

Stewartby Waste Transfer Station

Dust Management Plan

FCC Waste Services (UK) Ltd

Report No. 14-K0157-ENV-R004

13 September 2022

Revision 01



BYRNELOOBY

IRELAND | UK | UAE | BAHRAIN | KSA

Document Control

Document: Dust Management Plan
Project: Stewartby Waste Transfer Station
Client: FCC Waste Services (UK) Ltd
Report Number: 14-K0157-ENV-R004

Document Checking:

Revision	Revision/ Review Date	Details of Issue	Authorised		
			Prepared By	Checked By	Approved By
00	4 July 2022	Issued to Client	E Greenhalgh	Phil Roberts	Phil Roberts
01	13 September 2022	Issued to EA	E Greenhalgh	Phil Roberts	Phil Roberts

Disclaimer: Please note that this report is based on specific information, instructions and information from our Client and should not be relied upon by third parties.

Contents

1	Introduction	1
1.1	Report Objectives.....	1
1.2	Site Operations.....	1
2	Fugitive Dust Emission Sources	3
2.1	On-Site Dust Emission Sources.....	3
2.2	Control Measure for On-Site Dust Emissions	3
2.2.1	Waste Acceptance	3
2.2.2	Site Controls	3
2.2.3	Vehicle Controls.....	4
2.2.4	Adverse Weather Conditions.....	4
2.3	Off-Site Dust Emissions Sources	4
3	Potential Pathways	5
3.1	Airborne Pathways	5
3.2	Overland Pathways	5
4	Potential Sensitive Receptors	6
4.1	Receptor Locations	6
4.2	Receptor Types.....	7
4.2.1	Habitats, watercourse and waterbodies	7
4.2.2	Residential, recreational, industrial, commercial and educational premises.....	7
4.2.3	Highways, Railways and Footpaths.....	8
5	Dust Risk Assessment	9
5.1	Site Dust Emissions	9
6	Community Engagement, Reporting & Contingencies	11
6.1	Overview	11
6.2	Dust Monitoring.....	11
6.3	Visual Monitoring.....	11
6.4	Complaints Process.....	12
6.5	Means of Contact.....	13
6.6	Complaints Screening.....	13
6.7	Complaint Investigation	14
6.8	Contingency and Emergency	14
6.9	Abnormal Events	14

6.9.1 Strong Winds 14

6.9.2 Hot/Dry Conditions 15

6.9.3 Implementation of the Contingency Plan and /or Emergency Plan 15

6.9.4 Operator’s Experience with contingency / emergency situations 15

6.9.5 Review and Update of Contingency and Emergency Plans 16

6.10 Records and Reviews 16

6.11 Communication Tools..... 16

Appendix A – Drawings.....A

Appendix B – Smith Grant Dust AssessmentB

1 Introduction

1.1 Report Objectives

This Dust Management Plan (DMP) has been prepared by ByrneLooby Partners (UK) Limited to support a permit application by FCC Waste Services (UK) Ltd (the proposed Operator) for an Inert and Excavation Waste Transfer Station (WTS) at Stewartby, Bedford (the Site). A planning application is being submitted simultaneously for the development (reference: 22/01285/EIAWM).

The Site is located 500 m north of Stewartby and is at approximate National Grid Reference (NGR) TL 01694 43157. The site has historically been used as railway sidings and the eastern area of the site for clay extraction for nearby brickworks. To the north of the site is Stewartby Landfill (permit reference BV4576IK) with associated Leachate Treatment Plant to the south (permit reference BV0953IM). The Site is accessed from Green Lane via the existing access road towards the western end of the site.

An Environmental Risk Assessment (ERA) (referenced: 14-K0157-ENV-R-00003) has been submitted with this application. A Dust Assessment carried out by Smith Grant LLP (the Smith Grant Assessment) has been submitted as part of the planning application and is attached as Appendix B. Reference has been made to these documents and the following Environment Agency (Agency) guidance:

- [Risk assessments for your environmental permit - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit)
- [Control and monitor emissions for your environmental permit - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit)
- [Non-hazardous and inert waste: appropriate measures for permitted facilities - Guidance - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/non-hazardous-and-inert-waste-appropriate-measures-for-permitted-facilities-guidance)

The purpose of this DMP is to identify which aspects of the WTS are likely to cause a potential harmful emission of uncontrolled dust and how these emissions will be minimised. A copy of this DMP will be included in the Site's Environmental Management System (EMS).

1.2 Site Operations

The Site will operate as a WTS for the import of up to 750,000 tonnes per annum of non-hazardous excavation, construction and demolition waste with an inherently low biodegradable and contamination potential. The waste will be imported via train and transferred to HGVs for onward off-site transfer for recovery or disposal elsewhere. No treatment activities are proposed. Storage of material would not typically be required, however in the unlikely event that materials cannot be transferred immediately to waiting HGVs an offloading area may be used for temporary storage. The offload area will be a concrete pad with sealed drainage. The Site has three existing railway sidings, the offload area and internal site access roads. In order to optimise the operations of the Site, the Operator proposes to install a replacement weighbridge and weighbridge office at the

entrance to the Site and a wheel wash to the north of the Sidings. The Site Layout is shown on drawing referenced: K0157/1/002.

2 Fugitive Dust Emission Sources

2.1 On-Site Dust Emission Sources

The nature and quantity of airborne matter released from site will depend on a wide variety of factors including (but not limited to) the nature and quantity of the material being handled, the handling processes and the weather conditions at the time. Fugitive dust emission can potentially arise from the following Site activities:

- Materials handling – delivery, handling and transfer;
- Site plant and internal haulage; and
- On-road transport.

Fugitive dust may present a dust nuisance to surrounding human receptors or can cause an adverse impact to sensitive habitats if excessive quantities were to settle and smother vegetation or enter surface water receptors and accumulate as sediment. Table 1 summarises the potential sensitive receptors and these are shown on drawing referenced K0157/1/003.

2.2 Control Measure for On-Site Dust Emissions

2.2.1 Waste Acceptance

Control of incoming wastes will be managed according to the Operator's waste acceptance procedures outlined in the Technical Standards (referenced: 14-K0157-ENV-R-00005) submitted with this application and the Site's EMS. The waste acceptance protocols aim to identify non-permitted wastes prior to receipt at site which will be rejected and redirected to a suitable facility for alternative recovery or disposal.

All materials would be delivered to site by rail and would be loaded directly into Heavy Goods Vehicles (HGVs) for immediate off-site transport. There will typically not be any storage of material prior to onward transfer however this may be necessary if no HGVs are immediately available.

2.2.2 Site Controls

Existing fencing and the proposed 6 m high acoustic fencing, along with existing stands of trees will act as a barrier to potential dust emissions. The railway sidings area and access road are fully provided with paved surfacing (concrete) reducing the potential for dust generation through surface breakdown. Internal roads and surfaces will be regularly maintained and may readily be cleaned with a bowser or road sweeper. A site speed limit will be set to prevent the raising of dust. Given the nature of the surfaces and length of surfaced access road to the public highway (~565m), the likelihood of dust due to track out arising from the proposed operations is considered negligible.

Good housekeeping practices will be implemented to make sure the site is clear of dust, mud, and other debris. All site personnel will be trained as to the potential sources and effective mitigation of dust. Regular visual inspections will be conducted of the operation by the site personnel, as deemed necessary and especially during windy conditions to ensure that any dust sources are identified and dealt with promptly.

In the unlikely event that unacceptable dust emissions arise from the Site, or a complaint is received the procedures in the Site's EMS will be followed.

2.2.3 Vehicle Controls

All loads will be sheeted or otherwise contained. Drop heights of materials will be minimised. All vehicles will be appropriately maintained in accordance with the manufactures or suppliers' instructions.

All vehicles leaving site will use the wheel wash to remove excess mud or debris which may dry and give rise to dust and debris on public highways. The wheel wash will be subject to regular inspections and maintenance to ensure appropriate functionality.

The Operator will enforce a no idling policy for Site vehicles, ensuring that wagon or mobile plant engines are switched off when not in use.

2.2.4 Adverse Weather Conditions

The Operator will ensure appropriate controls are in place during dry and/or windy conditions to prevent dust spreading beyond the Site boundary. This may include restricting or suspending activities most likely to generate dust, or spraying material with low moisture content with water prior to handling.

2.3 Off-Site Dust Emissions Sources.

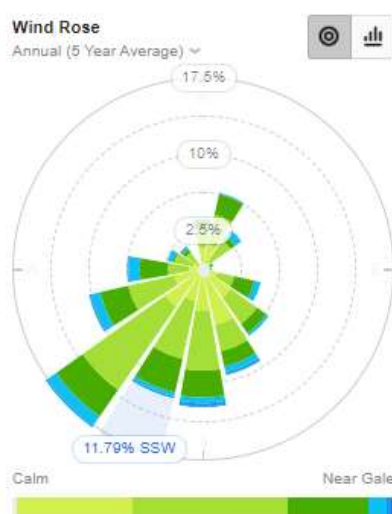
The site is located in a predominantly industrial setting with neighbouring land use comprising a hazardous waste transfer station, railway and sewerage works. These activities also have the potential to generate dust.

3 Potential Pathways

3.1 Airborne Pathways

The potential pathways for dust to reach sensitive receptors are via the air or over land. Transit of airborne emissions will be determined by the prevailing wind direction and physical obstructions. Weather and wind statistics are taken from Elstow Weather Station¹ located 4.7 km northeast of the Site boundary. The windrose shows that the dominant wind direction is from the southwest and blowing towards the northeast (Figure 3.1).

Figure 3.1 – Wind Rose, Elstow



The primary barrier to dust emission will be the Site’s surrounding fencing. The Site also benefits from perimeter trees which will be retained as part of the development.

3.2 Overland Pathways

Transit of emission which could travel overland will primarily be limited by physical barriers such as fences. There is no direct pathway between Site surfaces and potential off-site receptors other than via the Site access gates.

¹ [Elstow Wind Forecast, Bedfordshire MK42 9 - WillyWeather](#)

4 Potential Sensitive Receptors

4.1 Receptor Locations

When choosing the receptors, the closest or the most sensitive (if different from the closest) have been considered in each direction from the hazard. The most sensitive receptors are within 500 m radius of the Site making the assessment conservative for other potential receptors located further away. Account has been taken of the mechanism of transport to the sensitive receptor e.g. wind direction or a physical connection to the Site. Receptors are considered sensitive where people and habitats have the potential to be adversely affected by the dust emissions.

The probability of exposure is determined by the distance of the receptor to the Site and the likelihood of the hazard reaching the receptor (e.g. frequency of prevailing wind in that direction). This stage of the assessment assumes that exposure has resulted from an uncontrolled emission i.e. without mitigation.

The nearest sensitive receptors are shown on drawing referenced K0157/1/003. The site is located in a predominantly industrial setting with neighbouring land use comprising a recycling centre, sewerage works, landfill, and derelict brickworks. The closest receptors to the site are the railway line, Veolia Recycling Centre, Green Lane and deciduous woodland, all located <10m from the Site's boundary. The distance of receptors to the Site boundary, the type of receptor (i.e. residential, industrial) their direction relative to the Site and the frequency the wind blows in the direction of the receptor is detailed in Table 1 below. The sensitivity to dust of the individual receptor types identified in the third column of Table 1 is further detailed in Table 2.

Table 1 – Potential Sensitive Receptors

No.	Receptor Description	Category	Distance (m) from Site	Direction from Site	Frequency of prevailing Wind direction (%)
1	Veolia Hazardous Waste Transfer Station	Industrial / Commercial	<10	E	6.8
2	Kimberley Sixth Form College	School	80	E	6.8
3	College Pond	Waterbody	175	E	6.8
4	Green Lane	Highway	<10	SW	4.3
5	Railway Line	Railway	<10	E	6.8
6	Stewartby Brickworks	Derelict / Residential	40	SE	2.5
7	Broadmead Road	Highway	325	E	6.8
8	Properties off Broadmead Road	Residential	350	E-SE	6.8-2.5
9	Sewage Works / Commercial Premises	Industrial / Commercial	185	E	6.8
10	Broadmead Farm	Residential / Agricultural	340	NE	17.2
11	Elstow Brook	Watercourse	<10	N	12.3
12	Public Footpath	Footpath	70	E	6.8
13	Deciduous Woodland	Priority Habitat	<10 - 500	N-S	0 - 17.2
14	European Eel Migratory Route	Protected Species	340	N	12.3
15	Copart UK	Industrial / Commercial	500	NW	7.3
16	Stewartby Lake	Waterbody	50	SW	4.3

Table 2 – Types of Receptors Sensitive to Dust

No.	Receptor Sensitivity to dust
Habitat	High
Watercourse / body	Low
Residential	High
Highway / Railway / Footpath	Low
Recreational	High
Industrial	Low to Moderate
Commercial	High
Educational	High

4.2 Receptor Types

4.2.1 Habitats, watercourse and waterbodies

Deciduous woodland has been identified from the north to south of Site. The Agency describes deciduous woodland as containing nutrient sensitive vegetation which if depleted, may affect sensitive species dependant on that type of flora.

Uncontrolled fugitive dust is unlikely to affect adjacent habitats. In the unlikely event dust emissions were to occur, only the accumulation of very significant quantities dust in the vegetation could inhibit normal plant growth or animal behaviour.

Stewartby Lake, a former flooded brick pit, and Kimberley Sixth Form College Pond are located to the south of the Site. Elstow Brook is immediately north of the Site. It is culverted beneath the western site area and is present as an open channel off-site to the north and south. The brook is connected to Stewartby Lake, from which flows north and discharges into the River Great Ouse 2km north of the Site. The brook appears to have been modified historically as part of the wider Site’s history as a clay pit / brickworks and landfill.

Uncontrolled fugitive dust is unlikely to affect adjacent waterbodies and watercourses. In the unlikely event dust emissions were to occur, only the accumulation of very significant quantities of dust could impact water quality.

4.2.2 Residential, recreational, industrial, commercial and educational premises

The Smith Grant Assessment did not identify any existing potential sensitive receptors. The nearest residential receptors are 350m to the southeast and Kimberley Sixth Form College is 80m south of the access road. It also concluded the potential overall dust emissions from the proposed activity would not be significant. The Smith Grant Assessment and this DMP have included the redevelopment of the derelict brickworks to a residential area for completeness. The Smith Grant Assessment concluded there is a risk of slight adverse effects of dust soiling at the boundary of the proposed brickworks redevelopment area. It suggested that the proposed construction of a 6m high acoustic barrier fence would also serve to further reduce likely adverse dust impacts.

For conservatism this DMP assumes the residences are occupied during the operational hours of the Site by members of the public most sensitive to emissions from the Site. It is likely that the combination of waste type and operational controls, physical barriers (fencing and sprays), distance to the receptors and the prevailing wind direction will reduce potentially harmful emissions from reaching receptors.

The potential emissions from the Site may have an impact on persons occupying residential, recreational, industrial, commercial or educational premises. Although potential exposure of emissions to persons at industrial or commercial premises may be lower as they are more likely to be inside during the working day or they may be transient visitors to the premises. Certain industrial and commercial premises may generate similar emissions to the WTS and the employees may be desensitised as a result.

Fine dust particulates are able to travel further than larger particles that may settle on surfaces nearby. Finer particulates may potentially elicit a respiratory effect from sensitive individuals, whilst settlement of dust may be unsightly. Dust is less likely to affect internal spaces.

The proposed activities are unlikely to generate dust in such sufficient quantities that a plume would be visible beyond the Site boundary.

4.2.3 Highways, Railways and Footpaths

The transitory nature of highways or railways means receptors using those locations will be exposed to potential emissions from the Site for shorter (albeit variable) periods of time than residences or businesses. The highway and the railway both have potential to generate their own dust emission which are not related to the WTS. Pedestrians will have longer and more direct exposure to emissions compared to vehicle users, with train passengers less likely to be exposed to emissions and for significantly shorter periods of time.

Green Lane is the closest highway and this places a more immediate need for the operational effectiveness of Site controls.

5 Dust Risk Assessment

5.1 Site Dust Emissions

The risk potential to each receptor as identified in Section 4 and shown on drawing referenced K0157/1/003 from dust generated at the Site is presented in Table 3 below. This table evaluates the unmitigated risk to sensitive receptors from uncontrolled dust emissions and the control measures to be implemented at the Site in order to minimise this risk, producing a revised risk to receptors.

Table 3 – Fugitive Dust Emissions Risk Assessment and Management Plan

Hazard / Pathway	Receptor				Probability of exposure	Unmitigated Consequence	Initial Risk	Risk Management	Residual Risk
	ID No	Distance (m)	Direction	Freq. Downwind (%)					
Fugitive dust emissions generated by: Vehicle movements and handling of waste on site	1	<10	E	6.8	High – close proximity to Site, infrequently downwind	Medium – dust nuisance workers	Medium	<p>Site staff will enforce strict waste acceptance protocols to reduce the transfer of potentially dusty wastes.</p> <p>On site speed limits will be enforced and internal site roads will be maintained and cleaned with a bowser or road sweeper. If required, the road sweeper will be used on highways.</p> <p>All vehicles will use the proposed wheel wash to remove excess mud or debris which may dry and give rise to dust and debris on public highways. Wheel wash will be inspected and maintained as appropriate.</p> <p>Deposit of material will not be undertaken from excessive height to reduce dust.</p> <p>During dry or windy conditions appropriate controls will be put in place such as dampening down of site roads/stockpiles and restricting or suspending activities.</p> <p>Daily visual inspection by appropriate site staff taking account of the prevailing wind direction.</p>	Low
	2	110	E	6.8	Medium – proximity to Site, infrequently downwind	High – dust nuisance students	Medium		
	3	175	E	6.8	Low – distant to Site, infrequently downwind	Medium – potential for sediment to accumulate	Medium		
	4	<10	SW	4.3	High – close proximity to Site, occasionally downwind	Low – transient dust annoyance	Medium		
	5	<10	E	6.8	High – close proximity to Site, infrequently downwind	Low – transient dust annoyance	Medium		
	6	40	SE	2.5	High – close proximity to Site, occasionally downwind	Medium – dust nuisance visitors High – dust nuisance future residence	Medium / High		
	7	325	E	6.8	Low – distant to Site, infrequently downwind	Low – transient dust annoyance	Low		
	8	350	E-SE	6.8-2.5	Low – distant to Site, infrequently downwind	High – dust nuisance residents	Medium		
	9	185	E	6.8	Medium – proximity to Site, infrequently downwind	Medium – dust nuisance workers	Medium		
	10	340	NE	17.2	Medium – distant to Site, frequently downwind	High – dust nuisance residents	Medium		
	11	<10	N	12.3	High – close proximity to Site, frequently downwind	Medium – potential for sediment to accumulate	Medium		
	12	70	E	6.8	High – close proximity to Site, occasionally downwind	Medium – transient dust annoyance	Medium		
	13	<10 - 500	N-S	0 - 17.2	High – proximity to Site, frequently downwind	Medium – potential deposition on sensitive vegetation	Medium		
	14	340	N	12.3	Medium – distant to Site, frequently downwind	Medium – potential for sediment to accumulate	Medium		
	15	500	NW	7.3	Low – distant to Site, infrequently downwind	Medium – dust nuisance workers	Medium		
	16	50	SW	4.3	High – close proximity to Site, infrequently downwind	Medium – potential for sediment to accumulate	Medium		

6 Community Engagement, Reporting & Contingencies

6.1 Overview

Prevention will be viewed as the most effective means of controlling dust before an adverse impact occurs from uncontrolled emissions. The Source → Pathway → Receptor model determined above allows for the identification of the critical control points where dust can arise, how it can travel to a receptor and the likely impact.

The performance of a DMP will ultimately be judged by the impact of the WTS on the potential receptors. Should complaints be received, a procedure will be in place to effectively deal with the issue in a sensitive, efficient and auditable manner.

The controls for each source term are detailed in previous sections of this report. The management of those controls will be based on the on-going monitoring regime on Site. The monitoring regime can work as an early warning system against potential problems (e.g. meteorological monitoring) or a diagnostic tool to establish the cause of a dust event (e.g. perimeter monitoring).

6.2 Dust Monitoring

The Smith Grant Assessment concluded that overall dust emissions were not significant. Therefore, it is not considered necessary to carry out total deposited dust and / or PM10 monitoring at the Site.

It is considered that reliance on regular, routine visual monitoring of Site emissions is the most reliable and immediate indicator of potential emissions. Ongoing visual assessment of Site activities is considered to offer the operator the ability to make a more immediate response to potential dust emissions than PM10 or deposited dust equipment.

6.3 Visual Monitoring

The Site will be visually monitored twice daily for dust by the Site Manager and continuously by the operatives in the course of their duties to establish whether any dust has left the Site. This will include dust arising from vehicles arriving at Site and from the WTS itself.

Records will be completed for each inspection and all Site Personnel will be responsible for reporting dust and particulate problems as soon as practicable to the Site Manager or the next level of management if the Site Manager is not available.

The following locations will be targeted for dust monitoring by the nominated Site staff:

- Offloading area (continuous monitoring of vehicles); and

- Subject to prevailing wind direction (i.e. up and down wind), appropriate areas of the Site perimeter.

The following information will be recorded during each round of monitoring:

- Name of personnel undertaking monitoring;
- Nature of any problem identified including location, source, date, time, duration, prevailing weather conditions and likely cause;
- On-Site activities and operational condition at the time of the monitoring visit (this should include any of the abnormal events detailed in Section 6.9 below);
- Records of the likely source of any dust, even if it is not from the WTS;
- Details on the corrective action taken, realistic timeframes for remedial works and any subsequent changes to monitoring and operational procedures; and
- The Site Manager will be informed immediately of any findings of dust and particulates attributed to the Site and will authorise remedial measures to be taken.

6.4 Complaints Process

Any complaints received at the WTS or via the Regulatory Bodies including the Agency and Local Authority, will be recorded. This will instigate further visual dust monitoring at the location of the complaint and on-Site to determine the extent and location of the dust generating materials and/or process will be identified. Where possible, as much information and detail about the complaint will be recorded, whether this is from the relevant authority or a complaint direct to the Site. This information will assist in the investigation and determining the source of the dust e.g. differentiating between potential dust from the Site or other off-Site activities.

All complaints and queries will be logged in accordance with the Site's EMS as soon as is practicably possible. All complaints logged will be subject to investigation, and complainants responded to within 48 hours of receipt, where possible. All responses will be through trained and experienced staff.

In the event that a substantiated dust complaint is received arising from the WTS, additional visual monitoring will be undertaken at the nearest sensitive receptors. The person conducting the survey shall make note of any dust at each monitoring point including those not of obvious WTS origin.

Complaints regarding dust from the WTS will be investigated in accordance with the protocol, and appropriate records maintained which may include:

- Complaints received including name and contact details of complainant (if known), and complainants description of the dust;

- Nature of problem including date, time, duration, prevailing weather conditions and cause of the problem;
- On-Site activities and operational conditions at the time of the complaint;
- Records of the likely source of the dust, even if it is clearly not from the WTS;
- Details on the corrective action taken and any subsequent changes to monitoring and operational procedures; and,
- The Agency will be proactively informed by the Operator of the complaint and the Operator will confirm to the best of its knowledge the information described above.

The Operator will ensure that the complainant has all the relevant contact details of the Site (i.e. the Site Manager) and the officer responsible at the Agency. The operator will be in regular contact with the complainant and the Agency whilst the cause of the dust is being investigated and remediated.

An evaluation of the effectiveness of the techniques used will be carried out on completion of any remedial measures, or if the complaints persist. Records of the above will be retained by Site for future reference.

6.5 Means of Contact

The WTS will be readily contactable to outside organisations and to members of the public. The Site signage board (placed in a readily visible location) will contain the necessary contact details for both the Site operations and Agency. The company website also contains the necessary contact details.

Any complaints received directly to Site will be notified to the Agency. Should an off-site issue arise, therefore, the complainant has a readily available means of getting in touch with the Operator.

6.6 Complaints Screening

As part of each dust complaint received, these will be objectively assessed against the wider environment to ensure that the source of the emission is traced back to the correct source. It is essential that the source is correctly identified in order that mitigating measures can be applied effectively and correctly. The complaint will also be assessed against previous records to place the nature of the complaint into context.

If patterns in complaints emerge, community groups or individuals (subject to their agreement) will be called upon to act as an additional dust monitoring resource.

6.7 Complaint Investigation

In the event that dust is found to be causing a problem from the Site, as determined and confirmed by investigation into off-site complaints, or during routine monitoring; measures will be taken to determine the source of this dust and the following courses of action as detailed below shall be taken to ascertain if the dust is coming from the WTS;

- Additional visual inspection as detailed above to identify the extent of the dust emission and potential cause for the dust i.e. waste material and/or activity;
- Examination of the operational activities at the time of the dust complaint;
- Examination of the meteorological conditions at the time of the complaint;
- Carry out a review of the operational procedure and controls and instigate any control measures immediately following identification of the problem; and,
- Further visual inspection will be carried out to ensure the issue has been addressed and to monitor the effectiveness of any control measures undertaken.

It is recognised that whilst complainants are encouraged to report valid complaints to the regulatory bodies, complaints that are received/submitted directly to the Site are able to be investigated more rapidly. As a result, complaints reported directly can be substantiated, reviewed and actioned quicker. With the complainant still able to report the complaint to the regulatory bodies after, should it be necessary. Nevertheless, all complaints will be investigated.

6.8 Contingency and Emergency

In the event that dust is proven to be from the Site and found to be causing a problem as determined by the investigation of off-Site complaints or during routine on-Site monitoring, action will be taken to determine the source and the following courses of action. Control and mitigation measures for each stage of the waste management process are as described in Section 2 and summarised in Table 4.

6.9 Abnormal Events

The DMP assumes that the WTS will be running under expected operational conditions. There are however circumstances that could result in a dust emission from the Site if not appropriately considered in advance. These are considered in Table 4.

6.9.1 Strong Winds

Daily visual inspection of the Site infrastructure will be undertaken and recorded. Additional inspection for damage resulting from high wind events will also be undertaken and contingency actions identified below considered should high wind conditions result in escape of significant dust emissions.

6.9.2 Hot/Dry Conditions

The warmer the weather the greater the potential for wastes to become dry and dusty, particularly when agitated. Daily inspections will be undertaken of the waste to ensure waste delivered to the Site is not dusty and material with low moisture content is sprayed with water prior to handling to reduce dust emissions. During prolonged periods of hot weather inspection frequency will be increased.

Table 4 – Contingency Actions

Issue	Period	Mitigation Plan
Facility not available as the delivery location. E.g. plant failure	1 day	Retain waste in trains until replacement mobile grab can be sourced to transfer wastes to HGVs
	Up to 72 hours	Unlikely that replacement grab could not be sourced to unload trains > 1 day
	1 week	As above
	1 month	As above
	3 months or longer	As above
Action for waste deliveries	1 day	Retain waste in stockpiles until replacement mobile grab can be sourced to excavate into HGVs. Do not unload further trains until surface is cleared. Dampen down stockpiles in dry conditions if risk of dust arises.
	Up to 72 hours	Unlikely that replacement grab could not be sourced to unload trains > 1 day
	1 week	As above
	1 month	As above
	3 months or longer	As above
Facility available as delivery Site but not for transferring waste e.g. plant failure	1 day	Temporarily store material at WTS. Dampen down stockpiles in dry conditions if risk of dust arises.
	Up to 72 hours	Identify alternative delivery point.
	1 week	As above
	1 month	Implement Medium term solution i.e. transfer to 3rd party for storage.
	3 months or longer	Implement Long term solution i.e. establish new off-taker.
Off-taker not available for waste	1 day	Temporarily store material at WTS. Dampen down stockpiles in dry conditions if risk of dust arises.
	Up to 72 hours	Identify alternative delivery point.
	1 week	As above
	1 month	Implement Medium term solution i.e. transfer to 3rd party for storage.
	3 months or longer	Implement Long term solution i.e. establish new off-taker.

6.9.3 Implementation of the Contingency Plan and /or Emergency Plan

Unscheduled unavailability should only take place due to unscheduled maintenance, emergency situations and for Health and Safety reasons such as a fire at the Site. In such cases the plant staff will initially inform the plant manager who will in turn inform service managers, the Authority and the Agency. Site staff will implement measures to store or divert wastes as required.

6.9.4 Operator’s Experience with contingency / emergency situations

The operator has a policy of continuous review of emergency and contingency procedures which helps improve procedures across the operator’s operations.

6.9.5 Review and Update of Contingency and Emergency Plans

The Contingency Plan and Emergency Plan will be reviewed following any incident where they have had to be followed. They will be updated as necessary with any lessons learned.

6.10 Records and Reviews

A daily record relating to the management and monitoring of dust will be maintained. It will include the following details:

- The results of inspections and visual monitoring carried out by installation personnel;
- Weather conditions including atmospheric pressure, wind speed and wind direction;
- Problems including date, time, duration, prevailing weather conditions and cause of the problem;
- Complaints received including address of complainant; and
- Details of the corrective action taken, and any subsequent changes to operational procedures.

The DMP will be reviewed on an annual basis with the scheduled review of the EMS or with every major decrease, or alteration to the dust generated at Site (i.e. a change to dust source term, pathways or receptors).




6.11 Communication Tools

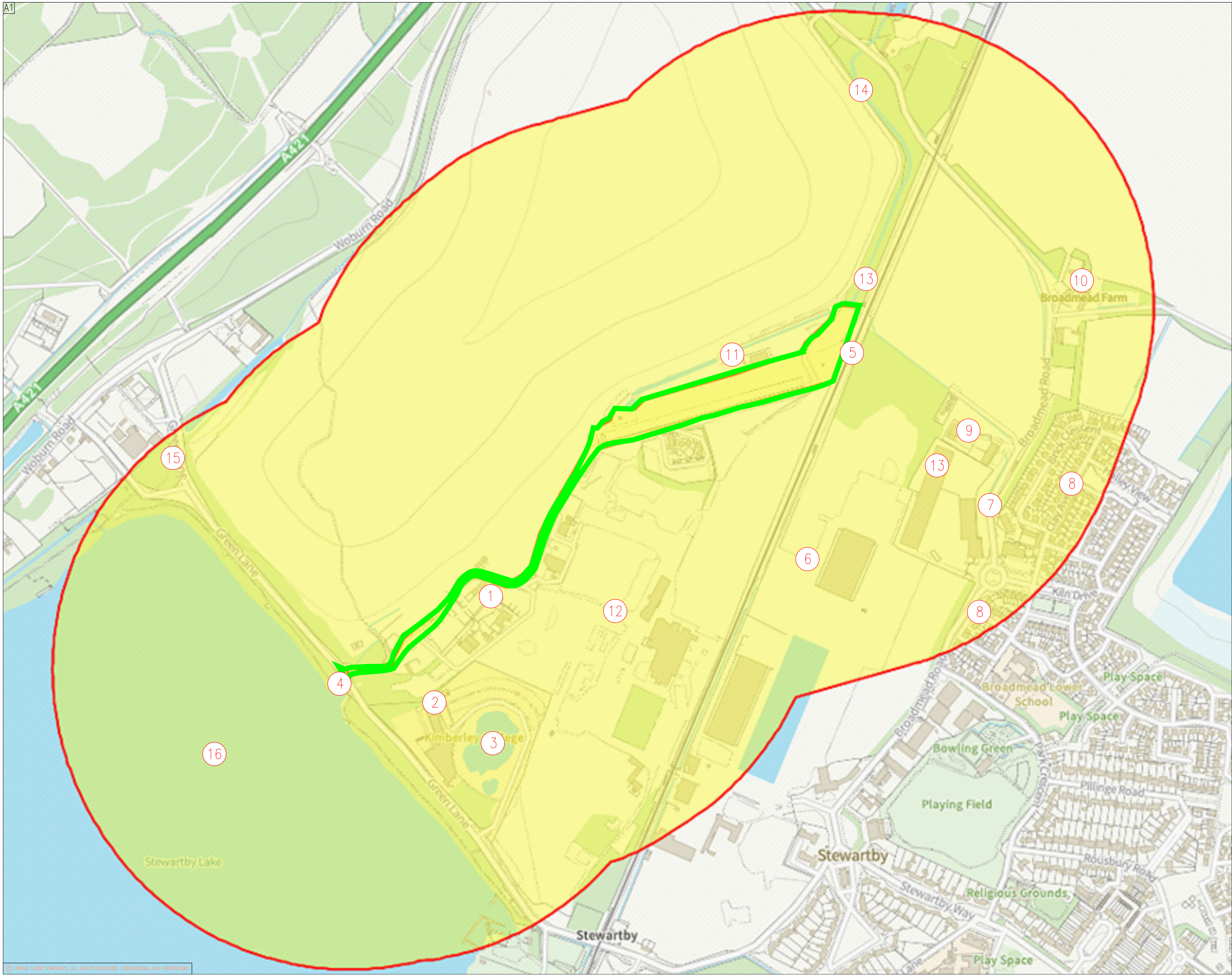
Stakeholders will typically include the Local Authority, the Agency, Parish Councils and members of the local community. Other stakeholders may include local businesses should the WTS be deemed to impact upon them.

In addition, and as covered within the complaints section, contact details will be made available so that any complaints can be directed to Site and an investigation undertaken immediately.

Appendix A – Drawings

- NOTES:
1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM.
 2. DO NOT SCALE FROM THIS DRAWING.
 3. ANY ANOMALIES IDENTIFIED WITH THE DETAILS SHOWN ON THIS DRAWING ARE TO BE BROUGHT TO THE ATTENTION OF BYRNE LOOBY PRIOR TO CONSTRUCTION WORKS COMMENCING.

- LEGEND:
-  PERMIT BOUNDARY
 -  BUFFER ZONE
 -  RECEPTOR MARKER



Rev	Date	Description	By	Chk	App

BYRNE LOOBY
 WWW.BYRNELOOBY.COM

IRELAND | UK | UAE | BAHRAIN | KSA

CLIENT
 FCC

PROJECT
 STEWARTBY

DRAWING TITLE
 SENSITIVE RECEPTOR PLAN

STATUS
 FINAL

Date: 23.06.22	Scale: 1:2000	Drawn: JM	Chk: MR	App: JB
Project No: K0157	Dwg. No: K0157.1.003	Rev: 00		

Appendix B – Smith Grant Dust Assessment

CHAPTER 6.0 AIR QUALITY

6.0	AIR QUALITY	6-1
6.1	Introduction.....	6-1
6.2	Methodology and Scope of Assessment.....	6-2
6.3	Baseline Conditions.....	6-16
6.4	Assessment of Effects.....	6-20
6.5	Cumulative Effects.....	6-29
6.6	Mitigation.....	6-30
6.7	Residual Effects and Conclusions.....	6-33

FIGURES

Figure 6.1.....	Study Areas
Figure 6.2.....	Location of nearby Air Quality Features
Figure 6.3.....	Dust Assessment Receptors

APPENDICES (see Volume 2)

Appendix 6-1.....	Assessment Methodologies
Appendix 6-2.....	Bedford Wind Rose
Appendix 6-3.....	Dust Impact Assessment

6.0 AIR QUALITY

6.1 Introduction

6.1.1 This Chapter assesses the likely significant effects of the Proposed Development at Stewartby Rail Sidings on local air quality.

6.1.2 The principal aspects considered by this Chapter are:

- Dust: potential impacts of disamenity dust and fine particulate matter (PM₁₀) arising during waste transfer activities; and
- HGV exhaust emissions: potential impacts of vehicle exhaust emissions (NO_x / NO₂ and PM₁₀) arising from traffic generated by the proposals.

6.1.3 The Chapter describes the methods used to assess the baseline conditions currently existing at the Site and surroundings, the potential severity of direct and indirect air quality impacts of the Proposed Development and the mitigation measures required to prevent, reduce or offset the impacts and the significance of residual effects.

Proposed Development

6.1.4 The Proposed Development is described in detail in Chapter 3.0.

6.1.5 In this Chapter the term 'Site' has been used to refer to the planning application boundary encompassing the area of sidings themselves and the associated main access road off Green Lane.

Competence

6.1.6 The Chapter has been prepared by Smith Grant LLP, an environmental consultancy specialising in air quality. The author is an environmental scientist with over 25 years' experience in the field of environmental risk management now specialising in the assessment of air emission impacts. The author regularly provides air quality input to planning applications for a wide range of developments including waste management and treatment facilities, mineral extraction and housing development. The author is a Member of the Institute of Air Quality Management (IAQM).

6.2 Methodology and Scope of Assessment

Technical Context

- 6.2.1 The Sidings would be used for the importation of material for onward transportation to sites in the local area. The material type to be imported via the Sidings would be unrestricted but could include materials which could give rise to amenity impacts such as aggregates, inert waste and soils. Aggregate, inert waste and soils handling operations can give rise to releases of airborne particulate matter (PM) or dust. The nature and quantity of airborne matter released at any one time will depend on a wide variety of factors including, but not limited to, the nature and quantity of the material being handled, the handling processes incorporated and the weather conditions at the time.
- 6.2.2 The airborne PM is made up of condensed phase (solid or liquid) particles suspended in the atmosphere and comes from both man-made and natural sources. It ranges in sizes from a few nano-metres to around 100µm and can give rise to both soiling effects through dust deposition ('disamenity dust') and human health effects through suspended particulates. Dust accumulation may also affect sensitive habitats through impacts on vegetation and aquatic ecosystems.
- 6.2.3 Dust soiling will arise from the deposition of particulate matter in all size fractions but will be associated mostly with particulate matter greater than 30 µm. Particles below 10 µm (referred to as PM₁₀) correspond to the inhalable fraction of particulate matter and, depending on the nature and concentrations of the particles, can be associated with adverse health impacts. PM₁₀ includes both fine (those particles of less than 2.5 µm; referred to as PM_{2.5}) and coarse (diameter between 2.5-10µm; PM_{2.5-10}) fractions of airborne particulate matter which normally arise from different sources.
- 6.2.4 Haulage to and from the Site and non-road mobile machinery (NRMM) associated with on-site activities will also result in emissions of, primarily, oxides of nitrogen (NO_x; comprises nitrogen dioxide (NO₂) and nitric oxide (NO)) and PM₁₀. NO itself is not considered harmful to human health. However, on release to the atmosphere it usually oxidises rapidly to NO₂ which is associated with adverse effects on human health, causing inflammation of the lungs at high concentrations. Long term exposure to NO₂ can affect lung function and respiratory symptoms.

6.2.5 Road transport is also a source of primary PM₁₀ both as direct emissions through vehicle exhausts and as indirect emissions through tyre and brake wear, re-suspension of particulate matter on the road and road wear (mechanical abrasion and corrosion). Road transport may also be responsible for secondary PM formed via gas-to-particle conversion.

Legislation and Guidance

6.2.6 Ambient air quality standards in the UK are established through the combination of transposition of European legislation and additional UK legislation and requirements. A series of Limit and Target Values have historically been established through the European legislation on the UK as a whole (referred to as AAD Limit and Target Values) and responsibility for meeting these was devolved to the national administrations; the Department for Environment, Food and Rural Affairs (Defra) co-ordinated assessment and quality plans for the UK as a whole.

6.2.7 Following the departure of the UK from the EU the air pollution limits established under EU requirements remain in place having been enshrined in UK law.

6.2.8 Under the Environment Act 1995 the UK Government and the devolved administrations are required to produce a national Air Quality Strategy (AQS). This was last reviewed and published in 2007¹ and sets out air quality objectives (AQOs) and policy options to improve air quality within the UK. The strategy sets AQOs for specific pollutants deemed to pose a risk for human health or other receptors, a number of which were derived from the EU limit and target values, although requirements for compliance vary. The UK AQS includes more exacting AQOs for some pollutants than those that were required by EU legislation.

6.2.9 In addition, Part IV of the Environment Act 1995 imposes a duty on local authorities in the UK to review existing and projected air quality in their area. Any location likely to exceed the UK AQOs must be declared an Air Quality Management Area (AQMA) and an Action Plan prepared and implemented, with the aim of achieving the objectives. This process is referred to as Local Air Quality Management

¹ Defra, (2007), *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007*

(LAQM). The LAQM process is supported by national statutory policy² and technical guidance³ provided by Defra.

6.2.10 The standards and objectives relevant to the LAQM framework are prescribed through the Air Quality (England) Regulations (2000) and Air Quality (England) (Amendments) Regulations 2002.

6.2.11 The applicable EU limit and target values and UK AQOs relevant to the Site and Proposed Development with regards to protection of human health, referred to in this report as Air Quality Assessment Levels (AQALs), are summarised below.

Table 6.1: Relevant Air Quality Assessment Levels (AQALs)

Pollutant	AQAL	Averaging Period	Source
NO ₂	40 µg/m ³	annual mean	AAD Limit Value / AQO
	200 µg/m ³	hourly mean, not to be exceeded more than 18 times per annum	AAD Limit Value / AQO
PM ₁₀	40 µg/m ³	annual mean	AAD Limit Value / AQO
	50 µg/m ³	24 hour mean, not to be exceeded more than 35 times per annum	AAD Limit Value / AQO
PM _{2.5}	25 µg/m ³	annual mean	AAD Limit Value / AQO ¹
	% reduction relative to average exposure indicator (AEI), dependant on initial concentration; to at least 18 µg/m ³	annual mean	AAD Target Value / AQO ¹

1: PM_{2.5} – not regulated through the LAQM regime

6.2.12 Statutory objectives, limit and / or target values for NO₂, PM₁₀ and PM_{2.5} are provided in the Air Quality Standards Regulations 2010 and Air Quality Strategy 2007, the 2010 Regulations imposing stricter standards on PM_{2.5} than the Strategy. However, there are no regulatory standards for PM_{2.5} within the LAQM system, and PM_{2.5} is currently regulated at a national, rather than local, level. Local Authorities do not presently have an obligation to review and monitor PM_{2.5} but are expected to work towards reducing PM_{2.5} emissions and concentrations in their area as far as practicable.

² Defra, *Local Air Quality Management, Policy Guidance (PG16)*, April 2016

³ Defra, *Local Air Quality Management, Technical Guidance (TG16)*, February 2018

6.2.13 For the purposes of the AQALs ambient air refers to the outdoor air and excludes workplaces where members of the public do not have regular access. Advice is given in Defra guidance as to where the UK AQOs should apply as summarised below; slightly different compliance requirements are provided for EU limit and target values:

Table 6.2: Summary of Where the AQOs Should Apply

Averaging Period	Locations where the objective should apply
annual mean	all locations where members of the public might be regularly exposed; including facades of residential properties, schools, hospitals, care homes etc
24-hour mean and 8-hr mean	all locations where the annual mean objectives apply together with hotels and gardens of residential properties
1-hr mean	all locations where the annual mean, 24-hour and 8-hour means apply; also kerbside sites, parts of car parks, bus stations and railway stations which are not fully enclosed and any outdoor locations where members of the public might reasonably be expected to spend 1 hour or longer.
15-min mean	all locations where members of the public may be reasonably exposed for a period of 15 minutes

6.2.14 The AQOs do not apply at building facades or other places of work where members of the public do not have regular access.

6.2.15 In January 2019 Defra published the **Clean Air Strategy**⁴. This sets out the UK Government's plans for dealing with all sources of air pollution. The strategy gives a detailed breakdown of the action that is required across the UK to meet the legally binding international targets to reduce emissions of NO_x and other pollutants. The strategy also supports the implementation and roll out of Clean Air Zones (CAZs) in the most polluted areas of the UK.

Ecological Assessment Levels

6.2.16 Additional statutory and non-statutory ambient air quality standards (termed Critical Levels) are also provided by the UK Air Quality Strategy and Environment Agency (EA) / Institute of Air Quality Management (IAQM) guidance for the protection of vegetation and ecosystems to be applied at nature conservation sites. Applicable standards for this assessment are detailed below:

⁴ UK Government, *Clean Air Strategy*, published 14 January 2019, <https://www.gov.uk/government/publications/clean-air-strategy-2019>

Table 6.3: Additional Non-Statutory Critical Levels for Protection of Vegetation and Ecosystems

Pollutant	Concentration ($\mu\text{g}/\text{m}^3$)	Measured as
nitrogen oxides (as NO_2)	30	Annual mean
	75	Daily mean

6.2.17 In addition, Critical Loads are provided for nitrogen nutrient and acidity deposition; these are dependent on the specific habitat and location.

Dust Standards and Control

6.2.18 Disamenity dust as such is not regulated under the above requirements and there are no UK statutory standards or recommended levels that define the point when deposited dust causes annoyance or disamenity.

6.2.19 Public concerns relating to dust accumulation and soiling may be related to a range of factors including the nature of a site and locality and baseline levels. Controls of soiling and annoyance impacts are typically achieved through conditions within planning permissions and / or Environmental Permits requiring the implementation of a dust management plan to prevent amenity impacts. Deposited dust may also give rise to ‘nuisance’ as Statutory, private and public nuisance as defined in environmental law and in so far as nuisance relates to unacceptable effects of emissions.

National Planning Policy and Guidance

6.2.20 The **National Planning Policy Framework 2021**⁵ (NPPF) sets out the Government’s planning policies for England and how these are expected to be applied. The NPPF provides some guidance to local authorities on taking air pollution into account in planning policies and decisions. Paragraph 174 of the Framework states: *“Planning policies and decisions should contribute to and enhance the natural and local environment by [...] preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or*

⁵ Ministry of Housing, Communities and Local Government 2019. *National Planning Policy Framework*, issued 27 March 2012; last revised 20 July 2021.

land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality.”

6.2.21 The NPPF further states in paragraph 185 that: *“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.”*

6.2.22 More specific guidance regarding air quality is provided in paragraph 186, which states: *“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.”*

6.2.23 Of note the different roles of a planning authority and a pollution control authority are addressed by the NPPF in paragraph 188:

‘The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.’

6.2.24 Further guidance is provided in the national **Planning Practice Guidance regarding Air Quality (PPG-AQ)**⁶ which provides guiding principles on how planning can take account of the impact of new development on air quality. The guidance states that: *“the level of air quality assessment should be proportionate to the nature and scale of the development and level of concern about air quality and that each assessment is locationally specific.”*

6.2.25 No further specific guidance is currently provided in the NPPF or the supporting technical guidance. In assessing the risks posed to, or by, new development, reference is therefore also made to non-statutory guidance issued by IAQM, as detailed below.

Local Planning Policy and Guidance

6.2.26 BBC adopted the Bedford Local Plan 2030 in January 2020⁷. Section 9 sets out the policies in relation to resources and climate change. Policy 47S sets out the policy with regards to Pollution, disturbance and contaminated land and states:

Development proposals will be required to:

Prevent the emission of significant levels of pollutants into the soil, air or water, and.....

iv. Reduce as far as practicable other potential impacts including from: vibration, dust, mud on the highway, smoke, fumes, gases, odours, litter, birds or pests.

Environmental Permitting

6.2.27 A wide range of industrial, waste and agricultural installations require an Environment Permit to operate under the Environmental Permitting (England and Wales) Regulations 2017 (EPR), and subsequent amendments. The aim of the permitting system is to prevent, and where that is not practicable reduce, emissions to air, water and land by potentially polluting and other installations. Permits are issued by either the Environment Agency or the Local Authority depending on the nature and size of the facility.

⁶ Ministry of Housing, Communities and Local Government (2014). *Planning Practice Guidance: Air Quality*, issued 6 March 2014; last revised 1 November 2019

⁷ Bedford Local Plan, adopted 15 January 2020

-
- 6.2.28 Operations and installation that are operated under a Permit are required to operate in such a way that: a) all the appropriate preventative measures are taken against pollution, through the application of the best available technique (BAT); and b) no significant pollution is caused.
- 6.2.29 EA guidance⁸ regarding developments requiring both a planning permission application and environmental permit application clarifies that when deciding on a planning application the authorities should a) be confident that the development will not result in unacceptable risks from pollution when considering if the development is an appropriate use of the land and b) not focus on controlling pollution where it can be controlled by other pollution regulations, such as EPR.
- 6.2.30 If the transfer of waste materials is to be undertaken at the Site these activities would be regulated under the Environmental Permitting regime as discussed below in Section 6.4.

National Best Practice and Guidance

- 6.2.31 The IAQM **Planning for Air Quality**⁹ document provides specific non-statutory guidance on air quality and the planning system for new development. The guidance clarifies when an air quality assessment is required, what it should contain and how impacts should be described and assessed. The guidance sets out a recommended approach to assess the significance of the air quality impacts and sets out suggested approaches to reducing emissions and impacts.
- 6.2.32 The IAQM **Guidance on the Assessment of Mineral Dust Impacts for Planning**¹⁰ document provides specific non-statutory guidance in relation to dust and mineral sites. Although not specifically provided for waste management sites the guidance contains elements of relevance with regards to a recommended methodology for carrying out impact assessments and determining the significance of impacts and effects and the provision of mitigation measures.

⁸ Environment Agency (EA), *Guidelines for developments requiring planning permission and environmental permits (England)*, 9th October 2013

⁹ Institute of Air Quality Management (2017), *Land-use Planning & Development Control: Planning for Air Quality*, v1.2.

¹⁰ Institute of Air Quality Management (2016), *Guidance on the Assessment of Mineral Dust Impacts for Planning*, v1.1.

6.2.33 The IAQM **Guidance on the Assessment of Dust from Demolition and Construction**¹¹ document provides specific non-statutory guidance in relation to dust and emissions from construction and demolition. Parts of this guidance may also be applied to waste management sites, where these present similar risks of impacts.

6.2.34 The IAQM **Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites**¹² provides specific non-statutory guidance in relation to the assessment of air quality impacts of development on designated nature conservation sites.

6.2.35 In addition to the above, guidance is provided by the EA in controlling and monitoring emissions from permitted activities including in relation to dust¹³.

Assessment Methodology

6.2.36 The scope of the assessment was based on consideration of the Proposed Development and likely effects on the local environment. The principal aspects considered in this assessment are:

- Aggregates, inert waste materials and soils transfer: dust (disamenity dust and PM₁₀); and
- Vehicle exhaust emissions: NO_x / NO₂ and PM₁₀

6.2.37 In undertaking the assessment, SGP carried out the following activities:

- Visit to view the Site and the surrounding environs;
- Review of baseline air quality, potential local emission sources and Defra / BBC air quality reports and data;
- Review of local wind speed and direction data;
- Identification of potentially sensitive human and ecological receptors;
- Review of the proposed scheme including expected operational traffic movements;
- Qualitative dust impact assessment of the Proposed Development;
- Qualitative screening assessment of operational phase vehicle movements for the Proposed Development; and

¹¹ Institute of Air Quality Management (2014), *Guidance on the Assessment of Dust from Demolition and Construction*. v1.1.

¹² Institute of Air Quality Management (IAQM), *A guide to the assessment of air quality impacts on designated nature conservation sites*, version 1.1, May 2020

¹³ <https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit>

- Provision of recommendations for additional mitigation measures and assessment of residual effects.

6.2.38 A site visit was undertaken on 13th January 2022.

Sources of Information

6.2.39 The baseline data has been gathered through a desk top study and the site visit. In undertaking the assessment reference has been made to the following sources of information:

Table 6.4: Information Sources

Date and Reference	Author and Source	Purpose and Content
Background and Topographical Information		
Promap	Ordnance Survey	General mapping information including topographic data, ground features, rights of ways, communications etc
Aerial satellite imagery	Aerial photography (various)	Site setting
www.magic.gov.uk	Multi-agency	Web-based interactive map containing information on nature conservation areas
Air Quality Information		
Bedford Borough Council 2021 Air Quality Annual Status Report (August 2021) <i>and previous reports</i>	BBC	Update of local authority air quality monitoring and assessment in fulfilment of LAQM requirements; includes data up until end 2020
www.uk-air.defra.gov.uk	Defra	Local Authority air quality management support; background pollutant maps; details and maps of AQMAs

All websites above were viewed during January 2022 unless stated otherwise

6.2.40 The traffic data used within this assessment has been provided by the project Transport Consultants, AXIS.

Assessment Methodologies

6.2.41 The assessment of potential pollutant impacts uses the source-pathway-receptor concept and considers the potential magnitude of a release (the source potential), the effectiveness of the pathway (i.e. dispersion of a pollutant towards a receptor), and the sensitivity of the receptor.

6.2.42 The assessment therefore considers the location of the materials handling and haulage routes of the proposals in relation to sensitive receptors, and the control

measures to be implemented, to assess the probability of significant adverse air quality impacts occurring during normal operations. Consideration is made of the orientation and distance of receptors to the Site and the prevailing weather conditions.

- 6.2.43 The dust assessment has been undertaken with reference to the IAQM guidance on mineral extraction⁹ and construction dust¹⁰ with appropriate modification for the specific proposed material handling activities.
- 6.2.44 The requirement for detailed assessment of impacts associated with vehicle exhaust emissions has been considered through reference to the IAQM guidance on air quality and planning⁸. The level of assessment was determined through an initial screening review taking into account the predicted number of vehicle movements associated with the proposed operations, the consequent changes in traffic flows along the local road network and the locations of sensitive receptors. The screening assessment determined that further detailed assessment with respect to the impacts of vehicle movements was not necessary as detailed below in paragraphs 6.4.26-6.4.57. This approach was agreed in advance with BBC in discussion regarding the separate recently submitted Elstow South planning application (ref: 21/03307/ROMWM and 21/03308/ROMWM). As the potential additional vehicle movements are similar for this application, and the potentially affect road network the same, or similar in nature, it is considered this approach is equally applicable for this application.
- 6.2.45 Receptors considered in this assessment comprise human receptors, that is locations where a person or property may experience adverse impacts of airborne dust or exposure to ambient pollution (i.e. residential, leisure, amenity and sensitive commercial use) and ecological receptors where this refers to any sensitive habitat that may be affected by dust soiling or increased ambient pollution (e.g. locations with an international, national or local designation and sensitive habitat features).
- 6.2.46 Further details on the selection of receptors and the methodology of each aspect of the assessment as detailed in the relevant guidance is described in Appendix 6-1.

Study Areas

- 6.2.47 Owing to the different spatial extents at which likely significant effects could arise from the development different Study Areas were adopted in the assessment for the different aspects.
- 6.2.48 The IAQM guidance on mineral dust⁹ advises that adverse dust impacts are uncommon beyond 250m from sand and gravel sites and beyond 400m from hard rock quarries, as measured from the nearest dust generating activities. Guidance on construction activities¹⁰ advises assessment distances of up to 350m of a site boundary and up to 50m from edges of roads used by exiting site traffic up to 500m from the access / egress point. Neither guidance is specifically relevant to the proposed activities at the Site. The application boundary includes the main railway sidings area and the ~700m long fully paved access road. To provide a conservative assessment therefore receptors have been considered up to 350m from the main railway sidings boundary and up to 50m from the edge of the access road to Green Lane, as shown in Figure 6.1.
- 6.2.49 The IAQM guidance on air quality and planning⁸ does not specify at what distance a receptor should be to an affected road to indicate the need for further assessment. However, pollution concentrations fall rapidly away from the roadside and are expected to return to background levels within 100m of a road source¹⁴. For the purposes of the assessment reference is made to HE DMRB¹⁵ guidance which requires assessment of receptors within 200m of affected roads. Where there are no receptors within 200m of affected roads vehicle emissions are not considered further and potential impacts can be considered **negligible**. The Study Area therefore encompasses an area up to 200m of the potential HGV routes to / from the Site as shown in Figure 6.1.

Scoped Out Matters

- 6.2.50 Proposals are for the importation of materials via rail and transfer for subsequent transportation off-site via road haulage. As set out in the scheme description (Chapter 3.0), the materials would be unrestricted but could consist of aggregates

¹⁴ Air Quality Consultants, *NO₂ Concentrations and Distance from Roads, Final Report, July 2008*
¹⁵ Highways England (HE), *Design Manual for Roads and Bridges (DMRB), Volume II Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1, HA 207/07, Air Quality, May 2007*

and construction materials. Such aggregates may include excavation, construction / demolition and similar industrial wastes that are inert or have a low level of contamination.

- 6.2.51 Some limited maintenance and preliminary works may be required to bring the sidings back into use, including the installation of a new wheel wash and weighbridge. As such there would be no construction phase requiring consideration.
- 6.2.52 The operations would involve the use of some on-site plant and machinery (non-road mobile machinery (NRMM)) for the unloading of trains and loading of HGVs which will give rise to vehicle exhaust and combustion plant emissions. However, these are typically considered unlikely to give rise to significant impacts on local air quality¹¹. In light of the small quantity of NRMM to be used on site (typically limited to 1 grab to transfer materials from the incoming trains to HGVs, although on occasions there may be 2 grabs in use) further consideration has been scoped out of this assessment.
- 6.2.53 Should waste materials be imported to site these would be limited to inert demolition / construction / excavation type materials suitable for re-use. Associated activities would be controlled under an Environmental Permit which would impose strict controls on the biodegradable waste fraction and consequently limit the potential for odour releases from the material. Considering the nature of materials likely to be handled and the rigorous controls that would be in place with regards to any waste materials, the potential for significant odour emissions that may result in a loss of amenity from the Proposed Development is considered to be **negligible**. Further assessment is not therefore deemed necessary.

Assessment of Significance

- 6.2.54 The resulting effects of aerial emissions are the consequences of the potential impacts, i.e. changes in pollutant concentrations and / or deposition, at receptors. IAQM guidelines do not provide a traditional matrix assessment of significant effects with regards to air quality. The frameworks outlined in the guidance above provide methodologies for describing air quality impacts and resulting effects at individual receptors. These frameworks are therefore used as a starting point to assess the significance of predicted effects.

6.2.55 Where **negligible** impacts are predicted, the overall effects will be **not significant**. In general, where **slight** impacts at receptors are predicted the resulting effects would be considered to be **not significant**. **Moderate** and **substantial** impacts could result in **significant** effects. However, the judgement of the overall significance of the air quality effects of the proposals is informed by the predicted impacts and effects at individual receptors and takes into account a number of factors, such as, but not limited to:

- The existing and future air quality in the absence of the Proposed Development;
- The extent of current and future population exposure to the impacts and the severity of those impacts, whether in relation to ambient pollutant concentrations or dust soiling;
- Whether the predicted impacts potentially result in failure to achieve compliance, or enhance compliance, with EU AAD values and / or UK AQOs and national and / or local air quality action plans;
- Whether the predicted impacts potentially result in the need for declaration of a new or extended AQMA, or removal of an existing AQMA;
- Whether the predicted impacts potentially result in permanent or temporary damage or improvements to nature conservation sites of local, national or international importance and the geographical extent of those impacts; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

Limitations

6.2.56 Baseline air quality data has been obtained through a review of existing information and additional monitoring has not been undertaken. Limited BBC monitoring data is available for the immediate locality and reference has therefore been made to background information provided by Defra based on UK-wide modelling and monitoring. The Defra data is based on the most up to date data currently available on background concentrations, and UK fleet composition and emissions. In the absence of any identified local air quality concerns and the site setting the data is considered appropriate for this Site and assessment.

6.2.57 The potential future baseline has been established through a review of Defra's current predictions with regards to background air quality. The future baseline air

quality data is based on the latest available information published by Defra in August 2020 and which is based on 2018 monitoring and modelling and predicted vehicle exhaust emissions factors and provides the most up to date available data. This data does not however take into account the implications of the COVID-19 pandemic and possible long-term impacts on travel movements¹⁶.

6.3 Baseline Conditions

Site Description and Context

- 6.3.1 The sidings and access roads are sandwiched between the Stewartby Landfill to the north and Marston Vale Railway, the former Stewartby Brickworks and various waste management facilities (including a Leachate Treatment Plant (LTP) and a Gas Utilisation Compound (GUP)) to the south. The landfill is no longer receiving wastes for disposal and the importation of soils for restoration is complete.
- 6.3.2 The nearest existing residential properties to the Site are located about 380m to the east-southeast on Brick Crescent in Stewartby with wider residential development associated with Stewartby lying to the southeast. The grounds of Kimberley Sixth Form College extend to about 100m of the Site access road off Green Lane. Stewartby Lake, which is used for leisure use, lies to the west beyond Green Lane.
- 6.3.3 A public footpath is mapped running through the area of the former brickworks to the south and extending to the access road about 25m to the south of the sidings. This does not currently extend across the Site, it will be reinstated over the landfill to make connection to a Public Right of Way to the north as part of the final restoration scheme.
- 6.3.4 Planning permission has recently been granted by BBC for redevelopment of the former brickworks to the south and east to a residential led mixed-use scheme (planning ref: 18/03022/EIA; decision notice dated 29th October 2021). The development boundary extends to the southern boundary of the Site, with residential development indicated on the Illustrative Layout plan lying to about 25m of the Site boundary. There is presently no screening provided between the Site and the adjoining former brickworks site, however a landscaped area between the

¹⁶ COVID-19: Following the outbreak of a global pandemic of the Coronavirus disease 2019 (COVID-19) due to the SAR-CoV-2 virus, the UK Government declared several restrictions on non-essential travel and movement from 23rd March 2020 onwards.

sidings land and the residential development is shown on the Brickworks masterplan.

- 6.3.5 No international or national statutory designated nature conservation sites have been identified within 500m of the Site.

Baseline Survey Information

Air Quality Management Areas (AQMAs)

- 6.3.6 BCC has declared one AQMA within its' administrative area under the LAQM regime. This is located within Bedford town centre, lying about 6km to the north-east, and as such is distant from the Site and any likely proposed HGV haulage routes to and from the sidings. The location of the AQMA in relation to the Site is shown in Figure 6-2.

Predicted Background Air Quality

- 6.3.7 DEFRA publishes predicted background pollutant concentration maps for 1km x 1km grid squares across the UK. These are updated on a regular basis due to updates in background data such as vehicle emissions factors. The current maps were issued in 2020 and the predicted data is based on 2018 ambient monitoring and meteorological data. The maps incorporate revised information on the age and distribution of vehicles and emission factors and consider existing local sources of emissions. Predicted data is provided by DEFRA for each year from 2018 to 2030.
- 6.3.8 Predicted background concentrations for the existing year (2022) for the grid squares in which the Site is located are summarised below.

Table 6.5: Predicted Background Air Quality Data – Nitrogen Oxides and Particulate Matter: 2022

Grid Square	Location	NO ₂	NO _x	PM ₁₀	PM _{2.5}
		(µg/m ³)			
501500 243500	Site: railway sidings; exit road	9.62	11.80	14.69	9.34
501500 242500	Site; access road	9.47	12.39	13.92	9.22
AQAL		40	30 (v)	40	25

V – established for protection of vegetation

6.3.9 The maximum average background NO₂ and PM₁₀ concentrations for the grid squares in which the Site is located are predicted to be substantially below the relevant objectives, at 23% and 37% of the objectives in 2022.

6.3.10 The data are effectively an average concentration across each 1km square. Pollutant concentrations will therefore be higher than those provided above at any individual receptor close to any significant source such as the nearby major roads (e.g. A421).

Monitored Air Quality

6.3.11 BBC undertakes ambient air quality monitoring for nitrogen dioxide (NO₂) across the Council area using a combination of automatic (continuous) analysers and non-automatic (passive) diffusion tubes. Results for up until 2020 are presented in the 2021 ASR¹⁷.

6.3.12 The two automatic analysers are located within Bedford town centre and are distant from the Site and any likely HGV haulage routes to and from the sidings.

6.3.13 The majority of the BBC diffusion tube monitoring is also undertaken within Bedford town centre and is distant from the Site and likely haulage routes.

Industrial Emissions and Existing Dust Sources

6.3.14 As noted above the Site adjoins the former Stewartby Landfill. Infilling and importation of soils to this site is however now complete. The nearby GUP may contribute emissions to air and thus influence the local air quality. This is however controlled and managed under the Environmental Permitting regime to minimise adverse impacts.

Meteorological Conditions

6.3.15 The most important meteorological parameters governing the atmospheric dispersion of pollutants are:

- Wind direction: determines the broad direction of the transport of the emission;
- Wind speed: affects the ground levels emissions by determining the initial dilution of the pollutants emitted; and

¹⁷ Bedford Borough Council, 2021 Air Quality Annual Status Report (ASR), August 2021

- Atmospheric stability: a measure of the turbulence and hence dispersion of pollutants.

6.3.16 The closest commercial meteorological station to the Site that measures wind speed and direction is located at Bedford 17km to the north-northeast of the Site (NGR: 504912 259857; altitude 85m AOD). Local variations will exist in meteorological conditions, but the Bedford wind data is considered appropriate for this assessment.

6.3.17 Annual windroses for Bedford (for the years 2011 - 2020), as provided by ADM Ltd, a recognised meteorological data provider, are provided in Appendix 6-3. These depict average wind speeds and directions over the relevant total monitoring period.

6.3.18 The data show that, as an annual average, winds blow from sectors 195° through to 285° about 46% of the time; i.e. predominantly south-westerly and consistent with typical UK conditions.

6.3.19 Winds greater than 10 knots (5 m/s) blow from the southwest quarter for 18.5% of the time annually. Wind speeds in excess of 10 knots are important as the onset of potentially significant airborne dust emissions due to wind-raising of loose dry dusts from bare ground and stockpiles.

Future Baseline

6.3.20 The future baseline scenario would be as per currently, with no activity at the Site itself. Outline planning permission has however been recently granted for redevelopment of the adjoining former Stewartby Brickworks site and which will have some effect on local air quality.

6.3.21 The current Defra predicted background concentrations for the year 2027 are as follows.

Table 9.6: Predicted Background Air Quality Data – Nitrogen Oxides and Particulate Matter: 2027

Grid Square	Location	NO ₂	NO _x	PM ₁₀	PM _{2.5}
		(µg/m ³)			
501500 243500	Site: railway sidings; exit road	8.16	10.54	14.13	8.90

501500 242500	Site; access road	8.24	10.68	13.30	8.71
AQAL		40	30 (v)	40	25

V – established for protection of vegetation

6.3.22 The maximum average background NO₂ and PM₁₀ concentrations for the grid squares in which the Site is located are predicted to fall to 21% and 35% of the objectives respectively by 2027. Further reductions would be expected in later years.

6.4 Assessment of Effects

6.4.1 The principal activities considered in the assessment are the transfer of imported material for off-site transport and associated vehicle movements.

Incorporated Mitigation

6.4.2 The access road and majority of the sidings area are fully surfaced and this would be retained, effectively forming in-design mitigation. Proposals include for the provision of a wheel wash for exiting vehicles, again forming incorporated mitigation. Given that HGVs would exit the Site via the existing concrete surfaced access road, the new wheel wash does not form part of any essential mitigation and is provided on a precautionary basis. In addition, the activities would be undertaken in accordance with standard best practice measures in relation to the management and control of dust, as discussed further below.

6.4.3 In the event any waste materials are to be handled, these activities would be undertaken in accordance with an Environmental Permit, to be issued by the Environment Agency, which would include measures on environmental pollution control, including management of incoming materials and aerial emissions, as discussed further below in paragraphs 6.4.20-6.4.21.

Dust Assessment

General Observations

- 6.4.4 Airborne dust occurs when fine particles are disturbed and loosened by physical activity such as loading and transport, or by an airstream passing over such materials. It is generally accepted that winds of more than 10 knots across loose fine materials can cause windblown dust emissions.
- 6.4.5 Light winds will transport fine particles already suspended in the atmosphere due to disturbance. In calm conditions, any raised dust tends to settle out in the vicinity of the source. In windier conditions the dust may be carried for a greater distance before settling out. The distance the dust will be carried depends on the wind speed, the particle size of the dust, the topography of the site and its surroundings.
- 6.4.6 Large dust particles, greater than 30 µm, which constitute the greatest proportion of dust emitted from mineral workings will largely deposit within 100m of the source¹⁸. Finer particles, which constitute a small proportion of the dust emitted from most operations, are only deposited slowly, although their concentrations decrease rapidly from the source due to dispersion and dilution.

Principal Sources of Dust

- 6.4.7 The proposed operations would only comprise the transfer of materials for off-site transport, with no processing (such as screening or crushing) or stockpiling activities. As such the principal potential sources of airborne dust arising from the Proposed Development are limited to:
- Materials handling – delivery, handling and transfer;
 - Site plant and internal haulage; and,
 - On-road transport.
- 6.4.8 The primary source of any aerial emissions would be during material transfer activities. As set out in the scheme description (Chapter 3.0), the proposed materials to be handled would be unrestricted and could consist of aggregates along with inert excavation, construction / demolition or similar industrial wastes.

¹⁸ Department of The Environment (DOE) (1995). *The environmental effects of dust from surface mineral workings, Volume 1.*

-
- 6.4.9 All materials would be delivered to site by rail and would be loaded directly into HGVs for immediate off-site transport. There would generally not be any stockpiling of materials. It is anticipated that material could be imported at a maximum of 3 trains a day (Mondays to Fridays) with each carrying up to 1,500 tonnes (i.e. total of up to 4,500 tonnes per day) and transferred to up to 225 HGVs a day for export. Reduced importation is expected on Saturdays at 2 trains per day with each carrying up to 3,000 tonnes of material resulting in 150 HGVs a day for export.
- 6.4.10 The railway sidings area and access road are fully provided with paved surfacing (concrete) reducing the potential for dust generation through surface break down. They would be maintained in good condition to maintain smooth running surfaces.
- 6.4.11 Dust may also be raised by on-road haulage if spillages of material are allowed to accumulate on running surfaces. In addition, any spilled materials that adhere to the wheels and underbodies of vehicles leaving the site may be subsequently deposited as track-out on roads in the vicinity of the Site, and on drying, be raised as dust by the passage of vehicles. Given the nature of the surfacing of the sidings area and access road, and the length of surfaced access road to the public highway (~700m), the likelihood of dust due to track-out arising from the proposed operations is however negligible.
- 6.4.12 Infilling and restoration soils import to the adjoining landfill is now complete. As such other vehicle transport along the access road would now be limited to that accessing the LTP and GUP, which would be associated with staff access and any maintenance works and as such would be very low. Hence there would be no risk of dust being deposited on the access road from other sources that may be re-suspended by the development traffic.
- 6.4.13 In summary, the principal potential sources of dust are limited to materials transfer operations (off-loading / loading), internal site haulage and road transport. These sources are summarised in the table below.

Table 6.7: Summary of Dust Sources

Source	Dust Source Potential	Comment
material handling – transfer of imported material from rail to road transport	<i>small to medium</i> depending on nature and moisture content of material; up to 4,500 tonnes per day	managed through minimisation of drop heights; materials to be sprayed with water prior to handling if of low moisture content / potentially highly dust generating
internal haulage – rail sidings area / access road	<i>small</i> – fully provided with concrete surfacing	maintenance of smooth-running surfaces required to prevent break down; controlled speed; surfaced road surfaces may require sweeping if deposits accumulate
external road transport	<i>negligible</i> - hard surfaced access road of ~700m to public highway; >50 departing HGVs / day	all loads to be sheeted or otherwise contained; internal access road to be maintained in good condition and cleaned / swept if necessary to minimise any track out to public highway

Dust Sensitive Receptors

- 6.4.14 The impact of dust at a receptor will depend on the inherent sensitivity of the receptor and the perception of the acceptability of the effects of dust. No existing potentially sensitive receptors have been identified within the Study Area, the nearest residential receptors lying beyond 350m to the south-east and Kimberley Sixth Form College lying beyond 50m of the access road.
- 6.4.15 The recently consented adjoining mixed-use development does however include receptors within the Study Area and hence has been included within the assessment for completeness.
- 6.4.16 A representative selection of potentially sensitive receptors that have been identified within the Study Area are detailed in Table 6.8 below and shown in Figure 6.3.

Table 6.8: Representative Potentially Sensitive Receptors

ID	Receptor	Type	Distance & orientation		Nearest potential source
			to boundary	to source	
Human Health Receptors					
Existing Receptors					
None					
Consented Receptors¹					
D1	Residential properties	Residential	25m S	39m S	Off-loading / handling
D2	Residential properties	Residential	45m E	55m E	Off-loading / handling

Notes:

1: where this refers to the consented development ref: 18/03022/EIA; distances estimated based on Illustrative Layout 1325-C-126

-
- 6.4.17 Other potentially sensitive receptors within 350m are effectively subsumed by the locations identified above.

Impact Assessment

- 6.4.18 The impact assessment takes into account the 'in-design' mitigation measures. These include the retention of the existing fully paved access road and hardstanding areas within the railway sidings area.
- 6.4.19 In accordance with IAQM guidance, the in-design mitigation measures also assume the incorporation of basic good practice mitigation measures that would form an embedded part of the works.
- 6.4.20 In addition, should waste materials be imported the Site operations would be controlled under an Environmental Permit with the EA being the regulatory authority. Such a Permit would establish strict procedures with regards to the nature of materials that could be imported and transferred and which would be taken to form in-design mitigation measures.
- 6.4.21 Any Permit would be expected to include a standard condition with regards to air emissions such as dust; the standard condition being: *“Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including but not limited, to those specified in any approved emission management plan have been taken to prevent, or where this is not practicable, to minimise those emissions.”*
- 6.4.22 Taking into account the comments above in Table 6.10 and the in-design mitigation measures, the overall Dust Source Potential for the Proposed Development is considered to be **small to medium** at most.
- 6.4.23 The probability of dust being carried towards the key potentially sensitive receptors (the 'pathway effectiveness') has been assessed through reference to the wind data for Bedford, and the distance and orientation of the receptors to the Site and sources of dust. In practice, the probability of winds carrying dust may be reduced outside the summer months, when rainfall can be typically expected to suppress

fugitive dust emissions over more than one third of the time. The potential pathway effectiveness has also been derived considering the local terrain and topography and the in-design mitigation measures.

Disamenity Dust Effects

6.4.24 The results of the assessment with regards to dust soiling effects for the Proposed Development are provided in Appendix 6-4 and are summarised in Table 6-9 as follows:

Table 6.9: Summary of Estimated Risk of Disamenity Dust Impacts and Effects at Specific Receptors

ID	Source potential	Residual pathway effectiveness	Receptor sensitivity	Risk of impacts	Potential effect
D1	up to <i>medium</i>	slightly effective	high	low	up to <i>slight adverse</i>
D2	up to <i>medium</i>	slightly effective	high	low	up to <i>slight adverse</i>

6.4.25 The Illustrative Layout Plan provided with the planning application indicates the facades of the nearest residential properties to be 25m of the Site boundary and about 39m of the railway sidings themselves. The prevailing wind direction is however south-westerly and away from the future development area with winds blowing across the sidings towards the future properties predicted to occur about 11% of the time, and with speeds of more than 5 m/s for about 4% of the time. There is presently no screening provided between the Site and development site and the resulting likely disamenity dust effects at the nearest potential future properties are predicted to be up to *slight adverse* when operations are taking place closest to these properties. This falls to *negligible* away from the Site.

6.4.26 Proposals however include for the provision of a 6m fence on the boundary to minimise potential noise impacts on the neighbouring future development. This would also serve to minimise the likelihood of off-site dust migration through the provision of physical screening with resulting potential for adverse effects considered to be *negligible*.

6.4.27 The overall significance with regards to disamenity dust is **not significant**.

Track-Out

- 6.4.28 Given the nature of the proposed operations, provision of surfacing across the area of the sidings that would be trafficked the residual source potential for track-out onto the access road itself is considered to be *small*. The access road itself is fully paved for its ~700m length resulting in a *negligible* potential for track out from the proposed waste transfer operations onto the public highway.
- 6.4.29 The overall significance with regards to track-out is **not significant**.

Fine Particulates (PM₁₀)

- 6.4.30 PM₁₀ will make up a small proportion of any emitted dust. Although PM₁₀ may travel distances of 1,000m or more, concentrations decrease rapidly on moving away from a source due to dispersion and dilution. Concentrations are expected to return to background concentrations within 400m of a surface mineral source. Given the proximity of residential properties to the Site further consideration has however been made of potential impacts associated with PM₁₀.
- 6.4.31 The IAQM guidance in relation to mineral operations⁹ advises that where existing background ambient PM₁₀ concentrations are less than 17 µg/m³ there is little risk that additional contributions from such operations would lead to an exceedance of the long-term AQAL. Predicted background Defra PM₁₀ concentrations for the area of the nearby receptors are in the range 13.3-14.1 µg/m³ for 2022, less than 17 µg/m³.
- 6.4.32 With reference to the IAQM guidance on construction dust¹⁰ the area sensitivity would be *low* (local PM₁₀ concentrations <24 µg/m³; no sensitive receptors within 20m of the Site). The resulting risk of dust impacts due to PM₁₀ would be described as *negligible to low*.
- 6.4.33 On this basis, it is concluded that the Proposed Development would not result in significant adverse impacts on local air quality due to PM₁₀ emissions. It is not considered that further assessment of potential PM₁₀ impacts and effects is required. In addition, the mitigation measures employed to manage fugitive dust emissions would similarly serve to reduce potential PM₁₀ emissions.

6.4.34 The overall significance with regards to PM₁₀ is **not significant**.

On-Road Vehicle Emissions Assessment

6.4.35 The Proposed Development would result in vehicle movements to and from the Site associated with off-road transport of the imported materials. It is predicted the operations would result in a maximum of 450 two-way HGV movements Monday to Friday (225 in / 225 out) and 300 two-way HGV movements on Saturdays (150 in / 150 out). The resulting maximum annual average daily 2-way HGV movements would be reduced to this at about 356 (when working day movements are averaged out across the year and allowing for no working on Bank Holidays).

6.4.36 The destination of the materials is unknown but as detailed in Chapter 4: Traffic and Transportation, it is most likely to be used in the short to medium term for the restoration of the former Elstow South Quarry. HGV deliveries would utilise appropriate routes on the strategic highway network avoiding residential areas where possible. All HGV movements would therefore be via Green Lane to / from Bedford Road which provides access to the strategic network. Movements beyond the Green Lane / Bedford Road junction would either be south-west towards the M1 via the A421 and / or north-east via the A421 and A6.

6.4.37 As detailed in sub-section 6.3 the Site does not lie within, or near, any AQMAs or areas identified by BBC as of potential air quality concern. Similarly, no AQMAs are declared by the adjoining local authority, Central Bedfordshire Council (CBC), in the area to the south-west that encompasses the A421 and junction with the M1. On this basis reference to the IAQM screening criteria⁸ of changes of vehicle movements of +100 AADT HGVs and +500 AADT LDVs (where distant from an AQMA; as outlined in Appendix 6.1) are deemed appropriate to determine the need for some form of assessment.

6.4.38 Predicted HGV movements to / from the Site are therefore above this indicative threshold.

6.4.39 As described in Chapter 4: Traffic and Transportation the material could be delivered to Elstow South in conjunction with other sites. Scenarios have been

considered assuming i) majority of movements (3,000 tonnes of material) being to / from Elstow South with the remainder (1,500 tonnes of material) distributed evenly south-west and north-east beyond the Green Lane / Bedford Road junction, and ii) 100% of movements (4,500 tonnes) being 50:50 south-west and north-east beyond the Green Lane / Bedford Road junction. Potential movements associated with each scenario are summarised below in Table 6.10:

Table 6.10: Summary of Potential HGV Distribution

Link	Description	Development HGVs (AADT)	Comment
Scenario A (assumes majority of movements to / from Elstow South) ¹⁹			
1	Green Lane (access route)	356	above screening threshold
2	Bedford Road (north-east of the Green Lane / Bedford Road junction)	237	above screening threshold
3	Bedford Road (south-west of the Green Lane / Bedford Road junction)	119	below screening threshold; no further assessment required
Scenario B (assumes 50:50 south-west / north-east distribution on Bedford Road)			
1	Green Lane (access route)	356	above screening threshold
3	Bedford Road (north-east of the Green Lane / Bedford Road junction)	178	above screening threshold
4	Bedford Road (south-west of the Green Lane / Bedford Road junction)	178	above screening threshold

6.4.40 There are no relevant receptors within the close vicinity of the Green Lane / Bedford Road junction. There are however relevant receptors within 200m of Bedford Road in either direction requiring further consideration with regards to potential impacts of development related HGV exhaust emissions.

6.4.41 Defra predicted background NO₂ and PM₁₀ concentrations for the grid squares in which these properties lie are in the ranges 10.06-11.23 µg/m³ and 13.76-16.27 µg/m³ for 2022 respectively, all below 50% of the relevant AQALs. Background concentrations at these properties would be expected to be above these values to

¹⁹ Note: detailed assessment of movements to / from Elstow South has been considered as part of the separate discharge of condition planning application

an extent due to the presence of both Bedford Road and the A421. However, they are they are all set back at least 100m from major junctions where queuing traffic would contribute to higher pollutant concentrations and as such background concentrations at facades would be expected to remain well below the relevant AQALs. This is consistent with the fact that BBC has not identified a need for air quality monitoring in these areas.

- 6.4.42 The properties along Bedford Road in both directions are all set back at least 15m from the potential haulage routes. Given the rapid drop of pollutant concentrations from the roadside and that the background and resulting pollutant concentrations would be expected to remain well below the relevant AQALs it is concluded that no further assessment is considered necessary and the effect of HGV emissions on local air quality would be ***not significant***.
- 6.4.43 Should transport of material to / from Elstow South occur as per Scenario A then potential impacts on properties close to other affected roads have been considered as part of the details submitted for that scheme for which planning permission already exists and they do not require consideration here. For all other scenarios, movements would be distributed beyond the A421 / M1 junction to the southwest and Woburn Road / A421 / A6 junctions to the northeast; the distribution being dependant on the final destination. Receptors are set-back from these roads by at least 15m and further assessment is not considered necessary or appropriate.
- 6.4.44 It is anticipated there would be 6 staff employed at the Site. As such the number of expected LDV trips is substantially below the screening criteria.
- 6.4.45 The overall effect of vehicle emissions on local air quality is deemed ***not significant***.

6.5 Cumulative Effects

- 6.5.1 AXIS has identified several committed developments that require consideration in the assessment as detailed in Chapter 2.
- 6.5.2 Where relevant these have been considered in the preceding dust assessment as receptors. The consented adjoining Stewartby Brickworks redevelopment would also serve as potential dust source during the construction phase(s). Such emissions would be expected to be controlled under standard dust mitigation

measures appropriate to the scale and longevity of the development, and it is expected that standard conditions are included within the planning permission for this development requiring the incorporation of such measures during construction. In the absence of any existing receptors down-wind of the sidings themselves, and the long access road serving the sidings, the contribution of the Proposed Development to potential off-site dust in-combination with the adjoining Stewartby Brickworks redevelopment is considered to be *negligible*. As such, the potential for concurrent construction at the adjoining site is not considered to affect the conclusions of the assessment above with respect to the Proposed Development.

6.5.3 The committed developments detailed in Chapter 2 would result in additional vehicle movements on the local road network including the potential haulage routes. The Air Quality Assessment produced in relation to the adjoining Stewartby Brickworks redevelopment²⁰ included detailed atmospheric dispersion modelling of vehicle exhaust emissions and assessment of the potential impacts of changes in pollutant concentrations at receptors across the affected local road network. The traffic data used in that assessment included data for several committed developments in the area; these included all the developments that are considered in Chapter 4: Transport of this Environmental Statement (planning refs: 15/02060/MAF, 17/00666/MAO, 15/00466/EIA and CB/13/00726/DCO). The modelling predicted the maximum NO₂ and PM₁₀ façade concentrations at all receptors in 2027 to be below 75% and 45% of the relevant AQAL, the maximum annual mean NO₂ being predicted for a property close to the A421 to the east of the A421 / A6 / A5141 junction. Annual mean NO₂ and PM₁₀ concentrations at properties on Bedford Road, near the junction with Green Lane, were predicted to be 41% and 36% of the AQAL in 2027.

6.5.4 On this basis and taking into account the set-back distances of properties from Bedford Road, it is concluded that with the Proposed development in-combination with the committed developments resulting total concentrations would remain well below the AQALs and the resulting effect is ***not significant***.

6.6 Mitigation

Dust Soiling and Accumulation

²⁰ Burohappold Engineering, *Former Stewartby Brickworks, Bedford: Environmental Statement Volume 1: Main Report, November 2018: Chapter 8 and accompanying appendices*

-
- 6.6.1 There are no existing sensitive receptors within the Study Area and hence there would not be any significant impacts and effects associated with dust emissions with regards to the existing site setting. However, the adjoining land (former Stewartby Brickworks) has recently been granted outline planning permission for a residential led mixed-use redevelopment. The associated residential properties are shown in the Illustrative Layout to extend to within 20m of the boundary of the railway sidings area. The assessment has therefore considered the potential for adverse impacts and effects from dust emissions on these proposed properties.
- 6.6.2 The potential for any fugitive dust generation during the transfer of the materials to be handled at the Site can be readily controlled through the implementation of standard best practice in respect of dust control and site management, as detailed in the IAQM Guidance.
- 6.6.3 The above dust assessment takes into account the in-design mitigation measures, both physical measures such the retention of existing paved access road and the provision of a wheel wash and incorporation of standard management and control measures. The assessment concludes there is a risk of *slight adverse* effects, at most, at the closest potential future nearby sensitive receptors due to dust soiling. The proposed provision of a 6m high fence to minimise potential noise impacts would serve to further reduce likely adverse dust impacts.
- 6.6.4 Given the potential sensitivity of the future neighbouring development and likely proximity of residential receptors, it is recommended the management measures are detailed in a dust management plan (DMP) that would be agreed in advance with the LPA. This will outline standard general requirements in relation to dust management, incorporating any additional site-specific measures as deemed necessary. For information, general example recommendations for appropriate mitigation are set out below. In the event an Environmental Permit is required the DMP would also require agreement with the EA.
- 6.6.5 Overall responsibility for the management and control of dust would lie with the Site Manager.
- 6.6.6 As an over-riding requirement, should winds carry visible dust towards any sensitive site boundaries, and particularly to the south / southeast / east, the

operations giving rise to dust would be modified and suspended until more suitable conditions pertain, or until effective dust control measures are implemented.

6.6.7 Standard good practice measures that would be employed with respect to haulage include:

- Regular maintenance of on-site internal haulage route in the sidings area and the access road;
- Provision and enforcement of an internal speed limit;
- Fitting of site vehicles with upswept exhausts and radiator fan shields;
- Sheeting of all departing haulage vehicles;
- Implementation of measures to ensure that mud and detritus do not accumulate on the access / egress roads with regular cleaning / sweeping.

6.6.8 Other general matters and the management of the site can also affect the likelihood of significant dust emissions. Such standard measures that can be readily employed include:

- Measures for acceptance of dusty and friable waste materials;
- Visual monitoring for dust throughout the working day with regular inspections of the site boundary;
- Maintenance of a daily record relating to dust management including the source, date and time along with any dust impacts;
- Recording of any complaints along with subsequent remedial actions and changes to procedures;
- Minimisation of drop heights when loading HGVs;
- Clearance of product or waste spillages to avoid accumulations;
- Securing and covering of loads;
- Conditioning of materials prior to transfer by spraying with water if required;
- Maintenance of adequate year-round water supply.

6.6.9 These measures also serve to minimise any potential PM₁₀ emissions.

On-Road Vehicle Exhaust Emissions

6.6.10 No additional mitigation has been identified as being required in relation to on-road vehicle exhaust emissions.

6.7 Residual Effects and Conclusions

- 6.7.1 The air quality assessment has considered the potential impacts at representative receptors associated with fugitive dust and HGV exhaust emissions from the Proposed Development.
- 6.7.2 An assessment has been undertaken of the potential for fugitive dust that may arise during the transfer operations at the Site. The assessment takes into account the nature and extent of the proposed scheme, local wind data and the sensitivity of the surrounding area.
- 6.7.3 The described standard good working practices and mitigation measures are generally accepted as providing effective control against the impact of airborne dust and suspended particulate matter. Through the incorporation of in-design mitigation and standard dust mitigation measures which would be provided within a DMP, no unacceptable impacts or resulting effects on human health, amenity or ecological receptors have been identified. The resulting significance of dis-amenity, health (PM₁₀) and ecological effects resulting from fugitive dust emissions is ***not significant***.
- 6.7.4 The Proposed Development would result in the generation of additional HGV movements on the local road network. However, given the existing good local air quality and the set-back distances of properties from the proposed most likely haulage routes the significance of residual effects associated with vehicle exhaust emissions would be ***not significant***.
- 6.7.5 The overall significance of the Proposed Development in relation to air quality effects is ***not significant***.



IRELAND | UK | UAE | BAHRAIN | KSA

BYRNELOOBY

www.byrneology.com

Email: info@byrneology.com