



**Air Quality Statement:**  
Exploration Well,  
Wisborough Green,  
Chichester

---

August 2013



Experts in air quality  
management & assessment

## Document Control

<b>Client</b>	Celtique Energie Holdings Limited	<b>Principal Contact</b>	Gareth Wilson (Barton Willmore)
---------------	-----------------------------------	--------------------------	---------------------------------

<b>Job Number</b>	J1804
-------------------	-------

<b>Report Prepared By:</b>	Dr Austin Cogan, Ricky Gellatly, Dr Clare Beattie and Prof. Duncan Laxen
----------------------------	--

### Document Status and Review Schedule

Report No.	Date	Status	Reviewed by
J1804/1/F1	27 August 2013	Final Report	Dr Ben Marner (Technical Director)

This report has been prepared by Air Quality Consultants Ltd on behalf of the Client, taking into account the agreed scope of works. Unless otherwise agreed, this document and all other Intellectual Property Rights remain the property of Air Quality Consultants Ltd.

In preparing this report, Air Quality Consultants Ltd has exercised all reasonable skill and care, taking into account the objectives and the agreed scope of works. Air Quality Consultants Ltd does not accept any liability in negligence for any matters arising outside of the agreed scope of works. The Company operates a formal Quality Management System, which is certified to ISO 9001:2008, and a formal Environmental Management System, certified to ISO 14001:2004. QMF 08.

When issued in electronic format, Air Quality Consultants Ltd does not accept any responsibility for any unauthorised changes made by others.

When printed by Air Quality Consultants Ltd, this report will be on Evolve Office, 100% Recycled paper.

**Air Quality Consultants Ltd**  
**23 Coldharbour Road, Bristol BS6 7JT Tel: 0117 974 1086**  
**12 Airedale Road, London SW12 8SF Tel: 0208 673 4313**  
**aqc@aqconsultants.co.uk**

Registered Office: 12 St Oswalds Road, Bristol, BS6 7HT  
 Companies House Registration No: 2814570

## Contents

1	Introduction .....	2
2	Policy Context and Assessment Criteria .....	3
3	Assessment Approach .....	11
4	Site Description and Baseline Conditions .....	13
5	Outline Impact Assessment.....	15
6	References.....	16
7	Glossary.....	18
8	Appendices .....	19
A1	Construction Dust Assessment Criteria .....	20
A2	Impact Descriptors and Assessment of Significance .....	26
A3	Construction Mitigation.....	29

## 1 Introduction

- 1.1 This statement describes the potential air quality, odour and climate change impacts associated with the proposed drilling and testing of an exploration well close to Boxal Bridge, to the northwest of Wisborough Green. The statement has been produced by Air Quality Consultants Ltd on behalf of Celtique Energie Holdings Ltd.
- 1.2 There will be a variety of sources on site which will generate pollutant emissions to air. These will include diesel generators, diesel pumps and a gas flare. The main air pollutants of concern related to these emissions are nitrogen dioxide and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), with sulphur dioxide also being of potential concern for the gas flare.
- 1.3 The development will also lead to an increase in traffic on the local roads, which may impact on air quality at existing residential properties. The main air pollutants of concern related to traffic emissions are nitrogen dioxide and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>).
- 1.4 Construction activities will potentially impact upon existing residential properties and nature conservation sites. The main pollutants of concern related to construction activities are dust and PM<sub>10</sub>.
- 1.5 The site is not expected to present a significant source of odour emissions, and, given that the nearest receptor lies approximately 375 m away, any odours that are emitted would almost certainly disperse sufficiently as to be undetectable to the human nose by the time they reach any receptors. Odour impacts will not, therefore, be considered further.
- 1.6 This statement describes existing local air quality conditions (2012), and provides an outline assessment of the likely impacts during the construction works and subsequent drilling and testing of the exploration well.
- 1.7 Consideration is also given to emissions of climate change gases (carbon dioxide and methane) released during the drilling and testing of the exploration well.
- 1.8 This statement has been prepared taking into account all relevant local and national guidance and regulations.

## 2 Policy Context and Assessment Criteria

### Air Quality Strategy

- 2.1 The Air Quality Strategy published by the Department for Environment, Food, and Rural Affairs (Defra) provides the policy framework (Defra, 2007) for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA), and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

### Clean Air Act 1993

- 2.2 Small combustion plant of less than 20 MW net rated thermal input are controlled under the Clean Air Act 1993. This requires the local authority to approve the chimney height. Plant which are smaller than 366kW have no such requirement.

### Planning Policy

#### *National Policies*

#### *NPPF*

- 2.3 The National Planning Policy Framework (NPPF) (2012) introduced in March 2012 now sets out planning policy for the UK in one place. It replaces previous Planning Policy Statements, including PPS23 on Planning and Pollution Control. The NPPF contains advice on when air quality should be a material consideration in development control decisions. Existing, and likely future, air quality should be taken into account, as well as the EU limit values or national objectives for pollutants, the presence of any AQMAs and the appropriateness of both the development for the site, and the site for the development.
- 2.4 The NPPF places a general presumption in favour of sustainable development, stressing the importance of local development plans, and states that the planning system should perform an environmental role to minimise pollution. One of the twelve core planning principles notes that planning should “*contribute to...reducing pollution*”. To prevent unacceptable risks from air

pollution, planning decisions should ensure that new development is appropriate for its location. The NPPF states that the effects of pollution on health and the sensitivity of the area and the development should be taken into account.

- 2.5 The need for compliance with any statutory air quality limit values and objectives is stressed, and the presence of AQMAs must be accounted for in terms of the cumulative impacts on air quality from individual sites in local areas. New developments in AQMAs should be consistent with local air quality action plans.

#### *The Climate Change Act 2008*

- 2.6 *The Climate Change Act* (2008) provides a legal framework for ensuring that the Government meets its commitments to tackle climate change. It sets legally binding targets to reduce net UK greenhouse gas emissions by at least 80% by 2050 against a 1990 baseline. This will be done through five-year 'carbon budgets'. Budgets have currently been set covering the periods 2008-2012, 2013-2017, 2018-2022, and 2023-2027. These budgets limited the UK to 3,018 Mt of carbon dioxide equivalent in the period 2008-2012, falling to 1,950 Mt of carbon dioxide equivalent over the period 2023-2027. Further five-year budgets will be set subsequently and it is expected that these will become more stringent as time goes on. Carbon budgets cap the total national emissions over the budget period. They do not require emissions from specific locations, or even specific sectors, to reduce; so long as total emissions from the UK as a whole meet the budget limits.

#### *The Carbon Plan*

- 2.7 *The Carbon Plan: Delivering our low carbon future* (2011) sets out the how the Government will deliver its plans for a low carbon economy, with particular focus on the fourth carbon budget that covers the period 2023-2027. This requires emissions to be 50% below their 1990 level.

#### *Local Policies*

- 2.8 West Sussex County Council is the strategic planning authority for mineral and waste developments in the county, and thus it is to the County Council that the planning application will be submitted.
- 2.9 The West Sussex Minerals Local Plan 2003 (West Sussex County Council, 2003) states that:
- "Mineral working can also affect residential amenities and the built environment due to noise, dust and visual impact, and haulage traffic spreads the effect beyond the immediate vicinity of workings. On balance, the benefits will need to outweigh the environmental disadvantages particularly in relation to meeting sustainable development objectives".*
- 2.10 Policy 19 of the document further reinforces this, stating that:

*“In considering planning applications for mineral extraction attention will be given to the effect upon residential and other amenity, and measures to mitigate the impact”.*

2.11 The Chichester District Local Plan (Chichester District Council, 1999), adopted in 1999, states that:

*“The District Planning Authority will aim to restrict and control pollution resulting from development insofar as it is able through planning powers. Potentially polluting development should not be located where it will be injurious to the health of local residents or where it will harm the natural environment”.*

2.12 Sussex Air Quality Partnership is currently working on a new air quality and emissions mitigation guidance document, which will introduce new requirements for air quality assessments for developments in Sussex, but this has yet to be formally adopted.

## **Policy for the Protection of Sensitive Ecosystems**

### ***European Policies***

2.13 European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the “Habitats Directive”) requires member states to introduce a range of measures for the protection habitats and species. The Conservation of Habitats and Species Regulations (The Air Quality Standards Regulations (No. 1001), 2010), transposes the Directive into law in England and Wales. The Regulations require the Secretary of State to provide the European Commission with a list of sites which are important for the habitats or species listed in the Directive. The Commission then designates worthy sites as Special Areas of Conservation (SACs). The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs); with these classified under the Council Directive 79/409/EEC on the Conservation of Wild Birds (Directive 2009/147/EC of the European Parliament and of the Council, 2009). These sites form a network termed “Natura 2000”.

2.14 The Regulations primarily provide measures for the protection of European Sites and European Protected Species, but also require local planning authorities to encourage the management of other features that are of major importance for wild flora and fauna.

2.15 In addition to SACs and SPAs, some internationally important UK sites are designated under the Ramsar Convention. Originally intended to protect waterfowl habitat, the Convention has broadened its scope to cover all aspects of wetland conservation.

2.16 The Habitats Directive (as implemented by the Regulations) requires the competent authority, which in this case will be the planning authority, to firstly evaluate whether the development is likely to give rise to a significant effect on the European site. Where this is the case, it has to carry out an ‘appropriate assessment’ in order to determine whether the development will adversely affect the integrity of the site.

## National Policies

- 2.17 Sites of national importance may be designated as Sites of Special Scientific Interest (SSSIs). Originally notified under the National Parks and Access to the Countryside Act (1949), SSSIs have been re-notified under the Wildlife and Countryside Act (1981). Improved provisions for the protection and management of SSSIs (in England and Wales) were introduced by the Countryside and Rights of Way Act (2000) (the “CROW” act). If a development is “*likely to damage*” a SSSI, the CROW act requires that a relevant conservation body (i.e. Natural England) is consulted. The CROW act also provides protection to local nature conservation sites, which can be particularly important in providing ‘stepping stones’ or ‘buffers’ to SSSIs and European sites. In addition, the Environment Act (1995) and the Natural Environment and Rural Communities Act (2006) both require the conservation of biodiversity.
- 2.18 National planning policy on biodiversity and conservation is set out in the NPPF (National Planning Policy Framework, 2012). This emphasises that the planning system should seek to minimise impacts on biodiversity and provide net gains in biodiversity wherever possible as part of the Government’s commitment to halting declines in biodiversity and establishing coherent and resilient ecological networks.
- 2.19 Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife sites will be judged, making distinctions between different levels of site designation. If significant harm from a development cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.

## Assessment Criteria

### Health Criteria

- 2.20 The Government has established a set of air quality standards and objectives to protect human health. The ‘standards’ are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The ‘objectives’ set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations, 2000, Statutory Instrument 928 (2000) and the Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument 3043 (2002).
- 2.21 The objectives for nitrogen dioxide and PM<sub>10</sub> were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. The PM<sub>2.5</sub> objective is to be achieved by 2020. Measurements across the UK have shown that the 1-hour nitrogen dioxide objective is unlikely to be exceeded where the annual mean concentration is below 60 µg/m<sup>3</sup>



(Defra, 2009). Therefore, 1-hour nitrogen dioxide concentrations will only be considered if the annual mean concentration is above this level.

2.22 The European Union has also set limit values for nitrogen dioxide, PM<sub>10</sub> and PM<sub>2.5</sub>. Achievement of these values is a national obligation rather than a local one (Directive 2008/50/EC of the European Parliament and of the Council, 2008). The limit values for nitrogen dioxide are the same levels as the UK objectives, but applied from 2010 (The Air Quality Standards Regulations (No. 1001), 2010). The limit values for PM<sub>10</sub> and PM<sub>2.5</sub> are also the same level as the UK statutory objectives, but applied from 2005 for PM<sub>10</sub> and will apply from 2015 for PM<sub>2.5</sub>.

2.23 The relevant air quality criteria for this assessment are provided in Table 1.

**Table 1: Air Quality Criteria for Nitrogen Dioxide, Sulphur Dioxide, PM<sub>10</sub> and PM<sub>2.5</sub>**

Pollutant	Time Period	Objective
Nitrogen Dioxide	1-hour Mean	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m <sup>3</sup>
Sulphur Dioxide	24-hour Mean	125 µg/m <sup>3</sup> not to be exceeded more than 3 times a year
	1-hour Mean	350 µg/m <sup>3</sup> not to be exceeded more than 24 times a year
	15-minute Mean	266 µg/m <sup>3</sup> not to be exceeded more than 35 times a year
Fine Particles (PM <sub>10</sub> )	24-hour Mean	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m <sup>3</sup>
Fine Particles (PM <sub>2.5</sub> ) <sup>a</sup>	Annual Mean	25 µg/m <sup>3</sup>

<sup>a</sup> The PM<sub>2.5</sub> objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. The EU limit value is the same, but is to be met by 2015.

### **Vegetation and Ecosystem Criteria**

2.24 Objectives for the protection of vegetation and ecosystems have been set by the UK Government and were to have been achieved by 2000. They are summarised in Table 2 and are the same as the EU limit values. The objectives only strictly apply a) more than 20 km from an agglomeration (about 250,000 people), and b) more than 5 km from Part A industrial sources, motorways and built up areas of more than 5,000 people. However, Natural England has adopted a more precautionary approach and applies the objective to all internationally designated conservation sites and SSSIs. For the assessment of road schemes, the Highways Agency follows this approach and requires an assessment of the impacts of roads traffic emissions on conservation sites (Designated Sites) within 200 m of a road (Highways Agency, 2007).

**Table 2: Vegetation and Ecosystem Objectives (Critical Levels)**

Pollutant	Time Period	Objective
Nitrogen Oxides (expressed as NO <sub>2</sub> )	Annual Mean	30 µg/m <sup>3</sup>
	24-Hour Mean	75 µg/m <sup>3</sup>
Sulphur Dioxide	Annual Mean and Winter Average	20 µg/m <sup>3</sup>

2.25 Critical loads for nitrogen deposition onto sensitive ecosystems have been specified by the United Nations Economic Commission for Europe (UNECE). They are defined as the amount of pollutant deposited to a given area over a year, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. The critical loads for the ecosystems under consideration in this assessment, as defined in the Air Pollution Information System (APIS, 2013), are provided in Table 3.

**Table 3: Vegetation and Ecosystem Critical Loads**

Habitat <sup>a</sup>	Nutrient Nitrogen (kgN/ha/yr) <sup>b</sup>	Acid Nitrogen (keq/ha/yr)
Broadleaved, mixed and yew woodland - lowland	10-20	0.285

<sup>a</sup> Habitat definition based on the UK Biodiversity Action Plan (BAP) habitat.

<sup>b</sup> Critical loads are given as ranges covering all EUNIS habitats within each BAP habitat

### ***Climate Change Criteria***

2.26 There are no formal assessment criteria to assess the significance of changes in emissions of climate change gases. In the absence of formal criteria the emissions will be compared with regional emissions.

### ***Construction Dust Criteria***

2.27 There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the Institute of Air Quality Management<sup>1</sup> (IAQM) (2012a) will therefore be used. Full details of this approach are provided in Appendix A2.

### ***Environment Agency Assessment Criteria***

2.28 The Environment Agency has considered potential impacts from industrial emission in its H1 guidance (Environment Agency, 2010). This explains that regardless of what the baseline environmental conditions are, a process can be considered as insignificant if:

<sup>1</sup> The IAQM is the professional body for air quality practitioners in the UK.

- the long-term (annual mean) process contribution is <1% of the long-term environmental standard; and
- the short-term (24-hour mean or shorter) process contribution is <10% of the short-term environmental standard.

2.29 It should be recognised that these criteria determine when an impact can be screened out as insignificant. They do not imply that impacts will necessarily be significant above these levels merely that above these levels there is a potential for significant impacts that should be assessed using a detailed assessment methodology such as detailed dispersion modelling (as has been carried out for this project in any event).

2.30 In addition, Environment Agency H1 guidance explains that “As a guide, detailed dispersion modelling of long term emissions maybe useful where:

- *local receptors maybe sensitive to long term emissions;*
- *released substances fall under an Air Quality Management Plan;*
- *the sum of the background concentration and process contribution exceed 70% of the appropriate long term standard”;*

and that: “As a guide, detailed dispersion modelling of short-term emissions maybe useful where:

- *local receptors maybe sensitive to short emissions;*
- *the short-term process contribution is more than 20% of the relevant short-term environmental standard minus twice the long term background concentration.”*

2.31 The approach taken in this assessment will be to use detailed dispersion modelling in the first instance, and to apply the Environment Agency screening criteria to the model outputs. Where impacts are shown to be below these screening criteria, they are judged to be insignificant. Where this initial screening shows the potential for significant impacts, then an assessment of the predicted total concentrations needs to be carried out following the IAQM guidance described below.

## ***Descriptors for Air Quality Impacts and Assessment of Significance***

### ***Operational Significance***

#### ***Health***

2.32 There is no official guidance in the UK on how to describe air quality impacts, nor how to assess their significance. The approach developed by the IAQM<sup>2</sup> (Institute of Air Quality Management,

---

<sup>2</sup> The IAQM is the professional body for air quality practitioners in the UK.

2009), and incorporated in Environmental Protection UK's (EPUK) guidance document on planning and air quality (Environmental Protection UK, 2010), will therefore be used. This approach includes elements of professional judgement. Full details of this approach are provided in Appendix A2.

### *Ecosystem*

- 2.33 Guidance issued by the Environment Agency and Joint Nature Conservation Committee (JNCC) on applying the Habitats Regulations in relation to air quality impacts (COMAH, 2005) states that:

*"Where the concentration within the emission footprint in any part of the European Site is less than 1% of the relevant benchmark, the emission is unlikely to have a significant effect irrespective of the background levels."*

- 2.34 The 1% (long-term) and 10% (short-term) criteria are thus routinely used to screen out the potential for significant impacts on sensitive habitats from a range of sources, including road traffic. For the purposes of this assessment, wherever the detailed modelling shows that concentrations and fluxes are below the critical level or critical load, it is considered that there will be no significant impacts. Furthermore, where the Scheme will increase concentrations or fluxes by less than 1% (long-term) or 10% (short-term) of the relevant critical level or critical load, the potential for significant impacts can be discounted. Those locations in which the Scheme will cause a change of more than 1% (long-term) or 10% (short-term) of the critical level or critical load have been highlighted.

### *Climate Change Significance*

- 2.35 There is no official or unofficial guidance on how to assess the significance of changes in emissions of climate change gases. The results will therefore be presented without any assessment of their significance.

### *Construction Dust Significance*

- 2.36 In the absence of official guidance, the approach developed by the IAQM (Institute of Air Quality Management, 2012a) to assess the significance of construction dust will be used. This approach includes elements of professional judgement. Full details of this approach are provided in Appendix A1.

## 3 Assessment Approach

### Existing Conditions

- 3.1 Existing sources of emissions within the study area have been defined using a number of approaches. Industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2013c) and the Environment Agency's website 'what's in your backyard' (Environment Agency, 2013). Local sources have also been identified through examination of the Council's Air Quality Review and Assessment reports.
- 3.2 Information on existing air quality has been obtained by collating the results of monitoring carried out by the local authority. The background concentrations across the study area have been defined using the national pollution maps published by Defra (2013a). These cover the whole country on a 1x1 km grid.

### Point Source Impacts

#### *Sensitive Locations*

- 3.3 Pollutant concentrations will be predicted at a number of locations close to the proposed development. Receptors will be identified to represent worst-case exposure within these locations. Nearby residential properties, nature conservation sites and public footpaths will be identified as receptors for the assessment, along with any accommodation or rest areas provided on the development site. Any other relevant locations identified close to the site will also be included.

#### *Modelling Methodology*

- 3.4 The impacts of emissions from the diesel generators and pumps and the gas flare will be modelled using the ADMS-5 dispersion model. ADMS-5 is a new generation model that incorporates a state-of-the-art understanding of the dispersion processes within the atmospheric boundary layer.

### Traffic Impacts

#### *Sensitive Locations*

- 3.5 These will be properties close to nearby roads that will be used by the development-generated traffic.

#### *Modelling Methodology*

- 3.6 Potential impacts due to traffic generated by the development will initially be assessed qualitatively against the guidance issued by EPUK (Environmental Protection UK, 2010). This guidance

includes a threshold for assessment of a 10% increase in traffic and/or an increase of HGVs of more than 200 per day. The Transport Assessment undertaken for the development predicts total daily traffic generation from the development of no more than 68 vehicles, including 28 HGVs, which is well below the screening criteria. The impacts of emissions from road traffic are therefore likely to be insignificant.

## **Climate Change Impacts**

### ***Sensitive Locations***

- 3.7 Sensitive locations are not relevant in terms of the impacts of emissions of climate change gases.

### ***Assessment Approach***

- 3.8 There is no requirement to assess climate change impacts of schemes. This is due to the global nature of the effects and the intrinsic inability to demonstrate an effect on climate change from a local change in emissions. Nevertheless, it is considered appropriate to calculate the emissions of carbon dioxide from the operations on the site. These will be determined using information on fuel use by the various items of plant, while emissions of carbon dioxide from the flaring of any gas/oil released during the testing will also be determined, and emissions of carbon dioxide from vehicles accessing the site will be calculated based on a nominal distance travelled. Consideration will also be given to any fugitive methane emissions that may arise.

## **Construction Impacts**

### ***Sensitive Locations***

- 3.9 Locations sensitive to dust emitted during construction will be places where members of the public are regularly present. Residential properties and commercial operations, as well as any property belonging to members of the public, close to the site will be most sensitive to construction dust. Any areas of sensitive vegetation or ecology that are very close to dust sources may also be susceptible to some negative effects.

### ***Assessment Approach***

- 3.10 It is very difficult to quantify emissions of dust from construction activities. It is thus common practice to provide a qualitative assessment of potential impacts, making reference to the assessment criteria set out in Appendix A1.

## 4 Site Description and Baseline Conditions

- 4.1 The proposed development site is located approximately 1 km to the northwest of Wisborough Green. The site is currently given over to agricultural use, and is bounded by agricultural land to the south and woodland to the north.
- 4.2 The nearest residential property to the site lies approximately 375 m to the northeast, and there are a number of other residential properties nearby, mainly to the east. The nearest nature conservation site is The Mens Special Area of Conservation (SAC), approximately 450 m south of the site at its closest point. Ebernoe Common SAC lies approximately 5 km to the west, and Arun Valley SAC lies approximately 5 km to the south. The undesignated Dunhurst & Northup Copses Site of Nature Conservation Importance (SNCI) lies approximately 15 m to the north of the site boundary, and is an area of ancient woodland.

### Industrial sources

- 4.3 A search of the UK Pollutant Release and Transfer Register (Defra, 2013c) and Environment Agency's 'what's in your backyard' (Environment Agency, 2013) websites did not identify any significant industrial or waste management sources close to the proposed development, in terms of air quality.

### Air Quality Review and Assessment

- 4.4 Chichester District Council has investigated air quality within its area as part of its responsibilities under the LAQM regime, but this has entirely focussed on Chichester City, where three AQMAs have been declared. The air quality in Chichester would not be representative of conditions at the proposed development site, which lies approximately 27 km northeast of the city, in a rural setting where the air quality is expected to be good.

### Background Concentrations

#### *National Background Pollution Maps*

- 4.5 Estimated background concentrations at the development site have been determined for 2012 (Table 4). The background concentrations are all well below the objectives.

**Table 4: Estimated Annual Mean Background Pollutant Concentrations in 2012 ( $\mu\text{g}/\text{m}^3$ )**

Year	NO <sub>x</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2012 <sup>a</sup>	11.2	8.6	14.0	9.5
<b>Objectives</b>	-	<b>40</b>	<b>40</b>	<b>25</b>

n/a = not applicable

<sup>a</sup> This assumes that road vehicle emission factors in 2012 remain the same as in 2010.

## Climate Change

4.6 There is no local baseline in terms of climate changes gases, although regional emissions estimates are available.



## 5 Outline Impact Assessment

- 5.1 This air quality statement only provides an outline assessment of the likely impacts.
- 5.2 A full description of the phases of the project is provided in Chapter 4 of the Environmental Statement.

### Construction Impacts

- 5.3 The construction works will give rise to a risk of dust impacts during earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. There are various sensitive receptors that may be affected by dust, including residential properties, less sensitive commercial premises and nature conservation sites. However, none of these sites are in close proximity to the development, other than the undesignated ancient woodland, and as such it is anticipated that the impacts of the construction works will not be significant.
- 5.4 Mitigation measures appropriate to the construction works on the site will be recommended. It is anticipated that the mitigation measures to be applied during the construction phase will be sufficient as to render any dust impacts insignificant. A generic list of mitigation measures, from which the site-specific measures will be drawn, is provided in Appendix A3.

### Road Traffic Impacts

- 5.5 Traffic generation by the proposed development is not anticipated to be greater than the thresholds set out in current guidance, and with background pollutant concentrations in the area being so low, it is deemed highly unlikely that there will be any significant impacts in terms of road traffic emissions due to the development. This will be verified in the assessment using the appropriate traffic data.

### Point Source Impacts

- 5.6 There will be a number of point sources on the site during the drilling phase, all of which will emit pollutants to the air, including nitrogen oxides, particulate matter and carbon dioxide. With the site being so far from any relevant receptors, be they residential or ecological, it is anticipated that any impacts on local air quality will be insignificant.

### Climate Change Impacts

- 5.7 It is anticipated that emissions of climate change gases will be minimal, particularly when compared to emissions at a regional level.

## 6 References

APIS (2013) *APIS*, [Online], Available: [www.apis.ac.uk](http://www.apis.ac.uk).

Chichester District Council (1999) *Chichester District Local Plan First Review*.

COMAH (2005) *Further Guidance on Applying the Habitats Regulations to Integrated Pollution Control (IPC), Pollution Prevention and Control (PPC) and Control of Major Accident Hazards (COMAH), Comprising of Appendix 7A for IPC and PPC and Appendices 7B and 7C for COMAH*, [Online].

*Countryside and Rights of Way Act 2000* (2000), HMSO.

Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*, Defra.

Defra (2009) *Review & Assessment: Technical Guidance LAQM.TG(09)*, Defra.

Defra (2013a) *Defra Air Quality Website*, [Online], Available: <http://www.defra.gov.uk/environment/quality/air/airquality/>.

Defra (2013c) *UK Pollutant Release and Transfer Register*, [Online], Available: [ptr.defra.gov.uk](http://ptr.defra.gov.uk).

*Directive 2008/50/EC of the European Parliament and of the Council* (2008).

*Directive 2009/147/EC of the European Parliament and of the Council* (2009).

*Environment Act* (1995), HMSO.

Environment Agency (2010) *Horizontal Guidance Note H1 – Annex (f)*, [Online], Available: [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk).

Environment Agency (2013) *'what's in your backyard'*, [Online], Available: <http://www.environment-agency.gov.uk/homeandleisure/37793.aspx>.

Environmental Protection UK (2010) *Development Control: Planning for Air Quality*, EPUK.

Highways Agency (2007) *Design Manual for Roads & Bridges, Volume 11, Section 3, Part 1, as updated by Advice Note HA207/07.*, Highways Agency.

Institute of Air Quality Management (2009) *Position on the Description of Air Quality Impacts and the Assessment of their Significance*, IAQM.

Institute of Air Quality Management (2012a) *Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance*.

*National Parks and Access to the Countryside Act* (1949), HMSO.

*National Planning Policy Framework* (2012), DCLG.

*Natural Environment and Rural Communities Act* (2006), HMSO.

*The Air Quality (England) (Amendment) Regulations, 2002, Statutory Instrument 3043 (2002), HMSO.*

*The Air Quality (England) Regulations, 2000, Statutory Instrument 928 (2000), HMSO.*

*The Air Quality Standards Regulations (No. 1001) (2010), Stationery Office.*

*The Carbon Plan: Delivering our low carbon future (2011), London: DECC.*

*The Climate Change Act 2008 (2008), (as amended 2009). London: The Stationery Office.*

*West Sussex County Council (2003) West Sussex Minerals Local Plan 2003 .*

*Wildlife and Countryside Act (1981), HMSO.*

## 7 Glossary

<b>ADMS</b>	Atmospheric Dispersion Modelling System
<b>AQMA</b>	Air Quality Management Area
<b>Defra</b>	Department for Environment, Food and Rural Affairs
<b>DfT</b>	Department for Transport
<b>EPUK</b>	Environmental Protection UK
<b>Exceedence</b>	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
<b>HDV</b>	Heavy Duty Vehicles (> 3.5 tonnes)
<b>IAQM</b>	Institute of Air Quality Management
<b>LAQM</b>	Local Air Quality Management
<b>µg/m<sup>3</sup></b>	Microgrammes per cubic metre
<b>NO</b>	Nitric oxide
<b>NO<sub>2</sub></b>	Nitrogen dioxide
<b>NO<sub>x</sub></b>	Nitrogen oxides (taken to be NO <sub>2</sub> + NO)
<b>NPPF</b>	National Planning Policy Framework
<b>Objectives</b>	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
<b>PM<sub>10</sub></b>	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter
<b>PM<sub>2.5</sub></b>	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
<b>Standards</b>	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal

## 8 Appendices

A1	Construction Dust Assessment Criteria .....	20
A2	Impact Descriptors and Assessment of Significance .....	26
A3	Construction Mitigation.....	29

## A1 Construction Dust Assessment Criteria

### Assessment Procedure

A1.1 The criteria developed by IAQM divide the activities on construction sites into four types to reflect their different potential impacts. These are:

- demolition;
- earthworks;
- construction; and
- trackout.

A1.2 The assessment procedure is split into four steps summarised below:

#### ***STEP 1: Screen the Need for a Detailed Assessment***

A1.3 An assessment is required where there are sensitive receptors within 350 m of the boundary of the site and/or within 100 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

A1.4 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is *negligible*.

#### ***STEP 2: Assess the Risk of Dust Effects Arising***

A1.5 The risk of dust effects is determined by:

- the scale and nature of the works, which determines the risk of dust arising; and
- the proximity of sensitive receptors.

A1.6 The risk categories assigned to the site are different for each of the four potential sources of dust (demolition, earthworks, construction and trackout).

#### ***Demolition***

A1.7 The potential dust emission classes for demolition are as follows:

**Large:** Total building volume >50,000 m<sup>3</sup>, potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities >20 m above ground level;

**Medium:** Total building volume 20,000 m<sup>3</sup> – 50,000 m<sup>3</sup>, potentially dusty construction material, demolition activities 10-20 m above ground level; and

**Small:** Total building volume <20,000 m<sup>3</sup>, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.

- A1.8 The potential dust emission class determined above should be used in the matrix in Table A1.1 to determine the **demolition risk category** with no mitigation applied based on the distance to the nearest receptors.

**Table A1.1: Risk Category from Demolition Activities**

Distance to Nearest Receptor (m) <sup>a</sup>		Dust Emission Class		
Dust Soiling and PM <sub>10</sub>	Ecological	Large	Medium	Small
<20	-	High Risk Site	High Risk Site	Medium Risk Site
20 – 100	<20	High Risk Site	Medium Risk Site	Low Risk Site
100 – 200	20 – 40	Medium Risk Site	Low Risk Site	Low Risk Site
200 – 350	40-100	Medium Risk Site	Low Risk Site	Negligible

<sup>a</sup> These distances are from the dust emission source. Where this is not known then the distance should be from the site boundary. The risk is based on the distance to the nearest receptor.

### **Earthworks and Construction**

- A1.9 The potential dust emission classes for earthworks are as follows:

**Large:** Total site area >10,000 m<sup>2</sup>, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry to due small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes;

**Medium:** Total site area 2,500 m<sup>2</sup> – 10,000 m<sup>2</sup>, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes; and

**Small:** Total site area <2,500 m<sup>2</sup>, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <10,000 tonnes, earthworks during wetter months.

- A1.10 The potential dust emission classes for construction are as follows:

**Large:** Total building volume >100,000 m<sup>3</sup>, piling, on site concrete batching; sandblasting

**Medium:** Total building volume 25,000 m<sup>3</sup> – 100,000 m<sup>3</sup>, potentially dusty construction material (e.g. concrete), piling, on site concrete batching; and

**Small:** Total building volume <25,000 m<sup>3</sup>, construction material with low potential for dust release (e.g. metal cladding or timber).

A1.11 These potential dust emission classes should then be used in the matrix in Table A1.2 to determine the **earthworks risk category** and the **construction risk category** with no mitigation applied.

**Table A1.2: Risk Category from Earthworks and Construction Activities**

Distance to Nearest Receptor (m) <sup>a</sup>		Dust Emission Class		
Dust Soiling and PM <sub>10</sub>	Ecological	Large	Medium	Small
<20	-	High Risk Site	High Risk Site	Medium Risk Site
20 – 50	-	High Risk Site	Medium Risk Site	Low Risk Site
50 – 100	<20	Medium Risk Site	Medium Risk Site	Low Risk Site
100 – 200	20 – 40	Medium Risk Site	Low Risk Site	Negligible
200 – 350	40-100	Low Risk Site	Low Risk Site	Negligible

<sup>a</sup> These distances are from the dust emission source. Where this is not known then the distance should be from the site boundary. The risk is based on the distance to the nearest receptor.

### **Trackout**

A1.12 The potential dust emission classes for trackout are 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 m;

**Medium:** 25-100 HDV (>3.5t) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m; and

**Small / Medium:** <25 HDV (>3.5t) trips in any one day, surface material with low potential for dust release, unpaved road length <50 m.

A1.13 These potential dust emission classes should be used in Table A1.3 to determine the **risk category for trackout** with no mitigation applied.



**Table A1.3: Risk Category from Trackout**

Distance to Nearest Receptor (m) <sup>a</sup>		Dust Emission Class		
Dust Soiling and PM <sub>10</sub>	Ecological	Large	Medium	Small
<20	-	High Risk Site	Medium Risk Site	Medium Risk Site
20 – 50	<20	Medium Risk Site	Medium Risk Site	Low Risk Site
50-100	20-100	Low Risk Site	Low Risk Site	Negligible

<sup>a</sup> For trackout the distance is from the roads used by construction traffic.

A1.14 There is an extra dimension to the assessment of trackout, as the distance over which it might occur depends on the site. As general guidance, significant trackout may occur up to 500 m from *large* sites, 200 m from *medium* sites and 50 m from *small* sites, as measured from the site exit. These distances assume no site-specific mitigation.

A1.15 The 'distance to receptor' in Table A1.3 relates to the distance from the road where mud may be deposited. Therefore in determining the risk from trackout, both distances need to be taken into account.

### **STEP 3: Identify the Need for Site-specific Mitigation**

A1.16 Having determined the risk categories for each of the four activities it is possible to determine the site-specific measures to be adopted. These measures will be related to whether the site is a *low*, *medium* or *high* risk site.

### **STEP 4: Define Effects and their Significance**

A1.17 The significance is determined using professional judgement, taking account of the factors that define the sensitivity of the surrounding area and the overall pattern of potential risks set out within the risk effects summary table. The sensitivity of the area is defined as *very high*, *high*, *medium* and *low* based on the criteria in Table A1.4

**Table A1.4: Examples of Factors Defining Sensitivity of an Area**

Sensitivity of area	Examples	
	Human receptors	Ecological receptors <sup>a</sup>
<b>Very high</b>	<ul style="list-style-type: none"> <li>• Very densely populated area.</li> <li>• More than 100 dwellings within 20 m.</li> <li>• Local PM<sub>10</sub> concentrations exceed the objective.</li> <li>• Contaminated buildings present.</li> <li>• Very sensitive receptors (e.g. oncology units).</li> <li>• Works continuing in one area of the site for more than one year.</li> </ul>	European Designated site.
<b>High</b>	<ul style="list-style-type: none"> <li>• Densely populated area.</li> <li>• 10-100 dwellings within 20 m of site.</li> <li>• Local PM<sub>10</sub> concentrations close to the objective (e.g. annual mean 36-40 µg/m<sup>3</sup>).</li> <li>• Commercially sensitive horticultural land within 20 m.</li> </ul>	Nationally Designated site.
<b>Medium</b>	<ul style="list-style-type: none"> <li>• Suburban or edge of town area.</li> <li>• Less than 10 receptors within 20 m.</li> <li>• Local PM<sub>10</sub> concentrations below the objective (e.g. annual mean 30-36 µg/m<sup>3</sup>).</li> </ul>	Locally designated site.
<b>Low</b>	<ul style="list-style-type: none"> <li>• Rural area; industrial area</li> <li>• No receptors within 20 m</li> <li>• Local PM<sub>10</sub> concentrations well below the objectives (less than 75%)</li> <li>• Wooded area between site and receptors</li> </ul>	No designations.

<sup>a</sup> Only if there are habitats that might be sensitive to dust

A1.18 The sensitivity of the area surrounding the construction / demolition site is combined with the risk of the site giving rise to dust effects to define the significance of the effects for each of the four activities (demolition, earthworks, construction and trackout) using Table A1.5 for the baseline without mitigation and Table A1.6 when mitigation is applied.

**Table A1.5: Significance of Effects for Each Activity Without Mitigation.**

Sensitivity of surrounding area	Risk of site giving rise to dust effects		
	High	Medium	Low
Very High	Substantial adverse	Moderate adverse	Moderate adverse
High	Moderate adverse	Moderate adverse	Slight adverse
Medium	Moderate adverse	Slight adverse	Negligible
Low	Slight Adverse	Negligible	Negligible

**Table A1.6: Significance of Effects for Each Activity With Mitigation.**

Sensitivity of surrounding area	Risk of site giving rise to dust effects		
	High	Medium	Low
Very High	Slight adverse	Slight adverse	Negligible
High	Slight adverse	Negligible	Negligible
Medium	Negligible	Negligible	Negligible
Low	Negligible	Negligible	Negligible

A1.19 The final step is to determine the overall significance of the effects arising from the construction phase of a proposed development. This is based on professional judgement but takes into account of the significance of the effects for each of the four activities.

## A2 Impact Descriptors and Assessment of Significance

A2.1 There is no official guidance in the UK on how to describe the nature of air quality impacts, nor how to assess their significance. The approach developed by the Institute of Air Quality Management<sup>3</sup> (Institute of Air Quality Management, 2009), and incorporated in Environmental Protection UK's guidance document on planning and air quality (Environmental Protection UK, 2010), has therefore been used. This involves three distinct stages: the application of descriptors for magnitude of change; the description of the impact at each sensitive receptor; and then the assessment of overall significance of the scheme.

### Impact Descriptors

A2.2 The definition of **impact magnitude** is solely related to the degree of change in pollutant concentrations, expressed in microgrammes per cubic metre, but originally determined as a percentage of the air quality objective. **Impact description** takes account of the impact magnitude and of the absolute concentrations and how they relate to the air quality objectives or other relevant standards. The descriptors for the magnitude of change due to the scheme are set out Table A2.1, while Table A2.2 sets out the impact descriptors. These tables have been designed to assist with describing air quality impacts at each specific receptor. They apply to the pollutants relevant to this scheme and the objectives against which they are being assessed.

---

<sup>3</sup> The IAQM is the professional body for air quality practitioners in the UK.

**Table A2.1: Definition of Impact Magnitude for Changes in Ambient Pollutant Concentrations**

Magnitude of Change	Annual Mean NO <sub>2</sub> /PM <sub>10</sub>	No. days with PM <sub>10</sub> concentration greater than 50 µg/m <sup>3</sup>	Annual Mean PM <sub>2.5</sub>
<b>Large</b>	Increase/decrease ≥4 µg/m <sup>3</sup>	Increase/decrease >4 days	Increase/decrease ≥2.5 µg/m <sup>3</sup>
<b>Medium</b>	Increase/decrease 2 - <4 µg/m <sup>3</sup>	Increase/decrease 3 or 4 days	Increase/decrease 1.25 - <2.5 µg/m <sup>3</sup>
<b>Small</b>	Increase/decrease 0.4 - <2 µg/m <sup>3</sup>	Increase/decrease 1 or 2 days	Increase/decrease 0.25 - <1.25 µg/m <sup>3</sup>
<b>Imperceptible</b>	Increase/decrease <0.4 µg/m <sup>3</sup>	Increase/decrease <1 day	Increase/decrease <0.25 µg/m <sup>3</sup>

**Table A2.2: Air Quality Impact Descriptors for Changes to Annual Mean Nitrogen Dioxide, PM<sub>10</sub> and PM<sub>2.5</sub> Concentrations and Changes to Number of Days with PM<sub>10</sub> Concentration Greater than 50 µg/m<sup>3</sup> at a Receptor <sup>a</sup>**

Absolute Concentration <sup>b</sup> in Relation to Objective/Limit Value	Change in Concentration/day <sup>c</sup>		
	Small	Medium	Large
<b>Above Objective/Limit Value <sup>d</sup></b>	Slight	Moderate	Substantial
<b>Just Below Objective/Limit Value <sup>e</sup></b>	Slight	Moderate	Moderate
<b>Below Objective/Limit Value <sup>f</sup></b>	Negligible	Slight	Slight
<b>Well Below Objective/Limit Value <sup>g</sup></b>	Negligible	Negligible	Slight

<sup>a</sup> Criteria have been adapted from the published criteria to remove overlaps at transitions.

<sup>b</sup> The ‘Absolute Concentration’ relates to the ‘With-Scheme’ air quality where there is an increase in concentrations and to the ‘Without-Scheme’ air quality where there is a decrease in concentrations.

<sup>c</sup> Where the Impact Magnitude is *Imperceptible*, then the Impact Description is *Negligible*.

<sup>d</sup> ‘Above’: >40 µg/m<sup>3</sup> annual mean NO<sub>2</sub> or PM<sub>10</sub>, >25 µg/m<sup>3</sup> annual mean PM<sub>2.5</sub>, or >35 days with PM<sub>10</sub> > 50 µg/m<sup>3</sup>.

<sup>e</sup> ‘Just below’: >36 – ≤40 µg/m<sup>3</sup> of annual mean NO<sub>2</sub> or PM<sub>10</sub>, >22.5 - ≤25 µg/m<sup>3</sup> annual mean PM<sub>2.5</sub>, or >32 – ≤35 days with PM<sub>10</sub> >50 µg/m<sup>3</sup>.

<sup>f</sup> ‘Below’: >30 – ≤36 µg/m<sup>3</sup> of annual mean NO<sub>2</sub> or PM<sub>10</sub>, >18.75 - ≤22.5 µg/m<sup>3</sup> annual mean PM<sub>2.5</sub>, or >26 – ≤32 days with PM<sub>10</sub> >50 µg/m<sup>3</sup>.

<sup>g</sup> ‘Well below’: ≤30 µg/m<sup>3</sup> annual mean NO<sub>2</sub> or PM<sub>10</sub>, ≤18.75 µg/m<sup>3</sup> annual mean PM<sub>2.5</sub>, or ≤26 days with PM<sub>10</sub> >50 µg/m<sup>3</sup>.

## Assessment of Significance

A2.3 The IAQM (Institute of Air Quality Management, 2009) guidance is that the **assessment of significance** should be based on professional judgement, with the overall air quality impact of the

scheme described as either, *insignificant*, *minor*, *moderate* or *major*. In drawing these conclusions, the factors set out in Table A2.3 should be taken into account.

**Table A2.3: Factors Taken into Account in Determining Air Quality Significance**

Factors
Number of people affected by increases and/or decreases in concentrations and a judgement on the overall balance.
The magnitude of the changes and the descriptions of the impacts at the receptors using the criteria set out in Table A2.1 and Table A2.2.
Whether or not an exceedence of an objective or limit value is predicted to arise in the study area where none existed before or an exceedence area is substantially increased.
Whether or not the study area exceeds an objective or limit value and this exceedence is removed or the exceedence area is reduced.
Uncertainty, including the extent to which worst-case assumptions have been made.
The extent to which an objective or limit value is exceeded, e.g. an annual mean NO <sub>2</sub> of 41 µg/m <sup>3</sup> should attract less significance than an annual mean of 51 µg/m <sup>3</sup> .

## A3 Construction Mitigation

A3.1 The following is a generic set of construction dust mitigation measures:

### Communications

- Implement a stakeholder communications plan that includes community engagement before and during work on site.

### Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. Make the complaints log available to the local authority when asked; and
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book.

### Monitoring

- Undertake daily on-site and off-site inspection where receptors (including roads) are nearby, to monitor dust, record inspection results, and make available the log to the local Authority when asked; and
- When activities with a high potential to produce dust are being carried out, and during prolonged dry or windy conditions, increase the frequency of inspections.

### Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. Use intelligent screening where possible – e.g. locating site offices between potentially dusty activities and the receptors;
- Avoid site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below; and
- Depending on the duration that stockpiles will be present and their size - cover, seed, fence or water to prevent wind whipping.

## Operating vehicle/machinery and sustainable travel

- Ensure all vehicles switch off engines when stationary – no idling vehicles; and
- Produce a Traffic Management Plan to manage the sustainable delivery of goods and materials.

## Operations

- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible; and
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

## Waste Management

- Only use registered waste carriers to take waste off-site; and
- Avoid bonfires and burning of waste materials.

## Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Only remove the cover in a small areas during work and not all at once.

## Measures Specific to Construction

- Avoid scabbling, if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place; and
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

## Measures Specific to Trackout

- Record all inspections of haul routes and any subsequent action in a site log book; and
- Implement a wheel washing system.