character.

Reporting on the Baseline Situation

- 6.3.7 The method of reporting on the landscape baseline has not changed from that previously presented in the submitted ES (**Volume 5.6.1, section 6.3**).

Predicting and Describing Landscape Effects

- 6.3.8 There are no changes to the method of predicting and describing landscape effects from that previously presented in the submitted ES (**Volume 5.6.1, section 6.3**).

Assessing the Significance of Landscape Effects

- 6.3.9 There are no changes to the method for the assessment of the likely significant effects of the Proposed Development on the landscape from that previously presented in the submitted ES (**Volume 5.6.1, section 6.3**).

Judging the Overall Significance of Landscape Effects

- 6.3.10 There are no changes to the method for the assessment of judging the overall significance of landscape effects of the Proposed Development from that previously presented in the submitted ES (**Volume 5.6.1, section 6.3**).

Assessment Years

- 6.3.11 The assessment year (or years) for the assessment of construction effects on landscape character is dependent on a number of factors; for example, the geographical location of a landscape character area or feature, and the specific Proposed Development component (or components) which are considered to give rise to a landscape effect (or landscape effects). Effects on landscape also have the potential to arise for part of the construction phase or the entirety of the construction phase.
- 6.3.12 As detailed in the submitted ES (**Volume 5.5.1, section 5.6**) it has been appropriate to assess the significance of potential landscape effects when such effects would be at their peak, for example when both construction of the proposed

400kV overhead line and removal of the F Route occur at the same time; and assessment of the Proposed Development on completion prior to establishment of mitigation planting. This complies with the general approach to the assessment of a reasonable worst case scenario.

- 6.3.13 The ‘opening year’ is used as the basis of assessment of operation effects on landscape character. Under the Revised Construction Programme, the opening year for the Proposed Development would be March 2022. This is just over two years later than the opening year detailed in the submitted ES. Landscape effects of the Proposed Development are considered during operation at the opening year including implementation mitigation planting that will be delivered in accordance with the DCO. Residual landscape effects of the Proposed Development are also considered when mitigation planting would have established fifteen years after the opening year.
- 6.3.14 Under the Revised Construction Programme there are no changes to landscape effects during the operation of the Proposed Development in the short and medium-term, at the updated opening year (March 2022) and to year fifteen, (including the establishment of mitigation planting that will be delivered in accordance with the DCO detailed in the submitted ES (**Volume 5.6.1, section 6.7**)), from that previously considered in the submitted ES (**Volume 5.6.1, section 6.5**). This is because the landscape baseline at the opening year does not change materially from that presented in the submitted ES (**Volume 5.6.1, section 6.4**).
- 6.3.15 The short-term landscape effects which may arise under the Revised Construction Programme of the Proposed Development (between December 2015 and the opening year) have been considered. Where the Revised Construction Programme results in construction effects considered different to those assessed in the submitted ES (**Volume 5.6.1, section 6.5**), an update is provided at section 6.5 of this chapter.
- 6.3.16 It is considered there are no changes to long-term landscape effects arising during the decommissioning of the Proposed Development as a result of the Revised Construction Programme and this remains the same as previously considered in the submitted ES **Volume 5.6.1, section 6.5**. There are no changes to the identified significance of long-term residual landscape effects of the Proposed Development 15 years and onwards (including the establishment of mitigation planting that will be delivered in accordance with the DCO) as a result of the Revised Construction Programme and this remains the same as previously considered in the submitted ES (**Volume 5.6.1, section 6.8**).
- 6.3.17 The landscape assessment in the submitted ES (**Volume 5.6.1**) identifies and assesses the likely significant effects on landscape character during the different stages of the Proposed Development. The landscape assessment identifies for each Section of the Proposed Development the sensitivity of the landscape, the nature of the change in the landscape (magnitude of effect) and the significance of the landscape effect.
- 6.3.18 This sensitivity test identifies and assesses the likely significant effects on landscape character that would be considered to be different during construction to that assessed in the submitted ES at **Volume 5.6.1**, due to the Revised Construction Programme.

Inter-relationship of Effects and Inter-Project Effects

- 6.3.19 There are no changes to the consideration of inter-relationship of effects and inter-project effects as a result of the Revised Construction Programme and this remains the same as previously considered in the submitted ES **Volume 5.6.1**.

6.4 Baseline Environment

- 6.4.1 There are no changes to the baseline environment desk-based assessment or results of site assessment from that previously considered in the submitted ES (**Volume 5.6.1, section 6.4**) and relevant baseline plan figures included in the submitted ES (**Volume 5.6.3**). This is because the Revised Construction Programme commences in the same quarter as the construction programme assessed in the submitted ES and therefore the baseline environment does not materially change..

Future Baseline Environment

- 6.4.2 Major consented development proposals ('committed developments') are able to influence the future baseline as discussed in submitted ES (**Volume 5.5.1, section 5.6**). The committed developments are identified and described in the submitted ES cumulative assessment provided at **Volume 5.17.1**.
- 6.4.3 Due to the lapse in time between the submission of the ES and this ES Sensitivity Test, it is also appropriate to identify any new committed developments that have come forward in the intervening period and require assessment in light of the Revised Construction Programme. Chapter 17 of this document provides the Cumulative Assessment Sensitivity Test.
- 6.4.4 Committed developments are identified in each Section using the development ID numbers provided in Chapter 17 of this sensitivity test (**Table 17.1**). Committed developments that have been consented since the submitted ES have been included in the future baseline where appropriate and are discussed further below.
- 6.4.5 Committed developments are identified in each Section and are categorised below based on distance from the LoD for the Proposed Development.

Section A: Puriton Ridge

- 6.4.6 Newly consented committed developments within Section A are:

Within 1km

- ID 103: outline planning application for the erection of three storey building (use class B1), formation of parking and access at land to the north of Bridgwater.
- 6.4.7 The above committed development would not change the landscape baseline potentially affected by the Proposed Development. The mixed use development on the northern edge of Bridgwater (ID 103) would be consistent with and reinforce the existing character of the extended north eastern edge of Bridgwater.

Section B: Somerset Levels and Moors South

6.4.8 Newly consented committed development within Section B are:

Within 1km

- ID 100: solar photovoltaic (PV) modules, grid connection and associated infrastructure at land at, Ashlawn Farm, Pill Road, Rooksbridge.

6.4.9 The above committed development would be introduced into a relatively open part of the Somerset Levels and Moors landscape and would have an influence on the landscape baseline potentially affected by the proposed 400kV overhead line to the east of the development. However this is a relatively small scale development that that would be located close to the F Route and any influence on the landscape baseline would be localised.

Landscape Base Case

- 6.4.10 The ‘base case’ refers to what the environment is anticipated to be when the landscape effects of the Proposed Development would arise. The Revised Construction Programme for the Proposed Development (and all of the permanent components) is provided at Chapter 3 of this document.
- 6.4.11 The Revised Construction Programme is 76 months (25 months longer than the construction programme assessed in the submitted ES). The Revised Construction Programme works start in December 2015 (two months later than construction programme assessed in the submitted ES) and are anticipated to be complete by March 2022 (just over two years later than construction programme assessed in the submitted ES).
- 6.4.12 The revised base case in December 2015 would not be different to the baseline environment assessed in the submitted ES (**Volume 5.6.1, section 6.4**) except for where committed developments (identified above) have been introduced into the landscape, and would influence the landscape baseline potentially affected by the Proposed Development.
- 6.4.13 Changes to the landscape can occur because of man-made processes such as agricultural practice and natural processes such as tree and vegetation growth and ash dieback disease. Whilst it is not possible to be absolute about how these processes may manifest changes to the landscape it is unlikely that the changes would be material to the assessment.

6.5 Prediction and Assessment of Significance of Potential Effects

- 6.5.1 The submitted ES (**Volume 5.6.1, section 6.5**) assesses those components of the Proposed Development which are anticipated to result in effects on landscape character during construction, operation and decommissioning.
- 6.5.2 This part of the ES Sensitivity Test identifies and assesses the likely significant effects on the landscape during construction of all components of the Proposed Development based on implementation of the Revised Construction Programme. This ES sensitivity test identifies where the significance of effect of the Proposed Development on landscape character is different during construction to that

assessed in the submitted ES (**Volume 5.6.1, section 6.5**). This includes assessment during construction from December 2015 (two months later than the construction programme assessed in the submitted ES) to the opening year (27 months later than the opening year assessed in the submitted ES) for all components of the Proposed Development. This includes assessment of the removal of the F Route and the partial removal of other 132kV overhead lines, as part of the Proposed Development, along with an assessment of proposed 132kV underground cables work.

- 6.5.3 The submitted ES identifies and assesses the likely significant effects of the Proposed Development on landscape character during its operation. Operational effects are assessed on completion of the Proposed Development at the opening year and to year fifteen (in the short and medium-term). The Revised Construction Programme anticipates the opening year to be March 2022; 25 months later than the opening year assessed in the submitted ES. There are no changes to landscape effects during operation as a result of the Revised Construction Programme and remains the same as previously presented in the submitted ES (**Volume 5.6.1, section 6.5**); the baseline environment at the revised opening year does not change materially from that previously considered in the submitted ES.
- 6.5.4 There are no changes to landscape effects during decommissioning from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**), as removal of the Proposed Development would not be any different as a result of the Revised Construction Programme.
- 6.5.5 Residual operational effects are assessed in the submitted ES (**Volume 5.6.1, section 6.8**). There are no changes to the residual operational effects as a result of the Revised Construction Programme and remains as previously presented in the submitted ES. Residual operational effects are landscape effects which would occur from the Proposed Development fifteen years after completion, taking account of establishment of mitigation measures that will be delivered in accordance with the DCO comprising; planting replacement trees, tree groups and hedges in-situ (following construction); and new planting of trees, tree groups and hedges with new site-specific infrastructure. The assessment of residual effects in the submitted ES does not take account of planting enhancements in the OSPES, submitted ES (**Volume 5.25**).
- 6.5.6 As detailed in the submitted ES (**Volume 5.6.1, section 6.1 and 6.7**), National Grid cannot guarantee the OSPES works because these works rely on landowners' agreement and LPAs' actions, and therefore cannot be taken into account in the assessment of residual effects. National Grid will enter into an agreement with relevant LPAs to fund the planting and enhancement works set out in the OSPES. The OSPES includes landscape enhancement works to further reduce the adverse residual effects on landscape character and views of the Proposed Development.
- 6.5.7 There are no changes to tree and hedgerow removal and replacement planting required to construct the Proposed Development from that previously presented in the submitted ES Arboricultural Impact Assessment (AIA) (**Volume 5.21.1, sections 7 - 9, and at submitted ES Volume 5.21.3, Figures 21.2 and 21.3**) as a result of the revised construction programme, and this has been considered as part of this sensitivity test. Two years of additional crown expansion and height growth has been applied to the existing tree management zones to identify any new

infringements as a result of the Revised Construction Programme; this has identified that there is no change to the assessment presented in the submitted AIA.

- 6.5.8 Verified photomontages are provided at submitted ES **Volume 5.18**. The submitted ES (**Volume 5.7, section 7.5**) provides further information regarding the production of a digital model and verified photomontages for the Proposed Development. There are no changes to the verified photomontages as a result of the Revised Construction Programme and these remain as previously presented in the submitted ES (**Volume 5.18**).

Source of Effect(s)

- 6.5.9 The Revised Construction Programme could potentially result in changes to landscape effects during construction from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).
- 6.5.10 Those other components of the Proposed Development that are anticipated to result in an effect on landscape character (including landscape features such as hedgerows and trees), during the operation, construction, and decommissioning stages of the Proposed Development, are discussed in the submitted ES (**Volume 5.3.1**), and do not change as a result of the Revised Construction Programme.
- 6.5.11 This sensitivity test has been considered based on the submitted ES Works Drawings and on the basis that the proposed route of the overhead line and underground cables would be subject to the Limits of Deviation (LoD) identified in the submitted ES (**Volume 5.5.1, section 5.6** and in **Volume 5.5.3, Figures 5.1 and 5.2**) as these do not change as a result of the Revised Construction Programme.

Source of Effect(s) during Construction

- 6.5.12 The duration of effects during construction is considered in determining the magnitude of effect experienced on landscape character. Less weight is usually given to effects that are short-term in duration, temporary and reversible. The method presented in the submitted ES (**Volume 5.6.1, section 6.3**) considers duration on a scale of short-term (0 to 5 years), medium-term (5 to 15 years) and long-term (15 years onwards). The duration of the submitted ES construction programme is short-term (51 months).
- 6.5.13 The duration of the Revised Construction Programme at Chapter 3 is 76 months and is medium-term (27 months longer than the construction programme assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**)). Construction of the Proposed Development based on the Revised Construction Programme will be undertaken between December 2015 (two months later than construction works assessed in the submitted ES) and March 2022 (27 months later than construction works assessed in the submitted ES).
- 6.5.14 Despite the longer duration of the Revised Construction Programme the duration for construction of each individual project component typically is similar to that considered in the submitted ES construction programme and does not exceed short-term (0 to 5 years) within any of the Sections assessed; albeit at different commencement and completion dates up to two and a half years later than in the submitted ES.

- 6.5.15 The main changes in the Revised Construction Programme are explained in detail in Chapter 3 of this document.
- 6.5.16 The revised construction duration for the proposed Mendip Hills 400kV underground cables installation is 57 months (9 months greater than the construction programme in the submitted ES) and is separated out into two stages which are each short-term (0 to 5 years) and align with Section C and D as follows:
- 400kV Underground Cable Mendip Hills Route: works between A38 Bristol Road to Towerhead Road (including South of Mendip Hills CSE Compound, A38 Bristol Road (UGC) Compound and haul road (Section C); and
 - 400kV Underground Cable Mendip Hills Route works between Towerhead Road and Sandford Substation (including the haul road and construction compound)(Section D).
- 6.5.17 The phasing of the 400kV underground cables installation within each Section C and Section D would not exceed 60 months duration and construction would be short-term (0 to 5 years). The works would be delivered in a phased manner under the Revised Construction Programme. The length of cable being installed, plus the section behind and section in front would need to remain open at any one time. This would equate to a maximum of 3km of the 400kV underground cable route where active working, and so too habitat loss, would take place at any one time. Whilst the cables would be laid in a phased manner, the haul road for this project component is assessed to remain in place for the duration of the Mendip Hills 400kV underground cable works. Once the cables have been laid and trenches backfilled, reinstatement work would begin. The reinstatement of subsoil, topsoil and hedgerows would also be undertaken in phases.
- 6.5.18 Landscape effects associated with the construction of each individual development component of the Proposed Development within each Section assessed would be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided.
- 6.5.19 There is no change to the source of landscape effects associated with the construction of each component of the Proposed Development or the measures for lighting during construction as a result of the Revised Construction Programme and these remain the same as previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Source of Effect(s) during Operation

- 6.5.20 There is not considered to be any changes to the source of landscape effects during operation from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**) as a result of the Revised Construction Programme.

Source of Effect(s) during Decommissioning

- 6.5.21 There are no changes to the source of landscape effects during decommissioning from that previously presented in the submitted ES at **Volume 5.6.1, section 6.5** as a result of the Revised Construction Programme.

Assessment of Potential Effects on Landscape Character

- 6.5.22 The following paragraphs provide a sensitivity test of the likely significant effects of the construction of the Proposed Development on landscape character as a result of the Revised Construction Programme.
- 6.5.23 The likely significant effects during operation of the Proposed Development and the decommissioning works on landscape character have not been assessed as part of this sensitivity test. There are no changes to landscape effects during operation or decommissioning from that previously presented in the submitted ES at (**Volume 5.6.1, section 6.5**) as a result of the Revised Construction Programme..
- 6.5.24 In assessing the significance of landscape effects, the assessment of the sensitivity of the landscape, taking account of the value of the landscape and the landscape's susceptibility to change, is considered. Under the Revised Construction Programme, the assessment of the sensitivity of the landscape does not change from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**). Therefore the assessment of the sensitivity of the landscape is not repeated for each Section A to H of the Proposed Development and the submitted ES (**Volume 5.6.1, section 6.5**) should be referenced for further information regarding landscape sensitivity.
- 6.5.25 This sensitivity test of the likely significant effects of the Proposed Development on landscape character during construction is discussed in relation to each Section of the Proposed Development (in Sections A to H), and is summarised for the project study area as a whole.
- 6.5.26 This ES sensitivity test should be read with the figures of the submitted ES (**Volume 5.6.2**) and the Revised Construction Programme at Chapter 3 of this document as they assist the understanding of the descriptions and assessment presented.

Section A: Puriton Ridge: Construction Effects

- 6.5.27 The duration of the Revised Construction Programme in Section A is 26 months; 19 months shorter than the construction programme assessed in the submitted ES. Construction of the Proposed Development in Section A is anticipated to commence in Q3 2019 and complete in Q3 2021. The revised construction programme works in Section A are anticipated to commence 42 months later than construction works assessed in the submitted ES.
- 6.5.28 The Revised Construction Programme commencement and completion dates in Section A are at different times to those considered in the submitted ES; however landscape effects associated with the construction of the Proposed Development would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted ES AIA at (**Volume 5.21.1**).
- 6.5.29 In Section A the construction effects on landscape character would remain temporary and short-term in duration under the Revised Construction Programme. As a result the magnitude and significance of predicted effects on the landscape during the construction of the Proposed Development does not change from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Section B: Somerset Levels and Moors South: Construction Effects

- 6.5.30 The duration of the Revised Construction Programme in Section B is 52 months; four months longer than the construction programme assessed in the submitted ES. Construction of the Proposed Development in Section B is anticipated to commence in Q1 2016 and complete in Q2 2020. The Revised Construction Programme works in Section B are anticipated to commence 5 months later than construction works assessed in the submitted ES.
- 6.5.31 The Revised Construction Programme commencement and completion dates in Section B are at different times to those considered in the submitted ES; however landscape effects associated with the construction of the Proposed Development would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 6.5.32 Section B construction effects on landscape character would remain temporary and short-term in duration under the Revised Construction Programme. As a result the magnitude and significance of predicted effects on the landscape during the construction of the Proposed Development does not change from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Section C: Mendip Hills AONB: Construction Effects

- 6.5.33 The duration of the Revised Construction Programme in Section C is 54 months; 6 months longer than the construction programme assessed in the submitted ES. Construction of the Proposed Development in Section C is anticipated to commence in Q1 2016 and complete in Q2 2020. The Revised Construction Programme works in Section C are anticipated to commence 5 months later than construction works assessed in the submitted ES.
- 6.5.34 The Revised Construction Programme commencement and completion dates in Section C are at different times to those considered in the submitted ES; however direct landscape effects associated with the construction of the Proposed Development would remain temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 6.5.35 It is considered there are no changes to the magnitude and significance of predicted indirect effects on the setting of Section C, from temporary construction works in Section B and D as a result of the Revised Construction Programme. The Revised Construction Programme duration in Section B is 52 months (4 months longer than that assessed in the submitted ES) and is anticipated to commence in Q1 2016 and complete in Q2 2020. The revised construction duration in Section D is 54 months (3 months longer than that assessed in the submitted ES) commencing in Q1 2017 to Q3 2021.
- 6.5.36 The Revised Construction Programme commencement and completion dates in Section B and D are at different times to those considered in the submitted ES. The indirect landscape effects on the setting of Section C, associated with the construction of the Proposed Development in Section B and D, would remain temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided.

- 6.5.37 Section C construction effects on landscape character would remain temporary and short-term in duration under the Revised Construction Programme. As a result there are no changes to the magnitude and significance of predicted direct and indirect effects on the Mendip Hills AONB landscape during the construction of the Proposed Development from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Effects on the Special Qualities of the Mendip Hills AONB

- 6.5.38 There are no changes to the consideration of effects on the special qualities of the Mendip Hills AONB under the Revised Construction Programme from that previously considered in the submitted ES (**Volume 5.6.1, section 6.5**).

Section D: Somerset Levels and Moors North: Construction Effects

- 6.5.39 The duration of the Revised Construction Programme in Section D is 54 months; 3 months longer than the construction programme assessed in the submitted ES. This does not include construction works at Churchill Substation which are separate from other works in Section D due to distance. The duration of works at Churchill Substation is 39 months and are anticipated to be undertaken between December 2015 and Q4 2018.
- 6.5.40 The Revised Construction Programme commencement and completion dates in Section D are at different times to those considered in the submitted ES; however landscape effects associated with the construction of the Proposed Development would remain temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 6.5.41 Section D construction effects on landscape character would remain temporary and short-term in duration under the Revised Construction Programme. As a result the magnitude and significance of predicted effects on the landscape during the construction of the Proposed Development does not change from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Section E: Tickenham Ridge: Construction Effects

- 6.5.42 The duration of the Revised Construction Programme in Section E is 54 months; 5 months longer in duration than the construction programme assessed in the submitted ES. Construction of the Proposed Development in Section E is anticipated to commence in Q2 2017 and complete in Q3 2021. The Revised Construction Programme works in Section E commences 18 months later than construction works assessed in the submitted ES.
- 6.5.43 The Revised Construction Programme commencement and completion dates in Section E are at different times to those considered in the submitted ES; however landscape effects associated with the construction of the Proposed Development would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA at (**Volume 5.21.1**).
- 6.5.44 Section E construction effects on landscape character would remain temporary and short-term in duration under the Revised Construction programme. As a result the magnitude and significance of predicted effects on the landscape during the construction of the Proposed Development does not differ from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Section F: Portishead: Construction Effects

- 6.5.45 The duration of the Revised Construction Programme in Section F is 54 months; 5 months longer in duration than the construction programme assessed in the submitted ES. Construction of the Proposed Development in Section F is anticipated to commence in Q1 2017 and complete in Q3 2021. The Revised Construction Programme works in Section F commences 18 months later than construction works assessed in the submitted ES.
- 6.5.46 The Revised Construction Programme commencement and completion dates in Section F are at different times to those considered in the submitted ES; however landscape effects associated with the construction of the Proposed Development would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 6.5.47 Section F construction effects on landscape character would remain temporary and short-term in duration under the Revised Construction Programme. As a result the magnitude and significance of predicted effects on the landscape in Section F during the construction of the Proposed Development does not differ from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Section G: Portishead: Construction Effects

- 6.5.48 The duration of the Revised Construction Programme in Section G is 54 months; 5 months longer in duration than the construction programme assessed in the submitted ES. Construction of the Proposed Development in Section G is anticipated to commence in Q2 2017 and complete in Q3 2021. The Revised Construction Programme works in Section G commence 18 months later than construction works assessed in the submitted ES.
- 6.5.49 The Revised Construction Programme commencement and completion dates in Section G are at different times to those considered in the submitted ES; however landscape effects associated with the construction of the Proposed Development would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA at (**Volume 5.21.1**).
- 6.5.50 Section G construction effects on landscape character would remain temporary and short-term in duration under the Revised Construction Programme. As a result the magnitude and significance of predicted effects on the landscape in Section G during the construction of the Proposed Development does not differ from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Section H: Hinkley Line Entries: Construction Effects

- 6.5.51 The duration of the Revised Construction Programme in Section H is 45 months; 9 months longer in duration than the construction programme assessed in the submitted ES. Construction of the Proposed Development in Section H is anticipated to commence in Q3 2018 and complete in Q1 2022. The Revised Construction Programme works in Section H commence 30 months later than construction works assessed in the submitted ES.
- 6.5.52 The Revised Construction Programme commencement and completion dates in Section H are at different times to those considered in the submitted ES; however landscape effects associated with the construction of the Proposed Development

would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).

- 6.5.53 Section H construction effects on landscape character would remain temporary and short-term in duration under the Revised Construction Programme. As a result the magnitude and significance of predicted effects on the landscape in Section H during the construction of the Proposed Development does not differ from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Assessment of Lighting during Construction

- 6.5.54 There are no changes to the assessment of the likely significant effects of lighting during construction of the Proposed Development on the landscape from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**); as lighting during construction would still be temporary and short-term (0 to 5 years) within each Section under the Revised Construction Programme.

Limits of Deviation (LoD) and the Order Limits

- 6.5.55 There are no changes to the assessment of the effects of the LoD and the Order Limits of the Proposed Development on the landscape as a result of the Revised Construction Programme from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Climate Change Effects

- 6.5.56 There are no changes to the assessment of the effects of climate change on the landscape as a result of the Revised Construction Programme from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

Indicative Access for Future Maintenance

- 6.5.57 There are no changes to the assessment of the effects of indicative access for future maintenance on the landscape as a result of the Revised Construction Programme from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).

6.6 Inter-relationship of Potential Effects

- 6.6.1 The Revised Construction Programme does not change the inter-relationship of potential effects on the landscape; this remains the same as previously presented in the submitted ES (**Volume 5.6.1, section 6.6**).

6.7 Mitigation

- 6.7.1 The Revised Construction Programme does not alter the measures for mitigation of construction effects on landscape character presented in the submitted ES (**Volume 5.6.1, section 6.7**). However an additional figure showing the phasing of landscape planting at Sandford 400kV/132kV Substation is provided at **Figure 7.35.6 (Volume 5.29.1.3)**. This phasing will be undertaken to reduce the duration of habitat loss under the Revised Construction Programme. The phasing is described in more detail in Chapter 8 of this Sensitivity Test.

- 6.7.2 The below text provides further detailed on planting replacement hedges in-situ to reduce duration of habitat loss within Section C (described in Chapter 8) under the Revised Construction Programme:

Planting replacement hedges in-situ

- 6.7.3 As set out in the submitted ES National Grid will plant replacement trees, tree groups and hedges in-situ and this will be delivered via Requirements set out in the DCO.
- 6.7.4 Hedgerow loss associated with the construction of proposed 400kV underground cable is necessarily greater than with other development components. The Revised Construction Programme duration for the 400kV underground cables in Section B to D is 57 months and would be short-term (0 to 5 years).
- 6.7.5 A large proportion of hedge removal will take place within the Mendip Hills AONB in Section C. To ensure that any impacts on this particularly sensitive landscape are minimised, reinstatement of hedgerows would be in a phased manner. The works would be delivered in sections under the Revised Construction Programme. The length of cable being installed, plus the section behind and section in front would need to remain open at any one time. National Grid has advised that this would equate to a maximum of 3km of the 400kV underground cable route where active working, and so too habitat loss, would take place at any one time. Whilst the cables would be laid in sections, the haul road for this project component is assessed to remain in place for the full duration of the Mendip Hills 400kV underground cable works. Once the cables have been laid and trenches backfilled, reinstatement work would begin. The reinstatement of subsoil, topsoil and hedgerows would also be undertaken in phases
- 6.7.6 If a fault is identified during testing of the 400kV underground cables, it is considered very unlikely that the whole reinstated hedgerow would need to be removed again; it is likely to just affect a small section if the fault has occurred in that specific area.

6.8 Residual Effects

- 6.8.1 The Revised Construction Programme has no material effect to predicted residual effects on landscape character from that previously presented in the submitted ES (**Volume 5.6.1, section 6.8**).

6.9 Cumulative Effects

- 6.9.1 The assessment of cumulative effects does not change for any of the projects identified within the submitted ES, as a result of the Revised Construction Programme. This is largely due to the construction period being unknown for any of the projects identified and a worst case has already been assumed in the submitted ES (i.e. projects and Proposed Development being constructed at the same time).
- 6.9.2 There are 17 new major developments proposals that have come forward in the intervening period since the ES was submitted, four of these new major developments would give rise to cumulative landscape effects.

- 6.9.3 Two potentially significant cumulative landscape effects are predicted in Section D that relate to the effect of the possible solar farms at land at Meer Wall near Congresbury (ID 102) and land at Bowerhouse near Banwell (ID 105), where landscape effects would arise as a result of these developments and the Proposed Development being introduced into the Moors landscape south of Hewish. The two proposed solar farms are close to the Proposed Development and landscape effects would be experienced in combination with the proposed 400kV overhead line and other major development proposals assessed cumulatively in the submitted ES. The predicted potential residual cumulative significance of effect on landscape character in Section D would be no greater than **moderate adverse**.
- 6.9.4 One cumulative effect on landscape would arise in Section E from the single wind turbine development at land off Charlton Drive Wraxall (ID 115) where landscape effects would arise as a result of this development and the proposed 400kV overhead line and 132kV underground cables being introduced into the Tickenham Ridge landscape. The proposed wind turbine is close to the Proposed Development and landscape effects would be experienced in combination with the proposed 400kV overhead line and underground cables. The predicted potential residual cumulative significance of effect on landscape character in Section E would be no greater than **moderate adverse**.
- 6.9.5 Cumulative effects on landscape would arise in Section G from the possible land at Access 18 industrial unit development in Avonmouth (ID 101) where landscape effects would arise as a result of this development and the proposed 400kV overhead line and 132kV underground cables being introduced into the landscape in Section G. The possible industrial units are close to the Proposed Development and landscape effects would be experienced in combination with the proposed 400kV overhead line and underground cables. The predicted potential residual cumulative significance of effect on landscape character in Section G would be no greater than **moderate adverse**.
- 6.9.6 The predicted effects on the Proposed Development cumulatively with other developments would give rise to a greater significance of adverse effect than that caused by the other developments alone. The significance of adverse effects of the four proposals that have come forward in the intervening period since the ES was submitted would be minor adverse, however the effects arising from the Proposed Development would be moderate adverse. The effects of the Proposed Development with the other developments cumulatively would be **moderate adverse** with the Proposed Development giving rise to greater effects than the other developments that have come forward in the intervening period since the ES was submitted.
- 6.9.7 With reference to paragraph 7.28 of the Guidelines for Landscape and Visual Impact Assessment 3rd Edition, and as identified in the submitted ES, the Proposed Development would not comprise a 'tipping point' which would give rise to greater significance of adverse effects on the landscape cumulatively with other projects

6.10 Conclusion

- 6.10.1 This chapter has considered the changes the Revised Construction Programme has on the magnitude and significance of effect on landscape character during construction, operation and decommissioning of the Proposed Development from that presented in the submitted ES (**Volume 5.6.1**).
- 6.10.2 The 'opening year' is used as the basis of assessment of operation effects on landscape character. The Revised Construction Programme opening year for the Proposed Development is March 2022. This is 27 months later than the opening year assessed in the submitted ES. It is considered that there are no changes to landscape effects during the operation of the Proposed Development in the short and medium-term, at the updated opening year (March 2022) and to year fifteen under the Revised Construction Programme, from that previously considered in the submitted ES (**Volume 5.6.1, section 6.5**). This is because the landscape baseline would not have changed materially from that presented in the submitted ES (**Volume 5.6.1, section 6.4**).
- 6.10.3 The Revised Construction Programme does not change the magnitude and significance of predicted effects on the landscape during the construction or decommissioning of the Proposed Development from that previously presented in the submitted ES at (**Volume 5.6.1, section 6.5**).
- 6.10.4 The duration of the Revised Construction Programme at Chapter 3 is 76 months, commencing December 2015 and completing March 2022; 25 months longer than the construction programme assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**).
- 6.10.5 Despite the longer duration of the Revised Construction Programme the duration for construction of each individual project component within each Section A to H, typically is similar to that considered in the submitted ES and does not exceed 5 years (60 months); albeit at different commencement and completion dates up to two and a half years later than in the submitted ES.
- 6.10.6 The landscape effects associated with the revised construction of the Proposed Development would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided. Landscape effects arising from construction operations would be experienced for a similar timescale (i.e. temporary and short-term 0 to 5 years) to that presently considered in the submitted ES, albeit at different commencement and completion dates. These variations in programme do not alter the landscape effects predicted in the submitted ES (**Volume 5.6.1, section 6.5**).
- 6.10.7 Accordingly, the Revised Construction Programme has no implications for the assessed effect of the Proposed Development on landscape character as this remains as stated in Chapter 6 of the submitted ES (**Volume 5.6.1**).

7 VISUAL EFFECTS

7.1 Introduction

- 7.1.1 This chapter of the ES Sensitivity Test provides an assessment of the likely significant visual effects of the Proposed Development as a result of the Revised Construction Programme. This assessment should be read in conjunction with Chapter 7 of the submitted ES (**Volume 5.7.1**).
- 7.1.2 The method for this visual assessment sensitivity test follows the method of the submitted ES (**Volume 5.7.1**) and is based on the 'Guidelines for Landscape and Visual Impact Assessment – Third Edition' (Ref. 7.2), Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA), 2013 (GLVIA3).
- 7.1.3 In order to achieve the revised connection offer date, the Proposed Development would be constructed between December 2015 and March 2022. This results in the duration for construction of the Proposed Development increasing by just over two years (25 months) compared to the construction timescale assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**).
- 7.1.4 This sensitivity test assesses what the likely significant effects on visual amenity would be during construction of all components of the Proposed Development as a result of the Revised Construction Programme. The sensitivity test identifies where the significance of visual effect is considered to be different during construction to that assessed in the submitted ES (**Volume 5.7.1**). This has included assessment of the removal of 132kV overhead lines.
- 7.1.5 The sensitivity test has also considered the significance of effect on visual amenity during operation and decommissioning of the Proposed Development. There are no changes to visual effects during operation and decommissioning from that presented in the submitted ES as a result of the revised construction programme.
- 7.1.6 Visual Assessment Tables are presented at submitted ES **Volume 5.7.2, Appendices 7A to 7I** and identify, for each visual receptor, the sensitivity of the view, the nature of the change in the view (magnitude of effect) and the judgement of the overall significance of the visual effect. Where there are changes to visual receptors as a result of the Revised Construction Programme, the changes are provided on revised Visual Assessment Tables at **Appendix 7A, 7C and 7D** of this sensitivity test (**Volume 5.29.1.2**).
- 7.1.7 This chapter should be read in conjunction with the figures in the submitted ES (**Volume 5.7.3**) as they assist the understanding of the descriptions and updated assessments presented in this chapter. There are no changes to the submitted figures as a result of the Revised Construction Programme.
- 7.1.8 An additional figure showing the phasing of landscape planting at Sandford 400kV/132kV Substation is provided at **Figure 7.35.6 (Volume 5.29.1.3)**. This phasing will be required to reduce the duration of habitat loss during the Revised Construction Programme. The details of the phasing are described in more detail in Chapter 8 of this Sensitivity Test.
- 7.1.9 There are no changes as a result of the Revised Construction Programme to tree and hedgerow removal required to construct the Proposed Development and replacement planting from that presented in the submitted Arboricultural Impact

Assessment (AIA) (**Volume 5.21.1, sections 7 – 9**), and at submitted ES (**Volume 5.21.3, Figures 21.2 and 21.3**). Two years of additional crown expansion and height growth has been applied to the existing tree management zones to identify any new infringements as a result of the Revised Construction Programme; this has identified that there are no changes to the assessment presented in the submitted AIA.

- 7.1.10 There are no changes as a result of the Revised Construction Programme to embedded mitigation measures that National Grid will deliver in accordance with the Development Consent Order (DCO) from that presented in the submitted ES (**Volume 5.6 and 5.7**).
- 7.1.11 There are no changes as a result of the Revised Construction Programme to the enhancement measures that National Grid has proposed in the Hinkley Point C Connection project Off-site Planting and Enhancement Scheme (OSPES) from that presented in the submitted ES (**Volume 5.25**).
- 7.1.12 There are no changes as a result of the Revised Construction Programme to the verified photomontages provided in the submitted ES (**Volume 5.18**).
- 7.1.13 As set out in the submitted ES (**Volume 5.3.1, section 3.2 and 3.7**) and summarised in Chapter 3 of this document, ‘Sections’ have been identified in the study area through which the Proposed Development is proposed, based on landscape character, and are referenced as Sections A to H. **Volume 5.3.1** of the submitted ES provides a detailed description of Sections A to H and the works proposed in each Section. The assessment of visual effects contained within Chapter 7 of the submitted ES was prepared with reference to each of these Sections; accordingly, this sensitivity test also references the Sections.

7.2 Legislation, Policy and Guidance

- 7.2.1 There has been no change to planning policy relevant to views (and landscape) from that presented in the submitted ES (**Volume 5.6.1, section 6.2**).
- 7.2.2 Scottish Natural Heritage (SNH) has recently published updated guidelines on the visual representations of wind farms (‘Visual Representations of Windfarms’, Scottish Natural Heritage (SNH) July 2014). The previous SNH guidance was used to inform the production of photomontages for the operational phase of the Proposed Development contained within the submitted ES (**Volume 5.18**). The updated SNH guidance does not change the assessment of effects presented in the submitted ES as a result of the Revised Construction Programme.
- 7.2.3 Accordingly the legislation, policy and guidance of relevance to the assessment of the Revised Construction Programme is as described in the submitted ES.

7.3 Method

- 7.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document.

Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.

7.3.2 The sensitivity test of the likely significant visual effects of the Proposed Development has been undertaken by Chartered Landscape Architects from The Environment Partnership (TEP) Ltd who are experienced in visual assessment.

7.3.3 The method for the assessment of effects has been undertaken in accordance with the method presented in the submitted ES (**Volume 5.7.1, section 7.3**) and is based on GLVIA3 (Ref. 7.1). In accordance with the approach in the submitted ES, a reasonable worst case scenario has been assessed as part of the ES Sensitivity Test.

Establishing the Visual Baseline

Desk Based Assessment

7.3.4 There has been no change to relevant information, guidance and planning policy relating to electricity transmission and views (and landscape) from that presented in the submitted ES (**Volume 5.7.1, section 7.3**).

Site Assessment

7.3.5 There has been no further field survey work undertaken as part of this ES Sensitivity Test of the Revised Construction Programme from that presented in the submitted ES (**Volume 5.7.1, section 7.3**).

7.3.6 Detailed site assessment undertaken as part of the submitted ES between December 2011 and January 2014 was recorded in winter, spring and summer. Landscape character and views are not considered to have changed materially since then and further field survey work was not deemed necessary as part of this sensitivity test to determine the possible effects of the Revised Construction Programme on views.

Reporting on the Baseline Situation

7.3.7 The method of reporting on the visual baseline has not changed from that presented in the submitted ES (**Volume 5.7.1, section 7.3**).

Predicting and Describing Visual Effects

7.3.8 The method of predicting and describing visual effects is the same as that presented in the submitted ES (**Volume 5.7.1, section 7.3**).

Assessing the Significance of Visual Effects

7.3.9 The method for the assessment of the likely significant visual effects of the Proposed Development is the same as that presented in the submitted ES (**Volume 5.7.1, section 7.3**).

Judging the Overall Significance of Visual Effects

7.3.10 The method for the assessment of judging the overall significance of visual effects of the Proposed Development is the same as that presented in the submitted ES (**Volume 5.7.1, section 7.3**).

Assessment Years

- 7.3.11 The assessment year (or years) for the assessment of construction effects on visual receptors is dependent on a number of factors; for example, the geographical location of a visual receptor (or a group of visual receptors) and the specific Proposed Development component (or components) which are considered to give rise to a visual effect (or visual effects). Effects on visual receptors also have the potential to arise for a part of the construction phase or the entirety of the construction phase.
- 7.3.12 As detailed in the submitted ES (**Volume 5.5.1, section 5.6**) it has been appropriate to assess the significance of potential visual effects when such effects would be at their peak, for example when both construction of the proposed 400kV overhead line and removal of the F Route occur at the same time; and assessment of the Proposed Development on completion prior to establishment of mitigation planting. This complies with the general approach to the assessment of a reasonable worst case scenario.
- 7.3.13 The ‘opening year’ is used as the basis of assessment of operation effects on views. Under the Revised Construction Programme the opening year for the Proposed Development would be March 2022. This is just over two years later than the opening year detailed in the submitted ES. Visual effects of the Proposed Development are considered during operation at the opening year including implementation of mitigation planting that will be delivered in accordance with the DCO. Residual visual effects of the Proposed Development are also considered when mitigation planting would have established fifteen years after the opening year.
- 7.3.14 Under the Revised Construction Programme there are no changes to visual effects during the operation of the Proposed Development in the short and medium-term, at the updated opening year (March 2022) and to year fifteen, (including the establishment of mitigation planting that will be delivered in accordance with the DCO detailed in the submitted ES (**Volume 5.7.1, section 7.7**), from that previously considered in the submitted ES (**Volume 5.7.1, section 7.5**). This is because the visual baseline at the opening year would not have changed materially from that presented in the submitted ES (**Volume 5.7.1, section 7.4**).
- 7.3.15 The short-term visual effects which may arise under the revised construction period of the Proposed Development (between December 2015 and the opening year) have been considered. Where the Revised Construction Programme results in construction effects different to those assessed in the submitted ES (**Volume 5.7.1, section 7.5**), an update is provided at section 7.5 of this chapter.
- 7.3.16 There is no change to long-term visual effects arising during the decommissioning of the Proposed Development as a result of the Revised Construction Programme and this remains the same as previously considered in the submitted ES (**Volume 5.7.1, section 7.5**).
- 7.3.17 There are no changes to the identified significance of long-term residual visual effects of the Proposed Development 15 years and onwards (including the establishment of mitigation planting that will be delivered in accordance with the DCO) as a result of the Revised Construction Programme and this remains the same as previously considered in the submitted ES (**Volume 5.7.1, section 7.8**).

- 7.3.18 The visual assessment in the submitted ES (**Volume 5.7.1**) identifies and assesses the likely significant effects on views during the different stages of the Proposed Development. Visual Assessment Tables are presented at submitted ES (**Volume 5.7.2, Appendices 7A to 7I**) and identify, for each visual receptor, the sensitivity of the view, the nature of the change in the view (magnitude of effect) and the judgement of the overall significance of the visual effect. Under the Revised Construction Programme, the visual receptors affected and the likely significance of effects on views do not change from those identified in the submitted ES. However the description of the nature of the change in the view (magnitude of effect) during construction would change for some visual receptors assessed in the submitted ES. Where there are changes to the description of the nature of the change in the view during construction as a result of the Revised Construction Programme, revised Visual Assessment Tables are presented at **Appendix 7C and 7D (Volume 5.29.1.2 of this ES Sensitivity Test)**.
- 7.3.19 This sensitivity test identifies and assesses the likely significant visual effects that are considered to be different during the Revised Construction Programme to that assessed in the submitted ES (**Volume 5.7.1**).

Inter-relationship of Effects and Inter-Project Effects

- 7.3.20 There are no changes to the consideration of inter-relationship of effects and inter-project effects as a result of the Revised Construction Programme and these remain the same as previously considered in the submitted ES (**Volume 5.7.1**).

7.4 Baseline Environment

- 7.4.1 There are no changes to the baseline environment, desk-based assessment or results of site assessment from that previously considered in the submitted ES (**Volume 5.7.1, section 7.4**) and relevant baseline plan figures included in the submitted ES (**Volume 5.7.3**). This is because the revised construction programme commences in the same quarter as the construction programme assessed in the submitted ES and therefore the baseline environment does not materially change.

Future Baseline Environment

- 7.4.2 Major consented development proposals ('committed developments') are able to influence the future baseline as discussed in submitted ES (**Volume 5.5.1, section 5.6**). The committed developments are identified and discussed in the submitted ES cumulative assessment provided at **Volume 5.17.1**.
- 7.4.3 Due to the lapse in time between the submission of the ES and this ES Sensitivity Test, it is also appropriate to identify any new committed developments that have come forward in the intervening period and require assessment in light of the Revised Construction Programme. Chapter 17 of this document provides the Cumulative Assessment Sensitivity Test.
- 7.4.4 Committed developments are identified in each Section using the development ID numbers provided in Chapter 17, **Table 17.1**. Committed developments that have been consented since the submitted ES have been included in the future baseline where appropriate and are discussed further below.

- 7.4.5 Committed developments are identified in each Section and are categorised below based on distance from the LoD for the Proposed Development. Committed development ID 103 would introduce new visual receptors and they are assessed in the Visual Assessment Tables for Section A at **Appendix 7A (Volume 5.29.1.2 of the ES Sensitivity Test)**.

Section A: Puriton Ridge

- 7.4.6 Newly consented committed developments within Section A are:

Within 1km

- ID 103: outline planning application for the erection of three storey building (use class B1), formation of parking and access at land to the north of Bridgwater.
- 7.4.7 The mixed use development on the northern edge of Bridgwater (ID 103) would introduce additional visual receptors within 1km of the Proposed Development with potential views towards the proposed 400kV overhead line and Bridgwater Tee CSE compounds on Horsey Level and Puriton Ridge.
- 7.4.8 Views are anticipated from the eastern edge of this committed development looking northeast towards the Bridgwater Tee connection to the VQ Route, above intervening trees and towards the proposed 400kV overhead line on Puriton Ridge. Views towards the Proposed Development would include this committed development; however mixed use development would reinforce the presence of existing development already present in views towards Bridgwater.

Section B: Somerset Levels and Moors South

- 7.4.9 Newly consented committed developments within Section B are:

Within 1km

- ID 100: solar photovoltaic (PV) modules, grid connection and associated infrastructure at land at Ashlawn Farm, Pill Road, Rooksbridge.
- 7.4.10 No visual receptors would be introduced by the solar energy facility (ID 100) and therefore there are no views from this committed development to be considered towards the Proposed Development. Views towards the Proposed Development would include the solar energy facility seen above hedgerows.

Visual Effects Base Case

- 7.4.11 The 'base case' refers to what the environment is anticipated to be when the visual effects of the Proposed Development would arise. The Revised Construction Programme for the Proposed Development (and all of the permanent components) is provided at Chapter 3 of this document.
- 7.4.12 The Revised Construction Programme is 76 months (25 months longer than the construction programme assessed in the submitted ES). The Revised Construction Programme works start in December 2015 (two months later than the construction programme assessed in the submitted ES) and are anticipated to be completed by

March 2022 (just over two years later than construction programme assessed in the submitted ES).

- 7.4.13 The base case in December 2015 would not be different to the baseline environment assessed in the submitted ES (**Volume 5.7.1, section 7.4**), except for the introduction of the committed developments identified above. Where these committed developments introduce new receptors they are assessed in the visual assessment Tables at **Appendix 7A** of this document.
- 7.4.14 Changes to the landscape over time can occur because of man-made processes such as agricultural practice and natural processes such as tree and vegetation growth and ash dieback disease. Whilst it is not possible to be absolute about how these processes may manifest changes to the landscape it is unlikely that the changes would be material to the assessment.

7.5 Prediction and Assessment of Significance of Potential Effects

- 7.5.1 The submitted ES (**Volume 5.7.1, section 7.5**) assesses those components of the Proposed Development which are anticipated to result in visual effects during construction, operation and decommissioning.
- 7.5.2 This part of the ES Sensitivity Test identifies and assesses the likely significant effects on views during construction of all components of the Proposed Development based on the Revised Construction Programme.
- 7.5.3 This ES sensitivity test identifies where the significance of effect of the Proposed Development on views is different during construction to that assessed in the submitted ES (**Volume 5.7.1, section 7.5**). This includes assessment during construction from December 2015 (two months later than the construction programme assessed in the submitted ES) to the opening year (27 months later than the opening year assessed in the submitted ES) for all components of the Proposed Development. This includes assessment of the removal of the F Route and the partial removal of other 132kV overhead lines, as part of the Proposed Development, along with an assessment of proposed 132kV underground cables work.
- 7.5.4 The submitted ES identifies and assesses the likely significant effects of the Proposed Development on views during its operation. Operational effects are assessed on completion of the Proposed Development at the opening year and to year fifteen, (in the short and medium-term). The Revised Construction Programme anticipates the opening year to be March 2022; 27 months later than the opening year assessed in the submitted ES. There are no changes to visual effects during operation as a result of the Revised Construction Programme and this remains the same as presented in the submitted ES (**Volume 5.7.1, section 7.5**); as the baseline environment at the revised opening year would not change materially from that previously considered in the submitted ES.
- 7.5.5 There are no changes to visual effects during decommissioning from that presented in the submitted ES (**Volume 5.7.1, section 7.5**), as removal of the Proposed Development would not be any different as a result of the Revised Construction Programme.

- 7.5.6 Residual operational effects are assessed in the submitted ES (**Volume 5.7.1, section 7.8**). There would not be any changes to residual operational effects from that presented in the submitted ES as a result of the Revised Construction Programme. Residual operational effects are visual effects which would occur from the Proposed Development fifteen years after completion, taking account of establishment of mitigation measures that will be delivered in accordance with the DCO comprising; planting replacement trees, tree groups and hedges in-situ (following construction); and new planting of trees, tree groups and hedges with new site-specific infrastructure. The assessment of residual effects in the submitted ES does not take account of planting enhancements in the OSPES, submitted ES (**Volume 5.25**).
- 7.5.7 As detailed in the submitted ES (**Volume 5.7.1, section 7.1 and 7.7**), National Grid cannot guarantee the OSPES works because they rely on landowners' agreement and LPAs' actions, and therefore cannot be taken into account in the assessment of residual effects. National Grid will enter into an agreement with relevant LPAs to fund the planting and enhancement works set out in the OSPES. The OSPES includes landscape enhancement works to further reduce the adverse residual effects on landscape character and views of the Proposed Development.
- 7.5.8 There would be no changes to tree and hedgerow removal required to construct the Proposed Development and no changes to the replacement planting from that presented in the submitted Arboricultural Impact Assessment (AIA) (**Volume 5.21.1, sections 7 – 9**, and at submitted ES **Volume 5.21.3, Figures 21.2 and 21.3**) as a result of the Revised Construction Programme, and this has been considered as part of this sensitivity test. Two years of additional crown expansion and height growth has been applied to the existing tree management zones to identify any new infringements as a result of the Revised Construction Programme; this has identified no changes to the assessment presented in the submitted AIA.
- 7.5.9 Verified photomontages are provided at submitted ES **Volume 5.18**. The submitted ES **Volume 5.7, section 7.5** provides further information regarding the production of a digital model and verified photomontages for the Proposed Development. There are no changes to the verified photomontages presented in the submitted ES (**Volume 5.18**).

Source of Effect(s)

- 7.5.10 The Revised Construction Programme could potentially result in changes to visual effects during construction from that presented in the submitted ES (**Volume 5.7.1, section 7.5**).
- 7.5.11 Those other components of the Proposed Development that are anticipated to result in an effect on views during the operation, construction, and decommissioning stages of the Proposed Development, are discussed in the submitted ES (**Volume 5.3.1**), and would not change as a result of the Revised Construction Programme.
- 7.5.12 This sensitivity test has been considered based on the submitted ES Works Drawings and on the basis that the proposed route of the overhead line and underground cables would be subject to the Limits of Deviation (LoD) identified in the submitted ES (**Volume 5.5.1, section 5.6** and in **Volume 5.5.3, Figures 5.1**

and **5.2**) as these do not change as a result of the Revised Construction Programme.

Source of Effect(s) during Construction

- 7.5.13 The duration of effects during construction is considered in determining the magnitude of effect experienced by visual receptors. Less weight is usually given to effects that are short-term in duration, temporary and reversible. The method presented in the submitted ES (**Volume 5.7.1, section 7.3**) considers duration on a scale of short-term (0 to 5 years), medium-term (5 to 15 years) and long-term (15 years onwards). The duration of the submitted ES construction programme is short-term (51 months).
- 7.5.14 The duration of the Revised Construction Programme at Chapter 3 is 76 months and is medium-term (25 months longer than the construction programme assessed in the submitted ES **Volume 5.3.2, Appendix 3B**). Construction of the Proposed Development based on the Revised Construction Programme will be undertaken between December 2015 (two months later than construction works assessed in the submitted ES) and March 2022.
- 7.5.15 Despite the longer duration of the Revised Construction Programme, the duration for construction of each individual project component typically is similar to that considered in the submitted ES construction programme and is short-term (0 to 5 years) within any of the Sections assessed; albeit at different commencement and completion dates up to two and a half years later than in the submitted ES.
- 7.5.16 The main changes in the Revised Construction Programme are explained in detail in Chapter 3 of this document.
- 7.5.17 The revised construction duration for the proposed Mendip Hills 400kV underground cables installation is 57 months (9 months greater than the construction programme in the submitted ES) and is separated out into two stages which are each short-term (0 to 5 years) and align with Section C and D as follows:
- 400kV Underground Cable Mendip Hills Route: works between A38 Bristol Road to Towerhead Road (including South of Mendip Hills CSE Compound, A38 Bristol Road (UGC) Compound and haul road (Section C); and
 - 400kV Underground Cable Mendip Hills Route works between Towerhead Road and Sandford Substation (including the haul road and construction compound)(Section D).
- 7.5.18 The phasing of the 400kV underground cables installation within each Section C and Section D would not exceed 60 months duration and construction would be short-term (0 to 5 years). The works would be delivered in a phased manner under the Revised Construction Programme. The length of cable being installed, plus the section behind and section in front would need to remain open at any one time. This would equate to a maximum of 3km of the 400kV underground cable route where active working, and so too habitat loss, would take place at any one time. Whilst the cables would be laid in a phased manner, the haul road for this project component is assessed to remain in place for the duration of the Mendip Hills 400kV underground cable works. Once the cables have been laid and trenches

backfilled, reinstatement work would begin. The reinstatement of subsoil, topsoil and hedgerows would also be undertaken in phases.

- 7.5.19 Visual effects associated with the construction of each development component of the Proposed Development (as discussed in the submitted ES in **Volume 5.3.1**) within each Section assessed would be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided, as detailed in the submitted AIA at **Volume 5.21.1**.
- 7.5.20 There is no change to the source of visual effects associated with the construction of each component of the Proposed Development, including the measures for lighting during construction, as a result of the Revised Construction Programme and these remain the same as presented in the submitted ES (**Volume 5.7.1, section 7.5**).

Source of Effect(s) during Operation

- 7.5.21 There are no changes to the source of visual effects during operation from that presented in the submitted ES (**Volume 5.7.1, section 7.5**) as a result of the Revised Construction Programme.

Source of Effect(s) during Decommissioning

- 7.5.22 There are no changes to the source of visual effects during decommissioning from that presented in the submitted ES **Volume 5.7.1, section 7.5** as a result of the Revised Construction Programme.

Assessment of Potential Visual Effects

- 7.5.23 The following paragraphs provide a sensitivity test of the likely significant visual effects of the construction of the Proposed Development as a result of the Revised Construction Programme.
- 7.5.24 There are no changes to visual effects during operation or decommissioning from that presented in the submitted ES (**Volume 5.7.1, section 7.5**) as a result of the Revised Construction Programme.
- 7.5.25 This sensitivity test of the likely significant visual effects of the Proposed Development during construction is discussed in relation to each Section (A to H) of the Proposed Development, and is summarised as a whole.
- 7.5.26 The sensitivity test considers the likely changes to significant visual effects on the following receptors as a result of the revised construction:
- visual receptors within 1km of the Proposed Development in Section A to H;
 - representative visual receptors between 1 and 3km and beyond 3km of the Proposed Development in Section A to H; and
 - sequential views on long distance public routes within 3km of the Proposed Development within Sections A to H, and from the M5 motorway in Sections A to G.
- 7.5.27 This ES sensitivity test should be read with the revised Visual Assessment Tables in **Appendix 7A, 7C and 7D**, the figures of the submitted ES **Volume 5.7.3**,

additional **figure 7.35.6 (Volume 5.29.1.3)** and the Revised Construction Programme at Chapter 3, as they assist the understanding of the descriptions and assessment presented.

Section A: Puriton Ridge: Construction Effects

- 7.5.28 The duration of the Revised Construction Programme in Section A is 26 months; 19 months shorter than the construction programme assessed in the submitted ES. Construction of the Proposed Development is anticipated to commence in Q3 2019 and complete in Q3 2021. The Revised Construction Programme works in Section A commence 42 months later than construction works assessed in the submitted ES.
- 7.5.29 The Revised Construction Programme commencement and completion dates in Section A are different from those considered in the submitted ES; however visual effects associated with the construction of the Proposed Development in Section A would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 7.5.30 There would be some inter-visibility of construction works in both Section A and Section B to the north under the Revised Construction Programme. In Section A, views of construction works associated with each project component would be the same as those assessed in the submitted ES, and would remain temporary and short-term in duration. As a result the magnitude and significance of predicted visual effects during the construction of the Proposed Development does not change from that presented in the submitted ES (**Volume 5.7.1, section 7.5**) and in the Visual Assessment Tables in the submitted ES (**Volume 5.7.2, Appendix 7A**). Committed development ID 103 would introduce new visual receptors and they are assessed in the Visual Assessment Tables for Section A at **Appendix 7A (Volume 5.29.1.2 of the ES Sensitivity Test)**.

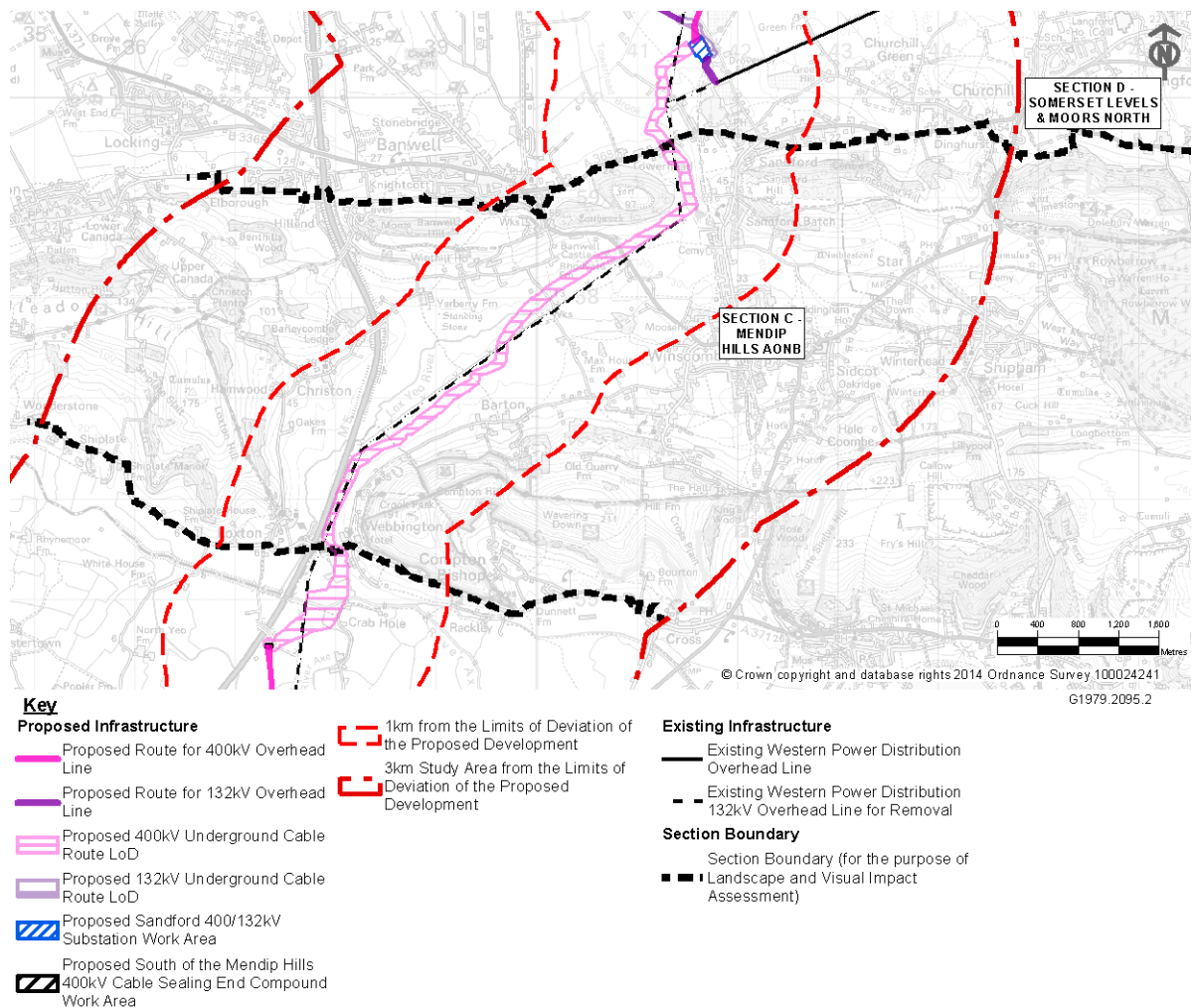
Section B: Somerset Levels and Moors South: Construction Effects

- 7.5.31 The duration of the Revised Construction Programme in Section B is 52 months; 4 months longer than the construction programme assessed in the submitted ES. Construction of the Proposed Development is anticipated to commence in Q1 2016 and complete in Q2 2020. The Revised Construction Programme works in Section B is anticipated to commence 5 months later than construction works assessed in the submitted ES.
- 7.5.32 The Revised Construction Programme commencement and completion dates in Section B are different from those considered in the submitted ES; however visual effects associated with the construction of the Proposed Development in Section B would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 7.5.33 There would be some inter-visibility of construction works in both Section B and Section A to the south, and in both Section B and Section C to the north under the Revised Construction Programme. In Section B views of construction works associated with each project component would be the same as those assessed in the submitted ES, and would remain temporary and short-term in duration. As a result the magnitude and significance of predicted visual effects during the construction of the Proposed Development does not change from that presented in

the submitted ES (**Volume 5.7.1, section 7.5**) and in the Visual Assessment Tables in the submitted ES (**Volume 5.7.2, Appendix 7B**).

Section C: Mendip Hills AONB: Construction Effects

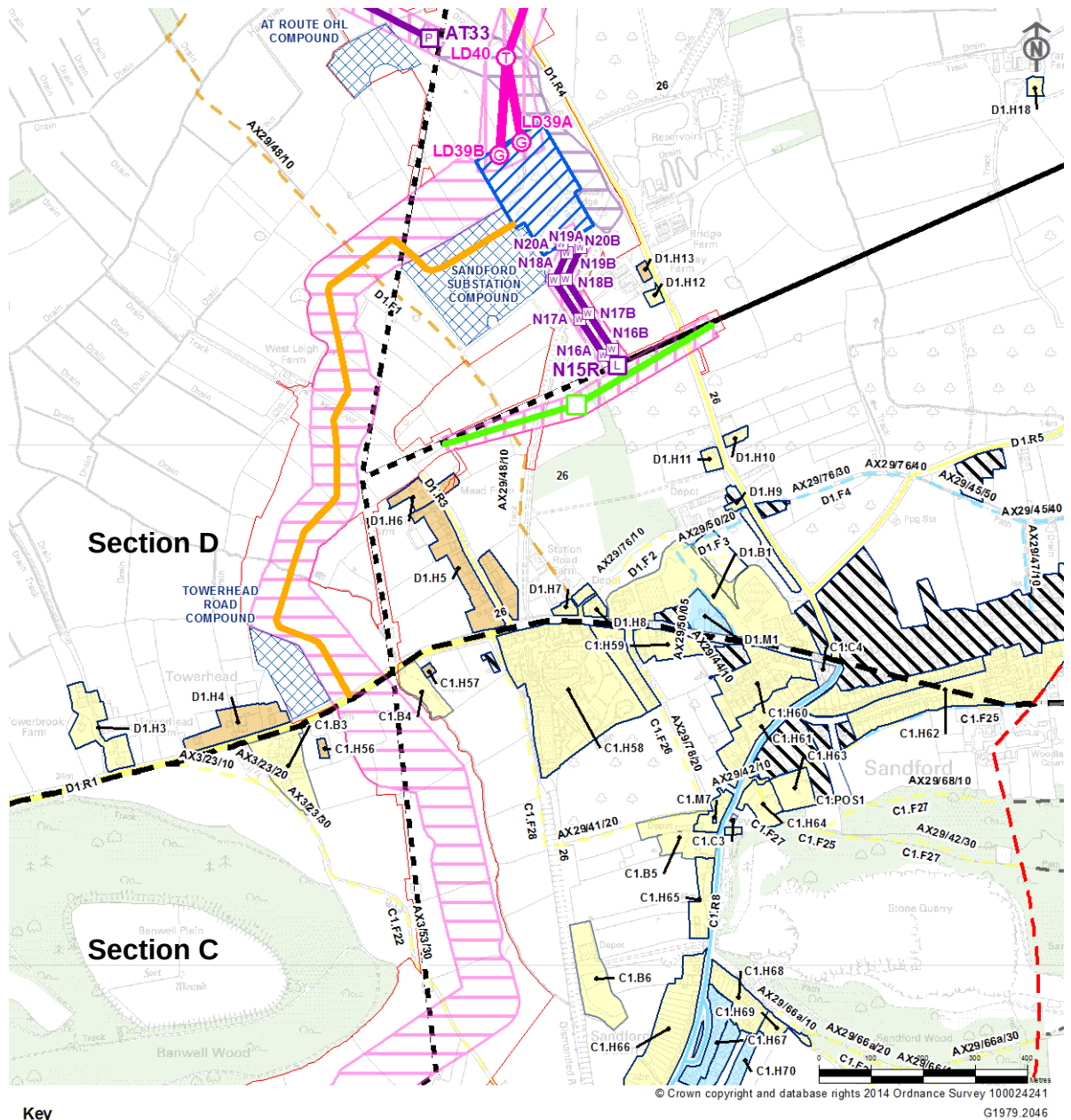
- 7.5.34 The duration of the Revised Construction Programme in Section C is 54 months; 6 months longer than the construction programme assessed in the submitted ES. Construction of the Proposed Development is anticipated to commence in Q1 2016 and complete in Q2 2020. The Revised Construction Programme works in Section C is anticipated to commence 5 months later than construction works assessed in the submitted ES.



Inset 7.1: Location Plan illustrating the Geographical Extent of Section C within the 3km Study Area

- 7.5.35 The Revised Construction Programme commencement and completion dates in Section C are different from those considered in the submitted ES; however visual effects associated with the construction of the Proposed Development in Section C would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 7.5.36 Visual effects associated with inter-visibility of construction works in both Section C and Section B to the south would still be temporary and short-term (0 to 5 years).

- 7.5.37 Visual effects associated with inter-visibility of construction works in both Section C and Section D to the north would still be temporary but would be experienced for a greater duration, increasing to medium-term (5 to 15 years), due to the overall duration of construction works in both Section C and Section D.
- 7.5.38 The overall duration of the Revised Construction Programme in Section C and Section D is 69 months, commencing in Q1 2016 and completing in Q3 2021. Visual receptors with inter-visibility of construction works in the northern part of Section C and southern part of Section D would experience an increase in the duration of temporary visual effects from short-term (0 to 5 years) to medium-term (5 to 15 years); albeit visual receptors would not have views of the whole of Section C and Section D and are not anticipated to have inter-visibility of construction works for the entire 69 months. These visual receptors located in the north of Section C near Sandford and Towerhead, within 1km of the LoD for the Proposed Underground Cables, are listed below and illustrated on **Inset 7.2** of the submitted ES (**Volume 5.7.3, Figure 7.28.9**) which is reproduced in this chapter for ease of reference:
- receptor C1.F22: PRoW AX 3/53 and PRoW AX 3/33 between Sandford Batch and Towerhead Road;
 - receptor C1:H56: Towerhead House on Towerhead Road;
 - receptor C1:H57: Orchard Lea on Towerhead Road in Towerhead;
 - receptor C1.H65: properties on the west and east side of Hill Road, Sandford;
 - receptor C1.H68: single property at the western end of the group of properties on Quarry Road, Sandford Batch;
 - receptor C1.B3: Towerhead Farm scrap yard south of Towerhead Road, Towerhead;
 - receptor C1.B4: Fred Sweeting & Sons Haulage depot south of Towerhead Road; and
 - receptor C1.B5: Yew Tree Joinery and large industrial shed to rear accessed via scout hut on Hill Road, Sandford.
- 7.5.39 These visual receptors experience a change to the description of the magnitude of effect as a result of the increase in duration due to the Revised Construction Programme. Receptors are detailed in the revised Visual Assessment Tables presented at **Appendix 7C** of this sensitivity test (**Volume 5.29.1.2**), and these should be read in conjunction with this chapter.



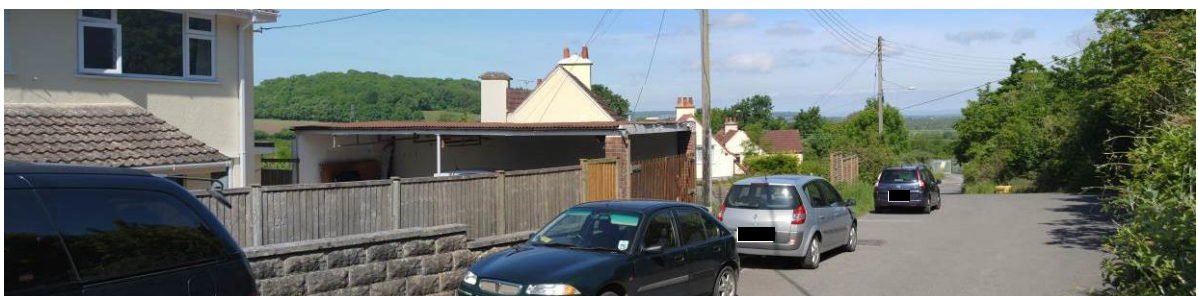
Inset 7.2 (of submitted ES Volume 5.7.3, Figure 7.28.9): Significance of Visual Effects on Receptors C1.F22, C1.H56, C1.H57, C1.H65, C1.H68 and C1.B3 to C1.B5 within 1km during Construction



Photograph 7.1 (of submitted ES **Volume 5.7.3, Figure 7.8.23**)(Receptor C1.F22): Existing view from PRow AX3/23 looking northeast towards the F Route and the N Route visible above landform and residential properties. The route of the proposed 400kV underground cables is screened from view by buildings, hedgerow and trees. The route of the proposed 400kV overhead line and the site of the proposed Sandford Substation is beyond intervening mature trees in Section D.



Photograph 7.2 (of submitted ES **Volume 5.7.3, Figure 7.8.26**)(Receptor C1.H57): Existing view from Towerhead Road adjacent to the driveway for a residential property (Orchard Lea) on Towerhead Road looking north and northeast along the F Route and towards the route of the proposed 400kV underground cables, west of the 132kV pylon in the foreground and partially screened by intervening hedgerow and trees.



Photograph 7.3 (of submitted ES **Volume 5.7.3, Figure 7.8.24**)(Receptor C1.H68): Existing view from Quarry Road looking northwest towards the F Route partly visible above residential properties in the foreground, with Banwell Hill in the background. The route of the proposed 400kV underground cables is screened by intervening buildings.

- 7.5.40 These receptors are of high or medium sensitivity and would experience a moderate or low adverse magnitude of effect during construction of the Proposed Development, as detailed in the submitted ES. This would result in receptors experiencing visual effects of **moderate** or **minor adverse** significance, as detailed

in the submitted ES (**Volume 5.7.1, section 7.5**) and revised Visual Assessment Tables in **Appendix 7C (Volume 5.29.1.2)**.

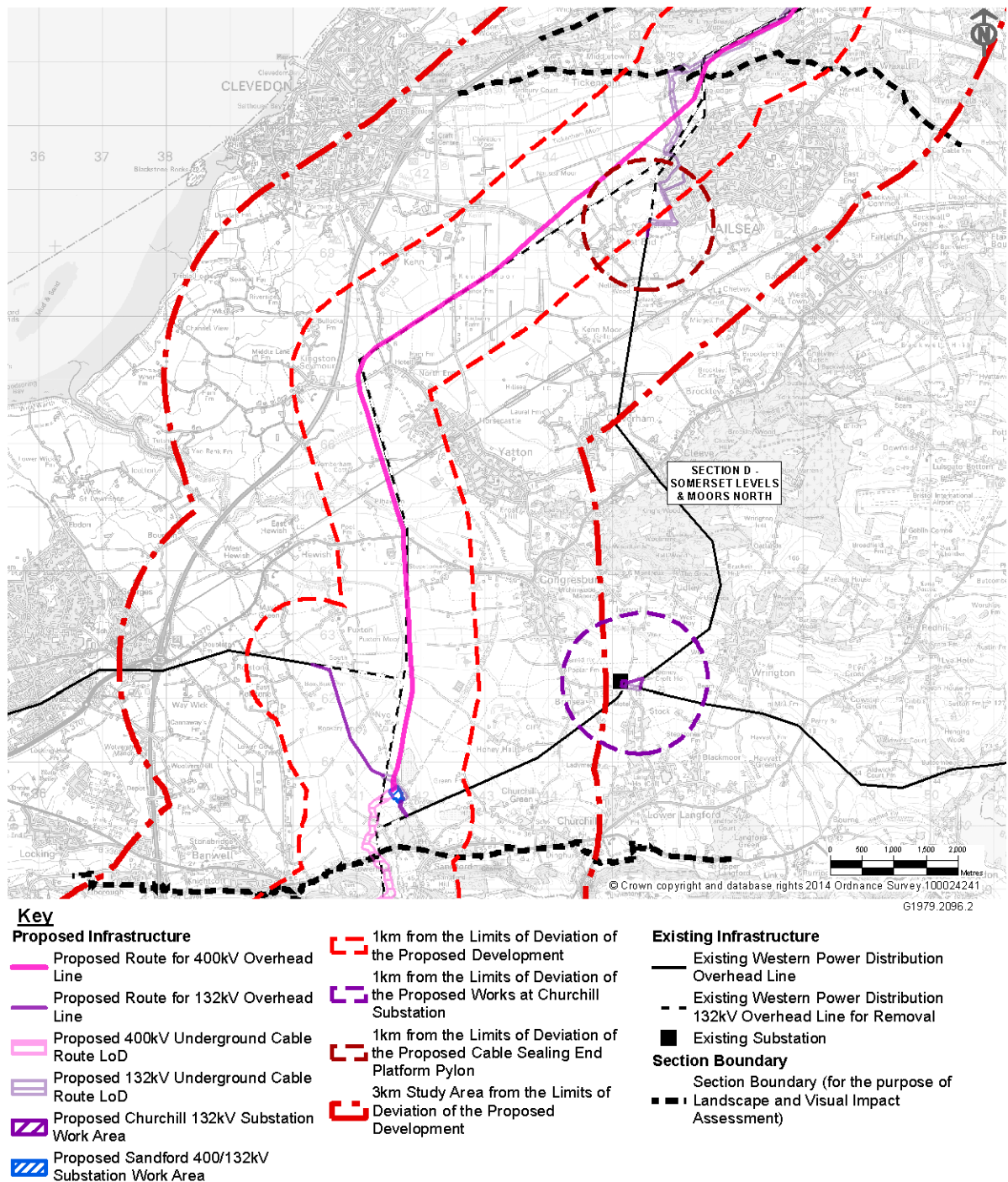
- 7.5.41 The significance of visual effect predicted in the submitted ES is largely as a result of the temporary and short-term (0 to 5 years) construction works anticipated being visible in Section C, relating to the proposed 400kV underground cable installation and removal of the F Route. Construction works in Section D also visible to these receptors and comprising the proposed 400kV underground cable installation, Towerhead Road compound and at-height works to remove the F Route and part of the N Route would also be temporary and short-term (0 to 5 years). Receptors would also experience distant views of at-height works to construct Sandford Substation, the proposed 400kV overhead line and the AT Route connection.
- 7.5.42 Distant views of at-height works to construct the proposed 400kV overhead line in Section D would increase the duration of construction works visible from short-term to medium-term (5 to 15 years), however this would form a small proportion of distant views.
- 7.5.43 Receptors would have views of construction works in Section D in a moderate or low proportion of views or in distant views, where only a small proportion of the view would be affected and there would be a high degree of filtering, screening or backgrounding. Due to the combined duration of the works in Section C and Section D being 69 months these receptors would experience a moderate or low adverse magnitude of effect in views in the medium-term (5 to 15 years) resulting in visual effects of moderate or minor adverse significance.
- 7.5.44 The increase in duration of construction works from short-term (0 to 5 years) to medium-term (5 to 15 years) would not increase the magnitude and significance of visual effects predicted for these receptors in the submitted ES. This is because views of at-height works to construct the proposed 400kV overhead line in Section D in the medium-term would be distant, in a small proportion of views and would not be more significant than construction works visible in Section C; and therefore would not alter the magnitude and significance of effect as a result of the overall increase in duration to medium-term (5 to 15 years).
- 7.5.45 The visual effects remain of moderate or minor adverse significance, as detailed in the submitted ES (**Volume 5.7.1, section 7.5**) and Visual Assessment Tables (**Volume 5.7.2, Appendix 7C**). For completeness, the description of the magnitude of effect contained within the submitted ES has been updated to reflect the description of the Revised Construction Programme duration; these tables are included in **Appendix 7C** of this sensitivity test (**Volume 5.29.1.2**).
- 7.5.46 When assessing possible visual effects of the Revised Construction Programme in Section C, and the increase in duration due to inter-visibility of construction works in Section D, consideration has been given to the phasing of construction works and the start and completion point. The proposed Mendip Hills 400kV underground cables installation between Section B and Section D is anticipated to be undertaken from south to north commencing at the South of Mendip Hills CSE compound in Section B in Q1 2016 and completing at Sandford Substation in Section D in Q3 2020. The proposed 400kV overhead line construction is also anticipated to be undertaken from south to north between Q3 2018 and completing in Section G in Q3 2021.

- 7.5.47 Construction works near Towerhead and Sandford to the north of Section C is anticipated to commence in Q1 2016, at the same time as works in Section B and construction of the proposed 400kV overhead line would complete in Q3 2021 at the same time as works in Avonmouth in Section G. A reasonable worst case scenario is assumed for the combined duration of the works in Section C and Section D of 69 months resulting in medium-term duration for a number of visual receptors. However it is likely that commencement of construction works at the northern end of Section C would be later in the programme and completion of construction works for the proposed 400kV overhead line in the southern part of Section D would be earlier in the programme. Visual receptors identified above (with views of construction works in both Section C and Section D) would experience temporary construction works for a short-duration (0 to 5 years) as assessed in the submitted ES (**Volume 5.7.1, section 7.5**).
- 7.5.48 There is no change to the magnitude and significance of predicted visual effects in Section C during the construction of the Proposed Development from that presented in the submitted ES (**Volume 5.7.1, section 7.5**) as a result of the Revised Construction Programme. However visual receptors with inter-visibility of construction works in both Section C and Section D would experience visual effects for a greater duration, increasing to medium-term (5 to 15 years), due to the overall duration of construction works in both Section C and Section D.
- 7.5.49 There is no change to the significance of visual effects from representative viewpoints assessed between 1 and 3km and beyond 3km from the LoD for the Proposed Development in Section C as a result of the Revised Construction Programme and this remain the same as previously considered in the submitted ES (**Volume 5.7.1, section 7.5**).

Section D: Somerset Levels and Moors North: Construction Effects

- 7.5.50 The duration of the Revised Construction Programme in Section D is 54 months; 3 months longer than the construction programme assessed in the submitted ES. This does not include construction works at Churchill Substation which are visually separate from other works in Section D due to distance. The duration of works at Churchill Substation is anticipated to 39 months and to be undertaken between December 2015 and Q4 2018.
- 7.5.51 Construction of the Proposed Development (excluding Churchill Substation) is anticipated to commence in Q2 2017 and complete in Q3 2021. The Revised Construction Programme works in Section D are anticipated to commence 18 months later than construction works assessed in the submitted ES.
- 7.5.52 The Revised Construction Programme commencement and completion dates in Section D are different from those considered in the submitted ES; however visual effects associated with the construction of the Proposed Development in Section D would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 7.5.53 Visual effects associated with inter-visibility of construction works in both Section D and Section E to the north would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided.
- 7.5.54 Visual effects associated with inter-visibility of construction works in both Section D and Section C to the south would still be temporary but would be experienced for a

greater duration, increasing to medium-term (5 to 15 years), due to the overall duration of construction works in both Section D and Section C.



Inset 7.3: Location Plan illustrating the Geographical Extent of Section D within the 3km Study Area

7.5.55 The overall duration of the Revised Construction Programme in Section D and Section C is 69 months, commencing in Q1 2016 and completing in Q3 2021. Visual receptors with inter-visibility of construction works in both Section D and Section C would experience an increase in the duration of temporary visual effects

from short-term (0 to 5 years) to medium-term (5 to 15 years). These visual receptors in the south of Section D near Sandford and Towerhead, within 1km of the LoD for the Proposed Development, are listed below and are illustrated on **Inset 7.4** of the submitted ES **Volume 5.7.3, Figure 7.28.9** which is reproduced in this chapter for ease of reference:

- receptor D1.R1: Towerhead Road;
- receptor D1:H4: group of residential properties on Towerhead Road, Towerhead;
- receptor D1:H5: residential properties on Mead Lane, Sandford; and
- receptor D1.H6: Mead Farm and two storey property at the northern end of Mead Lane, Sandford.

7.5.56 These visual receptors experience a change to the description of the magnitude of effect as a result of the increase in duration due to the Revised Construction Programme. Receptors are detailed in the revised Visual Assessment Tables presented at **Appendix 7D (Volume 5.29.1.2)**, and these should be read with the sensitivity test.



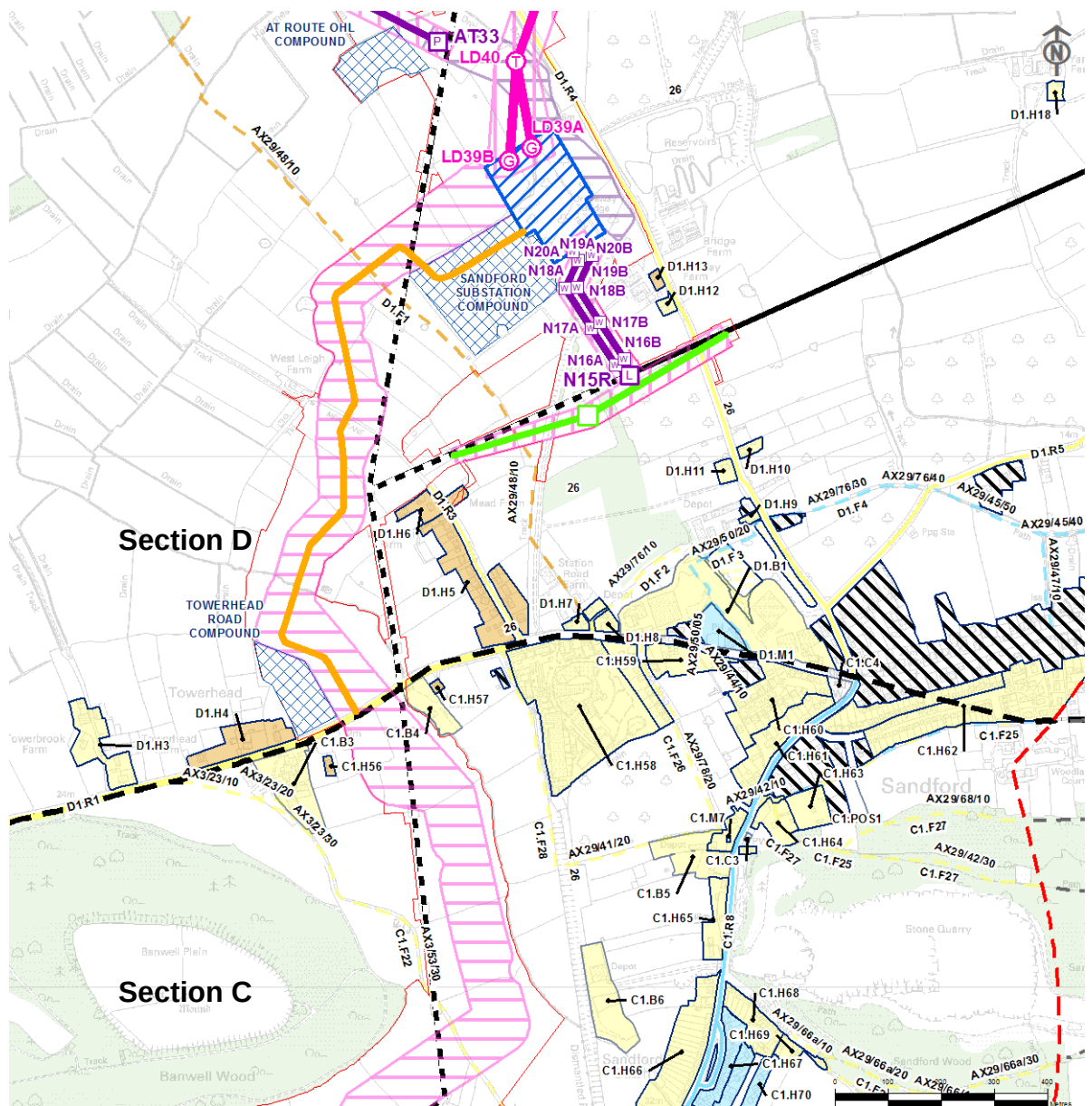
Photograph 7.4 (of submitted ES **Volume 5.7.3, Figure 7.8.26**)(Receptor D1.R1): Existing view northwest from Towerhead Road towards the F Route and the route of the proposed 400kV underground cables beyond trees and hedgerows in Section D.



Photograph 7.5 (of submitted ES **Volume 5.7.3, Figure 7.9.1**)(Receptor D1.R1): Existing view northeast from Towerhead Road towards the route of the proposed 400kV underground cables and the F Route visible above trees in Section D.

7.5.57 These receptors are of medium or low sensitivity and would experience a moderate or low adverse magnitude of effect during construction of the Proposed Development, as detailed in the submitted ES. This would result in receptors experiencing visual effects of **moderate** or **minor adverse** significance, as detailed

in the submitted ES (Volume 5.7.1, section 7.5) and submitted Visual Assessment Tables (Volume 5.7.2, Appendix 7D).



Key

Visual Receptor Reference Number
A1.H1 (refer to Volume 5.7.2, Appendix 7A to 7G
Visual Assessment Tables for further details)

Public Views

Public Right of Way Receptor

- Negligible
- Minor Adverse to Negligible
- Minor Adverse
- Moderate Adverse
- Beyond 1km

Road Receptor

- Minor Beneficial
- Negligible
- Minor Adverse to Negligible
- Minor Adverse
- Moderate Adverse

Private & Public Views

- Negligible
- Minor Adverse
- Moderate Adverse

No Views

- Receptor with No View

Committed Developments

- Committed Developments Reference Number (refer to Volume 5.17.1, Table 7.17 for details of Committed Developments)

Proposed Infrastructure

- Proposed 400kV "Goalpost" T-Pylon Position
- Proposed 400kV T-Pylon Position
- Proposed 132kV Lattice Platform Pylon Position

Proposed 132kV Standard Lattice Pylon Position

Proposed 132kV Wood Pole Pylon Position

Semi-Permanent Access Road

Proposed Temporary Pylon Position

Proposed Route for 400kV Overhead Line

Proposed Route for 132kV Overhead Line

Proposed Route for Temporary 132kV Overhead Line

Proposed Compound / Laydown Area

Proposed Sandford 400/132kV Substation Work Area

Proposed 400/132kV Overhead Line Route Limits of Deviation

Proposed 400kV Underground Cable Route Limits of Deviation

Proposed 132kV Underground Cable Route Limits of Deviation

Order Limits

1km from the Limits of Deviation of Proposed Development

Existing Infrastructure

Existing Western Power Distribution Overhead Line on Pylons

Existing Western Power Distribution 132kV Overhead Line for Removal

Existing Woodland

Existing Woodland

Section Boundary

Section Boundary (for the purpose of Landscape and Visual Impact Assessment)

Inset 7.4 (of submitted ES Volume 5.7.3, Figure 7.28.9): Significance of Visual Effects on Receptors D1.R1, D1.H4, D1.H5 and D1.H6 within 1km during Construction

- 7.5.58 The significance of visual effects predicted in the submitted ES is largely as a result of the temporary and short-term (0 to 5 years) construction works anticipated being visible in Section D, relating to the proposed 400kV underground cable installation, Towerhead Road compound and works to remove the F Route and part of the N Route and at-height works to construct Sandford Substation, the proposed 400kV overhead line and the AT Route connection. Construction works in Section C would comprise the proposed 400kV underground cable installation and removal of the F Route. Receptors would have views of construction works in Section C in a small proportion of views or in distant views, where the effect would be reduced due to a high degree of filtering, screening or backgrounding. Due to the combined duration of the works in Section C and Section D being 69 months these receptors would experience a moderate or low adverse magnitude of effect in views in the medium-term (5 to 15 years) resulting in visual effects of **moderate** or **minor adverse** significance.
- 7.5.59 The increase in duration of construction works from short-term (0 to 5 years) to medium-term (5 to 15 years), would not increase the magnitude and significance of visual effects predicted for these receptors in the submitted ES. This is because the scale of change, nature of the view, angle, distance and proportion of the view affected by construction works in Section C would not be more significant than construction works visible in Section D and would not alter the magnitude and significance of effect as a result of the overall increase in duration to medium-term (5 to 15 years).
- 7.5.60 The visual effects remain of moderate or minor adverse significance, as detailed in the submitted ES (**Volume 5.7.1, section 7.5**) and Visual Assessment Tables (**Volume 5.7.2, Appendix 7D**). For completeness, the description of the magnitude of effect contained within the submitted ES has been updated to reflect the description of the Revised Construction Programme duration; these tables are included within **Appendix 7D** of this sensitivity test (**Volume 5.29.1.2**).
- 7.5.61 When considering possible visual effects of the Revised Construction Programme in Section D, and the increase in duration due to inter-visibility of construction works in Section C, consideration has been given to the phasing of construction works and the start and completion point. The proposed Mendip Hills 400kV underground cables installation between Section B and Section D is anticipated to be undertaken from south to north commencing at the South of Mendip Hills CSE compound in Section B in early 2016 and completing at Sandford Substation in Section D in mid to late 2021.
- 7.5.62 As part of the ES Sensitivity Test a reasonable worst case scenario has been assessed. This has anticipated that construction works near Towerhead and Sandford in the north of Section C would commence in early 2016, at the same time as works in Section B. The reasonable worst case scenario assumed for the combined duration of the works in Section C and Section D is 69 months resulting in medium-term duration for a number of visual receptors. However it is likely that construction works in Section C would commence later in the programme. Visual receptors identified above (with inter-visibility of construction works in both Section D and Section C) would experience temporary construction works for a short-

duration (0 to 5 years) as assessed in the submitted ES (**Volume 5.7.1, section 7.5**).

- 7.5.63 There is no change to the magnitude and significance of predicted visual effects in Section D during the construction of the Proposed Development from that presented in the submitted ES (**Volume 5.7.1, section 7.5**) as a result of the Revised Construction Programme. However visual receptors with inter-visibility of construction works in both Section D and Section C would experience visual effects for a greater duration, increasing to medium-term (5 to 15 years), due to the overall duration of construction works in Section D and Section C.
- 7.5.64 There is no change to the significance of visual effects from representative viewpoints assessed between 1 and 3km and beyond 3km from the LoD for the Proposed Development in Section D as a result of the Revised Construction Programme and these remain the same as previously considered in the submitted ES (**Volume 5.7.1, section 7.5**).

Section E: Tickenham Ridge: Construction Effects

- 7.5.65 The duration of the Revised Construction Programme in Section E is 54 months; 5 months longer in duration than the construction programme assessed in the submitted ES. Construction of the Proposed Development is anticipated to commence in Q2 2017 and complete in Q3 2021. The Revised Construction Programme works in Section E are anticipated to commence 18 months later than construction works assessed in the submitted ES.
- 7.5.66 The Revised Construction Programme commencement and completion dates in Section E are different from those considered in the submitted ES; however visual effects associated with the construction of the Proposed Development would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 7.5.67 There would be some inter-visibility of construction works in both Section E and Section D to the south, and in both Section E and Section F to the north. In Section E views of construction works associated with each project component would be the same as those assessed in the submitted ES, and would remain temporary and short-term in duration. As a result the magnitude and significance of predicted visual effects during the construction of the Proposed Development does not change from that presented in the submitted ES (**Volume 5.7.1, section 7.5**) and in the Visual Assessment Tables in the submitted ES (**Volume 5.7.2, Appendix 7E**).

Section F: Portishead: Construction Effects

- 7.5.68 The duration of the Revised Construction Programme in Section F is 54 months; 5 months longer in duration than the construction programme assessed in the submitted ES. Construction of the Proposed Development is anticipated to commence in Q2 2017 and complete in Q3 2021. The Revised Construction Programme works in Section F are anticipated to commence 18 months later than construction works assessed in the submitted ES.
- 7.5.69 The Revised Construction Programme commencement and completion dates in Section F are different from those considered in the submitted ES; however visual effects associated with the construction of the Proposed Development would still be

temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).

- 7.5.70 Visual effects associated with inter-visibility of construction works in both Section F and Section E to the south, and in both Section F and Section G to the northeast, would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided.
- 7.5.71 In Section F views of construction works associated with each project component would be the same as those assessed in the submitted ES, and would remain temporary and short-term in duration. As a result the magnitude and significance of predicted visual effects during the construction of the Proposed Development does not change from that presented in the submitted ES (**Volume 5.7.1, section 7.5**) and in the Visual Assessment Tables in the submitted ES (**Volume 5.7.2, Appendix 7F**).

Section G: Portishead: Construction Effects

- 7.5.72 The duration of the Revised Construction Programme in Section G is 54 months; 5 months longer in duration than the construction programme assessed in the submitted ES. Construction of the Proposed Development is anticipated to commence in Q2 2017 and complete in Q3 2021. The Revised Construction Programme works in Section G are anticipated to commence 18 months later than construction works assessed in the submitted ES.
- 7.5.73 The Revised Construction Programme commencement and completion dates in Section G are different from those considered in the submitted ES; however visual effects associated with the construction of the Proposed Development would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided.
- 7.5.74 Visual effects associated with inter-visibility of construction works in both Section G and Section F to the southwest would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided as detailed in the submitted AIA (**Volume 5.21.1**).
- 7.5.75 In Section G views of construction works associated with each project component would be the same as those assessed in the submitted ES, and would remain temporary and short-term in duration. As a result the magnitude and significance of predicted visual effects during the construction of the Proposed Development does not change from that presented in the submitted ES (**Volume 5.7.1, section 7.5**) and in the Visual Assessment Tables in the submitted ES (**Volume 5.7.2, Appendix 7G**).

Section H: Hinkley Line Entries: Construction Effects

- 7.5.76 The duration of the Revised Construction Programme in Section H is 45 months; 9 months longer in duration than the construction programme assessed in the submitted ES. Construction of the Proposed Development is anticipated to commence in Q3 2018 and complete in Q1 2022. The Revised Construction Programme works in Section H are anticipated to commence 30 months later than construction works assessed in the submitted ES.

- 7.5.77 The Revised Construction Programme commencement and completion dates in Section H are different from those considered in the submitted ES; however visual effects associated with the construction of the Proposed Development would still be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided, as detailed in the submitted AIA (**Volume 5.21.1**).
- 7.5.78 In Section H views of construction works associated with each project component would be the same as those assessed in the submitted ES, and would remain temporary and short-term in duration. As a result the magnitude and significance of predicted visual effects during the construction of the Proposed Development does not change from that presented in the submitted ES (**Volume 5.7.1, section 7.5**) and in the Visual Assessment Tables in the submitted ES (**Volume 5.7.2, Appendix 7H**).

Assessment of Lighting during Construction

- 7.5.79 There are no changes to the assessment of the likely significant visual effects of lighting during construction of the Proposed Development as a result of the Revised Construction Programme and these remain the same as presented in the submitted ES **Volume 5.7.1, section 7.5**; lighting during construction would still be temporary and short-term (0 to 5 years) within each Section.

Limits of Deviation and the Order Limits

- 7.5.80 There are no changes to the assessment of the effects of the LoD and the Order Limits of the Proposed Development on visual amenity as a result of the Revised Construction Programme and these remain the same as presented in the submitted ES (**Volume 5.7.1, section 7.5**).

Climate Change Effects

- 7.5.81 There are no changes to the assessment of the effects of climate change on visual amenity as a result of the Revised Construction Programme and these remain the same as presented in the submitted ES (**Volume 5.7.1, section 7.5**).

Indicative Access for Future Maintenance

- 7.5.82 There are no changes to the assessment of the effects of indicative access for future maintenance on visual amenity as a result of the Revised Construction Programme and these remain the same as presented in the submitted ES (**Volume 5.7.1, section 7.5**).

7.6 Inter-relationship of Potential Effects

- 7.6.1 The Revised Construction Programme does not change the inter-relationship of potential effects on visual amenity; this remains the same as presented in the submitted ES (**Volume 5.7.1, section 7.6**).

7.7 Mitigation

- 7.7.1 The Revised Construction Programme does not alter the measures for mitigation of construction effects on views presented in the submitted ES (**Volume 5.7.1, section 7.7**). However an additional figure showing the phasing of landscape planting at Sandford 400kV/132kV Substation is provided at **Figure 7.35.6 (Volume 5.29.1.2)**. This phasing will be undertaken to reduce the duration of habitat loss under the Revised Construction Programme. The phasing is described in more detail in Chapter 8 of this Sensitivity Test.
- 7.7.2 The below text provides further detailed on planting replacement hedges in-situ to reduce duration of habitat loss within Section C (described in Chapter 8) under the Revised Construction Programme:

Planting replacement hedges in-situ

- 7.7.3 As set out in the submitted ES National Grid will plant replacement trees, tree groups and hedges in-situ and this will be delivered via Requirements set out in the DCO.
- 7.7.4 Hedgerow loss associated with the construction of proposed 400kV underground cable is necessarily greater than with other development components. The Revised Construction Programme duration for the 400kV underground cables in Section B to D is 57 months and would be short-term (0 to 5 years).
- 7.7.5 A large proportion of hedge removal will take place within the Mendip Hills AONB in Section C. To ensure that any impacts on this particularly sensitive landscape are minimised, reinstatement of hedgerows would be in a phased manner. The works would be delivered in sections under the Revised Construction Programme. The length of cable being installed, plus the section behind and section in front would need to remain open at any one time. This would equate to a maximum of 3km of the 400kV underground cable route where active working, and so too habitat loss, would take place at any one time. Whilst the cables would be laid in sections, the haul road for this project component is assessed to remain in place for the full duration of the Mendip Hills 400kV underground cable works. Once the cables have been laid and trenches backfilled, reinstatement work would begin. The reinstatement of subsoil, topsoil and hedgerows would also be undertaken in phases
- 7.7.6 If a fault is identified during testing of the 400kV underground cables, it is considered very unlikely that the whole reinstated hedgerow would need to be removed again; it is likely to just affect a small section if the fault has occurred in that specific area.

7.8 Residual Effects

- 7.8.1 The Revised Construction Programme has no material effect on predicted residual visual effects from that presented in the submitted ES (**Volume 5.7.1, section 7.8**).

7.9 Cumulative Effects

- 7.9.1 The assessment of cumulative visual effects does not change for any of the projects identified within the submitted ES (**Volume 5.17.1**) as a result of the Revised Construction Programme. This is largely due to the construction period being unknown for any of the projects identified.
- 7.9.2 There are 17 new major development proposals that have come forward in the intervening period since the ES was submitted, four of these new major developments would give rise to cumulative visual effects.
- 7.9.3 Two potentially significant cumulative visual effects are predicted in Section D that relate to the effect of the proposed solar farms at land at Meer Wall near Congresbury (ID 102) and land at Bowerhouse near Banwell (ID 105), where visual effects would be experienced in combination with the Proposed Development in views from receptors using PRoW, long distance routes and properties in the area. The two proposed solar farm projects are close to the Proposed Development and visual effects would be experienced in combination with the proposed 400kV overhead line and AT Route connection in Section D. The predicted significance of potential residual cumulative effect on visual receptors in Section D would be no greater than **moderate adverse** with most receptors experiencing a **minor adverse** or **negligible** significance of effect. The effects of the Proposed Development with the solar farms cumulatively would be **moderate adverse** for a small number of receptors with the Proposed Development giving rise to greater effects than the solar farms.
- 7.9.4 One cumulative effect on views would arise in Section E from the single wind turbine development at land off Charlton Drive Wraxall (ID 115). Visual effects would arise in views from receptors using PRoW, the Gordano Round long distance route, Noah's Ark Zoo Farm visitor attraction and in residential properties as a result of this development and the proposed 400kV overhead line and 132kV underground cables being introduced on Tickenham Ridge. The possible wind turbine is close to the Proposed Development and visual effects would be experienced in combination with the proposed 400kV overhead line and underground cables. The predicted significance of potential residual cumulative effect on visual receptors would be no greater than **moderate adverse** with most receptors experiencing a **minor adverse** or **negligible** significance of effect. The effects of the Proposed Development with the wind turbine cumulatively would be **moderate adverse** for a small number of PRoW and a section of the Gordano Round long distance route with the Proposed Development giving rise to greater effects than the wind turbine.
- 7.9.5 Cumulative visual effects would arise in Section G from the possible land at Access 18 office, industry and storage unit development in Avonmouth (ID 101) where visual effects would arise as a result of this development and the proposed 400kV overhead line and 132kV underground cables being introduced in Section G. The possible land at Access 18 development is close to the Proposed Development and visual effects would be experienced by receptors using PRoW, roads and workers in combination with the proposed 400kV overhead line and underground cables. The predicted significance of potential residual cumulative effects on visual receptors would be no greater than **minor adverse**. The Proposed Development

would give rise to the greater effect than the proposed office, industrial and storage development at land at Access 18, as this latter would be consistent with existing development on the site.

- 7.9.6 The predicted effects of the Proposed Development cumulatively with other developments would not give rise to a greater significance of adverse effect on visual receptors than that caused by the other developments alone, with the exception of the solar farm and wind turbine developments. The significance of effect of the solar farm and wind turbine developments would be **minor adverse**, however the effects arising from the Proposed Development would be **moderate adverse** for some visual receptors. The effects of the Proposed Development with the solar farms and wind turbine cumulatively would be **moderate adverse** with the Proposed Development giving rise to greater effects than the solar farms and wind turbine that have come forward in the intervening period since the ES was submitted.

7.10 Conclusion

- 7.10.1 This chapter has considered the changes the Revised Construction Programme has on the magnitude and significance of visual effects during construction, operation and decommissioning of the Proposed Development from that presented in the submitted ES (**Volume 5.6.1**).
- 7.10.2 The 'opening year' is used as the basis of assessment of operation effects on views. The Revised Construction Programme opening year for the Proposed Development is March 2022. This is 27 months later than the opening year assessed in the submitted ES. It is considered that there are no changes in visual effects during the operation of the Proposed Development in the short and medium-term, at the updated opening year (March 2022) and to year fifteen as a result of the Revised Construction Programme and these remain as reported in the submitted ES (**Volume 5.7.1, section 7.5**). This is because the visual baseline would not have changed materially from that presented in the submitted ES (**Volume 5.7.1, section 7.4**).
- 7.10.3 The Revised Construction Programme does not change the magnitude and significance of predicted visual effects during the construction or decommissioning of the Proposed Development from that presented in the submitted ES (**Volume 5.7.1, section 7.5**).
- 7.10.4 The duration of the Revised Construction Programme at Chapter 3 is 76 months, commencing December 2015 and completing March 2022; 25 months longer than the construction programme assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**).
- 7.10.5 The duration of the Revised Construction Programme is greater than that assessed in the submitted ES. However the duration of construction of most individual project components in each Section A to H is similar to that in the submitted ES. The construction period for each component does not exceed 5 years (60 months); albeit at different commencement and completion dates up to two and a half years later than in the submitted ES.

- 7.10.6 The Revised Construction Programme duration for the proposed Mendip Hills 400kV underground cables installation and the proposed 400kV overhead line (north) would be 69 months and would be medium-term (5 to 15 years); albeit the 400kV underground cables work between Section C and Section D would not exceed 60 months duration and construction works would remain short-term (0 to 5 years) within each Section. Distant views of at-height works to construct the proposed 400kV overhead line in Section D would increase the duration of construction works visible from short-term to medium-term (5 to 15 years), however this would form a small proportion of distant views.
- 7.10.7 Some visual receptors with inter-visibility of construction works in Section C and Section D would experience visual effects for a greater duration, increasing to medium-term (5 to 15 years), due to the overall duration of construction works for the proposed 400kV underground cables installation in Section C and Section D and the proposed 400kV overhead line in Section D. These visual receptors are within 1km of the LoD for the Proposed Development near Sandford and Towerhead.
- 7.10.8 The significance of visual effect predicted for these receptors is largely as a result of the temporary and short-term (0 to 5 years) construction works anticipated being visible in each Section, as detailed in the submitted ES. The magnitude and significance of visual effects of construction works in the adjacent Section would not be greater and would be visible in a moderate or low proportion of views or in distant views, where only a small proportion of the view would be affected and the effect would be reduced due to a high degree of filtering, screening or backgrounding. The increase in duration of construction works from short-term (0 to 5 years) to medium-term (5 to 15 years) does not increase the magnitude and significance of visual effects predicted for these receptors in the submitted ES.
- 7.10.9 The Revised Construction Programme has no implications for the assessed significance of visual effects of the Proposed Development. This remains as stated in Chapter 7 of the submitted ES (**Volume 5.7.1**) and the Visual Assessment Tables in the submitted ES (**Volume 5.7.2 Appendix 7A to 7H**). Visual receptors that would experience a change to the description of the magnitude of effect as a result of the Revised Construction Programme are detailed in the updated Visual Assessment Tables presented at **Appendix 7C and 7D (Volume 5.29.1.2)**.

8 BIODIVERSITY AND NATURE CONSERVATION

8.1 Introduction

- 8.1.1 This chapter of the ES Sensitivity Test provides an assessment of potential effects on ecological receptors of the Proposed Development as a result of the Revised Construction Programme. This chapter should be read in conjunction with Chapter 8 of the submitted ES (**Volume 5.8.1**).
- 8.1.2 In order to achieve the revised connection offer date, the Proposed Development would be built between December 2015 and March 2022; a duration of 76 months. This results in the overall construction period of the Proposed Development increasing by just over two years (25 months) compared to that assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**).
- 8.1.3 Within the revised construction period, each project component is phased. With the exception of the construction accesses, the duration of construction for each component is within the four year construction period assessed in Chapter 8 of the submitted ES. The 400kV underground works through the Mendip Hills and on to Sandford substation would be delivered in a phased manner to reduce the duration and area of habitat loss at any one time. All construction compounds will remain open only for the duration of the project component that they serve, and would then be removed.
- 8.1.4 This sensitivity test assesses the likely significant effects on ecological receptors during construction of all components of the Proposed Development, based on the Revised Construction Programme. In assessing ecological effects, consideration has been given to the seasonality of effects, for example, construction of a specific component may extend for a relatively small period but incur an additional breeding or wintering period. The sensitivity test identifies where the significance of effect is considered to be different during the revised construction to that assessed in the submitted ES at (**Volume 5.8.1**).
- 8.1.5 A number of further ecological studies have been undertaken since the submission of the DCO application. These further surveys cover geographic areas not previously surveyed due to site access restrictions and survey timing constraints. Reference to this outstanding information was made within the submitted ES where the intention was stated to provide an update to address them.
- 8.1.6 The outstanding baseline information has been requested by PINS in s51 Advice dated 19 June 2014. This information has been submitted to PINS under a separate cover (**Volume 5.29**). The updated surveys are also referenced within this document and do not materially change the baseline assessed within the submitted ES
- 8.1.7 All Insets and Photographs (**Volume 5.8.1**), Appendices (**Volume 5.8.2**) and Figures (**Volume 5.8.3**) accompanying Chapter 8 of the submitted ES and the Ecology Survey Update Report (**Volume 5.28**) remain unchanged as a result of the Revised Construction Programme.
- 8.1.8 The Habitat Regulations Assessment (HRA) Report (**Volume 5.20.1**) focuses on potential effects on the qualifying features of Natura 2000 sites. The HRA report is therefore primarily concerned with effects on birds and bats. The findings of the

HRA do not change in light of the Revised Construction Programme and a HRA Sensitivity Test is provided in **Volume 5.29.2.1**.

- 8.1.9 The Biodiversity Mitigation Strategy (BMS) contained within the Construction Environmental Management Plan (CEMP) of the submitted ES (Volume 5.26) is the delivery document for all embedded mitigation in respect of biodiversity. Mitigation is seasonally bound where appropriate, however as phasing was not specified in the submitted assessment, this does not change as a result of the Revised Construction Programme. Clarification regarding the delivery of the 400kv underground cables through the Mendip Hills and landscape planting at Sandford substation is provided in CEMP Sensitivity Test document (Volume 5.29.2.4). It should be noted that the BMS is a live document and will be updated during the construction phase of the Proposed Development.
- 8.1.10 There are no spatial changes as a result of the Revised Construction Programme. Tree and hedgerow removal required to construct the Proposed Development and replacement planting therefore remains as presented in the submitted Arboricultural Impact Assessment (AIA) (**Volume 5.21.1, sections 7 to 9**), and at submitted ES (**Volume 5.21.3, Figures 21.2 and 21.3**).
- 8.1.11 The spatial scope of this chapter reflects the 'zone of influence' of the Proposed Development, which remains unchanged from the submitted ES; the Revised Construction Programme makes no overall change to the spatial extent of the Proposed Development.
- 8.1.12 As explained in the submitted ES (**Volume 5.3.1, section 3.2 and 3.7**) and summarised in Chapter 3 of this document, Sections A to H have been identified in the study area through which the construction of the Proposed Development is proposed (devised to assist with the assessment in respect of landscape and views). **Volume 5.3.1** of the submitted ES provides a detailed description of Sections A to H and the works proposed in each. The assessment of effects contained within Chapter 8 of the submitted ES made reference to each of these Sections; accordingly, this sensitivity test also references the Sections.

8.2 Policy and Legislation

- 8.2.1 In June 2014, Natural England launched the 'SSSI Impact Risk Zones' GIS tool to help local authorities identify where potential adverse effects on SSSI may arise as a result of certain types of development. This provides a useful guide as to the sensitivities (e.g. wetland ecology) and locally appropriate opportunities (e.g. provision of various forms of SUDS) for development. Throughout the project, potential effects on SSSI have been identified and addressed in consultation with NE. Appropriate mitigation measures in respect of the Proposed Development are as set out in the submitted ES. There are no further changes to policy and legislation to that presented in the submitted ES.

8.3 Method

- 8.3.1 The assessment of the effects on ecology has been undertaken in accordance with the method as presented in Chapter 8, section 8.3 of the submitted ES (**Volume 5.8.1**).

Assessment of Effects

- 8.3.2 To assess the Revised Construction Programme, the same approach was followed as presented in the submitted ES and the Ecology Survey Update Report (**Volume 5.28**) – valuing each receptor, and identifying the magnitude, significance and likelihood of potential effects.

Study Area

- 8.3.3 The overall study area remains unchanged from the submitted ES as a result of the Revised Construction Programme.

Desk Study

- 8.3.4 The desk study information presented in the submitted ES was used to inform this sensitivity test. No changes are required as a result of the Revised Construction Programme.

Habitats and Flora

- 8.3.5 Methods to determine the baseline environment for habitats and flora remain as presented in the submitted ES.

Arboriculture

- 8.3.6 Methods to determine the baseline environment for arboriculture remain as presented in the submitted ES.

Birds

- 8.3.7 Methods to determine the baseline environment for birds remain as presented in the submitted ES.

Bats

- 8.3.8 Methods to determine the baseline environment for bats remain as presented in the submitted ES.

Hazel Dormouse

- 8.3.9 Methods to determine the baseline environment for dormice remain as presented in the submitted ES.

Water Vole

- 8.3.10 Methods to determine the baseline environment for water vole remain as presented in the submitted ES.

Otter

- 8.3.11 Methods to determine the baseline environment for otter remain as presented in the submitted ES.

Badger

- 8.3.12 Methods to determine the baseline environment for badger remain as presented in the submitted ES.

Other Mammals

- 8.3.13 Methods to determine the baseline environment for other mammals remain as presented in the submitted ES.

Amphibians

- 8.3.14 Methods to determine the baseline environment for amphibians remain as presented in the submitted.

Reptiles

- 8.3.15 Methods to determine the baseline environment for reptiles remain as presented in the submitted ES.

Ditch Invertebrates and Flora

- 8.3.16 Methods to determine the baseline environment for ditch invertebrates and flora remain as presented in the submitted ES.

8.4 Baseline Environment

- 8.4.1 The assessment of the Revised Construction Programme has been based on the ecological baseline presented in the submitted ES. The submitted Ecology Survey Update Report (**Volume 5.28**) provides the outstanding baseline information requested by PINS in s51 Advice dated 19 June 2014. The updated surveys do not materially change the baseline assessed within the submitted ES.

Projected Changes to the Baseline Environment (The Base Case)

- 8.4.2 The baseline environment is described for each receptor, based on the most recent survey data, augmented by desk study information. The Proposed Development will commence in December 2015 rather than October 2015 as set out in the submitted ES; a delay of two months. Accordingly, no change to the 'base case', from that set out in the submitted ES, is identified as a result of the Revised Construction Programme.

Valuation of Receptors

- 8.4.3 The assessment of the Revised Construction Programme has been based on the ecological baseline, and accordingly the same valuation of receptors, as presented in the submitted ES.

8.5 Prediction and Assessment of Significance of Potential Effects Prior to Mitigation

- 8.5.1 The submitted ES (**Volume 5.8.1, section 8.5**) assesses those components of the Proposed Development that are anticipated to result in ecological effects during construction, operation and decommissioning.

- 8.5.2 This ES sensitivity test identifies where the significance of effect of the Proposed Development on ecological receptors would be different during construction to that assessed in the submitted ES.

Modifications within the Scheme Design

- 8.5.3 This section sets out the modifications which would be incorporated into the construction phase to avoid or minimise potential effects on ecological receptors as a result of the Revised Construction Programme. All other scheme design modification remain as detailed in Chapter 8 of the submitted ES.

Ecological Design Considerations

- 8.5.4 As set out in the submitted ES, National Grid will undertake a final design process to establish the precise siting of project components prior to construction, and during this, National Grid commits to avoid any physical encroachment of construction activity into internationally and nationally designated sites unless essential and unavoidable.
- 8.5.5 The submitted ES (**Volume 5.8.1, section 8.5**) assessed construction effects as temporary medium-term based on a construction period of four years. As a result of the Revised Construction Programme this would increase the overall duration of construction phase to 76 months. Despite the longer duration of the Revised Construction Programme, the duration for construction of each project component would typically be less or similar to that considered in Chapter 8 of the submitted ES.
- 8.5.6 Two project components – the 400kV underground works through the Mendip Hills and Sandford substation – will be delivered in a phased manner under the Revised Construction Programme, to ensure potential additional effects associated with the extended duration would be avoided (described in paragraphs 8.5.7 and 8.5.9 below). Accordingly the duration of effect for all project components would not extended beyond four years as assessed in Chapter 8 of the submitted ES, with the exception of the construction access (described in paragraph 8.5.10 below).
- 8.5.7 The Revised Construction Programme for the 400kV underground works through the Mendip Hills would require a total working period of up to 57 months (Q1 2016 to Q3 2020, spanning five bat active seasons), in contrast to the four years (spanning four bat active seasons) previously assessed. As presented in the submitted ES, these underground works lie within the SAC Consideration Zones for horseshoe bats. To minimise loss of hedgerows that may be used by these species, hedgerow removal would be restricted to the minimum cable working width (as specified in the submitted ES) and all construction activities (including storage and lighting) would be located away from hedgerows.
- 8.5.8 To avoid complete loss of all hedgerows throughout the entire 8.5km length, the works would be delivered in a phased manner under the Revised Construction Programme. National Grid has advised that the length of cable being installed, plus the section behind and section in front which would need to remain open at any one time would equate to a maximum of 3km of the 400kV underground cable route where habitat loss, would take place at any one time (i.e. ca 35% of that assessed in the submitted ES at any one time). Whilst the cables would be laid in phases, the haul road for this project component would remain in place for the duration of

works (57 months) but may remain until testing of the cables is complete (up to 76 months). Once the cables have been laid and trenches backfilled, reinstatement work would begin. The reinstatement of subsoil, topsoil and hedgerows would also be undertaken in phases and within 12 months of completion of each phase.

- 8.5.9 Sandford substation also lies within the SAC Consideration Zones for horseshoe bats. Works here have potential implications on bats (a European Protected Species) and water vole (a UK Protected Species). The Revised Construction Programme requires works at the substation for up to 33 months (Q1 2018 to Q3 2020). The initial site clearance and levelling works would be undertaken during 2018 under the Revised Construction Programme, thereby facilitating early reinstatement of some habitats. These are described under 'Embedded Landscape Mitigation' below.
- 8.5.10 Construction access roads are required to be in place for up to 76 months through the construction period (December 2015 to March 2022, to include testing of the lines once connected). This timeframe applies to the access network as a whole; those accesses which are not built (or existing roads brought into use) until the latter phases of construction would still be removed and habitats reinstated by the close of construction in March 2022. Some accesses would therefore be in place for less than 76 months but for the purposes of assessment all are assumed to be in place for the entire duration. This is recognised to be an over estimation and a worst-case assessment.
- 8.5.11 Works proposed at Portbury, including 132kV overhead line removal and undergrounding, would collectively be undertaken for up to 54 months (Q2 2017 to Q3 2021). However, this phasing includes the entire period programmed for works on each of these lines. Works at Portbury are anticipated to be shorter than this, particularly as the earliest works (those on the W-Route) would initially be some distance south of Portbury. It is therefore reasonable for the collective works at Portbury (with the exception of construction accesses) to remain assessed as four years in duration, in line with the submitted ES.
- 8.5.12 Whilst phasing of the Revised Construction Programme may be further refined once a contractor has been appointed, the duration for each component would not increase, i.e. this chapter assesses the maximum construction period and the worst-case.
- 8.5.13 As set out in the submitted ES, National Grid has committed to phase the conductor and earth wire removal of the existing 132kV F-Route south of Mark and the stringing of the proposed 400kV line, to avoid both lines being in place when potential wintering or migratory bird collision risk would occur. This remains a requirement as a result of the Revised Construction Programme.

Embedded Landscape Mitigation: Site-Specific Planting Plans

- 8.5.14 **Volume 5.6.1, section 6.7** of the submitted ES sets out the embedded landscape works that form part of the DCO application, and therefore forms part of the Proposed Development assessed, prior to mitigation. The quantity and spatial spread of planting is as presented in the submitted ES. To minimise the period of habitat loss at Sandford substation as a result of the Revised Construction Programme, the initial site clearance and levelling works will be undertaken during 2018 thereby facilitating early reinstatement of some habitats. **Figure 7.35.6**

(**Volume 5.29.1.3** of ES Sensitivity Test) presents the Sandford Substation Landscape Mitigation Phasing Plan. Early reinstatement of habitats include:

- planting along the existing and reinstated orchard line in November/December 2017;
- orchard tree planting in the north west in November/December 2017;
- planting (ditch and hedgerow) along the realigned ditch in the first Spring or Autumn following construction of the ditch (November/December 2018 or April/May 2019); and
- native structure planting north of the pond on November/December 2018.

8.5.15 The attenuation pond proposed at the Sandford substation has been designed as a wildlife pond with shallow sloping margins and marginal aquatic planting. Whilst the pond has not explicitly been identified as mitigation for protected species, a range of native floating, emergent and marginal species are specified at densities that would create a structurally varied assemblage to benefit biodiversity, totalling 508m². As a result of the Revised Construction Programme, the pond would be in place in 2018 as a settling pond, although planting would not be completed until construction at Sandford substation is complete.

8.5.16 509m of existing ditch would need to be realigned to circumnavigate the substation building; the realignment totalling a length of 523m. Aquatic and marginal planting would again be provided along the length of the realigned ditch. The initial site clearance and levelling works under the Revised Construction Programme will be undertaken during 2018 and the ditch realigned. Some sections of the realigned ditch would require culverting during the construction phase (to facilitate accesses and installation of underground cables), non-culverted sections of ditch would be ready for planting in 2018, the remainder would be planted on removal of culverts.

8.5.17 All other elements of the embedded landscape mitigation required for the Revised Construction Programme remain as stated in the submitted ES.

Embedded Arboricultural Mitigation

8.5.18 The embedded arboricultural mitigation required for the Revised Construction Programme remains as stated in the submitted ES (**Volume 5.21.1**).

Embedded Hydrology and Water Resources Mitigation

8.5.19 The embedded hydrology and water resources mitigation required for the Revised Construction Programme remains as stated in the submitted ES (refer to Chapter 10 of this document and the FRA Sensitivity Test **Volume 5.29.2.3**).

Embedded Air Quality and Dust Mitigation

8.5.20 The embedded air quality and dust mitigation required for the Revised Construction Programme remains as stated in the submitted ES (refer to Chapter 13 of this document).

Embedded Habitat Reinstatement

8.5.21 As set out in paragraph 8.5.20 of the submitted ES, planting would be delivered “*in the first planting season after that part of the authorised development to which the*

landscaping or replacement planting works apply is first brought into operational use". This forms a DCO Requirement.

- 8.5.22 This apply to each project component that has been specifically phased and to the components that would be delivered in a phased manner under the Revised Construction Programme – the 400kV underground works through the Mendip Hills and Sandford substation. The construction access is the only component with a revised construction period longer than the four years assessed in the submitted ES and which cannot be phased (as described in paragraph 8.5.10 above).
- 8.5.23 As detailed in the submitted ES, hedgerows removed to facilitate excavation of cable trench or construction access tracks would be reinstated in-situ along existing field boundaries. The nature (age, structure and species mix) and spatial scale of reinstated hedgerows would be delivered as presented in the submitted ES (Tree Impact Plans provided in **Volume 5.21.2, Appendix 4**). However, by delivering the 400kV underground works through the Mendip Hills in a phased manner no greater than 3km the duration of effect would be reduced accordingly.
- 8.5.24 Grassland replacement would be similarly affected by the Revised Construction Programme. Sowing would generally match the use of land prior to construction, with the exception of areas of meadow grassland specified in the Site-Specific Planting Plans. Appropriate seed mixes will be determined at the detailed design stage.

Establishment Periods for Reinstated Habitats

- 8.5.25 The submitted ES (paragraph 8.5.44) recognises that replacement planting would take time to establish. This does not change as a result of the Revised Construction Programme; 1-3 years for grassland, 2-4 years for ditch vegetation, 3-5 years for hedgerows and 15 years for trees, depending on the species and age-class planted. This describes the time for the sward, whips or standards to establish, but longer periods would be required to allow semi-mature trees or hedgerows (e.g. those over 3m high) to develop i.e. over 5 years for tall hedgerows.
- 8.5.26 In the case of veteran trees, the replacement planting would not replace the ecological functions of the tree within the operational life of the Proposed Development, although the retention of dead and decaying wood would go some way to appease this.
- 8.5.27 There is no change to National Grid's commitment to provide management over a five year period of planting and ditch reinstatement.

Habitats that Cannot Be Reinstated In-situ

- 8.5.28 Habitats that cannot be reinstated in-situ apply as described in the submitted ES, and are again described as permanent losses.

Limits of Deviation

- 8.5.29 The Limits of Deviation do not change from those described in the submitted ES as a result of the Revised Construction Programme.

Potential Construction Effects Prior to Mitigation

- 8.5.30 The revised construction period spans 76 months from December 2015 to March 2022. This would include the removal of the construction accesses and associated

water crossings, as well as initial re-seeding/re-planting. Specific project components would be of shorter duration within this period and the timeframe for these is set out below as each potential effect is discussed.

- 8.5.31 As a result of phasing (set out in paragraphs 5.5.5 to 5.5.17 above) and National Grid's commitment to deliver select project components in a phased manner (the 400kV underground works through the Mendip Hills and Sandford substation), the majority of works will be less than four years (i.e. of short or medium-term) duration. The sole exception is the construction accesses, which will be in place for the revised 76 month construction period (worst-case). Phasing may be revised once a contractor has been appointed, although, as set out in 'Modifications within the Scheme Design', the construction period for each component does not increase, i.e. this chapter assesses the maximum duration. National Grid's commitment to de-string the existing 132kV F-Route prior to stringing the proposed 400kV line south of Mark to reduce potential bird collision risk remains in place; bird collision risk is assessed under section 8.5: Potential Operational Effects.
- 8.5.32 In the absence of mitigation, potential construction effects associated with the Revised Construction Programme are described in paragraph 8.5.57 of the submitted ES with the amendment of the following temporary effect:
- Temporary land take for construction compounds and laydown areas, accesses and undergrounding of new and existing lines: with the exception of construction accesses, these would remain in place only for as long as the development component that each serves. Construction accesses would remain in place for up to 76 months (the entire revised construction period, until construction and testing of the line is complete).
- 8.5.33 Removal of the existing 132kV lines and the preferred method for taking down pylons, once all the fittings have been removed, remain as presented in the submitted ES paragraph 8.5.60 as a result of the Revised Construction Programme.
- 8.5.34 Access for removal of existing lines (away from existing maintenance routes) would incur temporary disturbance associated with access by a 4x4 vehicle and a crane (with temporary track panels laid as appropriate), as previously described in the submitted ES. New accesses for other construction areas would incur disturbance during installation and removal (short-term) and land take for the duration of use (up to 76 months). As previously described, the proposed overhead line, permanent infrastructure and associated working areas will be served by local accesses that use existing roads and tracks wherever practicable (quantified in **Table 8.28** of the submitted ES). The proposed underground cables would be served by a single haul road running along the length of each cable section for the duration of construction. Culverts and bridge crossings are described further below. As detailed in the submitted ES, a 10mph speed limit along all construction areas/accesses would be imposed (**Volume 5.26.5**, Construction Traffic Management Plan).
- 8.5.35 The 304 watercourse crossings (i.e. culverts and ditches), including the types, size and duration of installation or removal, remain as presented at paragraph 8.5.62 of the submitted ES. However, the underground cables crossings would occur at three additional locations as the ditch realignment at Sandford substation would be

brought forward. This is addressed under the subheadings for relevant receptors below.

- 8.5.36 The location, dimensions and siting of Horizontal Directional Drilling (HDD) for the Revised Construction Programme remain as presented in the submitted ES.
- 8.5.37 Requirements for artificial lighting for the Revised Construction Programme remain as presented in the submitted ES.

Approach to Habitat Loss Calculations

- 8.5.38 There is no change to the habitat loss calculations, further to that presented in the submitted ES; the Revised Construction Programme makes no overall change to the spatial extent of the Proposed Development.

Designated Wildlife Sites

International Designated Sites

Severn Estuary SAC SPA Ramsar

- 8.5.39 In Section G (River Avon crossing), construction of the 400kV overhead line (within the timeframe for the 400kV overhead route north of Mendips) is programmed between Q2 2018 and Q2 2021 under the Revised Construction Programme. No adverse construction effects on the designated habitats are predicted at this location, as assessed in the submitted ES.
- 8.5.40 If construction works on either side of the Avon were scheduled during Winter, this could result in displacement of small numbers of qualifying species from Winter feeding or roosting grounds for the duration of work (medium-term). No change to the magnitude of potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.
- 8.5.41 In Section H, construction of the Hinkley Line Entries is programmed for Q3 2018 to Q1 2022 under the Revised Construction Programme. No change to the potential effects set out in the submitted ES is predicted; permanent loss or degradation of Winter feeding or roosting grounds is not anticipated to affect the integrity of the site and as such remains of Low magnitude. The likelihood of effect is certain/near certain.
- 8.5.42 In Section F, the Proposed Development (particularly the Alternative Route Option B) passes near Portbury Wharf where some waterbodies are used by wintering birds associated with the Severn Estuary; although outside the internationally designated areas, some SPA species occur here. Under the Revised Construction Programme, the works at Portbury are collectively programmed (including contingencies) across a maximum period of 54 months (Q2 2017 TO Q3 2021), covering four wintering seasons. Whilst this exceeds the four years previously assessed in the submitted ES, no additional wintering seasons would be incurred and the duration of effects remain medium-term. Furthermore, as the 54 months includes the entire construction or removal works associated with each of the F-Route, W-Route, G-Route and BW-Route, the works at Portbury are reasonably anticipated to be shorter, particularly as the earliest works (those on the W-Route) would initially be some distance south of Portbury. The construction accesses will however remain in place for up to 76 months, and in worst-case their removal might occur during an additional wintering season. However no change to the magnitude

of potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

- 8.5.43 Construction of the 400kV overhead line through Hallen Marsh forms part of the line works north of the Mendips (Q3 2018 to Q3 2021). No change to the magnitude of potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Severn Estuary and Somerset Levels & Moors Ramsar SAC SPA Ramsar

- 8.5.44 As in the submitted ES, the potential collision risk for qualifying bird species at this SAC SPA Ramsar site is an operational effect and is assessed in Section 8.5: Potential Operational Effects of the submitted ES.

North Somerset and Mendip Bat SAC

- 8.5.45 The potential effects associated with underground cable construction fall between Q1 2016 and Q3 2020, although these works would be delivered in a phased manner and as such, the overall duration of effect is not anticipated to exceed the four years assessed in the submitted ES. No change to the magnitude of potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.
- 8.5.46 Construction entailing the loss or degradation (specifically the removal or pruning of trees to accommodate the electrical safety clearance of the overhead line) of foraging habitats (trees, hedgerow and grassland habitats) may indirectly affect the designated bats. This particularly applies to the 400kV underground cable works through the Mendip Hills (Sections B and C), at Sandford substation (Section D) and to a lesser extent through 132kV underground cable routes (Sections D and E) where these fall within the SAC Consideration Zones.
- 8.5.47 The 400kV underground works and those at Sandford substation will be completed in a phased manner, thereby enabling reinstatement to be staggered and reducing the area of habitat loss at any one time. With the exception of the ditch at Sandford substation, working areas would be returned to the previous condition post-construction under the Tree Impact Plans. The 509m of ditch at Sandford substation will be recreated, ex situ, totalling 523m length. A time lag of 3-5 years as hedgerow planting establishes is predicted after each development component or component section has been completed. Site-specific landscape planting would be implemented at the permanent Sandford substation and the CSE compound south of the Mendip Hills, providing additional tree and hedgerow habitats in the long-term.
- 8.5.48 If Hedgerow removal within the SAC Consideration Zones would potentially disrupt bat flyways and, together with loss of pasture could reduce availability of bat foraging habitat. As stated in the submitted ES, hedgerow loss along the 400kV underground cable swathe, at Sandford substation and associated compounds total 4.6km. Loss of agricultural fields (pasture and arable) to active working areas would total 32.15ha, with a further 70.55ha (worst-case scenario) affected by creation of topsoil and subsoil piles, although the latter would be seeded following their creation. The areas of loss would be staggered, with no more than 3km (ca 35% of the total length) of the underground works would be cleared for active construction at any one time. No change to the magnitude of potential effects set

out in the submitted ES is predicted as a result of the Revised Construction Programme.

- 8.5.49 No change is predicted in the magnitude of severance effects that result from temporary hedgerow loss during the revised construction period (and permanent losses at the site of the Sandford substation), further to that presented in the submitted ES.

Mendip Limestone Grasslands SAC

- 8.5.50 Potential noise effects on this SAC are set out in the submitted ES. The potential effects associated with underground line construction fall between Q4 2015 and Q1 2022, although these works will be delivered in a phased manner and as such, the overall duration of effect is not anticipated to exceed the four years assessed in the submitted ES. Further, the area of habitat loss at any one time would be reduced as reinstatement is delivered across each section. No change to the potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

- 8.5.51 No changes to the assessment of potential air quality effects on the Mendip Limestone Grasslands SAC are predicted as a result of the Revised Construction Programme, further to those presented in the submitted ES.

- 8.5.52 Hedgerow removal and reinstatement associated with the 400kV underground works and Sandford substation will be staggered meaning that the effects would not be incurred across the total area at any one time. Accordingly, no change to the category of impact magnitude, significance or likelihood on the qualifying bats is predicted further to that presented in the submitted ES.

The Exmoor and Quantock Oakwoods SAC

- 8.5.53 No change to the potential effects set out in the submitted ES is predicted as the result of the Revised Construction Programme.

Chew Valley Lake SPA

- 8.5.54 No change to the potential effects set out in the submitted ES is predicted as the result of the Revised Construction Programme.

National Designated Sites

Bridgwater Bay SSSI

- 8.5.55 In addition to those effects discussed in relation to the Severn Estuary SPA Ramsar designation at Section H (Hinkley Line Entries), there is potential for effects on the ditch invertebrate community (for which the SSSI is designated). Culverts (i.e. habitat loss) associated with the construction accesses would be in place for up to 76 months, although disturbance associated with their installation and removal will remain as assessed in the submitted ES. As only a single culvert of a wet ditch is proposed within the designation, the effect remains of Low magnitude and Moderate adverse prior to mitigation. Accordingly, no change to the potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Huntspill River NNR

- 8.5.56 No change to the potential effects set out in the submitted ES is predicted as the result of the Revised Construction Programme.

Puxton Moor SSSI

- 8.5.57 No change to the potential effects set out in the submitted ES is predicted as the result of the Revised Construction Programme.

Biddle Street Yatton SSSI

- 8.5.58 No change in the effects identified in the submitted ES on this SSSI is predicted as a result of the Revised Construction Programme. The three watercourse crossings (two culverts and one bridge) proposed will be in place for up to 76 months under the Revised Construction Programme. However, it remains that no discernible effect on the integrity of the site is anticipated as a result of these three crossings and as such, the magnitude, significance and likelihood of effects remain as presented in the submitted ES.

Tickenham, Nailsea and Kenn Moors SSSI

- 8.5.59 The watercrossings required to install the new 400kV overhead line across the SSSI ditches remain as described in the submitted ES, as do the predicted effects at the time of installation and removal. The watercrossings facilitating the construction accesses will be in place for up to 76 months. Allowing 2-4 years for habitat to re-establish, this would result in habitat loss for a maximum period of up to 10½ years (126 months). Each affected stretch is of relatively short length. There is no change to the significance of effect in the submitted ES; prior to mitigation, potential adverse effects on Tickenham, Nailsea and Kenn Moors SSSI would be of Medium magnitude in the short term and therefore of **major adverse** significance. This is certain/near certain.

Severn Estuary SSSI

- 8.5.60 No change to the potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Other SSSIs

- 8.5.61 No change to the potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

County and Local Designated Sites

- 8.5.62 Potential effects on county and local wildlife designations have been reviewed to determine whether any additional effect arise as a result of the Revised Construction Programme and if this triggers a change in the category of impact magnitude of effect to a different category. Particular consideration has been given to sites at which watercourse crossings would be installed, habitats lost to the access roads, and/or disturbance of fauna sensitive to construction traffic. No change in the category of magnitude has been identified as a result of the Revised Construction Programme. Therefore, prior to mitigation, the Proposed Development (Preferred Route Option A) would result in potential effects on county and local designated sites as follows:

- No High magnitude effects on County or Local sites;

- Medium magnitude effects on five sites (all of County value and described under the subheadings below);
- Low magnitude effects on 33 sites (21 County value, 11 Local value); and
- Neutral effects on 14 sites (nine County value, five Local value).

8.5.63 Prior to mitigation, the Alternative Route Option B would result in the following effects on county and local wildlife designations:

- No High magnitude effects on County or Local sites;
- Medium magnitude effects on five sites (all County value);
- Low magnitude effects on 31 sites (20 County value, ten Local value); and
- Neutral effects on 14 sites (nine County value, five Local value).

Nailsea and Tickenham Moors SNCI

8.5.64 Within Nailsea and Tickenham Moors SNCI, there would be small-scale permanent losses to pylon feet (<0.01ha) and temporary loss of 19.26ha (2.12% of the SNCI) grassland habitats as a result of the Revised Construction Programme. 1.14km of hedge loss and 0.13ha of tree loss (based on canopy spread) would also result. Each of the temporarily affected habitats will be reinstated in the latter stages of the Revised Construction Programme. The integrity of the SNCI is not anticipated to be affected in the long-term and as such no change to the potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme. Effects resulting from watercourse crossing have already been assessed under the SSSI designation.

Tickenham Hill-Cadbury Camp-Chummock Wood Complex SNCI

8.5.65 As detailed in the submitted ES permanent habitat modifications through canopy removal (not affecting soils) of 0.36ha would occur at Tickenham Hill-Cadbury Camp-Chummock Wood Complex SNCI. Whilst this represents a relatively small proportionate loss across the SNCI, the Proposed Development bisects the various components of the SNCI. The proposed overhead line follows a similar alignment to the existing F-Route (where electrical clearance zones already apply), as does the proposed underground W-Route to the existing overhead W-Route (restriction on planting deep-rooting species directly above the cables would be introduced, although the overhead electrical clearance zone will no longer apply). There would also be temporary losses of 66m of important species-rich hedgerow and 0.76ha of grassland, which will be reinstated during the latter stages of the revised construction period. No change to the magnitude of potential effects set out in the submitted ES is predicted as the result of the Revised Construction Programme.

Portbury Wharf Nature Reserve SNCI and Portbury Wharf SNCI

8.5.66 The Portbury Wharf SNCI and the Portbury Wharf Nature Reserve SNCI Avon Wildlife Trust Reserve would both be subject to landtake and disturbance as a result of the works to underground the existing lines under Preferred Route Option A. If the Alternative Route Option B were chosen, additional semi-improved neutral and marshy grasslands, hedgerows and trees would be lost. As a result of the Revised Construction Programme, with the exception of access routes, the collective works at Portbury are reasonably assessed as four years in duration, in

line with the submitted ES. Under the Revised Construction Programme, the construction accesses will remain in place for up to 76 months, thereby delaying habitat reinstatement specifically associated with the access routes during the latter stages of the revised construction period. The significance of effect remains as stated in the submitted ES. The likelihood of effect is however revised to probable to reflect the assumed collective duration of the Revised Construction Programme.

Gloucester Road Railway Sidings SNCI

- 8.5.67 No change to the potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Habitats and Flora

Woodlands and Trees

- 8.5.68 No change to the spatial extent of permanent (removal or modification) or temporary (replanted in situ) effects on woodlands or trees is identified as a result of the Revised Construction Programme, further to that set out in the submitted ES. Similarly, there is no change to the extent of reinstatement or ex situ replacement planting proposed as a result of the Revised Construction Programme.
- 8.5.69 Losses to the 400kV underground works through the Mendip Hills and at Sandford substation during the Revised Construction Programme will be staggered as these development components are delivered in a phased manner. The delivery of replacement planting would also be staggered (i.e. some sections brought forward) as each phase is completed. This would reduce the area of loss at any one time to the woodland resource and/or tree resource as a whole.
- 8.5.70 Under the Revised Construction Programme replanting along the construction accesses will be delayed until the end of the 76 months construction period in contrast to the four years previously assessed. Potential effects of habitat loss and fragmentation are therefore extended.
- 8.5.71 As set out in the submitted ES, 0.89ha commercial orchard will be lost at the Sandford substation. The trees lost are young specimens within rabbit guards. Therefore, whilst the loss is listed as permanent, the compensatory habitat provided in the Site-Specific Planting Plan is predicted to attain similar structure and functionality in the following planting.
- 8.5.72 Losses of dense scrub have been calculated from Phase 1 Habitat survey data alone. Under Preferred Route Option A, the 0.22ha permanent loss and 4.89ha temporary loss (4.30ha for the Alternative Route Option B) are relatively small in absolute terms and typically occur as small or peripheral areas of this habitat type. Similarly, temporary loss of continuous bracken forms a small area of 0.11ha. These habitat types are anticipated to re-establish relatively readily following cessation of works. Whilst losses specifically to the construction accesses would occur over an extended construction period under the Revised Construction Programme, this is not considered to pose a change in the category of magnitude or significance identified in the submitted ES.

Hedgerows

- 8.5.73 The lengths of each type of hedgerow lost or reinstated remain as presented in the submitted ES.

- 8.5.74 Of the temporarily affected hedgerows, reinstatement of those along the construction accesses will be delayed under the revised construction period – up to 76 months in duration in contrast to the four years previously assessed.
- 8.5.75 **Table 8.28** of the submitted ES sets out the permanent and temporary hedgerow losses that would result from both Preferred and Alternative Options of the Proposed Development. This provides a breakdown of loss by hedgerow type and remains unchanged as a result of the Revised Construction Programme.
- 8.5.76 As a result of the Revised Construction Programme being implemented, losses to the 400kV underground works through the Mendip Hills and at Sandford substation will be staggered and so too would reinstatement. Through the Mendips, a maximum length of 3km would be removed to facilitate works at any one time. Hedgerow reinstatement would be carried out once works within a section are complete (within 12 months to allow for the appropriate planting season), allowing a rolling programme of removal and reinstatement which reduces both the area of loss (i.e. ca 35% of the total loss previously assessed) and also the duration of loss.
- 8.5.77 Taking account of the reinstatement and the site-specific landscaping, the Proposed Development would provide a net gain in hedgerow length across the Order Limits. However, the interval between removal and full re-establishment may be up to 11½ years (138 months) for those along the construction accesses (i.e. up to 76 months during the revised construction period when the hedges are removed, followed by 3-5 years (36-60 months) for re-establishment to a hedgerow height of 1.5m. Outside the footprint of access roads, hedgerows would be replanted on completion of each development component (i.e. within a maximum construction period of four years as assessed in the submitted ES). Hedgerows over 3m high will take longer to establish so it is anticipated that most ecological functions would be in place some ten years from re-planting.
- 8.5.78 Outside of the underground line swathes and proposed permanent infrastructure, the lengths of individual hedgerows lost to access roads would typically be no greater than 15m wide (unless these cross the route obliquely) and would be replanted in-situ. Hedgerows may also be trimmed to facilitate the 'drop and drag' removal of the existing cables, and although this would be localised it is not anticipated to sever connectivity. Collectively, the loss of numerous short stretches of hedgerow for the duration of construction is not anticipated to permanently affect the integrity of the network as a whole. The extended duration of effect (in comparison to the four year construction period assessed in the submitted ES) does not affect any other parameter of impact magnitude, such as reversibility, frequency or spatial extent. No change to the potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme; effect on hedgerows less than 3m high would remain within the category of Low magnitude and of **minor adverse** significance, and the longer-term effect on hedgerows over 3m high would remain within the category of Medium magnitude and **moderate adverse** significance. The likelihood of effect is certain/near certain.
- 8.5.79 Within the underground swathes the lengths of hedgerow removed would be greater – typically up to 45m lengths in the 400kV cable swathe and 35m in the 132kV cable swathe. Losses of greater length may also occur where a hedgerow is crossed obliquely by the Proposed Development. Through the 400kV underground swathe (as described above) losses would be staggered, thereby reducing the area

affected at any one time and bringing the replanting process forward in phases. No change to the potential effects set out in the submitted ES is predicted; whilst this would lessen the effect on the hedgerow network as a whole, the category of magnitude and significance identified in the submitted ES remains as Medium magnitude and therefore of **moderate adverse** significance as a result of the Revised Construction Programme. The likelihood of effect is certain/near certain.

Wetland Habitats

- 8.5.80 The number, size and form of watercourse crossings remain as described in the submitted ES as a result of the Revised Construction Programme. The sole change is that crossings along the construction accesses will remain in place for up to 76 months rather than the four assessed in the submitted ES. Potential effects associated with installation and removal of all watercourse crossings remain as previously described, as does the re-establishment of bank and in-channel vegetation which is anticipated within 2-4 years (24-48 months).
- 8.5.81 All of the temporary watercourse crossings will be removed and affected habitat reinstated during the latter phases of the Revised Construction Programme. Each will each incur lengths of habitat loss, usually between 9m and 17m. The habitat loss comprises:
- the actual crossing structure (culvert or bridge, including headwall if required) which would be in place for up to 76 months to facilitate the construction access; and
 - the dry working areas at each end of the crossing structure required only during installation and removal (1-2 weeks).
 -
- 8.5.82 In addition to the watercourse crossings, ditches through the underground swathes would be affected by cable ducts and associated dry working areas. Across the 400kV swathe, 25 stretches of ditch would be affected in this way. As works would be delivered in a phased manner, ca 35% of the area previously assessed would be affected at any one time, for a period of approximately 20 months. Through the 132kV underground swathes, 14 ditches would be affected. The realigned ditch at Sandford substation would also be affected. The habitat loss comprises:
- the crossing structure (as above) which would be in place for up to 76 months to facilitate the construction access (note that this element does not apply to the cables crossing the realigned ditch at Sandford);
 - the underground cable duct(s) laid below the level of the watercourse, alongside the crossing (up to 1-2 weeks per duct).
 - the dry working areas required only during installation and removal (1-2 weeks each side of the crossing and duct(s)).
 -
- 8.5.83 In total (for Preferred Route Option A), there would be 2.07km open ditch affected by the watercourse crossing structures (up to 76 months) and underground cable ducts, and 2.19km additionally affected during the short-term installation and removal (1-2 weeks). Figures for Alternative Route Option B are 2.1km and 2.21km respectively. In addition there would also be impact on running watercourses, consisting of 0.12km of short-term construction activity and 0.13km of medium-term construction activity totalling 0.27km.

- 8.5.84 The extended duration of effect associated with the Revised Construction Programme does not affect any other parameter of impact magnitude, such as reversibility, frequency or spatial extent. Therefore, the temporary effect on the watercourse network as a result of watercourse crossings and cable ducts would remain as Low magnitude and of **minor adverse** significance prior to mitigation. The likelihood of effect is certain/near certain. For SSSI ditches, the effect is assessed in terms under 'Designated Wildlife Sites' above, taking into account the elevated value. Potential effects on protected and priority species are described under the relevant fauna headings below.
- 8.5.85 The Proposed Development would incur less than 1ha swamp habitat during construction, largely at Portbury but also small areas at Woolavington Level, if this cannot be entirely avoided at detailed design. This would be reinstated on completion. The works at the Reserve, including 132kV removal and undergrounding, are collectively programmed across a maximum period of 54 months under the Revised Construction Programme (Q2 2017 to Q3 2021), but as this includes the entire period programmed for works on each of these lines, the collective works are anticipated to be shorter and reasonably remain assessed as four years in duration, in line with the submitted ES. Given the scale of habitat affected, this is not predicted to increase the magnitude of effect on the swamp resource and as such, the effect remains **not significant**. The likelihood of effect is probable to reflect the assumed collective duration of construction.

Grassland Habitats

Calcareous Grassland

- 8.5.86 No change to the magnitude, significance or likelihood of potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Permanent Grassland Losses

- 8.5.87 No change to the magnitude, significance or likelihood of potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Temporary Loss of Grasslands

- 8.5.88 Areas of greatest effect would occur across the 400kV underground swathe (through the Mendip Hills) and W-Route underground swathe (across Tickenham and Nailsea Moors, and Tickenham Ridge). As described for hedgerows above, the 400kV underground works through the Mendip Hills would be delivered in a phased manner, meaning that the area and duration of loss at any one time would be reduced. It is recognised that the loss of grassland to the construction accesses would however remain for the revised construction period of up to 76 months. The magnitude and significance of effects identified for grassland habitats of Local and Neighbourhood value would remain as stated in the submitted ES.
- 8.5.89 Changes to these grassland types of Local value (i.e. semi-improved grasslands, marshy grasslands and improved grasslands derived from floodplain grazing marsh) is anticipated to be of Medium magnitude and of **minor adverse** significance as a result of the Revised Construction Programme; this is as stated in the submitted ES.
- 8.5.90 The effect of changes to improved grasslands (neighbourhood value) is Low or Neutral; and therefore **not significant** as a result of the Revised Construction

Programme; this is as stated in the submitted ES. The likelihood of effect is probable.

Other Habitat Types

- 8.5.91 No change to the potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Summary of Habitat Losses

- 8.5.92 Areas and lengths of permanent and temporary loss are as presented in the submitted ES.

Birds

- 8.5.93 Disturbance effects are temporary and would be experienced for the duration of the revised construction period. Disturbance effects would usually be short-term, affecting one season of bird activity at a time. Habitat losses are mostly temporary, from the start of construction at any given locale until reinstated habitats are established; few areas would experience permanent loss. With the exception of construction accesses, all of the development components, or component sections, would individually be completed within four years as assessed in the submitted ES. Although temporary, across the footprint of access roads grassland habitats will be lacking for up to up to 76 months (for construction) and 12-36 months for successful re-establishment and hedgerows for up to 138 months for construction and 36-60 months for successful re-establishment, longer for those over 3m).

Displacement and Disturbance

- 8.5.94 The Revised Construction Programme is not predicted to incur any additional constraint on the rate of recolonisation by birds following completion of works. Particular consideration has been given to the collective works proposed at Portbury and potential displacement and disturbance effects on wintering birds at the pools, over and above the current maintenance activity at Portbury substation. No change in the magnitude or significance of disturbance or displacement effects on birds is identified as a result of the Revised Construction Programme being implemented.

Habitat Loss

- 8.5.95 The temporary effect on farmland birds of construction-stage hedgerow removal in the undergrounding corridor under the Revised Construction Programme would persist for up to 11½ years (138 months) taking into consideration the period for hedgerow re-establishment (more for hedgerows over 3m). The Revised Construction Programme is not predicted to incur any additional constraint on the rate of re-colonisation once habitat has been reinstated. Habitat loss remains as set out in the submitted ES as a result of the Revised Construction Programme.

Bats

- 8.5.96 As set out in the submitted ES, during the latter stage of works, hedgerows will be reinstated under the Hedgerow Replacement Planting Plan and grassland will be re-sown as part of the broad commitment to re-instate habitats to their former condition in the latter stages of construction. Severance of commuting habitat as a result of habitat loss applies to the bat assemblage as a whole but horseshoe bats

are particularly vulnerable. Fragmentation leading to loss of wider landscape connectivity may potentially affect large numbers of commuting or migrating bats and/or those moving between SAC sites.

- 8.5.97 The duration of loss of hedgerows and grassland habitat to the 400kV underground works through the Mendip Hills, and to the works at Sandford substation would increase as a result of the Revised Construction Programme. These two development components would therefore be delivered in a phased manner. Through the 400kV underground works, the area of habitat loss at any one time and the duration of loss would be reduced. At Sandford substation, areas of advance gap planting, native structure planting, native hedgerow and orchard planting would be brought forward to avoid complete loss of habitats for the entire duration of works here (33 months, Q1 2018 to Q3 2020). However, the construction accesses will remain in place for up to 76 months, incurring two additional bat active seasons. The Revised Construction Programme is not predicted to incur any additional constraint on the speed or rapidity of re-colonisation once habitat has been reinstated, further to that assessed in the submitted ES. Nevertheless, the category of magnitude of the effects associated with habitat loss remains as High across the underground swathes and at Sandford substation and Low across construction accesses prior to mitigation. The magnitude of effects remain as stated in the submitted ES, with significance predicted to be **minor adverse**, ranging up to **major adverse** depending on the value of the location for bats and the type of works. The likelihood of effect is probable.

Hazel Dormouse

- 8.5.98 Potential effects on dormice are identified where the 400kV overhead line passes through Tickenham Ridge and the 400kV underground line through the Mendip Hills. Throughout the Proposed Development, the construction accesses will remain for up to 76 months as a result of the Revised Construction Programme, in contrast to the four previously assessed, although the spatial extent of habitats impacted would remain as presented in the submitted ES. Lengths of hedgerow loss to the accesses remain as 15m in length, and 45m through the 400kV underground swathe. The 400kV underground works would be delivered in a phased manner, thereby reducing the area and duration of habitat affected at any one time, and subsequent habitat reinstatement brought forward accordingly. No change to the magnitude, significance or likelihood of potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Water Vole

- 8.5.99 The Revised Construction Programme is not predicted to incur any additional constraint on the speed or rapidity of re-colonisation once habitat has been reinstated. As described for 'Habitats and Flora' above, the Proposed Development entails construction phase works in various watercourses:
- 304 watercourse crossings for construction access, 20 of which are existing crossings to be replaced (to accommodate the requisite construction loads) and would remain in place following works;
 - Installation of cable duct crossings through the 400kV and 132kV underground swathes (at 25 and 14 watercourses respectively) and the realigned ditch at Sandford substation;

- At the River Axe, a temporary bailey bridge would be installed for construction access; however two options are included within the DCO for the cable crossing: via a permanent cable bridge or by Horizontal Direct Drilling (HDD) under the river. The final design is dependent upon detailed cable design following appointment of a contractor. Both options have been considered
- At Towerhead Brook, a temporary bailey bridge would be installed for construction access; the cables would cross the river embedded in the proposed permanent bridge and not be HDD or ducted under it, It is not yet confirmed whether the permanent road and cable crossing of Towerhead Brook would be by open span bridge or by box culvert. Both options have been assessed.
- two further HDD crossings (the Old Lox Yeo and the Lox Yeo River) are proposed for the 400kV underground cables and two for the 132kV W-Route (SSSI ditches/Tickenham Boundary Rhyne/Parish Brook, and the Land Yeo) to avoid loss of watercourse habitats.

8.5.100 Whilst each of the watercourse crossing points is relatively narrow, multiple crossings are required, particularly in areas subject to undergrounding. As reported earlier in regard to watercourse crossings, there would be temporary loss totalling ca 2.19km watercourse across the entire ditch network for the duration of construction (up to 76 months). This is an overestimation spatially as some crossings would use bridges (which avoid/minimise loss of in-channel habitat) and some would replace existing culverts (or bridges). It is also an overestimation temporally as not all crossings would be installed at the outset of construction but all would be removed, and habitat reinstatement completed, within the revised construction period. Loss and disturbance of bankside habitats will be minimised as far as possible during removal of the existing culvert, although it is recognised that excavation may be required. During the de-watered installation period of any watercourse crossing, short-term habitat fragmentation will occur but once installed, water flow will return and the movement of water vole may continue unimpeded. Following removal of the culverts, re-colonisation of bankside habitat under the Revised Construction Programme is not predicted to incur any additional constraint on the speed or rapidity of re-colonisation once habitat has been reinstated.

8.5.101 The Somerset Levels supports a strong population of water vole but nevertheless, the species is not resilient to stochastic change. As a result of the high winter flooding in 2013/2014, availability of suitable burrowing habitat will likely be reduced therefore exacerbating the vulnerability of the local population. However, the Levels is a highly managed agricultural ditch system therefore the water vole population will be accustomed to habitat disturbance, furthermore much of the flooding occurred south of Bridgwater. The effect on water vole by the watercourse crossings and cable duct installation remains, in both cases, of High magnitude. The significance and likelihood of effects therefore remains as presented in the submitted ES as a result of the Revised Construction Programme; the effect on water vole by the medium-term culvert crossings and by the short-term cable duct installation is, in both cases of High magnitude and therefore of **major adverse** significance. The effect is certain/near certain.

Otter

8.5.102 As described for 'Habitats and Flora' above, the Proposed Development entails construction of two optional clear-span bridges and five (and a sixth optional) HDD

crossings. 304 watercourse crossings are proposed (including 20 to replace existing crossings) which would incur a loss totalling 2.91km of ditch for the duration of works (up to 76 months as a result of the Revised Construction Programme) and an additional 1.22km to the 2m wide dry-working area. The installation of cable duct crossings through the 400kV and 132kV underground swathes would incur a loss of 800m through the 400kV underground swathe (across 25 watercourses), 394m through the 132kV swathe (14 watercourses) and 128m at Sandford substation (single realigned ditch) for the duration of works.

- 8.5.103 No change to the potential effects on otter set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Badger

- 8.5.104 Badgers are particularly sensitive to disturbance during the breeding season (December to June inclusive) and works within this period have potential to disturb badgers with young. However works near setts would be governed by legal restrictions preventing unlawful disturbance, so the effect to be assessed is disturbance rather than loss (abandonment) of an active sett. The overall Revised Construction Programme extends to 76 months, although as a result of phasing the works, the construction period in the majority of cases will be no longer than the four years assessed in the submitted ES. The sole exception is the construction accesses which will remain in place for up to 76 months (i.e. two breeding seasons additional to those assessed in the submitted ES). During this time, disturbance effects associated with construction traffic may continue, albeit at a lower intensity (same number of vehicle movements over an extended period). The significance of effect remain as stated in the submitted ES; in the absence of mitigation, disturbance affecting active setts in any given breeding season would be of Low magnitude and **minor adverse** significance. The likelihood of effect is certain/near certain.
- 8.5.105 Smaller areas of loss would also occur where construction accesses or working areas overlie foraging habitat. These typically fall within wider, extensive areas of suitable habitat; hence, the effect of habitat loss would be proportionately less. Working areas would be reinstated to pre-construction conditions following works, with the exception of Sandford substation and the CSE compounds where Site-Specific Replacement Planting Plans are proposed. By delivering the 400kV underground works in a phased manner, the area and duration of effect prior to reinstatement is reduced. The construction accesses will however remain in place for up to 76 months incurring loss and severance of habitat connectivity for two years in addition to that assessed in the submitted ES. As previously set out in paragraph 8.5.260 of the submitted ES, this effect would be exacerbated where the design of fencing along the construction haul road may impede movement and does not allow space for badgers to pass beneath or where substrate of the road/track surface prevent badger digging underneath the fence, thereby impeding their movement. Loss of foraging habitat across the Order Limits is predicted to be of Low magnitude on the badger population and therefore not Significant significance prior to mitigation. The significance of effect remains as stated in the submitted ES; the associated severance of habitat as a result of insensitive fencing design is predicted to be of Medium magnitude and therefore of **minor adverse** significance. The likelihood of these effects is probable.

Brown Hare

- 8.5.106 No change to the potential effects set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Hedgehog

- 8.5.107 Where the Proposed Development directly affects habitat suitable to support hedgehog there is potential for killing or injury, particularly during hibernation. The construction accesses will remain in place for up to 76 months (two additional hibernation periods to that assessed in the submitted ES). Habitat loss and fragmentation may occur for the duration of works, particularly in respect of hedgerow removal, until reinstated habitats establish. No change to the potential effects on hedgehog set out in the submitted ES is predicted as a result of the Revised Construction Programme.

Amphibians

- 8.5.108 As set out in the Draft licence submitted to NE, permanent terrestrial habitat losses across the entire Order Limits total <0.01ha within 50m, <0.01ha within 250m and 2.01ha within 500m of GCN ponds. Temporary losses total 7.35ha within 50m, 32.08ha within 250m and 54.83ha within 500m of GCN ponds. Within this, the majority of temporary losses are up to four years in duration, although the construction access would remain in place for up to 76 months. As a result of terrestrial loss, some habitat fragmentation for GCN moving across the surrounding landscape would occur during the construction period and death or injury may result without mitigation. This is principally anticipated to occur in respect of underground line working and at Sandford where there are several GCN ponds. The loss and fragmentation, of habitat used by GCN, would also affect common toad, frog and the small newt species. No change to the potential effects on GCN set out in the submitted ES as a result of the Revised Construction Programme.

Reptiles

- 8.5.109 Construction accesses will remain in place for up to 76 months, in contrast to the assessed four years in the submitted ES, but as stated in paragraph 8.5.291 the wider construction access routes are not anticipated to pose a significant barrier to dispersing reptiles. As such, the magnitude, significance and likelihood of effects on reptiles remain as presented in the submitted ES as a result of the Revised Construction Programme.

Ditch Invertebrates and Flora

- 8.5.110 Habitat losses at watercourse crossings are described above, under 'Habitats and Flora'. As a result of the Revised Construction Programme, the effect would principally occur as a result of in-channel works at the time of crossing installation or removal, or cable duct installation. Once installed, whilst flow would return through the culvert, a discrete stretch of habitat loss to culverts would remain until the existing 'natural' profile is re-instated. Culverts will remain in place for up to 76 months whilst construction accesses are in place. Following works, vegetation would colonise across areas of reinstated bank substrate (2-4 years (24 -48 months)). The duration of loss may therefore be up to 10½ years (126 months) before fully re-establishing. Although numerous throughout the entire Proposed

Development, the affected lengths are relatively short and habitat losses localised. Collectively, the predicted localised effect of short sections of habitat loss remains as presented in the submitted ES as a result of the Revised Construction Programme.

Fish

- 8.5.111 Loss of ditch habitats as a result of watercourse crossings are set out under 'Habitats and Flora' above. The loss of short stretches of natural channel habitat for the Revised Construction Programme is not anticipated to have any discernible effect on fish, although there would be short-term fragmentation during installation and removal.
- 8.5.112 All ditches would be reinstated on completion of works; bank and in-channel vegetation is anticipated to re-establish within 2-4 years (24-48 months). The effect of fragmentation (of bankside vegetation and substrate), at numerous discrete and relatively short-length locations whilst culverts remain in place to facilitate construction access, is predicted to be of Low magnitude and therefore of **minor adverse** significance prior to mitigation. The likelihood of effect is probable. The significance of effect would remain as stated in the submitted ES.

Summary Regarding Habitats and Species of Principal Importance for Biodiversity, Comparing Preferred and Alternative Routes

- 8.5.113 No change in the significance of effects on ecological receptors has been identified as a result of the Revised Construction Programme.

Potential Operational Effects Prior to Mitigation

- 8.5.114 Potential operational effects remain as presented in Chapter 8 of the submitted ES as a result of the Revised Construction Programme, albeit that the operation period would commence in Q2 2022 rather than Q3 2019. Habitats sown and planted in the latter stages of construction would continue to establish and naturally colonise as set out in the submitted ES. The spring rather than autumn start date of operation does not affect the assessment of impacts over the ~80 year lifespan of the project.

Potential Decommissioning Effects Prior to Mitigation

- 8.5.115 Potential decommissioning effects remain as presented in the submitted ES as a result of the Revised Construction Programme.

Consideration of Climate Change Effects on Biodiversity

- 8.5.116 The effects of climate change are considered beyond 20 years. The Revised Construction Programme, including all habitat reinstatement, ends in March 2022.
- 8.5.117 Reinstated habitats will take time to establish ecological functionality, and those which take at least 20 years are to be considered in respect of climate change. Habitat types with the longest timeframe for this are trees, woodland and hedgerows:
- Submitted ES paragraph 1.5.137 recognises that it may take several decades for the ecological functionality of trees and woodland to be fully

restored. As in the submitted ES, these therefore require consideration in light of climate change.

- Submitted ES paragraph 1.5.150 states that that whilst hedgerows are typically predicted to re-establish in 3-5 years (in line with the landscape assessment of hedgerows to a height of 1.5m), hedgerows over 3m high will take longer; so it is anticipated that most ecological functions would be in place some ten years from re-planting. This applies to reinstated hedgerows and to those that represent a net gain (20.16km for the Preferred Route Option A as listed in submitted ES paragraph 8.8.9). Taking into account the revised construction period, these are predicted to have regained functionality prior to the timeframe that climate change is considered.

8.5.118 Potential effects of the Proposed Development which are relevant to consider in respect of climate change therefore include losses of woodland and trees, permanent construction effects and operational effects. The assessment therefore remains as presented in the submitted ES as a result of the Revised Construction Programme.

8.6 Inter-relationship of Effects

Landscape and Views

8.6.1 As presented in the submitted ES, **Volumes 5.6.1 and 5.7.1** and this chapter has been written with due cross-consideration.

Geological Conservation

8.6.2 No significant change in potential effects on geological conservation as a result of the Revised Construction Programme is predicted in **Volume 5.9.1**. The inter-relationship of effects therefore applies as set out in the submitted ES.

Hydrology

8.6.3 No significant change in potential effects on hydrology as a result of the Revised Construction Programme is predicted in **Volume 5.10.1**. The inter-relationship of effects therefore applies as set out in the submitted ES.

Historic Environment

8.6.4 The Revised Construction Programme proposes no change to the overall footprint of the Proposed Development, nor the proposed intrusive ground investigations. The mitigation, and where appropriate licence requirements, would apply as set out in the submitted ES.

Air Quality and Emissions

8.6.5 No significant change in potential effects on air quality as a result of the Revised Construction Programme is predicted in **Volume 5.13.1**. The inter-relationship of effects therefore applies as set out in the submitted ES.

Noise

- 8.6.6 As set out in the submitted ES, noise data collected for **Volume 5.14.1** has been used to assess potential construction noise effects on ecological receptors. Operational noise is unlikely to have a significant effect on species.

EMF

- 8.6.7 EMF relates to operational effects which, with the exception of a delayed start date, remain unchanged. Potential effects of EMF therefore apply as set out in the submitted ES.

8.7 Mitigation**Mitigation of Construction Phase Effects*****Designated Wildlife Sites***

- 8.7.1 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Habitats and Flora**Trees**

- 8.7.2 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Hedgerows

- 8.7.3 Taking into consideration the in-situ hedgerow replacement and the landscape schemes, ca 41.92km of new hedge under the Preferred Route Option A would be planted to replace the 16.81km hedgerows currently lost to the development and an additional 2.99km that could be affected to be determined at detailed design. Hedgerow lengths for the Alternative Route Option B vary slightly with 42.45km replanted to replace 17.27km due for removal under current proposals and an additional 2.37km that could be affected at detailed design. An additional 11.12km of hedgerow gaps would be filled. This mitigation is certain to be delivered within the Order Limits, and in the long-term is predicted to fully mitigate the temporary adverse effects identified. Mitigation would be effective for fauna within 12½ years (150 months) of the start of construction (76 months' construction, 3-5 years' establishment (36-60 months), more for those hedgerows over 3m). The likelihood of effect is certain.

Watercourse Crossings

- 8.7.4 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Arisings and Soil Mounds

- 8.7.5 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Non-Native Invasive Flora and Diseases

- 8.7.6 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Birds

Mitigation of Impacts on Nesting Birds

- 8.7.7 The approach to mitigation required as a result of the Revised Construction Programme would remain as presented in the submitted ES.

Avoidance and Mitigation of Habitat Loss

- 8.7.8 If the Alternative Route Option B is selected, disturbance and/or displacement to Wintering birds would be minimised through avoiding the period September to April to carry out works within 250m of the pools at Portbury Wharf where possible. Works would still avoid the period February to March under the Revised Construction Programme. This is the period when Wintering birds are especially sensitive to losing valuable feeding time due to disturbance.

Bats

- 8.7.9 The approach to mitigation of potential impacts on roosts, foraging and commuting habitat and in respect of artificial lighting, required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Hazel Dormouse

- 8.7.10 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Water Vole

- 8.7.11 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Otter

- 8.7.12 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Badger

- 8.7.13 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Brown Hare

- 8.7.14 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Hedgehog

- 8.7.15 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Amphibians

- 8.7.16 The approach to mitigation required as a result of the Revised Construction Programme is remains as presented in the submitted ES.

Reptiles

- 8.7.17 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Ditch Invertebrates and Flora

- 8.7.18 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Fish

- 8.7.19 The approach to mitigation required as a result of the Revised Construction Programme remains as presented in the submitted ES.

Monitoring of Construction-phase mitigation

- 8.7.20 The approach to monitoring as a result of the Revised Construction Programme remains as presented in the submitted ES.

Mitigation of Operational Phase Effects

- 8.7.21 No change to mitigation of operational effects is proposed, further to that presented in the submitted ES as a result of the Revised Construction Programme.

Mitigation During Decommissioning

- 8.7.22 No change to mitigation of decommissioning effects is proposed, further to that presented in the submitted ES as a result of the Revised Construction Programme

8.8 Residual Effects

- 8.8.1 The Revised Construction Programme has no material effect on predicted residual ecological effects, further to that presented in the submitted ES (**Volume 5.8.1, section 8.8**).

8.9 Additional Mitigation Measures**Off-site Planting and Enhancement Scheme (OSPES)**

- 8.9.1 The OSPES (**Volume 5.25.1**) and supporting Schedule of Enhancements (**Volume 5.25.2, Appendix 25B**), Landscape Specification (**Volume 5.25.2, Appendix 25D**), and Guide Management Operations (**Volume 5.25.2, Appendix 25E**) all remain unchanged, as does National Grid's commitment to funding this quantum of planting. As previously, the timeframe for delivery is dependent on implementation by the Local Authorities and landowners; the OSPES can begin to be implemented

before some habitat is lost, because the great majority of the proposals it contains are outside of the footprint of the construction works for the Proposed Development.

- ***Overall Habitat Creation under OSPES***

- 8.9.2 This remains as presented in the submitted ES as a result of the Revised Construction Programme.

OSPES Works in and Adjacent Designated Wildlife Sites

- 8.9.3 This remains as presented in the submitted ES as a result of the Revised Construction Programme.

Lox Yeo River SNCI

- 8.9.4 This remains as presented in the submitted ES as a result of the Revised Construction Programme; once planting becomes established, this is anticipated to form an effect of Medium magnitude and of **moderate beneficial** significance the in the long-term.

Hallen Marsh

- 8.9.5 This remains as presented in the submitted ES as a result of the Revised Construction Programme.

OSPES Benefits to Habitats and Flora

- 8.9.6 This remains as presented in the submitted ES as a result of the Revised Construction Programme; depending on the extent of additional planting and habitat creation, which varies from place to place, the long-term effect could range from Neutral magnitude (**not significant**) to a Low magnitude beneficial effect on a series of County level receptors, the latter representing **minor beneficial** significance.

Compensatory Offsetting

Local Wildlife Sites Offsetting

- 8.9.7 No change to the provision of LWS offsetting is proposed as a result of the Revised Construction Programme, further to that set out in the submitted ES.

Tilting Weir at Tickenham, Nailsea & Kenn Moors SSSI

- 8.9.8 No change to the installation of a tilting weir is proposed as a result of the Revised Construction Programme, further to that set out in the submitted ES.

Habitat Enhancement at Hallen Marsh

- 8.9.9 No change to the habitat enhancement at Hallen Marsh or the commitment of funds (via an agreement with Bristol City Council for the Severnside Offsetting Scheme) to allow for two year's bird collision monitoring set out in the submitted ES is proposed as a result of the Revised Construction Programme.

Bird Tagging Study

- 8.9.10 No change to the bird-tagging study is proposed, further to that set out in the submitted ES as a result of the Revised Construction Programme.
- **Consideration of the Water Framework Directive**
- 8.9.11 **Volume 5.10.1** identified no residual significant adverse effect on water quality (which correlates to the ‘water chemistry’ parameters of the WFD). Similarly, no significant effect on flow rates was concluded through the Flood Risk Assessments (**Volume 5.23.9**).
- 8.9.12 Across the networks of ditches, the installation of culvert and bridge water crossings would incur loss of the natural bank morphology in the medium-term whilst the culverts remain in place (up to 76 months). Whilst numerous, the number of culvert and bridge crossings are individually short, requiring bank and channel modifications of lengths of up to 17m (taking into consideration headwalls and working areas). The 400kV and 132kV underground cable swathes require lengths of typically 45m and 35m respectively, although these greater lengths are temporary during the period of cable duct installation (1-2 weeks per duct, i.e. 2-4 weeks for the 400kV underground route, less for the 132kV). Culvert lengths themselves would be between 6m and 9m, buried below the level of the watercourse. There is also a time lag post-removal of culverts whilst bank and channel vegetation re-establishes (assessed as 2-4 years (24- 48 months)). Collectively the modifications account for a small proportion of the total network.
- 8.9.13 As set out in submitted paragraph 8.10.11, in the absence of any significant residual permanent effect on these aquatic receptors, no adverse impact on WFD status or objectives is anticipated as a result of the Revised Construction Programme.

8.10 Cumulative Effects

- 8.10.1 The Revised Construction Programme does not change the assessment of cumulative effects on ecological receptors and this remains as presented in the submitted ES (**Volume 5.8.1, section 8.9**). The predicted cumulative effects of all assessed plans and projects combined are not greater than the predicted effect of the Proposed Development. No increase in the level of impact to the biodiversity receptors is predicted and it is therefore concluded that the mitigation proposals described within **Volume 5.8.1, section 8.7** are robust and no additional mitigation above is required with regards biodiversity.

8.11 Conclusions

- 8.11.1 This chapter has considered the changes the Revised Construction Programme has on the magnitude and significance of potential effects on ecological receptors. This has included a sensitivity test of the Revised Construction Programme on designated sites (international, national and local), habitats and flora, and fauna assessments.

- 8.11.2 The submitted ES assessed construction effects as temporary medium-term based on a construction period of four years. Under the Revised Construction Programme is this will increase the overall duration of construction phase to 76 months. Despite the longer duration of the Revised Construction Programme, the duration for each project component typically is similar to that considered in the submitted ES construction programme and would not exceed the four years assessed in the submitted ES. Indeed, the construction period for a number of individual development components will be reduced.
- 8.11.3 Where the Revised Construction Programme results in an increased duration of effects through the Mendip Hills 400kV underground cable route and at the Sandford substation, construction would be phased to avoid complete loss of all hedgerows for the full duration of works.
- 8.11.4 A net increase in duration of construction works related to the haul roads to 76 months does not increase the category of magnitude or significance of effects predicted for the ecological receptors in the submitted ES.
- 8.11.5 Accordingly, the Revised Construction Programme has no implications for the assessed significance of effects of the Proposed Development on ecological receptor with the implementation of the phased construction working. This would remain as stated in Chapter 8 of the submitted ES.

9 GROUND ENVIRONMENT

9.1 Introduction

- 9.1.1 This chapter of the Environmental Statement (ES) Sensitivity Test provides an assessment of the likely significance of effect to the ground environment as a result of the Revised Construction Programme for the Proposed Development.
- 9.1.2 This assessment should be read in conjunction with Chapter 9 of the submitted ES (**Volume 5.9.1**), relevant appendices (**Volume 5.9.2**) and figures (**Volume 5.9.3**).
- 9.1.3 There are no changes to the operation or decommissioning of the Proposed Development as a result of the Revised Construction Programme and therefore this chapter considers the construction phase assessment only. Potential significant effects to the ground environment for the operation and decommissioning of the Proposed Development remain as stated Chapter 9 of the submitted ES.

9.2 Legislation, Policy and Guidance

- 9.2.1 There have been no changes to the legislation, policy or guidance context outlined in the submitted ES that are relevant to this topic or assessment.
- 9.2.2 There have been no amendments to local planning policies relating to the ground environment which impact on the previously submitted assessment. It is possible that changes to the local planning policies relating to the ground environment could be implemented during the Revised Construction Programme; changes to local planning policy are also possible during the construction programme presented within the submitted ES. Accordingly the legislation, policy and guidance of relevance to the assessment of the Revised Construction Programme are as described in the submitted ES (**Volume 5.9.1, section 9.2**).

9.3 Method

- 9.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.
- 9.3.2 The method for the assessment of the significance of effect has been undertaken in accordance with the method presented within the submitted ES (**Volume 5.9.1, section 9.3**). Definitions of the magnitude of effect are presented within **Table 9.5** of **Volume 5.9.1** with definitions for receptor sensitivity presented within **Table 9.6** of **Volume 5.9.1**. A qualitative assessment of likelihood has been included, for selected effects to the ground environment as described within **Volume 5.9.3 section 9.3**, paragraph 9.3.18.
- 9.3.3 The resulting assessment method of the overall significance of effect has been undertaken in line with guidance from the Institute of Environmental Management and Assessment's 'State of Environmental Impact Assessment in the UK'.

9.4 Baseline Environment

- 9.4.1 The baseline environment described in Chapter 9 of the submitted ES (**Volume 5.9.1, Section 9.4**) is not affected by the Revised Construction Programme.
- 9.4.2 There are no known material changes to the baseline environment from that previously presented in the submitted ES (**Volume 5.9.1, section 9.4**) to require re-assessment as a result of the Revised Construction Programme. This includes potential changes to aspects of the ground environment including topography, superficial and bedrock geology, radon and ground gas, mineral sites, landfilling and ground stability, mining, groundwater designations or historical land use. The baseline environmental study for Section C – Mendip Hills, identified that interest in registering the Mendip Hills as a European Geopark has been expressed. To date, the Mendip Hills have not been registered as a European Geopark.
- 9.4.3 There is the potential for future pollution incidents arising from other land uses, agencies or activities, to occur along the route of the Proposed Development, however these cannot be predicted. Minor pollution incidents arising from other land uses, agencies or activities along the route of the Proposed Development would not materially affect the conclusions of the assessment as a result of the Revised Construction Programme.
- 9.4.4 It is anticipated that significant pollution incidents arising from other land uses, agencies or activities, along the route of the Proposed Development will be appropriately mitigated and remediated and therefore would not materially affect the conclusions of the assessment, as a result of the Revised Construction Programme. Owing to the generally rural and agricultural setting of the majority of the route alignment, potential future pollution incidents would be rare. Anticipated pollutants and associated volumes would remain low.
- 9.4.5 Potential changes to hydrology and flood risk as a result of the Revised Construction Programme are specifically addressed within Chapter 10 of this ES Sensitivity Test.

9.5 Prediction and Assessment of Significance of Potential Effects

- 9.5.1 This section presents a review of the potential effects prior to mitigation of the Revised Construction Programme.
- 9.5.2 The predicted effects of the Proposed Development on the ground environment, prior to implementation of mitigation measures, are not sensitive to changes in the construction programme, and the predicted effects that result from the Revised Construction Programme are the same as those described in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.5**).
- 9.5.3 With regard to the interest in registering the Mendip Hills as a European Geopark, there is no change to the assessment presented within the submitted ES (**Volume 5.9.5, section 9.5, paragraph 9.5.7**) as a result of the Revised Construction Programme. It is noted within the submitted ES (**Volume 5.9.8, section 9.8**) that any future designations for the Mendip Hills would not apply to the Triassic Age bedrock geology that the Proposed Development crosses within Section C –

Mendip Hills, therefore no change to the assessment would occur if the site is registered as a European Geopark at a future date.

9.6 Inter-relationship of Potential Effects

- 9.6.1 Possible inter-relationships could occur between the ground environment and ecology such as direct and indirect effects on protected species and habitats and designated areas of ecological interest, through contact with contaminated soils and groundwater. The Revised Construction Programme does not result in any additional impacts on this relationship from those identified within Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.6**).
- 9.6.2 Possible inter-relationships could occur between the ground environment and hydrology (surface waters). The ground environment interacts with the hydrology principally through groundwater and the hydrogeological environment. However, the Revised Construction Programme does not result in any additional impacts on this relationship from those identified within Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.6**).
- 9.6.3 Possible inter-relationships could occur between the ground environment and archaeological assets, in particular where, designated sites or sites of interest are located close to the Proposed Development within sensitive superficial deposits such as peat. However, the Revised Construction Programme does not result in additional impacts on this relationship from those identified within Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.6**).

9.7 Mitigation

- 9.7.1 The mitigation measures described within Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.7**) will be secured via Requirements or via the draft Construction Environmental Management Plan (CEMP) (**Volume 5.26.1** of the submitted ES) and Outline Waste Management Plan (OWMP) (**Volume 5.26.2** of the submitted ES), both of which will be the subject of a Requirement. Accordingly a review of these documents was undertaken as part of this assessment to determine if there are any changes required as a result of the Revised Construction Programme.
- 9.7.2 No amendments are required to the mitigation measures identified in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.7**) as a result of the revised construction programme. The Revised Construction Programme has no material effect on the conclusions of the draft CEMP and OWMP identified within **Volumes 5.24 and Volume 5.26** of the submitted ES.

9.8 Residual Effects

- 9.8.1 Residual effects to the ground environment post application of mitigation measures are presented within Section 9.8 of the submitted ES (**Volume 5.9.1**).
- 9.8.2 With regard to the interest in registering the Mendip Hills as a European Geopark, there is no change to the residual effects presented within Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.8**, paragraph 9.8.1. and 9.8.2) as a result of the Revised Construction Programme

- 9.8.3 The Revised Construction Programme has no material effect on the assessment of residual effects to the ground environment identified in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.8**).

9.9 Cumulative Effects

- 9.9.1 The cumulative assessment sensitivity test is provided at Chapter 17 of this document.
- 9.9.2 The Revised Construction Programme has no material change on the cumulative effects identified in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.9**).

9.10 Conclusion

- 9.10.1 The baseline environment for the ground environment has not materially changed as to require re-assessment as a result of the Revised Construction Programme.
- 9.10.2 The Revised Construction Programme has no material effect on the assessment of the significance of effects to the ground environment.
- 9.10.3 No additional inter-relationships have been identified as a result of the Revised Construction Programme and the assessment within the submitted ES of existing inter-relationships remains unchanged.
- 9.10.4 No additional mitigation measures are required as a result of the Revised Construction Programme; the mitigation measures will remain in place for the duration of the Revised Construction Programme.
- 9.10.5 The Revised Construction Programme has no implications for the assessed effect of the Proposed Development on the ground environment and the residual effects remain as stated in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.8**).

10 HYDROLOGY AND WATER RESOURCES

10.1 Introduction

- 10.1.1 This chapter of the Environmental Statement (ES) Sensitivity Test is to provide an assessment of the likely significant effects on surface water hydrology of the Revised Construction Programme for the Proposed Development.
- 10.1.2 This assessment should be read in conjunction with Chapter 10 of the submitted ES (**Volume 5.10.1**), relevant appendices (**Volume 5.10.2**) and figures (**Volume 5.10.3**).
- 10.1.3 There are no changes to the operation or decommissioning of the Proposed Development as a result of the Revised Construction Programme therefore this chapter considers only the construction phase assessment. Potential significant effects on surface water hydrology for the operation and decommissioning of the Proposed Development remain as stated Chapter 10 of the submitted ES.
- 10.1.4 Amendments to the Flood Risk Assessments (FRAs) (**Volumes 5.23.1 to Volume 5.23.4** of the submitted ES) that are required as a result of the Revised Construction Programme are included as a separate FRA Sensitivity Test provided in **Volume 5.29.2.3** of this sensitivity test submission.

10.2 Legislation, Policy and Guidance

- 10.2.1 There have been no changes to the legislation, policy or guidance context outlined in the submitted ES that are relevant to this topic or assessment.
- 10.2.2 There have been no amendments to local planning policies relating to the hydrological environment which impact on the previously submitted assessment. It is possible that changes to the local planning policies relating to the hydrological environment could be implemented during the Revised Construction Programme; changes to local planning policy are also possible during the construction programme presented in the submitted ES.
- 10.2.3 Chapter 10 of the submitted ES has taken into account relevant local policies by identifying hydrological receptors within or within close proximity to the Proposed Development as required by the local policies. Therefore, future changes to local planning policies will not result in a material change in the assessments undertaken.
- 10.2.4 Accordingly the legislation, policy and guidance of relevance to the assessment of the Revised Construction Programme are as described in the submitted ES (**Volume 5.10.1, section 10.2**).

10.3 Method

- 10.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.

- 10.3.2 The method for the assessment of effects is undertaken in accordance with the method as presented in the submitted ES (**Volume 5.10.1, section 10.3**). Potential effects of the Proposed Development on the water environment have been identified and assessed using criteria from the Institute of Environmental Management and Assessment (IEMA 2011).
- 10.3.3 Sensitivity has been assessed with reference to the relative importance (e.g. whether features are of national, regional or local value) of existing features/receptors on or near to the Proposed Development which could potentially be affected. The scale or magnitude of potential effects (both beneficial and adverse) on hydrological baseline conditions is identified through the application of professional judgement and supporting evidence using details of the Proposed Development.

10.4 Baseline Environment

- 10.4.1 The baseline environment described in Chapter 10 of the submitted ES will not be materially affected by the implementation of the Revised Construction Programme. There is potential for the minor alteration of some managed watercourses due to ongoing management programmes, however these alterations are not significant as to impact the baseline environment presented in the submitted ES or to require re-assessment as a result of the Revised Construction Programme.
- 10.4.2 Accordingly, there are no known changes to the hydrological baseline condition from that presented in the submitted ES (**Volume 5.10.1, section 10.4**).

10.5 Prediction and Assessment of Significance of Potential Effects

- 10.5.1 The prediction and assessment of effects presented in Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.5**) considers the details and nature of the Proposed Development and uses a worst case scenario in terms of potential effects to surface water hydrology.
- 10.5.2 No changes to the assessment of significance of effect to the hydrological environment, prior to implementation of mitigation measures, have been identified as a result of the Revised Construction Programme.
- 10.5.3 No changes to the standalone hydrological reports contained within the submitted ES for the proposed 400kV (**Volume 5.10.2, Appendix 10C**) and 132kV (**Volume 5.10.2, Appendix 10D**) underground cable corridors are required as a result of the Revised Construction Programme.
- 10.5.4 A sensitivity test of the submitted FRAs for the route, substations and cable sealing end (CSE) compounds has been carried out to identify any changes in the assessment as a result of the Revised Construction Programme. The FRA Sensitivity Test is provided as a Supporting Document to this ES Sensitivity Test at **Volume 5.29.2.3**. A summary of key findings is included below:

Summary of Findings of Flood Risk Assessments

- 10.5.5 The submitted FRAs comprise a series of five separate FRAs related to the Proposed Development (**Volume 5.23.1 to 5.23.5** of the submitted ES) as follows:
- Bridgwater Tee Cable Sealing End Compounds Flood Risk Assessment (**Volume 5.23.1**);
 - South of Mendip Hills Cable Sealing End Compound Flood Risk Assessment (**Volume 5.23.2**);
 - Sandford Substation Flood Risk Assessment (**Volume 5.23.3**);
 - Seabank Substation Flood Risk Assessment (**Volume 5.23.4**); and
 - Hinkley Point C Connection Route Flood Risk Assessment (**Volume 5.23.5**).
- 10.5.6 The submitted Hinkley Point C Connection Route FRA (**Volume 5.23.5**) considered flood risk to all components of the whole route including substations and CSE compounds. Accordingly the Hinkley Point C Connection Route FRA has been used as the basis of the FRA Sensitivity Test; the findings of the Sensitivity Test apply to all submitted FRAs.
- 10.5.7 Under the Revised Construction Programme, the Proposed Development will be built between December 2015 and March 2022, over a 76 month duration. The overall duration of the construction phase of the Proposed Development will increase by just over two years (25 months) when compared to the construction phase assessed in the submitted FRA.
- 10.5.8 The Hinkley C Connection Route FRA took a conservative approach to flood risk by assessing a 3.3% annual exceedance probability (AEP) (1 in 30) flood event occurring during the five year construction phase rather than the less extreme 10% (1 in 10) event. The FRA Sensitivity Test has shown that extending the construction period increases the likelihood of a flood event occurring during the construction phase as a result of the increased time exposed to the flood hazard. However, the increase in likelihood of a flood occurring is small and so the assessment of the 3.3% AEP (1 in 30) event is still be appropriate for the Revised Construction Programme and remains conservative.
- 10.5.9 Whilst the likelihood of a flood event occurring is slightly increased under the revised construction programme, the impact of the flood event on the construction and caused by the construction is unchanged from that assessed for the previous construction programme in the submitted FRA. Therefore, there is no change required to the mitigation measures specified in the submitted FRA other than the mitigation will in place for longer to cover the revised construction period. Full details of the mitigation measures, including runoff management and pollution control, are set out in the Draft CEMP (**Volume 5.26** of the submitted ES).

10.6 Inter-relationship of Potential Effects

- 10.6.1 Possible inter-relationships could occur between the water environment and ecology such as direct and indirect effects on protected species and habitats; effects upon water quality, as well as effects of culverting watercourses on biodiversity of the watercourses. The Revised Construction Programme does not

result in any additional impacts on this relationship from those identified within Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.6**).

- 10.6.2 Inter-relationships could occur between the hydrological and ground environment. The ground environment interacts with the hydrology principally through groundwater and the hydrogeological environment. However, the Revised Construction Programme does not result in any additional impacts on this relationship from those identified within Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.6**).

10.7 Mitigation

- 10.7.1 The Revised Construction Programme does not result in any amendments to the mitigation as outlined in Chapter 10 (**Volume 5.10.1, section 10.7**) and the CEMP (**Volume 5.26.1**) of the submitted ES.

10.8 Residual Effects

- 10.8.1 Residual effects to the hydrological environment post application of mitigation measures are presented within Chapter 10 of the submitted ES. The Revised Construction Programme does not change the residual effects identified in Chapter 10 of the submitted ES (**Volume 5.10.1, section 11.8**).

10.9 Cumulative Effects

- 10.9.1 The cumulative assessment sensitivity test is provided at Chapter 17 of this document.
- 10.9.2 The Revised Construction Programme may result in the simultaneous construction of the Proposed Development and other developments in the area, however as the majority of the developments assessed are only in the vicinity of smaller drains and ditches and not adjoining reportable watercourses under the Water Framework Directive or with ecological designations, the effects of the cumulative assessment are generally classed as minor adverse, due to the low significance of the receptor.
- 10.9.3 Accordingly, the Revised Construction Programme does not change the cumulative effects identified in Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.9**).

10.10 Conclusion

- 10.10.1 The baseline environment for the hydrological environment has not materially changed as to require re-assessment as a result of the Revised Construction Programme.
- 10.10.2 The Revised Construction Programme has no material effect on the assessment of the significance of effects to the hydrological environment.

- 10.10.3 No additional inter-relationships have been identified as a result of the Revised Construction Programme and the assessment within the submitted ES remains unchanged.
- 10.10.4 No additional mitigation measures are required as a result of the Revised Construction Programme; the mitigation measures will remain in place for the duration of the Revised Construction Programme.
- 10.10.5 The Revised Construction Programme has no implications for the assessed effect of the Proposed Development on surface water hydrology and the residual effects remain as stated in Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.8**).

11 HISTORIC ENVIRONMENT

11.1 Introduction

- 11.1.1 This chapter of the Environmental Statement (ES) Sensitivity Test provides an assessment of the potential historic environment effects of the Revised Construction Programme for the Proposed Development.
- 11.1.2 This chapter considers the predicted effects of the Proposed Development on the historic environment, and whether the level of effect or deliverability of the mitigation proposed in response to a predicted effect, changes as a result of the Revised Construction Programme.
- 11.1.3 This chapter should be read in conjunction with Chapter 11 of the submitted ES (**Volume 5.11.1**) and relevant appendices (**Volume 5.11.2**) and figures (**Volume 5.11.3**). There are no changes to the appendices and figures as a result of the Revised Construction Programme.
- 11.1.4 There are no changes to the operation or decommissioning of the Proposed Development as a result of the Revised Construction Programme and therefore this chapter considers the construction phase assessment only. Potential significant effects on the historic environment for the operation and decommissioning of the Proposed Development remain as stated Chapter 10 of the submitted ES.

11.2 Legislation, Policy and Guidance

- 11.2.1 There have been no changes to the legislation, policy or guidance context outlined in the submitted ES that are relevant to this topic or assessment. Accordingly the legislation, policy and guidance are as described in the submitted ES (**Volume 5.11.1, section 11.2**).

11.3 Method

- 11.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.
- 11.3.2 The method for the assessment of the significance of effect has been undertaken in accordance with the method presented within the submitted ES (**Volume 5.11.1, section 11.3**).

11.4 Baseline Environment

- 11.4.1 The baseline environment described in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.4**) is not affected by the Revised Construction Programme. No significant changes have occurred in the baseline environment since the submission of the ES to require re-assessment. Accordingly the baseline

environment, for the purposes of assessing the effect of a Revised Construction Programme, is as described in Chapter 11 of the submitted ES.

11.5 Prediction and Assessment of Significance of Potential Effects

- 11.5.1 The predicted effects of the Proposed Development on the historic environment are not sensitive to changes in the construction programme. The predicted effects that result from the Revised Construction Programme are the same as those described in the submitted ES (**Volume 5.11.1, section 11.5**).
- 11.5.2 Some effects may have a longer duration for example, temporary indirect effects resulting from construction activities on the settings of heritage assets. Chapter 11 of the submitted ES assesses these effects as temporary, short-term and reversible. The Revised Construction Programme may result in these effects having a longer duration; but the effects remain as temporary, short-term and reversible. Accordingly, the predicted effects as a result of the Revised Construction Programme are the same as those described in the submitted ES Revised Construction Programme.

11.6 Inter-relationship of Potential Effects

- 11.6.1 The predicted inter-relationship effects of the Proposed Development on the historic environment are not sensitive to changes in construction programme, and the predicted effects that will result from the Revised Construction Programme are the same as those described in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.6**).

11.7 Mitigation

- 11.7.1 The pre-construction mitigation measures outlined in the submitted ES (**Volume 5.11.1, section 11.7**) assumes that there would be a period of time between the DCO being granted and the construction programme commencing. The Revised Construction Programme also allows for sufficient time to ensure that the pre-construction archaeological mitigation can be implemented. The mitigation measures are unaltered for the Revised Construction Programme and remain the same as outlined in the submitted ES.

11.8 Residual Effects

- 11.8.1 The Revised Construction Programme does not change the residual effects identified in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.8**).

11.9 Cumulative Effects

- 11.9.1 The cumulative assessment sensitivity test is provided at Chapter 17 of this document. The Revised Construction Programme does not change the cumulative effects identified in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.9**).

11.10 Summary of Significant Historic Environment Effects

- 11.10.1 The Revised Construction Programme does not change the Summary of Significant Historic Environment Effects presented in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.10**).

11.11 Conclusion

- 11.11.1 Baseline conditions for the historic environment topic are not affected by variation to construction programme. The predicted effects on the historic environment are equally not affected by variation to the construction programme.
- 11.11.2 The duration of some effects is altered by the Revised Construction Programme, but not to such an extent as to result in any change to the magnitude or significance of effects assessed in the submitted ES.
- 11.11.3 The Revised Construction Programme has no implications for the assessed effect of the Proposed Development on the historic environment and the residual effects remain as stated in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.8**).

12 TRAFFIC AND TRANSPORT

12.1 Introduction

12.1.1 This chapter of the ES Sensitivity Test provides an assessment of the likely significant effects of the Proposed Development on traffic and transportation as a result of the Revised Construction Programme.

12.1.2 This chapter should be read in conjunction with Chapter 12 of the submitted ES (**Volume 5.12.1**), the Construction Traffic Management Plan (**Volume 5.26.5** of the submitted ES) and Transport Assessment (**Volume 5.22** of the submitted ES).

12.1.1 A sensitivity test of the submitted Transport Assessment (TA), identifying changes as a result of the Revised Construction Programme, is provided at **Volume 5.29.2.2.1**.

12.1.2 It should be noted that further information, additional to that in the submitted TA, was provided to the Joint Councils on the 20 August 2014. The further information provided additional detail and clarification in response to discussions with the Joint Councils and the Highways Agency on the following matters:

- Junction traffic profiles – Proposed Development construction vehicle activity profiles;
- Junction mitigation measures;
- Mitigation Junction Capacity Assessments;
- Highways Agency Junction Modelling;
- Traffic Regulations Orders (TROs); and
- Transport and Access Plans.

12.1.3 The further information is referenced in the TA Sensitivity Test and this chapter where relevant.

12.1.4 In order to achieve the revised connection date offered, the Proposed Development would be built between December 2015 and March 2022, over a 76 month duration. This results in the duration of the construction phase of the Proposed Development increasing by just over two years (25 months) when compared to the construction timescale assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**).

This sensitivity test assesses the likely significant effects of the traffic and transportation on the road network during the revised construction phase of all development components.

12.2 Legislation, Policy and Guidance

12.2.1 There has been no change to planning policy relevant to this assessment from that previously presented in the submitted ES (**Volume 5.12.1, section 12.2**). Accordingly the legislation, policy and guidance of relevance are as described in the submitted ES.

12.3 Method

- 12.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document.
- 12.3.2 The sensitivity test of the likely significant effects on traffic of the Revised Construction Programme has been undertaken in accordance with the method set out within Chapter 12 of the submitted ES (**Volume 5.12.1**). This includes the methods for assessing the significance of any potential effects.
- 12.3.3 As detailed in Chapter 12 of the submitted ES (**Volume 5.12.1**), a percentage impact assessment has been undertaken to identify those sensitive highway links that would experience an increase in traffic flows of greater than 10% under the Revised Construction Programme. Those highway links with percentage increases of below 10% were not assessed further.
- 12.3.4 If an increase of flows of 10% or greater were recorded along a highway link within the Revised Construction Programme, the sensitive receptors along a link were assessed for the following transport related environmental impacts:
- Severance;
 - Driver delay;
 - Pedestrian/cyclist delay;
 - Accidents and Safety;
 - Fear and intimidation; and
 - Dust and Dirt.

12.4 Baseline Environment

- 12.4.1 There have been no significant changes to the baseline environment from that previously presented in the submitted ES that would require re-assessment as part of this sensitivity test.
- 12.4.2 As set out in the submitted ES, a number of sensitive receptors were identified and graded in proximity to the Proposed Development. In addition, the highway links identified to be used by construction vehicles were also given an overall sensitivity classification based on the number and sensitivity of receptors along them. All identified sensitive receptors and highways links are anticipated to remain at the same level of sensitivity identified in the submitted ES during the Revised Construction Programme.

12.5 Prediction and Assessment of Significance of Potential Effects

- 12.5.1 The primary traffic and transportation effects associated with the Proposed Development would be as a direct consequence of the increases in traffic flow on local roads during the construction phase.
- 12.5.2 Construction traffic would be associated with the installation of accesses (including haul road construction), pylon foundations, pylon assembly and erection, cable installations, access reinstatement, haul road removal and construction employee vehicle movements.

- 12.5.3 The total volume of estimated vehicles required to construct the Proposed Development and presented in the submitted ES (**Volume 5.12.1**) would not change as a result of the Revised Construction Programme.
- 12.5.4 Furthermore, the peak daily traffic volumes associated with construction would not exceed those already identified and assessed as part of the submitted ES as a result of the Revised Construction Programme.
- 12.5.5 In some instances the daily peak number of vehicles anticipated to utilise a highway link would reduce as a result of the Revised Construction Programme, due to different elements of construction activity occurring at different times.
- 12.5.6 A detailed description of the changes the Revised Construction Programme has in regards to the volume and frequency of vehicles required to construct the Proposed Development is included within the Transport Assessment Sensitivity Test (**Volume 5.29.2.2**) submitted alongside this ES Sensitivity Test .
- 12.5.7 The primary reasons for there being no predicted increase in overall construction traffic vehicle trips and daily vehicle trips as a result of the Revised Construction Programme are as follows:
- No new development is proposed as a result of the Revised Construction Programme. Therefore the same total volume of vehicles would be required to complete the Proposed Development, however, the timeframes under which each of the development components is to be constructed has change;
 - The submitted ES and TA assess the construction programme where the majority of construction activities all align to start in late 2015 and early 2016. For the Revised Construction Programme, the construction of the individual development components are more staggered in their start times;
 - Although the construction phase duration of some development components for the Revised Construction Programme increases, the daily peak in construction vehicle numbers required to access the individual development components does not increase.
 - As a result of the Revised Construction Programme the time available to complete the construction phase of some development components decreases. Due to the long linear nature of the project there are predicted to be periods of construction inactivity between different elements of construction within a particular area. These periods of inactivity are present in the traffic data used for the submitted TA (**Volume 5.22**). It should be noted that if the construction programme for a development component has decreased, it is these periods of inactivity that have been reduced not the overall number of activity days for construction to take place. This effectively means that the number of days that traffic is predicted to access a project component has not been reduced.
- 12.5.8 As a result of the revised connection offer date, the construction programme moves further into the future and accordingly the predicted effects would occur in a different assessment year from that presented in the submitted ES. In these

instances the percentage increase in traffic associated with the Proposed Development would be lower as the level of background traffic would be higher.

- 12.5.9 However, for the purpose of this sensitivity test the percentage impacts have been assumed to remain the same, therein representing a robust assessment and a worst case in terms of percentage increase of Proposed Development construction traffic. Traffic growth is discussed in greater detail in the TA Sensitivity Test (**Volume 5.29.2.2**).
- 12.5.10 The total and daily peak volumes of traffic are not anticipated to increase as a result of the Revised Construction Programme therefore the level of predicted environmental effects as set out in the submitted ES does not change.
- 12.5.11 The effects of increased background traffic at a number of junctions on the Local Road Network (LRN) and Strategic Road Network (SRN) have been assessed and are contained in the TA Sensitivity Test (**Volume 5.29.2.2**).
- 12.5.12 Within the TA Sensitivity Test (**Volume 5.29.2.2**) 16 additional junction capacity assessments have been undertaken at junctions which are subject to increased background traffic flows. The results (**Table 12.30, TA Sensitivity Test, Volume 5.29.2.2**) indicate that Junction 44, the M5/A4/Avonmouth Way junction will operate above its practical capacity (90% Degree of Saturation) in the 2020 Future Baseline with Development scenario as a result of the increased background traffic.

Assessment of Effects - General Construction Traffic

Severance

- 12.5.13 The submitted ES has predicted that a number of slight adverse effects in regard to severance could occur during peak periods of construction. The effects do not change as a result of the Revised Construction Programme and remain as stated in the submitted ES (**Volume 5.12.1**).

Driver Delay

- 12.5.14 The submitted ES has predicted a number of slight to moderate adverse effects in regards to driver delay. The effects do not change as a result of the Revised Construction Programme and remain as stated in the submitted ES (**Volume 5.12.1**).

Pedestrian and Cyclist Delay

- 12.5.15 The submitted ES has predicted a number of slight to moderate adverse effects in regards to pedestrian and cyclist delay. There is no change in the assessment as a result of the changes to construction duration and the effects remain as stated in the submitted ES (**Volume 5.12.1**).

Fear and Intimidation

- 12.5.16 A number of negligible to slight adverse impacts were predicted within the submitted ES in regard to general construction traffic and fear and intimidation. There is no change in the assessment as a result of the changes to construction duration and the effects remain as stated in the submitted ES (**Volume 5.12.1**).

Accidents and Safety

- 12.5.17 There are no material changes to the conclusions reached in the submitted ES (**Volume 5.12.1**) in regard to accidents and safety as a result of the Revised Construction Programme.
- 12.5.18 The Proposed Development construction traffic is not considered to have a significant impact on highway safety at junctions or along the proposed highway links to be used during construction as a result of the Revised Construction Programme.

Dust and Dirt

- 12.5.19 The submitted ES has predicted a number of moderate adverse effects in regards to dust and dirt being brought onto the local highway. There is no change in the assessment as a result of the changes to construction duration and the effects remain as stated in the submitted ES (**Volume 5.12.1**).

Assessment of Effects – Abnormal Load Movements***Severance***

- 12.5.20 The submitted ES has predicted that the effects of the delivery of abnormal loads would have on severance would be negligible. There is no change in the assessment as a result of the changes to construction duration and the effects remain as stated in the submitted ES (**Volume 5.12.1**).

Driver Delay

- 12.5.21 The submitted ES has predicted a number of moderate adverse effects in regards to driver delay during the delivery of abnormal loads to site. There is no change in the assessment as a result of the changes to construction duration and the effects remain as stated in the submitted ES (**Volume 5.12.1**).

Pedestrian and Cyclist Delay

- 12.5.22 The submitted ES has predicted negligible effects in regards to pedestrian and cyclist delay and the delivery of abnormal loads to the site. There is no change in the assessment as a result of the changes to construction duration and the effects remain as stated in the submitted ES (**Volume 5.12.1**).

Fear and Intimidation

- 12.5.23 A number of slight adverse effects were predicted within the submitted ES in regard to abnormal load deliveries. There is no change in the assessment as a result of the changes to construction duration and the effects remain as stated in the submitted ES (**Volume 5.12.1**).

Accidents and Safety

- 12.5.24 It is not anticipated that there would be any significant increased risk of accidents along the delivery routes as a result of the Revised Construction Programme. The assessment remains as stated within the submitted ES (**Volume 5.12.1**).

Dust and Dirt

- 12.5.25 The submitted ES has predicted a number of minor adverse effects in regards to dust and dirt being brought onto the local highway by large abnormal deliveries.

There is no change in the assessment as a result of the changes to construction duration and the effects would as stated in the submitted ES (**Volume 5.12.1**).

Operational Effects

- 12.5.26 No changes to the predicted operational effects of the Proposed Development occur as a result of the Revised Construction Programme; these remain as stated in the submitted ES (**Volume 5.12.1**)

Decommissioning Effects

- 12.5.27 No changes to the predicted decommissioning effects of the Proposed Development occur as a result of the Revised Construction Programme; these remain as stated in the submitted ES (**Volume 5.12.1**)

12.6 Inter-relationship of Potential Effects

- 12.6.1 There are no changes as a result of the Revised Construction Programme that materially affect the inter-relationships of potential effects reported in the submitted ES (**Volume 5.12.1**).

12.7 Mitigation

- 12.7.1 A number of traffic and transport mitigation measures have been proposed during the construction of the Proposed Development and presented in the submitted ES.
- 12.7.2 As part of the mitigation package of measures contained within the submitted Construction Traffic Management Plan (CTMP) (**Volume 5.26.5**), it has been agreed, through discussions and consultation with the LPAs, that construction traffic from the Proposed Development will not use any junctions operating over its practical capacity in either the Future Baseline or Future Baseline with Development scenarios.
- 12.7.3 The CTMP (**Volume 5.26.5**) identifies 12 junctions that will have peak period HGV movement restrictions in place. While the anticipated impacts of the Proposed Development at these locations are for the most part are temporary and not material, National Grid will restrict HGV movements during the peak periods of assessment (08.00 – 09.00 and 17.00 – 18.00) at the junctions listed above. These restricted hours will be secured by a DCO requirement. This is described in the submitted TA (**Volume 5.22**).
- 12.7.4 While no specific restriction is proposed on the Strategic Road Network (SRN), all vehicles accessing the 12 Local Road Network (LRN) junctions will be required to use the SRN therefore limiting the vehicles that can use these junctions during the peak periods identified. This will reduce the volume of construction vehicles travelling through the SRN junctions that form part of the assessment contained in the submitted TA (**Volume 5.22**) and this Revised Construction Programme assessment.
- 12.7.5 As a result of the Revised Construction Programme a single additional junction, junction 44 (the M5/A4/Avonmouth Way), is predicted to operate above its practical capacity level. Accordingly, this junction will be added to the CTMP and DCO

requirements. This is set out in the Construction Environmental Management Plan Sensitivity Test at Volume **5.29.2.4**.

- 12.7.6 AM and PM peak period HGV vehicle movement restrictions would mitigate the impacts of the Proposed Development Construction HGV vehicle movements under the Revised Construction Programme.
- 12.7.7 With the exception of the addition of junction 44 to the CTMP and DCO requirements, no further changes are required to the mitigation measures set out in the submitted ES (**Volume 5.12.1**) as a result of the Revised Construction Programme.
- 12.7.8 The mitigation measures and mechanisms for implementation are considered wholly appropriate and proportional to the impacts of the Proposed Development.

12.8 Residual Effects

- 12.8.1 The Revised Construction Programme is not anticipated to change the residual effects of traffic and transport outlined within the submitted ES (**Volume 5.12.1**).
- 12.8.2 Mitigation proposals, as detailed in the submitted ES, will be extensive throughout the proposed working corridors and along construction routes providing access to the Proposed Development.

12.9 Cumulative Effects

- 12.9.1 As part of the submitted ES and accompanying TA (**Volume 5.22**) the cumulative effects of other locally proposed developments were assessed and discussed.
- 12.9.2 The methodology by which this has been assessed is detailed within the TA (**Volume 5.22**). The Revised Construction Programme results in 25 junctions having a later assessment year compared to the construction programme assessed in the submitted ES. The later assessment years result in an increase in the levels of background traffic associated with local development. Of these 25 junctions, 16 required additional junction capacity assessments (contained within the TA Sensitivity Test (**Volume 5.29.2.2.1**)).
- 12.9.3 Additional junction capacity assessment has identified that as a result of the increases in background traffic associated with local development, one of the 16 junctions (the M5/A4/Avonmouth Way) is predicted to operate above its practical capacity as a result of the Revised Construction Programme. Therefore this junction will be subject to peak period vehicle restrictions to mitigate the cumulative impacts. However, there would be no significant changes in the cumulative effects detailed in the submitted ES (**Volume 5.12.1**) as a result of the Revised Construction Programme.

12.10 Conclusion

Construction Effects

- 12.10.1 It is concluded that the Revised Construction Programme would result in one additional junction (the M5/A4/Avonmouth Way) operating over its practical capacity in the Future Baseline with Development scenario.
- 12.10.2 Predicted construction traffic associated with the Proposed Development has not increased and it should be noted that this is a result of the increased background traffic flows resulting from the year of assessment changing from 2017 (submitted **TA, Volume 5.22**) and 2020 (Revised Construction Programme).
- 12.10.3 The junction (the M5/A4/Avonmouth Way) will be subject to the peak period HGV vehicles restrictions; these measures will be added to the CTMP and DCO requirements.
- 12.10.1 The Revised Construction Programme is not anticipated to change the residual effects of traffic and transport outlined within the submitted ES (**Volume 5.12.1**).

Operational Effects

- 12.10.2 It is concluded that the Revised Construction Programme has no implications for the assessment of the likely significant environmental effects of operational traffic set out in Chapter 12 of the submitted ES (**Volume 5.12.1**).

Decommissioning Effects

- 12.10.3 It is concluded that the Revised Construction Programme has no implications for the assessment of the likely significant environmental effects of decommissioning traffic set out in Chapter 12 of the submitted ES (**Volume 5.12.1**).

13 AIR QUALITY AND EMISSIONS

13.1 Introduction

- 13.1.1 This chapter of the ES Sensitivity Test provides an assessment of the likely significant effects of the Proposed Development on air quality and emissions as a result of the Revised Construction Programme. This assessment should be read in conjunction with Chapter 13 of the submitted ES.
- 13.1.2 The sensitivity test has also incorporated revised guidance on the assessment of fugitive dust and updated background air quality data which have been published since the submission of the ES.
- 13.1.3 The submitted ES concluded that the Proposed Development would not adversely affect air quality during its operational or decommissioning phases, therefore the sensitivity test considers construction phase impacts only.
- 13.1.4 As a result of updated Institute of Air Quality Management guidance and Defra background concentration maps, all Figures (**Volume 5.13.2** of submitted ES) and Appendices (**Volume 5.13.3** of submitted ES) have been revised, and updated information is provided in **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)**.

13.2 Legislation, Policy and Guidance

- 13.2.1 Since the submission of the DCO application in May 2014, the following document referred to in chapter 13 of the submitted ES have been updated:
- Institute of Air Quality Management (IAQM), London, 2011. Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London, Holman et al (2014);
- 13.2.2 Accordingly this sensitivity test assesses the likely effects of the Revised Construction Programme against the latest guidance.

13.3 Method

- 13.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES
- 13.3.2 The approach and methods adopted for the sensitivity test analysis are identical to those adopted for the submitted ES (**Volume 5.13.1, section 13.3**), except that the sensitivity test assesses the impact of fugitive emissions from construction activities according to the updated IAQM guidance cited in 13.2.1 above, whereas the submitted ES used the previous version of the IAQM guidance.
- 13.3.3 The updated IAQM guidance differs from the methodology used for the submitted ES in that the magnitude or significance of effects are assessed post-mitigation, therefore the assessment of the significance of effects prior to mitigation are not included in this chapter. However, the Revised Construction Programme does not

result in the significance of any air quality effects prior to mitigation to vary from the assessment presented in the Submitted ES. The significance of effects following mitigation (Residual Effects) are set out in section 13.8 of this document.

13.3.4 The updated IAQM guidance provides a revised best practice approach to the assessment of fugitive dust from construction activities, based on a number of steps, as set out below.

13.3.5 **Step 1: Screen the requirement for assessment.** The first step is to ‘screen’ the requirement for a construction dust assessment, based on criteria the guidance states are intended to be conservative. An assessment is usually required where there is:

- a ‘human receptor’ within:
 - 350m of the boundary of the site; or
 - 50m of the route used by construction vehicles on the public highway, up to 500m from the site entrance(s).
- an ‘ecological receptor’:
 - 50m of the boundary of the site; or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

13.3.6 **Step 2A: Defining the Potential Dust Emission Magnitude.** The dust emission magnitude category for demolition is varied for each site in terms of timing, building type, duration and scale. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large:** Total building volume $>50,000\text{m}^3$, potentially dusty construction material, on-site crushing and screening, demolition activities $>20\text{m}$ above ground level;
- **Medium:** Total building volume $20,000\text{m}^3 - 50,000\text{m}^3$, potentially dusty construction material, demolition activities $10\text{m} - 20\text{m}$ above ground level; and,
- **Small:** Total building volume $<20,000\text{m}^3$, construction material with low potential for dust release, demolition activities $<10\text{m}$ above ground, demolition during wetter months.

13.3.7 The dust emission magnitude category for earthworks is varied for each site in terms of timing, geology, topography and duration. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large:** Total site area $>10,000\text{m}^2$, potentially dusty soil type (e.g. clay), >10 heavy earth moving vehicles active at any one time, formation of bunds $>8\text{m}$ in height, total material moved $>100,000$ tonnes;
- **Medium:** Total site area $2,500 - 10,000\text{m}^2$, moderately dusty soil type (e.g. silt), $5 - 10$ heavy earth moving vehicles active at any one time, formation of bunds $4 - 8\text{m}$ in height, total material moved $20,000 - 100,000$ tonnes; and,
- **Small:** Total site area $< 2,500\text{m}^2$, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds $<4\text{m}$ in height, total material moved $<10,000$ tonnes, earthworks during wetter months.

13.3.8 The dust emission magnitude category for construction is varied for each site in terms of timing, building type, duration, and scale. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large:** Total building volume $>100,000\text{m}^3$, piling, on site concrete batching;
- **Medium:** Total building volume $25,000 - 100,000\text{m}^3$, potentially dusty construction material (e.g. concrete), piling, on site concrete batching; and,
- **Small:** Total building volume $<25,000\text{m}^3$, construction material with low potential for dust release (e.g. metal cladding or timber).

13.3.9 Factors which determine the dust emission magnitude class for trackout (the transference of dust and dirt materials from construction sites onto the public road network, where it may be deposited, and available for resuspension) are vehicle size, vehicle speed, vehicle number, geology and duration. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large:** >100 HDV (3.5t) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length $>100\text{m}$;
- **Medium:** $25 - 100$ HDV ($>3.5\text{t}$) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length $50 - 100\text{m}$; and,
- **Small:** <25 HDV ($<3.5\text{t}$) trips in any one day, surface material with low potential for dust release, unpaved road length $<50\text{m}$.

13.3.10 **Step 2B: Define the sensitivity of the area** with respect to dust soiling, human health and ecosystems. The sensitivity of the area takes into account the following factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10} , the local background concentration; and,
- Site-specific factors, such as whether there are natural shelters such as trees, to reduce the risk of wind-blown dust.

13.3.11 **Table 13.1** is used, with an element of professional judgement, to define the sensitivity of receptors to dust soiling, human health effects and ecological effects.

Table 13.1: Sensitivity of Receptors

Sensitivity of Area	Dust Soiling	Human Health	Ecological Receptors
High	- Users can reasonably expect a enjoyment of a high level of amenity. - The appearance, aesthetics or value of their property would be diminished by soiling. - The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. - Examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.	- Locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day) - Examples include residential properties, hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	- Locations with an international or national designation <i>and</i> the designated features may be affected by dust soiling. - Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. - Examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	- Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home. - The appearance, aesthetics or value of their property could be diminished by soiling. - The people or property wouldn't reasonably be expected to be	- Locations where the people exposed are workers and exposure is over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). - Examples include office and shop workers, but will generally not	- Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. - Locations with a national designation where the features may be affected by dust deposition. - Example is a Site of Special Scientific Interest (SSSI) with dust sensitive

Sensitivity of Area	Dust Soiling	Human Health	Ecological Receptors
	present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Examples include parks and places of work.	include workers occupationally exposed to PM₁₀, as protection is covered by Health and Safety at Work legislation.	features.
Low	- The enjoyment of amenity would not reasonably be expected. - Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. - There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. - Examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.	- Locations where human exposure is transient. - Indicative examples include public footpaths, playing fields, parks and shopping streets.	- Locations with a local designation where the features may be affected by dust deposition. - Example is a local Nature Reserve with dust sensitive features.

13.3.12 Based on the sensitivities assigned to the different types of receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification for the area can be defined for each. **Tables 13.2 to 13.4** indicate the method used to determine the sensitivity of the area for dust soiling, human health and ecological impacts, respectively.

13.3.13 For trackout, as per the guidance, it is only considered necessary to consider trackout impacts up to 50m from the edge of the road.

- 13.3.14 As in the submitted ES, sensitive receptors for fugitive emissions from construction site activities were identified with reference to the draft Development Consent Order limits, to include all activities such as access routes and all stripping and storage of soils and materials. It is recognised that this is likely to present a conservative assessment of impacts.
- 13.3.15 The updated IAQM guidance focuses on 'dwellings' as non –ecological receptors, however for a conservative assessment, residential, community and commercial buildings and land uses were considered potential 'human' receptors for fugitive emissions from construction. Receptors were identified by interrogating a GIS linked address database including the National Land and Property Gazetteer (NLPG), Ordnance Survey's OS MasterMap Address Layer and the Royal Mail Postcode Address File (PAF).

Table 13.2: Sensitivity of the area to dust soiling effects on people and property

Receptor Sensitivity	Number of Receptors	Distances from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 13.3: Sensitivity of the area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Conc.	Number of Receptors	Distances from the Source (m)				
			<20	<50	<100	<200	<350
High	>32µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low

Receptor Sensitivity	Annual Mean PM ₁₀ Conc.	Number of Receptors	Distances from the Source (m)				
			<20	<50	<100	<200	<350
		1-10	Low	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table 13.4: Sensitivity of the area to Ecological Impacts

Receptor Sensitivity	Distances from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

- 13.3.16 **Step 2C: Defining the Risk of Impacts:** The dust emission magnitude and the sensitivity of the area are used to determine the risk of impacts, in the absence of mitigation, for each activity. **Tables 13.5 to 13.7** indicate the method used to assign the level of risk for each activity.

Table 13.5: Risk of Dust Impacts from Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 13.6: Risk of Dust Impacts from Earthworks/Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 13.7: Risk of Dust Impacts from Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

- 13.3.17 **Step 4: Determining The Significance:** The IAQM guidance is based on all mitigation measures being documented (for example in a Construction Environmental Management Plan, Dust Management Plan, or similar) secured by planning conditions or legal obligations and effectively applied, and that therefore significant adverse effects will not arise, and the residual effect will therefore be 'not significant' where appropriate mitigation is specified.
- 13.3.18 The mitigation measures described within Chapter 13 of the submitted ES (**Volume 5.13.1**) will be secured via Requirements or via the draft Construction Environmental Management Plan (CEMP) (**Volume 5.26.1** of the submitted ES) and Outline Waste Management Plan (OWMP) (**Volume 5.26.2** of the submitted ES), both of which will be the subject of a Requirement. Accordingly a review of these documents was undertaken as part of this assessment to determine if there would be any changes required as a result of the Revised Construction Programme.
- 13.4 Baseline Environment**
- 13.4.1 The submitted ES considered baseline air quality on the basis of local authority Local Air Quality Management (LAQM) reports and DEFRA Estimated Air Pollution Background Concentration Maps.
- 13.4.2 The LAQM reports reviewed for the submitted ES remain the current documents and there would be no changes required as a result of the Revised Construction Programme.
- 13.4.3 The DEFRA Estimated Air Pollution Background Concentrations have been revised and the updated estimated background data are summarised in **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)** of this document. The revised data are similar to those presented in the submitted ES and are do not result in a material change in the baseline air quality.
- 13.4.4 The Proposed Development does not pass through or near any AMQA and the revised estimated background pollutant concentrations presented in **Appendix 13A** are all well below the objectives.

13.5 Prediction and Assessment of Significance of Potential Effects

Construction Effects

13.5.1 As set out in the submitted ES, construction and demolition activities may impact on air quality in a number of ways, which may be broadly classified into:

- exhaust emissions from site plant, equipment and vehicles; and
- fugitive emissions from construction and overhead line removal activities.

Exhaust Emissions from Plant and Vehicles

13.5.2 The operation of site equipment, vehicles and machinery would result in emissions to the atmosphere of exhaust gases. For construction road traffic associated with the development, this is assessed at paragraph 13.5.67. For site plant, such emissions are unlikely to be significant, due to the small number of plant items likely to be in use at any one time, and their limited duration at any one location, in comparison with emissions from vehicle movements on the local road network surrounding the development site, and existing agricultural activities. For example, the construction of temporary access routes typically requires one mechanical excavator, two dumpers, and one vibratory roller, and the removal of topsoil typically utilises two tracked excavators and three bulldozers. Such numbers of plant are comparable with agricultural activity and are low compared with existing traffic on local roads. The impact of site equipment and plant on local air quality is not considered likely to change as a result of the Revised Construction Programme.

Fugitive Emissions

Updated IAQM guidance

13.5.3 With reference to the updated IAQM guidance, the fugitive dust emissions magnitudes for demolition, earthworks, construction and trackout activities are summarised below.

13.5.4 The changes to the submitted ES described in this section are as a result of the updated IAQM guidance and not as a result of the Revised Construction Programme. The construction activities and receptors are not anticipated to change materially, therefore there would be no change in the significance of effects described in the submitted ES (**Volume 5.13.1**) as a result of the Revised Construction Programme.

Identification of Receptors

13.5.5 The submitted ES identified sensitive receptors for fugitive emissions from construction site activities within 100m and 20m of the Proposed Development Order Limits (summarised in Table 13.8 of the submitted ES (**Volume 5.13.1**).

13.5.6 The ES also identifies the sensitivity of the area (by Section) based on the sensitive receptors contained therein.

13.5.7 The sensitive receptors identified in the submitted ES do not change as a result of the Revised Construction Programme or the updated IAQM guidance; the receptors within each Section remain as stated in the submitted ES.

- 13.5.8 The sensitivity of each Section does not change as a result of the Revised Construction Programme. However under the updated IAQM guidance, the sensitivity of each Section is defined with reference to the type of construction activities taking place and the potential effect (dust soiling, human health and ecological). Accordingly, the assessment of the sensitivity of each Section is described in paragraphs 13.5.12 to 13.5.73 below.

Significance of Construction Activities

- 13.5.9 The submitted ES sets out risk categories for four types of construction activities (demolition, earthworks, construction and trackout) in the Proposed Development sections. This information is set out in **Table 13.5** to **13.7** of the submitted ES (**Volume 5.13.1**)
- 13.5.10 This information does not change as a result of the Revised Construction Programme. However the updated IAQM provides a revised assessment of risk derived from the dust emissions magnitude and the defined sensitivity of the area (Section). Accordingly, the assessment of risk within each Section has been updated and is provided in paragraphs 13.5.12 to 13.5.73 below.
- 13.5.11 Mitigation measures that will control the potential effects of the construction activities based on the revised assessment of risk are discussed in Section 13.7. The mitigation measures do not change as a result of the Revised Construction Programme nor does the mitigation change as a result of the updated IAQM guidance; these would remain as stated in the submitted ES.

Section A – Puriton Ridge

- 13.5.12 With respect to dust soiling effects, it is estimated that there are approximately 1 to 10 High sensitivity receptors <20m from the Proposed Development order limits, and fewer than 100 within 50m, leading to a 'Medium Sensitivity' classification for the area. Since the assessment is made with reference to the order limits, the same sensitivity was applied for demolition, earthworks and construction phases, however a 'High Sensitivity' is applied to trackout because of the order of 10 to 100 High sensitivity receptors are present within 20m of affected roadsides.
- 13.5.13 With respect to human health, **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)** suggests that background PM₁₀ concentrations at all receptors are likely to be <24µg/m³ at 1 to 10 high sensitivity receptors <20m of the order limits during demolition, earthworks and construction, and 10 to 100 during trackout, therefore a low sensitivity applies to all.
- 13.5.14 With regard to ecological impacts, two Local Wildlife Sites are designated within 20m of the order limits, and it is assumed that features may be affected by dust deposition, therefore a Low sensitivity applies during demolition, earthworks, construction and trackout activities.

Table 13.8 Summary of Sensitivity of Area to Construction Activities

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Sensitivity'	Medium Sensitivity'	Medium Sensitivity'	High Sensitivity
Human health	Low Sensitivity'	Low Sensitivity'	Low Sensitivity'	Low Sensitivity'
Ecological	Low Sensitivity'	Low Sensitivity'	Low Sensitivity'	Low Sensitivity'

13.5.15 The assessed dust emissions classes are presented in **Table13.9**, below.

Table 13.9 Summary of Dust Emissions Magnitude Classes

Construction Activities	Parameters	Dust Emissions Class
Demolition	• Small demolition volume; • Mostly low dust materials (e.g. steel towers); and • Some work at around 20m above ground.	Medium
Earthworks	• Large area, >10,000m³; • Likely >10 plant; and • clay soil assumed.	Large
Construction	• Small 'building' volume; • Piled foundations; • No on site concrete batching; and • Above ground structure of steel.	Medium
Trackout	• Potentially large numbers (>100) HDV per day; • Temporary access route -assume moderately dusty (i.e. stone, not earth); and • Temporary access route – no unpaved road.	Large (Conservative assessment)

13.5.16 The dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts of construction activities before mitigation; these are evaluated based on risk categories of each activity in **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)**.

13.5.17 The risk of dust impacts from construction activities is identified in **Table 13.10**. As described previously, the risk category and the sensitivity of the area does not change as a result of the Revised Construction Programme. However as a result of the updated IAQM guidance, the approach and definition of risk has changed.

13.5.18 Site specific mitigation measures to reduce construction phase impacts are based on this assessment are defined in Chapter 13 of the submitted ES and summarised in section 13.7 below.

Table 13.10 Summary of the Dust Risk from Construction Activities, Section A

Potential Impact	Risk of Dust Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	Medium Risk	Medium Risk	High Risk
Human health	Low Risk	Low Risk	Low Risk	High Risk
Ecological	Low Risk	Low Risk	Low Risk	Low Risk

Section B – Somerset Levels and Moors South

- 13.5.19 With respect to dust soiling effects, it is estimated that there are approximately 10 to 100 High sensitivity receptors <20m from the Proposed Development order limits, leading to a 'High Sensitivity' classification for the area. 'High sensitivity' is the highest sensitivity class and was applied to demolition, earthworks, construction and trackout.
- 13.5.20 With respect to human health, **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)** suggests that background PM₁₀ concentrations at all receptors are likely to be <24µg/m³ at the 10 to 100 High sensitivity receptors <20m of the order limits during demolition, earthworks, construction, and trackout, therefore a low sensitivity applies to all.
- 13.5.21 With regard to ecological impacts, several Local Wildlife Sites and one National Nature Reserve are present within 20m of the order limits. For a conservative assessment, it is assumed that features may be affected by dust deposition, therefore a High sensitivity applies during demolition, earthworks, construction and trackout activities.

Table 13.11 Summary of Sensitivity of Area to Construction Activities, Section B

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	High Sensitivity'	High Sensitivity'	High Sensitivity'	High Sensitivity'
Human health	Low Sensitivity'	Low Sensitivity'	Low Sensitivity'	Low Sensitivity'
Ecological	High Sensitivity'	High Sensitivity'	High Sensitivity'	High Sensitivity'

- 13.5.22 The assessed dust emissions classes are presented in **Table 13.12** below.

Table 13.12 Summary of Dust Emissions Magnitude Classes, Section B

Construction Activities	Parameters	Dust Emissions Class
Demolition	- Small demolition volume; - Mostly low dust materials (e.g. steel towers); and - Some work at around 20m above ground.	Medium
Earthworks	- Large area, >10,000m³; - Likely >10 plant; and - clay soil assumed.	Large

Construction Activities	Parameters	Dust Emissions Class
Construction	• Small 'building' volume; • Piled foundations; • No on site concrete batching; • Above ground structure of steel; and • Some concrete and bentonite used in CSE compound construction.	Medium
Trackout	• Potentially large numbers (>100) HDV per day; • Temporary access route -assume moderately dusty (i.e. stone, not earth); and • Temporary access route – no unpaved road.	Large (Conservative assessment)

- 13.5.23 The dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts without mitigation; these are evaluated based on risk categories of each activity in **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)**. The risk of dust impacts from construction activities is identified in **Table 13.13**.
- 13.5.24 As described previously, the risk category and the sensitivity of the area does not change as a result of the Revised Construction Programme. However as a result of the updated IAQM guidance, the approach and definition of risk has changed.
- 13.5.25 Site specific mitigation measures to reduce construction phase impacts are defined based on this assessment in section 13.7.

Table 13.13 Summary of the Dust Risk from Construction Activities, Section B

Potential Impact	Risk of Dust Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
Human health	Low Risk	Medium Risk	Low Risk	Medium Risk
Ecological	Medium Risk	High Risk	Medium Risk	Medium Risk

Section C – Mendip Hills

- 13.5.26 With respect to dust soiling effects, it is estimated that there are approximately 10 to 100 High sensitivity receptors <20m from the Proposed Development order limits, leading to a 'High Sensitivity' classification for the area. 'High sensitivity' is the highest sensitivity class and was applied to demolition, earthworks, construction and trackout.
- 13.5.27 With respect to human health, **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)** suggests that background PM₁₀ concentrations at all receptors are likely to be <24µg/m³ at the 10 to 100 High sensitivity receptors <20m of the

order limits during demolition, earthworks, construction, and trackout, therefore a low sensitivity applies.

- 13.5.28 With regard to ecological impacts, several Sites of Nature Conservation Interest (SNCI) and one Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC) are present within 20m of the order limits. For a conservative assessment, it is assumed that features may be affected by dust deposition; therefore a High sensitivity is assumed for demolition, earthworks, construction and trackout activities.

Table 13.14 Summary of Sensitivity of Area to Construction Activities, Section C

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	High Sensitivity	High Sensitivity	High Sensitivity	High Sensitivity
Human health	Low Sensitivity	Low Sensitivity	Low Sensitivity	Low Sensitivity
Ecological	High Sensitivity	High Sensitivity	High Sensitivity	High Sensitivity

- 13.5.29 The assessed dust emissions classes are presented in **Table 13.15**, below.

Table 13.15 Summary of Dust Emissions Magnitude Classes, Section C

Construction Activities	Parameters	Dust Emissions Class
Demolition	• Small demolition volume; • Mostly low dust materials (e.g. steel towers); and • Some work at around 20m above ground.	Medium
Earthworks	• Large area, >10,000m³; • Likely >10 plant; and • Clay soil assumed.	Large
Construction	• Construction of jointing bays, cable bridges and culverts - Small 'building' volume; and • Moderately dusty materials (no on-site concrete batching, but placement and potential on-site mixing of concrete and bentonite for HDD).	Medium
Trackout	• Potentially large numbers (>100) HDV per day; • Temporary access route -assume moderately dusty (i.e. stone, not earth); and • Temporary access route – no unpaved road.	Large (Conservative assessment)

- 13.5.30 The risk of dust impacts from construction activities is identified in **Table 13.16**.

- 13.5.31 As described previously, the risk category and the sensitivity of the area does not change as a result of the Revised Construction Programme. However as a result of the updated IAQM guidance, the approach and definition of risk has changed.
- 13.5.32 Site specific mitigation measures to reduce construction phase impacts are defined based on this assessment in section 13.7.

Table 13.16 Summary of the Dust Risk from Construction Activities, Section C

Potential Impact	Risk of Dust Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
Human health	Low Risk	Medium Risk	Low Risk	Medium Risk
Ecological	Medium Risk	High Risk	Medium Risk	High Risk

Section D – Somerset Levels and Moors North

- 13.5.33 With respect to dust soiling effects, it is estimated that there are more than 100 High sensitivity receptors <20m from the Proposed Development order limits, leading to a 'High Sensitivity' classification for the area. 'High sensitivity' is the highest sensitivity class and was applied to demolition, earthworks, construction and trackout.
- 13.5.34 With respect to human health, **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)** suggests that background PM₁₀ concentrations at all receptors are likely to be <24µg/m³ at the >100 High sensitivity receptors <20m of the order limits during demolition, earthworks, construction, and trackout, therefore a Medium sensitivity is assigned.
- 13.5.35 With regard to ecological impacts, three SNCI, one LNR and three SSSI are present within 20m of the order limits. For a conservative assessment, it is assumed that features may be affected by dust deposition; therefore a High sensitivity is assumed for demolition, earthworks, construction and trackout activities.

Table 13.17 Summary of Sensitivity of Area to Construction Activities, Section D

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	High Sensitivity	High Sensitivity	High Sensitivity	High Sensitivity
Human health	Medium Sensitivity	Medium Sensitivity	Medium Sensitivity	Medium Sensitivity
Ecological	High Sensitivity	High Sensitivity	High Sensitivity	High Sensitivity

- 13.5.36 The assessed dust emissions classes are presented in **Table 3.18**, below.

Table 13.18 Summary of Dust Emissions Magnitude Classes, Section D

Construction Activities	Parameters	Dust Emissions Class
Demolition	- Small demolition volume; - Mostly low dust materials (e.g. steel towers); and	Medium

Construction Activities	Parameters	Dust Emissions Class
	Some work at around 20m above ground.	
Earthworks	- Large area, >10,000m³; - Likely >10 plant; and - Moderately dusty soil assumed.	Large
Construction	- Small 'building' volume; - Piled pylon foundations; - No on-site concrete batching; - Above ground structure mostly of steel; and, - Concrete used in CSE compound and substation and access bridge construction.	Medium
Trackout	- Potentially large numbers (>100) HDV per day; - Temporary access route - assume moderately dusty (i.e. stone, not earth); and - Temporary access route – no unpaved road.	Large (Conservative assessment)

13.5.37 The risk of dust impacts from construction activities is identified in **Table 13.19**.

13.5.38 As described previously, the risk category and the sensitivity of the area does not change as a result of the Revised Construction Programme. However as a result of the updated IAQM guidance, the approach and definition of risk has changed.

13.5.39 Site specific mitigation measures to reduce construction phase impacts are defined based on this assessment in Section 13.7.

Table 13.20 Summary of the Dust Risk from Construction Activities, Section D

Potential Impact	Risk of Dust Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
Human health	Medium Risk	Medium Risk	Medium Risk	Medium Risk
Ecological	Medium Risk	High Risk	Medium Risk	High Risk

Section E – Tickenham Ridge

13.5.40 With respect to dust soiling effects, it is estimated that there are fewer than 10 High sensitivity receptors <20m from the Proposed Development order limits and 10 to 100 within 50m, leading to a 'Medium Sensitivity' classification for the area to demolition, earthworks and construction, however for trackout, the number of high sensitivity receptors <20m from the roadside is estimated to be 10 to 100, leading to a 'High sensitivity assessment for trackout.

13.5.41 With respect to human health, , **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)** suggests that background PM₁₀ concentrations are likely to be <24µg/m³ at the <10 High sensitivity receptors <20m of the order limits during

demolition, earthworks and construction, leading to 'Low sensitivity' designation, and for trackout, the number of high sensitivity receptors <20m from the roadside is estimated to be 10 to 100, leading to a 'Low sensitivity assessment for trackout.

- 13.5.42 With regard to ecological impacts, two SNCI, and one Wildlife Site are present within 20m of the order limits. It is assumed that features may be affected by dust deposition; therefore a Low sensitivity is assumed for demolition, earthworks, construction and trackout activities.

Table 13.21 Summary of Sensitivity of Area to Construction Activities, Section E

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Sensitivity	Medium Sensitivity	Medium Sensitivity	High Sensitivity
Human health	Low Sensitivity	Low Sensitivity	Low Sensitivity	Low Sensitivity
Ecological	Low sensitivity	Low sensitivity	Low sensitivity	Low sensitivity

- 13.5.43 The assessed dust emissions classes are presented in **Table 13.22** below.

Table 13.22 Summary of Dust Emissions Magnitude Classes, Section E

Construction Activities	Parameters	Dust Emissions Class
Demolition	• Small demolition volume; • Mostly low dust materials (e.g. steel towers); and • Some work at around 20m above ground.	Medium
Earthworks	• Large area, >10,000m³; • Likely >10 plant; and • Moderately dusty soil assumed.	Large
Construction	• Small 'building' volume; • Piled pylon foundations; • No on-site concrete batching; and • Above ground structure mostly of steel..	Medium
Trackout	• Potentially large numbers (>100) HDV per day; • Temporary access route - assume moderately dusty (i.e. stone, not earth); and • Temporary access route – no unpaved road.	Large (Conservative assessment)

- 13.5.44 The risk of dust impacts from construction activities is identified in **Table 13.22**.

- 13.5.45 As described previously, the risk category and the sensitivity of the area does not change as a result of the Revised Construction Programme. However as a result of the updated IAQM guidance, the approach and definition of risk has changed.

- 13.5.46 Site specific mitigation measures to reduce construction phase impacts are defined based on this assessment in Section 13.7.

Table 13.23 Summary of the Dust Risk from Construction Activities , Section E

Aspect	Risk of Dust Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
Human health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological	Low Risk	Medium Risk	Low Risk	Medium Risk

Section F – Portishead (Route Options A and B)

- 13.5.47 The A and B route options are not materially different in terms of the defined sensitivity or emissions magnitude and risk classes, therefore the assessment outcome is the same under both route options.
- 13.5.48 With respect to dust soiling effects, it is estimated that there are fewer than 10 High sensitivity receptors <20m from the Proposed Development order limits and 10 to 100 within 50m, leading to a 'Medium Sensitivity' classification for the area to demolition, earthworks and construction, however for trackout, the number of high sensitivity receptors <20m from the roadside is estimated to be 10 to 100, leading to a 'High sensitivity assessment for trackout.
- 13.5.49 With respect to human health, **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)** suggests that background PM₁₀ concentrations are likely to be <24µg/m³ at the <10 High sensitivity receptors <20m of the order limits during demolition, earthworks and construction, leading to 'Low sensitivity' designation, and for trackout, the number of high sensitivity receptors <20m from the roadside is estimated to be 10 to 100, leading to a 'Low sensitivity assessment for trackout.
- 13.5.50 With regard to ecological impacts, a number of SNCI are present within 20m of the order limits (under both route options A and B). It is assumed that features may be affected by dust deposition; therefore a Low sensitivity is assumed for demolition, earthworks, construction and trackout activities.

Table 13.24 Summary of Sensitivity of Area to Construction Activities, Section F

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Sensitivity	Medium Sensitivity	Medium Sensitivity	High Sensitivity
Human health	Low Sensitivity	Low Sensitivity	Low Sensitivity	Low Sensitivity
Ecological	Low sensitivity	Low sensitivity	Low sensitivity	Low sensitivity

- 13.5.51 The assessed dust emissions classes are presented in **Table 13.25**, below.

Table 13.25 Summary of Dust Emissions Magnitude Classes, Section F

Construction Activities	Parameters	Dust Emissions Class
Demolition	- Small demolition volume; - Mostly low dust materials (e.g.	Medium

Construction Activities	Parameters	Dust Emissions Class
	- steel towers); and - Some work at around 20m above ground.	
Earthworks	- Large area, >10,000m³; - Likely >10 plant; and - Moderately dusty soil assumed.	Large
Construction	- Small 'building' volume; - Piled pylon foundations; - No on-site concrete batching; and - Above ground structure mostly of steel..	Medium
Trackout	- Potentially large numbers (>100) HDV per day; - Temporary access route - assume moderately dusty (i.e. stone, not earth); and - Temporary access route – no unpaved road.	Large (Conservative assessment)

13.5.52 The risk of dust impacts from construction activities is identified in **Table 13.26**.

13.5.53 As described previously, the risk category and the sensitivity of the area does not change as a result of the Revised Construction Programme. However as a result of the updated IAQM guidance, the approach and definition of risk has changed.

13.5.54 Site specific mitigation measures to reduce construction phase impacts are defined based on this assessment in Section 13.7.

Table 13.26: Summary of the Dust Risk from Construction Activities , Section F

Aspect	Risk of Dust Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	Medium Risk	Medium Risk	Medium Risk
Human health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological	Low Risk	Low Risk	Low Risk	Low Risk

Section G Avonmouth

13.5.55 With respect to dust soiling effects, it is estimated that there are >100 High sensitivity receptors <20m from the Proposed Development order limits, leading to a 'High Sensitivity' classification for the area to demolition, earthworks, construction, and trackout.

13.5.56 With respect to human health, **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)** suggests that background PM₁₀ concentrations are likely to be <24µg/m³ at the >100 High sensitivity receptors <20m of the order limits during demolition, earthworks and construction and trackout, leading to a 'Medium sensitivity assessment'.

- 13.5.57 With regard to ecological impacts, a number of SNCI, Wildlife Network Sites, other locally important sites and one SSSI and RAMSAR site are present within 20m of the order limits. It is assumed that features may be affected by dust deposition; therefore a High sensitivity is assumed for demolition, earthworks, construction and trackout activities.

Table 13.27 Summary of Sensitivity of Area to Construction Activities, Section G

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	High Sensitivity	High Sensitivity	High Sensitivity	High Sensitivity
Human health	Medium Sensitivity	Medium Sensitivity	Medium Sensitivity	Medium Sensitivity
Ecological	High Sensitivity	High Sensitivity	High Sensitivity	High Sensitivity

- 13.5.58 The assessed dust emissions classes are presented in **Table 13.28**, below.

Table 13.28 Summary of Dust Emissions Magnitude Classes Section G

Construction Activities	Parameters	Dust Emissions Class
Demolition	• Small demolition volume; • Mostly low dust materials (e.g. steel towers); and • Some work at around 20m above ground.	Medium
Earthworks	• Large area, >10,000m³; • Likely >10 plant; and • Clay soil assumed.	Large
Construction	• Small 'building' volume; • Piled pylon foundations; • No on-site concrete batching; and • Above ground structure mostly of steel..	Medium
Trackout	• Potentially large numbers (>100) HDV per day; • Temporary access route - assume moderately dusty (i.e. stone, not earth); and • Temporary access route – no unpaved road.	Large (Conservative assessment)

- 13.5.59 The risk of dust impacts from construction activities is identified in **Table 13.29**.
- 13.5.60 As described previously, the risk category and the sensitivity of the area does not change as a result of the Revised Construction Programme. However as a result of the updated IAQM guidance, the approach and definition of risk has changed.
- 13.5.61 Site specific mitigation measures to reduce construction phase impacts are defined based on this assessment in Section 13.7.

Table 13.29 Summary of the Dust Risk from Construction Activities, Section G

Aspect	Risk of Dust Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
Human health	Medium Risk	Medium Risk	Medium Risk	Medium
Ecological	Medium Risk	High Risk	Medium Risk	High Risk

Section H Hinkley Line Entries

- 13.5.62 With respect to dust soiling effects, there are no High sensitivity receptors <20m from the Proposed Development order limits and 1 to 10 within 100m, leading to a 'Low Sensitivity' classification for the area to demolition, earthworks and construction, however for trackout, the number of high sensitivity receptors <20m from the roadside is estimated to be 1 to 10, leading to a 'Medium sensitivity assessment for trackout.
- 13.5.63 With respect to human health, **Appendix 13A (Volume 5.29.1.2)** and **Figure 13.1 (Volume 5.29.1.3)** suggests that background PM₁₀ concentrations are likely to be <24µg/m³ at the <10 High sensitivity receptors <100m of the order limits during demolition, earthworks and construction, leading to 'Low sensitivity' designation, and for trackout, the number of high sensitivity receptors <20m from the roadside is estimated to be 1 to 10, leading to a 'Low sensitivity assessment for trackout.
- 13.5.64 With regard to ecological impacts, one LNR and one SSSI and RAMSAR site are present within 20m of the order limits. It is assumed that features may be affected by dust deposition; therefore a High sensitivity is assumed for demolition, earthworks, construction and trackout activities.

Table 13.30 Summary of Sensitivity of Area to Construction Activities, Section H

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Low Sensitivity	Low Sensitivity	Low Sensitivity	Medium Sensitivity
Human health	Low Sensitivity	Low Sensitivity	Low Sensitivity	Low Sensitivity
Ecological	High Sensitivity	High Sensitivity	High Sensitivity	High Sensitivity

- 13.5.65 The assessed dust emissions classes are presented in **Table 13.31**, below.

Table 13.31 Summary of Dust Emissions Magnitude Classes, Section H

Construction Activities	Parameters	Dust Emissions Class
Demolition	None proposed	Not applicable
Earthworks	- Large area, >10,000m³; - Likely >10 plant; and - Clay soil assumed.	Large

Construction Activities	Parameters	Dust Emissions Class
Construction	• Small 'building' volume; • Piled pylon foundations; • No on-site concrete batching; and • Above ground structure mostly of steel..	Medium
Trackout	• Typically 25-100 HDV per day; • Temporary access route - assume moderately dusty (i.e. stone, not earth); and • Temporary access route – no unpaved road.	Medium (Conservative assessment)

- 13.5.66 The risk of dust impacts from construction activities is identified in **Table 13.32**.
- 13.5.67 As described previously, the risk category and the sensitivity of the area does not change as a result of the Revised Construction Programme. However as a result of the updated IAQM guidance, the approach and definition of risk has changed.
- 13.5.68 Site specific mitigation measures to reduce construction phase impacts are defined based on this assessment in Section 13.7.

Table 13.32: Summary of the Dust Risk from Construction Activities, Section H

Aspect	Risk of Dust Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	None proposed	Low Risk	Low Risk	Low Risk
Human health		Low Risk	Low Risk	Low Risk
Ecological		High Risk	Medium Risk	Medium Risk

Significance of Construction Phase Impacts

- 13.5.69 The risk of dust impacts from construction activities for all route sections, prior to mitigation, is summarised in **Table 13.33**, below. As described above, the risks have not changed as a result of the Revised Construction Programme; the risks have been assessed in line with the updated IQAM guidance.

Table 13.33: Summary of the Dust Risk from Construction Activities, All Sections

Route Section	Aspect	Risk of Dust Impact			
		Demolition	Earthworks	Construction	Trackout
A: Puriton Ridge	Dust soiling	Medium Risk	Medium Risk	Medium Risk	High Risk
	Human health	Low Risk	Low Risk	Low Risk	High Risk
	Ecological	Low Risk	Low Risk	Low Risk	Low Risk
B: Somerset Levels and Moors South	Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
	Human health	Low Risk	Medium Risk	Low Risk	Medium Risk
	Ecological	Medium Risk	High Risk	Medium Risk	Medium Risk

C: Mendip Hills	Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
	Human health	Low Risk	Medium Risk	Low Risk	Medium Risk
	Ecological	Medium Risk	High Risk	Medium Risk	High Risk
D: Somerset Levels and Moor North	Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
	Human health	Medium Risk	Medium Risk	Medium Risk	Medium Risk
	Ecological	Medium Risk	High Risk	Medium Risk	High Risk
E: Tickenham Ridge	Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
	Human health	Low Risk	Low Risk	Low Risk	Low Risk
	Ecological	Low Risk	Medium Risk	Low Risk	Medium Risk
F: Portishead (Options 1 & 2)	Dust soiling	Medium	Medium	Medium	Medium
	Human health	Low Risk	Low Risk	Low Risk	Low Risk
	Ecological	Low Risk	Low Risk	Low Risk	Low Risk
G: Avonmouth	Dust soiling	Medium Risk	High Risk	Medium Risk	High Risk
	Human health	Medium Risk	Medium Risk	Medium Risk	Medium Risk
	Ecological	Medium Risk	High Risk	Medium Risk	High Risk
H: Hinkley Line Entries	Dust soiling	None proposed	Low Risk	Low Risk	Low Risk
	Human health		Low Risk	Low Risk	Low Risk
	Ecological		High Risk	Medium Risk	Medium Risk

- 13.5.70 The updated IAQM guidance recommends that, since appropriate mitigation would be secured by the Construction Environmental Management Plan (CEMP) (a requirement of the DCO), potentially significant effects would be managed. Therefore the potential significance of unmitigated impacts has not been assessed as part of this sensitivity test as it is not a requirement of the new guidance; the updated IAQM guidance states that it is not considered appropriate to assess the magnitude or therefore significance of effects without mitigation.
- 13.5.71 However, it is considered that the revised construction programme does not cause the significance of effects to change from those presented in **Table 13.28** of the submitted ES (**Volume 5.13.1**). As described above the changes to the risks and sensitivity of each area is related to the updated IQAM guidance rather than the Revised Construction Programme.
- 13.5.72 As a result of the Revised Construction Programme, there will not be any materially different fugitive dust emissions compared with the submitted ES, because no major changes to the construction activities or receptors are anticipated.
- 13.5.73 However the application of the updated IAQM guidance results in a change in the presentation of the assessment outcome when compared to the submitted ES. In reality the potential for fugitive dust emissions would be controlled by effective mitigation and no significant adverse impact is anticipated as a result of the proposed Revised Construction Programme.

Construction Traffic Air Quality Impacts

- 13.5.74 Construction traffic air quality impacts associated with the Revised Construction Programme has been assessed in this section. The methodology is as in the

submitted ES (**Volume 5.13.1, section 13.3**). Revised traffic data are presented in **Table 13.34**, below.

Table 13.34- Revised Traffic Data associated with Revised Construction Programme

Road Link	Year	Without Development		With Development		% Increase AADT	Increase HGV (No)
		AADT	HGV	AADT	HGV		
Puriton Hill	2021	15825	2069	16033	2121	1.3	52
Bath Road	2021	14056	1158	14190	1210	1.0	52
B3141 Woolavington Hill	2021	5235	448	5416	474	3.5	26
B3139 Causeway	2021	3325	259	3506	285	5.4	26
B3139 Church Road	2019	4310	313	4370	341	1.4	28
A38 Bristol Road	2019	14822	1892	14882	1920	0.4	28
A38 Bristol Road	2016	16458	1597	16782	1713	2.0	116
A38 Bristol Road	2016	12373	1051	12697	1167	2.6	116
A368 Dinghurst Road	2016	7124	676	7448	792	4.5	116
A38 Bristol Road	2017	18222	1410	18546	1526	1.8	116
A370	2018	20237	1708	20553	1792	1.6	84
A370	2018	18385	1222	18701	1306	1.7	84
Lampley Road	2018	10767	850	10941	901	1.6	51
Kennmoor Road	2018	3261	137	3435	188	5.3	51
Kenn Road	2018	11133	896	11307	947	1.6	51
Nailsea Wall	2018	1966	138	2139	189	8.8	51

Road Link	Year	Without Development		With Development		% Increase	Increase HGV
B3133	2018	15436	1116	15609	1167	1.1	51
Manmoor Lane	2018	4370	208	4543	259	4.0	51
B3130 Clevedon Road	2019	14769	947	14851	975	0.6	28
B3130 Clevedon Road	2019	12658	837	12741	865	0.7	28
B3128 Clevedon Road	2019	9835	526	9918	554	0.8	28
Whitehouse Lane	2019	8011	290	8094	318	1.0	28
Caswell Hill	2019	993	57	1076	85	8.4	28
Sheepway	2019	1326	178	1406	204	6.0	26
The Portbury Hundred	2019	29490	1737	29573	1764	0.3	28
Victoria Road	2019	2254	651	2293	664	1.7	13
Avonmouth Way	2020	1938	639	2122	679	9.5	40
A403 St. Andrew's Road	2020	0	0	184	40	N/A	40
Kings Weston Lane	2020	9105	1265	9289	1305	2.0	40
A403 Smoke Lane	2020	13124	3496	13308	3536	1.4	40
Poplar Way West	2020	9256	2660	9440	2700	2.0	40
Poplar Way East	2020	3119	441	3303	481	5.9	40
A403 Severn Road	2020	14062	1979	14246	2019	1.3	40
Severn Road	2020	4314	521	4498	561	4.3	40

Road Link	Year	Without Development		With Development		% Increase	Increase HGV
Wick Moor Drive	2018	2698	252	3165	412	17.3	160
Whitewick Lane	2018	253	17	253	17	0.0	0
Rodway	2018	6088	530	6555	690	7.7	160
Quantock Road	2018	17616	1615	18083	1775	2.7	160
A38 Bristol Road	2018	27919	2523	28386	2683	1.7	160

- 13.5.75 Traffic associated with the construction phase would be directed via designated routes. Estimates of existing traffic along these routes and additional traffic associated with the construction phase are presented below. The predicted 'worst case' year for each route was selected.
- 13.5.76 The Environmental Protection (UK) Planning for Air Quality (2010 Update) guidance on dealing with air quality within the development control process suggests a traffic increase of 10% (or 5% in an AQMA) on roads with existing Annual Average Daily Traffic (AADT) of 10,000 or more or a change to materially alter the traffic composition, (for example, increase the number of HGVs by 200 movements or more per day) as a threshold triggering a requirement for the quantitative assessment of air quality effects of increased road traffic.
- 13.5.77 As a result of the Revised Construction Programme, none of the identified roads meets the criteria set out by the guidance. Only one road link (Wick Moor Drive) is predicted to experience an increase in AADT greater than 10% however, the existing AADT for this road link is well below the 10,000 threshold. Quantitative assessment of road traffic emissions is therefore not required and no significant impact of increased road traffic emissions associated with the Revised Construction Programme of the Proposed Development is anticipated.

Operational Effects

- 13.5.78 The Operational effects would not change materially from the submitted ES (**Volume 5.13.1**) as a result of the Revised Construction Programme.

Indicative Access for Future Maintenance

- 13.5.79 The effects of future access requirements are not considered likely to change materially from the submitted ES (**Volume 5.13.1**) as a result of the Revised Construction Programme.

Decommissioning Effects

- 13.5.80 The decommissioning effects are not considered likely to change materially from the submitted ES (**Volume 5.13.1**) as a result of the Revised Construction Programme.

Climate Change Effects

- 13.5.81 The climate change effects are not considered likely to change materially from the submitted ES (**Volume 5.13.1**) as a result of the Revised Construction Programme.

13.6 Inter-relationship of Potential Effects

- 13.6.1 The inter-relationship of potential effects is unlikely to change materially from the submitted ES (**Volume 5.13.1**) as a result of the Revised Construction Programme.

13.7 Mitigation

- 13.7.1 The IAQM guidance requires mitigation to be specified on the basis of site Risk Category, but also notes that 'it is difficult to provide generic guidance as each site and its locations - are different and professional judgement is required'.
- 13.7.2 The agreed mitigation would be secured by a single CEMP, which would be a requirement of the DCO, to ensure that any potentially significant effects would be adequately controlled.
- 13.7.3 The mitigation does not change from that set out in Chapter 13 of the submitted ES (**Volume 5.13.1**) and the submitted Draft CEMP (**Volume 5.26.1**) as a result of the Revised Construction Programme. However, for completeness, where sections of the project differ in terms of dust impacts risk under the updated IAQM guidance, the mitigation recommended for the greater risk (High Risk) has been specified below:

Table 13.35 Summary of Air Quality mitigation measures of submitted CEMP (**Volume 5.26.1** of submitted ES)

Aspect	Mitigation Measures
Fugitive emissions from construction and similar activities.	- Daily inspections will be undertaken of the site and off-site receptors (including deposition of dust on surfaces) by the contractor(s) and weekly inspections will be undertaken by National Grid, WPD and the contractor(s). - Dust suppression techniques will be adopted (for example, water sprays, dampening of access roads, erection of screens and barriers, and/or positioning works away from receptors) where activities could create dust clouds. Suppression techniques will be used more frequently during periods of dry weather. - Potentially dust creating plant and activities will be positioned away from receptors, where reasonably practicable. - Dusty materials, such as aggregate and limestone dust, will be sheeted or prevented in some other way from becoming wind-borne. - Where required and where practicable, (for example at construction camps) screens and barriers would be erected.

Aspect	Mitigation Measures
	- Waste will be disposed of in accordance with the Waste Management Plan (WMP) (Volume 5.26.2) and the Site Waste Management Plans (SWMPs). - The CTMP would be implemented to reduce the risk of mud and dust being deposited on roads. When roads are cleaned, appropriate measures, such as wet sweepers, would be used to avoid dust creation. - Wheel-cleaning and road-sweeping requirements at site exits will be established in accordance with the CTMP (Volume 5.26.5). - Loaded vehicles that are carrying dust generating materials will be covered, for example, with sheets when leaving site. - Wheel cleaning facilities would be established at appropriate site access and egress for vehicles in accordance with the CTMP (Volume 5.26.5). - There will be no open burning of materials on site.
Exhaust Emissions from Plant and Vehicles.	- The site speed limit would be signposted and would not exceed 10mph. - Engines would be turned off when vehicles are not in use, to avoid 'idling'. - The use of diesel generators will be minimised and mains or battery power will be used where available.
Effects on nearby receptors.	- Records would be kept of air quality incidents and or complaints. They would be investigated and remedial action would be taken. - The log would be available to the local authority on request. - A communications plan would be established in accordance with (CEMP) Volume 5.26.1. - The contractor's main office contact information and the site manager's contact information would be displayed at the site entrance.
Odour	- Odour monitoring would be carried out by site staff according to Environment Agency Horizontal Guidance on Odour H4. - Materials liable to emitting odour would be covered where practicable.

13.8 Residual Effects

- 13.8.1 The mitigation detailed in **Table 13.35** would be secured by the CEMP, which would be a requirement of the DCO, to ensure that any potentially significant effects will be adequately controlled. As stated in the IAQM guidance, the aim should be to prevent significant effects on receptors through the use of effective

mitigation. The mitigation would be effectively applied by the CEMP, therefore no significant impacts due to fugitive dust emissions are anticipated and no changes to the residual effects presented in the submitted ES (**Volume 5.13.1**) are required as a result of the Revised Construction Programme.

13.9 Cumulative Effects

- 13.9.1 The Revised Construction Programme is considered unlikely to change either the potential for cumulative fugitive dust effects with the projects assessed in the submitted ES, or with new major development identified since submission of the submitted ES (as described in Chapter 17 of this document).
- 13.9.2 As in the submitted ES, fugitive emissions from the Proposed Development, and therefore their potential for summation with those from other projects would be controlled by the best practice mitigation measures identified in the submitted ES (**Volume 5.13.1, section 13.7**) and the submitted Draft CEMP (**Volume 5.26.1**).
- 13.9.3 Mitigation of potential fugitive dust is standard practice for development projects and it is typically a condition of planning consent. It is therefore expected that all proposed developments would mitigate fugitive dust emissions; therefore no significant effect is predicted. There is unlikely to be a significant adverse effect from fugitive emissions as a result of the Proposed Development and other projects being constructed.
- 13.9.4 As in the submitted ES (**Volume 5.13.1**), the majority of the identified roads are not predicted to experience a 'significant' increase in traffic based on the screening criteria reproduced from the EP-UK guidance.
- 13.9.5 As in the submitted ES, a small number of roads are predicted to experience an increase in AADT or HGV numbers which would exceed the EP-UK screening criteria, however as in the submitted ES, in all cases the great majority of the increase is associated with committed developments, and not the Proposed Development.
- 13.9.6 As in the submitted ES (**Volume 5.13.1**), the majority of roads predicted to experience an increase in traffic exceeding the screening criteria do not have residential receptors at roadside locations and existing air quality is likely to be good, therefore a significant impact on air quality at relevant receptors is unlikely.

13.10 Conclusion

- 13.10.1 The sensitivity test considers construction phase impacts only; the submitted ES concluded that the Proposed Development does not adversely affect air quality during its operational phase, and the programme for the decommissioning phase is unaffected by the Revised Construction Programme.
- 13.10.2 There will not be any materially different fugitive dust impacts compared with the submitted ES, because the construction activities and receptors are not anticipated to change materially as a result of the Revised Construction Programme. However the application of the updated IAQM guidance results in a change in the presentation of the outcome when compared to the submitted ES. In reality the potential for fugitive dust emissions will be controlled by effective mitigation and no

adverse impact is anticipated as a result of the Revised Construction Programme. The potential significance of effects remains as stated in the submitted ES (**Volume 5.13.1**).

- 13.10.3 The potential impact of the updated road traffic emissions associated with the Revised Construction Programme has been assessed. None of the roads assessed meet the screening criteria for requiring further assessment and no significant impact of increased road traffic emissions associated with the implementation of the Revised Construction Programme are anticipated; the potential significance of effects remains as stated in the submitted ES (**Volume 5.13.1**).
- 13.10.4 The Revised Construction Programme does not alter the assessment of residual effects in the submitted ES (**Volume 5.13.1**).

14 NOISE AND VIBRATION

14.1 Introduction

- 14.1.1 This chapter of the ES Sensitivity Test provides an assessment of the potential noise and vibration effects of the Revised Construction Programme (including removal of existing overhead lines), operation and decommissioning of the various components of the Proposed Development. This assessment should be read in conjunction with Chapter 14 of the submitted ES (**Volume 5.14.1**).
- 14.1.2 In order to achieve the revised connection offer date, the Proposed Development would be constructed between December 2015 and March 2022, over a 76 month duration. This results in the duration of the construction phase of the Proposed Development increasing by just over two years (25 months) when compared to the construction timescale assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**). Where the Revised Construction Programme results in changes to the assessment contained within Chapter 14 of the submitted ES, these are presented herein.
- 14.1.3 The Construction Traffic Noise Assessment contained at **Appendix 14B** of the submitted ES (**Volume 5.14.2**) has been updated to reflect the predicted construction noise associated with the Revised Construction Programme. The revised assessment is contained within **Appendix 14B** of this document (Volume **5.29.1.2**); all other appendices presented in **Volume 5.14.2** remain unchanged.

Chapter Layout

- 14.1.4 In accordance with Chapter 14 of the submitted ES, this chapter has been separated into three parts. Part 1 deals with construction and decommissioning effects. Part 2 deals with operational effects. Part 3 summarises the findings of this chapter for construction, decommissioning and operational effects of the Revised Construction Programme. This separation should aid the reader and minimise confusion between the various methods, standards and assessments described in this chapter.

Part 1- Construction and Decommissioning Noise and Vibration

14.2 Legislation, Policy and Guidance

- 14.2.1 There are no changes to the legislation, policy or guidance context outlined in the submitted ES that are relevant to this topic or assessment. Accordingly the legislation, policy and guidance relevant to construction noise and vibration is as described in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.2**)

14.3 Method

- 14.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method presented in Chapter 5 of this document. A desk-based assessment, together with professional judgement, has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES (**Volume 5.14.1, section 14.2**).

- 14.3.2 The following information has been used in the assessment:
- Revised Construction Programme traffic data; and
 - Revised Construction Program (contained within **Appendix 3B** of the ES Sensitivity Test (**Volume 5.29.1.2**))
- 14.3.3 The assessment of effects is undertaken in accordance with the method as presented in the submitted ES (**Volume 5.14.1, section 14.2**).

14.4 Baseline Environment

- 14.4.1 With regards to construction activity, the baseline environment described in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.11**) is not affected by changes to the construction programme and no significant changes have occurred in the baseline environment since the submission of the ES to require re-assessment. Accordingly the baseline environment is as described in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.3**).
- 14.4.2 With regards to construction traffic on existing roads, the Transport Assessment Sensitivity Test (**Volume 5.29.2.2**) indicates that the future baseline traffic flows, on which the construction traffic noise assessment is based, would be marginally greater due to the later construction dates of the Revised Construction Programme. The subsequent increase in baseline traffic noise is **negligible**. However, the assessment of noise from construction traffic on existing roads has been updated to reflect this change.

14.5 Prediction and Assessment of Significance of Potential Effects

Construction Effects

- 14.5.1 In accordance with the assessment presented at Section 14.4 of the submitted ES(**Volume 5.14.1**), the following construction processes have been reviewed with regard to the Revised Construction Programme being implemented:
- 400kV and 132kV overhead line construction;
 - Substation construction;
 - Construction Compound construction;
 - Transition Jointing Pits construction;
 - Construction Traffic on Temporary Construction Haul and Access Roads;
 - Construction Traffic Vibration Effects; and
 - Decommissioning Effects.
- 14.5.1 The effects of noise and vibration assessed in the submitted ES would not change at any single receptor for the above construction processes under the Revised

Construction Programme. Accordingly, the Revised Construction Programme does not alter the assessment of effects as set out in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.4**).

Construction Traffic on Existing Roads

- 14.5.2 The construction traffic noise assessment has been revised based on traffic data supplied by the traffic consultant. The traffic assessment indicates that the peak construction flows will not exceed those assessed in the submitted ES but the peak traffic will occur during a different year. The baseline traffic flows for the peak years will therefore vary and the revised construction traffic noise assessment is therefore revised accordingly.
- 14.5.3 The revised construction traffic noise assessment is presented in **Appendix 14B** and indicates that the effects would not materially alter the construction traffic noise assessment as set out in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.4**).
- 14.5.4 It should be noted that a number of construction traffic routes identified in the submitted ES are no longer proposed and these are identified in **Appendix 14B (Volume 5.29.1.2)**. The change in the proposed construction routes are as a result of National Grid's ongoing discussions with the local planning authorities.
- 14.5.5 The magnitude of effects for several routes has been reduced from low to negligible or negligible to no change. In these instances the significance of effect is either low or negligible.
- 14.5.6 The exceptions to this are: Avonmouth Way and the Wick to Stalford Road. The construction traffic noise assessment at Avonmouth Way marginally increases in terms of assessed magnitude under the Revised Construction Programme, but remains of **negligible** significance. Accordingly, no further mitigation is required for this route as a result of the Revised Construction Programme
- 14.5.7 The Wick to Stalford Road increases from minor to **moderate** significance. The increase is due to the low level of existing traffic on this road during the peak year associated with the Revised Construction Programme. However, as the baseline traffic flows are low, the absolute noise levels will not exceed threshold noise levels, in terms of WHO guidelines for health and wellbeing or published amenity guidance, at receptors. Accordingly, no further mitigation is required for this route as a result of the Revised Construction Programme.

14.6 Inter-relationship of Potential Effects

- 14.6.1 The predicted inter-relationship construction noise effects are not sensitive to changes in construction programme. Accordingly, the Revised Construction Programme does not alter the assessment of inter-relationship construction effects as set out in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.5**).

14.7 Mitigation

- 14.7.1 The construction mitigation measures would be as stated in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.6**). No further mitigation measures are required as a result of the Revised Construction Programme.

14.8 Residual Effects

- 14.8.1 The residual effects of construction noise and vibration remain as stated in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.7**). There are no changes to the residual effects as a result of the Revised Construction Programme.

14.9 Cumulative Effects

- 14.9.1 The cumulative assessment sensitivity test is provided at Chapter 17 of this document.
- 14.9.2 The Revised Construction Programme does not change the assessment of cumulative effects identified in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.8**).

14.10 Conclusion - Construction Effects

- 14.10.1 It is concluded that the Revised Construction Programme has no implications for the assessment of the likely significant environmental effects of construction noise set out in Chapter 14 of the submitted ES (Volume 5.14.1), with the exception of the proposed construction route along the Wick to Stalford Road which increases from negligible to moderate significance. However, this increase is due to the low baseline traffic flows along this route during the peak year and absolute levels will not exceed threshold noise levels, in terms of WHO guidelines for health and wellbeing or published amenity guidance, at receptors. Accordingly no further mitigation measures are required as a result of the Revised Construction Programme.

Part 2- Operational Noise and Vibration

14.11 Legislation, Policy and Guidance

- 14.11.1 There are no changes to the legislation, policy or guidance context outlined in the submitted ES that are relevant to this topic or assessment. Accordingly the legislation, policy and guidance relevant to operational noise and vibration is as described in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.10**).

14.12 Method

- 14.12.1 The review of the Revised Construction Programme has been undertaken in accordance with the method presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme has changed the assessment presented in the submitted ES.

14.13 Baseline Environment

- 14.13.1 The baseline environment described in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.11**) is not affected by changes to the construction programme and no significant changes have occurred in the baseline environment since the submission of the ES to require re-assessment. Accordingly the baseline environment is as described in Chapter 14 of the submitted ES.

14.14 Prediction and Assessment of Significance of Potential Effects

- 14.14.1 The predicted effects during operation are not sensitive to changes in construction programme. The predicted operational effects that would result from the Revised Construction Programme are the same as those described in the submitted ES (**Volume 5.14.1, section 14.12**).

14.15 Inter-relationship of Potential Effects

- 14.15.1 The predicted inter-relationship operational effects are not sensitive to changes in construction programme. Accordingly, the Revised Construction Programme does not alter the assessment of inter-relationship operational effects as set out in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.13**).

14.16 Mitigation

- 14.16.1 The operational mitigation measures would be as stated in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.14**). There are no changes to the mitigation measures as a result of the Revised Construction Programme.

14.17 Residual Effects

- 14.17.1 As stated in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.15**) residual effects for operational noise are not assessed, since all practical mitigation has already been applied during the design and specification of the overhead line and substation. The Revised Construction Programme does not alter the assessment of residual effects.

14.18 Cumulative Effects

- 14.18.1 The Revised Construction Programme does not change the assessment of cumulative effects identified in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.16**).

14.19 Conclusion - Operational Effects

- 14.19.1 It is concluded that the Revised Construction Programme does not change the assessment of the likely significant environmental effects of operational noise set out in Chapter 14 of the submitted ES (**Volume 5.14.1**).

Part 3 – Summary of Noise and Vibration Effects**14.20 Conclusion****Construction Effects**

- 14.20.1 It is concluded that the Revised Construction Programme does not change the assessment of the likely significant environmental effects of construction noise set out in Chapter 14 of the submitted ES (Volume 5.14.1), with the exception of the proposed construction route along the Wick to Stalford Road which increases from negligible to moderate significance. However, this increase is due to the low baseline traffic flows along this route during the peak year and absolute levels will not exceed threshold noise levels, in terms of WHO guidelines for health and wellbeing or published amenity guidance, at receptors. Accordingly no further mitigation measures are required as a result of the Revised Construction Programme.

Operational Effects–

- 14.20.2 It is concluded that the Revised Construction Programme does not change the assessment of the likely significant environmental effects of operational noise set out in Chapter 14 of the submitted ES (**Volume 5.14.1**).

Decommissioning Effects

- 14.20.3 It is concluded that the Revised Construction Programme does not change the assessment of the likely significant environmental effects of decommissioning noise set out in Chapter 14 of the submitted ES (**Volume 5.14.1**).

15 SOCIO-ECONOMICS AND LAND USE

15.1 Introduction

- 15.1.1. This chapter of the ES Sensitivity Test provides an assessment of the likely significant effects of the Proposed Development on socio-economic features and on existing and future land uses during the construction, operation and decommissioning phases as a result of the Revised Construction Programme. This assessment should be read in conjunction with Chapter 15 of the submitted ES (**Volume 5.15.1**). Where there are changes to chapter Insets as a result of the Revised Construction Programme being implemented, these are included within this document.
- 15.1.2. In order to achieve the revised connection date offer, the Proposed Development would be built between December 2015 and March 2022, over a 76 month duration. This results in the duration of the construction phase of the Proposed Development increasing by just over two years (25 months) when compared to the construction timescale assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**). Accordingly this sensitivity test assesses what the likely effects on socio-economics are during the Revised Construction Programme.
- 15.1.3. **Appendix 15G** of the submitted ES (**Volume 5.15.2**) provides a list of planning allocations relevant to this assessment. Where new planning allocations have been identified in the interim since the drafting of the submitted ES, these are reported in an updated table at **Appendix 15G (Volume 5.29.1.2)**; this updates **Appendix 15G** of the submitted ES.
- 15.1.4. In addition **Appendix 15H** of the submitted ES (**Volume 5.15.2**) provides a list of planning applications relevant to this assessment. Where new planning applications have been identified in the interim since the drafting of the submitted ES, these are reported in an updated table at **Appendix 15H (Volume 5.29.1.2)**; this updates **Appendix 15H** of the submitted ES.
- 15.1.5. All other figures (**Volume 5.15.2**) and appendices (**Volume 5.15.3**) remain as stated in the submitted ES as a result of the Revised Construction Programme.

15.2 Legislation, Policy and Guidance

- 15.2.1 There have been no changes to policy from that previously presented in the submitted ES (**Volume 5.15.1, Section 15.2**). Accordingly the legislation, policy and guidance of relevance to the Revised Construction Programme is as described in the submitted ES.

15.3 Method

- 15.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. The

Revised Construction Programme and construction staff numbers were provided by National Grid. The submitted ES was reviewed using this data.

- 15.3.2 In accordance with the employment data for the Proposed Development used in the submitted ES, employment data for the Revised Construction Programme has been provided by National Grid. This data is based on reasonable estimates by National Grid engineers and their experience of previous projects. All employment numbers identified have been rounded to the nearest 5.
- 15.3.3 Re-calculations and professional judgement were used to determine the significance of these changes on the impacts reported in the submitted ES as a result of the Revised Construction Programme.
- 15.3.4 The assessment of effects was undertaken in accordance with the method presented in Chapter 15 of the submitted ES.

15.4 Baseline Environment

- 15.4.1 There have been no changes to the baseline environment from that previously presented in the submitted ES (Volume 5.15.1) that would require re-assessment as part of this sensitivity test other than one planning application that has been approved since drafting the submitted ES; this is discussed below at **Section 15.5**.

15.5 Prediction and Assessment of Significance of Potential Effects

- 15.5.1 Under the Revised Construction Programme, the Proposed Development would be built between December 2015 and March 2022, over a 76 month duration. This results in the duration of the construction phase of the Proposed Development increasing by just over two years (25 months) when compared to the construction timescale assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**).

Socio-Economic

- 15.5.2 As a result of the Revised Construction Programme, the demand for labour changes from being concentrated in the first 3 years of the programme to being concentrated in 2018 and 2019. The peak employment period changes from 545 staff in October 2016, to 385 during August 2018. This is detailed on Insets 15.1 and 15.2 below.
- 15.5.3 As a result of the Revised Construction Programme, the various components of the Proposed Development change as follows:
 - overhead line construction and removal:
 - peak staff demand changes from 230 during July to November 2016, to 230 during September 2018 to January 2019; the average monthly staff demand estimate changes from 185 people per month (full time equivalent (FTE))

during the previous 55 month construction programme, to 135 during the new 49 month programme for this element;

- underground cable and CSE compound construction:
 - peak staff demand changes from 285 during October 2016, to 280 staff during December 2016;
 - the average monthly staff demand decreases from 155 people per month FTE to 130 during the 54 month construction programme for this element;
- substation construction:
 - peak staff demand changes from 67 during June 2018, to 55 during October 2019; and
 - average monthly staff demand changes from 25 over a construction programme of 64 months, to 35 staff on average over a 49 month programme for this element.

15.5.4 As a result of the Revised Construction Programme, the cost of the Proposed Development would remain the same as stated in the submitted ES (£485 million) and the effect on the local economy, supply chains and inward investment would remain as **minor beneficial**.

15.5.5 The additional spend that would enter into the local economy from the contractors working on the Proposed Development increases from that stated in the submitted ES (£11 million) to approximately £12 million during the construction period. This is because the revised programme has an increased number of staff on site for a longer period. The effect of this would remain as **negligible**.

15.5.6 As a result of the Revised Construction Programme, the number of jobs that this additional spend might support changes from potentially 65 to 60 full time jobs in the restaurant and mobile food service sector if spent there exclusively, and from 60 to 50 jobs if spent exclusively in the accommodation and food service sector. This is the number of annual jobs possibly supported in each sector through the construction programme. Given the longer assessed programme, the overall inward spend is aggregated over the longer period.

15.5.7 The breakdown of where local employment opportunities exist across the employment types would change, but only slightly, from between 8-25% (averaging at 17%) of the workforce onsite coming from the local labour market to between 10-24% (averaging at 17%). This share of employment is expected to be equivalent to an estimated 210 person years of work as a result of the Revised Construction Programme; this changes from the 240 person years of work as stated in the submitted ES.

15.5.8 The average monthly local job demand changes from 60 for the first four years, to 35 over the six year Revised Construction Programme (as detailed at Inset 15.3). The overall effect on employment across the combined local authorities continues to equate to less than 1% of people out of work, this would remain as a **negligible** impact.

- 15.5.9 However, as a result of the Revised Construction Programme, the Proposed Development continues to offer significant opportunities to certain job types, such as security and labouring (as detailed at Inset 15.2). The effect on the unemployed in these skill groups as a whole would remain as minor beneficial.
- 15.5.10 In terms of accommodation, the highest overall accommodation bedspace demand of 385 during the off peak month of October 2016, changes to 280 during the peak months of August and September 2018 as a result of the Revised Construction Programme. The average overall bedspace demand, with the Revised Construction Programme, during the peak tourism season (April to September) would be 160 in 2016, 155 in 2017, 250 in 2018, 235 in 2019, 135 in 2020 and 75 in 2021. Camping and caravan facilities would be in greatest demand with the highest demand projected to be 155 in August 2018 and the average peak season bedspace demands projected to be 90 in 2016, 85 in 2017, 140 in 2018, 130 in 2019, 75 in 2020 and 40 in 2021 as detailed at Inset 15.4.
- 15.5.11 Overall the accommodation demands of the workforce could still be satisfied within the existing accommodation stock without displacing existing tourist users. This would represent an impact of negligible magnitude. The Proposed Development would continue to have a negligible effect on accommodation availability as a result of the Revised Construction Programme.
- 15.5.12 The Revised Construction Programme results in a different employment and accommodation profile for the project (Insets 5.1 to 5.4 and Table 15.1 represents the employment profile as a result of the Revised Construction Programme). However the Revised Construction Programme, does not change the assessment of effects reported in the submitted ES (**Volume 5.15.1**).

The chart displays the estimated FTE construction staff for various projects from December 2015 to January 2022. The Y-axis represents the number of staff, ranging from 0 to 600. The X-axis shows the months, with labels D (December), F (February), A (April), J (June), A (August), O (October), and D (December) for each year.

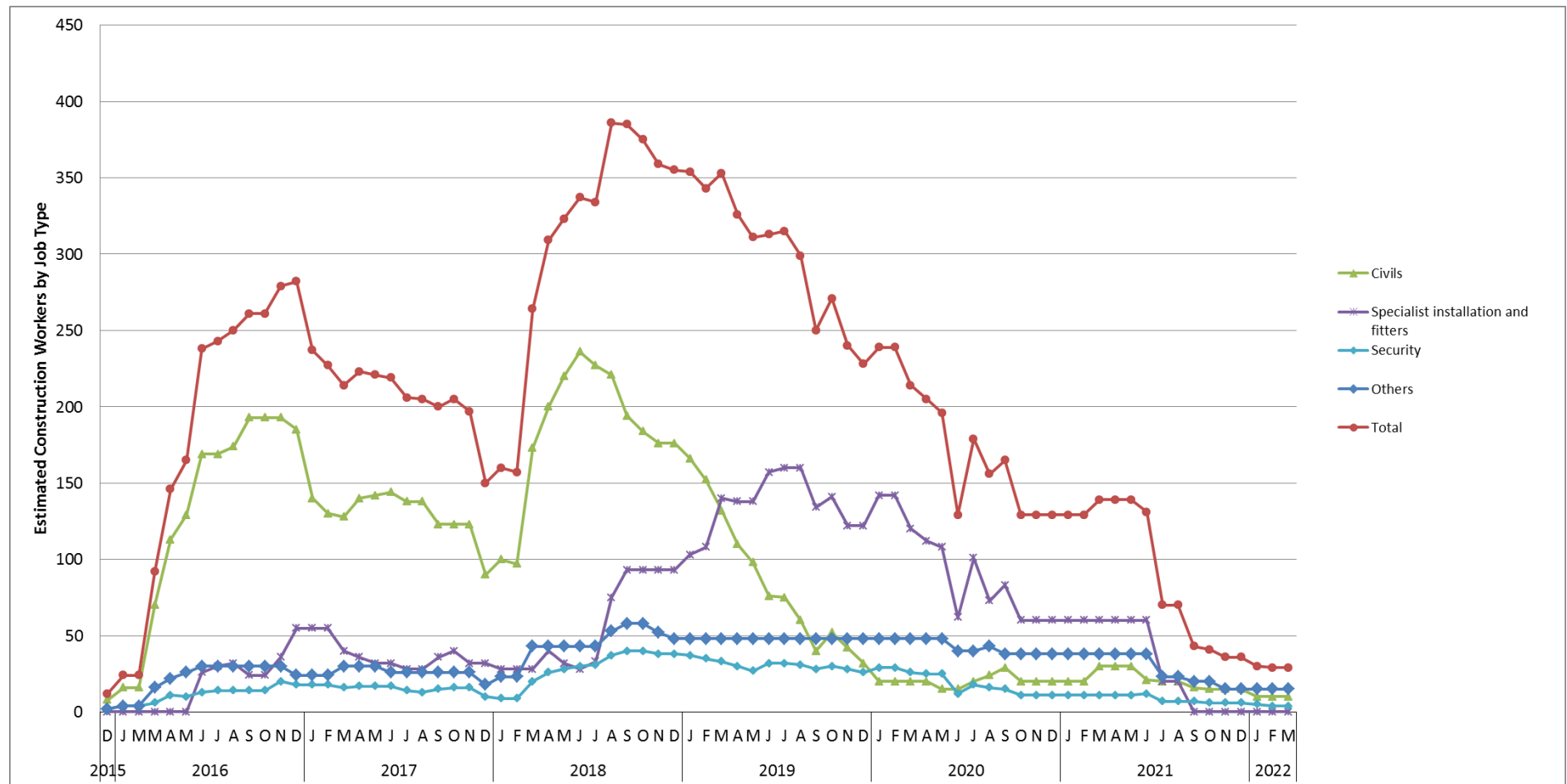
The legend identifies the following data series:

- All staff (Red line with circles)
- OHLs (Purple line with crosses)
- Cables (Teal line with diamonds)
- Substations (Blue line with diamonds)
- Total (new programme) (Green line with triangles)
- Submitted ES total employment (Orange line with circles)

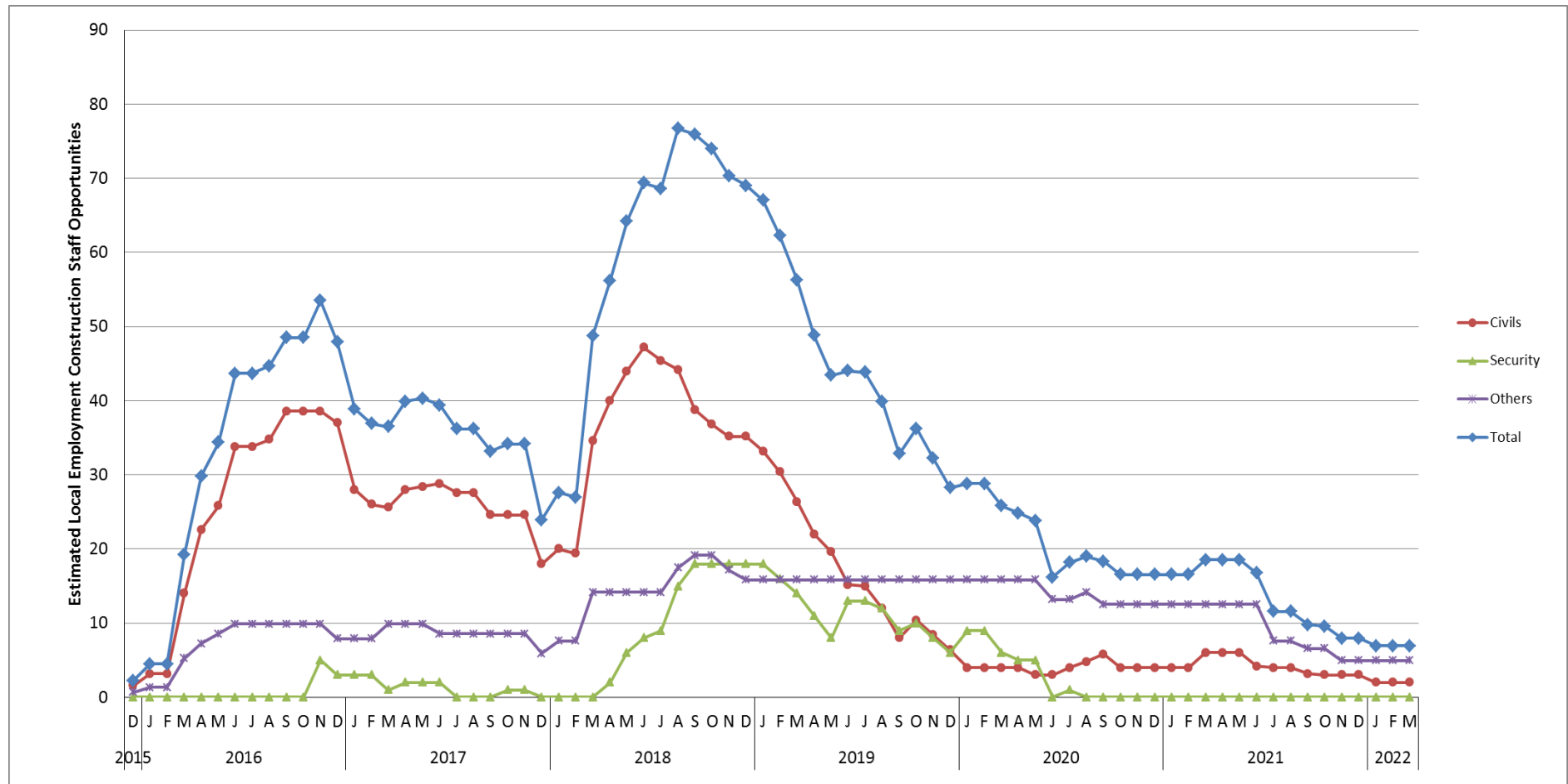
Key observations from the chart:

- Submitted ES total employment** shows a significant peak of approximately 540 FTE in late 2016, followed by a decline and then a sharp drop to near zero by early 2020.
- Total (new programme)** shows a steady increase from 2015, peaking at approximately 390 FTE in late 2018, before declining to around 100 FTE by early 2020.
- OHLs** and **Cables** show a sharp increase starting in early 2018, peaking around 2019, and then declining.
- Substations** remain relatively low, peaking around 60 FTE in early 2019.
- All staff** remains consistently near zero throughout the entire period.

Inset 15.2: Total Employment Profile by Job Type (associated with the Revised Construction Programme)



Inset 15.3: Indicative Local Employment Profile of the Proposed Development (associated with the Revised Construction Programme)



Inset 15.4: Accommodation Bedspace Demand (associated with the Revised Construction Programme), alongside the total bedspace demand included in the submitted ES

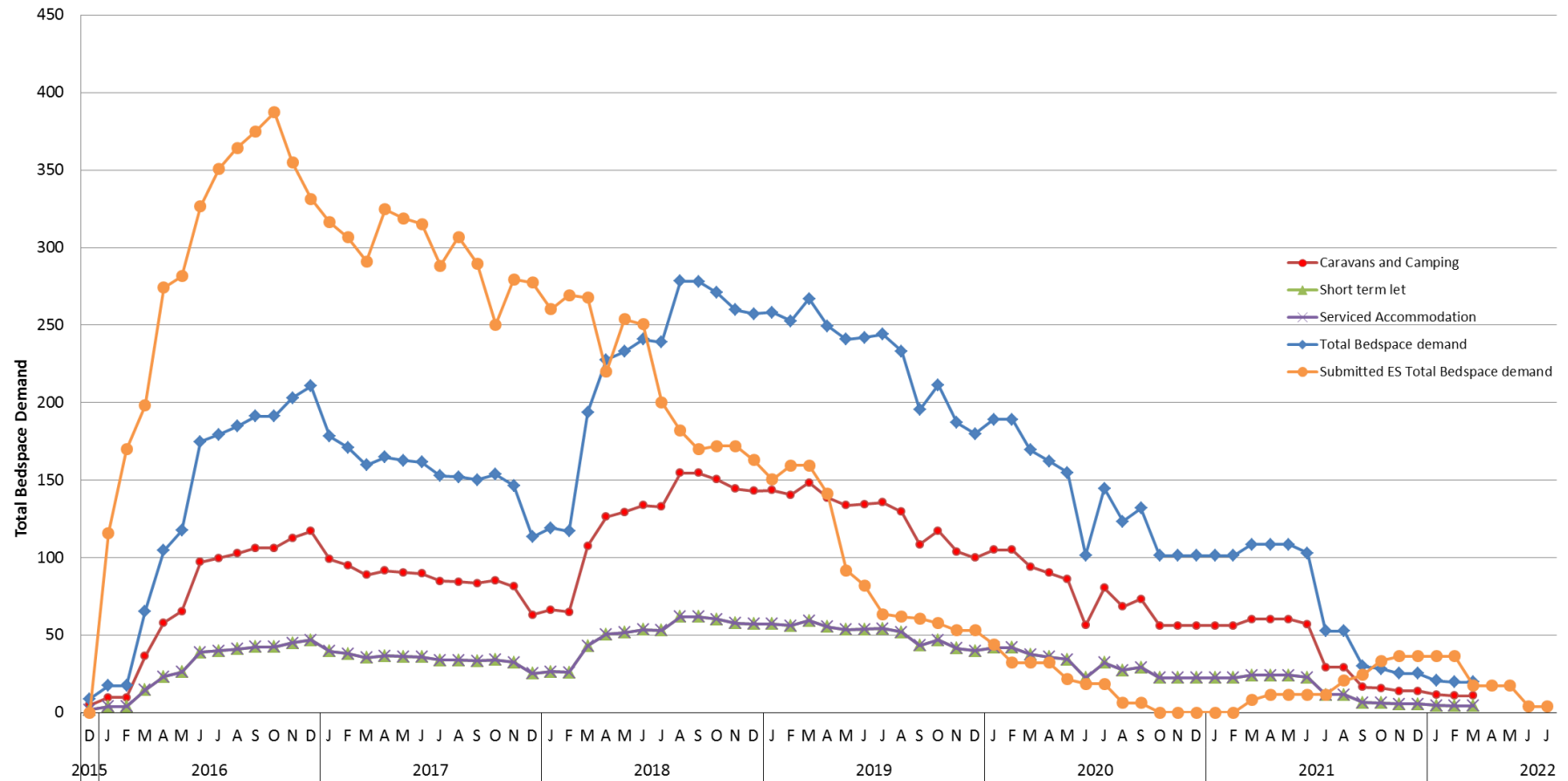


Table 15.1 Accommodation Bedspace Demand for the Proposed Development compared with Availability of Registered Accommodation (replaces Table 15.33 in the submitted ES)

Area	Available Bedspaces in Serviced Accommodation		Available Bedspaces in Non-Serviced Accommodation ('Collective Accommodation Establishments')			
	Hotels and Similar Establishments		Holiday Dwellings		Tourist Campsites	
	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
Proposed Development Demand						
August 2018 Proposed Development peak accommodation demand	60		60		155	
2018 peak tourist season average accommodation demand.	55		55		140	
Local Planning Authority Availability						
Bristol	4,595	6,330	182	250	25	34
South Gloucestershire	2,693	3,710	42	58	0	0
West Somerset	1,216	1,675	3,883	5,350	2,020	2,783
Sedgemoor	1,163	1,602	2,629	3,623	9,351	12,883
North Somerset	1,880	2,590	1,368	1,884	934	1,287

Land Use

- 15.5.13 Due to the time period that has passed since drafting the Submitted ES and the writing of this sensitivity test it was deemed prudent to update the Planning Allocations, Planning Applications and Committed Developments to ascertain if any additional impacts were likely to occur as a result of the Revised Construction Programme.

Planning Allocations

- 15.5.14 Appendix 15G to this ES Sensitivity Test (**Volume 5.29.1.2**) sets out an updated list of Planning Allocations within the Local Area of Influence (data updated in July 2014); this updates **Appendix 15G** and **Table 15G.1** in the submitted ES.

- 15.5.15 No significant changes in Planning Allocations have occurred since the ES was drafted.
- 15.5.16 However, of note, Bristol City Council formally adopted their Site Allocations and Development Management Policies 2013 in July 2014. The submitted ES considered the published policies prior to their adoption and no alterations have been made to the policies upon adoption that affect the Proposed Development.
- 15.5.17 The Revised Construction Programme has no bearing on the impacts set out in the submitted ES in this regard. The potential effects set out in the submitted ES remain unchanged.

Planning Applications

- 15.5.18 Appendix 15H to this ES Sensitivity Test (**Volume 5.29.1.2**) sets out an updated list of Planning Applications within the Local Area of Influence (data updated in July 2014); this updates **Appendix 15H** and **Table 15H.1** in the submitted ES.
- 15.5.19 There are three developments that have been approved since the submitted ES was drafted; these are set out in Table 15.2 below. This table supplements **Table 15.35** in the submitted ES.
- 15.5.20 Two of the new planning permissions lie within 250m of the Proposed Development's Order Limits but there is no direct land conflict. The developments are both judged to be of low sensitivity and the magnitude of impact low during construction and decommissioning, therefore overall temporary minor adverse significant effects may occur during construction and decommissioning notably from construction traffic. One of these is for a solar farm in Rooksbridge and the other is for a processing building, warehouse building, reception hopper and overhead conveyor in Woolavington. In both cases **negligible** effects are anticipated during operation.
- 15.5.21 A direct land conflict does occur with a solar farm approved at Pyde Drove, The Causeway, Woolavington, Bridgwater. The Proposed Development's Order Limits extend into the red line boundary of the development and cover around 10% of the site which includes a number of solar PV panels. However this land is not required for a new pylon location or permanent apparatus and there will be no oversail. The solar farm layout is designed around an existing National Grid overhead line and pylons; National Grid was consulted on the application in September 2013 and did not object. The solar farm is judged to be of low sensitivity and the magnitude of impact moderate during construction and decommissioning, therefore a significant moderate adverse impact is anticipated during construction and decommissioning albeit temporary in nature. **Negligible** significant impacts are anticipated during operation.

Table 15.2 Additional Approved Planning Applications to Table 15.35 in the submitted ES.

Planning Application	Potential to be Directly Affected	Sensitivity	Nature of Effect Expected	Magnitude	Significance
Wessex Solar Energy Land at, Pyde Drove (2), The Causeway, Woolavington, Bridgwater Installation of a solar energy facility utilising solar photovoltaic panels to produce up to 7 megawatts of renewable electricity.	Order Limits extend into red line boundary of the development and cover around 10% of the site which includes a number of solar PV panels. However this land is not required for a new pylon location and there will be no oversail. The solar farm layout is designed around an existing National Grid overhead line and pylon. National Grid were consulted and did not object.	Low Sensitivity	During construction a direct impact will occur, albeit temporary, which may affect the operation of the solar farm. Once operational no adverse effects will occur.	Moderate adverse impact during construction. Negligible during operation.	Temporary Moderate adverse impact during construction. Negligible Impact during operation.
Siniat Limited Marsh Lane Easton-in-Gordano BS20 0NF Erection of a processing building, warehouse building, reception hopper and overhead conveyor.	Land lies within 250 m of Order Limits and one of the project's major construction traffic routes but is not directly affected by Order Limits, no oversail.	Low Sensitivity	During construction and decommissioning low level disruption may occur mainly from construction traffic; however this will be temporary in nature and is unlikely to affect the construction or operation of this development.	Low during construction and decommissioning. Negligible during operation.	Temporary Minor adverse impact during construction. Negligible during operation.
Brilliant Harvest	Land abuts the Order Limits but is	Low Sensitivity	During construction and decommissioning	Low during construction and	Temporary Minor adverse impact during

Planning Application	Potential to be Directly Affected	Sensitivity	Nature of Effect Expected	Magnitude	Significance
Land at, Ashlaw Farm, Pill Road, Rooksbridge, Axbridge, BS26 Installation of Standalone Solar PV modules, grid connection and Associated Infrastructure 25,460 solar photovoltaic (PV) panels mounted on driven posts, with associated cable trenches and string inverters. The total installed capacity of the array is 6.75MWp	not directly affected by Orders Limits, no oversail.		low level disruption may occur however this will be temporary in nature and is unlikely to affect the construction or operation of this development.	decommissioning. Negligible during operation.	construction. Negligible during operation.

15.5.22 The other land use effects set out in the submitted ES remain unchanged. The Revised Construction Programme has no bearing on the impacts set out above or in the submitted ES with respect to approved planning applications.

15.6 Inter-relationship of Potential Effects

15.6.1 There are no changes to the inter-relationships of potential effects reported in the submitted ES (**Volume 5.15.1**) as a result of the Revised Construction Programme.

15.7 Mitigation

15.7.1 No changes are required to the mitigation measures that are set out in the submitted ES (**Volume 5.15.1**) as a result of the Revised Construction Programme.

15.8 Residual Effects

15.8.1 The Revised Construction Programme has no material effect on the residual impacts set out in the submitted ES (**Volume 5.15.1**).

15.9 Cumulative Effects

- 15.9.1 The Revised Construction Programme has no material effect on the cumulative effects reported in the submitted ES (**Volume 5.15.1**).
- 15.9.2 Under the Revised Construction Programme the construction phase of the Proposed Development requires an average of 205 staff a month over the 76 month construction programme. It is estimated that Bridgwater substation (Project ID 6), Bridgwater to Hinkley overhead line reconductoring (Project ID 7), the N Route reconductoring (Project ID 34) and WPD crossing works (Project ID 99) would employ approximately 20 construction staff each, whilst the Helius Energy Project (ID 59) would provide from 38 to 264 full time equivalent construction jobs. There is significant demand for employment through the Hinkley Point C project with the application documents identifying that there are likely to be at least 20,000 to 25,000 different individual posts in the main 108 month construction period, with a peak head count of 5,600 in 2016. Collectively it is considered that these developments would have a cumulative effect ranging from **negligible** to **moderate beneficial** significance on unemployment and the labour market; this remains as stated in the submitted ES and does not change as a result of the Revised Construction Programme.
- 15.9.3 The demands of the Proposed Development workforce can be satisfied within the existing accommodation stock without displacing existing tourist users and the Proposed Development is considered to have negligible effect on accommodation availability. It is considered that the cumulative demand of the Bridgwater substation project (ID 6), the Bridgwater to Hinkley overhead line reconductoring project, the N Route reconductoring project, Helius Energy project and WPD crossing works can also be satisfied within the existing accommodation stock without displacing tourist users. Hinkley Point C has a detailed accommodation plan including the provision on specific worker accommodation in the area. As a result of the revised programme, the peak demands between Hinkley Point C Power Station and the Proposed Developments would differ by approximately two years, assuming the published Hinkley Point C Power Station project programme is maintained. There would be **negligible** cumulative effect overall.

15.10 Conclusion

- 15.10.1 The revised 76 month construction programme has no material effect on the Socio-Economic and Land Use chapter of the submitted ES; the conclusions in the submitted ES remain unchanged.
- 15.10.2 However, three planning applications within 250m of the Proposed Development have been granted planning permission since the submitted ES was drafted. Two of these may experience temporary **Minor adverse** effects during construction and decommissioning notably from construction traffic. One solar farm for Wessex Solar Energy will experience **Moderate adverse** effects during construction albeit temporary in nature. In all three cases operational impacts are expected to be negligible. The revised programme has no effect on these impacts or those set out in the submitted ES relating to other planning approvals.

- 15.10.3 There have been no material changes to the Planning Allocations since the ES was drafted; and the revised programme has no effect on the impacts set out in the submitted ES.
- 15.10.4 The Revised Construction Programme has no material effect on the cumulative effects reported in the submitted ES.

16 ELECTRIC AND MAGNETIC FIELDS

16.1 Introduction

- 16.1.1 This chapter of the Environmental Statement (ES) Sensitivity Test provides an assessment of the likely significance of potential electric and magnetic fields (EMFs) effects as a result of the Revised Construction Programme for the Proposed Development.
- 16.1.2 This chapter should be read in conjunction with Chapter 16 of the submitted ES (**Volume 5.16.1**) and relevant appendices (**Volume 5.16.2**).

16.2 Legislation, Policy and Guidance

- 16.2.1 There have been no changes to the legislation, policy or guidance context outlined in the submitted ES that are relevant to this topic or assessment. Accordingly the legislation, policy and guidance are as described in the submitted ES (**Volume 5.16.1, section 16.2**).

16.3 Method

- 16.3.1 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme has changed the assessment presented in the submitted ES.

16.4 Baseline Environment

- 16.4.1 The baseline environment described in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.4**) is not affected by changes to the construction programme and no significant changes have occurred in the baseline environment since the submission of the ES to require re-assessment. Accordingly the baseline environment is as described in Chapter 16 of the submitted ES.

16.5 Prediction and Assessment of Significance of Potential Effects

- 16.5.1 As stated in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.5, paragraph 16.5.1**) during construction and prior to energisation, transmission equipment will not produce any significant EMF. Accordingly, the Revised Construction Programme does not alter the assessment of significance of potential effects. The Proposed Development has been demonstrated to comply with the current public exposure guidelines as detailed in National Planning Statement (NPS) EN-5 (Ref. 16.1).

16.6 Inter-relationship of Potential Effects

- 16.6.1 The predicted inter-relationship effects of EMFs are not sensitive to changes in construction programme. Accordingly, the Revised Construction Programme does not alter the assessment of inter-relationship effects as set out in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.6**).

16.7 Mitigation

- 16.7.1 As detailed in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.7**), no mitigation measures are necessary as the Proposed Development has been demonstrated to comply with the current public exposure guidelines as detailed in NPS EN-5. If these requirements are met NPS EN-5 (Ref. 16.1) states that “*no further mitigation should be necessary*”. The Revised Construction Programme does not alter this assessment.

16.8 Residual Effects

- 16.8.1 As detailed in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.8**) the Proposed Development has been demonstrated to comply with the current public exposure guidelines as detailed in NPS EN-5 (Ref. 16.1). If these requirements are met NPS EN-5 states that “*EMF effects are minimal*.” The Revised Construction Programme does not alter the assessment of residual effects.

16.9 Cumulative Effects

- 16.9.1 The cumulative assessment sensitivity test is provided at Chapter 17 of this document.
- 16.9.2 The Revised Construction Programme does not change the cumulative effects identified in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.9**).

16.10 Conclusion

- 16.10.1 The Revised Construction Programme has no implications for the assessment of the likely significant environmental effects of electric and magnetic fields (EMFs) set out in Chapter 16 of the submitted ES (**Volume 5.16.1**).

17 CUMULATIVE EFFECTS

17.1 Introduction

- 17.1.1 This chapter of the Environmental Statement (ES) Sensitivity Test provides an assessment of the potential inter-project cumulative effects from the interaction of the Proposed Development and other major development proposals as a result of the Revised Construction Programme. This chapter identifies where the significance of effect are considered to be different to that assessed in the submitted ES. This assessment should be read in conjunction with Chapter 17 of the submitted ES (**Volume 5.17.1**).
- 17.1.2 The submitted ES assesses two major sources of cumulative effects, inter-project and intra-project effects, defined as follows:
- inter-project effects are those that occur “as a result of the likely impacts of the proposed development interacting with the impacts of other development in the vicinity”; and
 - intra-project effects are those that “occur between different environmental topics within the same proposal as a result of that development’s direct effects”.
- 17.1.3 The submitted ES also assesses the combined effects on individual receptors as a result of individual Proposed Development components.
- 17.1.4 In order to achieve the revised connection date offer, the Proposed Development would be built between December 2015 and March 2022; a duration of 76 months. This results in the duration of the construction phase of the Proposed Development increasing by just over two years (25 months) overall, when compared to the construction timescale assessed in the submitted ES (**Volume 5.3.2, Appendix 3B**).
- 17.1.5 As a result of the Revised Construction Programme, there is potential for changes in the inter-project effects where the construction phase for the Proposed Development has increased in duration and now occurs at the same time as other major development proposals (identified in the submitted ES) in the vicinity. Accordingly, changes in the inter-project effects as a result of the Revised Construction Programme are considered in this chapter.
- 17.1.6 There would also be potential for changes in the intra-project effects and effects on individual receptors due to the increased duration of the construction phase. The intra-project effects are considered in each of the ES Sensitivity Test technical chapters (Chapters 6 to 16 of this document) where relevant.
- 17.1.7 Due to the lapse in time between the submission of the ES and this ES Sensitivity Test, it is also appropriate to identify any new major development proposals that have come forward in the intervening period and that require assessment in light of the Revised Construction Programme. Accordingly this chapter also identifies and assesses such projects.
- 17.1.8 **Appendices 17C and 17D (Volume 5.17.2 of the submitted ES) and Figure 17.1 (Volume 5.17.3 of the submitted ES)** have been updated to reflect the new major development proposals which have come forward since the submission of the ES. Accordingly, the updated appendices are provided at **Appendix 17C and 17D** of

Volume 5.29.1.2; the updated figures are provided at **Figure 17.1** of **Volume 5.29.1.3**.

17.2 Method

- 17.2.1 The assessment of the cumulative effects associated with the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.
- 17.2.2 The method for the assessment of effects is the same as that set out in **Volume 5.5.1, section 5.6** of the submitted ES (Environmental Impact Assessment (EIA) Approach and Method) and the environmental topic chapters (**Volume 5.6 6 – 5.16** of submitted ES) where an alternative method has been used.
- 17.2.3 For the purposes of this ES Sensitivity Test, the assessment of inter-project cumulative effects of the Revised Construction Programme is separated into two categories as follows:
- the potential for changes in the inter-project effects for major development proposals assessed in the submitted ES (**Volume 5.17.1, Table 17.7**); and
 - the potential inter-project effects of new major development proposals which have come forward in the intervening period and would require assessment in light of the Revised Construction Programme. This section also considers the inter-project effect of both the major development proposals identified in the submitted ES and the new major developments proposals.
- 17.2.4 A summary of the approach to the identification of new major development proposals is provided below and has been undertaken in accordance with the method in the submitted ES (**Volume 5.17.1, section 17.2**). This chapter does not seek to reproduce all of the method and should be read in conjunction with the submitted ES.

Identification of New Major Development not Considered in Submitted ES

Zones of Interaction

- 17.2.5 For the purposes of the ES Sensitivity Test, the geographical extents, known as the Zones of Interaction (Zoi), presented in the submitted ES have been applied to identify any new major development proposals which have come forward in the intervening period and would require assessment in light of the Revised Construction Programme.
- 17.2.6 The general Zoi around the Proposed Development has been identified as 1km (taken from the outer edge of the Proposed Development) for each of the EIA technical topic areas.
- 17.2.7 An extended Zoi of 10km has been identified for the following EIA technical topic areas:
- Landscape;
 - Visual Effects;

- Biodiversity and Nature Conservation;
- Historic Environment; and
- Traffic and Transport.

Major Development within 1km Zol

Planning Applications Search 1

17.2.8 In accordance with the method in the submitted ES, all planning applications data was requested (7 July 2014) from the Landmark Group's Envirocheck Planning Application search report for a 1km area around the Proposed Development (taken from the outer edge of the Order Limits). The data requested was for the period 1 January 2014 to 7 July 2014. This covers the period of time since data was obtained and assessed in the submitted ES.

17.2.9 The data obtained provided 275 planning applications.

Scoping Exercise

17.2.10 The scoping exercise identified within section 17.2 of the submitted ES (**Volume 5.17.1**) was undertaken for this additional data to identify new major development proposals which have come forward in the intervening period and would require assessment as a result of the Revised Construction Programme.

Level 1 - Planning Applications Status

17.2.11 The 275 planning applications were filtered to include those with the following status:

- proposals for which a planning application has been made and is still valid (pending decision);
- proposals for which there is an extant planning permission;
- proposals which have been refused planning permission and are currently subject to appeal; and
- where a formal request for an EIA screening or scoping opinion has been submitted to a Local Planning Authority (LPA).

Level 2a – Major Development as Defined in the Town and Country Planning Act 1990

17.2.12 The Level 2a scoping exercise was then undertaken in accordance with the submitted ES to filter the planning applications data which met the criteria of major development as set out in the Town and Country Planning (Development Management Procedure) (England) Order 2010) (as amended).

17.2.13 Professional judgement was also used to ensure that any new major development proposals that did not fall into any of the categories above were not inappropriately 'scoped out'. An example includes a wind turbine development proposal.

Level 2b – Major Development using Professional Judgement

17.2.14 Notwithstanding the undertaking of the Level 2a scoping exercise, certain types of development are considered to be insignificant in terms of their nature and scale to the extent that they would be unlikely to have the potential to contribute to significant cumulative effects. Therefore the Level 2b scoping exercise was

undertaken to further filter the development proposals with the potential to result in cumulative effects with the Proposed Development as a result of the Revised Construction Programme. Professional judgement based on the scoping criteria presented in **Volume 5.17.1, Table 17.3** of the submitted ES was used.

Information Gathering

- 17.2.15 An information gathering exercise was undertaken to obtain more details about the new major development proposals identified after the completion of the scoping exercises detailed above. Information gathered included the following:
- development location, application boundary and description;
 - construction programme;
 - the gathering of relevant environmental assessment information (if available) and any other relevant documentation (such as Planning Statements and Design and Access Statements) to understand more about the potential for cumulative environmental effects; and
 - any other publicly available information deemed to be of relevance.
- 17.2.16 As with the major development proposals identified in the submitted ES, the level of information gathered varies and depends on the scale and nature of the development proposal described in a particular planning application. The level of information gathered for development proposals subject to EIA screening and/or scoping also varies.
- 17.2.17 This process identified six new major development proposals within 1km of the Proposed Development which have come forward in the intervening period and would require assessment in light of the Revised Construction Programme.

Major Development beyond 1km Zol (up to a distance of 10km)

- 17.2.18 In accordance with the submitted ES, outside of the 1km Zol it is considered appropriate to apply a slightly different scoping approach due to the geographical separation between major development in this area and the Proposed Development.
- 17.2.19 For the purposes of the ES Sensitivity Test, further planning application data was requested from the Landmark Group's Envirocheck Planning Application search report for a 10km area around the Proposed Development.
- 17.2.20 The data requested was for the period 1 January 2014 to 7 July 2014. This covers the period of time since the assessment of cumulative effects in the submitted ES.
- 17.2.21 The data obtained for the 10km search area excluded the following types of planning applications based on scoping criteria presented in **Volume 5.17.1, Table 17.4** of the submitted ES:
- Agricultural Buildings.
 - Awning.
 - Civil Engineering –Commercial Access and Estate Roads; Harbour, Docks and Marina; Land Reclamation/Major Landscaping; and Minor Landscaping.
 - Commercial Retail-Portable Buildings.

- Dormer.
- Flagpoles.
- Hotel and Catering- Restaurants, Public Houses and Bars.
- Leisure Facilities- Playgrounds.
- Residential - Single houses.
- Housing Modifications/Extensions (to single residential units).
- Lighting.
- Roof works.
- Roofing Works- Industrial and Commercial
- Unspecified minor development.
- Vehicle Sales and Servicing.
- Signs.

17.2.22 The data obtained provided 1,897 planning applications. The planning applications were then filtered based on the Level 1 scoping exercise detailed above. Thereafter professional judgement based on the scoping criteria presented in **Volume 5.17.1, Table 17.4** of the submitted ES was used to identify new major development proposals.

17.2.23 This process identified 11 new major development proposals within 1 to 10km of the Proposed Development which have come forward in the intervening period and require assessment in light of the Revised Construction Programme.

PINS Programme of Projects

17.2.24 A separate search was undertaken on the National Infrastructure Planning website to identify proposals registered (pending and consented) on PINS's programme of projects since the submission of the ES. There were no new projects registered on the PINS programme of projects that would require assessment as part of this ES Sensitivity Test.

Development Plans and Other Plans and Programmes

17.2.25 In accordance with the method in section 17.2 of the submitted ES (**Volume 5.17.1**), proposals within development plans and other plans and programmes have not been considered, as there is substantially less guarantee that they will come forward in the projected time period.

National Grid and Western Power Distribution Permitted Development Works

17.2.26 There are no new relevant works to be undertaken by National Grid or Western Power Distribution (WPD) which are considered to have the potential to result in cumulative effects with the Proposed Development from that identified in the submitted ES.

Other Projects

17.2.27 National Grid is not aware of any other major development proposals which have come forward in the intervening period and require assessment in light of the Revised Construction Programme.

Final Master List and New Major Development Projects Identified

- 17.2.28 The Final Master List (**Volume 5.17.1, Table 17.7**) contains 99 major development proposals considered in the submitted ES. **Table 17.1** below identifies the new major development proposals which have come forward in the intervening period since the assessment within the submitted ES and would require assessment in light of the Revised Construction Programme. A programme showing the anticipated start and end dates (where known) of the new major development proposals is provided at **Appendix 17.C (Volume 5.29.1.2** of the ES Sensitivity Test).
- 17.2.29 The location of all development proposals (those contained in **Volume 5.17.1, Table 17.17** of the submitted ES and those identified in **Table 17.1** below) is shown at **Figure 17.1 (Volume 5.29.1.3** of the ES Sensitivity Test).
- 17.2.30 It should also be noted that the proposals for the erection of four wind turbines at land to the east of the M5, and south of A38 (ID Reference 25 in **Volume 5.17.1, Table 17.7**) has been refused at appeal and is not considered as part of this ES Sensitivity Test.

Table 17.1 Cumulative Assessment - Additional Major Development – ES Sensitivity Test

ID	Reference	Local Authority	Applicant/Project Detail	Site Size (ha)	Status	Committed Development ?
100	24/14/00007	Sedgemoor District Council	Brilliant Harvest Land at, Ashlawn Farm, Pill Road, Rooksbridge, Axbridge, BS26. Planning permission for the installation of standalone solar photovoltaic (PV) modules, grid connection and Associated Infrastructure. 25,460 solar PV panels mounted on driven posts, with associated cable trenches and string inverters. The total installed capacity of the array is 6.75 MW.	7.62 ha	Approved – 14/05/2014	Yes
101	14/02509/S CR & 14/01117/S CO	Bristol City Council	New Earth Solutions Land at Access 18, off Kingsweston Lane/Avonmouth Way, Avonmouth. Full planning permission for the erection of 10,405 sqm (112,000 sqft) of B1c, B2 and B8 development comprising 3 units on land at Access 18, off Kingsweston Lane/Avonmouth Way, Avonmouth. THIS IS NOT A PLANNING APPLICATION: EIA SCREENING REQUEST Request for a Scoping Opinion as for a low carbon energy facility part of Access 18 site in Avonmouth. Processing 120,000 tonnes of feedstock and generate 13 MW of renewable energy. THIS IS NOT A PLANNING APPLICATION: EIA SCOPING REQUEST	2.5 ha	EIA Screening Request- EIA Required. EIA Scoping Request- Pending	No

ID	Reference	Local Authority	Applicant/Project Detail	Site Size (ha)	Status	Committed Development ?
102	14/P/0660/ EIA1	North Somerset Council	Smiths Gore Land at Meer Wall near Strawberry Line, Congresbury. EIA Screening opinion for a 36 MW power Solar Farm. THIS IS NOT A PLANNING APPLICATION: EIA SCREENING OPINION	73 ha	EIA Screening Opinion- EIA not required	No
103	09/14/0000 7	Sedgemoor District Council	Bridgwater Gateway Ltd Land to the SW of Stockmoor Distributor Road and NW of Taunton Road, North Petherton, Bridgwater. Outline planning application for the erection of three storey building (use class B1), formation of parking and access. Total B1 comprises 2,867 sqm.	20.79 ha	Approved- 07/07/2014	Yes
104	PT14/0565/ O	South Gloucestershire Council	DFE Skanska Residential Ltd Land At Cribbs Causeway, Almondsbury, Bristol, South Gloucestershire BS10 7TE. Outline application including access with all other matters reserved for a mixed use development of 51.49 hectares of land comprising: up to 1,000 new dwellings (Use Class C3); a 36-bed Extra Care Home (Use Class C2); a mixed use local centre including a food store up to 2000 sqm. gross floor area (Use Classes A1, A2, A3, A4, A5, B1, D1, D2); a 2-form entry primary school; community facilities including a satellite GP surgery, dentist and community centre; associated public open space and sporting facilities; green infrastructure integrated with foot and cycle paths; together with supporting infrastructure and facilities including three new vehicular accesses.	51.49 ha	Pending Consideration	No

ID	Reference	Local Authority	Applicant/Project Detail	Site Size (ha)	Status	Committed Development ?
105	14/P/0746/F2	North Somerset Council	A & R House Partnership Weston Wake Park, Accommodation Road, Bleadon. Large scale major application for Leisure complex together with an Environmental Impact Assessment with change of use from agricultural lakes to tourist facility(D2) providing a water-park for cable-tow wake-boarding, water-skiing, canoeing and other non-powered water-based sports with construction of retaining bank for a series of lakes consisting of a long lake for triathlon with 2no islands, a main lake with central island, up to 8 masts for cable-skiing, a balancing lake and a training lake. Works to include erection of club house with showers/wc, restaurant/cafe, equipment hire/shop-(A1), kitchen-(A3 and A4), offices, training facilities and grounds management. Erection of a boat and equipment storage building, boiler room, pumping and control cabins, parking for 65 vehicles, reed-bed treatment plant, associated landscaping with hard-surfaced tracks and water-control features for attenuation of excess water (part retrospective).	44 ha	Pending Consideration	No
106	PT14/1260/O	South Gloucestershire Council	Taylor Wimpey UK Ltd And Bristol Polytechnic Enterprises Dev Land East Of Coldharbour Lane, Stoke Gifford, Bristol, South Gloucestershire BS16 1UX. Development on 14.8 hectares of land seeking outline permission for the erection of up to 550 no. dwellings with associated infrastructure to include full permission for Phase I of development, consisting of the erection of 282 no. dwellings (of the 550 no. total), 250m2 of Retail and/or Community Meeting Space (mixed Class A1 Retail / Class D2 Assembly and Leisure), site access/spine road, car parking, open space, landscaping and drainage infrastructure	14.8 ha	Pending Consideration Screened EIA not required (PT14/013/SCR)	No

ID	Reference	Local Authority	Applicant/Project Detail	Site Size (ha)	Status	Committed Development ?
107	37/14/00020	Sedgemoor District Council	Bridgwater Gateway Phase 2 Land South of Bridgwater to the West of, Taunton Road, North Petherton, Bridgwater. Outline application for residential development of up to 292 dwellings and associated infrastructure.	20.5 ha	Pending Consideration	No
108	14/01066/S CREEN	Bath and North East Somerset Council	Green Switch Solutions Parcel 2900, Greenhouse Lane, Nempnett Thrubwell, Bristol. Development of a 7 MW solar park on land associated to Howgrove Farm, Redhill, Bristol (nearest postcode BS40 5TS). THIS IS NOT A PLANNING APPLICATION: EIA SCREENING REQUEST	16.6ha	EIA Screening Opinion- EIA not required	No
109	14/P/0532/EIA1	North Somerset Council	KWTN Solar Ltd Land at Bowerhouse, East of Riverside Banwell, BS29 6EL. Proposed 7.48 MW solar farm. THIS IS NOT A PLANNING APPLICATION: EIA SCREENING REQUEST	22.67ha	EIA Screening Opinion- EIA not required	No
110	14/P/1101/EIA1	North Somerset Council	Green Energy UK Direct Ltd Churchill Park Farm, Ladymead Lane, Langford, Churchill BS40 5ED Proposed 4.5 MW solar farm. THIS IS NOT A PLANNING APPLICATION: EIA SCREENING REQUEST	10 ha	Pending	No

ID	Reference	Local Authority	Applicant/Project Detail	Site Size (ha)	Status	Committed Development ?
111	PT14/009/S CR	South Gloucestershire Council	Estrans Ltd Land Adjacent to Church Road and the M49, Severn Beach, Bristol, South Gloucestershire BS35 4NL Proposed 3.5 MW Solar Farm. THIS IS NOT A PLANNING APPLICATION: EIA SCREENING REQUEST	7.2 ha	EIA Screening Opinion- EIA required	No
112	14/01549/S CR	Bristol City Council	Network Rail Permitted Development. Railway Between Temple Meads And Abbey Wood Stations Bristol Filton bank capacity improvement project - railway line improvements between Temple Meads and Filton Abbey Wood stations including track re-doubling, new road access and replacement of bridges. THIS IS NOT A PLANNING APPLICATION: EIA SCREENING REQUEST	2km in length	Permitted Development and EIA Screening Opinion- EIA not required	Permitted Development

ID	Reference	Local Authority	Applicant/Project Detail	Site Size (ha)	Status	Committed Development ?
113	14/01187/F B	Bristol City Council	Bristol City Council & South Gloucestershire Council Land and Highways between Cribbs Causeway/Emersons Green and Hengrove including Aztec West Roundabout, Bradley Stoke, Stoke Gifford Transport Link, Hambrook, Stoke Lane, M32, Bristol City Centre, Redcliffe Hill And Hartcliffe Way. Construction of North Fringe to Hengrove Package (NFHP) MetroBus: A rapid bus route between Bristol North and East Fringes to South Bristol via Bristol City Centre comprising new roads and alteration to existing highways to prioritise MetroBus, including widening of Bradley Stoke Way, A 4174 Avon Ring Road at Hambrook junction, Stoke Lane/Coldharbour Lane, new footbridge at Church Lane over A 4174, a new bus only junction on the M32, alterations to roads and public spaces at St Augustine's Parade/Baldwin Street/ Colston Avenue, widening of Hartcliffe Way, new MetroBus stop infrastructure, public realm works, associated engineering and earthworks, drainage works and landscaping.	50 ha	Pending	No
114	14/01324/S CO	Bristol City Council	Oaktree Environmental Limited Filton Golf Club, Golf Course Lane, Bristol, BS34 7QS. Infilling of irrigation lakes and landscaping works to practice area at Filton Golf Course. Total of 292,244 tonnes of inert material to be imported to site, over a minimum period of two years, maximum of three years. This means that between 97,415 tonnes and 146,122 tonnes of inert material will be imported to the site per annum. THIS IS NOT A PLANNING APPLICATION: EIA SCOPING REQUEST	6 ha	Pending	No

ID	Reference	Local Authority	Applicant/Project Detail	Site Size (ha)	Status	Committed Development ?
115	14/P/1027/EIA1	North Somerset Council	Clean Earth Charlton Drive, Wraxall, Bristol, Avon, BS48 1PF Single wind turbine single wind turbine of maximum hub height 50 m and maximum tip height 77 m, with a 3 bladed rotor design. THIS IS NOT A PLANNING APPLICATION: EIA SCREENING OPINION	4.2 ha	EIA Screening Opinion- EIA not required	No
116	14/02084/S CO	Bristol City Council	Balfour Betty Land Eastern Side Of Chittening Trading Estate, Greensplott Road, Avonmouth, Bristol. Request for a Scoping Opinion for the erection of a 10.4 MW Bioenergy Facility using a gasification process to approximately 60,000 tonnes (dry) of waste wood per annum being supplied by the neighbouring wood recovery facility Boomeco. THIS IS NOT A PLANNING APPLICATION: EIA SCOPING REQUEST	1.8 ha	EIA Scoping Request- Pending	No

17.3 Assessment of Potential Cumulative Effects

Introduction

- 17.3.1 The assessment of the potential cumulative effects likely as a result of the Revised Construction Programme has been undertaken for each environmental topic area (chapters 6 to 16) to determine any change to the likely significance of effects assessed in the submitted ES.
- 17.3.2 As detailed in section 17.2 of this chapter, each topic area assessment is separated into two sections:
- potential for changes in the inter-project effects for major development assessed in the submitted ES (with reference to **Table 17.17** of the submitted ES (**Volume 5.17.1**)); and
 - potential inter-project effects for new major development which have come forward in the intervening period and require assessment in light on the Revised Construction Programme (with reference to **Table 17.1** above).
- 17.3.3 The Inter-relationship of cumulative effects is either considered as an inherent part of the sensitivity test (for example the air quality cumulative assessment sensitivity test considers construction traffic movements inherently due to their close inter-relationship) or is described after the cumulative assessment tables below where relevant.

Committed Developments and Future Baseline

- 17.3.4 The last column (on the right hand side) of the Additional Major Development table (see **Table 17.1**) sets out whether a major development proposal is considered to be committed development. In accordance with the submitted ES, certain ES technical chapters include details of future baseline conditions which are informed by an appropriate evidence base including committed developments.

Further Scoping

- 17.3.5 Due to the bespoke nature of potential cumulative effects for each of the environmental topics and the manner in which they are considered and assessed, it is not appropriate to include all major development proposals identified in the Additional Major Development List in the assessment of potential cumulative effects. Therefore, for each environmental topic, each new development proposal has been further considered with regard to whether it is likely (either alone or in combination with other major development proposals) to have cumulative effects with the Proposed Development. Where such cumulative effects are considered unlikely to arise, they are then scoped out from that cumulative assessment; justification is provided in each case. The projects that have been scoped out for each environmental topic are provided at **Appendix 17D (Volume 5.29.1.2 of the ES Sensitivity Test)**.

Approach to Mitigation

- 17.3.6 The tables set out below provide a (environmental topic by topic) cumulative assessment. In each case, the cumulative assessment is based on residual effects only i.e. the cumulative assessment considers guaranteed mitigation measures identified as part of the Proposed Development together with any mitigation measures, or other measures to be secured by planning conditions, Development Consent Order Requirements and legal agreement (where it was possible to identify them).
- 17.3.7 In addition, other mitigation measures which are considered reasonable to assume would be undertaken by the applicant (either because they are industry standard or a statutory requirement etc.) have been stated and considered as part of the residual cumulative assessment.
- 17.3.8 The ‘mitigation’ sections of the assessment tables below describe (where relevant) whether any additional Proposed Development mitigation measures are considered necessary over and above that already identified in the technical assessment chapters (**Volumes 5.6 – 5.16** of the submitted ES and chapters 6 to 16 of this document).

Landscape

- 17.3.9 The major developments ID 100 and 103 are committed developments and have been considered as part of the future baseline environment in Chapter 6 of this document, and are therefore not considered in the assessment of potential cumulative effects.
- 17.3.10 The following major developments have been scoped out and further details are provided at Appendix 17D: ID 104, 105-108, 110-114 and 116.

Table 17.2 Assessment of Potential Cumulative Effects – Landscape

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
	Assessment of projects identified within submitted ES as a result of the Revised Construction Programme.
	Projects scoped out of the cumulative assessment in the submitted ES (Volume 5.17.1, Appendix 17D) would remain scoped out as a result of the Revised Construction Programme. The assessment of cumulative effects would not change for any of the projects identified within the submitted ES (ID 16, 22, 24, 32, 38, 42, 43, 44, 46, 47, 69, 79, 80, 81, 96, 98 & 99) , as a result of the Revised Construction Programme. This is due to the construction period being unknown for any of the projects identified and a worst case being assumed in the submitted ES.
	Assessment of new projects against the Revised Construction Programme (Including the inter-project effect of both the development identified in the submitted ES and the new major developments).
101	<u>Summary of Project Detail</u> New Earth Solutions B1c, B2 and B8 Development and Low Carbon Energy Facility Land at Access 18, off Kings Weston Lane/Avonmouth Way, Avonmouth. Screening opinion as to whether an Environmental Impact Assessment (EIA) is required to be submitted with a full planning application, for the erection of 10,405 sqm (112,000 sqft) of B1c, B2 and B8 development comprising 3 units on land at Access 18, off Kingsweston Lane/Avonmouth Way, Avonmouth. Request for a Scoping Opinion for a low carbon energy facility part of access 18 site in Avonmouth. Processing 120,000 tonnes of feedstock and generate 13mwe of renewable energy. <u>Description of Potential Effect(s)</u> Those aspects of the Proposed Development and the proposed 3 units on land at Access 18 and associated low carbon energy facility that would result in potential effects on landscape character are identified below and include: the proposed 400kV overhead line supported with standard steel lattice pylons, 132kV underground cables replacing part of the G Route and the removal of a section of the G Route would be introduced in the central part of Section G; and

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
	the introduction of new industrial buildings and structures as identified in the 'summary project detail' onto land at Access 18 off Kings Weston Lane/Avonmouth Way in Avonmouth in the central part of Section G. <u>Reference to Key Documents</u> N/A <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> There is no Landscape Character Assessment for Bristol. Existing overhead lines and large scale industry and offices reduce the susceptibility to change of the landscape from the proposed 400kV overhead line and the proposed new buildings and structures. The sensitivity of the landscape to the Proposed Development and the proposed new buildings and structures on land at Access 18 would be low given the area's generally low susceptibility to change and the local value of the landscape within which the above developments are proposed. <u>Assessment of Potential Cumulative Effect – during Revised Construction Programme</u> <u>Proposed Development</u> North of the River Avon, construction of the Proposed Development (including the proposed 400kV overhead line, removal of a section of the G Route and installation of 132kV underground cables on the G Route) would result in direct and indirect adverse effects on Avonmouth and on the Pilning Levels (LLCA 20) within the northern and north eastern part of Section G. Construction works would also result in indirect adverse landscape effects on higher ground further east in the Severn Ridges (LLCA 18), including Spaniorum Hill. As discussed in submitted ES Volume 5.6.1, section 6.5 construction of the Proposed Development would result in adverse landscape effects in the short-term. The landscape across Avonmouth in Section G is of low sensitivity and the overall magnitude of effect on landscape character arising from the construction of the Proposed Development would be low adverse. The significance of effects of construction operations generally would be minor adverse close to construction activity but reducing to neutral significance elsewhere. <u>Land at Access 18, Kings Weston Lane/Avonmouth Way</u> In terms of the proposed new industrial buildings and low carbon energy facility the construction period is unknown at this stage. Given the scale and nature of the development the predicted magnitude of effect would be low adverse. The significance of effect would be minor adverse close to construction activity but reducing to neutral significance elsewhere. <u>Cumulative Effects</u> Cumulatively the magnitude of effect caused by both developments would involve a low alteration to key characteristics of the existing landscape. The sensitivity of the landscape is low and the significance of effect would be minor adverse close to construction activity but reducing to neutral significance elsewhere. <u>Assessment of Potential Cumulative Effect – during Operation</u> <u>Proposed Development</u> As discussed in submitted ES Volume 5.6.1, section 6.5 the Proposed Development generally would have a minor adverse significance of effect on the landscape in Section G with effects reducing to neutral in the wider Severn and Avon Vales, and Bristol, Avon Valleys and Ridges landscape. <u>Land at Access 18, Kings Weston Lane/Avonmouth Way</u> Given the nature of the proposed new industrial buildings and low carbon energy facility the predicted magnitude of effect would be low adverse. The significance of effect would be

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
	minor adverse close to the development but reducing to neutral significance elsewhere. <u>Cumulative Effects</u> Cumulatively the magnitude of effect caused by both developments would involve a low alteration to key characteristics of the existing landscape. The sensitivity of the landscape is low and the significance of effect would be minor adverse close to the proposed developments but reducing to neutral significance elsewhere. <u>Mitigation</u> No mitigation planting is proposed to minimise identified effects on landscape character resulting from the proposed 400kV overhead line. Replacement hedgerow planting is proposed in-situ to mitigate loss of existing hedgerows within the 132kV underground cables swathe replacing part of the G Route. Mitigation planting proposed as part of the land at Access 18 development is unknown at this stage. <u>Residual Effects</u> Residual cumulative effects on landscape character would be the same as those identified above during the operation of the proposed 400kV overhead line, 132kV underground cables and the proposed industrial buildings and low carbon energy facility at land at Access 18.

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
102	<u>Summary of Project Detail</u> Smiths Gore Solar Farm Land at Meer Wall, near Strawberry Line, Congresbury EIA Screening opinion for a 36 MW power Solar Farm. <u>Description of Potential Effect(s)</u> Those aspects of the Proposed Development and the proposed construction of a solar farm that would result in potential effects on landscape character are identified below and include: • the introduction of the proposed 400kV overhead line supported with the T-pylon into the Somerset Moors in Section D; and • the introduction of new structures as identified in the 'summary of project detail' onto land at Meer Wall near the Strawberry Line in the southern part of Section D. <u>Reference to Key Documents</u> N/A <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> NSC Landscape Character Assessment defines the landscape where the Proposed Development and the solar farm are proposed as the Locking and Banwell Moors LLCA A4, however Kingston, Seymour and Puxton Moors LLCA A1 lies immediately to the west. The Mendip Hills (Mendip Ridge LLCA E1) forms a strong landscape feature south of Section D and is visually prominent from the low lying landscape. The Somerset Moors comprise a large scale flat landscape, with hedgerows including trees in places breaking up longer views, surrounded by higher landform providing backgrounding to this landscape. The F Route and the AT Route are present in the landscape and reduce the landscape's susceptibility to change from the proposed 400kV overhead line and from the proposed solar farm. The sensitivity of the landscape to the Proposed Development and the proposed solar farm would be medium given the landscape's medium susceptibility to change from the Proposed Development and the solar farm, and the local value of the Locking and Banwell Moors landscape within which the above developments are proposed.

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
	<u>Assessment of Potential Cumulative Effects – during Revised Construction Programme</u> <u>Proposed Development</u> Construction of the Proposed Development in Section D would result in temporary direct and indirect adverse effects on the Locking and Banwell Moors LLCA A4 and Kingston, Seymour and Puxton Moors LLCA A1. Construction of the proposed 400kV overhead line and construction works required for the removal of the F Route would result in adverse landscape effects in the short-term as discussed in submitted ES Volume 5.6.1, section 6.5. The magnitude of effect on landscape character arising from the construction of the proposed 400kV overhead line would range from moderate adverse to low adverse. A moderate adverse magnitude of effect would be experienced where working areas would be clustered or where the landscape is more open and in some instances visible from elevated ground such as the Mendip Hills. These effects would reduce to low adverse further away from the construction operations. The significance of the temporary effects of construction operations would be moderate adverse close to construction activity and on the landscape immediate adjacent but would be minor adverse elsewhere. <u>Land at Meer Wall Solar Farm</u> In terms of the proposed solar farm the construction period is unknown at this stage. Given the relatively small scale nature of the development the predicted magnitude of effect would be low adverse. The sensitivity of the landscape is medium and the significance of effect would be minor adverse. <u>Cumulative Effects</u> Cumulatively the magnitude of effect caused by both developments would involve a partial alteration to key features of the existing landscape. The sensitivity of the landscape is medium and the significance of the temporary effects of construction operations would be moderate adverse close to construction activity and on the landscape immediate adjacent but would be minor adverse elsewhere. The cumulative indirect significance of effect on the Mendip Hills AONB would also be moderate adverse in the short-term largely resulting from the construction of the Proposed Development in the immediate setting of the Mendip Hills AONB. <u>Assessment of Potential Cumulative Effect – during Operation</u> <u>Proposed Development</u> As discussed in submitted ES Volume 5.6.1, section 6.5 the Proposed Development would have a moderate adverse significance of effect on the Somerset Levels and Moors landscape and the Locking and Banwell Moors LLCA A4, which have a medium sensitivity to change. <u>Land at Meer Wall Solar Farm</u> It is anticipated that the proposed solar panels and associated facilities would cause a minor alteration to characteristics of the existing landscape. This would result in a minor adverse significance of effect on the Locking and Banwell Moors LLCA A4 and the Kingston, Seymour and Puxton Moors LLCA A1 landscape, which have a medium sensitivity to this change in the southern part of Section D. <u>Cumulative Effects</u> Cumulatively the magnitude of effect caused by both developments would involve a partial alteration to key characteristics of the existing landscape. The sensitivity of the landscape is medium and the significance of effect would be moderate adverse close to the proposed developments but reducing to minor adverse significance elsewhere.

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
	<u>Mitigation</u> No mitigation planting is proposed to minimise identified effects on landscape character resulting from the proposed 400kV overhead line. Mitigation planting proposed as part of the land at Meer Wall solar farm is unknown at this stage. <u>Residual Effects</u> Residual cumulative effects on landscape character would be the same as those identified above during the operation of the proposed 400kV overhead line and land at Meer Wall solar farm.
38 42 43 102	<u>Combined Assessment for ID 38, 42, 43 (in the submitted ES) and ID 102</u> The four solar farms are proposed a minimum of approximately 0.3km apart, with intervening hedgerows and trees along Meer Wall Rhyne, Dolemoor Lane the Strawberry Line and field boundaries reducing inter-visibility between these development proposals in the context of the Proposed Development. Given the relatively small-scale of the equipment proposed within the solar farms, the distance between them and screening by intervening hedgerows and trees, cumulative effects on landscape character resulting from the solar farms, in addition to the Proposed Development, being constructed and operational in the landscape, are not anticipated to be greater than if one of these solar farms was built as proposed, in the context of the Proposed Development. The sensitivity of the landscape is medium and the significance of the cumulative effect would be moderate adverse close to the proposed developments but reducing to minor adverse significance elsewhere.
109	<u>Summary of Project Detail</u> KWTN Solar Ltd Solar Farm Land at Bowerhouse, East of Riverside, Banwell BS29 6EL. EIA screening request for a proposed 7.48 MW solar farm. <u>Description of Potential Effect(s)</u> Those aspects of the Proposed Development and the proposed construction of a solar farm that would result in potential effects on landscape character are identified below and include: the introduction of the proposed 132kV connection between Sandford Substation and the AT Route, the proposed 400kV overhead line using the T-pylon to the east; and the proposed Sandford Substation, proposed 400kV underground cables, the Towerhead Brook cables bridge (and temporary construction bridge) to the southeast in addition to the proposed N Route connection, into undulating farmland

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
	and the Somerset Moors in the southern part of Section D, and within the setting of the Mendip Hills AONB to the south in Section C; and the introduction of new structures as identified in the 'summary of project detail' onto land at Bowerhouse East of Riverside Banwell in the southern part of Section D. <u>Reference to Key Documents</u> N/A <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> North Somerset Council's (NSC) Landscape Assessment characterises the landscape in the southern part of Section D (where the Proposed Development and the proposed solar panels and associated facilities are proposed) as the Kingston, Seymour and Puxton Moors (LLCA A1), Locking and Banwell Moors (LLCA A4) and the River Yeo Rolling Valley Farmland (LLCA J2). The proposed solar farm is located within the Kingston, Seymour and Puxton Moors (LLCA A1) and adjacent to the Locking and Banwell Moors (LLCA A4). The Mendip Hills (Mendip Ridge LLCA E1) forms a strong landscape feature south of Section D and is visually prominent from the low-lying landscape to the north. The Somerset Moors comprise a large scale flat landscape, with hedgerows including trees in places breaking up views, surrounded by higher landform providing backgrounding to this landscape. The F Route, N Route and the AT Route are present in the landscape and reduce the susceptibility to change of the landscape from the proposed AT Route connection and the 400kV overhead line. Existing 132kV overhead lines would reduce the susceptibility to change of the landscape from the proposed solar development. The sensitivity of the landscape to the Proposed Development and the proposed solar farm would be medium given the landscape's medium susceptibility to change, and the local value of the Kingston, Seymour and Puxton Moors (LLCA A1) and the Locking and Banwell Moors (LLCA A4) and River Yeo Rolling Valley Farmland (LLCA J2) landscape within which the above developments are proposed. <u>Assessment of Potential Cumulative Effects – during Revised Construction Programme</u> <u>Proposed Development</u> Construction of the Proposed Development in Section D would result in direct and indirect adverse landscape effects on the LLCA identified above. Construction of the Proposed Development would result in adverse landscape effects in the short-term as discussed in submitted ES Volume 5.6.1, section 6.5. The magnitude of effect on landscape character arising from the construction of the proposed 132kV AT Route connection would be low adverse. The magnitude of effect on landscape character arising from the construction of other components of the Proposed Development would range from moderate adverse to low adverse. A moderate adverse magnitude of effect would be experienced where working areas would be clustered or where the landscape is more open and in some instances visible from elevated ground such as the Mendip Hills. These effects would reduce to low adverse further away from the construction operations. The significance of effect would therefore vary from moderate adverse to minor adverse. <u>Land at Bowerhouse East of Riverside Solar Panels</u> In terms of the proposed solar panels the construction period is unknown at this stage. Given the relatively small-scale nature of the development the predicted magnitude of effect would be low adverse. The sensitivity of the landscape is medium and significance of effect would be minor adverse. <u>Cumulative Effects</u>

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
	The proposed 132kV AT Route connection would be the closest component of the Proposed Development to the Solar Farm. Cumulatively the magnitude of effect caused by both developments would involve a partial alteration to characteristics of the existing landscape. The sensitivity of the landscape is medium and in areas of working the significance of effect would be moderate adverse. The significance of effect would reduce further away from the working areas. The cumulative significance of effect would largely result from the construction of the Proposed Development. The cumulative indirect significance of effect on the Mendip Hills AONB would also be moderate adverse in the short-term largely resulting from the construction of the Proposed Development in the immediate setting of the Mendip Hills AONB. <u>Assessment of Potential Cumulative Effects – during Operation</u> <u>Proposed Development</u> As discussed in Volume 5.6.1, section 6.5 the proposed 132kV AT Route connection would have a minor adverse significance of effect on the Kingston, Seymour and Puxton Moors (LLCA A1). The proposed 400kV overhead line would have a moderate adverse significance of effect on the Kingston, Seymour and Puxton Moors (LLCA A1), Locking and Banwell Moors (LLCA A4) and River Yeo Rolling Valley Farmland (LLCA J2) landscape which has medium sensitivity in the southern part of Section D. <u>Land at Bowerhouse East of Riverside Solar Panels</u> It is anticipated that the proposed solar panel development would cause a minor alteration to characteristics of the existing landscape. This would result in a minor adverse significance of effect on the Kingston, Seymour and Puxton Moors (LLCA A1) landscape and the adjacent Locking and Banwell Moors (LLCA A4) landscape which have medium sensitivity in the southern part of Section D. <u>Cumulative Effects</u> Cumulatively the magnitude of effect caused by both developments would involve a partial alteration to key features of the existing landscape. The sensitivity of the landscape is medium and close to the proposed developments the significance of effect would be no greater than moderate adverse. The significance of effect would reduce further away from the working areas. The cumulative significance of effect would largely result from the Proposed Development. The cumulative indirect significance of effect on the Mendip Hills AONB would also be moderate adverse resulting from the Proposed Development in the immediate setting of the Mendip Hills AONB. <u>Mitigation</u> No mitigation planting is proposed to minimise identified effects on landscape character resulting from the proposed 400kV overhead line or the proposed solar panels. <u>Residual Effects</u> Residual cumulative effects on landscape character would be the same as those identified above during the potential operation of the Proposed Development and the proposed solar panels.
32 109	<u>Combined Assessment for ID 32 (in the submitted ES) and ID 109</u> The two solar farms are proposed a minimum of approximately 0.5km apart, with intervening hedgerows and trees along Liddy Yeo and field boundaries reducing inter-visibility between these development proposals in the context of the Proposed Development. Given the relatively small-scale of the equipment proposed within the solar farms, the distance between them and screening by intervening hedgerows and trees, cumulative effects on landscape character resulting from the solar farms, in addition to the Proposed Development, being constructed and operational in the landscape, are not anticipated to be greater than if one of these solar farms was built as proposed, in the context of the Proposed Development. Cumulatively the magnitude of effect caused by both developments would involve a partial

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
	alteration to key features of the existing landscape. The sensitivity of the landscape is medium and in areas close to the proposed developments the significance of effect would be no greater than moderate adverse but reducing to minor adverse significance elsewhere. The cumulative significance of effect would largely result from the Proposed Development. The cumulative indirect significance of effect on the Mendip Hills AONB would also be moderate adverse largely resulting from the Proposed Development in the immediate setting of the Mendip Hills AONB.
115	<u>Summary of Project Detail</u> Clean Earth Wind Turbine Charlton Drive, Wraxall, Bristol, Avon, BS48 1PF EIA screening opinion for a single wind turbine of maximum hub height 50 m and maximum tip height 77 m, with a 3 bladed rotor design. <u>Description of Potential Effect(s)</u> Those aspects of the Proposed Development and the proposed construction of a single wind turbine that would result in potential effects on landscape character are identified below and include: - the introduction of the proposed 400kV overhead line supported with the T-pylon and 132kV underground cables on Tickenham Ridge in Section E; and - the introduction of a single new wind turbine as identified in the 'summary of project detail' onto land at Charlton Drive in Wraxall in the eastern part of Section E. <u>Reference to Key Documents</u> N/A <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> The Tickenham Ridge landscape in Section E is part of the Bristol, Avon Valleys and Ridges (NCA 118) and is described as a landscape of very mixed landform, geology and settlement pattern with low-lying, shallow valleys that contrast with the limestone ridges and scarps. Tickenham Ridge in Section E rises steeply from the Somerset Levels and Moors. The steep wooded scarps of the Failand Hills ridge lie northeast of Section D and overlook the River Severn and the low ground of Kenn Moor. North Somerset Council's (NSC) Landscape Assessment characterises the landscape in Section E, where the Proposed Development and the proposed wind turbine are proposed, as the Abbots Leigh Sandstone Uplands (LLCA F1). The Proposed Development is also proposed within the Failand Settled Limestone Plateau (LLCA G2) adjacent to the south, Tickenham Ridge (LLCA E2) further southwest and the Clapton Moor (LLCA A2) to the north in Section F. The F Route and the W Route are present in the landscape and reduce the susceptibility to change of the landscape from the proposed 400kV overhead line and 132kV underground cables. Existing 132kV overhead lines would reduce the susceptibility to change of the landscape from the proposed wind turbine however the wind turbine would be over 0.5km away and introduced into a part of the landscape where there is little development. The sensitivity of the landscape to the Proposed Development and the proposed wind turbine would be medium given the landscape's medium susceptibility to change, and the local value of the Abbots Leigh Sandstone Uplands (LLCA F1), the Failand Settled Limestone Plateau (LLCA G2) adjacent, the Tickenham Ridge (LLCA E2) further southwest and the Clapton Moor (LLCA A2) to the north in Section F.

ID	Assessment of Potential Cumulative Effects – Landscape –ES Sensitivity Test
	<u>Assessment of Potential Cumulative Effects – during Revised Construction Programme is Proposed Development</u> Construction of the Proposed Development in Section E would result in short-term direct adverse landscape effects on the Abbots Leigh Sandstone Uplands (LLCA F1) and indirect effects on the Failand Settled Limestone Plateau (LLCA G2) adjacent, the Tickenham Ridge (LLCA E2) further southwest and the Clapton Moor (LLCA A2) landscape adjacent to the north in Section F. Construction of the Proposed Development would result in adverse landscape effects in the short-term as discussed in submitted ES Volume 5.6.1, section 6.5. The magnitude of effect on landscape character arising from the construction of the proposed 400kV overhead line, 132kV underground cables, and removal of the F and W Routes would be moderate adverse. A moderate adverse magnitude of effect would be experienced where working areas would be clustered or where the landscape is more open. These effects would reduce to low adverse further away from the construction operations. The significance of the temporary effects of construction operations would be moderate adverse close to construction activity and on the landscape immediate adjacent but would be minor adverse elsewhere. <u>Single Wind Turbine at Charlton Drive Wraxall</u> In terms of the proposed wind turbine the construction period is unknown at this stage. Given the relatively small-scale nature of the development the predicted magnitude of effect would be low adverse. The sensitivity of the landscape is medium and significance of effect would be minor adverse. <u>Cumulative Effects</u> Cumulatively the magnitude of effect caused by both developments would involve a partial alteration to characteristics of the existing landscape. The sensitivity of the landscape is medium and in areas of working the significance of effect would be moderate adverse. The significance of effect would reduce further away from the working areas. The cumulative significance of effect would largely result from the construction of the Proposed Development.
	<u>Mitigation</u> No mitigation planting is proposed to minimise identified effects on landscape character resulting from the proposed 400kV overhead line. Replacement hedgerow planting is proposed in-situ to mitigate loss of existing hedgerows within the 132kV underground cables swathe. Mitigation planting proposed as part of the single wind turbine development is unknown at this stage. <u>Residual Effects</u> Residual cumulative effects on landscape character would be the same as those identified above during the operation of the proposed 400kV overhead line, 132kV underground cables and the proposed single wind turbine.

Landscape Cumulative Effects Assessment - Summary

- 17.3.11 The assessment of cumulative effects does not change for any of the projects identified within the submitted ES, as a result of the Revised Construction Programme. This is largely due to the construction period being unknown for any of the projects identified.
- 17.3.12 Of the 17 new major development proposals that have come forward in the intervening period since the ES was submitted, four potential cumulative effects are identified.
- 17.3.13 Two potentially significant cumulative landscape effects are predicted in Section D that relate to the effect of the possible solar farms at land at Meer Wall near Congresbury (ID 102) and land at Bowerhouse near Banwell (ID 105), where landscape effects would arise as a result of these developments and the Proposed Development being introduced into the Moors landscape south of Hewish. The two possible projects are close to the Proposed Development and landscape effects would be experienced in combination with the proposed 400kV overhead line and other major development proposals assessed cumulatively in the submitted ES. The predicted potential residual cumulative significance of effect on landscape character in Section D would be no greater than **moderate adverse**.
- 17.3.14 One cumulative effect on landscape would arise in Section E from the single wind turbine development at land off Charlton Drive Wraxall (ID 115) where landscape effects would arise as a result of this development and the proposed 400kV overhead line and 132kV underground cables being introduced into the Tickenham Ridge landscape. The possible wind turbine is close to the Proposed Development and landscape effects would be experienced in combination with the proposed 400kV overhead line and underground cables. The predicted potential residual cumulative significance of effect on landscape character in Section E would be no greater than **moderate adverse**.
- 17.3.15 Cumulative effects on landscape would arise in Section G from the possible land at Access 18 industrial unit development in Avonmouth (ID 101) where landscape effects would arise as a result of this development and the proposed 400kV overhead line and 132kV underground cables being introduced into the landscape in Section G. The possible industrial units are close to the Proposed Development and landscape effects would be experienced in combination with the proposed 400kV overhead line and underground cables. The predicted potential residual cumulative significance of effect on landscape character in Section G would be no greater than **moderate adverse**.
- 17.3.16 The predicted effects on the Proposed Development cumulatively with other developments would give rise to a greater significance of adverse effect than that caused by the other developments alone. The significance of adverse effects of the four proposals that have come forward in the intervening period since the ES was submitted would be **minor adverse**, however the effects arising from the Proposed Development would be **moderate adverse**. The effects of the Proposed Development with the other developments cumulatively would be **moderate adverse** with the Proposed Development giving rise to greater effects than the other developments that have come forward in the intervening period since the ES was submitted.

- 17.3.17 With reference to paragraph 7.28 of the Guidelines for Landscape and Visual Impact Assessment 3rd Edition, and as identified in the submitted ES, the Proposed Development would not comprise a 'tipping point' which would give rise to greater significance of adverse effects on the landscape cumulatively with other projects

Visual

- 17.3.18 The developments ID 100 and ID 103 are committed developments and have been accounted for in the updated visual effects future baseline 'base case' at Chapter 7, which identifies what the environment is anticipated to be when the visual effects of the Proposed Development would arise. These committed developments are therefore not considered in the assessment of potential cumulative effects.
- 17.3.19 Committed development ID 103 would introduce new visual receptors and is assessed in the updated Visual Assessment Table for Section A at **Appendix 7A (Volume 5.29.1.2 of the ES Sensitivity Test)**. The Visual Assessment Table also provides further detail of the visual receptors identified below by receptor reference number in the assessment of potential cumulative visual effects of other major development proposals. This assessment should be read with the submitted ES **Volume 5.7.1; Volume 5.7.2, Appendix 7A to 7H**; and the relevant figures at submitted ES **Volume 5.7.3**.
- 17.3.20 The following developments have been scoped out and further details are provided at **Appendix 17.D (Volume 5.29.1.2 of the ES Sensitivity Test)**: ID 104, 105-108, 110-114 and 116.

Table 17.3 Assessment of Potential Cumulative Effects – Visual Effects

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	Assessment of projects identified within submitted ES as a result of the Revised Construction Programme.
	The Revised Construction Programme does not change the assessment of cumulative effects for any of the projects identified within the submitted ES (as set out below): ID 16, ID 22, ID 24, ID 32, ID 38, ID 42, ID 43, ID 44, ID 46, ID 47, ID 69, ID 79, ID 80, ID 81, ID 96, ID 98, ID 99 This is largely due to the construction period being unknown for any of the projects identified.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
101	Assessment of new projects against the Revised Construction Programme (Including the inter-project effect of both the development identified in the submitted ES and the new major developments).
	<u>Summary of Project Detail</u> New Earth Solutions Land at Access 18, off Kings Weston Lane/Avonmouth Way, Avonmouth. Screening opinion as to whether an Environmental Impact Assessment (EIA) is required to be submitted with a full planning application, for the erection of 10,405 sqm (112,000 sqft) of B1c, B2 and B8 development comprising 3 units on land at Access 18, off Kingsweston Lane/Avonmouth Way, Avonmouth. Request for a Scoping Opinion for a low carbon energy facility part of Access 18 site in Avonmouth. Processing 120,000 tonnes of feedstock and generate 13mwe of renewable energy. <u>Description of Potential Effect(s)</u> Those aspects of the Proposed Development and the proposed 3 units on land at Access 18 and associated low carbon energy facility that would result in potential visual effects are identified below and include: - the proposed 400kV overhead line supported with standard steel lattice pylons, 132kV underground cables replacing part of the G Route and the removal of a section of the G Route would be introduced in the central part of Section G; and - the introduction of new office, industrial and storage units and structures as identified in the 'summary project detail' onto land at Access 18 off Kings Weston Lane/Avonmouth Way in Avonmouth in the central part of Section G. <u>Reference to Key Documents</u> N/A <u>Description of Baseline Environment when Potential Effects are Expected to Arise (see submitted ES Volume 5.7.3, Figure 7.2.18)</u> Public receptors that would potentially experience visual effects as a result of the Proposed Development and proposed new office, industrial and storage units and structures off Kings Weston Lane in Avonmouth include: - receptors using PRow BCC/17/10 and BCC/6/10 on Ballast Lane west of Kings Weston Lane (G1.F13); - receptors using PRow BCC/18/10 and BCC/5/10 on Mere Bank east of Kings Weston Lane (G1.F14); - receptors using Kings Weston Lane (G1.R14); and - receptors using Avonmouth Way, Willment Way, Second Way, Third Way, Fourth Way and Fifth Way. Private receptors that would potentially experience visual effects as a result of both developments include - receptors at warehouses and industrial buildings on the north side of Third Way in International Trading Estate, St Andrews Trading Estate and Haslemere Industrial Estate (G1.B23); - receptors at warehouses and industrial buildings to the south of Avonmouth Way (G1.B24); and - receptors at Access 18 offices off Kings Weston Lane (G1.B25).

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Assessment of Potential Cumulative Effect – during Revised Construction Programme (see submitted ES Volume 5.7.3, Figure 7.28.19)</u> <i>Proposed Development</i> Construction effects typically are of relatively short duration. Construction activities associated with the proposed 400kV overhead line, 132kV underground cables and removal of the G Route in Section G would be short-term with visual receptors experiencing temporary adverse effects. <i>Public Views</i> Users of the PRoW BCC/17/10 and BCC/6/10 on Ballast Lane west of Kings Weston Lane (G1.F13) and PRoW BCC/18/10 and BCC/5/10 on Mere Bank east of Kings Weston Lane (G1.F14) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Users of Kings Weston Lane (G1.R14) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Users of Avonmouth Way, Willment Way, Second Way, Third Way, Fourth Way and Fifth Way would experience a low adverse magnitude of effect in views resulting in a minor adverse significance of effect. <i>Private Views</i> Receptors at warehouses and industrial buildings on the north side of Third Way in International Trading Estate, St Andrews Trading Estate and Haslemere Industrial Estate (G1.B23) and to the south of Avonmouth Way (G1.B24) would experience a low adverse magnitude of effect in views resulting in a minor adverse significance of effect. Receptors at Access 18 offices (G1.B25) would experience a negligible magnitude of effect in views resulting in a negligible significance of effect. <u>Land at Access 18, Kings Weston Lane/Avonmouth Way</u> In terms of the proposed new office, industrial and storage units and low carbon energy facility the construction period is unknown at this stage. <i>Public Views</i> Users of the PRoW BCC/17/10 and BCC/6/10 on Ballast Lane west of Kings Weston Lane (G1.F13) and PRoW BCC/18/10 and BCC/5/10 on Mere Bank east of Kings Weston Lane (G1.F14) would have views towards construction works filtered in places by field trees and vegetation and would at worst experience a low adverse magnitude of effect in views. This would result in visual effects of no greater than minor adverse significance. Users of Kings Weston Lane (G1.R14) would have oblique views towards construction works for a short section of the road. Views would be filtered in places by field trees and vegetation and receptors would experience at worst a low adverse magnitude of effect in views. This would result in visual effects of no greater than minor adverse significance. Users of Avonmouth Way, Willment Way, Second Way, Third Way, Fourth Way and Fifth Way would have views towards construction works largely filtered and screened by industrial warehouses and boundary vegetation. Receptors would experience visual effects of no greater than low adverse magnitude resulting in visual effects of no greater than minor adverse significance. <i>Private Views</i> Receptors at warehouses and industrial buildings on the north side of Third Way in International Trading Estate, St Andrews Trading Estate and Haslemere Industrial Estate (G1.B23) and to the south of Avonmouth Way (G1.B24) would have views towards construction works largely filtered and screened by industrial warehouses and boundary vegetation. Receptors would experience visual effects of no greater than low adverse magnitude resulting in visual effects of no greater than minor adverse significance.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	Receptors at Access 18 offices (G1.B25) would have views towards construction works on adjacent plots and in a moderate proportion of views. Receptors would experience a low adverse magnitude of effect in views resulting in a minor adverse significance of effect. <u>Cumulative Effects</u> It is predicted that the proposed 400kV overhead line and the proposed land at Access 18 development in combination would cause a moderate or low alteration to the existing view in the short-term resulting in a low adverse magnitude of effect during construction. This would result in receptors experiencing visual effects of no greater than minor adverse significance cumulatively. The majority of other public and private visual receptors in the area would experience a low to negligible magnitude of effect in views. This would result in no greater than a minor to negligible adverse cumulative significance of effect. <u>Assessment of Potential Cumulative Effect – during Operation (see submitted ES Volume 5.7.3, Figure 7.30.19)</u> <u>Proposed Development</u> <u>Public Views</u> Users of the PRoW BCC/17/10 and BCC/6/10 on Ballast Lane west of Kings Weston Lane (G1.F13) would have the proposed 400kV overhead line visible on a similar alignment to the G Route removed. The 400kV overhead line would pass over the PRoW and there would be a low scale of change from the existing view and the magnitude of effect would be low adverse. This would result in visual effects of minor adverse significance. Users of PRoW BCC/18/10 and BCC/5/10 on Mere Bank east of Kings Weston Lane (G1.F14) would have views of the proposed 400kV overhead line to the south parallel to the PRoW with the G Route removed from views. A moderate proportion of the view would be affected but the effect would be reduced due to the industrial nature of views that include the G Route and BW Route. There would be a low scale of change from the existing view and the magnitude of effect would be low adverse and significance of effect would be minor adverse. Users of Kings Weston Lane (G1.R14) would have views of the proposed 400kV overhead line passing over the road in a similar location to the G Route removed. Receptors would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Users of Avonmouth Way, Willment Way, Second Way, Third Way, Fourth Way and Fifth Way would experience a low adverse magnitude of effect in views resulting in a minor adverse significance of effect where the proposed 400kV overhead line would be visible passing over the industrial estate. <u>Private Views</u> Receptors at warehouses and industrial buildings on the north side of Third Way in International Trading Estate, St Andrews Trading Estate and Haslemere Industrial Estate (G1.B23) and to the south of Avonmouth Way (G1.B24) would have views of the proposed 400kV overhead line over warehouses and businesses south of Third Way. Receptors would experience a low adverse magnitude of effect in views resulting in a minor adverse significance of effect. Receptors at Access 18 offices (G1.B25) would have the proposed 400kV overhead line visible in places to the south partially filtered by trees and vegetation. Receptors would experience a negligible magnitude of effect in views resulting in a negligible significance of effect.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Land at Access 18, Kings Weston Lane/Avonmouth Way</u> <i>Public Views</i> Users of the PRoW BCC/17/10 and BCC/6/10 on Ballast Lane west of Kings Weston Lane (G1.F13) and PRoW BCC/18/10 and BCC/5/10 on Mere Bank east of Kings Weston Lane (G1.F14) would have views towards the proposed office, industrial and storage units filtered in places by field trees and vegetation and would at worst experience a low adverse magnitude of effect in views. This would result in visual effects of no greater than minor adverse significance. Users of Kings Weston Lane (G1.R14) would have oblique views towards the development for a short section of the road. Views would be filtered in places by field trees and vegetation and receptors would experience a negligible magnitude of effect in views as the units would be viewed in context with existing units at Access 18.. This would result in visual effects of negligible significance. Users of Avonmouth Way, Willment Way, Second Way, Third Way, Fourth Way and Fifth Way would have views towards the development at Access 18 largely filtered and screened by industrial warehouses and boundary vegetation. Receptors would experience visual effects of no greater than low adverse magnitude resulting in visual effects of no greater than minor adverse significance. <i>Private Views</i> Receptors at warehouses and industrial buildings on the north side of Third Way in International Trading Estate, St Andrews Trading Estate and Haslemere Industrial Estate (G1.B23) and to the south of Avonmouth Way (G1.B24) would have views towards the proposed units at Access 18 largely filtered and screened by industrial warehouses and boundary vegetation. Receptors would experience visual effects of no greater than low adverse magnitude resulting in visual effects of no greater than minor adverse significance. Receptors at Access 18 offices (G1.B25) would have views towards the proposed office, industrial and storage units on adjacent plots and in a moderate proportion of views. Receptors would experience a low adverse magnitude of effect in views resulting in a minor adverse significance of effect as there would be a low scale of change from the existing view. <u>Cumulative Effects</u> It is predicted that the proposed 400kV overhead line and the proposed land at Access 18 development in combination would cause a low alteration to the existing view and there would be a low scale of change. Receptors would experience visual effects of no greater than a low adverse magnitude of effect resulting in visual effects of no greater than minor adverse significance cumulatively. The land at Access 18 development would be consistent with other development in Avonmouth and the proposed 400kV overhead line would have the greatest visual effect of the two developments. The majority of other public and private visual receptors in the area would experience a low to negligible magnitude of effect in views. This would result in no greater than a minor to negligible adverse cumulative significance of effect. <u>Mitigation</u> No mitigation planting is proposed to minimise identified visual effects resulting from the proposed 400kV overhead line. Replacement hedgerow planting is proposed in-situ to mitigate loss of existing hedgerows within the 132kV underground cables swathe replacing part of the G Route. Mitigation planting proposed as part of the land at Access 18 development is unknown at this stage.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Residual Effects</u> Residual cumulative visual effects would be the same as those identified above during the operation of the proposed 400kV overhead line, 132kV underground cables and the proposed industrial buildings and low carbon energy facility at land at Access 18.
102	<u>Summary of Project Detail</u> Smiths Gore Land at Meer Wall near Strawberry Line Congresbury EIA Screening opinion for a 36 mw power Solar Farm. <u>Description of Potential Effect(s)</u> Those aspects of the Proposed Development and the proposed construction of a solar farm that would result in potential visual effects are identified below and include: - the introduction of the proposed 400kV overhead line supported with the T-pylon into the Somerset Moors in Section D; and - the introduction of new structures as identified in the 'summary of project detail' onto land at Meer Wall near the Strawberry Line in the southern part of Section D. <u>Reference to Key Documents</u> N/A <u>Description of Baseline Environment when Potential Effects are Expected to Arise (see submitted ES Volume 5.7.3, Figure 7.2.9 and 7.2.10)</u> Public receptors that would potentially experience visual effects as a result of the Proposed Development and the proposed solar farm include: - people using the Strawberry Line long distance route and National Cycle Route 26; - users of PRoW AX24/7A/10 (D1.F11); - users of PRoW AX24/6/10 (D1.F12); - users of PRoW AX24/5/30 (D1.F20); and - users of AX16/37/20 and AX16/37/30 (D1.F28). It is not anticipated that any private receptors would potentially experience visual effects as a result of both developments due to distance and field boundary hedgerows and trees screening the proposed solar farm.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Assessment of Potential Cumulative Effect – during Revised Construction Programme (see submitted ES Volume 5.7.3, Figure 7.28.9 and 7.28.10)</u> <u>Proposed Development</u> Construction effects typically are of relatively short duration. Construction activities associated with the proposed 400kV overhead line, AT Route connection and removal of the F Route and AT Route in Section D would be short-term with visual receptors experiencing temporary adverse effects. <u>Public Views</u> People using the Strawberry Line long distance route and National Cycle Route 26 would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Users of PRoW AX24/7A/10 (D1.F11) along Oldbridge River would experience a moderate adverse magnitude of effect in views. This would result in a moderate adverse significance of effect. Users of PRoW AX24/6/10 (D1.F12) on Puxton Moor Lane and PRoW AX24/5/30 (D1.F20) west of Oldbridge River would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Users of AX16/37/20 and AX16/37/30 (D1.F28) on Brandeer Rhyne south of Dolemoor Lane would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. <u>Land at Meer Wall Solar Farm</u> It is unclear whether the construction of the solar farm would coincide with the proposed 400kV overhead line in terms of timescale, however it is assumed that the construction operation of the former would be relatively minor as the scale and height of the solar farm is relatively small. Users of the Strawberry Line long distance route and National Cycle Route 26 would experience visual effects of no greater than low adverse magnitude with a low alteration to the existing view affected for the short-term due to the presence of hedgerow screening in the landscape. This would result in short-term visual effects of no greater than minor adverse significance on views. Users of PRoW AX24/7A/10 (D1.F11) along Oldbridge River would pass adjacent to the western boundary of the solar farm and would have views into the development area. Receptors would experience visual effects of no greater than moderate adverse magnitude in views. This would result in visual effects of no greater than moderate adverse significance. Users of PRoW AX24/6/10 (D1.F12) on Puxton Moor Lane and PRoW AX24/5/30 (D1.F20) west of Oldbridge River would have views east towards the solar farm construction heavily filtered and screened by mature hedgerows and trees. Receptors would experience visual effects of no greater than low adverse magnitude in views. This would result in visual effects of no greater than minor adverse significance. Users of AX16/37/20 and AX16/37/30 (D1.F28) on Brandeer Rhyne south of Dolemoor Lane would have views south towards construction works filtered and screened by intervening field boundary hedgerows and trees and would experience visual effects of no greater than low adverse magnitude in views. This would result in visual effects of no greater than minor adverse significance.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Cumulative Effects</u> It is predicted that the proposed 400kV overhead line and the proposed solar farm development in combination would result in visual effects of moderate adverse magnitude and moderate adverse significance cumulatively to users of PRoW AX24/7A/10 (D1.F11) along Oldbridge River. Receptors would pass close to construction works for both developments in the short-term. Typically for most receptors it is predicted that the proposed 400kV overhead line and the proposed solar farm development in combination would cause a moderate or low alteration to the existing view in the short-term resulting in visual effects of no greater than low adverse magnitude in views. This would result in cumulative visual effects of no greater than minor adverse significance during construction. <u>Assessment of Potential Cumulative Effect – during Operation (see submitted ES Volume 5.7.3, Figure 7.30.9 and 7.30.10)</u> <u>Proposed Development</u> <u>Public Views</u> People using the Strawberry Line long distance route and National Cycle Route 26 would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Users of PRoW AX24/7A/10 (D1.F11) along Oldbridge River would experience a moderate adverse magnitude of effect in views. This would result in a moderate adverse significance of effect. Users of PRoW AX24/6/10 (D1.F12) on Puxton Moor Lane would experience a low beneficial magnitude of effect in views. This would result in a minor beneficial significance of effect. Users of PRoW AX24/5/30 (D1.F20) west of Oldbridge River would experience a moderate adverse magnitude of effect in views. This would result in a moderate adverse significance of effect. Users of AX16/37/20 and AX16/37/30 (D1.F28) on Brandeer Rhyne south of Dolemoor Lane would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Land at Meer Wall Solar Farm</u> Users of the Strawberry Line long distance route and National Cycle Route 26 would experience visual effects of no greater than low adverse magnitude with a low alteration to the existing view due to the presence of hedgerow screening in the landscape. This would result in visual effects of no greater than minor adverse significance on views. Users of PRoW AX24/7A/10 (D1.F11) along Oldbridge River would pass adjacent to the western boundary of the solar farm along the southern section of this PRoW. Receptors would have views across the solar farm and would experience visual effects of no greater than moderate adverse magnitude. This would result in visual effects of no greater than moderate adverse significance. Users of PRoW AX24/6/10 (D1.F12) on Puxton Moor Lane and PRoW AX24/5/30 (D1.F20) west of Oldbridge River would have views east towards the solar farm heavily filtered and screened by mature hedgerows and trees. Receptors would experience visual effects of no greater than low adverse magnitude in views. This would result in visual effects of no greater than minor adverse significance. Users of AX16/37/20 and AX16/37/30 (D1.F28) on Brandeer Rhyne south of Dolemoor Lane would have views south towards construction works filtered and screened by intervening field boundary hedgerows and trees and would experience visual effects of no greater than low adverse magnitude in views. This would result in visual effects of no greater than minor adverse significance. <u>Cumulative Effects</u> It is predicted that the proposed 400kV overhead line and the proposed solar farm development in combination would result in visual effects of moderate adverse magnitude and moderate adverse significance cumulatively to users of PRoW AX24/7A/10 (D1.F11) along Oldbridge River. Receptors would pass close to both developments with close views of the proposed 400kV overhead line and solar farm. The greater effect would be from the proposed 400kV overhead line that would be parallel adjacent to the PRoW. Typically for most receptors it is predicted that the proposed 400kV overhead line and the proposed solar farm development in combination would cause a moderate or low alteration to the existing view resulting in visual effects of no greater than low adverse magnitude in views. This would result in cumulative visual effects of no greater than minor adverse significance during operation.
	<u>Mitigation</u> No mitigation planting is proposed to minimise identified visual effects resulting from the proposed 400kV overhead line. Mitigation planting proposed as part of the solar farm is unknown at this stage, however it is anticipated that no mitigation planting would be required due to the scale and height of the development and existing tree and hedgerows to field boundaries. <u>Residual Effects</u> Residual cumulative visual effects would be the same as those identified above during the operation of the proposed 400kV overhead line and solar farm.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
38 42 43 102	<u>Combined Assessment for ID 38, 42, 43 (in the submitted ES) and ID 102</u> The four solar farms are proposed a minimum of approximately 0.3km apart, with intervening hedgerows and trees along Meer Wall Rhyne, Dolemoor Lane, the Strawberry Line and field boundaries reducing inter-visibility between these development proposals in the context of the Proposed Development. Given the relatively small-scale of the equipment proposed within the solar farms, the distance between them and screening by intervening hedgerows and trees, cumulative effects on visual amenity resulting from the solar farms, in addition to the Proposed Development, being constructed and operational in the landscape, are not anticipated to be greater than if one of these solar farms was built as proposed, in the context of the Proposed Development. It is predicted that the proposed 400kV overhead line and the proposed solar farm developments in combination would result in visual effects of no greater than moderate adverse magnitude and moderate adverse significance cumulatively to receptors close to these developments with close views of the proposed 400kV overhead line and solar farms. The greater effect would be from the proposed 400kV overhead line. Typically for most receptors it is predicted that the proposed 400kV overhead line and the proposed solar farm developments in combination would cause a moderate or low alteration to the existing view resulting in visual effects of no greater than low adverse magnitude. This would result in cumulative visual effects of no greater than minor adverse significance during operation.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
109	<u>Summary of Project Detail</u> KWTN Solar Ltd Land at Bowerhouse East of Riverside Banwell BS29 6EL. EIA screening request for a proposed 7.48mw solar farm on land at Bowerhouse East of Riverside Banwell BS29 6EL. <u>Description of Potential Effect(s)</u> Those aspects of the Proposed Development and the proposed construction of a solar farm that would result in potential visual effects are identified below and include: - the introduction of the proposed 132kV connection between Sandford Substation and the AT Route, the proposed 400kV overhead line using the T-pylon to the east; and the proposed Sandford Substation, proposed 400kV underground cables, the Towerhead Brook cables bridge (and temporary construction bridge) to the southeast in addition to the proposed N Route connection, in the southern part of Section D; and - the introduction of new structures as identified in the ‘summary of project detail’ onto land at Bowerhouse East of Riverside Banwell in the southern part of Section D. <u>Reference to Key Documents</u> N/A <u>Description of Baseline Environment when Potential Effects are Expected to Arise (see submitted ES Volume 5.7.3, Figure 7.2.9)</u> Public receptors that would potentially experience visual effects as a result of the Proposed Development and the proposed solar farm include: - users of PRoW AX29/48/10 (D1.F1) between Sandford and Liddy Yeo; - users of PRoW AX29/48/10 (D1.F7) along Liddy Yeo; Private receptors that would potentially experience visual effects as a result of the Proposed Development and the proposed solar farm include: - receptors at Rookery Farm and Rookery Farm East, Drove Way, Nye (D1.H17); - receptors at Gout House Farm, Riverside (D1.H19); and - receptors at Havage House along Box Bush Lane, East Rolstone (D1.H20).

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Assessment of Potential Cumulative Effect – during Revised Construction Programme (see submitted ES Volume 5.7.3, Figure 7.28.9)</u> <u>Proposed Development</u> Construction effects typically are of relatively short duration. Construction activities associated with the proposed AT Route connection, 400kV overhead line and removal of the F Route and AT Route in Section D would be short-term with visual receptors experiencing temporary adverse effects. <u>Public Views</u> Users of PRoW AX29/48/10 (D1.F1) between Sandford and Liddy Yeo and PRoW AX29/48/10 (D1.F7) along Liddy Yeo would experience a moderate adverse magnitude of effect in views. This would result in a moderate adverse significance of effect. <u>Private Views</u> Receptors at Rookery Farm and Rookery Farm East, Drove Way, Nye (D1.H17) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Receptors at Gout House Farm, Riverside (D1.H19) and Havage House along Box Bush Lane, East Rolstone (D1.H20) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. <u>Land at Bowerhouse East of Riverside Solar Panels</u> It is unclear whether the construction of the solar farm would coincide with the proposed 400kV overhead line in terms of timescale, however it is assumed that the construction operation of the former would be relatively minor as the scale and height of the solar farm is relatively small. Users of PRoW AX29/48/10 (D1.F1) between Sandford and Liddy Yeo and PRoW AX29/48/10 (D1.F7) along Liddy Yeo would pass close to the solar farm for a short section and would have views towards the development area beyond hedgerows on Liddy Yeo. Receptors would experience visual effects of no greater than low adverse magnitude in views. This would result in visual effects of no greater than minor adverse significance. Receptors at Rookery Farm and Rookery Farm East, Drove Way, Nye (D1.H17) are largely enclosed by mature garden trees that would limit views towards the solar farm construction. Receptors would experience no greater than a low adverse magnitude of effect in filtered views. This would result in visual effects of no greater than minor adverse significance. Receptors at Gout House Farm, Riverside (D1.H19) and Havage House along Box Bush Lane, East Rolstone (D1.H20) are largely surrounded by trees and vegetation and would experience filtered views towards construction works resulting in visual effects of no greater than low adverse magnitude. This would result in visual effects of no greater than minor adverse significance during construction.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Cumulative Effects</u> Construction of the proposed AT Route connection would be the closest component of the Proposed Development to the Solar Farm. It is predicted that construction of the Proposed Development and the proposed solar farm development in combination would result in visual effects of moderate adverse magnitude and moderate adverse significance cumulatively to users of PRoW AX29/48/10 (D1.F1) between Sandford and Liddy Yeo and PRoW AX29/48/10 (D1.F7) along Liddy Yeo. Receptors would pass close to both construction sites for a short section of the PRoW with close views of the proposed AT Route connection and solar farm construction operations. At height works for construction of the proposed 400kV overhead line, F Route and AT Route removal would be visible further away above trees and hedgerows. Receptors using PRoW AX29/48/10 (D1.F1) would also experience the greatest visual effects further south close to the proposed 400kV underground cables swathe and Sandford Substation construction. The greater effect on receptors using these PRoW would be from the Proposed Development, in particular the AT Route connection that would be parallel adjacent to the PRoW. Typically for most receptors it is predicted that construction of the Proposed Development and the proposed solar farm development in combination would cause a moderate or low alteration to the existing view resulting in visual effects of no greater than low adverse magnitude in views. This would result in cumulative visual effects of no greater than minor adverse significance during construction. Receptors at Rookery Farm and Rookery Farm East, Drove Way, Nye (D1.H17) would have filtered views of construction of the AT Route connection with the solar farm construction works visible further west beyond the Proposed Development. Receptors at Gout House Farm, Riverside (D1.H19) and Havage House along Box Bush Lane, East Rolstone (D1.H20) would have filtered views of the proposed solar farm construction works to the east and south with construction works for the proposed AT Route connection visible beyond to the east and at height works for the proposed 400kV overhead line construction and removal of the F Route further away, visible above trees and hedgerows. The greater effect on receptors during construction would be from the Proposed Development, in particular the AT Route connection.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Assessment of Potential Cumulative Effects – during Operation (see submitted ES Volume 5.7.3, Figure 7.30.9)</u> <u>Proposed Development</u> <u>Public Views</u> Users of PRoW AX29/48/10 (D1.F1) between Sandford and Liddy Yeo and PRoW AX29/48/10 (D1.F7) along Liddy Yeo would experience a moderate adverse magnitude of effect in views. This would result in a moderate adverse significance of effect. <u>Private Views</u> Receptors at Rookery Farm and Rookery Farm East, Drove Way, Nye (D1.H17) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Receptors at Gout House Farm, Riverside (D1.H19) and Havage House along Box Bush Lane, East Rolstone (D1.H20) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. <u>Land at Bowerhouse East of Riverside Solar Panels</u> Users of PRoW AX29/48/10 (D1.F1) between Sandford and Liddy Yeo and PRoW AX29/48/10 (D1.F7) along Liddy Yeo would pass close to the solar farm for a short section and would have views towards the development area beyond hedgerows on Liddy Yeo. Receptors would experience visual effects of no greater than low adverse magnitude in views. This would result in visual effects of no greater than minor adverse significance. Receptors at Rookery Farm and Rookery Farm East, Drove Way, Nye (D1.H17) are largely enclosed by mature garden trees that would limit views towards the solar farm development. Receptors would experience no greater than a low adverse magnitude of effect in filtered views. This would result in visual effects of no greater than minor adverse significance. Receptors at Gout House Farm, Riverside (D1.H19) and Havage House along Box Bush Lane, East Rolstone (D1.H20) are largely surrounded by trees and vegetation and would experience filtered views towards the proposed solar farm development resulting in visual effects of no greater than low adverse magnitude. This would result in visual effects of no greater than minor adverse significance during construction.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Cumulative Effects</u> The proposed 132kV AT Route connection would be the closest component of the Proposed Development to the Solar Farm. It is predicted that the Proposed Development and the proposed solar farm development in combination would result in cumulative visual effects of moderate adverse magnitude and moderate adverse significance to users of PRoW AX29/48/10 (D1.F1) between Sandford and Liddy Yeo and PRoW AX29/48/10 (D1.F7) along Liddy Yeo. Receptors would pass close to both developments for a short section of the PRoW with close views of the proposed AT Route connection and solar farm. The proposed 400kV overhead line, F Route and AT Route removal would be visible further away above trees and hedgerows. Receptors using PRoW AX29/48/10 (D1.F1) would also experience the greatest visual effects further south close to Sandford Substation. The greater effect on receptors using these PRoW would be from the Proposed Development, in particular the AT Route connection that would be parallel adjacent to the PRoW. Typically for most receptors it is predicted that the Proposed Development and the proposed solar farm development in combination would cause a moderate or low alteration to the existing view resulting in visual effects of no greater than low adverse magnitude in views. This would result in cumulative visual effects of no greater than minor adverse significance during operation. Receptors at Rookery Farm and Rookery Farm East, Drove Way, Nye (D1.H17) would have filtered views of the AT Route connection with the solar farm construction works visible further west beyond the Proposed Development. Receptors at Gout House Farm, Riverside (D1.H19) and Havage House along Box Bush Lane, East Rolstone (D1.H20) would have filtered views of the proposed solar farm construction works to the east and south with the proposed AT Route connection visible beyond to the east and the proposed 400kV overhead line construction and removal of the F Route further away, visible above trees and hedgerows. The greater effect on receptors would be from the Proposed Development, in particular the AT Route connection. <u>Mitigation</u> Mitigation planting is proposed at Sandford Substation and the permanent bridge crossing at Towerhead Brook to minimise identified visual effects resulting from the Proposed Development. No other mitigation planting is proposed to minimise identified visual effects resulting from the Proposed Development. Replacement hedgerow planting is proposed in-situ to mitigate loss of existing hedgerows within the 400kV underground cables swathe near Sandford Substation. Mitigation planting proposed as part of the solar farm is unknown at this stage, however it is anticipated that no mitigation planting would be required due to the scale and height of the development and existing tree and hedgerows to field boundaries. <u>Residual Effects</u> For most receptors residual cumulative visual effects would be the same as those identified above during the potential operation of the Proposed Development and the proposed solar farm. In the long-term from PRoW AX29/48/10 (D1.F1) between Sandford and Liddy Yeo views of the proposed solar farm and the proposed AT Route connection supported by lattice pylons and more glimpsed filtered views of the new 400kV overhead line supported by T-pylons would remain. However to the southern section of the PRoW tree planting including orchard and lines of native trees along the northern and western boundaries of Sandford Substation would provide screening to the lower elevations of structures with the tops of gantries and the terminal pylons visible. The magnitude and significance of effect would remain moderate adverse.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
32 109	<u>Combined Assessment for ID 32 (in the submitted ES) and ID 109</u> The two solar farms are proposed a minimum of approximately 0.5km apart, with intervening hedgerows and trees along Liddy Yeo and field boundaries reducing inter-visibility between these development proposals in the context of the Proposed Development. Given the relatively small-scale of the equipment proposed within the solar farms, the distance between them and screening by intervening hedgerows and trees, cumulative visual effects resulting from the solar farms, in addition to the Proposed Development, being constructed and operational in the landscape, are not anticipated to be greater than if one of these solar farms was built as proposed, in the context of the Proposed Development. It is predicted that the proposed 400kV overhead line and the proposed solar farm developments in combination would result in visual effects of no greater than moderate adverse magnitude and moderate adverse significance cumulatively to receptors close to these developments with close views of the proposed 400kV overhead line and solar farms. The greater effect would be from the proposed 400kV overhead line. Typically for most receptors it is predicted that the proposed 400kV overhead line and the proposed solar farm developments in combination would cause a moderate or low alteration to the existing view resulting in visual effects of no greater than low adverse magnitude. This would result in cumulative visual effects of no greater than minor adverse significance during operation.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
115	<u>Summary of Project Detail</u> Clean Earth Charlton Drive, Wraxall, Bristol, Avon, BS48 1PF. EIA screening opinion for a single wind turbine of maximum hub height 50m and maximum tip height 77m, with a 3 bladed rotor design. <u>Description of Potential Effect(s)</u> Those aspects of the Proposed Development and the proposed construction of a single wind turbine that would result in potential visual effects are identified below and include: - the introduction of the proposed 400kV overhead line supported with the T-pylon and 132kV underground cables on Tickenham Ridge in Section E; and - the introduction of a new single wind turbine as identified in the ‘summary of project detail’ onto land at Charlton Drive in Wraxall in the eastern part of Section E. <u>Reference to Key Documents</u> N/A <u>Description of Baseline Environment when Potential Effects are Expected to Arise (see submitted ES Volume 5.7.3, Figure 7.2.15 and 7.4.8)</u> Public receptors that would potentially experience visual effects as a result of the Proposed Development and the proposed wind turbine include: - users of the Gordano Round long distance route (including PRoW LA20/5620, LA20/56/30 and LA20/56/40 near Charlton Drive (E1.F15 and E1.F16) and PRoW LA20/56/10 and LA20/56/15 and LA15/20/20 west of Prior’s Wood (E1.F11)); - users of the Gordano Round Link 3 long distance route; - users of PRoW LA20/32/20 (E1.F14) between Charlton Drive and PRoW LA20/90/20; - users of PRoW LA15/12/40 (E1.F17) on Charlton Drive and through Prior’s Wood; Private receptors that would potentially experience visual effects as a result of the Proposed Development and the proposed wind turbine include: - receptors at The Cleaves off Charlton Drive (E1.H35); - receptors at Noah’s Ark Zoo Farm visitor attraction and surrounding land off Clevedon Road (E1.M2); - receptors at The Downs School Association on Charlton Drive (E1.M3); and - receptors at Children’s Hospice South West on Charlton Drive (E1.M4).

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Assessment of Potential Cumulative Effect – during Revised Construction Programme (see submitted ES Volume 5.7.3, Figure 7.28.15 and 7.29.12)</u> <i>Proposed Development</i> Construction effects typically are of relatively short duration. Construction activities associated with the proposed 400kV overhead line, 132kV underground cables and removal of the F Route and W Route in Section E would be short-term with visual receptors experiencing temporary adverse effects. <i>Public Views</i> Users of the Gordano Round long distance route on PRoW LA20/56/10 and LA20/56/15 and LA15/20/20 (E1.F11) west of Prior's Wood would experience a moderate adverse magnitude of effect in views. This would result in a moderate adverse significance of effect. Users of the Gordano Round long distance route east of Prior's Wood and including PRoW LA20/56/20, LA20/56/30 and LA20/56/40 near Charlton Drive (E1.F15 and E1.F16) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Users of the Gordano Round Link 3 long distance route near Charlton Farm and Charlton Drive would experience a negligible magnitude of effect resulting in a negligible significance of effect. Users of PRoW LA20/32/20 (E1.F14) between Charlton Drive and PRoW LA20/90/20 and users of PRoW LA15/12/40 (E1.F17) on Charlton Drive and through Prior's Wood would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. <i>Private Views</i> Receptors at The Cleaves off Charlton Drive (E1.H35) and Noah's Ark Zoo Farm visitor attraction and surrounding land off Clevedon Road (E1.M2) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Receptors at The Downs School Association on Charlton Drive (E1.M3) and the Children's Hospice South West on Charlton Drive (E1.M4) would experience a negligible magnitude of effect resulting in a negligible significance of effect. <u>Single Wind Turbine at Charlton Drive Wraxall</u> <i>Public Views</i> In terms of the proposed wind turbine there is no indication of the construction period in the planning application EIA screening opinion request. However for this cumulative assessment it is assumed to be no more than 12 months. Users of the Gordano Round long distance route on PRoW LA20/56/10 and LA20/56/15 and LA15/20/20 (E1.F11) west of Prior's Wood would have distant views of at-height works to construct the wind turbine, barely perceptible above Prior's Wood in a small proportion of views. Receptors would experience a negligible magnitude of effect in views. This would result in a negligible significance of effect. Users of the Gordano Round long distance route east of Prior's Wood and including PRoW LA20/56/20, LA20/56/30 and LA20/56/40 near Charlton Drive (E1.F15 and E1.F16); and users of the Gordano Round Link 3 long distance route near Charlton Farm would have views across agricultural fields towards construction operations and at-height works for the wind turbine erection. Works would be visible in a low proportion of views in the short-term and receptors would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	Users of PRoW LA20/32/20 (E1.F14) between Charlton Drive and PRoW LA20/90/20 and users of PRoW LA15/12/40 (E1.F17) on Charlton Drive and through Prior's Wood would have views across agricultural fields towards construction operations and at-height works for the wind turbine erection. Works would be visible in a low proportion of views in the short-term and receptors would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. <i>Private Views</i> Receptors at Noah's Ark Zoo Farm visitor attraction and surrounding land off Clevedon Road (E1.M2) would have distant views of at-height works to construct the wind turbine. Construction works would be barely perceptible in a small proportion of views between Prior's Wood and Breach Wood, visible above The Downs School and associated trees on Charlton Drive. Receptors would experience a negligible magnitude of effect in views. This would result in a negligible significance of effect. Receptors at The Cleaves off Charlton Drive (E1.H35), The Downs School Association on Charlton Drive (E1.M3) and the Children's Hospice South West on Charlton Drive (E1.M4) would have views across agricultural fields towards construction operations and at-height works for the wind turbine erection. Works would be visible in a low proportion of views in the short-term and receptors would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. <u>Cumulative Effects</u> The receptors referred to above would have views of both developments under construction but for many receptors construction operations would not be visible in the same direction. Already present in the receptors' existing view are the F Route and W Route overhead lines. In all cases there would be partial alteration to the existing view during construction. The magnitude of effect would typically be minor adverse or negligible resulting in a minor adverse or negligible significance of effect during construction. Receptors using the Gordano Round west of Prior's Wood would experience a moderate adverse magnitude of effect and the cumulative significance of effect would be no greater than moderate adverse. The greater effect on receptors during construction would be from the Proposed Development where the PRoW pass through the construction area and would be managed during the works.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	<u>Assessment of Potential Cumulative Effects – during Operation (see submitted ES Volume 5.7.3, Figure 7.30.15 and 7.31.12)</u> <u>Proposed Development</u> <u>Public Views</u> Users of the Gordano Round long distance route on PRoW LA20/56/10 and LA20/56/15 and LA15/20/20 (E1.F11) west of Prior's Wood would experience a moderate adverse magnitude of effect in views. This would result in a moderate adverse significance of effect. Users of the Gordano Round long distance route east of Prior's Wood and including PRoW LA20/56/20, LA20/56/30 and LA20/56/40 near Charlton Drive (E1.F15 and E1.F16) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Users of the Gordano Round Link 3 long distance route near Charlton Farm and Charlton Drive would experience a negligible magnitude of effect resulting in a negligible significance of effect. Users of PRoW LA20/32/20 (E1.F14) between Charlton Drive and PRoW LA20/90/20 and users of PRoW LA15/12/40 (E1.F17) on Charlton Drive and through Prior's Wood would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. <u>Private Views</u> Receptors at The Cleaves off Charlton Drive (E1.H35) and Noah's Ark Zoo Farm visitor attraction and surrounding land off Clevedon Road (E1.M2) would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Receptors at The Downs School Association on Charlton Drive (E1.M3) and the Children's Hospice South West on Charlton Drive (E1.M4) would experience a negligible magnitude of effect resulting in a negligible significance of effect. <u>Single Wind Turbine at Charlton Drive Wraxall</u> <u>Public Views</u> Users of the Gordano Round long distance route on PRoW LA20/56/10 and LA20/56/15 and LA15/20/20 (E1.F11) west of Prior's Wood would have distant views of the wind turbine above Prior's Wood in a small proportion of views. Receptors would experience a minor adverse magnitude of effect in views. This would result in a minor adverse significance of effect. Users of the Gordano Round long distance route east of Prior's Wood and including PRoW LA20/56/20, LA20/56/30 and LA20/56/40 near Charlton Drive (E1.F15 and E1.F16); and users of the Gordano Round Link 3 long distance route near Charlton Farm would have views across agricultural fields towards the wind turbine. The wind turbine would be visible in a small proportion of views in the medium to long-term and receptors would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect.

ID	Assessment of Potential Cumulative Effects – Visual Effects –ES Sensitivity Test
	Users of PRoW LA20/32/20 (E1.F14) between Charlton Drive and PRoW LA20/90/20 and users of PRoW LA15/12/40 (E1.F17) on Charlton Drive and through Prior's Wood would have views across agricultural fields towards the wind turbine. The wind turbine would be visible in a small proportion of views in the medium to long-term and receptors would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. <i>Private Views</i> Receptors at Noah's Ark Zoo Farm visitor attraction and surrounding land off Clevedon Road (E1.M2) would have distant views of the wind turbine. The wind turbine would be barely perceptible in a small proportion of distant views between Prior's Wood and Breach Wood, visible above The Downs School and associated trees on Charlton Drive. An existing low wind turbine is already present in views within the visitor attraction and this would reduce the scale of change. Receptors would experience a negligible magnitude of effect in views resulting in a negligible significance of effect. Receptors at The Cleaves off Charlton Drive (E1.H35), The Downs School Association on Charlton Drive (E1.M3) and the Children's Hospice South West on Charlton Drive (E1.M4) would have views across agricultural fields towards the wind turbine. The wind turbine would be visible in a small proportion of views in the medium to long-term and receptors would experience a low adverse magnitude of effect in views. This would result in a minor adverse significance of effect. <u>Cumulative Effects</u> The receptors referred to above would have views of both developments but for many receptors the Proposed Development and proposed wind turbine would not be visible in the same direction. Already present in the receptors' existing view are the F Route and W Route overhead lines. In all cases there would be a partial alteration to the existing view during operation. The magnitude of effect would typically be minor adverse or negligible resulting in a minor adverse or negligible significance of effect during operation in the medium and long-term. Receptors using the Gordano Round west of Prior's Wood would experience a moderate adverse magnitude of effect and the cumulative significance of effect would be no greater than moderate adverse. The greater effect on receptors during operation would be from the Proposed Development where the PRoW would pass under the proposed 400kV overhead line and across underground cable swathe.
	<u>Mitigation</u> No mitigation planting is proposed to minimise identified visual effects resulting from the proposed 400kV overhead line. Replacement hedgerow planting is proposed in-situ to mitigate loss of existing hedgerows within the 132kV underground cables swathe. Mitigation planting proposed as part of the single wind turbine development is unknown at this stage. <u>Residual Effects</u> Residual cumulative visual effects would be the same as those identified above during the operation of the proposed 400kV overhead line, 132kV underground cables and the proposed single wind turbine.

Visual Cumulative Effects Assessment - Summary

- 17.3.21 The assessment of cumulative visual effects does not change for any of the projects identified within the submitted ES, as a result of the Revised Construction Programme. This is largely due to the construction period being unknown for any of the projects identified.
- 17.3.22 Of the 17 new major development proposals that have come forward in the intervening period since the ES was submitted 4 cumulative effects are predicted in light of the Revised Construction Programme.
- 17.3.23 Two potentially significant cumulative visual effects are predicted in Section D that relate to the effect of the possible solar farms at land at Meer Wall near Congresbury (ID 102) and land at Bowerhouse near Banwell (ID 105), where visual effects would be experienced in combination with the Proposed Development (mainly the proposed 400kV overhead line and AT Route connection) in views from receptors using PRow, long distance routes and properties in the area. The two potential solar farm projects are close to the Proposed Development and visual effects would be experienced in combination with the proposed 400kV overhead line and AT Route connection in Section D. The predicted significance of potential residual cumulative effect on visual receptors in Section D would be no greater than **moderate adverse** with most receptors experiencing a **minor adverse** or **negligible** significance of effect. The effects of the Proposed Development with the solar farms cumulatively would be **moderate adverse** for a small number of receptors with the Proposed Development giving rise to greater effects than the solar farms.
- 17.3.24 One cumulative effect on landscape would arise in Section E from the single wind turbine development at land off Charlton Drive Wraxall (ID 115). Visual effects would arise in views from receptors using PRow, a long distance route, a visitor attraction and in properties as a result of this development and the proposed 400kV overhead line and 132kV underground cables being introduced on Tickenham Ridge. The possible wind turbine is close to the Proposed Development and visual effects would be experienced in combination with the proposed 400kV overhead line and underground cables. The predicted significance of potential residual cumulative effect on visual receptors would be no greater than **moderate adverse** with most receptors experiencing a **minor adverse** or **negligible** significance of effect. The effects of the Proposed Development with the wind turbine cumulatively would be **moderate adverse** for a small number of PRow and a long distance route with the Proposed Development giving rise to greater effects than the wind turbine.
- 17.3.25 Cumulative visual effects would arise in Section G from the possible land at Access 18 office, industry and storage unit development in Avonmouth (ID 101) where visual effects would arise as a result of this development and the proposed 400kV overhead line and 132kV underground cables being introduced in Section G. The possible land at Access 18 development is close to the Proposed Development and visual effects would be experienced by receptors using PRow, roads and workers in combination with the proposed 400kV overhead line and underground cables. The predicted significance of potential residual cumulative effects on visual receptors would be no greater than **minor adverse**. The Proposed Development would give rise to the greater effect than the proposed office, industrial and storage

development at land at Access 18 as this would be consistent with existing development on the site.

- 17.3.26 The predicted effects of the Proposed Development cumulatively with other developments would not give rise to a greater significance of adverse effect on visual receptors than that caused by the other developments alone, with the exception of the solar farm and wind turbine developments. The significance of effect of the solar farm and wind turbine developments would be **minor adverse**, however the effects arising from the Proposed Development would be **moderate adverse** for some visual receptors. The effects of the Proposed Development with the solar farms and wind turbine cumulatively would be **moderate adverse** with the Proposed Development giving rise to greater effects than the solar farms and wind turbine that have come forward in the intervening period since the ES was submitted.

Biodiversity and Nature Conservation

Table 17.4 Assessment of Potential Cumulative Effects – Biodiversity and Nature Conservation

	Assessment of Potential Cumulative Effects – Biodiversity and Nature Conservation –ES Sensitivity Test
	Assessment of projects identified within submitted ES as a result of the Revised Construction Programme.
	Projects scoped out of the cumulative assessment in the submitted ES (Volume 5.17.1, Appendix 17D) would remain scoped out as a result of the Revised Construction Programme. The assessment of cumulative effects would not change for the following projects identified within the submitted ES as a result of the Revised Construction Programme: • Projects assessed with no known timeframe, which are already assessed in the submitted ES on a worst-case scenario (assuming that potential effects overlap with those of the Proposed Development) – ID 7, 12, 17, 19, 22, 24, 25, 29, 32, 33, 35, 36, 38, 40, 42, 43, 45-47, 56, 58, 67, 69, 80-82 & 85. • Projects with a timeframe that would incur no change in the overlap of potential effects (construction or operational) with those of the Proposed Development– ID 34, 64, 72 & 96. • Projects with a timeframe resulting in less of an overlap in their construction with that of the Proposed Development implemented – ID 10, 80, 95, 98, & 99. • Projects with a timeframe resulting in greater overlap in their construction with that of the Proposed Development, but nevertheless causing no change in the category of magnitude of potential effects identified, either individually or inter-project – ID 7, (construction scheduled to commence 2018/19, completion date unknown but given the Revised Construction Programme, overlap would increase), ID 16 (construction
	Assessment of new projects against the Revised Construction Programme (Including the inter-project effect of both the development identified in the submitted ES and the new major developments).

100	<u>Summary of Project Detail</u> Brilliant Harvest Solar Site Solar energy facility located immediately west of the existing F-Route and proposed 400kV overhead line south of Rooks Bridge. <u>Description of Potential Effect(s)</u> The site lies to the south west of Pill Road and, based on aerial photography and Phase 1 habitat survey data, comprises arable land with ditches and some hedgerows marking the field boundaries. The development, (including access(es) from the public highway) would incur habitat loss, potentially including hedgerows, and require ditch crossings. Grassland habitats can be retained or recreated around solar panels but the extent to which these would be delivered at ID 100 is unclear in the absence of any project information. <u>Reference to Key Documents</u> In the assessment of potential cumulative effects judgments refer to the method provided at Volume 5.8.1, section 8.3 of the submitted ES. <u>Description of Baseline Environment when Potential Effects are Expected to Arise:</u> 10 week construction period from approval, approval date being 14/05/2014. <u>Assessment of Potential Cumulative Effect During Revised Construction Programme Prior to Mitigation:</u> Potential indirect effects on ecological receptors include encroachment into bankside habitats, indirect pollution or siltation of the ditch (es), loss of any hedgerow present, and loss of open arable land that may, for example, be used by brown hare or birds that favour open habitats. The Proposed Development will incur loss of ditch, hedgerow and arable habitats in the immediate vicinity of ID 100, although indirect effects associated with water quality and flow rates would be avoided through sensitive design. Whilst ID 100 lies west of the existing pylon, potential cumulative effects may occur on these receptors may therefore arise. <u>Assessment of Potential Cumulative Effect During Operation Prior to Mitigation</u> No significant adverse operational effects on the network of ditches and hedgerows, further to those described during construction are anticipated as a result of the solar farm. No significant effects have been identified on these receptors during operation in respect of the Proposed Development.
	<u>Mitigation</u> None further to that proposed in the submitted ES. The Proposed Development will implement mitigation as described in submitted Volume 5.8.1, section 8.7 in relation to habitat loss including ditches and hedgerows. No additional mitigation will be implemented by the Proposed Development
	<u>Residual Effects</u> There is no change to the assessment of residual effects made in the submitted ES (Volume 5.8.1, section 8.8)

101	<u>Summary of Project Detail</u> New Earth Solutions B1c, B2 and B8 Development and Low Carbon Energy Facility Industrial development proposed on previously developed land at Avonmouth/Portbury Docks, less than 50m from the proposed 400kV overhead line works. <u>Description of Potential Effect(s)</u> The site lies north of Shirehampton Rhine and immediately abuts the Land South West of Kings Weston Lane Rhine Wildlife Network Site (WNS). Based on aerial photography and the Phase 1 habitat survey data, the site comprises industrial building/hardstanding and amenity grassland, with an area of standing water immediately north. <u>Reference to Key Documents</u> In the assessment of potential cumulative effects judgments refer to the method provided at Volume 5.8.1, section 8.3 of the submitted ES. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> The timeframe for construction is not known. <u>Assessment of Potential Cumulative Effect During Revised Construction Programme Prior to Mitigation</u> Based on the available baseline information, habitats that would be lost to ID 101 are of limited ecological value. The Proposed Development seeks to utilise such habitats where possible to avoid loss of semi-natural habitats. No cumulative effects in terms of direct habitat loss are identified. The potential indirect effects on habitats and on designated land relate to the pollution or siltation aquatic habitats. The Proposed Development avoids such effects through embedded mitigation. <u>Assessment of Potential Cumulative Effect During Operation Prior to Mitigation</u> It is reasonable to assume that the industrial development at ID 101 will comply with standard Environment Agency requirements to control the risk of pollution events during operation. Accidental indirect pollution events may however occur of ID 101. No significant effects have been identified on these receptors during operation in respect of the Proposed Development and as such, no cumulative effects are predicted during operation.
	<u>Mitigation</u> The embedded mitigation of the Proposed Development is described in submitted ES Volume 5.8.1, section 8.5 as part of 'Modifications within the Schemed Design'. No additional mitigation will be implemented by the Proposed Development.
	<u>Residual Effects</u> There is no change to the assessment of residual effects made in the submitted ES (Volume 5.8.1, section 8.8).

102	<u>Summary of Project Detail</u> Smiths Gore Solar Farm Solar energy facility across 73 ha located below the existing F-Route and proposed 400kV overhead line north of Sandford substation. <u>Description of Potential Effect(s)</u> ID 102 lies “<i>partly within [Puxton Moor] SNCI and in proximity to the SSSI</i>”. The publically available EIA Screening Request states that ID 102 would incorporate “<i>...a minimum maintenance strip of 9m from the rhynes</i>” and that the solar panel rows would be set back from “<i>the existing and proposed planting along the site boundaries... This will ensure that habitats along the field edges and within the rhynes are maintained and even enhanced in some areas... It is considered that the proposed solar park will not harm the objectives of the SSSI and SNCI designations and therefore not lead to any adverse environmental effects in this regard</i>”. Based on aerial photography and the Phase 1 habitat plans, the site supports pasture (improved, semi-improved and marshy grasslands) and arable in the south, with ditches, hedgerows and trees. In respect of bats, ID 102 lies within the same SAC Consideration Zones for greater and lesser horseshoe bats that apply to the Proposed Development. Bat activity hotspots of Criteria 1 (at least 20 passes of pipistrelle and at least five passes of other species) and Criteria 3 (meets Criteria 1 and at least four species of bat) were recorded in this locale. Grassland swards can be retained or recreated around solar panels but the extent to which these would remain available to bats at ID 102 is unclear in the absence of any detailed ecological assessment information. Records of badger activity were identified in the vicinity through the desk-study for the Proposed Development. The nearest sett identified through the field surveys lies approx. 0.5km south. <u>Reference to Key Documents</u> Publically available EIA Screening request (letter from Applicant). In the assessment of potential cumulative effects judgments refer to the method provided at Volume 5.8.1, section 8.3 of the submitted ES.

	<u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> The timeframe for construction is not known. <u>Assessment of Potential Cumulative Effect During Revised Construction Programme Prior to Mitigation</u> Adverse effects as a result of ID 102 on designated watercourses and the associated flora and fauna would be avoided through sensitive design. The Proposed Development largely passes outside Puxton Moors SNCI and SSSI at this location; selective pruning of boundary trees may be required to facilitate removal of the existing F-Route. The new 400kV overhead line will be aligned farther east, away from the designations. Farther south within Puxton Moor, small-scale habitat loss will inevitably occur within the SNCI to facilitate removal of the AT-Route pylons, including six watercrossings within the SNCI. The new AT-Route will be aligned farther east, entirely avoiding the designation. Puxton Moor supports water vole, which would potentially be affected by any adverse effects on the ditch network. In respect of bats, ID 102 lies within the same Bat SAC Consideration Zones that apply to the Proposed Development. Temporary loss of some grassland, hedgerows and trees to the construction of the Proposed Development is inevitable, although the area and duration of loss at any one time within the SAC Consideration Zones has been minimised by phasing the development components and by delivering some (the 400kV underground works through the Mendip Hills and Sandford substation) in sections. The loss of grassland foraging habitat and the loss or disturbance of hedgerows and trees would increase if construction of the Proposed Development and ID 102 occur at the same time. Habitat loss during the construction of ID102 may include areas that support badger setts, foraging and/or dispersal. Cumulative effects on badger, if present, may therefore arise if construction of the Proposed Development occurs at the same time, thereby restricting (through disturbance or direct habitat loss, albeit relatively small areas) the ability of any local population to adapt to these temporary effects.
	<u>Assessment of Potential Cumulative Effect During Operation Prior to Mitigation</u> In general terms, no significant adverse operational effects on designated land, the flora and fauna these support, on bats or badger are likely as a result of the solar facility, further to those described during construction. No significant effects have been identified on these receptors during operation in respect of the Proposed Development.
	<u>Mitigation</u> The Proposed Development will implement mitigation as described in submitted Volume 5.8.1, section 8.7 in relation to designated sites, habitats, flora and protected species. No additional mitigation will be implemented by the Proposed Development.
	<u>Residual Effects</u> There is no change to the assessment of residual effects made in the submitted ES (Volume 5.8.1, section 8.8).

105	<u>Summary of Project Detail</u> Weston Wake Park, Accommodation Road, Bleadon Large-scale application for a water sports complex at Bleadon, approx. 5km west of the M5 and the Proposed Development at Webbington. Construction of retaining bank for a series of lakes and water-control features for attenuation. Works to include erection of club house, training facilities, offices, grounds management and ancillary buildings (storage & utilities), car parking, reed-bed treatment plant, associated landscaping with hard-surfaced tracks. <u>Description of Potential Effect(s)</u> Of the designated sites potentially affected by the Propose Development, ID 105 lies approx. 1km east of the Severn Estuary SAC SPA Ramsar SSSI. ID 105 also lies within the same SAC Consideration Zone for greater horseshoe bats that applies to the Proposed Development. The site lies north of the River Axe, east of the railway line. Based on aerial photography, the site comprises agricultural land, some of which appears to have been scraped bare, with ditches and some hedgerows, scrub and trees marking the field boundaries. The publically available Environmental Statement for ID 105 (Non-Technical Summary Table 1) identified moderate beneficial effects on ecology as a result the increase in habitat diversity in comparison to the existing arable land use. Creation of new rhynes is specifically stated to avoid long-term adverse effects on dragonfly species. No significant adverse cumulative effects on ecology were identified. <u>Reference to Key Documents</u> Publically available Environmental Statement Non-Technical Summary (dated March 2014), with subsequent Natural England (May 2014) and Environment Agency (June 2014) responses. In the assessment of potential cumulative effects judgments refer to the method provided at Volume 5.8.1, section 8.3 of the submitted ES. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> 104 week construction period, although the start/end dates are not known. <u>Assessment of Potential Cumulative Effect During Revised Construction Programme Prior to Mitigation</u> It is reasonable to assume that the leisure development at ID 105 will comply with standard EA requirements (as set out in their responses dated June 2014) to control the risk of pollution, waste production and maintenance of surface run-off during operation. The Non-Technical Summary provides the following information regarding protected and notable species: • Water vole were found on site and <i>“a secondary mitigation regime was written and instigated. The translocation of potential animals was executed under a Natural England licence. This work has been completed and approved”</i>; • <i>“Various species of Bat were found on site... mostly found off this site”</i>; • An active badger sett was identified and <i>“The recommendations in the report are being followed, and monitored by AWT”</i>; • Reptiles were found present and <i>“Recommendations for mitigation are being followed”</i>, further, that the extension of the rhyme network will form an enhancement; and

	• Dragonflies – <i>“The new rhynes should result in there being no long-term negative impact on the Purn House Farm population of this species”.</i> No information was provided on birds. In respect of internationally and nationally designated sites, in their May response, <i>“Natural England advises that there is currently not enough information to determine whether the likelihood of significant effects can be ruled out. We recommend you obtain the following information to help undertake a Habitats Regulations Assessment:</i> • <i>Current and likely future use of the development site and its environs by bird species associated with the Severn Estuary SPA and Ramsar site - for example whether wildfowl and waders currently use the site and if so, whether additional water bodies would be likely to attract greater numbers?</i> • <i>Potential impacts of the proposed development on bird species associated with the Severn Estuary SPA and Ramsar site, such as disturbance and/or collision risks.</i> • <i>Potential avoidance and/or mitigation measures that could be included within the development, or required by a suitably worded planning condition, to reduce direct and/or indirect impacts on birds should these be identified as being potentially significant.”</i> The response also states that NE expect the LPA <i>“to assess and consider the other possible impacts resulting from this proposal on the following when determining this application local or national biodiversity priority habitats and species”.</i> <u>Assessment of Potential Cumulative Effect During Operation Prior to Mitigation</u> It is reasonable to assume that the development at ID 105 will comply with standard EA requirements during operation. Potential effects on birds may arise as a result of disturbance associated with increased recreational use on site, and potentially off-site in the vicinity of the designated Estuary. As for construction above, further information has been requested by NE to satisfy determination in respect of qualifying bird species.
	<u>Mitigation</u> The assessment for ID 105 is not yet complete, with outstanding information required in respect of birds. In line with the NE response, it is assumed that ID 105 would not be granted until such information has been provided to complete the assessment and to ensure that any potential effects are fully mitigated. <u>Residual Effects</u> There is no change to the assessment of residual effects made in the submitted ES (Volume 5.8.1, section 8.8).

108	<u>Summary of Project Detail</u> Green Switch Solutions Solar energy facility located east of Redhill (south of Green Lane, east of Howgrove Hill Lane), over 9km north of the Proposed Development at Sandford substation and over 10km east of the Proposed Development at Nye. <u>Description of Potential Effect(s)</u> Of the designated sites potentially affected by the Proposed Development, ID 108 lies within the same SAC Consideration Zones for greater and lesser horseshoe bats that apply to the Proposed Development. Grassland swards can be retained or recreated around solar panels but the extent to which these would remain available to bats at ID 108 is unclear in the absence of any detailed ecological assessment information. Based on aerial photography, the site overlies three agricultural fields with ditches and some hedgerows and trees marking the field boundaries. The development, (including accesses from the public highway) would incur habitat loss, potentially including hedgerows, and require ditch crossings. <u>Reference to Key Documents:</u> In the assessment of potential cumulative effects judgments refer to the method provided at Volume 5.8.1, section 8.3 of the submitted ES. <u>Description of Baseline Environment when Potential Effects are Expected to Arise:</u> The timeframe for construction is not known. <u>Assessment of Potential Cumulative Effect During Revised Construction Programme Prior to Mitigation:</u> It is reasonable to assume that the solar development at ID 108 will comply with standard Environment Agency requirements to control the risk of pollution and maintenance of surface run-off during operation. Potential indirect effects on ecological receptors include encroachment into bankside habitats, loss of any hedgerow present, and loss of open agricultural land that may, for example, be used by birds that favour open habitats. In respect of bats, ID 108 lies within the same Bat SAC Consideration Zones that apply to the Proposed Development. Temporary loss of some grassland, hedgerows and trees to the construction of the Proposed Development is inevitable, although the area and duration of loss at any one time within the SAC Consideration Zones has been minimised by phasing the development components and by delivering some (the 400kV underground works through the Mendip Hills and Sandford substation) in sections. The loss of grassland foraging habitat and the loss or disturbance of hedgerows and trees would increase if construction of the Proposed Development and ID 108 occur at the same time. Habitat loss during the construction of ID108 may include areas that support badger or brown hare. Cumulative effects on these species, if present, may therefore arise (albeit over 10km from the Proposed Development) if construction of the Proposed Development occurs at the same time. <u>Assessment of Potential Cumulative Effect During Operation Prior to Mitigation:</u> No significant effects have been identified on these receptors during operation in respect of the Proposed Development and as such, no cumulative effects are predicted during operation. <u>Mitigation</u> None further to that proposed in the submitted ES. The Proposed Development will implement mitigation as described in submitted Volume 5.8.1, section 8.7 in relation to habitat loss including ditches and hedgerows. No additional mitigation will be implemented by the Proposed Development. <u>Residual Effects</u> There is no change to the assessment of residual effects made in the submitted ES (Volume 5.8.1, section 8.8)

109	Summary of Project Detail: KWTN Solar Ltd Solar Farm Solar energy facility across 22.67ha, located <300m west of the proposed AT-Route (west of Puxton Moor) but within approx. 50m of the proposed construction accesses for the AT-Route. Description of Potential Effect(s) With regard to designated sites, Towerhead Brook SNCI lies south of ID 109 (beyond access track and ditch with 8m buffer), the River Banwell SNCI west of the existing access (beyond the road named Riverside), and Puxton SNCI SSSI lies 500m north east. The publically available EIA Screening Analysis Proforma states that “... <i>the development would not have any adverse impact on the existing hydrology of the site... There is potential for the site to be hydrologically linked via drainage ditches to the SSSI. However, there will be no discharge of pollutants...or any other harmful substance on the watercourse with [an] 8m buffer retained.</i>” It can be assumed that, in line with standard Environment Agency requirements, there will be no increase in existing greenfield run off rates and that water quality will be maintained. With regard to bats, ID 109 lies within the same SAC Consideration Zones for lesser and horseshoe bats that apply to the Proposed Development. The publically available EIA Screening Analysis Proforma states that “<i>The proposed development will be designed to preserve the habitat of the Greater and Lesser Horseshoe bat in part through retaining a 5m buffer to existing hedgerows on the site</i>”; further, that “<i>Grazing will be maintained during the operational life of the solar farm</i>”. Reference to Key Documents Publically available EIA Screening Analysis Proforma. In the assessment of potential cumulative effects judgments refer to the method provided at Volume 5.8.1, section 8.3 of the submitted ES. Description of Baseline Environment when Potential Effects are Expected to Arise The timeframe for construction is unknown. Assessment of Potential Cumulative Effect During Revised Construction Programme Prior to Mitigation Adverse effects as a result of ID 109 on designated watercourses and the associated flora and fauna would be avoided through sensitive design. Within the Proposed Development, Towerhead Brook will be crossed, north of Towerhead Road (upstream of ID109), by the semi-permanent access into Sandford substation (clear span bridge) and associated works. Whilst this would incur loss of trees, hedgerows/linear scrub and localised temporary effects on the watercourse to install 1x bailey bridge for construction, no such direct effects on the brook are anticipated as a result of ID109. No cumulative effects are predicted for this receptor. Works at Sandford substation/Towerhead Brook would incur loss of terrestrial GCN habitat associated with ponds to the north and south of the SNCI, but as these ponds lie over 0.5km from ID 109 (north of Nye Drove), no cumulative effects on GCN are anticipated. Puxton Moor SSSI lies west of the existing F-Route to be removed, with proposed 400kV overhead line beyond. These works will not encroach into the SSSI. The SSSI is also overflowed by the existing AT-Route to be removed, with the AT-Route replacement located some 200m beyond the SSSI boundary. Small-scale habitat loss will inevitably occur within the SNCI to facilitate removal of the AT-Route pylons, including six watercrossings within the SNCI. Accesses to construct the new AT-Route (accesses lie west of the SNCI but potentially affect the interconnected ditch system) cross/pass alongside Rockers Rhyne which forms the north boundary of ID 109. As is indicated in the EIA Screening Analysis Proforma, ID109 will be offset 8m from the ditches. No cumulative effects are predicted for this receptor.

	Potential adverse effects as a result of ID 109 on bats, particularly the horseshoes associated with the SAC, would be avoided through sensitive design, as is indicated in the EIA Screening Analysis Proforma. Temporary loss of some grassland, hedgerows and trees to the construction of the Proposed Development is inevitable, although the area and duration of loss at any one time within the SAC Consideration Zones has been minimised by phasing the development components and by delivering some (the 400kV underground works through the Mendip Hills and Sandford substation) in sections.
109	<u>Assessment of Potential Cumulative Effect During Operation Prior to Mitigation</u> In general terms, no significant adverse operational effects on designated land, the flora and fauna these support, or on bats are likely as a result of the solar facility, further to those described during construction. No significant effects have been identified on these receptors during operation in respect of the Proposed Development. <u>Mitigation</u> The Proposed Development will implement mitigation as described in submitted Volume 5.8.1, section 8.7 in relation to designated land, the flora and fauna these support, and to bats. No additional mitigation will be implemented by the Proposed Development. <u>Residual Effects</u> There is no change to the category of magnitude or significance of residual effects predicted in the submitted ES (Volume 5.8.1, section 8.8).

110	<u>Summary of Project Detail</u> Green Energy UK Direct Ltd Solar Farm Solar energy facility across 25 acres, located approx. 3km east of Sandford substation. <u>Description of Potential Effect(s)</u> EIA Screening request states that hedgerows and trees would be retained and that planting proposals incorporate biodiversity enhancement. No potential adverse ecological effects are identified. The EIA Screening request states that ID 110 is currently in agricultural use and, based on aerial photography, this appears to be pasture. The suitability of this pasture as foraging habitat for bats is not known. Grassland swards can be retained or recreated around solar panels but the extent to which these would remain available to bats at ID 110 is unclear in the absence of any detailed ecological assessment information. <u>Reference to Key Documents</u> Publically available EIA Screening request. In the assessment of potential cumulative effects judgments refer to the method provided at Volume 5.8.1, section 8.3 of the submitted ES. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> The timeframe for construction is unknown. <u>Assessment of Potential Cumulative Effect During Revised Construction Programme Prior to Mitigation,</u> ID 110 lies within the same SAC Consideration Zones for greater and lesser horseshoe bats that apply to the Proposed Development; hence, any loss of grassland foraging habitat could potentially adversely affect the designated bats. The scale and timeframe for enhancement measures within the proposed planting at ID 110 is not known, although it is reasonable to anticipate this would, as a minimum, ensure any short-term impacts on bat habitats are offset. Temporary loss of some grassland and hedgerow habitats to the construction of the Proposed Development is inevitable, although the area and duration of loss at any one time within the SAC Consideration Zones has been minimised by phasing the development components and by delivering some (the 400kV underground works through the Mendip Hills and Sandford substation) in sections. The loss of grassland foraging habitat and the loss or disturbance of hedgerows and trees would increase if construction of the Proposed Development and ID 102 occur at the same time. <u>Assessment of Potential Cumulative Effect During Operation Prior to Mitigation</u> No adverse operational effects on bats are likely as a result of the solar facility, further to the habitat losses during construction. No significant effects have been identified on bats during operation in respect of the Proposed Development. <u>Mitigation</u> The Proposed Development will implement mitigation as described in submitted ES Volume 5.8.1, section 8.7 in relation to bats and the nearby SAC designated for horseshoes. No additional mitigation will be implemented by the Proposed Development <u>Residual Effects</u> There is no change to the category of magnitude or significance of residual effects predicted in the submitted ES (Volume 5.8.1, section 8.8).

115	<u>Summary of Project Detail</u> Clean Earth Wind Turbine Single wind turbine with maximum hub height of 50m and maximum blade tip height of 77m, located west of Prior's Wood in Section E, approx. 0.8km east of the proposed W-Route works. <u>Description of Potential Effect(s)</u> Based on aerial photography ID 115 appears to comprise arable and pasture fields, with hedgerows, trees and ditches/drains along the field boundaries. Project ID 115 has the potential to create cumulative impacts with the Proposed Development in regards to collision risk to birds during operation. In respect of potential collision risk to birds, the EIA Screening request letter states that <i>"The site's proximity to the Severn Estuary SAC/SPA dictates that further studies into the development's impact on migratory and resident birds are undertaken."</i> Submitted Figure 8.26 illustrates that the Proposed Development, in the vicinity of the proposed turbine, was calculated to be of Low likelihood for bird movement. <u>Reference to Key Documents</u> EIA Screening request letter. In the assessment of potential cumulative effects judgments refer to the method provided at Volume 5.8.1, section 8.3 of the submitted ES. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> 2-3 days installation, 25 years operation. Start/end dates not known but for the purposes of assessment is expected to be operational during the revised construction period for the Proposed Development. <u>Assessment of Potential Cumulative Effect During Revised Construction Programme Prior to Mitigation</u> Potential cumulative effects relate to the operational phase. <u>Assessment of Potential Cumulative Effect During Operation Prior to Mitigation</u> Undergrounding of the W-Route will remove any existing collision risk associated with this line. Replacement of the existing F-Route with the new overhead line configuration is predicted to reduce the bird collision risk. <u>Mitigation</u> The Proposed Development will implement mitigation as described in submitted ES Volume 5.8.1, section 8.7 in relation to birds and the Severn Estuary SAC/SPA. No additional mitigation will be implemented by the Proposed Development. <u>Residual Effects</u> There is no change to the category of magnitude or significance of residual effects predicted in the submitted ES(Volume 5.8.1, section 8.8). The remaining new major developments have been scoped out and further details are provided at Appendix 17D.

Ecology Cumulative Effects Assessment - Summary

- 17.3.27 The assessment of cumulative effects would not change for the projects identified within the submitted ES as a result of the Revised Construction Programme.
- 17.3.28 Six new major developments which have come forward in the intervening period and with potential significant cumulative effects in relation to biodiversity have been identified. However, the predicted magnitude of cumulative effects are no greater than the predicted effect of the Proposed Development following successful implementation of mitigation. No increase in the level of impact to the biodiversity

receptors is therefore predicted and it is concluded that the mitigation proposals described within Volume 5.8.1, section 8.7 of the submitted ES and chapter 8 of this document are robust and no additional mitigation above is required with regards biodiversity.

Table17.5 Assessment of Potential Cumulative Effects – Ground Environment

ID	Assessment of Potential Cumulative Effects – Ground Environment –ES Sensitivity Test
	Assessment of projects identified within submitted ES as a result of the Revised Construction Programme.
	The assessment of cumulative effects presented within the submitted ES, between the Proposed Development and other major developments would not change as a result of the Revised Construction Programme. This includes all major developments presented within the submitted ES (ID1 to ID99).
	Assessment of new projects against the Revised Construction Programme(Including the inter-project effect of both the development identified in the submitted ES and the new major developments).
101	<u>Summary of Project Detail</u> New Earth Solutions B1c, B2 and B8 Development and Low Carbon Energy Facility Land at Access 18, off Kingsweston Lane/Avonmouth Way, Avonmouth. Full planning permission, for the erection of 10,405 sqm (112,000 sqft) of B1c, B2 and B8 development comprising 3 units on land at Access 18, off Kingsweston Lane/Avonmouth Way, Avonmouth. Request for a Scoping Opinion as for a low carbon energy facility, part of the Access 18 site in Avonmouth. Processing 120,000 tonnes of feedstock and generate 13mwe of renewable energy. <u>Description of Potential Effect(s)</u> The proposed development ID101 is located over a historic landfill, immediately north of the proposed 400kV overhead line within Section G – Avonmouth. The area has been subject to a long history of industrial land use and landfilling. This has the potential to have resulted in soil and groundwater contamination; which has the subsequent potential for leaching and remobilisation off site to beneath the Order Limits of the Proposed Development and contaminate soils being left at the surface following construction activities. Potential cumulative effects on the ground environment would occur predominantly during the construction and decommissioning phases of the Proposed Development, where soil excavations are undertaken. <u>Reference to Key Documents</u> Please refer to the technical baseline report for Section G – Avonmouth, referenced 312318 – R7 (01), dated August 2013. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> The potential effects are physical and direct and would occur predominantly during the construction and decommissioning phases of both projects. Potential cumulative effects on the ground environment include the contamination of soil and groundwater through construction and decommissioning activities; the potential creation of preferential migration pathways and residual contaminated soils being left at the surface following site activities, especially following any piling activity. The Proposed Development (consisting of the proposed 400kV overhead line) could result in the creation of migration pathways for contaminants (including landfill gas or leachate) via piled foundations. The superficial geology within the area comprises Tidal Flat Deposits (classed as a secondary undifferentiated aquifer). The bedrock geology consists of the Mercia Mudstone Group (MMG) classed as a secondary B aquifer. The superficial deposits are of low sensitivity. The bedrock geology would also be of low sensitivity.

	Irrespective of when the Proposed Development takes place, the sensitivity of the ground environment remains unchanged. <u>Cumulative Effects</u> <u>Assessment of Potential Cumulative Effect – during Revised Construction Programme</u> The receptor sensitivity would be low owing to the predominantly industrial/commercial land use in the wider vicinity of the area. A number of landfills are recorded within the area. Both superficial and bedrock hydrogeology are classed as having low sensitivity. The magnitude of effect of the potential cumulative effects on the ground environment through remobilisation of contaminants associated with contaminated soil, groundwater or landfills would be moderate. The significance of effect of these major developments on the ground environment would be a minor adverse effect <u>Cumulative Effects</u> <u>Assessment of Potential Cumulative Effect – during Operation</u> Cumulative effects between the Proposed Development and this major development would principally occur during the construction phase. No operational phase impacts are predicted. <u>Mitigation</u> All construction work would be undertaken in accordance with the safety, health and environmental management procedure set out in the submitted CEMP (Submitted ES, Volume 5.26.7 and 5.26.8). Mitigation measures for the contamination of soils/groundwater or the accidental import of contaminated soils arising through construction activities would include: • pre-construction phase ground and soil surveys would be undertaken to identify the nature of the soil, areas of potential difficulty arising from the nature of the soil; • appropriate measures would be followed on site as outlined in the Environment Agency Pollution Prevention Guidance (PPGs) to prevent spillage of potentially polluting substances; and • appropriate piling risk assessments would be undertaken. Mitigation measures in addition to those identified within the CEMP (submitted ES, Volume 5.26) would not be required. <u>Residual Effects</u> The residual cumulative effect, following the implementation of the proposed mitigation, will be negligible.
102	<u>Summary of Project Detail</u> Smiths Gore Solar Farm Land at Meer Wall near Strawberry Line, Congresbury EIA Screening opinion for a 36 mw power Solar Farm <u>Description of Potential Effect(s)</u> Both the footprint of the Proposed Development (existing F route and proposed 400kV overhead line) and the other major development overlap. Both have potential cumulative effects on the ground environment through residual contaminated soils being left at the surface following work. <u>Reference to Key Documents</u> Please refer to the technical baseline report for Section G – Avonmouth, referenced 312318 – R2 (01), dated August 2013. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u>

	The potential cumulative effects would occur during the construction and demolition phase. The order limits of the Proposed Development (400kV overhead line) and the other major development are located over rural agricultural land. The developments could result in contaminated soils being left at the surface following construction activities, resulting in risks to human end users of those fields and health of livestock. Soil arisings may be contaminated and be remobilised to surface waters through run off. Potential damage to the physical properties of the soil structure may occur as a result of large scale soil excavations and movement. Irrespective of when the Proposed Development takes place, the sensitivity of the ground environment remains unchanged. <u>Assessment of Potential Cumulative Effect – during Revised Construction Programme</u> The receptor sensitivity would be medium owing to the agricultural land use. The superficial deposits comprise Tidal Flat Deposits, classed as being unproductive. The bedrock comprises the MMG and is designated as a secondary B aquifer and is therefore of low sensitivity. The magnitude of effect of the potential cumulative effects on the ground environment would be moderate. The significance of effect of these major developments on the ground environment would be a minor adverse effect. <u>Cumulative Effects</u> <u>Assessment of Potential Cumulative Effect – during Operation</u> Cumulative effects between the Proposed Development and this major development would principally occur during the construction and demolition phase. No operational phase impacts are predicted. <u>Mitigation</u> All construction work would be undertaken in accordance with the safety, health and environmental management procedure set out in the submitted CEMP (submitted ES, Volume 5.26.7 and 5.26.8). Mitigation measures to address residual contaminants being left at the surface following construction activity would include: • pre-construction phase ground and soil surveys would be undertaken to identify the nature of the soil, areas of potential difficulty arising from the nature of the soil; • subsoils and different superficial deposits would be stored separately to ensure successful restoration; and • soils would not be stockpiled close to surface water features. Stockpiled soils would be stored on an appropriate impermeable surface material and covered to reduce the risk of windblown dust, surface water run-off and reduce the risk of overland migration of sediment to surface waters. Mitigation measures in addition to those identified within the CEMP (submitted ES, Volume 5.26) would not be required. <u>Residual Effects</u> The residual cumulative effect, following the implementation of the proposed mitigation, will be negligible. The remaining new major developments have been scoped out and further details are provided at Appendix 17D.

Ground Environment Cumulative Effects Assessment – Summary

- 17.3.29 The assessment of cumulative effects does not change for the projects identified within the submitted ES as a result of the Revised Construction Programme.
- 17.3.30 The potential impacts to the ground environment have been considered in light of the construction programme changes. It is considered that given the enduring nature of the ground environment, changes to the baseline assessment within

these relatively short time frames with regard to the ground environment would be **negligible**.

- 17.3.31 The majority of new major developments (**Table 17.1**) identified along the Proposed Development order limits would not result in a significant cumulative effect on the ground environment. This is based predominantly on the geographic separation between the proposed major developments and the Proposed Development.
- 17.3.32 Where the new major developments have the potential to interact with the Proposed Development it is reasonable to expect that the effect to the ground environment would be the same and therefore mitigation will be of a similar nature to that being implemented for the Proposed Development.
- 17.3.33 The residual effect on the ground environment arising through the cumulative impact of the new major developments and the Proposed Development has been assessed, following implementation of mitigation measures, appropriate to the environmental impact.
- 17.3.34 The residual effect on the ground environment from the Proposed Development has been assessed within **Volume 5.9.1** of the submitted ES as being a **minor adverse** effect. When considering the residual cumulative effect on the ground environment (resulting from the Proposed Development and other major developments, and following implementation of mitigation measures) a **negligible** effect is predicted. Mitigation measures in addition to those identified within the submitted CEMP would not be required.
- 17.3.35 No potential change in cumulative impact as a result of the major development projects in **Table 17.1** has been identified as a result of the operational period of the development.

Hydrology and Water Resources

Table 17.6 Assessment of Potential Cumulative Effects – Hydrology and Water Resources

ID	Assessment of Potential Cumulative Effects – Hydrology and Water Resources– ES Sensitivity Test
	Assessment of projects identified within submitted ES as a result of the Revised Construction Programme.
	Projects scoped out of the cumulative assessment in the submitted ES (Volume 5.17.1, Appendix 17D) remains scoped out. The assessment for the following projects IDs 6, 7, 11, 16, 17, 18, 42, 44, 45, 47, 56, 63, 69, 74, 77, 78, 80, 81, 93, 94, 95, 96, 97, 98 and 99 does not.
	Assessment of new projects against the Revised Construction Programme (Including the inter-project effect of both the development identified in the submitted ES and the new major developments).
100	<u>Summary of Project Detail</u> Brilliant Harvest Solar Site Installation of a Solar energy facility utilising solar photovoltaic panels to produce up to 6.75MW of renewable electricity, with ancillary plant, fencing and electrical equipment. <u>Description of Potential Effect(s)</u> The aspects of the Proposed Development and the proposed Brilliant Harvest Solar Photovoltaic Development that would result in potential effects on hydrology and the water environment are identified below and include: • The introduction of the proposed 400kV overhead line, F Route removal and associated haul road. • The introduction of the array of photovoltaic panels. • Introduction of DNO substation, transformers, security, fences and lighting. <u>Reference to Key Documents</u> In this assessment of potential cumulative effects on the water environments, judgements have been based on the methods outlined in Volume 5.10.1, section 10.3 of the submitted ES. Reference is also made to the Flood Risk Assessment and the Design and Access Statement for the development site. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> The Mark Yeo is located adjacent to the north eastern boundary of the development, and is classified as having a poor ecological status along this stretch (River Brue). The watercourses in the area are predominantly field drains and minor ditches, with Blind Pill Rhyne located to the west of the proposed development, all with no ecological designations. Irrespective of when the Proposed Development/potential cumulative development takes place, the sensitivity of the water environment remains unchanged. <u>Assessment of Potential Cumulative Effect – during Revised Construction Programme</u> <u>Proposed Development</u> As discussed in Volume 5.10.1, section 10.5 of the submitted ES, the Proposed Development would have a minor adverse significance of effect on the Mark Yeo and the surrounding drains and ditches, which has a low sensitivity to the Proposed Development. The significance of the adverse effect would be a determinant of the

	likelihood of a spillage of pollutants (e.g. from Plant or construction traffic), and the pollutants entering the nearby watercourses. Due to the low likelihood of large spillages entering watercourse, and more probable small spillages the overall significance is minor adverse. <u>Brilliant Harvest Solar Farm</u> The construction timeframe for the Brilliant Harvest Solar Farm is scheduled for 10weeks, commencing approximately on the 30/06/2014 as such the Brilliant Harvest Solar Farm will be completed the week commencing 1/09/14 (approximately 3 and a half years prior to the commencement of any works on the 400kV OHL route in line with the Revised Construction Programme). From the available information in the Flood Risk Assessment and the Design and Access Statement the effects of the solar farm on hydrology and water resources would be considered negligible. <u>Cumulative Effects</u> As the Brilliant Harvest Solar Farm will be established prior to the commencement of the 400kV works and F-Route removal works, the Proposed Development will need to make sure that it does not increase surface water runoff onto the solar farm. Overall as the Brilliant Harvest development will be constructed well in advance of the works on the 400kV OHL, the cumulative significance of the construction of both developments on the water environment is therefore considered negligible. <u>Assessment of Potential Cumulative Effect – during Operation</u> <u>Proposed Development</u> As discussed in Volume 5.10.1, section 10.5 of the submitted ES, the Proposed Development would have a negligible adverse effect on the surrounding drains and ditches, which have a low sensitivity to the Proposed Development, during the operation phase. <u>Brilliant Harvest Solar Farm</u> Once operational, it is anticipated that the Brilliant Harvest Solar Farm would have a negligible effect of the water environment, as the array of photovoltaic panels would be constructed on stilts and are unlikely to constitute a source of significant increased runoff or pollution. <u>Cumulative Effects</u> The cumulative significance of the effect on the water environment would be negligible adverse, given the negligible adverse effects on the water environment of the Brilliant Harvest Solar Farm and the negligible adverse effects predicted for the Proposed Development. <u>Mitigation</u> Measures are proposed within the submitted CEMP (submitted ES, Volume 5.26.1) and outlined in Volume 5.10.1, section 10.7 of the submitted ES to mitigate the adverse effects on hydrology and water resources. There would be no need for extra mitigation above and beyond what has already been outlined for the Proposed Development as outlined in the above documents. <u>Residual Effects</u> The residual effect, following the implementation of the proposed mitigation will be negligible.
101	<u>Summary of Project Detail</u> Access 18 Developments - B1c, B2 and B8 Development and Low Carbon Energy Facility Environmental Impact Assessment Screening Opinion for the erection of 10,405m² of B1c, B2 and B8 development comprising 3 units at Access 18.

	Environmental Impact Assessment Screening Opinion for the development of a low carbon energy facility processing 120,000 tonnes of feedstock and generate 13MW of renewable energy at Access 18. <u>Description of Potential Effect(s)</u> The aspects of the Proposed Development and the proposed Access 18 Developments that would result in potential effects on hydrology and the water environment are identified below and include: • The introduction of the proposed 400kV overhead line, G Route works and associated haul road. • The introduction of the B1c, B2 and B8 uses. • The introduction of the 13MWe LowCEF including fuel and waste bunkers, silos (Sodium Bicarbonate and Prill), treated water tanks, ash bunker, turbines and boilers. • The introduction of an office building. • The introduction of external plant and structures including air cooled condensers Sodium Bicarbonate storage silo, fire water tank and clean water tank. • The introduction of a multi core stack. • Surface water runoff from the LowCEF development would be discharged to local watercourse via interceptors under discharge consent and process water would be tankered off site. <u>Reference to Key Documents</u> In this assessment of potential cumulative effects on the water environments, judgements have been based on the methods outlined in Volume 5.10.1, section 10.3. Reference is also made to the Scoping Report for the proposed low carbon energy facility. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> The watercourses in the area are predominantly field drains and ditches, with no ecological designations. Irrespective of when the Proposed Development/potential cumulative development takes place, the sensitivity of the water environment remains unchanged. <u>Assessment of Potential Cumulative Effect – during Revised Construction Programme</u> <u>Proposed Development</u> As discussed in Volume 5.10.1, section 10.5 of the submitted ES, the Proposed Development would have a minor adverse significance of effect on the surrounding drains and ditches, which has a low sensitivity to the Proposed Development. The significance of the adverse effect would be a determinant of the likelihood of a spillage of pollutants (e.g. from Plant or construction traffic), and the pollutants entering the nearby watercourses. Due to the low likelihood of large spillages entering watercourse, and more probable small spillages the overall significance is minor adverse. <u>Access 18 Development</u> The construction timeframe for the Access 18 development is unknown (there is potential that there will be an overlap in timescales for the two developments). As such from the limited information available, it is inferred that the effect on the water environment would be minor adverse in significance. <u>Cumulative Effects</u> The cumulative significance of effect on the water environment would be minor adverse as the combination of the developments could involve an increase in potential pollutants entering the existing local watercourses (low sensitivity) if

	constructed during the same time span. <u>Assessment of Potential Cumulative Effect – during Operation</u> <u>Proposed Development</u> As discussed in Volume 5.10.1, section 10.5 of the submitted ES, the Proposed Development would have a negligible effect on the surrounding drains and ditches, which have a low sensitivity to the Proposed Development, during the operation phase. <u>Access 18 Development</u> Once operational, it is anticipated that the Access 18 development would have a negligible effect of the water environment, as the array of photovoltaic panels would be constructed on stilts and are unlikely to constitute a source of significant increased runoff or pollution. <u>Cumulative Effects</u> The cumulative significance of the effect on the water environment would be negligible during the operational phase given the negligible adverse effects on the water environment of the Access 18 development and the negligible adverse effects predicted for the Proposed Development. <u>Mitigation</u> Measures are proposed within the submitted CEMP (Volume 5.26.1 of submitted ES) and outlined in Volume 5.10.1, section 10.7 of submitted ES to mitigate the adverse effects on hydrology, water resources and drainage. There would be no need for extra mitigation above and beyond what has already been outlined for the Proposed Development as outlined in the above documents. <u>Residual Effects</u> The residual effect, following the implementation of the proposed mitigation, will be negligible.
102	<u>Summary of Project Detail</u> Smiths Gore Solar Farm EIA Screening opinion for the installation of a Solar energy facility utilising solar photovoltaic panels to produce up to 36MW of renewable electricity, with ancillary plant, fencing and electrical equipment on land at Meer Wall neat Strawberry Lane, Congresbury. <u>Description of Potential Effect(s)</u> The aspects of the Proposed Development and the proposed Smiths Gore Solar Photovoltaic Development that would result in potential effects on hydrology and the water environment are identified below and include: • The introduction of the proposed 400kV overhead line, F Route removal and associated haul road. • The introduction of the array of photovoltaic panels. • The introduction of an inverter, transformer, switch gears and cabling. <u>Reference to Key Documents</u> In this assessment of potential cumulative effects on the water environments, judgements have been based on the methods outlined in Volume 5.10.1, section 10.3 of submitted ES. Reference is also made to the Delegated Planning Application Report and the Consultation Replies from North Somerset Levels Internal Drainage Board and the Environment Agency. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> The site is located adjacent to the eastern bank of the River Oldbridge (which has no ecological designation at its closest point to the site). The surrounding watercourses

	in the area are predominantly field drains and ditches with those to the west located within the Puxton Moor SSSI (high sensitivity). Irrespective of when the Proposed Development/potential cumulative development takes place, the sensitivity of the water environment remains unchanged. <u>Assessment of Potential Cumulative Effect – during Revised Construction Programme</u> <u>Proposed Development</u> As discussed in Volume 5.10.1, section 10.5 of submitted ES, the Proposed Development would have a moderate to major adverse significance of effect on the surrounding drains and ditches, which have a high sensitivity to the Proposed Development (SSSI status). The significance of the adverse effect would be a determinant of the likelihood of a spillage of pollutants (e.g. from plant or construction traffic), and the pollutants entering the nearby watercourses. Due to the low likelihood of large spillages entering watercourses the effect would be considered moderate adverse. It is more probable that small spillages (rather than large spillages) would occur and large spillages are assessed in the worst case. The overall significance is major adverse. <u>Smiths Gore Solar Farm</u> The construction timeframe for the Access 18 development is unknown (there is potential that there will be an overlap in timescales for the two developments). The Environment Agency and the North Somerset Levels Internal Drainage Board have no objections to the screening request for the development provided approval is gained from the correct authorities. From the limited information available and the general development principles for solar farms, it is inferred that the effect on the water environment would be minor to moderate adverse in significance. <u>Cumulative Effects</u> The cumulative significance of effect on the water environment would be minor to major adverse as the combination of the developments could involve an increase in potential pollutants entering the existing local watercourses (low sensitivity if associated with the River Oldbridge and drains and ditches to the east, or high sensitivity if associated with the Puxton Moor SSSI) if construction occurs at the same time. <u>Assessment of Potential Cumulative Effect – during Operation</u> <u>Proposed Development</u> As discussed in Volume 5.10.1, section 10.5 of submitted ES, the Proposed Development would have a minor adverse to negligible effect on the surrounding drains and ditches, which have a low to high sensitivity to the Proposed Development in the area, during the operation phase. <u>Smiths Gore Solar Farm</u> Once operational, it is anticipated that the Smiths Gore Solar Farm would have a negligible effect of the water environment, as the array of photovoltaic panels would be constructed on stilts and are unlikely to constitute a source of significant increased runoff or pollution. Periodic maintenance would not constitute a significant impact on the surrounding hydrology and water environment. <u>Cumulative Effects</u> The cumulative significance of the effect on the water environment would be negligible, given the negligible adverse effects on the water environment of the Smiths Gore Solar Farm and the negligible adverse effects predicted for the Proposed Development. <u>Mitigation</u> Measures are proposed within the submitted CEMP (Volume 5.26.1 of submitted ES) and outlined in Volume 5.10.1, section 10.7 of submitted ES to mitigate the adverse effects on hydrology, water resources and drainage.

	There would be no need for extra mitigation above and beyond what has already been outlined for the Proposed Development as outlined in the above documents. <u>Residual Effects</u> The residual effect, following the implementation of the proposed mitigation, will be negligible. The remaining new major developments have been scoped out and further details are provided at Appendix 17D.

Hydrology and Water Resources Cumulative Effects Assessment - Summary

- 17.3.9 The assessment of cumulative effects would not change for the projects identified within the submitted ES as a result of the Revised Construction Programme.
- 17.3.10 The majority of new major developments (**Table 17.1**) identified along the Proposed Development Order Limits would not result in a cumulative effect on hydrology and the water environment. This is based predominantly on the geographic separation between the proposed major developments including the Proposed Development.
- 17.3.11 Prior to implementing mitigation measures, there will be a moderate to major significance of effect on hydrology and the water environment from project Smiths Gore Solar Farm (ID102). The potential for effects would primarily be on the contamination of surface waters in the Puxton Moor SSSI through construction and decommissioning activities and the potential creation of migration pathways.
- 17.3.12 The residual effect on hydrology and the water environment arising through the cumulative impact of major developments and the Proposed Development has been assessed, following implementation of mitigation measures, appropriate to the environmental impact.
- 17.3.13 The residual cumulative effect on hydrology and the water environment, resulting from the Proposed Development and other major developments, following implementation of mitigation measures, would be negligible to a minor adverse effect.

Historic Environment

Table 1.7 Assessment of Potential Cumulative Effects – Historic Environment

ID	Assessment of Potential Cumulative Effects – Historic Environment –ES Sensitivity Test
	Assessment of projects identified within submitted ES as a result of the Revised Construction Programme.
	The predicted inter-project effects of the Proposed Development on heritage assets are not sensitive to changes of the Revised Construction Programme being implemented, and would not alter from those recorded in the submitted ES Chapter 17 (Volume 5.17) and summarised in submitted ES Chapter 11 (Volume 5.11.1). The potential for inter-project effects of new major development proposals which have come forward in the intervening period and would also require assessment in light on the Revised Construction Programme has also been assessed for the historic environment topic. The majority of projects assessed for potential cumulative effects on the historic environment could be scoped out and this provided in Appendix 17D.
	Assessment of new projects against the Revised Construction Programme (Including the inter-project effect of both the development identified in the submitted ES and the new major developments).
102	<u>Summary of Project Detail</u> Land at Meer Wall near Strawberry Line Congresbury <u>Description of Potential Effect(s)</u> The area of archaeological remains described below is also affected by the proposed 'F Route' removal and associated development. Both developments would have a direct physical impact on archaeological remains recorded at this location, associated with the Meer Wall (asset ID HL55). <u>Reference to Key Documents</u> This assessment of the potential cumulative effects of the proposed developments is based on the method provided at Volume 5.11.1, section 11.3 of the submitted ES. <u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> The proposed works are adjacent to Meer Wall, asset ID HL55. The Meer Wall comprises a drainage feature (rhyne) and adjacent track. The asset is of low heritage significance. <u>Assessment of Potential Cumulative Effect</u> The overall magnitude of effect of both developments, both individually and in combination is low adverse. The overall significance of potential cumulative effect is minor adverse. This is the same as the predicted effect of the Proposed Development individually. <u>Mitigation</u> Measures are proposed in the submitted ES to mitigate the adverse effect on buried archaeology of the Proposed Development through archaeological recording <u>Residual Effects</u> The residual effect, following the implementation of the proposed mitigation, would be negligible. This is not a significant effect, and is equivalent to less than substantial harm. The remaining new major developments have been scoped out and further details are provided at Appendix 17D.

- 17.3.14 The assessment of cumulative effects would not change for the projects identified within the submitted ES as a result of the Revised Construction Programme.
- 17.3.15 A potential inter-project effect is predicted in relation to one of the new major development projects. This effect is not significant and is the same as the predicted effect of the Proposed Developments individually as set out in the submitted ES (**Volume 5.11.1**)

Traffic and Transport

Introduction

- 17.3.16 This section should be read in conjunction with Chapter 17 of the submitted ES (**Volume 5.12.17**) and submitted Transport Assessment (**Volume 5.22**). The assessment methodology of this sensitivity test is the same as in the previously submitted ES Chapter 17 – Traffic and Transport (**Volume 5.17.1**).
- 17.3.17 The Revised Construction Programme is extended by a period of two years (2016 – 2020 to 2016 to 2022). It is therefore considered that as a result of the additional two years there is potential for additional traffic to be on the Local Road Network (LRN) and Strategic Road Network (SRN) as a result of increases in background traffic.
- 17.3.18 The cumulative assessment methodology contained within the ES (**Volume 5.17**) and the submitted Transport Assessment (**Volume 5.22**) has also been adopted in this Sensitivity Test.
- 17.3.19 This methodology is based on assessment using:
- TEMPro (growth factors being applied to surveyed background traffic flows); and
 - Committed Developments requested to be included within the assessment at the request of the local planning authorities.
- 17.3.20 This methodology provides an assessment of the likely significant effects of the committed developments on traffic and transportation as a result of the Revised Construction Programme being implemented.

TEMPro

- 17.3.21 TEMPro is a software package published by the Department for Transport (DfT) which allows users to generate growth factors which can be applied to observed traffic data in order to establish forecast future year scenarios. The primary function of the software is to uplift observed traffic flows to a future year to represent the growth in traffic resulting from forecast committed developments in a specific geographical location.
- 17.3.22 The software produces growth factors based on various input parameters which can be tailored to suit the needs of a particular geographical locations and road type.
- 17.3.23 TEMPro also employs the use of the National Trip End Model (NTEM) forecasts to allow growth factor forecasts to be made based on population, employment, households – by car ownership, trip ends and simple traffic growth factors.
- 17.3.24 This then allows the overall cumulative effects to be assessed. This method of assessment has previously been agreed with the Local Planning Authorities.
- 17.3.25 Within the ES Sensitivity Test and the Transport Statement Sensitivity Test, TEMPro has been used to calculate background traffic conversion factors which correspond with the appropriate Future Baseline year for each respective assessed junction in line with the Revised Construction Programme. The impacts of the revised background traffic levels have then been assessed against the capacity assessments previously undertaken as part of the submitted Transport Assessment (**Volume 5.22**). This is discussed in detail in the Transport Assessment Sensitivity Test (Section 9).

- 17.3.26 Therefore in the context of this cumulative assessment Sensitivity Test, this 'cumulative assessment' represents the impacts of all the committed developments in the area of the Proposed Development.

Committed Developments

- 17.3.27 In addition to the use of TEMPRo, ten committed developments which were identified by the LPAs for consideration in the cumulative traffic and transportation capacity assessments contained in the submitted Transport Assessment (**Volume 5.22**). Details on the committed developments can be found within Section 8 of the Transport Assessment Sensitivity Test and in Table 17.8 below.
- 17.3.28 No specific additional committed developments have been considered. This approach is validated by the use of TEMPRo (as discussed above).

General Approach

- 17.3.29 The cumulative inter-relationship of effects will vary in significance based on the timetabled construction and operation phases and associated traffic generation within these phases for the committed developments and for the Proposed Development.
- 17.3.30 Furthermore the significance of the committed developments on the cumulative inter-relationship of effects varies by geography based on the location of the committed developments and the predicted arrival and departing traffic distribution on the local and strategic road networks. Further to this the committed developments considered are specific to their year of operation and these traffic flows would be used from their respective years of impact which may be either, or both pre or post construction, i.e. construction traffic or operational traffic as applicable.
- 17.3.31 It should be noted that there are no specific additional committed developments which are included within the cumulative assessment Sensitivity Test which represent the Revised Construction Programme as compared with those included within the submitted ES (**Volume 5.12.1**) and the submitted Transport Assessment (**Volume 5.22**).
- 17.3.32 It is assumed that additional background traffic growth associated with any non-specific additional committed developments local to the road networks considered within this assessment will be picked up through the use of TEMPRo. Whereby, a TEMPRo growth factor has been applied to all Future Baseline years and Future Baseline plus Development scenarios.

Assessment of projects identified within submitted ES against the Revised Construction Programme

- 17.3.33 It should be noted that based on the methodology discussed above, the cumulative assessment effects would not change as a result of the Revised Construction Programme and the assessment is the same as **Table 17.18** of the submitted ES.
- 17.3.34 The maximum trips generated by each of the specific committed developments considered have been applied to the appropriate year of assessment for Future Baseline and Future Baseline with Development. As such, it is considered that the assessment for the committed developments listed in Table 17.8 would not change.

Assessment of new projects against the Revised Construction Programme

- 17.3.35 An assessment of new major development projects is listed in **Table 17.1** (following paragraph 17.2.30). It is assumed that any background traffic growth associated with non-specific committed development will be picked up through the use of TEMPRo. Growth factors for the future year of assessment have been calculated and the resultant background traffic flows have been added to the Future Baseline and Future Baseline plus Development assessments as detailed in the Transport Assessment Sensitivity Test (**Volume 5.29.2.2**).

Traffic and Transport - Summary

- 17.3.36 The cumulative impact assessment methodology employed with respect to the revised construction methodology uses the same tools and practices as those employed within the submitted ES (**Volume 5.12.17**) and the Transport Assessment (**Volume 5.22**).
- 17.3.37 The trips generated by the specific committed developments detailed in the submitted ES are specific to the highest trip generation value of that committed development and are therefore: (a) finite; and (b) applicable across the construction programme. These trips have been applied to the peak year of assessment within the capacity assessments undertaken within the submitted the Transport Assessment (**Volume 5.22**).
- 17.3.38 Therefore the cumulative impact of the traffic flows from the specific committed developments will remain the same as presented in the submitted ES as a result of the Revised Construction Programme being implemented.
- 17.3.39 Any background traffic growth associated with the new major development projects identified in **Table 17.1** will be picked up through the use of TEMPRo. Growth factors for the future year of assessment have been calculated and the resultant background traffic flows have been added to the Future Baseline and Future Baseline plus Development assessments as detailed in the Transport Assessment Sensitivity Test (**Volume 5.29.2.2**).

Air Quality and Emissions

Operational Phase

- 17.3.40 The Proposed Development would not adversely affect air quality during its operational phase, as it would not cause significant emissions; therefore operational phase effects have been scoped out, as established during EIA scoping for the Submitted ES (**Volume 5.5.2, Appendix 5A**).

Construction Phase Fugitive Dust

- 17.3.41 The updated IAQM guidance on the assessment of construction dust includes a distance based screening criterion of 350m for receptors from the site boundary as defining when an assessment of fugitive dust is required. For a receptor to experience a cumulative effect from two sites therefore, the maximum straight-line separation of the sites would be 700m. For a conservative assessment, a screening separation of 1km was applied for cumulative fugitive dust effects.

Table17.9 Assessment of Potential Cumulative Effects – Air Quality and Emissions, Fugitive Dust Impacts

ID	Assessment of Potential Cumulative Effects – Air Quality and Emissions –ES Sensitivity Test
	Assessment of projects identified within submitted ES as a result of the Revised Construction Programme.
	Projects scoped out of the cumulative assessment in the submitted ES (Volume 5.17.1, Appendix 17E) would remain scoped out under the Revised Construction Programme. It is not considered that the assessment of cumulative effects would change as a result of the Revised Construction Programme, for any of the projects assessed in the Submitted ES as follows: Projects: 6, 7, 12, 16, 7, 11, 17, 18,19, 20, 21, 99, 22, 25, 32, 33, 34, 38, 39, 40, 42, 43, 44, 47, 98, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 98, 93, 94, 95, 96, 97.

	Assessment of new projects against the Revised Construction Programme (Including the inter-project effect of both the development identified in the submitted ES and the new major developments).
100	<u>Summary of Project Detail</u>
101	100 – Brilliant Harvest, Solar Farm at, Ashlawn Farm, Pill Road, Rooksbridge;
102	101 – New Earth Solutions, low carbon energy facility at Avonmouth;
103	102 - Smiths Gore, 36 mw power Solar Farm near Strawberry, Line Congresbury;
109	103 - Bridgwater Gateway Ltd, 3- storey building (use class B1), Bridgwater
115	109 - KWTN Solar Ltd, 7.48mw solar farm at Bowerhouse East of Riverside;
116	115 – Clean Earth, Single wind turbine at Charlton Drive, Wraxall; and 116 – Balfour Beatty, waste wood 10.4MWe Bioenergy Facility, Chittening Trading Estate. Avonmouth.
	<u>Description of Potential Effect(s)</u> Potential for cumulative fugitive emissions impacts.
	<u>Reference to Key Documents</u> Holman <i>et al</i> (2014) Institute of Air Quality Management, <i>IAQM Guidance on the Assessment of Dust From Construction And Demolition</i> , London, 2014.
	<u>Description of Baseline Environment when Potential Effects are Expected to Arise</u> Existing air quality is likely to be good (refer to Section 13 of ES Sensitivity Test).
	<u>Assessment of Potential Cumulative Effect – during Revised Construction Programme</u> These projects are located <1km from the Proposed Development Order Limits, therefore the potential may exist for cumulative impacts with regard to fugitive dust.
	<u>Mitigation</u> Mitigation for the Proposed Development applicable to fugitive dust is set out in the Draft CEMP at Volume 5.26.1 of submitted ES. Mitigation of potential fugitive dust is standard practice for development projects and it is therefore expected that all proposed developments will mitigate fugitive dust emissions.
	<u>Residual Effects</u> Significant cumulative effects are not anticipated. The remaining new major developments have been scoped out and further details are provided at Appendix 17D.

Construction Phase Traffic Emissions

- 17.3.42 Predicted Proposed Development construction traffic including 'committed development' traffic was assessed. The data are presented in the table below (**Table 17.10**), and include all relevant, committed developments. The predicted 'worst case' year for each route, under the proposed revised programme was selected.

Table17.10 Cumulative Development Traffic Data

Road Link	Year	Future 'Baseline' Traffic		Proposed Development Traffic			Committed + Proposed Development Traffic		
		AADT	HGV	AADT	HGV	% Increase AADT	AADT	HGV	% Increase AADT
Puriton Hill	2021	15825	2069	208	52	1.3	1406	200	9
Bath Road	2021	14056	1158	134	52	1.0	134	52	1
B3141 Woolavington Hill	2021	5235	448	181	26	3.5	181	26	3
B3139 Causeway	2021	3325	259	181	26	5.4	181	26	5
B3139 Church Road	2019	4310	313	60	28	1.4	60	28	1
A38 Bristol Road	2019	14822	1892	60	28	0.4	60	28	0.4
A38 Bristol Road	2016	16458	1597	324	116	2.0	324	116	2
A38 Bristol Road	2016	12373	1051	324	116	2.6	324	116	3
A368 Dinghurst Road	2016	7124	676	324	116	4.5	324	116	5
A38 Bristol Road	2017	18222	1410	324	116	1.8	324	116	2
A370	2018	20237	1708	316	84	1.6	316	84	2
A370	2018	18385	1222	316	84	1.7	316	84	2
Lampley Road	2018	10767	850	174	51	1.6	174	51	2
Kennmoor Road	2018	3261	137	174	51	5.3	174	51	5
Kenn Road	2018	11133	896	174	51	1.6	174	51	2
Nail sea Wall	2018	1966	138	173	51	8.8	173	51	8.8
B3133	2018	15436	1116	173	51	1.1	173	51	1.1
Manmoor Lane	2018	4370	208	173	51	4.0	173	51	4.0

Road Link	Year	Future 'Baseline' Traffic		Proposed Development Traffic			Committed + Proposed Development Traffic		
B3130 Clevedon Road	2019	14769	947	83	28	0.6	83	28	0.6
B3130 Clevedon Road	2019	12658	837	83	28	0.7	83	28	0.7
B3128 Clevedon Road	2019	9835	526	83	28	0.8	83	28	0.8
Whitehouse Lane	2019	8011	290	83	28	1.0	83	28	1.0
Caswell Hill	2019	993	57	83	28	8.4	83	28	8.4
Sheepway	2019	1326	178	80	26	6.0	80	26	6.0
The Portbury Hundred	2019	29490	1737	83	28	0.3	83	28	0.3
Victoria Road	2019	2254	651	39	13	1.7	39	13	1.7
Avonmouth Way	2020	1938	639	184	40	9.5	184	40	9.5
A403 St. Andrew's Road	2020	0	0	184	40	-	2563	2419	-
Kings Weston Lane	2020	9105	1265	184	40	2.0	674	300	7.4
A403 Smoke Lane	2020	13124	3496	184	40	1.4	692	306	5.3
Poplar Way West	2020	9256	2660	184	40	2.0	361	40	3.9
Poplar Way East	2020	3119	441	184	40	5.9	184	40	5.9
A403 Severn Road	2020	14062	1979	184	40	1.3	703	300	5.0
Severn Road	2020	4314	521	184	40	4.3	692	300	16.0
Wick Moor Drive	2018	2698	252	467	160	17.3	1266	708	46.9
Whitewick Lane	2018	253	17	0	0	0.0	0	0	0.0
Rodway	2018	6088	530	467	160	7.7	1266	708	20.8

Road Link	Year	Future 'Baseline' Traffic		Proposed Development Traffic			Committed + Proposed Development Traffic		
Quantock Road	2018	17616	1615	467	160	2.7	1266	708	7.2
A38 Bristol Road	2018	27919	2523	467	160	1.7	6105	708	21.9

- 17.3.43 As in the Submitted ES, the increases were compared with the screening criteria suggested by Environmental Protection (UK) Planning for Air Quality (2010 Update) guidance on air quality assessment (see Volume 5.13.1, section 13.2 and section 13.3 of submitted ES).

Fugitive Emissions

- 17.3.44 The Revised Construction Programme is unlikely to change either the potential for cumulative fugitive dust effects with the projects assessed in the Submitted ES, or with new major development projects (**Table 17.1**) identified since submission of the Submitted ES.
- 17.3.45 Mitigation of potential fugitive dust is standard practice for development projects and it is typically a condition of planning consent. As in the Submitted ES, fugitive emissions from the Proposed Development, and therefore their potential for summation with those from other projects, would be controlled by the best practice mitigation measures identified in the submitted ES (**Volume 5.13.1, section 13.7**) and the submitted Draft CEMP (**Volume 5.26.1**).
- 17.3.46 It is therefore expected that all proposed developments will mitigate fugitive dust emissions; therefore no significant effect is predicted. There is unlikely to be a significant adverse effect from fugitive emissions as a result of the Proposed Development and other projects being constructed.

Construction Traffic

- 17.3.47 As in the Submitted ES, the majority of the identified roads are not predicted to experience a 'significant' increase in traffic based on the screening criteria reproduced from the EP-UK guidance.
- 17.3.48 As in the Submitted ES, a small number of roads are predicted to experience an increase in AADT or HGV numbers which would exceed the EP-UK screening criteria, however as in the Submitted ES, in all cases the great majority of the increase is associated with committed developments, and not the Proposed Development.
- 17.3.49 As in the Submitted ES, the majority of roads predicted to experience an increase in traffic exceeding the screening criteria do not have residential receptors at roadside locations and existing air quality is likely to be good, therefore a significant impact on air quality at relevant receptors is unlikely.
- 17.3.50 Rodway has residential receptors at roadside locations where it passes through Cannington, however existing air quality is likely to be good. The completion of the by-pass road around Cannington in 2016 would be expected to mitigate potential construction traffic emissions at receptors in the village, therefore the delay in predicted peak traffic on this route to 2018 Revised would result in a lower impact on air quality at receptors at Cannington as a result of the Revised Construction Programme.

Noise and Vibration

- 17.3.51 The assessment of cumulative effects does not change for the projects identified within the submitted ES as a result of the Revised Construction Programme.
- 17.3.52 No new major developments subsequently identified (**Table 17.1**) are likely to have a cumulative effect from noise and vibration on surrounding receptors due in most cases to the distance between the Proposed Development and the other projects or noise sensitive receptors. Where there is limited distance between the Proposed Development and other projects, the cumulative effects of construction and operational noise and vibration are negligible. With regards to construction noise and vibration, the magnitude of effect is based on a combination of level and duration of exposure. Cumulative construction effects are not expected to increase the level or duration of exposure at any receptor, such that the magnitude or significance of effect would be increased beyond what has been assessed associated with each development in isolation.

Socio-Economics and Land Use

- 17.3.53 The assessment of cumulative effects would not change for the projects identified within the submitted ES as a result of the Revised Construction Programme.
- 17.3.54 No new major developments subsequently identified (**Table 17.1**) are likely to have a cumulative effect in terms of socio-economics and land use. The major developments ID 100 and 103 are committed developments and have been considered as part of the future baseline environment in Chapter 15 of this document, and are therefore not considered in the assessment of potential cumulative effects.
- 17.3.55 The remaining new major developments have been scoped out and further details are provided at **Appendix 17D (Volume 5.29.1.2 of the ES Sensitivity Test)**.

Electric and Magnetic Fields

- 17.3.56 Both the transmission and distribution assets associated with the Proposed Development have each been assessed for compliance against Government guideline limits documented in NPS EN-5.
- 17.3.57 Electric and magnetic fields (EMFs) from the Proposed Development can combine with the EMFs already present in the development area from other sources such as appliances, domestic and industrial wiring etc; however the largest source of fields are typically from electricity transmission and distribution infrastructure. The way in which fields from different sources combine with each other is complex. The relative power flows, voltage and the relative phasing of each electrical asset would affect the direction of the fields from each asset and therefore whether they add or subtract with one another. The cumulative field could increase or decrease depending on the specific conditions, but it would only be a slight effect either way.
- 17.3.58 However, even considering the worst case situation of the maximum electric and magnetic fields from both the proposed 400kV overhead lines and cables combining, i.e. the highest EMFs encountered along the route, these combined fields would still be lower than the Government guideline levels.
- 17.3.59 Therefore the cumulative impact of all of the components of the Proposed Development and any interactions with the new major developments identified (**Table 17.1**) which produce lower EMFs are not significant and there is no change from the assessment in the submitted ES.

18 PHOTOMONTAGES

- 18.1.1 There are no changes to the photomontages as a result of the Revised Construction Programme. The photomontages remain the same as those contained within the submitted ES (**Volume 5.18.1**).

19 NON- TECHNICAL SUMMARY

19.1 Introduction

- 19.1.1 National Grid Electricity Transmission plc (National Grid) has submitted an application to seek powers to construct, operate and maintain a new 400,000 volt (400kV) connection between Bridgwater, Somerset and Seabank Substation, north of Avonmouth, together with various associated development and other works ('the Proposed Development').
- 19.1.2 The application was submitted to the Planning Inspectorate (PINS) on the 28th May 2014. PINS confirmed that the application has been accepted for examination on 17th June 2014 (reference number. EN020001).
- 19.1.3 That part of the Proposed Development that comprises an electric line above ground is a Nationally Significant Infrastructure Project (NSIP). Under Section 37 of the Planning Act 2008, the consenting process requires an application to be submitted for a Development Consent Order (DCO).
- 19.1.4 An Environmental Statement (ES) was submitted as part of the DCO application (the submitted ES).

Amendments to Proposed Connection Date

- 19.1.5 Following the submission of the DCO application, National Grid has received an application for a modification to the offer to connect Hinkley Point C Power Station which envisages the connection being made two years later than the present offer and as described in the submitted ES.
- 19.1.6 As a result of the application from EdF Energy, on the 19 August 2014 a formal offer for a revised connection date was made by National Grid to EdF Energy.
- 19.1.7 EdF Energy has advised National Grid that, although technically this offer is confidential until signed, National Grid can inform PINS that an offer has been made.
- 19.1.8 To meet the revised connection date offered, the construction programme, as presented and assessed in the submitted ES (**Volume 5.3.2, Appendix 3.B**), has also been revised.
- 19.1.9 The revisions to the construction programme are greater than moving the start of construction to a later date than presented in the submitted ES. The duration of the construction of the various individual proposed development components has changed; the duration of some development components have increased, others have decreased. The changes are described and explained in Chapter 3 of this sensitivity test

Purpose of this document

- 19.1.10 In light of the change to the connection date and the Revised Construction Programme a review of the submitted ES has been undertaken by National Grid.
- 19.1.11 This document provides a summary of the ES Sensitivity Test which has been undertaken to consider whether there are changes to the environmental effects and measures to avoid or reduce adverse effects described in the submitted ES as a result of the Revised Construction Programme.

19.1.12 There have been no changes to the project need as a result of the revised connection offer and the changes relate only to the potential changes to the connection date and the Revised Construction Programme.

19.1.13 This document should be read in conjunction with the Non-Technical Summary of the submitted ES (**Volume 5.19.1**).

Updates to Ecological Information

19.1.14 In addition to the sensitivity test, a number of further ecological studies have been undertaken since the submission of the DCO application. These further surveys cover geographic areas not previously surveyed where access permission had not been established previously; reference to this outstanding information was made within the submitted ES where the intention was stated to provide an update to address them.

19.1.15 This updated ecology surveys has been submitted to PINS under a separate cover (**Volume 5.29**) and is referenced within Chapter 8 of the ES Sensitivity Test. The updated ecology surveys do not change the findings of the submitted ES.

Project Overview

19.1.16 The Proposed Development has not changed from that presented within the submitted DCO application and reproduced in the NTS. The only change that would occur is to the submitted construction programme.

Policy and Legislation

19.1.17 The environmental impact assessment (EIA) process and the published ES are subject to a number of legal and policy requirements. Regulations set out when EIA is required and identify the information which should be provided. This guidance has not changed since the submission of the ES.

Structure of the ES Sensitivity Test and Supporting Documents

19.1.18 The ES Sensitivity Test is split into 19 Chapters numbered in accordance with the submitted ES. A number of supporting documents are also provided and are numbered in accordance with the submitted document.

19.1.19 Table 1.1 below identifies the location of the ES Sensitivity Test Chapters and which Chapter of the submitted ES this relates to:

Table 1.1 Environmental Statement Sensitivity Test Structure

ES Sensitivity Chapter (Volume 5.29.1.1)	Document Name	Corresponding Chapter within Submitted ES
1	Introduction	Chapter 1, Volume 5.1.1
2	Project Need and Alternatives	Chapter 2, Volume 5.2.1
3	Project Description	Chapter 3, Volume 5.3.1
4	Planning Policy Context	Chapter 4, Volume 5.4.1
5	Environmental Impact Assessment Sensitivity Test Approach and Method	Chapter 5, Volume.5.1.5
6	Landscape	Chapter 6, Volume 5.6.1
7	Visual Effects	Chapter 7, Volume 5.7.1
8	Biodiversity and Nature Conservation	Chapter 8, Volume 5.8.1
9	Ground Environment	Chapter 9, Volume 5.9.1
10	Hydrology and Water Resources	Chapter 10, Volume 5.10.1
11	Historic Environment	Chapter 11, Volume 5.11.1
12	Traffic and Transport	Chapter 12, Volume 5.12.1
13	Air Quality and Emissions	Chapter 13, Volume 5.13.1
14	Noise and Vibration	Chapter 14, Volume 5.14.1
15	Socio-economics and Land Use	Chapter 15, Volume 5.15.1
16	Electric and Magnetic Fields	Chapter 16, Volume 5.16.1
17	Cumulative Effects	Chapter 17, Volume 5.17.1
18	Photomontages	Chapter 18, Volume 5.18.1
19	Non-Technical Summary	Chapter 19, Volume 5.19.1

- 19.1.20 Chapters 1 to 5 present the ‘upfront’ chapters, describing the purpose of this document; the need case; a detailed description of the Revised Construction Programme; planning policy update review and sensitivity test method and approach respectively.
- 19.1.21 Chapters 6 to 16 provide a sensitivity test of the Revised Construction Programme against each of the EIA topics. Where the Revised Construction Programme would result in a change to the assessment provided in the submitted ES, this is described.
- 19.1.22 Chapter 17 sets out changes to the cumulative effects assessments as a result of the Revised Construction Programme. Chapter 18 describes any changes to the photomontages. The Non-Technical Summary of the ES Sensitivity Test is included at Chapter 19.

19.1.23 The ES Sensitivity has the following supporting documents provided in **Volume 5.29.2**:

- The Applicant's Report to Support Habitats Regulations Assessment Sensitivity Test;
- Transport Assessment (TA) Sensitivity Test;
- Flood Risk Assessment (FRA) Sensitivity Test; and
- Draft Construction Environmental Management Plan (CEMP) Sensitivity Test

19.1.24 All other supporting documents submitted with the ES remains unchanged as a result of the Revised Construction Programme and have not been referenced as part of the ES Sensitivity Test.

19.2 Background to the Project

19.2.1 The background to the project remains as stated in the submitted ES and NTS. The submitted ES has been reviewed in light of the change to the connection date and the Revised Construction Programme. There have been no other changes to the project as a result of the revised connection date.

19.3 Description of the Proposed Development

Location

19.3.1 There are no changes to the location of the Proposed Development. The site boundary would remain the same as detailed within the submitted ES and NTS as a result of the Revised Construction Programme.

19.3.2 The 'Sections' illustrated with the submitted ES at **Volume 5.1.2, Figure 1.1** and described at **Volume 5.3, Paragraph 3.2.2**, would remain as follows:

- Section A – Puriton Ridge;
- Section B – Somerset Levels and Moors South;
- Section C – Mendip Hills;
- Section D – Somerset Levels and Moors North;
- Section E – Tickenham Ridge;
- Section F – Portishead;
- Section G – Avonmouth; and
- Section H – Hinkley Line Entries

The Proposed Development

19.3.3 As detailed in the submitted ES and NTS, the proposed Hinkley Point C Connection project includes the following principal elements:

- construction of a 57km 400kV electricity transmission connection (see submitted ES **Volume 5.3.3, Figure 3.1 and Figure 3.2**) between Bridgwater in Somerset and Seabank, near Avonmouth, comprising:
 - installation of a 400kV overhead line; and
 - installation of 400kV underground cables.

- modifications to existing overhead lines at Hinkley Point, Somerset (see submitted ES **Volume 5.3.3, Figure 3.1.20**);
- construction of three 400kV CSE compounds along the route of the connection (see submitted ES **Volume 5.3.3, Figure 3.1.2** and **Figure 3.1.6**);
- construction of a 400/132kV substation at Sandford, North Somerset (see **Volume 5.3.3, Figure 3.1.9**);
- extension of the existing 400kV substation at Seabank (see submitted ES **Volume 5.3.3, Figure 3.1.19**);
- the removal of existing 132kV overhead lines and the construction of replacement 132kV overhead lines and 132kV underground cables (see submitted ES **Volume 5.3.3, Figure 3.1**);
- extensions/modifications to existing 132kV substations at Churchill, Portishead, Avonmouth and Seabank (see submitted ES **Volume 5.3.3, Figures 3.1.10, 3.1.16, 3.1.18** and **3.1.19**); and
- associated works, for example, temporary access roads, highway works, temporary construction compounds, scaffolding, work sites and ancillary works (see submitted ES **Volume 5.3.3, Figure 3.1**).

19.3.4 If the revised connection date is accepted, the Proposed Development would not alter from that described in the submitted ES. The only change would be to the programming and duration of the construction phase. The Revised Construction Programme is described below.

Requirement for Changes to the Construction Programme duration

- 19.3.5 National Grid's transmission licence requires it to ensure the security of the supply of high voltage electricity. Part of National Grid's role involves balancing the supply of electricity between generators and users. This supply of electricity has to be delivered in combination with the need to allow for works on the National Grid transmission system (such as maintenance operations, carrying out repairs and making new connections, such as those required to construct the Proposed Development).
- 19.3.6 To ensure the safety of those working on or near overhead power lines during such works to the transmission system, the electricity flowing through the lines is usually turned off. These periods are known as "outages" and refer to when the normal power operation of the overhead lines is interrupted by some of the live electricity circuits being temporarily turned off, whilst at all times allowing sufficient power to continue to flow through other parts of the transmission system to maintain supply.
- 19.3.7 All outages have to be co-ordinated nationally and regionally within National Grid and with affected Distribution Network Operators (DNOs). The outages have to be "booked" several years in advance of need and normally can only occur during British Summer Time from March to October, when there is a lower power demand on the National Grid system.
- 19.3.8 To ensure that the Hinkley Point C connection project could be delivered by the proposed revised connection date, a Revised Construction Programme has been developed which is spread over a number of known and planned outage periods, having regard to the need to continue to provide high voltage electricity efficiently and reliably whilst works progress and also the need to carry out work in a safe manner.

- 19.3.9 Accordingly, the revisions to the construction programme would be greater than simply moving the start of construction to a later date than presented in the submitted ES. The Revised Construction Programme has to be planned to fit within the existing outages periods already scheduled by National Grid and the DNO (Western Power Distribution (WPD)). There would be changes in the construction duration for a number of project components (both increases and decreases in duration) and the length of the overall construction programme would increase because of the different outages that would apply to the Revised Construction Programme.

Revised Construction Programme

- 19.3.10 Under the Revised Construction Programme, National Grid would start construction in December 2015, two months later than the Preliminary Construction Programme set out in the submitted ES. Construction of the Proposed Development would be complete by March 2022.
- 19.3.11 The duration of the total Revised Construction Programme is 76 months which is 25 months longer than the Preliminary Construction Programme detailed in the submitted ES
- 19.3.12 The construction methods described in Chapter 3 of the submitted ES would not alter as a result of the Revised Construction Programme. The total construction vehicle movements associated with each of the component parts of the Proposed Development would not change.

19.4 Planning Policy

- 19.4.1 There have been no changes to the national and local planning policy context relevant to the Proposed Development since the submission of the ES. The Revised Construction Programme does not alter the planning policy context.
- 19.4.2 The planning policy which has framed National Grid's approach to identifying the environmental effects to consider, and the significance of those effects is as described in section 4 of the submitted NTS. Specific planning policies relevant to the environmental topics covered in the ES Sensitivity Test are summarised in the specialist topic chapters.

19.5 EIA Sensitivity Test Approach and Method

Introduction

- 19.5.1 All chapters of the submitted ES were examined to determine whether any updates to the assessments are required as a result of the Revised Construction Programme.
- 19.5.2 For the majority of the assessments presented in the submitted ES, no further work was required as changes in the construction programme do not influence the assessments already undertaken.
- 19.5.3 Where potential changes to the assessment findings were identified, these have been updated with further assessment work. Where such additional assessment work has been undertaken, the approach and findings were specified in the relevant chapter of the ES Sensitivity Test.

Approach to the Construction Programme Changes

19.5.4 The approach taken in producing the ES Sensitivity Test was as follows:

- Each topic author reviewed the content of their submitted ES sections against the Revised Construction Programme, to include:
 - future baseline conditions;
 - planning policy context; and
 - conclusions
- If further assessment was considered necessary, or it was considered that further environmental information should be provided as a result of the Revised Construction Programme, this is included within the relevant ES Sensitivity Test topic chapter; and
- If no further assessment was considered necessary as a result of the Revised Construction Programme, a commentary on the approach to the sensitivity test and an explanation as to why the conclusions of the submitted ES would remain applicable.

19.6 Landscape

Introduction

19.6.1 Chapter 6 of the ES Sensitivity Test provides an assessment of the likely significant effects on the landscape as a result of the Revised Construction Programme. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.6.1**).

Method

19.6.2 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.

19.6.3 The method for this landscape assessment sensitivity test follows the method of the submitted ES Volume 5.6.1 and is based on the 'Guidelines for Landscape and Visual Impact Assessment – Third Edition' (Ref. 6.iii), Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA), 2013 (GLVIA3) guidance.

Baseline Environment

19.6.4 There has been no further field survey work undertaken as part of this ES sensitivity test of the Revised Construction Programme from that previously presented in the submitted ES **Volume 5.6.1, section 6.3** and the submitted NTS.

19.6.5 Detailed site assessment undertaken as part of the submitted ES between December 2011 and January 2014 was recorded in winter, spring and summer. Landscape character and views are not considered to have changed materially since then and further field survey work was not deemed necessary as part of this sensitivity test to determine the possible effects of the Revised Construction

Programme on landscape character. This is because the Revised Construction Programme commences in the same quarter as the construction programme assessed in the submitted ES and changes to the landscape would not so great so to require reassessment.

Prediction and Assessment of Significance of the Potential Effects

- 19.6.6 The ES sensitivity test identifies and assesses the likely significant effects on landscape character that would be different during construction to that assessed in the submitted ES.
- 19.6.7 The duration of the Revised Construction Programme is 76 months (25 months longer than the construction programme assessed in the submitted ES).
- 19.6.8 Construction of the Proposed Development based on the Revised Construction Programme would be undertaken between December 2015 (two months later than construction works assessed in the submitted ES) and March 2022 (27 months later than construction works assessed in the submitted ES).
- 19.6.9 Despite the longer duration of the Revised Construction Programme overall, the duration for construction of each individual project component typically is similar to that considered in the submitted ES construction programme and does not exceed 60 months within any of the Sections assessed (Sections A to H).
- 19.6.10 The Revised Construction Programme duration for the proposed Mendip Hills 400kV underground cables installation would be 57 months in total and would be medium-term (5 to 15 years). However this component part of the Proposed Development is separated out into two stages which align with Section C and D as follows:
- 400kV Underground Cable Mendip Hills Route: works between A38 Bristol Road to Towerhead Road (including South of Mendip Hills CSE Compound, A38 Bristol Road (UGC) Compound and haul road (Section C); and
 - 400kV Underground Cable Mendip Hills Route: works between Towerhead Road and Sandford Substation (including haul road and construction compound) (Section D).
- 19.6.11 The phasing of the 400kV underground cables installation within each Section C and Section D would not exceed 60 months duration and construction would be short-term (0 to 5 years). The works would be delivered in a phased manner under the Revised Construction Programme. The length of cable being installed, plus the section behind and section in front would need to remain open at any one time. This would equate to a maximum of 3km of the 400kV underground cable route where active working, and so too habitat loss, would take place at any one time. Whilst the cables would be laid in a phased manner, the haul road for this project component is assessed to remain in place for the duration of the Mendip Hills 400kV underground cable works. Once the cables have been laid and trenches backfilled, reinstatement work would begin. The reinstatement of subsoil, topsoil and hedgerows would also be undertaken in phases
- 19.6.12 Landscape effects associated with the construction of each individual project component of the Proposed Development within each Section assessed would be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided.

- 19.6.13 There is no change to the source of landscape effects associated with the construction of each component of the Proposed Development or the measures for lighting during construction as a result of the Revised Construction Programme, from that previously presented in the submitted ES (**Volume 5.6.1, section 6.5**).
- 19.6.14 Accordingly, the Revised Construction Programme has no implications for the assessed effect of the Proposed Development on landscape character as this would remain as stated in Chapter 6 of the submitted ES (**Volume 5.6.1**) and NTS.
- 19.6.15 There are no changes to the operation or decommissioning effects identified in the submitted ES as a result of the Revised Construction Programme.

Inter-relationship of Potential Effects

- 19.6.16 The Revised Construction Programme does not change the inter-relationship of potential effects on the landscape previously presented in the submitted ES **Volume 5.6.1, section 6.6** and NTS.

Mitigation

- 19.6.17 The Revised Construction Programme does not change the measures for mitigation of construction effects on landscape character previously presented in the submitted ES (**Volume 5.6.1, section 6.7**) and NTS.
- 19.6.18 However an additional figure showing the phasing of landscape planting at Sandford 400kV/132kV Substation is provided at **Figure 7.35.6 (Volume 5.29.1.2** of the ES Sensitivity Test). This phasing is required to reduce the duration of habitat loss associated with the Revised Construction Programme.

Residual Effects

- 19.6.19 The Revised Construction Programme does not change the predicted residual effects on landscape character previously presented in the submitted ES (**Volume 5.6.1, section 6.8**) and NTS.

Cumulative Effects

- 19.6.20 The Revised Construction Programme does not change the assessment of cumulative effects on landscape character previously presented in the submitted ES (**Volume 5.6.1, section 6.9**) and NTS.

19.7 Visual Effects

Introduction

- 19.7.1 Chapter 7 of the ES Sensitivity Test provides an assessment of the likely significant effects on views as a result of the revised construction. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.6.1**).

Method

- 19.7.2 The assessment of the effects on views of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5. Professional judgement has been used to determine whether the Revised Construction Programme would change the assessment presented in the submitted ES.

- 19.7.3 The method for the assessment of effects has been undertaken in accordance with the method presented in the submitted ES at **Volume 5.7.1, section 7.3** and is based on GLVIA3 (Ref. 7.1).

Baseline Environment

- 19.7.4 There are changes to the baseline environment, results of site assessment or future baseline environment from that previously considered in the submitted ES **Volume 5.7.1, section 7.4** and submitted NTS. This is because the Revised Construction Programme commences in the same quarter as the construction programme assessed in the submitted ES and changes to the landscape would not be so great so as to require reassessment.

Prediction and Assessment of Significance of the Potential Effects

- 19.7.5 The ES sensitivity test identifies and assesses the likely significant effects on visual amenity that would be different during construction to that assessed in the submitted ES.
- 19.7.6 The duration of the Revised Construction Programme is 76 months (25 months longer than the construction programme assessed in the submitted ES).
- 19.7.7 Construction of the Proposed Development based on the Revised Construction Programme would be undertaken between early December 2015 (two months later than construction works assessed in the submitted ES) and early 2022 (27 months later than construction works assessed in the submitted ES).
- 19.7.8 Despite the longer duration of the Revised Construction Programme overall, the duration for construction of each individual project component typically is similar to that considered in the submitted ES construction programme and does not exceed 60 months within any of the Sections assessed (Sections A to H).
- 19.7.9 The Revised Construction Programme duration for the proposed Mendip Hills 400kV underground cables installation would be 57 months in total and would be medium-term (5 to 15 years). However this component part of the Proposed Development is separated out into two stages which align with Section C and D as follows:
- 400kV Underground Cable Mendip Hills Route: works between A38 Bristol Road to Towerhead Road (including South of Mendip Hills CSE Compound, A38 Bristol Road (UGC) Compound and haul road (Section C); and
 - 400kV Underground Cable Mendip Hills Route: works between Towerhead Road and Sandford Substation (including haul road and construction compound) (Section D).
- 19.7.10 The phasing of the 400kV underground cables installation within each Section C and Section D would not exceed 60 months duration and construction would be short-term (0 to 5 years). The works would be delivered in a phased manner under the Revised Construction Programme. The length of cable being installed, plus the section behind and section in front would need to remain open at any one time. This would equate to a maximum of 3km of the 400kV underground cable route where active working, and so too habitat loss, would take place at any one time. Whilst the cables would be laid in a phased manner, the haul road for this project component is assessed to remain in place for the duration of the Mendip Hills 400kV underground cable works. Once the cables have been laid and trenches

backfilled, reinstatement work would begin. The reinstatement of subsoil, topsoil and hedgerows would also be undertaken in phases.

- 19.7.11 Visual effects associated with the construction of each individual project component of the Proposed Development within each Section assessed would be temporary and short-term (0 to 5 years), except where permanent tree loss cannot be avoided.
- 19.7.12 Some visual receptors with views of construction works in Section C and Section D would experience visual effects for a greater duration, increasing to medium-term (5 to 15 years), due to the overall duration of construction works for the proposed 400kV underground cables installation in Section C and Section D.
- 19.7.13 The increase in duration of construction works from short-term (0 to 5 years) to medium-term (5 to 15 years) does not increase the magnitude and significance of visual effects predicted for these receptors in the submitted ES. This is because the significance of visual effects of construction works in the adjacent Section would not be greater and would be visible in only parts of the views or in distant views; the effect would be reduced due to a high degree of filtering or screening.
- 19.7.14 The Revised Construction Programme has no implications for the assessed significance of visual effects of the Proposed Development. This remains as stated in Chapter 7 of the submitted ES (**Volume 5.7.1**) and NTS.
- 19.7.15 There are no changes to visual effects during operation or decommissioning as a result of the revised construction.

Inter-relationship of Potential Effects

- 19.7.16 The Revised Construction Programme does not change the inter-relationship of potential effects on visual amenity presented in the submitted ES.

Mitigation

- 19.7.17 The Revised Construction Programme does not change the measures for mitigation of construction effects on views previously presented in the submitted ES.
- 19.7.18 However an additional figure showing the phasing of landscape planting at Sandford 400kV/132kV Substation is provided at **Figure 7.35.6 (Volume 5.29.1.2** of the ES Sensitivity Test). This phasing is required to reduce the duration of habitat loss as a result of the Revised Construction Programme.

Residual Effects

- 19.7.19 The Revised Construction Programme does not change the predicted residual visual effects presented in the submitted ES (**Volume 5.7.1, section 7.8**) and NTS.

Cumulative Effects

- 19.7.20 The Revised Construction Programme does not change the assessment of cumulative effects on visual receptors from that presented in the submitted ES (**Volume 5.7.1, section 7.9**) and NTS.

19.8 Biodiversity and Nature Conservation

Introduction

- 19.8.1 Chapter 8 of the ES Sensitivity Test provides an assessment of the likely significant effects on the ecological environment as a result of the Revised Construction Programme. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.8.1**).
- 19.8.1 In addition to the sensitivity test, a number of further ecological surveys have been undertaken since the submission of the DCO application. These further surveys cover geographic areas not previously surveyed due to site access restrictions and survey timing constraints. Reference to this outstanding information was made within the submitted ES where the intention was stated to provide an update to address them.
- 19.8.2 This information has been submitted to PINS under a separate cover (**Volume 5.29**). The updated surveys do not materially change the baseline assessed within the submitted ES.

Method

- 19.8.3 The method for the assessment of effects has been undertaken in accordance with the method presented in the submitted ES Chapter 8 – valuing each receptor, and identifying the magnitude, significance and likelihood of potential effects.

Baseline Environment

- 19.8.4 The assessment of the Revised Construction Programme has been based on the ecological baseline presented in the submitted ES (**Volume 5.8.1, section 8.4**) and NTS. As described above, the updated ecological surveys do not materially change the baseline assessment identified in the submitted ES.

Prediction and Assessment of Significance of the Potential Effects

- 19.8.5 The ES sensitivity test identifies and assesses the likely significant effects on the ecological receptors that would be different during construction to that assessed in the submitted ES.
- 19.8.6 The Revised Construction Programme increases the overall duration of construction phase to 76 months.
- 19.8.7 A number of modifications would be incorporated into the construction phase to avoid or minimise potential effects on ecological receptors as a result of the Revised Construction Programme.
- 19.8.8 To minimise potential effects on the particularly high value receptors associated with the extended duration of the 400kV underground cable works through the Mendip Hills, the works would be delivered in a phased manner under the Revised Construction Programme. The length of cable being installed, plus the section behind and section in front would need to remain open at any one time. National Grid has advised that this would equate to a maximum of 3km of the 400kV underground cable route where active working, and so too habitat loss, would take place at any one time. To ensure access to the construction areas is retained, the haul road would remain in place for the duration of works.
- 19.8.9 Works at Sandford substation have potential implications on bats and water vole, which are European Protected Species. As a result of the Revised Construction

Programme, the initial site clearance and levelling works would be undertaken during 2018, thereby facilitating early reinstatement of some habitats.

- 19.8.10 With the implementation of the phased construction working detailed above, the Revised Construction Programme has no implications for the assessed significance of effects of the Proposed Development on ecological receptors. This remains as stated in Chapter 8 of the submitted ES (**Volume 5.8.1, section 8.5**) and NTS.

Inter-relationship of Potential Effects

- 19.8.11 The Revised Construction Programme does not change the inter-relationship of potential effects on ecological receptors presented in the submitted ES (**Volume 5.8.1, section 8.6**) and NTS.

Mitigation

- 19.8.12 The Revised Construction Programme does not change the measures for mitigation of construction effects on ecological receptors previously presented in the submitted ES (**Volume 5.8.1, section 8.7**) and NTS.

Residual Effects

- 19.8.13 The Revised Construction Programme has no material effect on predicted residual ecological effects, further to that presented in the submitted ES (**Volume 5.8.1, section 8.8**) and NTS.

Cumulative Effects

- 19.8.14 The Revised Construction Programme does not change the assessment of cumulative effects on visual receptors presented in the submitted ES (**Volume 5.8.1, section 8.9**) and NTS.

19.9 Ground Environment

Introduction

- 19.9.1 Chapter 9 of the ES Sensitivity Test provides an assessment of the predicted significance of effect to the ground environment as a result of the Revised Construction Programme for the Proposed Development. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.9.1**).

Method

- 19.9.2 The review of the Revised Construction Programme was undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.

Baseline Environment

- 19.9.3 The baseline environment described in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.4**) and submitted NTS does not change as a result of the Revised Construction Programme.

Prediction and Assessment of Significance of the Potential Effects

- 19.9.4 The predicted effects of the Proposed Development on the ground environment, prior to implementation of mitigation measures, are not sensitive to changes in the construction programme, and the predicted effects that would result from the

Revised Construction Programme are the same as those described in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.5**) and in the submitted NTS.

Inter-relationship of Potential Effects

- 19.9.5 The Revised Construction Programme does not result in any additional inter-relationship effects than those identified within Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.6**) and in the submitted NTS.

Mitigation

- 19.9.6 No amendments are required to the mitigation measures identified in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.7**) as a result of the Revised Construction Programme.

Residual Effects

- 19.9.7 The Revised Construction Programme does not change the assessment of residual effects to the ground environment identified in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.8**) and submitted NTS.

Cumulative Effects

- 19.9.8 The Revised Construction Programme does not change the cumulative effects identified in Chapter 9 of the submitted ES (**Volume 5.9.1, section 9.9**) and submitted NTS.

19.10 Hydrology and Water Resources

Introduction

- 19.10.1 Chapter 10 of the ES Sensitivity Test provides an assessment of the predicted significance of effect to the hydrology and water resources as a result of the Revised Construction Programme for the Proposed Development. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.10.1**).

Method

- 19.10.2 The review of the Revised Construction Programme was undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme would change the assessment presented in the submitted ES.

Baseline Environment

- 19.10.3 The baseline environment described in Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.4**) and submitted NTS does not change as a result of the Revised Construction Programme.

Prediction and Assessment of Significance of the Potential Effects

- 19.10.4 The predicted effects that result from the Revised Construction Programme are the same as those described in Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.5**) and submitted NTS.

Inter-relationship of Potential Effects

- 19.10.5 The Revised Construction Programme does not result in any additional inter-relationship effects than those identified within Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.6**) and submitted NTS.

Mitigation

- 19.10.6 No amendments are required to the mitigation measures identified in Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.7**) and submitted NTS as a result of the Revised Construction Programme.

Residual Effects

- 19.10.7 The Revised Construction Programme does not change the assessment of residual effects to the hydrology and water resources identified in Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.8**) and submitted NTS.

Cumulative Effects

The Revised Construction Programme does not change the cumulative effects identified in Chapter 10 of the submitted ES (**Volume 5.10.1, section 10.9**) and submitted NTS.

19.11 Historic Environment

Introduction

- 19.11.1 Chapter 11 of the ES Sensitivity Test provides an assessment of the predicted significance of effect to the historic environment as a result of the Revised Construction Programme for the Proposed Development. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.11.1**).

Method

- 19.11.2 The review of the Revised Construction Programme was undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.

Baseline Environment

- 19.11.3 The baseline environment described in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.4**) and submitted NTS does not change as a result of the Revised Construction Programme.

Prediction and Assessment of Significance of the Potential Effects

- 19.11.4 The predicted effects that result from the Revised Construction Programme are the same as those described in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.5**) and NTS.

Inter-relationship of Potential Effects

- 19.11.5 The Revised Construction Programme does not result in any additional inter-relationship effects than those identified within Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.6**) and NTS.

Mitigation

- 19.11.6 No amendments are required to the mitigation measures identified in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.7**) and submitted NTS as a result of the Revised Construction Programme.

Residual Effects

- 19.11.7 The Revised Construction Programme does not change the assessment of residual effects to the historic environment identified in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.8**) and NTS.

Cumulative Effects

The Revised Construction Programme does not change the cumulative effects identified in Chapter 11 of the submitted ES (**Volume 5.11.1, section 11.9**) and NTS.

19.12 Traffic and Transport

Introduction

- 19.12.1 Chapter 12 of the ES Sensitivity Test provides an assessment of the predicted significance of effect of the Proposed Development on traffic and transportation as a result of the Revised Construction Programme. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.12.1**).
- 19.12.2 The assessment of effects on traffic and transport is supported by the Transport Assessment (TA) Sensitivity Test (**Volume 5.29.2.3**).
- 19.12.3 The TA Sensitivity Test has been produced to provide an assessment of the likely impacts of the construction traffic associated with the Proposed Development during all phases of the works as a result of the revised construction.

Method

- 19.12.4 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document.
- 19.12.5 The sensitivity test of the likely significant effects on traffic of the Revised Construction Programme has been undertaken in accordance with the method set out within Chapter 12 of the submitted ES (**Volume 5.12.1**). This includes the methods for assessing the significance of any potential effects.

Baseline Environment

- 19.12.6 There have been no significant changes to the baseline environment from that previously presented in the submitted ES that would require re-assessment as part of the sensitivity test.

Prediction and Assessment of Significance of the Potential Effects

- 19.12.7 The total volume of estimated vehicles required to construct the Proposed Development and presented in the submitted ES does not change as a result of the Revised Construction Programme.
- 19.12.8 Furthermore, the peak daily traffic volumes associated with construction would not exceed those already identified and assessed as part of the submitted ES as a result of the Revised Construction Programme.

- 19.12.9 In some instances the daily peak number of vehicles that are anticipated to utilise a highway link reduce as a result of the Revised Construction Programme. This is due to different elements of construction activity occurring at different times.
- 19.12.10 The revised construction period moves further into the future and accordingly the predicted effects occur in a different assessment year from that presented in the submitted ES. In these instances the percentage increase in traffic associated with the Proposed Development as a result of the Revised Construction Programme would be lower as the level of background traffic would be higher.
- 19.12.11 The total and daily peak volumes of traffic are not anticipated to increase as a result of the Revised Construction Programme therefore the level of predicted environmental effects as set out in the submitted ES and NTS does not change.

Inter-relationship of Potential Effects

- 19.12.12 There are no changes that change the inter-relationships of potential effects reported in the submitted ES and NTS as a result of the Revised Construction Programme.

Mitigation

- 19.12.13 A number of traffic and transport mitigation measures have been proposed during the construction of the Proposed Development and presented in the submitted ES.
- 19.12.14 As part of the mitigation package of measures contained within the submitted Construction Traffic Management Plan (CTMP) (**Volume 5.26.5**), it has been agreed, through discussions and consultation with the local planning authorities, that construction traffic from the Proposed Development will not use any junctions operating over its practical capacity in either the Future Baseline or Future Baseline with Development scenarios.
- 19.12.15 The submitted CTMP (**Volume 5.26.5**) identifies 12 junctions that will have complete peak period HGV movement restrictions in place. As a result of the Revised Construction Programme, a single additional junction (the M5/A4/Avonmouth Way) is predicted to operate above its practical capacity level. It is considered that this junction will also be subject to the peak period HGV vehicles restrictions and added to the CTMP and DCO requirements.
- 19.12.16 With the exception of the above addition, no further changes are required to the mitigation measures that are set out in the submitted ES (**Volume 5.12.1**) as a result of the revised construction.

Residual Effects

- 19.12.17 The Revised Construction Programme is not anticipated to change the residual impacts of traffic and transport outlined within the submitted ES and NTS.
- 19.12.18 Mitigation proposals, as detailed in the submitted ES and NTS, will be extensive throughout the proposed working corridors and along construction routes providing access to the Proposed Development.

Cumulative Effects

- 19.12.19 As part of the submitted ES and accompanying TA (**Volume 5.22**) the cumulative effects of other locally proposed developments were assessed and discussed.

19.12.20 The methodology by which this has been assessed is detailed within the TA (**Volume 5.22**) however, no significant changes in the findings are predicted as a result of the Revised Construction Programme.

19.13 Air Quality and Emissions

Introduction

19.13.1 Chapter 13 of the ES Sensitivity Test provides an assessment of the likely significant effects on the air quality environment of the Proposed Development as a result of the Revised Construction Programme. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.13.1**).

Method

19.13.2 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES

19.13.3 Since the submission of the submitted ES in May 2014, the following guidance and data referred to in chapter 13 of the Submitted ES have been updated:

- Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London, Holman et al (2014);
- DEFRA Estimated Air Pollution Background Concentration Maps, based on 2011 data, available at: DEFRA LAQM-Tools website, available from: <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>;

19.13.4 The approach and methods adopted for the sensitivity test analysis are identical to that adopted for the Submitted ES (**Volume 5.13.1, section 13.3**), except that the sensitivity test assesses the impact of fugitive emissions from construction activities according to updated IAQM guidance above, whereas the Submitted ES used the previous version of the IAQM guidance.

Baseline Environment

19.13.5 The submitted ES considered baseline air quality on the basis of local authority Local Air Quality Management (LAQM) reports and DEFRA Estimated Air Pollution Background Concentration Maps.

19.13.6 The DEFRA Estimated Air Pollution Background Concentrations have been revised. The revised data is similar to that presented in the Submitted ES and does not result in a change in the assessment.

Prediction and Assessment of Significance of the Potential Effects

19.13.7 There would not be any materially different fugitive dust impacts associated with the Revised Construction Programme when compared with the submitted ES, because the construction activities and receptors are not anticipated to change materially.

19.13.8 The updated IAQM Guidance recommends that, since appropriate mitigation will be secured by the CEMP, which will be a requirement of the DCO, potentially significant effects will be managed, therefore the potential significance of unmitigated impacts has not been assessed.

- 19.13.9 The potential impact of increased road traffic emissions as a result of the Revised Construction Programme has been assessed. None of the roads assessed meet the screening criteria for requiring further assessment (as set out in the Submitted ES) and no significant impact of increased road traffic emissions associated with the implementation of the Revised Construction Programme is anticipated.

Inter-relationship of Potential Effects

- 19.13.10 The inter-relationship of potential effects does not change from the submitted ES and NTS as a result of the Revised Construction Programme.

Mitigation

- 19.13.11 No amendments are required to the mitigation measures identified in Chapter 13 of the submitted ES (**Volume 5.13.1, section 13.7**) and NTS as a result of the Revised Construction Programme.

Residual Effects

- 19.13.12 The mitigation detailed above will be secured by the CEMP, which will be a requirement of the DCO, to ensure that any potentially significant effects will be adequately controlled. As stated in the updated IAQM guidance, the aim should be to prevent significant effects on receptors through the use of effective mitigation. The mitigation will be effectively applied, therefore no significant impacts due to fugitive dust emissions are anticipated and no changes to the submitted ES are required as a result of the Revised Construction Programme.

Cumulative Effects

- 19.13.13 The Revised Construction Programme does not change the cumulative effects identified in Chapter 13 of the submitted ES (**Volume 5.13.1, section 13.9**) and NTS.

19.14 Noise and Vibration

Introduction

- 19.14.1 Chapter 14 of the ES Sensitivity Test provides an assessment of potential noise and vibration effects as a result of the Revised Construction Programme for the Proposed Development. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.14.1**).
- 19.14.2 There would be different effects arising from construction of the Proposed Development and from its operation. Construction noise is assessed differently to noise from operation because construction noise is an inevitable by-product of required works and construction activities are temporary.

Construction and Decommissioning Phase

Method

- 19.14.3 The review of the Revised Construction Programme has been undertaken in accordance with the method presented in Chapter 5 of this document. A desk-based assessment, together with professional judgement, has been used to

determine whether the Revised Construction Programme changes the assessment presented in the submitted ES (**Volume 5.14.1, section 14.2**).

- 19.14.4 The assessment of effects is undertaken in accordance with the method as presented in the submitted ES (**Volume 5.14.1, section 14.2**).

Baseline Environment

- 19.14.5 With regards to construction activity, the baseline environment described in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.11**) and the NTS is not affected by changes to the construction programme and no changes have occurred in the baseline environment since the submission of the ES as to require re-assessment.
- 19.14.6 Baseline traffic flows have been updated to reflect the later construction dates as a result of the Revised Construction Programme. This data has been used in the assessment of noise from construction traffic on existing roads.

Prediction and Assessment of Significance of the Potential Construction and Decommissioning Noise Effects

Construction Noise Effects

- 19.14.7 The effects of noise and vibration are unlikely to change at any single receptor for the above construction processes as a result of the Revised Construction Programme. Accordingly, the Revised Construction Programme does not alter the assessment of effects as set out in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.4**) and NTS.

Construction Traffic on Existing Roads

- 19.14.8 The construction traffic noise assessment has been revised based on traffic data supplied by the traffic consultant. The traffic assessment indicates that the peak construction flows will not typically exceed those assessed in the submitted ES but the peak traffic will occur during a different year. The baseline traffic flows for the peak years will therefore vary and the revised construction traffic noise assessment is therefore revised accordingly.
- 19.14.9 The revised construction traffic noise assessment has been undertaken and indicates that the effects would not materially alter the construction traffic noise assessment as set out in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.4**).
- 19.14.10 The magnitude of effects for several routes have been reduced from low to negligible or negligible to no change. In these instances the significance of effect is either low or negligible.
- 19.14.11 The exceptions to this are: Avonmouth Way which would marginally increase in terms of assessed magnitude, but remains to be of **negligible** significance; and the Wick to Stalford Road which would increase from minor to **moderate** significance. This increase is predominantly due to the low level of existing traffic on this road during the peak year. However the absolute noise levels are not expected to be adverse nor would threshold noise levels, in terms of WHO guidelines for health and wellbeing or published amenity guidance, at receptors be exceeded. No further mitigation is required for this route as a result of the Revised Construction Programme.

Inter-relationship of Potential Effects

- 19.14.12 The predicted inter-relationship construction noise effects are not sensitive to changes in construction programme. Accordingly, the Revised Construction Programme does not alter the assessment of inter-relationship construction effects as set out in Chapter 14 of the submitted ES and NTS.

Mitigation

- 19.14.13 The construction mitigation measures required as a result of the Revised Construction Programme do not change from those stated in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.6**) and NTS.

Residual Effects

- 19.14.14 The residual effects of construction noise and vibration remain as stated in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.7**) and NTS as a result of the Revised Construction Programme.

Cumulative Effects

- 19.14.15 The Revised Construction Programme does not change the cumulative effects identified in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.8**) and NTS.

Operational Phase

Method

- 19.14.16 The review of the Revised Construction Programme has been undertaken in accordance with the method presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme has changed the assessment presented in the submitted ES.

Baseline Environment

- 19.14.17 The baseline environment described in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.11**) is not affected by changes to the construction programme and no changes have occurred in the baseline environment since the submission of the ES to require re-assessment.

Prediction and Assessment of Significance of Potential Effects

- 19.14.18 The predicted effects during operation are not sensitive to changes in construction programme. The predicted operational effects that would result from the Revised Construction Programme are the same as those described in the submitted ES (**Volume 5.14.1, section 14.12**) and NTS.

Inter-relationship of Potential Effects

- 19.14.19 The predicted inter-relationship operational effects are not sensitive to changes in construction programme. Accordingly, the Revised Construction Programme does not alter the assessment of inter-relationship operational effects as set out in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.13**).

Mitigation

- 19.14.20 The operational mitigation measures required as a result of the Revised Construction Programme would not change from those stated in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.14**) and NTS.

Residual Effects

- 19.14.21 As stated in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.15**) residual effects for operational noise are not assessed, since all practical mitigation has already been applied during the design and specification of the overhead line and substation. The Revised Construction Programme does not alter the assessment of residual effects.

Cumulative Effects

- 19.14.22 The Revised Construction Programme does not change the cumulative effects identified in Chapter 14 of the submitted ES (**Volume 5.14.1, section 14.16**) and NTS.

19.15 Socio-economics and Land Use

Introduction

- 19.15.1 Chapter 15 of the ES Sensitivity Test provides an assessment of the likely significant effects on the on socio-economic features and on existing and future land uses of the Proposed Development as a result of the Revised Construction Programme. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.15.1**).

Method

- 19.15.2 The review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. The Revised Construction Programme and construction staff numbers were provided by National Grid. The submitted ES was reviewed using this data.
- 19.15.3 Re-calculations and professional judgement were used to determine the significance of these changes on the impacts reported in the submitted ES as a result of the Revised Construction Programme.
- 19.15.4 The assessment of effects was undertaken in accordance with the method presented in section 15.3 of the submitted ES (**Volume 5.15.1, section 15.3**).

Baseline Environment

- 19.15.5 There have been no changes to the baseline environment from that previously presented in the submitted ES that would require re-assessment as part of this sensitivity test.

Prediction and Assessment of the Significance of the Potential Effects

- 19.15.6 As a result of the Revised Construction Programme, the peak employment period changes from 545 staff in October 2016, to 385 during August 2018. The demand for labour changes from being concentrated in the first 3 years of the programme to being concentrated in 2018 and 2019. However the Revised Construction Programme has no implications for the assessed significance of effects of the Proposed Development on socio-economic features. This remains as stated in Chapter 15 of the submitted ES (**Volume 5.15.1, section 15.5**) and NTS.

Inter-relationship of Potential Effects

- 19.15.7 There are no changes that affect the inter-relationships of potential effects reported in the submitted ES (**Volume 5.15.1, section 15.6**) and NTS as a result of the Revised Construction Programme.

Mitigation

- 19.15.8 No change are required to the mitigation measures that are set out in the submitted ES (**Volume 5.15.1, section 15.7**) and NTS as a result of the Revised Construction Programme.

Residual Effects

- 19.15.9 The Revised Construction Programme does not change the residual impacts set out in the submitted ES (**Volume 5.15.1, section 15.8**) and NTS.

Cumulative Effects

- 19.15.10 The Revised Construction Programme does not change the cumulative effects identified in Chapter 15 of the submitted ES (**Volume 5.15.1, section 15.9**) and NTS.

19.16 Electric and Magnetic Fields**Introduction**

- 19.16.1 Chapter 16 of the ES Sensitivity Test provides an assessment of the likely significant effects on electric and magnetic fields (EMFs) of the Proposed Development as a result of the Revised Construction Programme. The chapter identifies any changes from the assessment presented in the submitted ES (**Volume 5.16.1**).

Method

- 19.16.2 This review of the Revised Construction Programme has been undertaken in accordance with the method as presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.

Baseline Environment

- 19.16.3 The baseline environment described is not affected by changes to the construction programme and no changes have occurred in the baseline environment since the submission of the ES to require re-assessment. Accordingly the baseline environment is as described in the submitted ES and NTS.

Prediction and Assessment of the Significance of the Potential Effects

- 19.16.4 As stated in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.5**, paragraph 16.5.1) and NTS during construction and prior to energisation, transmission equipment will not produce any significant EMF. Accordingly, the Revised Construction Programme does not alter the assessment of significance of potential effects.

Inter-relationship of Potential Effects

- 19.16.5 The predicted inter-relationship effects of EMFs are not sensitive to changes in construction programme. Accordingly, the Revised Construction Programme does not alter the assessment of inter-relationship effects as set out in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.6**) and NTS.

Mitigation

- 19.16.6 As detailed in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.7**), no mitigation measures are necessary as the Proposed Development has been demonstrated to comply with the current public exposure guidelines and would not result in any adverse effects.

Residual Effects

- 19.16.7 As detailed in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.8**) and NTS the Proposed Development has been demonstrated to comply with the current public exposure guidelines as detailed in NPS EN-5 (Ref. 16.1). If these requirements are met NPS EN-5 states that “*EMF effects are minimal.*” The Revised Construction Programme does not alter the assessment of residual effects.

Cumulative Effects

- 19.16.8 The Revised Construction Programme does not change the cumulative effects identified in Chapter 16 of the submitted ES (**Volume 5.16.1, section 16.9**).

19.17 Cumulative Effects

Introduction

- 19.17.1 Cumulative effects are the effects of the Proposed Development combined with the potential effects of other major developments. This chapter of the NTS provides a summary of the approach used in Chapter 17 of the ES Sensitivity Test.
- 19.17.2 A summary of the cumulative effects assessment sensitivity test is included in each of the topic chapters of this NTS and is not repeated below.

Method

- 19.17.3 The assessment of the cumulative effects has been undertaken in accordance with the method presented in Chapter 5 of this document. Professional judgement has been used to determine whether the Revised Construction Programme changes the assessment presented in the submitted ES.
- 19.17.4 The method for the assessment of effects is the same as that set out in **Volume 5.5.1, section 5.6** of the submitted ES (Environmental Impact Assessment (EIA) Approach and Method) and the environmental topic chapters (**Volume 5.6 6 – 5.16**) where an alternative method has been used.
- 19.17.5 Due to the lapse in time between the submission of the ES and this ES Sensitivity Test, it is also appropriate to identify any new major development proposals that have come forward in the intervening period and would require assessment in light on the Revised Construction Programme.

Identification of New Major Developments

- 19.17.6 A summary of the approach to the identification of new major development proposals is provided below and has been undertaken in accordance with the method in the submitted ES at **Volume 5.17.1, section 17.2**.
- 19.17.7 In accordance with the method in the submitted ES and NTS, all planning applications data was requested (7 July 2014) from the Landmark Group’s

Envirocheck Planning Application search report for a 1km area around the Proposed Development (taken from the outer edge of the Order Limits).

- 19.17.8 The data requested was for the period 1 January 2014 to 7 July 2014. This covers the period of time since data was obtained and assessed in the submitted ES. Over 200 planning applications within 1km from the outer edge of the Proposed Development's Order Limits were considered to identify major development proposals to include in the assessment of potential cumulative effects.
- 19.17.9 In addition, major developments up to 10km from the Order Limits were considered for some EIA topics. For the purposes of the ES Sensitivity Test, further planning application data was requested from the Landmark Group's Envirocheck Planning Application search report for a 10km area around the Proposed Development. The data obtained provided 1,897 planning applications.
- 19.17.10 As a result of the planning application search, 17 new major development proposals which have come forward in the intervening period since the assessment within the submitted ES were identified and assessed in light on the Revised Construction Programme. The location of all development proposals is shown at **Volume 5.29.1.3, Figure 17.1.**

Assessment of Potential Cumulative Effects

- 19.17.11 An assessment of the potential cumulative effects was undertaken for each environmental topic area to determine the likely significance of effects.
- 19.17.12 For the purposes of this ES Sensitivity Test, the assessment of cumulative effects of the Revised Construction Programme was separated into two categories as follows:
- the potential for changes in cumulative effects for major development proposals assessed in the submitted ES (**Volume 5.17.1, Table 17.7**); and
 - the potential cumulative effects of new major development proposals which have come forward in the intervening period and would require assessment in light on the Revised Construction Programme.
- 19.17.13 The method used to determine significance of effect is the same as that set out in the submitted ES **Volume 5.5.1** (EIA Approach and Method) and the environmental topic chapters (**Volume 5.6.1 to 5.16.1**). This has enabled a consistent approach to be adopted for the ES assessment approach.

6.1 Landscape Institute and the Institute of Environmental Management & Assessment. Guidelines for Landscape and Visual Impact Assessment. Third Edition. Routledge, 2013.
 7.2 Landscape Institute and the Institute of Environmental Management & Assessment. Guidelines for Landscape and Visual Impact Assessment. Third Edition. Routledge, 2013.