ATLAS WORKS, LENWADE, NORFOLK, NR9 5SN

Dust Assessment

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1.0 INTRODUCTION

1.1 Create Consulting Engineers Ltd have been appointed by Serruys Property Company Ltd (SPC) to undertake a Dust Assessment in relation to proposals for a change of use of a storage/distribution facility at Atlas Works, Lenwade to a Derived Fuel Production Facility (DFPF).

Site Location

1.2 The site is located in the district of Broadland in the county of Norfolk. It lies adjacent to the East side of the village of Lenwade and to the North of the A1067 Norwich to Fakenham Road. The A1067 is a principal route administered by Norfolk County Council (NCC) as the Highway Authority.

1.3 The proposed development site lies to the Northeast of the A1067 Norwich to Fakenham Road some 16.5km (10.3miles) from the centre of Norwich and 21.5km (13.4miles) from the centre of Fakenham.

1.4 The Atlas Works site is bordered to the Southwest by the A1067 and to the West is located Shepherds Business Park. To the north, the site is bordered by Marriott’s Way footpath and cycle route running along the track bed of the former Midland and Great Northern Railway.

1.5 The proposed development would involve only part of the overall Atlas Works facility with some of the current occupiers remaining in those existing industrial units forming the south-eastern boundary of the application site.

Proposed Development

1.6 The proposed development considered in this Dust Assessment would occupy the north-western quarter of the Atlas Works site and would be constructed on what is currently assigned as 5,676 m² of covered warehousing.

1.7 The proposed development comprises of a change of use of the site from B8 (storage and distribution/warehousing) to a sui-generis use for a waste treatment facility primarily to produce Refuse Derived Fuel (RDF).

1.8 The site has been identified as suitable for the type of development currently proposed due to the location within a wider industrial landholding. The site has also been formally allocated Minerals & Waste Authority’s “Waste Site Allocations Development Plan”.

1.9 It is intended that the proposed activities on site will accept waste materials from household, commercial and industrial sectors with a maximum annual throughput of
150,000 tonnes. Waste will be sourced primarily from existing waste management facilities that pre-treat commercial and industrial wastes, and Local Authority household wastes.

1.10 Outwardly, there will be little change to site arrangements. The large existing building will be retained in its current form, although some cosmetic improvements will be made.

1.11 All waste processing activities will be undertaken internally, within the building, with only ancillary equipment, i.e. weighbridges and office, fuel storage and some material storage, being undertaken in external areas.

1.12 Internal operations will utilise standard processing equipment including bag splitters, shredders, size selection screening equipment, electromagnets, eddy current separators, conveyors, balers, shrink wrap machine and hand sorting. Therefore, the potential for dust/debris dispersion outdoors will be minimal.

**Objectives**

1.13 The following report provides an assessment of any potential dust impacts associated with the proposed operational activities.

1.14 In the event that potential impacts are identified, specific mitigation measures will be recommended.
2.0 RELEVANT UK LEGISLATION AND GUIDANCE

Legislation

2.1 Create Consulting has taken the following legislation into consideration when completing this assessment:

- Environmental Protection Act 1990; Part III Statutory Nuisance;
- Control of Substances Hazardous to Health Regulations 1994;
- Control of Pollution Act 1974;
- Clean Air Act 1993;
- The Health and Safety at Work Act 1974;
- Clean Neighbourhoods and Environment Act 1995;
- Air Quality Regulations 2000, as amended;
- Air Quality Standards Regulations 2010;
- BRE “Controlling particles, vapour and noise pollution from construction sites” 2003;
- Environmental Permitting (England and Wales) Regulations 2010;
- Health and Safety Executive (HSE) Guidance Notes EH 40/2002 on Occupational Exposure Limits;
- Control of Asbestos at Work Regulations, 2002 (as amended); and

2.2 Guidance from the BRE states that the most effective mitigation technique for dust control is to prevent dust from becoming airborne, since it is difficult to suppress after this stage.

2.3 Good site management would include the ability to respond quickly to such conditions by employing such techniques as damping down (i.e. using a spray hose to deliver a fine spray) of stockpiles and sheeting of vehicles carrying dust. Specific mitigation measures to be employed on Site are provided in section 7.

2.4 Create Consulting has taken the following guidance into consideration when writing this plan:

- BRE: Controlling particles, vapour and noise pollution from construction sites, parts 1-5 – 2003; and
3.0 DUST ASPECTS AND IMPACTS

3.1 There are numerous activities on waste management facilities that, if unmitigated, can give rise to elevated levels of dust. For example, the movement and placing of granular materials and the grinding/shaking of materials, poor stockpile management, site traffic movements, etc. can give rise to excessive levels of airborne particulate matter (PM_{10}/PM_{2.5}).

3.2 When breathed in PM_{10/2.5} can penetrate deep into the lungs. Exposure to high concentrations of PM_{10/2.5} can result in a number of health impacts ranging from coughing and wheezing to asthma attacks and bronchitis to high blood pressure, heart attack, strokes and premature death.

3.3 Furthermore, dust emissions may cause nuisance through, for example, surface soiling, loss of visibility, and impact on ecological receptors through deposition. It is difficult to suppress dust once it is airborne. As such, it is preferable to prevent emissions at source. i.e., prevent dust being generated in the first place.

3.4 For the purpose of monitoring the impact of PM_{10/2.5} this dust management plan will seek to protect all members of the public at all locations in the vicinity of the project site where they might reasonably be exposed for a period of 15 minutes.
4.0 **DUST ASSESSMENT CRITERIA**

4.1 The primary guidance on monitoring Particulate Matter in Ambient Air around waste facilities is the Environment Agency Technical Guidance Note M17 (TG M17, 2013). However this guidance applies mostly to monitoring dust generated on open air sites, and does not provide guidance on how to carry out a dust risk assessment for waste handling facilities.

4.2 The IAQM Guidance on the assessment of dust from demolition and construction (2014) provides guidance on how to assess the risk of potential dust impacts from construction and demolition sites, however in the absence of more specific guidance it has been applied in this case to assess the sensitivity of the area.

**Fine particles (PM\(_{10}\) and PM\(_{2.5}\))**

4.3 The National Air Quality Strategy (NAQS) objective for PM\(_{10}\) presently sets an annual gravimetric mean of 40µg/m\(^3\), with 50µg/m\(^3\) measured as a 24-hour mean, not to be exceeded more than 35 times per annum.

4.4 The National Air Quality Strategy (NAQS) objective for PM\(_{2.5}\) presently sets an annual gravimetric mean of 25µg/m\(^3\) by 2020 with 15 % cut in annual mean (urban background exposure) between 2010 and 2020.

**Background Air Quality**

4.5 A review of the 2017 UK Defra Background Maps show that PM\(_{10}\) is estimated to be 16.6µg/m\(^3\) and 11.4µg/m\(^3\) for PM\(_{2.5}\) in the vicinity of the project site (X-611500, Y-317500). Based on the data shown by Defra background maps it can be concluded that, with respect to particulate matter, air quality in the vicinity of the project site is generally very good. There are no Air Quality Management Areas located in the vicinity of the project site.
5.0 SENSITIVITY OF AREA

5.1 The sensitivity of the area takes into account a number of factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of \( \text{PM}_{10} \), the local background concentration; and
- Site specific factors.

5.2 The site under consideration has been identified as suitable for this type of development due to its location within a wider industrial landholding. Surrounding operations include a construction supply and block manufacturing plant, PVC window manufacture and a scrap metal recycling and processing yard. All of these operations have potential for dust emissions, if left unmitigated. However, they are not considered dust-sensitive receptors.

5.3 Towards the West of the site, the A1067 runs through the village of Great Witchingham (Lenwade). Having reviewed the local area, it is identified that the closest residential receptors are located approximately 180m to the North ("The Warren"), 1km to the West and 300m to the East of the site.

5.4 While there are existing dwellings to the West and East, "The Warren" residential property located approximately 180m to the North is the closest sensitive receptor. However, there is a natural tree boundary between the proposed development and The Warren and also those other aforementioned residential properties to the West and East. Therefore, this tree boundary makes it very unlikely that these receptors would be affected by any dust impacts associated with the operation of the site, especially when all the treatment operations will be conducted internally.

5.5 However, site-specific mitigation measures should be implemented in order to ensure that any potential for dust impacts are minimised. These are described in Section 5 of this report.

Dust Soiling

LOW RISK
- One receptor located approximately 180m from the site.

Health

LOW RISK
- One receptor located approximately 180m from the site; and
- Background levels of \( \text{PM}_{10} \) are less than 20µg/m³.
Ecological Effects

5.6 Dust can have two types of effects on vegetation: Physical and Chemical. Direct physical effects include reduced photosynthesis, respiration and transpiration through smothering.

5.7 Chemical changes to watercourses or soils may lead to loss of plants or animals via changes in acidity. Indirect effects can include susceptibility to stressors such as pathogens and air pollution. These changes are likely to occur only as a result of long term demolition and construction works adjacent to a sensitive habitat. Often impacts will be reversed when the works are completed and dust emissions cease.

**LOW (Not Applicable)**

- There are no ecologically sensitive features within the vicinity of the site that may be affected by dust deposition.
6.0 POTENTIAL DUST GENERATION AND IMPACT

6.1 Dust can be generated by numerous activities associated with waste treatment facilities. However, most of the activities with significant dust producing potential will be undertaken internally. As such, the risk of any significant off-site impacts will be LOW.

6.2 Additionally, derived fuels (e.g. treated waste), will be prepared for transport by baling and shrink wrapping to avoid any introducing dust emissions during storage and transportation.

6.3 However, there is potential for dust impacts from operational vehicle movements during site movements and also from sorted waste e.g. non-fuel materials such as inert aggregates and soils being stored externally in stockpiles.

**Operational Traffic**

6.4 Vehicle movements along access roads and also neighbouring roads have the potential to generate dust, especially during dry weather; however, these movements are not expected to introduce a significant source of dust generation.

6.5 The proposed scheme would operate a shift system, seven days per week, every week with a total of 50 full-time employees. However, the Site will need to operate on a 24 hour basis and therefore, it is proposed to provide up to 60 car parking spaces (including 4 disabled spaces) to cater for shift change/over time “overlaps”. Delivery and export of waste would, however, be restricted to between 0700 and 1800 Mondays to Saturdays and so HGV movements to/from the Site would only take place during these particular periods.

6.6 Vehicles entering the site from the A1067 would proceed along the new internal road system to the rear of the concrete works before passing over a new weighbridge to enter the processing area. Employee and visitor vehicles would not pass over the weighbridge and would enter the hardstanding area before the weighbridge and park on the southern boundary of the site. They would also depart the area using this access route.

6.7 Approximately 150,000 tonnes of waste would be processed at the site annually and this would be delivered by a mixture of articulated bulk carriers, tippers and roll on/roll off skips and smaller skip lorries and vans.

6.8 In addition to the HGV-related movements, there would be a daily workforce of approximately 50 full-time staff (arriving/departing the site over three 8hr shifts). On the basis that these staff arrived individually with 90% travelling by car, there would be 45 two-way car movements generated daily at a “worse-case” rate of 15 two-way movements during any particular hour.
6.9 In addition to the above, it could be assumed that visitors, post, small delivery and courier trips could be in the region of 5 two-way car/"light" vehicles per hour.

6.10 For simplicity, it could be assumed that HGV traffic would be spread evenly over the 0700 to 1800 periods allowed for the delivery and export of waste. Therefore, maximum levels of two-way vehicular traffic during any one hour would be up to 16 two-way HGV movements and 20 two-way car/"light" vehicle movements. Such modest levels of traffic are unlikely to pose any issues for the operation of the A1067 and this is particularly so given that the proposed development would introduce a new ghost island format of junction.

6.11 Recommendations regarding dust suppression for operational vehicles and any mobile plant are covered in Section 7.

**Operational Activities**

6.12 External hardstanding areas are already surfaced in concrete, therefore it is not necessary to assess potential dust impacts from dry unvegetated areas. However, as previously stated, there is a potential for dust impacts associated with aggregates and soils that would be stored externally. The potential for such impacts will be at its highest during predominantly dry, windy conditions.

6.13 Recommendations regarding dust suppression for operational activities and any mobile plant are covered in Section 7.
7.0 MITIGATION MEASURES

Operational Traffic and Plant

7.1 As previously stated, there is the potential for air quality and dust impacts to arise from plant and vehicles associated with operational activities. To mitigate the impacts from operational traffic and plant a number of Best Available Techniques (BAT) should be implemented and adhered to in conjunction with the proposed development.

7.2 The operational traffic and plant mitigation measures recommended are as follows:

- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and debris prior to leaving the site where reasonably practicable);
- Clean internal access routes using wet sweeping methods, as required;
- Avoid dry sweeping;
- Ensure any vehicles entering and leaving the site are securely covered to prevent escape of materials during transport.
- Ensure all vehicles switch off engines when stationary, no idling vehicles;
- Ensure vehicles working on site have exhausts positioned such that the risk of re-suspension of ground dust is minimised (exhausts should preferably point upwards);
- Minimise traffic movements around the site as much as possible;
- Maximising efficiency (this may include alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing);
- Vehicles and stationary plant should be well maintained and kept in a high standard of working order;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine sprays on such equipment wherever possible; and
- All non-road mobile machinery (NRMM) to use ultra low sulphur diesel (ULSD) where available;
- All NRMM to comply with all relevant emission standards;
- Avoid the use of diesel or petrol powered generators by using mains electricity or battery powered equipment where possible; and
- Locate plant away from site boundaries.

Operational Activities

7.3 The following is a list of specific mitigation measures that can be applied to the site in order to minimise dust effects associated with the operational activities:
• Erect barriers around the site, and ensure that any “dusty” activities are undertaken inside bunded areas and that all aggregates, soils and stock piles are constantly covered and also stored within bunded areas;

• Remove materials that have a potential to produce dust as soon as possible, unless being re-used. If they are to be re-used, on site covers should be used;

• Fully enclose the site or specific operations where there is a high potential for dust production and the site is active for an extensive period;

• Screen buildings, where dust producing activities might take place, with debris screens or sheeting;

• Carry out regular on-site and off-site inspections to monitor dust soiling effects, with cleaning to be provided, if necessary. Increase the frequency of inspections when activities with a high potential to produce dust are being carried out;

• Clean all hard standing surfaces using wet sweeping methods, as required;

• Avoid dry sweeping; and

• Avoid bonfires and the burning of any waste materials.
8.0 CONCLUSIONS

8.1 Create Consulting Engineers Ltd have been appointed by Serruys Property Company Ltd (SPC) to undertake a Dust Assessment in relation to proposals for a change of use of a storage/distribution facility at Atlas Works, Lenwade to a Derived Fuel Production Facility (DFPF).

8.2 Background concentrations of PM$_{10}$ and PM$_{2.5}$ are low (16.6µg/m$^3$ and 11.4µg/m$^3$, respectively). As such, air quality in the vicinity of the project site is considered to be very good.

8.3 The closest residential receptors are located approximately 180m to the north (“The Warren”), 1km to the west and 300m to the east of the site. However, there is a natural tree boundary between the proposed development and The Warren and also those other aforementioned residential properties to the west and east. It is highly unlikely that these receptors would be affected by any dust impacts associated with the operation of the site.

8.4 There are no ecological receptors in the vicinity of the project site.

8.5 Based on IAQM guidance on assessing the sensitivity of an area, the project site is considered LOW sensitivity.

8.6 The potential for dust emissions is minimised since waste processing activities will be undertaken internally, with only ancillary equipment (weighbridges and office, fuel storage and product storage) being undertaken in external areas.

8.7 There is potential for dust impacts arising from operational vehicle movements and their exhaust emissions and also from certain inert products (e.g. aggregates/soils) being stored externally. However, a comprehensive suite of mitigation measures has been put forward as part of this report.

8.8 The potential for dust emissions from the facility is considered to be LOW.

8.9 The mitigation measures referred to in this report should form part of the day-to-day processes and requirements of the proposed development and serve to minimise air quality and dust effects during operational activities.

8.10 In view of the findings of this report, it is considered that there are no significant air quality and/or dust effect issues that should hinder the proposed DFPF development at Atlas Works, Lenwade from proceeding.
9.0 DISCLAIMER

9.1 Create Consulting disclaims any responsibility to the Client and others in respect of any matters outside the scope of this report.

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