CONTENTS

Introduction 7-1
Scope of the Assessment 7-1
Identification of Potential Impacts 7-1
Required Scope of Assessment 7-2
Relevant Legislation, Standards and Guidance 7-3
The Environment Act 7-3
Air Quality Strategy 7-3
Environmental Permitting Regulations 7-4
Standards and Guidance Relating to Odour 7-6
Standards and Guidance Relating to Dust 7-7
Planning Policy Context 7-7
Assessment Methodology 7-8
General 7-8
ACT & AD Combustion Emissions 7-8
Dust 7-10
Odour 7-11
Traffic Exhaust Emissions Risk Assessment 7-11
Air Quality Significance Criteria 7-12
Baseline Environment 7-14
Baseline Air Quality 7-14
Sensitive Receptors 7-15
Topography 7-17
Meteorological Conditions 7-17
Assessment of Impact, Mitigation and Residual Effects 7-19
Construction Phase - Dust 7-19
Operational Phase 7-21
Summary and Conclusions 7-27

INTRODUCTION

7.1 This section comprises an air quality assessment considering the potential for the proposed development at the Micheldever Rail Sidings (MRS) site to impact upon air quality in the vicinity of the application site.

7.2 This assessment describes the scope, relevant legislation, assessment methodology and the baseline conditions currently existing at the application site and its surroundings. It then considers any potentially significant environmental effects that the proposed facility would have on this baseline environment; the mitigation measures required to prevent, reduce or offset any significant adverse affects; and the likely residual impacts after these measures have been employed.

7.3 The proposed development will also require an Environmental Permit (EP) to be able to operate which will be regulated by the Environment Agency (EA). As part of this Permit application process, assessments of the risk associated with releases from the combustion process, dust and odour will be required.

7.4 These assessments will be reviewed by the EA to ensure that the proposed development will not cause significant pollution to the environment (including offence to human senses) or harm human health prior to issuing a Permit Variation. This assessment therefore assumes that the pollution control regime will operate effectively.

SCOPE OF THE ASSESSMENT

7.5 This chapter has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (and amendments). The information contained within this chapter addresses the requirements of Schedule 4 of the Regulations as they are relevant to air quality.

Identification of Potential Impacts

ACT & AD Combustion Emissions

7.6 The proposed development would comprise three gas engines utilising syngas and biogas generated from the ACT and AD facilities to geneate electricity and heat. Emissions to air will be via three separate gas engine stacks and a pyrolyser stack (comprising four separate flues within a single wind shield).

7.7 The emissions from these stacks will be regulated by the EA, with the permit stipulating emission limits for specific pollutants and monitoring requirements.

7.8 It is therefore assumed that the pollution control regime will operate effectively and that the emission limits required by the permit will be achieved.

Odour and Dust

7.9 Given the handling of waste there is a potential risk for the generation of odour and dust. There is also the risk of generation of dust during construction activities.

7.10 The actual magnitude and nature of the generation and release of odour, and dust from the process is dependent on the ongoing application of effective control measures. These control measures alongside monitoring regimes to demonstrate their effectiveness and management procedures will be defined in the Odour Management Plan (OMP) and Environmental Management Systems for the proposed development.

7.11 Adherence to the operational procedures defined in these documents will be a condition of the Environmental Permit for the site, compliance with which will be inspected and audited by the EA. Non-compliance with condition of an environmental permit is an offence and can lead to enforcement action being taken by the EA.

7.12 It is therefore assumed that the pollution control regime will operate effectively to ensure that the generation and release of odour and dust are mitigated to an appropriate extent to prevent unacceptable offsite impacts.

Vehicle Exhaust Emissions

7.13 Vehicle exhaust emissions resulting from traffic generated by the construction and operation of the site has the potential to affect local pollution levels, both within and surrounding the application site.

7.14 The pollutants of greatest concern in respect of the impact on public health, which are found in the exhaust emissions of road traffic and plant, are nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than 10µm (PM_{10}), carbon monoxide (CO) and benzene. Of these pollutants, NO_2 and PM_{10} are present in the highest concentrations relative to air quality standards; where Air Quality Strategy (AQS) objectives for these are met it is found that the AQS Objectives for the other pollutants are also met.

Required Scope of Assessment

7.15 The following potential releases to atmosphere have been considered:

- combustion pollutants from ACT and AD processes;
- construction dust;
- potential releases of odour and dust from waste processing operations; and
- combustion pollutants from traffic exhausts during construction and operation.

RELEVANT LEGISLATION, STANDARDS AND GUIDANCE

The Environment Act

7.16 The Environment Act 1995 requires DEFRA to produce a national air quality strategy containing standards, objectives and measures for improving ambient air quality and to keep these policies under review. In addition it sets out the responsibilities of local authorities on air quality management.

Air Quality Strategy

7.17 The 'Air Quality Strategy for England, Scotland, Wales and Northern Ireland' (AQS) 2007, contains air quality objectives based on the protection of both human health and vegetation (ecosystems). The Air Quality Strategy sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK.

7.18 These objectives have been set taking into account the Air Quality Standards (AQS) defined in the Air Quality Standards Regulations 2007 (now superseded by the Air Quality Standards Regulations 2010).

7.19 The AQS actually includes more exacting objectives for some pollutants than required by EC legislation. This assessment refers only to the UK air quality standards, as compliance with these standards will ensure that the less demanding European Air Quality limit values also being met.

7.20 A summary of the current air quality standards for relevant pollutants as detailed in the AQS 2007 is provided in Table 7-1 below.

Table 7-1
Relevant UKAQS Air Quality Objectives and Standards

Pollutant	Concentration	Measured as
	Human Health Standards	
Carbon monoxide (CO)	10 mg/m^3	Maximum daily running 8 hour mean
Lead (Pb)	0.25 µg/m^3	Annual mean
Benzene (C_2H_6)	5µg/m^3	Annual average
Nitrogen dioxide (NO_2)	200 µg/m^3	1 hour mean (18 exceedences per year 99.79%ile of hourly averages)
	40 µg/m^3	Annual mean
Sulphur dioxide (SO_2)	266 µg/m^3	15 minute mean (35 exceedences per year; 99.90%ile of 15-min averages)
	350 µg/m^3	1 hour mean (24 exceedences per year; 99.73%ile of hourly averages)
	125 µg/m^3	24 hour mean (3 exceedences per year; 99.18%ile of 24-hr averages)
Particulate matter (PM_{10}) (gravimetric)	40 µg/m^3	Annual mean
	50 µg/m^3	24 hour mean (35 exceedences per year ; 90.41%ile of 24-hr averages)
	Vegetation and Ecosystem Standards	
Nitrogen oxides (NO_x)	30 µg/m^3	Annual mean

Sulphur dioxide (SO_2)	20 µg/m^3 20 µg/m^3	Annual mean Winter mean (1 October to 31 March)

7.21 In addition to these UKAQS objectives, the following additional 'target values' are defined within the Air Quality Standard Regulations 2010:

Table 7-2
Relevant Additional Air Quality 'Target Values'

Pollutant	Concentration	Measured as
Particulate matter $PM_{2.5}$ (gravimetric)	25 µg/m^3	Annual mean
Arsenic	6 ng/m^3	Annual average in PM_{10} fraction
Cadmium	5 ng/m^3	
Nickel	20 ng/m^3	

Local Air Quality Management (LAQM)

7.22 Part IV of the Environment Act 1995 requires local authorities to review and assess existing and predict future air quality in their areas as part of a rolling 'review and assessment' process. In areas where exceedence of one or more of the air quality objectives are predicted the local authority must designate an Air Quality Management Area (AQMA). Once designated; the local authority must then draw up an Air Quality Action Plan (AQAP) setting out the measures it intends to take in pursuit of achieving the air quality objectives in the AQMA.

7.23 The core guidance documents for use by persons involved in Local Air Quality Management (LAQM), or considering the impacts of a development with the potential to impact on air quality as covered by LAQM, are LAQM TG (09)[1] and LAQM PG (09)[2].

7.23.1 The Environment Agency's role in relation to Local Air Quality Management has been detailed , with the following commitments made:

> *"The Environment Agency is committed to ensuring that any industrial installation or waste operation we regulate will not contribute significantly to breaches of an AQS objective.*
>
> *It is a mandatory requirement of EPR legislation that we ensure that no single industrial installation or waste operation we regulate will be the sole cause of a breach of an EU air quality limit value. Additionally we have committed that no installation or waste operation will contribute significantly to a breach of an EU air quality limit value."*

Environmental Permitting Regulations

7.24 The WMD operations would be authorised under the EP Regulations by the EA and would be regulated by its Environmental Permit.

[1] DEFRA, Local Air Quality Management Technical Guidance LAQM.TG(09), (February 2009).
[2] DEFRA, Local Air Quality Management Policy Guidance, LAQM.PG(09) (February 2009).

7.25 Guidance Notes produced by DEFRA provide a framework for regulation of installations and additional Technical Guidance Notes produced by the EA are used to provide the basis for permit conditions as regards releases to air and mitigation measures.

7.26 Of particular relevance to the assessment of air quality impacts is Horizontal Guidance Note H1 - *Environmental risk assessment for permits*[3]. The purpose of this guidance note is to assist operators to assess risks to the environment and human health when applying for a permit under the EP Regulations. Annex F[4] of the H1 Guidance Note is specifically concerned with emissions to air and the process of carrying out a bespoke risk assessment. Included in the H1 Guidance Note are Environmental Assessment Levels (EALs) for each pollutant in air against which impact of potentially significant releases may be assessed.

7.27 A summary of the relevant EALs for pollutants for this assessment are included in Table 7-3. EALs have been applied in this assessment where no air quality standard exists, or where the EAL is lower than the corresponding air quality standard.

Table 7-3
Relevant EALs (µg/m^3)

Pollutant	Long Term EAL (Annual average)	Short Term (Hourly average) EAL
Nitrogen dioxide (NO_2)	40	200
Particulates (PM_{10})	40	50
Particulates ($PM_{2.5}$)	25	--
Carbon monoxide (CO)	---	30000 (1-hr) 10000 (8-hr)
Sulphur dioxide (SO_2)	50[(a)]	267 (15-min) 350 (1-hour) 125 (24-hour)
Hydrogen chloride (HCl)	20[(a)]	750
Hydrogen fluoride (HF)	16	160
Benzene (as surrogate for TOC)	5	208[(a)]
Arsenic	0.003	15[(a)]
Antimony	5	150
Cadmium	0.005	1.5[(a)]
Chromium (II and III)	5	150
Chromium (VI)	0.0002	3[(a)]
Cobalt	0.2[(a)]	6[(a)]
Copper	10	200
Lead	0.25	---
Manganese	150	1500
Mercury	0.25	7.5
Nickel	0.02	30[(a)]

[3] Environment Agency, Horizontal Guidance Note H1 - Environmental risk assessment for permits v2.0 (April 2010).
[4] Environment Agency, Horizontal Guidance Note H1 - Annex (f) Air Emissions. v2.2 (December 2011).

Thallium	1[(a)]	30[(a)]
Vanadium	5	1

Table Note:
a) Where the current H1 Guidance Note Table does not include an EAL from the previous version of the H1 document has been applied.

7.28 There are no Air Quality Limits or EALs for dioxins and furans on the basis that inhalation is not a significant exposure route with the majority of our exposure via our diet which will be assessed by the EA as part of the permitting assessment.

7.29 The following EALs for the protection of ecosystems and vegetation are also defined in H1 as critical levels.

Table 7-4
Additional EALs for Ecosystems

Pollutant	Concentration (µg/m^3)	Measured as
Sulphur dioxide	10	Annual mean (for sensitive lichen communities & bryophytes and ecosystems where lichens & bryophytes are an important part of the ecosystem's integrity)
	20	Annual mean for all higher plants (all other ecosystems)
Nitrogen Oxides	30	Annual mean
	75	Daily mean
Hydrogen Fluoride	<5	Daily mean
	<0.5	Weekly Mean

Standards and Guidance Relating to Odour

7.30 Currently, in the UK there are no statutory numerical standards or levels against which to assess odour nuisance, however relevant guidance has have been published as discussed below.

Environment Agency - H4 Odour Management Guidance

7.31 Guidance on odour management and assessment under the EP Regime has been published by the EA. This guidance focuses (where possible) on the minimisation of odour releases at source through effective site management (to be demonstrated though ongoing process monitoring) and requires a detailed Odour Management Plan (OMP) for all sites where odour is likely to have an offsite impact.

7.32 The EA's H4 guidance also provides a framework for assessing the odour risk presented by a site which follows the normal source–pathway–receptor approach. This approach is used for identifying mitigation requirements and residual environmental impacts, therefore these general principals have been applied in this assessment.

Standards and Guidance Relating to Dust

7.33 There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist – 'nuisance' is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred.

7.34 Guidance for control of dust from construction has been produced by the Institute for Air Quality Management (IAQM)[5]. The IAQM guidance document provides site evaluation guidelines based upon the size in square metres, proximity to receptors, nature of activities and sensitivity of receptors to rate an application site between a low risk to high risk. On the basis of an evaluation of risk the guidance then prescribes a range of best practice mitigation measures to be applied at an application site.

Planning Policy Context

7.35 National, regional and local planning policy documents have been reviewed for policies relevant to Air Quality and this Planning Application.

National Planning Policy Framework (NPPF)

7.36 The relevant sections of the NPPF are considered to be as follows:

> *"120. To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account.*
>
> *122. In doing so, local planning authorities should focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to approval under pollution control regimes. Local planning authorities should assume that these regimes will operate effectively.*
>
> *124. Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."*

[5] Institute of Air Quality Management, Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance (2012).

Hampshire CC Waste Plan

7.37 The Hampshire CC Minerals and Waste Plan (submission version)[6] contains Policy 9 relating to protecting public health, safety and amenity:

> *"Minerals and waste development should not cause adverse public health and safety impacts, and unacceptable adverse amenity impacts. Minerals and waste development should not:*
>
> *a. release emissions to the atmosphere, land or water (beyond recognised levels);*
> *b. have an unacceptable impact on human health;*
> *c. cause unacceptable noise, dust, lighting, vibration or odour;"*

ASSESSMENT METHODOLOGY

General

7.38 The assessment is based upon a comparison of the baseline situation against the air quality impacts resulting from the development proposal scenario.

7.39 Each of the activities associated with the proposal have been assessed in a staged approach for potential air quality impacts with the assumption that the pollution control regime enforced by the EA is applied effectively. The methodology used in each assessment is presented in the sections below.

ACT & AD Combustion Emissions

7.40 Detailed atmospheric dispersion modelling of the emissions of combustion pollutant from the stacks serving the ACT and AD processed has been based upon the following stages:

- identification of sensitive receptors;
- review of process design proposals and emission sources;
- compilation of the existing air quality baseline with due regard to Review and Assessments of local air quality;
- calculation of process contribution to ground level concentrations for pollutants emitted from the process; and
- evaluation of effects on ecological receptors.

7.41 This assessment has been reported in detail in the accompanying Technical Appendix 7/1.

Assessment of Human Health Effects

7.42 The potential effects on human health have been assessed within the detailed dispersion modelling assessment by comparison of predicted impacts against health based air quality objectives. These air quality

[6] Hampshire Minerals and Waste Plan. Submission February 2012

objectives are set for the protection of health in relation to direct exposure via inhalation.

7.43 For some compounds, such as dioxins, the main exposure route is via our diet and not via inhalation. Therefore exposure to dioxins released from the proposed development could occur as a result of deposition on the surrounding land, thereby entering the food chain. This exposure route will be assessed by the Environment Agency during the permitting process of the facility. Assessments undertaken for similar facilities show that the contribution to the existing intake of dioxins to be small and well below the established Tolerable Daily Intake for dioxins.

7.44 This is supported by the Health Protection Agency[7] who state: *"However, dioxins may make a larger contribution to human exposure via the food chain, particularly fatty foods. Dioxins from emissions could also be deposited on soil and crops and accumulate in the food chain via animals that graze on the pastures though dioxins are not generally taken up by plants. Thus the impact of emissions on locally produced foods such as milk and eggs is considered in deciding whether to grant a permit. These calculations show that, even for people consuming a significant proportion of locally produced foodstuffs, the contribution of incinerator emissions to their intake of dioxins is small and well below the tolerable daily intake (TDI) for dioxins recommended by the relevant expert advisory committee, Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment."*

7.45 As part of the Permitting process for the facility the Environment Agency will consider the potential for health effects and they cannot issue a permit for a facility that will harm human health[8].

Assessment of Impacts on Vegetation and Ecosystems

7.46 The potential impacts on ecosystems within the threshold distances defined by the Agency H1 guidance process have been assessed by reference to critical levels and critical loads. Both are set with respect to values below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge.

7.47 Critical levels are a quantitative estimate of exposure to one or more airborne pollutants in gaseous form. Critical levels for the protection of vegetation and ecosystems are specified within relevant European air quality directives and corresponding UK air quality regulations.

7.48 Critical loads are a quantitative estimate of exposure to deposition of one or more pollutants. Critical loads are set for the deposition of various substances to sensitive ecosystems.

[7] The Impact on Health of Emissions to Air from Municipal Waste Incinerators. Health Protection Agency, September 2009.

[8] Position Statement - Energy from Waste. Environment Agency (http://www.environment-agency.gov.uk/business/topics/waste/103220.aspx)

Dust

7.49 Given the handling of waste and soils (associated with construction), there is a potential risk for the generation of dust. For such operations the common concern regarding dust emissions is their potential 'nuisance' effect.

7.50 The potential nuisance effects of dust emissions are related to emissions of large and fine particles, generally larger than 30 microns in diameter. Deposition of these particles onto surfaces, such as windows and cars, can cause soiling that, if sufficiently great; will sometimes be considered to be a 'nuisance'.

7.51 To assess the impacts associated with particulate matter releases during the construction phase a qualitative assessment has been undertaken using guidance published by the Institute for Air Quality Management (IAQM) as summarised in the Figure below.

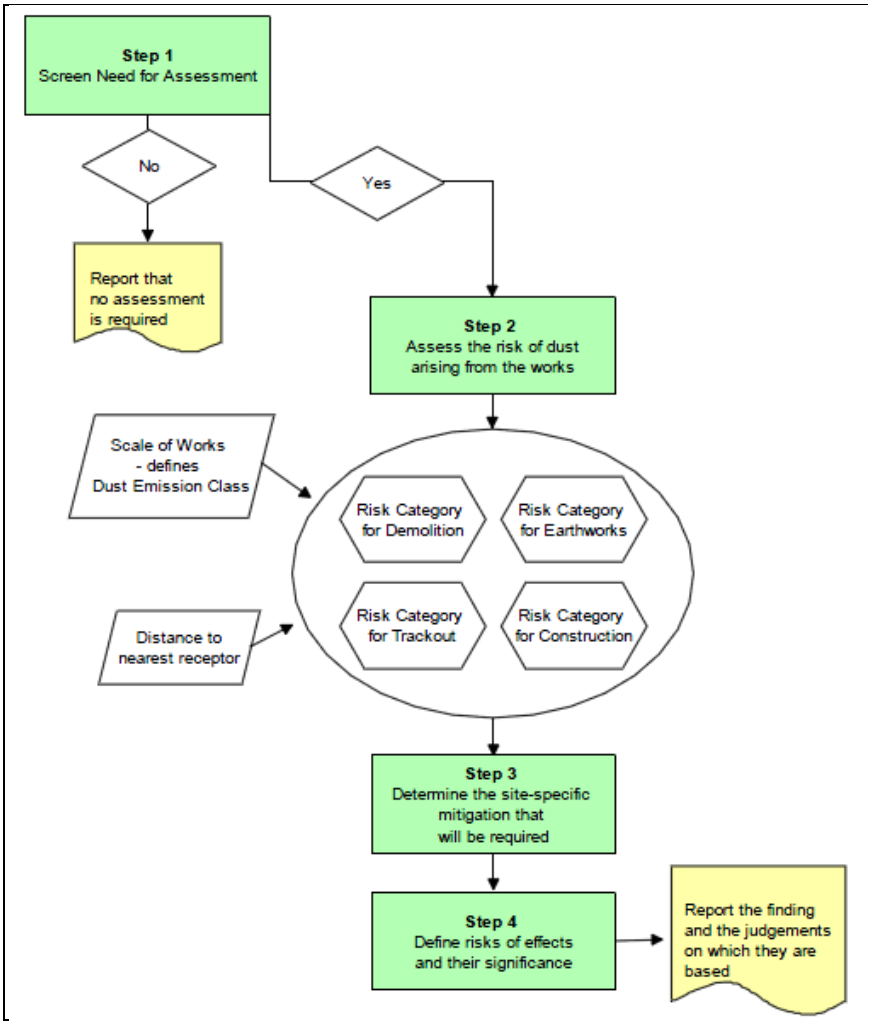

Figure 7-1
IAQM Construction dust – Overview of Approach

7.52 To assess the impacts associated with particulate matter releases during the operational phase a qualitative assessment of the dust generation potential of the operations has been carried out. This assessment considers:

- the potential magnitude of released dust; and
- separation distances between sources and receptors.

Odour

7.53 Given the handling and processing of waste, there is a potential risk for the generation and release of odour. For such operations the common concern regarding odour emissions is their potential 'nuisance' effect.

7.54 To assess the impacts associated with odour during the operational phase a qualitative assessment of the odour generation potential has been carried out. This assessment considers:

- the potential magnitude of generation;
- the effectiveness of designed-in mitigation to prevent release; and
- separation distances between sources and receptors.

Traffic Exhaust Emissions Risk Assessment

7.55 The assessment of impact of traffic exhaust emissions has been carried out using the UK Design Manual for Roads and Bridges (DMRB) methodology (2007)[9]. The DMRB methodology facilitates the prediction of pollutant concentrations near to roads, as a result of vehicle emissions. Predicted concentrations at receptors are made using an empirical relationship using different emission factors for different vehicle types. These emission factors change from year to year as the technology in the vehicle fleet improves.

7.56 Owing to improvements in vehicle technology, the DMRB assumes that emissions per vehicle kilometre will fall with time. The vehicle improvements include progressive refinements in engine performance, the introduction of three-way catalytic converters and particle traps for diesel vehicles. As a consequence of these reductions in emission rates, predicted future pollutant levels can be lower than present day levels close to roads where traffic flows do not change significantly

7.57 The criterion for assessment of air quality contained within the latest DMRB guidance (207/07) focuses on roads with relatively high changes in flows or high proportion of HDV traffic. Affected roads are defined as those that meet any of the following criteria:

- Road alignment will change by 5 m or more; or
- Daily traffic flows will change by 1,000 AADT or more; or
- Heavy Duty Vehicle (HDV) flows will change by 200 AADT or more; or
- Daily average speed will change by 10 km/hr or more; or
- Peak hour speed will change by 20 km/hr or more.

[9] Design Manual for Roads and Bridges Vol. 11 Environmental Assessment (Consolidated Edition), Section 3, Part 1 Air Quality (May 2007, with revisions 2009)

7.58 Only properties and Designated Sites within 200m of roads affected by the project need be considered. If none of the roads in the network meet any of the traffic/alignment criteria or there are no properties or relevant Designated Sites near (within 200m) the affected roads, then the impact of the scheme can be considered to be 'neutral' in terms of local air quality and no further air quality assessment is required. For roads where the criteria are met the predicted environmental concentration at receptors within 200m will be predicted using the 'DMRB screening method' and the latest 'NO_2 from NO_x calculator'.

Air Quality Significance Criteria

7.59 The Town and Country Planning (Environmental Impact Assessment) Regulations require '*a description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development*'. This has resulted in Environmental Statements using *descriptors* for the purposes of summarising impacts. This air quality assessment uses descriptors, the rationale used to determine which descriptor is appropriate is described in the sections below

ACT & AD Combustion Emissions

7.60 The significance of impacts from industrial sources on air quality is determined using the EA's EPR H1 methodology. The H1 guidance states that 'process contribution' (PC) can be considered insignificant if:

- the long term process contribution is <1% of the long term environmental standard;
- the short term process contribution is <10% of the short term environmental standard.

7.61 On this basis the PC is described as either 'insignificant' or 'not insignificant'. This criteria in combination with the resultant Predicted Environmental Concentration (PEC) has been used to determine the significance descriptors as described in Table 7-5.

Table 7-5
Significance Criteria for Process Emissions

Significance Criteria	Descriptor of Significance
PC is insignificant and PEC below EAL	Insignificant
PC is not insignificant but PEC below 75% of EAL	
PC is not insignificant and PEC >75% and <95% of EAL	Minor Adverse
PC is not insignificant and PEC >95% and <100% of EAL	Moderate Adverse
PC is not insignificant and PEC >100%	Major Adverse

7.62 The significance of the predicted impacts at ecological designated sites are based on the H1 approach for European sites and the EA's briefing note for ammonia from agriculture for other designated sites which identifies the following thresholds, below which no further assessment is required:

- for SSSI's a process contribution threshold of 20% of the critical level or load is set, below which no further assessment of the potential to cause damage is required;
- for other ecological designated sites a process contribution threshold of 50% is set, below which no further assessment is required to ensure the site is adequately protected.

7.63 The H1 guidance indicates that impacts are likely to be considered to be unacceptable where significant breaches (or significant addition to an existing breach) of the EAL's occur as a result of the impact from the facility. In such a situation consideration of the application of abatement techniques beyond the requirements of indicative BAT.

Odour and Dust

7.64 The assessment of significance for odour, dust and bioaerosol dust impacts is undertaken qualitatively and the criteria applied can be 'Insignificant', 'Adverse' or 'Beneficial'. The magnitude will be judged as 'Slight', 'Moderate', 'Substantial', or 'Very Substantial'.

Emissions from Vehicle Exhausts

7.65 In the case of significance criteria for the assessment of vehicle exhaust emissions, the example criteria described within guidance issued by Environmental Protection UK (EPUK)[10] has been used as presented in Table 7-6 and Table 7-7.

Table 7-6
EPUK Magnitude of Change for PM_{10} and NO_2

Magnitude of Change	Annual Mean NO_2 / PM_{10}
Large	+/- >10%
Medium	+/- 5-10%
Small	+/- 1-5%
Imperceptible	+/- <1%

Table 7-7
Significance Criteria for Annual PM_{10} and NO_2

Magnitude of Change	Small	Medium	Large
Above Objective/Limit Value *With* Scheme (>100% of AQO)	Minor Adverse	Major Adverse	Major Adverse
Just Below Objective/Limit Value *With* Scheme (>90% of AQO)	Minor Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value *With* Scheme (>75% <90% of AQO)	Insignificant	Minor Adverse	Minor Adverse
Well Below Objective/Limit Value *With* Scheme (<75%)	Insignificant	Insignificant	Minor Adverse

[10] Environmental Protection UK, Development Control: Planning For Air Quality (2010 Update).

BASELINE ENVIRONMENT

Baseline Air Quality

Local Air Quality Management

7.66 The study area encompasses two local authorities responsible for LAQM, Winchester City council (to the south of the site) and Basingstoke and Deane Borough Council (to the north)).

7.67 WCC declared an AQMA in Winchester City Centre for annual mean nitrogen dioxide and 24-hour mean PM_{10} was declared in November 2003. Ongoing monitoring within the AQMA has confirmed the requirement for this AQMA and has not identified any areas in the vicinity of the site which require more detailed assessment.

7.68 There are currently no AQMA's in Basingstoke and Deane Borough Council (BDBC), however, the council has identified certain areas of the borough where levels of nitrogen dioxide exceed or are close to the AQO. It has not been necessary to declare an AQMA in the borough due to the absence of relevant receptors such as residential properties and the site is not located within proximity to one of these areas of concern.

Local Air Quality Monitoring

7.69 WCC currently have two real time air quality monitoring stations in Winchester town centre which monitor levels of both NO_2 and PM_{10}, given the location of these monitors in a city centre AQMA, they are not considered applicable to this assessment. BDBC do not undertake real-time air quality monitoring.

7.70 WCC monitor levels of nitrogen dioxide via a diffusion tube survey with over forty tubes located across both the town centre and the district. BDBC also monitors levels of nitrogen dioxide via diffusion tubes at 28 locations. Monitoring locations are predominantly at either roadside or residential façade close to busy roads and are not in close proximity to the site and therefore are not considered applicable to this assessment.

Applied Background Concentrations

7.71 The background concentrations in Table 7-8 have been obtained from DEFRA predictions as detailed in Technical Appendix 7/1.

Table 7-8
Applied Background Concentrations (µg/m^3)

Pollutant	Short Term	Long Term	Data Source
PM_{10}	33.2	16.6	NAQA 2010
$PM_{2.5}$	n/a	10.9	NAQA 2010
NOx	n/a	21.7	NAQA 2010

NO_2	30.4	15.2	NAQA 2010
CO	222	111	NAQA 2010
SO_2	3.4	1.7	NAQA 2010
HCl	0.70	0.35	Nitric Acid Monitoring Network background maps
Benzene	0.30	0.15	NAQA 2010
Cadmium ηg/m^3	0.18	0.09	Heavy Metal Monitoring for Wytham Wood. 2007 – 2009 Average
Mercury ηg/m^3	2.02	1.01	
Antimony ηg/m^3	1.70	0.85	
Coblat ηg/m^3	0.09	0.05	
Arsenic ηg/m^3	1.02	0.51	
Chromium ηg/m^3	1.26	0.63	
Copper ηg/m^3	6.08	3.04	
Lead ηg/m^3	9.94	4.97	
Manganese ηg/m^3	4.08	2.04	
Nickel ηg/m^3	4.56	2.28	
Vanadium ηg/m^3	2.52	1.26	

Dust and Odour

7.72 There are no quantitative measurements of existing dust or odour concentration available from the vicinity of the application site.

Sensitive Receptors

7.73 The term 'sensitive receptors' includes any persons, locations or systems that may be susceptible to changes as a consequence of the Proposed Development.

7.74 Primarily in relation to odour and dust the most sensitive receptors will be residential properties and amenity areas, with commercial or industrial receptors typically being less sensitive due to lower frequency of occupation and expectations.

7.75 The following discrete human receptor locations have been used in the atmospheric dispersion modelling in addition to a receptors grid (as detailed in the Technical Appendix) and shown on Drawing MS 7/1.

Table 7-9
Discrete Human Receptor Locations

ID	Name	OS GR x (m)	OS GR y (m)
HR1	Coxford Farm	451942.3	143788.3
HR2	The Boundary	452200.6	143823.3
HR3	The Pines	452447.3	143834.9
HR4	Woodlands	452350.6	143823.3
HR5	The Beacons	452653.9	144096.6

HR6	Granary	452050.6	143968.2
HR7	Works building	451762.3	143598.3
HR8	Western Farm	452104.0	143374.9
HR9	Travellers Rest	451995.6	142891.6
HR10	Micheldever Station A	451484.0	142965.0
HR11	Micheldever Station B	451634.0	142975.0
HR12	Micheldever Station C	451750.6	142981.6
HR13	New Road A	451928.1	142867.7
HR14	New Road B	451844.9	142867.7
HR15	Station Garage Yard	451648.1	142885.4
HR16	Black Wood Holiday Cottages	452924.6	143347.1

Ecological Receptors

7.76 Environment Agency H1 Guidance Note states that ecological habitats should be screened against relevant standards if they are located within the following set distances from the WMD:

- Special Protection Areas (SPAs), Special Areas of Conservation (SACs) or Ramsar sites within 10km of the installation; and
- Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), Local Nature Reserves (LNRs), local wildlife sites and ancient woodland within 2km of the location of the installation.

7.77 Relevant nature conservation sites to this assessment and the location of discrete receptors applied in the model are presented in Table 7-10 and drawing MS 7/2.

Table 7-10
Relevant Designated Habitat Sites within Zone of Influence

ID	X	Y	Designation	Name
ER1	456435	135418	SAC	River Itchen
ER2	Grid (217 receptor locations)		SSSI	Micheldever Spoil Heaps
ER3	450186.6	144435.2	SINC & AWL	Freefolk Wood
ER4	450943.3	145273.3	SINC & AWL	Laverstoke Wood
ER5	451100	144900	SINC & AWL	Round Wood, Roundwood Estate
ER6	452400	145300	SINC & AWL	Cobley Wood North
ER7	452500	144900	SINC & AWL	Cobley Wood Middle
ER8	452600	144500	SINC & AWL	Cobley Wood South
ER9	453400	144600	SINC & AWL	Oaken Copse
ER10	453500	143900	SINC	Black Wood North
ER11	449933.2	144029.5	SINC & AWL	Norton Wood
ER12	450835.5	142647.7	SINC	Upper Cranbourne/Hunton Down
ER13	450100	143400	SINC & AWL	Cranbourne Wood
ER14	450370	143900	SINC	Field Near Freefolk Wood
ER15	450500	143600	SINC	Freefolk Beech Break
ER16	451940.6	143429	SINC	Micheldever Oil Terminal

ER17	452867.3	143595.9	SINC & AWL	Black Wood, Micheldever
ER18	450806.2	144142.6	AWL	Kitelands Clump
ER19	451787.6	144332.3	AWL	Burntheat Copse
ER20	452473.6	145106.4	AWL	Cobley Wood (Location 1)
ER21	452522.1	144727.1	AWL	Cobley Wood (Location 2)

Topography

7.78 The presence of elevated terrain can significantly affect the dispersion of pollutants and the resulting ground level concentration in a number of ways. Elevated terrain reduces the distance between the plume centre line and the ground level, thereby increasing ground level concentrations. Elevated terrain can also increase turbulence and, hence, plume mixing with the effect of increasing concentrations near to a source and reducing concentrations further away.

7.79 The proposed development area lies at approx 125-130m AOD towards western end of a slight ridge which falls away to around 100m AOD to the north, south and west. Locally there is significant variation in the topography resulting from the construction of the railway through a cutting and tunnel beneath the A303. For this reason elevation data has been included in the model.

Meteorological Conditions

7.80 The most important meteorological parameters governing the atmospheric dispersion of pollutants are as follows:

- wind direction determines the broad transport of the emission and the sector of the compass into which the emission is dispersed;
- wind speed will affect ground level concentrations of emissions by increasing the initial dilution of pollutants in the emission; and
- atmospheric stability; a measure of the turbulence, particularly of the vertical motions present.

7.81 Following consultation with the meteorological data provider, it was concluded that RAF Odiham, located approximately 22km to the east-northeast of the application site, would provide the most complete and representative data set for purposes of this assessment. Meteorological data used in this assessment was for the period 1st January 2007 to 31st December 2011 (inclusive).

7.82 A windrose of the data used in the assessment is presented in Figure 7-2. As is apparent from this windrose, the predominant wind direction is from the south west and wind from the north, northeast and easterly directions occur relatively infrequently.

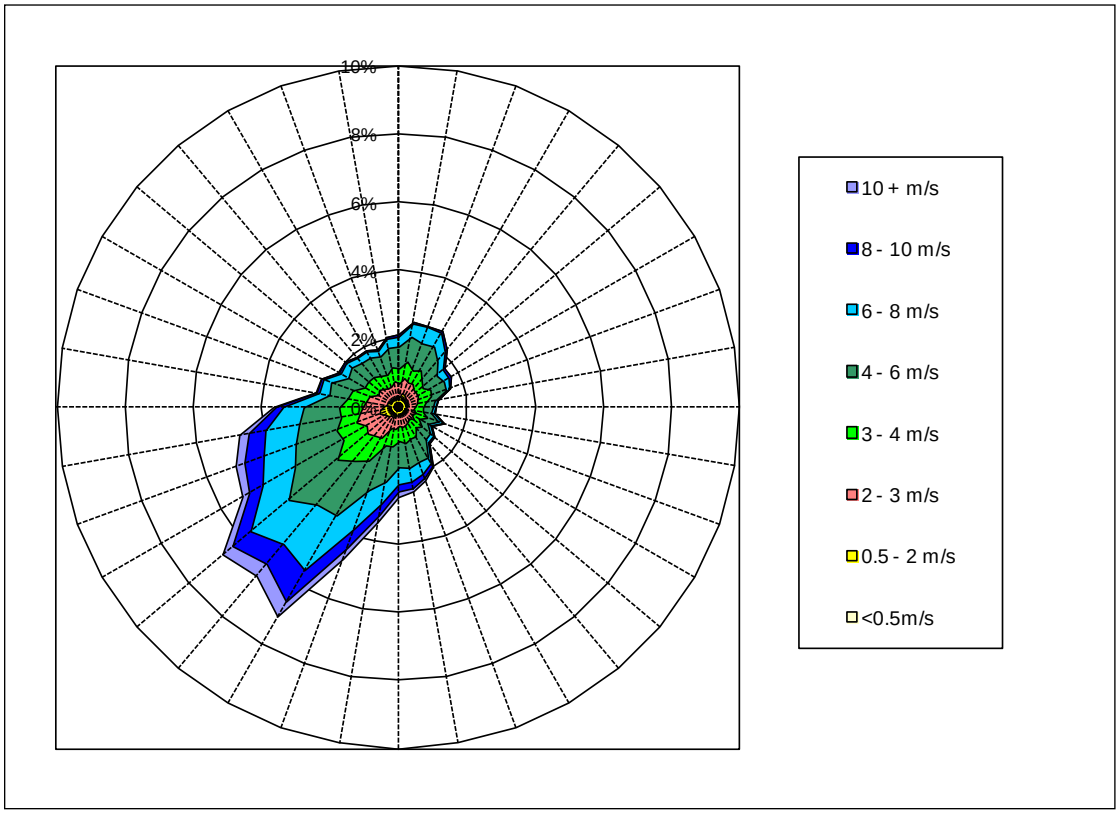

Figure 7-2
Windrose for RAF Odiham Meteorological Station (2007 – 2011)

ASSESSMENT OF IMPACT, MITIGATION AND RESIDUAL EFFECTS

Construction Phase - Dust

Risk of Dust Effects Arising

7.83 The proposed development will not require demolition work but will involve earthworks to create the required land-form, laying of hard-standings and fabrication of buildings and plant. The main potential sources of dust during the proposed construction activities include:

- haulage routes, vehicles and construction traffic; and
- site preparation (earth works - handling, storage, stockpiling, spillage and disposal).

7.84 If construction operations were un-mitigated, the effects of dust during dry and windy conditions, could lead to a small increase in the 24-hour mean PM_{10} concentration immediately surrounding the proposed development site.

7.85 However, the background concentration for site is estimated to be 16.6µg/m³; based upon 2010 mapped background estimates; therefore it is considered highly unlikely that the construction operations would cause the annual objective to come close to an exceedence.

7.86 Site earthworks are required over an area of greater than 10,000m^2, with site soil types representing a relatively high-risk potential for suspension when dry due to small particle size. The duration and timing of earthworks has not been confirmed, as are the number of heavy moving vehicles active on site at any one time.

7.87 Based on the information above, the risk category for Earthworks has been classified as ‘medium’ for residential receptors as they are located over 100m from the development boundary and for ecological receptors which are located within 20m (the Micheldever Oil Terminal SINC).

7.88 The construction of the plant itself will largely involve the laying of the hard-standing and fabrication of tanks and buildings with metal cladding type construction techniques employed.

7.89 Based on the information above, the dust emission class for Construction has been classified as ‘low’ as residential receptors are over 100m from the development boundary and ‘medium’ for ecological receptors which are located within 20m.

7.90 Around 120 vehicle movements per day are expected during the construction phase of the development. It is anticipated that 50% of the construction vehicles will be HGVs. All construction HGVs will access the site from the A303 via Overton Road and will not pass any residential properties

7.91 Based on the information above, the dust emission class for Trackout has been classified as ‘low’ as residential receptors are over 100m from the

access route and 'medium' for ecological receptors which are located within 20m.

7.92 A summary of the risk category for each phase of the construction operation is as shown in Table 7-11:

Table 7-11
Construction Phase Assessment Summary – Without Mitigation

Source	Risk of Dust Soiling and PM_{10} Effects	Risk of Vegetation Effects
Demolition	N/A	N/A
Earthworks	Medium Risk	Medium Risk
Construction	Low Risk	Medium Risk
Trackout	Low Risk	Medium Risk

Mitigation

7.93 The sensitivity of the area is considered to be low in terms of human receptors given the separation distance to a limited number of residential properties and medium for ecological receptors given the proximity to the Micheldever Oil Terminal SINC.

7.94 Therefore without mitigation the construction activities are considered to represent an 'insignificant' impact to human receptors. However given the proximity of ecological receptors the overall significance of impact is considered to be 'slight adverse' and therefore mitigation measures are considered to be required.

7.95 In order to control potential impacts, the following mitigation measures are proposed.

- vehicles will be sheeted to prevent loss of materials off-site;
- storage locations for all materials that create dust, including soil, will be located away from development boundaries as far as practicable;
- regular inspection of local roads to check for dust deposits and any deposits removed;
- use water as a dust suppressant as and when required; and
- a trained site manager (or his deputy) will be on site during working hours to be responsible for proper implementation of dust mitigation measures.

7.96 It is considered that, with the successful application of the mitigation measures presented above, and the sensitivity of the site, the significance of effects will be 'insignificant'.

Construction Traffic Exhaust Emissions

7.97 The impact of construction traffic on air quality would be below the DMRB screening criteria (of 200 HGV movements per day). The potential effect on air quality due to the additional emissions from construction traffic is therefore considered neutral or insignificant. No further mitigation is therefore required and effects would cease once construction is complete.

Operational Phase

Odour & dust

Sources of Generation and Release

7.98 The main source of odour generation at the proposed development will be from the waste reception area and the AD and autoclave processes; following these processes a stabilised material is generated with significantly lower odour generation potential. Similarly dust generation potential will be predominately associated with incoming waste material prior to processing.

7.99 The waste reception building will be enclosed and the feedstock managed to minimise storage times and exclude any problematic waste types. The reception building will be ventilated to achieve negative pressure, with extracted air directed to odour abatement plant consisting of a UV filter followed by thermal abatement via the pyrolysis units and gas engines.

7.100 The AD process itself is enclosed to ensure anaerobic conditions and the effective capture of methane; this also prevents the release of odours from the digestion process. The biogas (containing odorants and methane) will be directed to the gas engines for thermal abatement.

7.101 Similarly the autoclave is an enclosed process during the pressurised steam sterilisation process. Following steam sterilisation the pressure is released and the contaminated airstream directed to the pyrolysis units for thermal abatement.

7.102 The main sources of odour from the proposed development will therefore be associated with the releases from the stacks serving the ACT and AD process of residual odour (low concentration) following thermal abatement.

Mitigation Measures

7.103 As detailed above, extensive designed-in mitigation measures for odour management and control will be employed at the proposed development and will be defined in the Environmental Permit and the Odour Management Plan (OMP) for the site.

7.104 The primary environmental design measures to mitigate the risk of odour generation and release during the operation of the proposed development are as follows:

- enclosure of the handling and sorting of wastes within a building;
- fast acting roller action doors to ensure effective containment within the building;
- adoption of good housekeeping measures which would minimise the magnitude of odour generation, to include regular cleaning of waste reception area and minimise the storage time of raw waste;
- extraction of air from within reception building and effective odour abatement;

- vented steam from enclosed autoclave process directed to pyrolysis units for effective thermal abatement;
- anaerobic digestion process undertaken within sealed tanks and biogas directed to CHP facility; and
- provision of back-up odour control plant to provide abatement of odour from reception area when pyrolysis units and gas engines are inoperable.

7.105 The EA will require demonstration of the adequacy of the design of these measures prior to approving the OMP and the effective application of these mitigation measures (which will also provide mitigation of dust releases) will continue to be monitored by the EA as part of their regulatory role. Therefore they are not duplicated in detail in this assessment, but they are assumed to be applied effectively for the purposes of the assessment of potential impacts.

Assessment of Impacts

7.106 The permit for the facility will not be approved by the EA unless they are satisfied that the mitigation measures are adequate to enable operations to be undertaken without causing unacceptable offsite odour impact.

7.107 On this basis (and given that the EA would continue to ensure effective mitigation of any odour and dust release from the site during operation) the impact associated with the proposed development will be acceptable.

7.108 Therefore the impacts of odour and dust associated the proposed development at nearby sensitive receptors (residential properties located over 100m from the boundary) are considered to be insignificant.

Traffic Exhaust Emissions

7.109 As detailed in Chapter 6 the proposed development would result in the movement of a total of 53 HDV vehicles (106 trips) each weekday for the delivery and removal of waste and recyclate and the movement of a further 17 vehicles (34 trips) for staff etc. These vehicles will enter and exit the site from the A303 via the Overton road.

7.110 Therefore the potential effect on air quality due to the exhaust emissions from additional traffic is considered to be neutral and no further assessment or mitigation is considered to be required.

7.111 On this basis the impact of traffic exhaust emissions is considered to be insignificant.

ACT & AD Combustion Emissions

7.112 The detailed assessment of impact from the stack serving the ACT and AD processes is detailed in Appendix 7/A and an overview is presented in the following section.

Sources

7.113 The stacks serving the proposed ACT and AD processes will consist of the exhaust from three gas engines and a stack (four flues within a wind-shield) serving the 4 pyrolyser units. The process conditions used to determine the pollutant emission rates were calculated from design data provided by the technology designer as detailed in Appendix 7/A.

7.114 The release of metals and dioxins from point A1 have been included under the requirements of the Waste Incineration Directive, however due to the nature of the process, the actual emissions of metals will be significantly lower than those stated by the WID and from typical Energy from Waste (EfW) processes. The proposed development, due to the use of autoclaves and downstream associated materials recovery plant removes all metals, plastics and non-organic fractions from the waste stream. The resulting biomass material is therefore devoid of all inorganic species and compounds (beyond trace levels) and thus resulting in very high purity biomass and char materials.

7.115 The technology provider has demonstrated that inorganic species within the biomass will be retained in solid phase within the vitrified ash slags produced by the pyrolyser. Therefore the technology provider considers that the actual emissions of metals within the flue gases will be significantly below any regulatory emission limits prescribed by the Waste Incineration Directive (WID), Environmental Permitting Regulations or the forthcoming Industrial Emissions Directive.

7.116 The technology provider has described this in detail as part of the 'End of Waste' (EoW) determination application that was approved by the Environment Agency in March 2012. The approval of this determination means that all syn-gas produced by the process falls outside of the WID requirements and hence why the assessment of 'WID metals' and dioxins has not been undertaken for points A2-4.

7.117 It is understood that a further EoW application has been prepared and submitted to the EA by the technology provider relating to the end use of the pyrolysis char. Once approved, all references to the WID and thus the requirement to include 'WID metals' and dioxins within the assessment of release point A1 will be removed.

Predicted Impacts on Air Quality

7.118 The results of the atmospheric dispersion modelling are provided in the tables below, Table 7-12 and Table 7-13 present the maximum ground level predictions for short-term and long-term averages respectively. The process contribution (PC), predicted environmental concentration (PEC: PC + background concentration (BG)), magnitude of change and significance of impact are presented. Full results and drawings are presented in Appendix 7/A.

Table 7-12
Maximum Predicted Long-Term Concentrations

Pollutant	Applied Standard	PC Max (µg/m^3)	Magnitude of Change	PEC (µg/m^3)	% of EAL	Significance
PM_{10}	40	0.61	Not insignificant	17.2	43.0%	Insignificant
$PM_{2.5}$	25	0.31	Not insignificant	11.2	44.8%	Insignificant
NO_2	40	1.16	Not insignificant	16.4	40.9%	Insignificant
SO_2	50	3.08	Not insignificant	4.8	9.6%	Insignificant
HCl	20	0.59	Not insignificant	0.9	4.7%	Insignificant
HF	16	0.06	Insignificant	0.1	0.4%	Insignificant
TOC	5	0.59	Not insignificant	0.7	14.8%	Insignificant
Cadmium	0.005	0.001	Not insignificant	0.002	31.64%	Insignificant
Thallium	1	0.001	Insignificant	0.001	0.15%	Insignificant
Mercury	0.25	0.003	Not insignificant	0.004	1.60%	Insignificant
Antimony	5	0.001	Insignificant	0.002	0.03%	Insignificant
Arsenic	0.003	0.0002	Not insignificant	0.001	23.1%	Insignificant
Chromium (III)	5	0.003	Insignificant	0.004	0.07%	Insignificant
Chromium (VI)	0.0002	0.0001	Not insignificant	0.0001	49.8%	Insignificant
Cobalt	0.2	0.0002	Insignificant	0.0003	0.14%	Insignificant
Copper	10	0.001	Insignificant	0.004	0.04%	Insignificant
Lead	0.25	0.002	Insignificant	0.007	2.87%	Insignificant
Manganese	150	0.002	Insignificant	0.004	<0.01%	Insignificant
Nickel	0.02	0.008	Not insignificant	0.010	52.0%	Insignificant
Vanadium	5	0.0001	Insignificant	0.001	0.03%	Insignificant

Table 7-13
Maximum Predicted Short-Term Concentrations

Pollutant	Applied Standard	PC Max (µg/m^3)	Magnitude of Change	PEC (µg/m^3)	% of EAL	Significance
PM_{10} (24-hr)	50	1.72	Insignificant	34.92	69.8%	Insignificant
NO_2 (1-hr)	200	5.96	Insignificant	36.36	18.2%	Insignificant
SO_2 (24-hr)	125	13.37	Not Insignificant	47.37	37.9%	Insignificant
SO_2 (1-hr)	350	25.21	Insignificant	59.21	16.9%	Insignificant
SO_2 (15-min)	266	34.43	Not Insignificant	68.43	25.7%	Insignificant
CO (8-hr)	10000	747.84	Insignificant	969.84	9.7%	Insignificant
CO (1-hr)	30000	894.74	Insignificant	1116.74	3.7%	Insignificant
HCl (1-hr)	750	5.46	Insignificant	6.16	0.8%	Insignificant
HF (1-hr)	160	0.55	Insignificant	0.55	0.3%	Insignificant
TOC	208	5.46	Insignificant	5.76	2.8%	Insignificant

Cadmium	1.5	0.014	Insignificant	0.014	0.93%	Insignificant
Thallium	30	0.014	Insignificant	0.014	0.05%	Insignificant
Mercury	7.5	0.028	Insignificant	0.030	0.39%	Insignificant
Antimony	150	0.006	Insignificant	0.008	0.01%	Insignificant
Arsenic	15	0.002	Insignificant	0.003	0.02%	Insignificant
Chromium (III)	150	0.029	Insignificant	0.030	0.02%	Insignificant
Chromium (VI)	3	0.001	Insignificant	0.001	0.02%	Insignificant
Cobalt	6	0.002	Insignificant	0.002	0.04%	Insignificant
Copper	200	0.011	Insignificant	0.017	0.01%	Insignificant
Manganese	1500	0.020	Insignificant	0.024	0.00%	Insignificant
Nickel	30	0.075	Insignificant	0.080	0.27%	Insignificant
Vanadium	1	0.001	Insignificant	0.004	0.38%	Insignificant

7.119 The significance of impacts at the location of maximum ground level concentration for all pollutants is assessed as 'insignificant'. As this represents the maximum ground level concentration, the overall impact in the study area from combustion emissions emitted from the proposed development is considered to be 'insignificant'.

Predicted Impacts on Nature Conservation Sites

7.120 The maximum predicted annual mean ground level concentration of NO_x and SO_2 at each nature conservation site is presented Table 7-14 below.

Table 7-14
Annual Mean Process Contribution at Sensitive Ecosystems - (µg/m^3)

Local Site	NO_x PC	NO_x % of EAL	SO_2 PC	SO_2 % of EAL
River Itchen SAC	0.002	0.01%	0.002	0.01%
Micheldever Spoil Heaps SSSI	0.245	0.82%	0.375	1.88%
Freefolk Wood SINC & AWL	0.006	0.02%	0.006	0.03%
Laverstoke Wood SINC & AWL	0.010	0.03%	0.009	0.05%
Round Wood SINC & AWL	0.012	0.04%	0.012	0.06%
Cobley Wood North SINC & AWL	0.027	0.09%	0.024	0.12%
Cobley Wood Middle SINC & AWL	0.043	0.14%	0.039	0.20%
Cobley Wood South SINC & AWL	0.079	0.26%	0.078	0.39%
Oaken Copse SINC & AWL	0.037	0.12%	0.033	0.17%
Black Wood North SINC	0.043	0.14%	0.038	0.19%
Norton Wood SINC & AWL	0.006	0.02%	0.005	0.03%
Upper Cranbourne/Hunton Down Farms SINC	0.014	0.05%	0.014	0.07%
Cranbourne Wood SINC & AWL	0.006	0.02%	0.006	0.03%
Field Near Freefolk Wood SINC	0.008	0.03%	0.007	0.03%
Freefolk Beech Break SINC	0.008	0.03%	0.008	0.04%
Micheldever Oil Terminal SINC	0.138	0.46%	0.497	2.49%
Black Wood, Micheldever SINC & AWL	0.054	0.18%	0.047	0.23%
Kitelands Clump AWL	0.011	0.04%	0.011	0.06%
Burntheat Copse AWL	0.049	0.16%	0.059	0.30%
Cobley Wood 1 AWL	0.034	0.11%	0.030	0.15%

Cobley Wood 2 AWL	0.055	0.18%	0.051	0.25%

7.121 The annual average process contribution is below 1% of the relevant critical level for all receptors except for SO_2 at the Micheldever Spoil Heaps SSSI and Micheldever Oil Terminal SINC.

7.122 Maximum impacts are <2% on the SSSI and <3% on the SINC and therefore not significant and no further assessment is required. The maximum predicted SO_2 contribution to acid deposition at the identified nature conservation sites where SO_2 impacts exceeded 1% of the critical level are presented in Table 7-15 below.

Table 7-15
Predicted S-acid Deposition on Nature Conservation Sites (kgeq/ha/yr)

Site	CLmaxS	CLmaxS	S PC as % CLO
Micheldever Spoil Heaps SSSI	4.15	0.044	1.2%
Micheldever Oil Terminal SINC	3.91	0.059	1.5%

7.123 The predicted PCs from the proposed development are less than 20% of the applied critical load for S-acid deposition on the SSSI and <50% on the SINC and therefore the impact is not considered to be significant and no further assessment is required.

7.124 The maximum predicted daily mean ground level concentration of NOx and HF at each nature conservation site is presented in Table 7-16 below.

Table 7-16
Daily Mean Process Contribution at Sensitive Ecosystems - (µg/m^3)

Local Site	NO_x PC	NO_x % of EAL	SO_2 PC	SO_2 % of EAL
River Itchen SAC	0.044	0.06%	0.001	0.02%
Micheldever Spoil Heaps SSSI	3.772	5.03%	0.083	1.67%
Freefolk Wood SINC & AWL	0.168	0.22%	0.003	0.06%
Laverstoke Wood SINC & AWL	0.199	0.27%	0.004	0.07%
Round Wood SINC & AWL	0.247	0.33%	0.005	0.10%
Cobley Wood North SINC & AWL	0.218	0.29%	0.004	0.08%
Cobley Wood Middle SINC & AWL	0.335	0.45%	0.006	0.12%
Cobley Wood South SINC & AWL	0.581	0.77%	0.012	0.23%
Oaken Copse SINC & AWL	0.325	0.43%	0.005	0.11%
Black Wood North SINC	0.354	0.47%	0.006	0.12%
Norton Wood SINC & AWL	0.155	0.21%	0.003	0.05%
Upper Cranbourne/Hunton Down Farms SINC	0.330	0.44%	0.006	0.11%
Cranbourne Wood SINC & AWL	0.199	0.26%	0.004	0.07%
Field Near Freefolk Wood SINC	0.205	0.27%	0.003	0.07%
Freefolk Beech Break SINC	0.217	0.29%	0.004	0.08%
Micheldever Oil Terminal SINC	1.861	2.48%	0.126	2.52%
Black Wood, Micheldever SINC & AWL	0.587	0.78%	0.009	0.18%
Kitelands Clump AWL	0.288	0.38%	0.006	0.12%
Burntheat Copse AWL	0.700	0.93%	0.014	0.29%
Cobley Wood 1 AWL	0.265	0.35%	0.005	0.09%
Cobley Wood 2 AWL	0.453	0.60%	0.008	0.16%

7.125 The process contribution is predicted to be below 10% of the respective short-term critical level and therefore the impact is considered insignificant and therefore no further assessment is required.

SUMMARY AND CONCLUSIONS

7.126 An assessment of the air quality impacts associated with the proposed development has been undertaken. The assessment has considered:

- construction dust;
- combustion pollutants from stacks serving the ACT and AD processes;
- Air Quality Strategy Pollutants from vehicle exhausts during construction and operation; and
- odour and dust emissions during the operational phase.

7.127 The assessment of construction dust has found that some mitigation measures will be required (primarily during earthworks) due to the proximity to ecological receptors. However with adoption of these measures the residual impact is considered to be 'insignificant'.

7.128 The additional traffic associated with both the construction and operation of the proposed development is below the DMRB criteria for assessment (classified as 'neutral') and therefore the impact associated with vehicle exhaust emissions is considered to be 'insignificant'.

7.129 In terms of process emissions (odour, combustion pollutants and dust) from the proposed development during operation, the permit will not be approved by the EA unless they are satisfied that operations will not cause significant pollution to the environment (including offence to human senses) or harm human health.

7.130 Given the low potential identified for the release of odour and dust from the proposed development with the extensive mitigation measures appropriately designed and applied effectively; the residual impact is considered to be 'insignificant'.

7.131 The findings of the detailed dispersion modelling assessment of combustion emissions from the stacks serving the ACT and AD processes at the proposed development has found that for all pollutants the maximum predicted long-term and short term impacts on air quality and sensitive ecosytems would be classified as 'insignificant'.

7.132 In summary the proposed development is not predicted to lead to exceedences of applicable air quality standards for either human or ecological receptors and does not conflict with relevant legislation or planning policies with regard to air quality.