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Bramford to Twinstead Reinforcement

Volume 6: Environmental Information

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nationalgrid

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1. Introduction

1.1 Overview

1.1.1 National Grid Electricity Transmission plc (here on referred to as National Grid) is making an application for development consent to reinforce the transmission network between Bramford Substation in Suffolk, and Twinstead Tee in Essex.

1.1.2 This Dust Risk Assessment has been produced to support and inform Environmental Statement (ES) Chapter 13: Air Quality (**application document 6.2.13**). It has been prepared to examine the potential effect of dust generated from the construction phase of the project on sensitive receptors and whether additional measures are required to mitigate significant effects.

1.2 Background to the Project

1.2.1 The Bramford to Twinstead Reinforcement ('the project') would be achieved by the construction and operation of a new electricity transmission line over a distance of approximately 29km comprising of overhead lines, underground cables and grid supply point substation. It also includes the removal of 25km of the existing distribution network and various ancillary works.

1.2.2 A more detailed description of the project can be found in ES Chapter 4: Project Description (**application document 6.2.4**) and the Proposed Alignment can be found on Figure 4.1: The Project (**application document 6.4**).

1.2.3 For ease of reference and to aid description of the project, the project has been split into seven sections based on the landscape character and feedback during consultation, further details can be found in ES Chapter 4: Project Description (**application document 6.2.4**). The sections are as follows:

- Section AB: Bramford Substation/Hintlesham;
- Section C: Brett Valley;
- Section D: Polstead;
- Section E: Dedham Vale Area of Outstanding Natural Beauty (AONB);
- Section F: Leavenheath/Assington;
- Section G: Stour Valley; and
- Section H: Grid Supply Point (GSP) Substation.

2. Assessment Methodology

2.1 Introduction

2.1.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities associated with the project. These have been assessed in accordance with the methodology outlined within the Institute of Air Quality Management's (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (2014).

2.1.2 Activities associated with the construction phase of the project have been divided into four types of activity to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

2.1.3 The potential for dust emissions has been assessed for each activity that is likely to take place and three separate dust effects have been considered:

- Annoyance due to dust soiling (amenity);
- Health effects due to a significant increase in exposure to particulate matter less than 10 microns in diameter (PM_{10}); and
- Harm to ecological receptors.

2.1.4 The assessment steps are detailed below.

- Step 1 Screening: The project is screened to identify whether a more detailed assessment is required based on whether there are sensitive receptors within the study area. Should sensitive receptors be identified then the assessment proceeds to Step 2;
- Step 2 Risk Assessment: This assesses the risk of potential dust impacts. A project is allocated a risk category based on two factors:
  - Step 2A Scale and Nature of the Works: This determines the magnitude of dust arising as: small, medium or large; and
  - Step 2B Sensitivity to Dust: This assesses the sensitivity to dust impacts, which can be defined as low, medium or high sensitivity.

  The two factors are combined in Step 2C Risk of Dust, to determine the risk of dust impacts without mitigation applied.
- Step 3 Mitigation: This requires the identification of site-specific mitigation measures within the guidance to reduce potential dust impacts based upon the relevant risk categories identified in Step 2.
- Step 4 Residual Risk: Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts.

3. Dust Risk Assessment

3.1 Step 1: Screening

3.1.1 The undertaking of activities such as demolition, excavation, ground works, cutting, construction and storage of materials has the potential to result in fugitive dust emissions throughout construction. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from highway surfaces.

3.1.2 A desk study identified a number of sensitive receptors within the following study areas (based on Box 1: Screening Criteria in IAQM (2014)). These are shown on Figure 13.1: Air Quality Dust Risk Assessment Study Area (**application document 6.4**) and comprise:

- Human receptors located within 350m of the Order Limits or within 50m of a construction route on public roads up to 500m from an access point; or
- Ecological receptors located within 50m of the Order Limits or within 50m of a construction route on public roads up to 500m from an access point.

3.2 Step 2: Risk Assessment

Step 2A: Scale and Nature of the Works

3.2.1 The scale and nature of the works was assessed based on the magnitude descriptions in IAQM (2014).

Demolition

3.2.2 Demolition activities included within the project include the removal of pylons, which in itself is not a significant dust generating activity, and the removal of foundations which may result in dust from earth and concrete. This is assessed as **small**.

Earthworks

3.2.3 Earthworks associated with the project will primarily involve the excavation of foundations (pylons, cable sealing end (CSE) compounds and GSP substation), topsoil removal for construction of temporary access routes, excavation of the cable trench and drill pits associated with the trenchless crossings. The total area of these earthworks is estimated to be greater than 10,000 m^2 and there is expected to be more than 100,000 tonnes of potentially dusty soil moved. As such, the magnitude of potential dust emissions from earthworks on the project is classified as **large**.

Construction

3.2.4 There would be construction of temporary access routes for use during the construction period. The total building volume is expected to be within the IAQM construction category of total building volume 25,000m^3 – 100,000m^3 with potentially dusty construction materials (e.g. concrete) and on site concrete batching. This includes the pylon foundations, CSE compounds, the substation base and ancillary infrastructure. As such, the magnitude of potential dust emissions from construction is classified as **medium**.

Trackout

3.2.5 The project would require a number of heavy good vehicles (HGV) to deliver materials for the project including stone for temporary access routes, concrete and / or piling for foundations, metal work and cable drums. Vehicle numbers are anticipated to exceed 50 heavy duty vehicles (>3.5 tonnes) per day and would be using unpaved (stone) access tracks. As such, the magnitude of potential dust emissions from trackout on the project is classified as **large**.

Step 2B: Sensitivity to Dust

3.2.6 Receptors sensitive to potential dust impacts during earthworks and construction were identified from a desktop study using AddressBase Plus data (Ordnance Survey, 2022). The number of cumulative human and ecological receptors potentially affected by the project are summarised in Table 3.1.

Table 3.1 – Cumulative Banded Receptor Counts

Receptor Type	Distance Banding	Construction Section						
		AB	C	D	E	F	G	H
Residential	0-20m	48	4	17	3	20	29	14
	0-50m	96	18	35	13	50	70	37
	0-100m	157	53	68	24	86	94	74
	0-200m	261	154	101	37	178	151	132
	0-350m	362	197	115	57	228	243	211
	Trackout	240	87	84	109	115	191	181
Community	0-20m	0	0	0	0	0	3	1
	0-50m	0	1	0	0	1	5	1
	0-100m	0	2	0	0	2	6	3
	0-200m	1	2	0	0	2	6	3
	0-350m	4	2	0	0	3	9	4
	Trackout	6	1	1	0	1	8	6
Commercial	0-20m	1	0	0	1	2	1	6
	0-50m	15	1	1	2	4	4	9
	0-100m	17	1	1	2	4	6	16
	0-200m	27	2	2	5	14	14	22
	0-350m	41	6	5	5	19	26	29
	Trackout	7	0	0	1	10	18	16

Receptor Type	Distance Banding	Construction Section						
		AB	C	D	E	F	G	H
Ecological	Closest site	0m	0m	0m	0m	0m	0m	0m
	0-20m	9	2	6	5	5	8	4
	0-50m	9	2	6	5	5	8	4
	Trackout	4	4	9	3	0	2	5

3.2.7 The sensitivity of the receptors and the area was assessed using the categories described in Box 6, 7 and 8 and Tables 2, 3 and 4 in IAQM (2014). The results of this are presented in Table 3.2 and 3.3.

Table 3.2 – Sensitivity of People/Receptors

Activity	Sensitivity	Construction Section						
		AB	C	D	E	F	G	H
Demolition	Dust Soiling	High	High	High	High	High	High	High
	Health Effects	High	High	High	High	High	High	High
	Ecology	Medium	Low	Medium	Medium	Medium	Low	Medium
Earthworks	Dust Soiling	High	High	High	High	High	High	High
	Health Effects	High	High	High	High	High	High	High
	Ecology	Medium	Low	Medium	Medium	Medium	Low	Medium
Construction	Dust Soiling	High	High	High	High	High	High	High
	Health Effects	High	High	High	High	High	High	High
	Ecology	Medium	Low	Medium	Medium	Medium	Low	Medium
Trackout	Dust Soiling	High	High	High	High	Medium	High	High
	Health Effects	High	High	High	High	Medium	High	High
	Ecology	Medium	Medium	Medium	Medium	n/a	Low	Medium

Table 3.3 – Assessed Sensitivity of the Area

Activity	Sensitivity	Construction Section						
		AB	C	D	E	F	G	H
Demolition	Dust Soiling	High	Medium	High	Medium	High	High	High
	Health Effects	Low	Low	Low	Low	Low	Low	Low
	Ecology	Medium	Low	Medium	Medium	Medium	Low	Medium

Activity	Sensitivity	Construction Section						
		AB	C	D	E	F	G	H
Earthworks	Dust Soiling	High	Medium	High	Medium	High	High	High
	Health Effects	Low	Low	Low	Low	Low	Low	Low
	Ecology	Medium	Low	Medium	Medium	Medium	Low	Medium
Construction	Dust Soiling	High	Medium	High	Medium	High	High	High
	Health Effects	Low	Low	Low	Low	Low	Low	Low
	Ecology	Medium	Low	Medium	Medium	Medium	Low	Medium
Trackout	Dust Soiling	High	Medium	Medium	High	High	High	High
	Health Effects	Low	Low	Low	Low	Low	Low	Low
	Ecology	Medium	Medium	Medium	Medium	n/a	Low	Medium

Step 2C: Risk of Dust

3.2.8 The risk of dust was calculated by combining the dust emission magnitude and the sensitivity of the area using the criteria shown in Tables 4, 5 and 6 in IAQM (2014). The results are shown in Table 3.4.

3.2.9 The results of the dust risk assessment show that the risk of dust impacts in each of the sections is most commonly medium or low, however the highest assessed risk in every project section is high, except for Section C: Brett Valley, where it is medium. As a conservative measure, and using the precautionary principle, the project is considered as a whole and a high risk of dust is therefore applied to all sections.

Table 3.4 – Assessed Risk of Dust Impacts

Impact	Activity	Dust Risk per Construction Section						
		AB	C	D	E	F	G	H
Dust Soiling	Demolition	Medium	Low	Medium	Low	Medium	Medium	Medium
	Earthworks	High	Medium	High	Medium	High	High	High
	Construction	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Trackout	High	Medium	Medium	High	High	High	High
Human Health	Demolition	Neg*	Neg	Neg	Neg	Neg	Neg	Neg
	Earthworks	Low	Low	Low	Low	Low	Low	Low
	Construction	Low	Low	Low	Low	Low	Low	Low
	Trackout	Low	Low	Low	Low	Low	Low	Low
Ecological	Demolition	Low	Neg	Low	Low	Low	Neg	Low

Impact	Activity	Dust Risk per Construction Section						
		AB	C	D	E	F	G	H
	Earthworks	Medium	Low	Medium	Medium	Medium	Low	Medium
	Construction	Medium	Low	Medium	Medium	Medium	Low	Medium
	Trackout	Medium	Medium	Medium	Medium	n/a	Low	Medium
Highest Overall Risk		**High**	**Medium**	**High**	**High**	**High**	**High**	**High**

*Neg = Negligible

3.3 Step 3: Mitigation

3.3.1 The next step was to identify site-specific mitigation that would reduce the risk of dust. As part of the project development, National Grid has already set out a number of good practice measures to reduce dust which are included within the Construction Environmental Management Plan (CEMP) (**application document 7.5**) and CEMP Appendix A: Code of Construction Practice (CoCP) (**application document 7.5.1**). The key measures relevant to dust include:

- GG05: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the project. Topics could include but not be limited to pollution prevention and pollution incident response, and dust management and control measures;
- GG10: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or designated ecological sites where practicable;
- GG12: Plant and vehicles will conform to relevant applicable standards for the vehicle or plant type. Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so;
- GG13: Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including cable drums and excavated materials, drop heights will be limited;
- GG17: Wheel washing or other wheel cleaning systems will be provided at each main compound access point on to the highway where a need has been identified through the design process. An adequate supply of water will be made available at these locations at all times. Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits;
- GG18: Earthworks and stockpiled soil will be protected by covering, seeding or using water suppression where appropriate;
- GG19: Bonfires and the burning of waste material will be prohibited;

- GG26: A speed limit for vehicles travelling on temporary access routes will be implemented. This will be a maximum of 15mph on surfaced and 10mph on unsurfaced temporary access routes;
- GG27: The Contractor will undertake regular inspections of the temporary access routes and bellmouths to check for potholes or other defects. These will be repaired in a timely manner; and
- AS01: Soil management measures will be included within the CEMP. Measures will include but not be limited to the following: suitable protective surfacing (such as Trackway or similar products) where soil stripping can be avoided, based on sensitivity of the environment and proposed works.

3.3.2 Further details are also set out within CEMP Chapter 13: Air Quality (**application document 7.5**), which is secured through Requirement 4 of the draft DCO (**application document 3.1**).

3.4 Step 4: Residual Risk

3.4.1 Following the application of the good practice measures set out within the CEMP (**application document 7.5**) and CoCP (**application document 7.5.1**) it has been assessed that any residual risk of dust would be reduced to **negligible** and therefore no additional mitigation is required. Visual monitoring would also be undertaken during construction as described in Table 15.1 in the CEMP, to check that the good practice measures continue to be effective and local amenity is not diminished.

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