



global environmental solutions

West End Farm, Upper Froye, Alton

Dust Assessment

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## 1.0 INTRODUCTION

This report presents a dust impact assessment to support a change of use application at West End Farm, Upper Froyle, Alton. SITA UK are looking to change operations at an existing green waste site to import and process waste wood by chipping and screening for exportation.

The focus of the assessment is to determine the potential dust emissions as a result of the change of operations and its impact on local receptors. Any change in the local air quality as a result of the Proposed Development has been assessed against the baseline scenario.

### 1.1 Scope

In pre application consultations with Hampshire County Council (HCC) dust impacts have been raised as a concern. Therefore this assessment is provided to address the councils comments.

The baseline scenario, against which any additional dust impacts would be assessed, includes the previous operation of the existing site for which extant permission exists for the shredding of green waste.

### 1.2 Overview of Previous Site Operations

Previous operations at the site ceased several months ago, however preceding this, the site operations included the management of green waste under existing permission (F22111/028/CMA), gained in November 2008. The existing permission allows for the receipt of 25,000tpa of green waste for storage, shredding and screening, from local HWRC collections. The existing permission allowed for no export of waste products and as such the green waste once processed was transferred by farm tractors and trailers to be used as a soil improver for agricultural benefit at West End Farm. Green waste was delivered to the application site by heavy goods vehicles (HGVs) for which the maximum permitted number of vehicle movements is 16 per day, between the operational hours of 07:30 and 17:30 hours Monday to Friday.

### 1.3 Overview of Proposed Operations

Proposed site operations would be very similar in nature to previous permitted operations. It is proposed imported segregated waste wood from wood recycling plants and council wood recycling plants would be received onsite via the weighbridge before storage and processing by shredding and screening. Waste wood is expected to be delivered to site in 20 tonne loads, with the maximum tonnage remaining as currently permitted at 25,000tpa.

Following processing it is proposed waste wood will be processed and removed from site by HGVs for biomass recovery. Vehicle movements will not exceed the current permitted level of 16 movements per day. These will be between the current permitted operational hours of Monday to Friday 07:30 to 17:30.

### 1.4 Structure of Report

The remainder of this report is structured as follows:

- **section 2** describes the relevant legislation and guidance used in the assessment;
- **section 3** describes the assessment methodology used to identify sources and receptor and describes the assessment approach;
- **section 4** characterises the baseline environment in the vicinity of the proposal from

an air quality perspective with regard to site location, local meteorology and nearby receptors;

- **section 5** details the dust sources and the significance of impacts;
- **section 6** presents the recommended mitigation measures and the resulting residual impacts; and
- **section 7** concludes the assessment.

## 2.0 RELEVANT AIR QUALITY LEGISLATION AND GUIDANCE

### 2.1 National Legislation and Guidance

#### 2.1.1 Air Quality Strategy for England, Scotland, Wales & Northern Ireland

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.

These objectives have been set taking into account the Air Quality Standards defined in the Air Quality Standards Regulations 2010. The AQS objectives relevant to this assessment, relate to particulate matter and are shown in Table 2-1 below.

**Table 2-1**  
**Air Quality Strategy Objectives**

| Pollutant                              | Concentration        | Measured as   | Reference |
|--|----------------------|---|-----------|
| Particulate matter (PM <sub>10</sub> ) | 50 µg/m <sup>3</sup> | 24-hour mean not to be exceeded more than 35 times per year (90.4 %ile) | AQS       |
| (gravimetric)                          | 40 µg/m <sup>3</sup> | Annual mean   |           |

#### 2.1.2 Local Air Quality Management (LAQM)

Part IV of the Environment Act 1995 requires local authorities to periodically review and assess the quality of air within their administrative area. The reviews have to consider the present and future air quality and whether any air quality objectives prescribed in regulations are being achieved or are likely to be achieved in the future.

Where any of the prescribed air quality objectives are not likely to be achieved the authority concerned must designate an Air Quality Management Area (AQMA). For each AQMA the local authority has a duty to draw up an Air Quality Action Plan (AQAP) setting out the measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the air quality objectives.

DEFRA has published technical guidance for use by local authorities in their review and assessment work<sup>1</sup>.

### 2.1 Planning Policy

#### 2.1.1 National Policy

The National Planning Policy Framework (NPPF) describes the policy context in relation to pollutants including air pollutants:

*'The Government's objective is that planning should help to deliver a healthy natural environment for the benefit of everyone and safe places which promote wellbeing.*

*To achieve this objective, the planning system should contribute and enhance the natural and local environment by:*

<sup>1</sup> Department for Environment, Food and Rural Affairs (DEFRA): Local Air Quality Management Review and Assessment Technical Guidance LAQM.TG(09), 2009.

*[...] preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of land, air, water or noise pollution or land instability.'*

Specifically in terms of development with regard to air quality:

*'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.'*

The policy contained within the NPPF relating to air quality is addressed within this assessment.

### **2.1.2 Local Policy**

#### *East Hampshire District Council*

EHDC has adopted a Joint Core Strategy in conjunction with South Downs National Planning Authority to provide a long term strategy for planning within the district. This Core Strategy has been submitted to the Secretary of State and is due to be examined late October 2012.

Within the Core Strategy Policy CP25 relates to pollution, with paragraph 7.55 and 7.56 specifically mentioning air quality;

*'Research has shown that levels of land contamination, air quality and excessive noise for example, can impact upon human health but may also impact upon the natural environment'*

#### *Hampshire County Council*

HCC has adopted their Minerals and Waste Core Strategy Development Plan Document 2007. Within this plan policy DC8 - Pollution, Health, Quality of Life and Amenity, relates to the development at the application site. This states;

*'Minerals and waste development will only be permitted if due regard is given to the pollution and amenity impacts on the residents and users of the locality and there is unlikely to be an unacceptable impact on health and/or the quality of life of occupants of nearby dwellings and other sensitive properties.'*

This assessment has been undertaken to address these policies.

## **2.2 General Nuisance Legislation**

Part III of the Environmental Protection Act (EPA) 1990 (as amended by the Noise and Statutory Nuisance Act 1993) contains the main legislation on Statutory Nuisance and allows local authorities and individuals to take action to prevent a statutory nuisance. Section 79 of the EPA defines, amongst other things, smoke, fumes, dust and smells emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance, as a potential Statutory Nuisance. It also defines accumulation or deposit, which is prejudicial to health as a nuisance.

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.

## **2.3 Environmental Permitting**

The proposed development would be regulated under the Environmental Permitting (England and Wales) Regulations 2010 (introduced on 6 April 2010). The Permit would regulate emissions to air by imposing conditions, for example on specific control measures or in terms of emissions limits.

## **2.4 Further research / Guidance**

### ***2.4.1 Monitoring of Particulate Matter in Ambient Air Around Waste Facilities: Technical Guidance M17***

The Environment Agency has published a technical guidance document M17<sup>2</sup> which relates to dust assessment around waste facilities. M17 provides information of the monitoring methods and techniques available for assessing levels of particulate matter in ambient air around waste facilities.

### ***2.4.2 Planning for Waste Management Facilities***

A research study<sup>3</sup>, undertaken by the Office of the Deputy Prime Minister details general planning considerations for waste management facilities. This also details specific issues for a variety of waste sites types, using case examples.

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<sup>2</sup> Environment Agency (2004) *Monitoring of particulate matter in ambient air around waste facilities*. Technical Guidance Document (Monitoring) M17

<sup>3</sup> Office of the Deputy Prime Minister (2004). *Planning for Waste Management Facilities*. A Research Facility

### 3.0 ASSESSMENT METHODOLOGY

The methodologies used in this assessment are consistent with the guidance and regulations detailed in Section 2 of this assessment.

This assessment examines the additional sources of dust associated with the wood shredding operations. The assessment takes into account the prevailing meteorological conditions at the site; particularly the frequency of wind speeds capable of carrying airborne dust (greater than 3m/s)<sup>4</sup> and the frequency of rainfall considered sufficient to effectively suppress wind-blown dust emissions (greater than 0.2 mm/day<sup>5</sup>) in assessing dust nuisance impacts.

Fugitive releases of dust have been assessed using a qualitative approach by consideration of the following:

- the nature, scale and duration of activities undertaken on site in order to determine the potential magnitude of releases;
- the land uses and location of receptors in the surrounding area;
- the local climate and meteorology; and
- existing dust control measures and their effectiveness.

Subsequently, recommendations for any further mitigation measures on site have been made and the residual impacts following the implementation of such measures re-assessed.

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<sup>4</sup> K. W. Nicholson (1988) A review of particle re-suspension. Atmospheric Environment Volume 22, Issue 12, 1988, Pages 2639-2651

<sup>5</sup> Leeds University. Good Quarry. Available at: <http://www.goodquarry.com/>

## **4.0 BASELINE ENVIRONMENT**

### **4.1 Location**

The site is located in a predominately agricultural area close to the village of Upper Froyle. The application site extends across an area of 0.15 hectares and is bounded to the south and east by Round Wood with agricultural fields extending some distance to the west and north. The site is accessed by a long haul route linking West End Farm with the site. The nearest residential area is Upper Froyle 800m to the east where the site haul road meets the local road network. There are several other isolated properties located within 1km of the site.

### **4.2 Meteorology**

The generation, release and dispersion of fugitive dust and odour are particularly dependent upon weather conditions and the nature of the handled material. The prevailing meteorological conditions at any site would be dependent upon many factors including its location in relation to macroclimatic conditions as well as more site specific, microclimatic conditions. The most important climatic parameters governing the emission and magnitude of impact of dust are:

- wind direction which determines the broad transport of the emission and the direction in which it is dispersed; and
- wind speed will affect ground level emissions by increasing the initial dilution of pollutants in the emission; it will also affect the potential for dust entrainment.

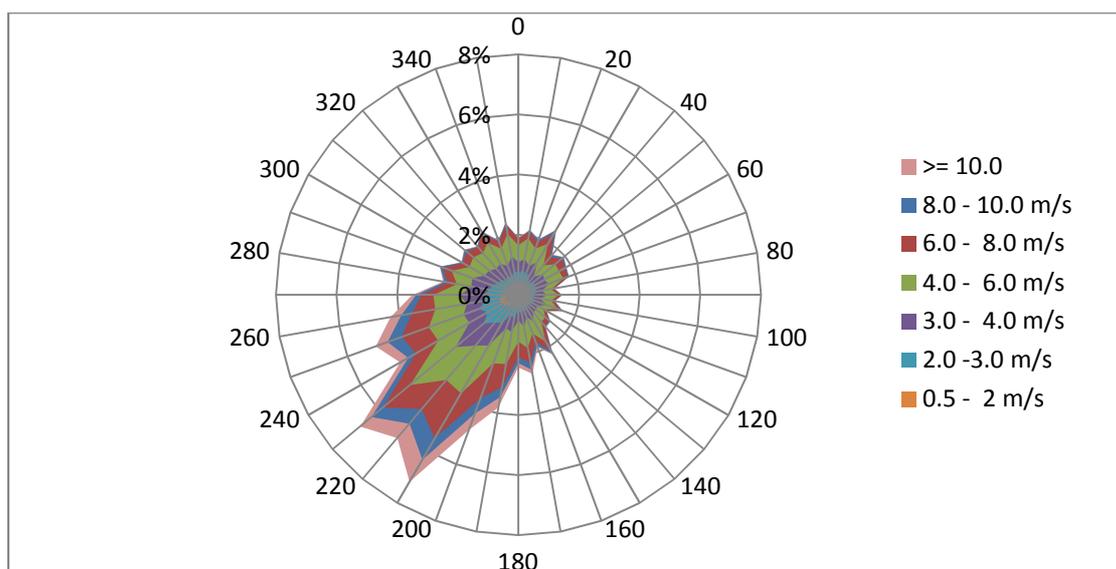
Rainfall is also an important climatological parameter in the generation of dust; sufficient amounts of rainfall can suppress dust at the source and eliminate the pathway to the receptor. According to Arup (1995)<sup>6</sup> rainfall greater than 0.2mm per day is sufficient to suppress dust emissions.

#### **4.2.1 Wind Speed and Direction Data**

A meteorological station considered representative of local site conditions with available data is located at Odiham, approximately 6km north of the site. A 5 year data set for this station has been used for this purpose. A windrose for the Odiham observing station is presented in Figure 4-1.

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<sup>6</sup> Arup & Ove Arup Environmental. Environment Effects of Surface Mineral Workings. DoE, October 1995



**Figure 4-1**  
**Windrose for Odiham Observation Station**

From Figure 4-1 it can be seen that the majority of winds are from the southwest with winds from this sector occurring for approximately 45% of the year. On this basis, it is locations to the north and east which have the highest potential for impacts from emissions originating from the site.

#### 4.2.2 Rainfall

Average rainfall data has been obtained for the Wisley meteorological observation station, located approximately 35km east of the site. Average data records (1971 to 2000) indicate that the average number of rainfall days per year (days with rainfall >1mm) is 110.2, which relates to 30% of the year.

### 4.3 Sensitive Receptors

#### 4.3.1 Human Receptors

Sensitive receptor locations are those where the public may be exposed to dust potentially arising from the site. The most sensitive receptor locations are residential dwellings where people generally expect a high level of amenity. There are a couple of residential properties located around the site. The location of these receptors are summarised below in Table 4-1.

**Table 4-1: Discrete Receptor Locations**

| Receptor                | Sensitivity to Dust <sup>7</sup> | OS X   | OS Y   | Distance from site boundary (m) | Direction from nearest site boundary (°) | Distance from Haul Road (m) |
|-------------------------|----------------------------------|--------|--------|---------------------------------|--|-----------------------------|
| R1 Bonhan Farm          | Low                              | 474200 | 141850 | 480                             | 180                                      | 810                         |
| R2 Whiteground Cottages | Medium                           | 475130 | 142645 | 730                             | 75                                       | 185                         |
| R3 West End             | Low                              | 475270 | 142475 | 800                             | 100                                      | 10                          |

<sup>7</sup> Office of the Deputy Prime Minister. Minerals Policy Statement 2. Controlling and Mitigating the Environmental Effects of Minerals Extraction in England. Annex 1:Dust

| Receptor       | Sensitivity to Dust <sup>7</sup> | OS X | OS Y | Distance from site boundary (m) | Direction from nearest site boundary (°) | Distance from Haul Road (m) |
|----------------|----------------------------------|------|------|---------------------------------|--|-----------------------------|
| Farm Residents |                                  |      |      |                                 |  |                             |

Located to the north of the site is a public footpath No. 27 running along the haul road to the site. Footpath No. 15 is located 120m to the south of the site and joins the first half of the haul road. Due to the short term exposure along these footpaths they are not considered to be sensitive to dust.

#### 4.3.2 Ecological Receptors

There are no nationally or internationally designated sites within 2km of the site. The closest ecologically designated sites to the site are woodland areas, Roundwood and Spollycombe Copse woodlands at distances of 10m and 500m, respectively.

**Table 4-2: Ecological Receptors within 2km**

| Site              | Designation      | Distance from Site | Direction from Site |
|-------------------|------------------|--------------------|---------------------|
| Roundwood SINC    | SINC             | 10m                | 90-180              |
| Spollycombe Copse | Ancient Woodland | 500m               | 275-300             |

#### 4.4 Baseline Air Quality

##### 4.4.1 Local Authority Review and Assessment

The Application site lies within the administrative area of East Hampshire District Council (EHDC). The most recent air quality report available is the Updating and Screening Assessment 2012.

EHDC monitor air quality across the district, as a result of which they have designated one Air Quality Management Area (AQMA) in Borden for annual mean nitrogen dioxide. They undertake automatic monitoring in Borden and have a network of 18 diffusion tubes across the district.

No fugitive particulate monitoring is undertaken within the area as EHDC considers that there are no potential sources of fugitive particulate matter emissions in their area.

##### 4.4.2 Defra background maps

Background pollutant concentration data on a 1km x 1km spatial resolution is provided by Defra and is routinely used to support LAQM and Air Quality Assessments.

Mapped background concentrations for PM<sub>10</sub> were downloaded for grid square x474500, y142500 which contains the proposed development site, from the 2010 based background maps (updated August 2012). These are presented in Table 4-3 below. Concentrations are 'well below'<sup>13</sup> the annual mean limit value of 40µg/m<sup>3</sup>.

**Table 4-3: Relevant Estimated Annual Mean Background Concentrations**

| Pollutant        | Predicted 2010 (µg/m <sup>3</sup> ) | Predicted 2012 (µg/m <sup>3</sup> ) |
|------------------|-------------------------------------|-------------------------------------|
| PM <sub>10</sub> | 15.80                               | 15.59                               |

#### **4.4.3 Complaints**

Permission was granted in 2008 for the green waste operations. To SITA's knowledge, no complaints have been made during this period about the site operations.

## 5.0 ASSESSMENT OF EFFECTS AND SIGNIFICANCE

This chapter presents the potential sources and dust impacts associated with the change of use from green waste operations to waste wood operations.

The addition of the wood shredding process has the potential to generate additional dust emissions above the baseline level of previous operations.

The vast majority of particles responsible for annoyance are deposited within 100m – 200m of the source<sup>8</sup>, and hence it is in this zone that the risk of problems from dust is greatest. Research<sup>9</sup> indicates that coarse dusts (for example greater than 30µm in diameter) will largely deposit within 100m of the source.

For all sources, the creation and subsequent dispersion of dust will be highly dependent on the weather conditions. Wind speed can determine the amount of dust raised, while wind direction determines those areas that may be affected. Higher wind speed increases the potential for the generation of airborne dust due to the suspension and entrainment of particles in airflow; rainfall however, has a suppressive effect on the generation of dust.

### 5.1 Sources of Dust

The primary sources of dust, according to M17<sup>10</sup>, from waste transfer stations, for which operations on the application site are similar, are from '*...activities associated with tipping, crushing, shaking and screening of waste within the waste transfer station*'. Other potential sources of dust are from roads and surfaces across the waste facility

Previous operations at West End Farm involved the storage, shredding and processing of green waste. It is proposed that the site will now accept waste wood which is considered to be a dustier material due to its inherently drier nature. The potential sources have been assessed and the principal activities that would give rise to potential for dust emissions from the development have been identified as;

- material storage
- transfer and processing of material; and
- transportation of material of site.

The amount of dust generated by each activity depends on the size of particles and, crucially, upon their moisture content. Dust emissions are greatest when there is a plentiful supply of small dry particles.

#### 5.1.1 Waste Wood Storage

Previous operations at the site involved the storage of green waste in stockpiles to the north of the site. After acceptance, green waste was initially stockpiled on hard standing for a period no longer than 24 hours prior to shredding. Once processed and shredded any material <50 mm fraction was temporarily stockpiled for an additional period of no more than 3 days.

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<sup>8</sup> MPS2, Annex 1: Controlling and Mitigating the Environmental Effects of Mineral Extraction in England.

<sup>9</sup> Minerals Policy Statement 2: *Controlling and Mitigating the Environmental Effects of Minerals Extraction in England*. Annex 1: Dust. Appendix 1A, paragraph 1A.5.

<sup>10</sup> Environment Agency 2004. Monitoring of Particulate Matter in Ambient Air around Waste Facilities (M17).

It is proposed with this change of use application that the initial storage area for the incoming waste wood will be located to south east of the site prior to shredding. Processed wood will then be stored to the north west of the site.

Incoming wood will be inherently larger in size with a lower proportion of fines and therefore considered less dusty than processed wood. Once shredded, the material will be smaller and therefore more likely to become entrained by wind. Due to the nature of operations, stockpiles would usually be left uncovered due to the need for frequent material transfer into or out of the stockpile.

The period of product stockpiling is considered to be relatively short, with material continuously being removed from the stockpile to be transported off-site. Without any mitigation measures, compared to green waste operations, there is likely to be a small increase in potential for dust emissions from the storage areas to the north west and south east of the site.

### 5.1.2 Processing and Loading

As with green waste operations the loading and unloading of waste wood into the processing plant and stockpiles is a potential source of dust emissions.

The processing of raw waste wood will be similar to green waste operations. Incoming wood will be shredded and screened to produce 100mm lump wood which will be transported by loading shovel to the stockpile area to the northwest of the site, to be eventually exported in 20 tonne payloads by HGV.

The processing plant area will remain in a similar location to the south west of the site. The previous plant used on site was a mobile shredding machine, mobile screen and loading shovel. The processing of waste wood will utilise a slow speed shredder, a 3 way mobile screener, loading shovel and 360 crab CAT to load the wood.

Dust particle distribution monitoring undertaken for a recent wood shredding plant<sup>11</sup> application provided the data presented in Table 5-1 below. This indicates that typical wood dusts produced are relatively coarse. The findings were that of the <4mm wood chip produced at this surrogate site that approximately 1.4% of the dust had a particle size of less than 6.3µm in diameter and that 97.2% was greater than 150µm in diameter.

**Table 5-1  
Particle Distribution for Different Wood Chip Grades**

| <b>Grade or Material</b> | <b>&lt;6.3µm</b> | <b>o fugit</b> |
|--------------------------|------------------|----------------|
| 0 – 4mm                  | 1.4%             | 2.8%           |
| 4 – 8mm                  | 1.0%             | 1.9%           |
| Wood Chip (>8mm)         | 0.3%             | 0.6%           |

Based on this table is it considered that the waste wood processing would lead to a low percentage of fines. Therefore processing of material is considered to have the potential for a small increase in dust emissions, compared to green waste operations.

Loading and unloading of storage piles and processing plant has the potential for dust emissions but strongly depends on the timing of operations with respect to meteorological

<sup>11</sup> FWS Carter & Sons Ltd Greendale Barton Business Park Noise and Dust Assessment of Proposed Wood Chip Plant (October 2009)

conditions and the characteristics of the material being handled. Operations carried out during periods of dry and windy weather are more likely to cause dust emissions capable of carrying the dust beyond the site boundary. During loading onto storage piles fines are easily disaggregated and released to the atmosphere on exposure to surface winds.

The handling and transfer of material without any mitigation measures has the potential for a small increase in dust emissions, especially when exposed to surface wind, compared to green waste operations.

### **5.1.3 Haul Road**

All site traffic would enter the farm from the west via the A31 and Ryebidge Lane, which links with the existing farm access off Colthouse Lane. The haul route runs past buildings after which it goes north across an agricultural field to link up with Footpath 27 before turning south into the site at a total length of approximately 1,300m.

Sources of dust from the haul road are typically associated with the transport of vehicles over the road surface and loss of material from the load. The eastern part of the haul road past West End Farm is tarmaced, while the western section running east/west is surfaced with type 1 sub-base. The surface of the site processing area comprises concrete hard standing. The production of dust emissions by HGV's on unpaved roads is dependant on the weight, speed and number of wheels in contact with the road surface. The main factor in the production of dust emissions from paved road surfaces is the re-suspension of loose material on the surface deposited by vehicles through spillages or trackout<sup>12</sup>. The material can become entrained by wind blow, with the dust generation dependant on wind speed, rainfall and the size of dust particles.

The permitted number of vehicle movements is 16 movements per day. Previously waste was transported to site by HGV and exported to West End Farm by agricultural tractor vehicles and trailer, with empty HGV's exiting the site. The proposed development will utilise current HGV movements to import and export waste with the processed waste exported to a biomass (or similar) facility for use as a sustainable fuel. As a result of the import and export of waste from the site by HGV, tractors would no longer be used, therefore reducing the number of vehicle movements along the haul road and consequently reducing dust emissions. The export of processed wood by HGV will also result in less spillage of material than tractor and trailer. Taking this into account there is considered to be a potential decrease in dust emissions, compared to green waste operations.

## **5.2 Dust Impact Assessment**

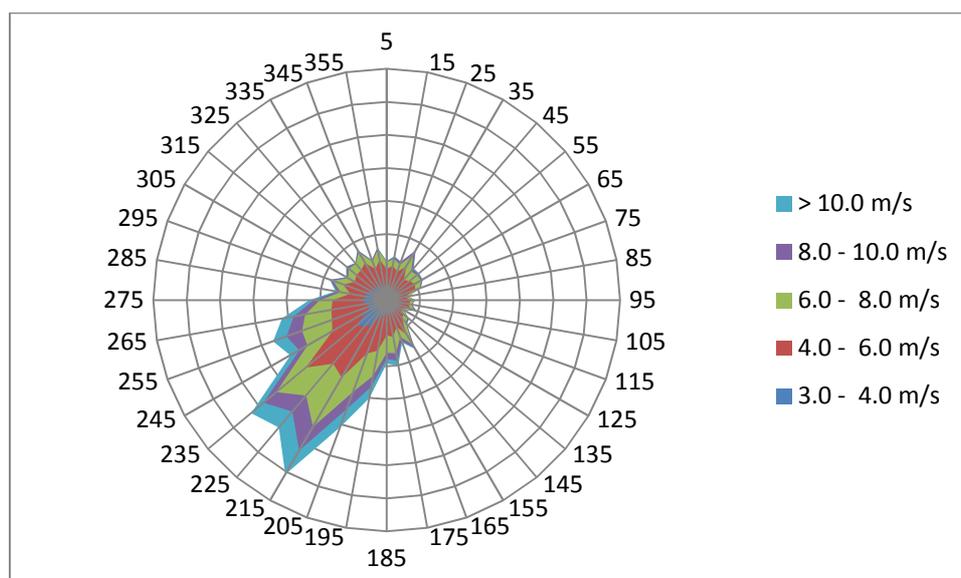
Potential dust impacts above the baseline have been identified to occur during the operational phase of the Proposed Development.

An assessment of potential dust impacts on local receptors is therefore considered to be required. Although dust emissions from such activities would be expected to deposit on the ground within 100-200m of the source, receptors within a distance of 500m have been assessed.

A windrose of winds capable of carrying airborne dust is presented in Figure 5-1 from the Odiham meteorological station.

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<sup>12</sup> USEPA 2011. AP42 Fifth Edition. Volume 1. Chapter 13. Miscellaneous Sources. Section 13.2.1



**Figure 5-1: Windrose from Odiham – Winds >3m/s**

Figure 5-1 illustrates the prevailing wind direction for moderate to high winds expected at the site is from the south-west. Receptors located to the north-east of the site would therefore expect to be at a higher risk of experiencing dust impacts due to their location downwind of the facility. The natural dust suppression however, provided by local rainfall patterns would expect to significantly reduce the risk, with sufficient rainfall to suppress dust emissions at the source falling on 30% of days of the year.

### 5.2.1 Human Receptors

The closest receptors to potential sources of dust during site operations are those located close to the haul road. West End Farm and Whiteground Cottages are located 10m and 185m from the haul road respectively in the prevailing wind direction. The closest receptor to operations within the site is Bonham Farm located 480m from the site.

Bonham Farm is located some distance from the operational area due south of the site. Winds from the North >3m/s 345°-15° occur for approximately 17% of the time. Therefore the frequency of winds from the north and the distance to the receptor, it is considered that impacts as a result of change of use at West End Farm would be negligible at Bonham Farm.

As Whiteground Cottages and West End Farm are within 200m of the site haul road and in the prevailing wind direction it is considered these receptors could be at a small risk of dust impact in the absence of effective mitigation measures on the haul road. However, compared to permitted green waste operations, as a result of the reduction in vehicle movements it is considered these receptors may experience a beneficial impact.

With regards to Particulate Matter (PM<sub>10</sub>) considering the small proportion of fines associated with waste wood shredding described in Table 5-2, the small increase in dust emissions compared to green waste operations and the background PM<sub>10</sub> emissions described in Table 4-3 being 'well below' the AQO, without mitigation measures there is considered to be a negligible<sup>13</sup> impact on receptors.

<sup>13</sup> Environmental Protection UK. Development Control; Planning for Air Quality (2010 Update)

### **5.2.2 Ecological Receptors**

The effects of particulate matter have not been subject to extensive research and therefore little published guidance is available. A majority of the research undertaken has focussed on the chemical effects of alkaline dusts. A summary of a review of available research on behalf of the DETR<sup>14</sup> concluded that:

*“the issue of dust on ecological receptors is largely confined to the associated chemical effect of dust, and particularly the effect of acidic or alkaline dust influencing vegetation through soils.”*

An Interim Advice Note (IAN) prepared as a supplement for Volume 11, Section 3, part 1 of the Design Manual for Roads and Bridges (and now incorporated into HA207/07<sup>15</sup>) suggests that only dust deposition levels above 1,000 mg/m<sup>2</sup>/day are likely to affect sensitive ecological receptors. This level of dust deposition is approximately five times greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans. It states that most species appear to be unaffected until dust deposition rates are at levels considerably higher than this<sup>16</sup>.

By ensuring dust deposition levels are kept to levels whereby perceptible nuisance to humans is not apparent (200mg/m<sup>2</sup>/day); levels of dust are expected to be significantly below the suggested level at which ecological receptors would be affected. Although Roundwood is closer to the site boundary than human receptors, by ensuring that sources of dust are controlled using general practice mitigation measures there is considered to be a negligible impact on nearby woodland and crops.

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<sup>14</sup> Department of the Environment, Transport and the Regions (DETR) 1995: *The Environmental Effects of Dust from Surface Mineral Workings – Volume Two*.

<sup>15</sup> Design Manual for Roads and Bridges. Volume 11, Section 3. Part 1 HA207/07. Annex F.

<sup>16</sup> Guidance for Undertaking Environmental Assessment of Air Quality for Sensitive Ecosystems in Internationally Designated Nature Conservation Sites and SSSI's (Supplement to DMRB 11.3.1), Interim Advice Note 61/04, March 2005

## 6.0 MITIGATION MEASURES & RESIDUAL IMPACTS

This section describes mitigation measures employed within the working scheme of the approved green waste shredding operation. These are reviewed in terms of their effectiveness of controlling dust emissions in relation to waste wood, and further mitigation measures are recommended as and where necessary and residual impacts assessed.

### 6.1 Mitigation Measures

The risks identified within Section 5 were assessed without implementation of mitigation measures. Given that the previous operation did not give rise to any issues in relation to dust emissions and the additional sources of dust are not considered to be significant it is considered that mitigation measures in place are sufficient and adequate.

The primary measures in the previous working scheme for controlling dust emissions are as follows:

- paved processing area and initial haul road section from public roads, facilitating cleaning;
- perimeter bunding on the south, west and northern extents of the site;
- use of water sprays where required;
- operational restrictions during dry, windy weather, with cessation of operations if required;
- sheeting of vehicles where necessary;
- use of mechanical sweeping plant where necessary;
- speed of vehicles limited to 10mph to reduce the potential for dust, particularly from unpaved section of haul road; and
- dust monitoring through visual inspection.

Providing the existing mitigation measures in place are continued in the proposed working scheme, no further consideration is required in relation to additional dust control. Section 5 has identified those receptors located close to the haul road are at a small risk of dust impact. Therefore the following mitigation measures are highlighted;

- all vehicles entering and leaving site to be enclosed or sheeted where possible to prevent spillage onto the road
- The ongoing maintenance and sweeping of any surfaced roads to ensure they remain free from dust generating materials, in addition to the water spraying of site roads during dry conditions

A summary of the effectiveness of mitigation measures is provided in Table 6-1.

**Table 6-1: Summary of Dust Control Measures and Estimate of Effectiveness**

| Dust Control Measures                                 | Estimate of Effectiveness |
|---|---------------------------|
| Water sprays to be used as required                   | High                      |
| Avoid handling wood during adverse weather conditions | High                      |
| Perimeter bunding; shielding from wind                | High                      |
| Speed controls to be implemented and enforced         | Moderate                  |
| Sheeting of vehicles where necessary                  | Moderate                  |
| Use of road sweeper on paved road when required       | High                      |

## **6.2 Residual Impacts**

With the continuation of the existing mitigation measures employed during the previous green waste operations, there is considered to be negligible residual impact from dust emissions on the surrounding receptors.

## **7.0 CONCLUSIONS**

The impact of dust from the change of use to waste wood processing for the Proposed Development is considered to be negligible with no increase from the baseline situation. Providing the existing mitigation measures continue to be employed on site, there is not considered to be a significant risk of dust impact at local receptors during the operation of the site.

Based upon the assessment of potential impacts introduced as a result of the Proposed Development, the change of use is considered to be suitable in terms of its impact on air quality.

## **8.0 CLOSURE**

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

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