



Air Quality Assessment & Dust Management Plan

Restoration of former Quarry on Land at Russell Green,
Chelmsford

Land Logical

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
AQAL	Air Quality Assessment Level
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
AQSR	Air Quality Strategy Regulations
CCC	Chelmsford City Council
DMP	Dust Management Plan
ECC	Essex County Council
EPUK	Environmental Protection UK
HDV	Heavy Duty Vehicles (>3.5t)
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LDV	Light Duty Vehicles (<3.5t)
LWS	Local Wildlife Site
NO ₂	Nitrogen dioxide
NO _x	Oxides of Nitrogen
NPPF	National Planning Policy Framework
NRMM	Non-Road Mobile Machinery
PM2.5	Particulates of less than 2.5µm diameter
PM10	Particulates of less than 10µm diameter
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest



1.0 Introduction

SLR Consulting Ltd has been commissioned by Land Logical to undertake an Air Quality Assessment and Dust Management Plan in support of the proposed restoration of the former quarry on land at Russell Green, Chelmsford (the Site).

1.1 Summary of Proposed Development

The Proposed Development is for the importation of approximately 85,000 tonnes of inert waste to stabilise and restore the former quarry pit. The restoration would take approximately seven months to complete and would create a final landform of gentle slopes with an open mosaic habitat, reed beds and pond.

1.2 Pre-Consultation

This assessment considers the impact of the proposals on the local air quality environment. Pre-application advice¹ sought from Essex County Council (ECC) provided the following with regard to air quality and dust from the Proposed Development:

"It is considered that the proposal would likely generate noise and dust. Given the close proximity of residential properties and surrounding vegetation, a Dust Mitigation Plan, Air Quality Assessment and a Noise Impact Assessment are recommended to be included as part of any application. Appendix I includes the full responses from the County Council's noise and air quality consultants which include particulars that should be included in any such assessments [...] Any application should include details of all mitigation features proposals and measure such as wheel washing facilities"

The full response from the Air Quality Consultant of ECC is presented in Appendix B of this report.

1.3 Scope of Assessment

The Institute of Air Quality Management (IAQM) Guidance on the Assessment of Mineral Dust Impacts for Planning² and the Environmental Protection UK (EPUK) and IAQM Guidance on land-use planning and development control: Planning for Air Quality³, have informed the scope and methodology of the assessment, which addresses:

- baseline review - identification of relevant receptors, background air quality and meteorological conditions;
- assessment of potential impacts arising as a result of dust deposition (i.e. effects on amenity and ecological receptors);
- assessment of potential impacts arising as a result of suspended airborne dust with an aerodynamic diameter of less than 10 microns (PM₁₀);
- identification of air quality effects associated with the Proposed Development; and
- preparation of a Dust Management Plan (DMP).

¹ Essex County Council Pre-Application Planning Advice. April 2022. Planning Ref: ESS/11/22/CHL/PRE

² IAQM, Guidance on the Assessment of Mineral Dust Impacts for Planning, v1.1 2016.

³ EPUK-IAQM, Guidance on land-use planning and development control: Planning for air quality, v1.2, 2017.



2.0 Relevant Legislation, Guidance and Policy

2.1 Legislation

2.1.1 National Obligations

The Air Quality Standards Regulations 2010⁴ (AQSR) transpose both the EU Ambient Air Quality Directive (2008/50/EC), and the Fourth Daughter Directive (2004/107/EC) within UK legislation, in order to align and mirror European obligations. The AQSR includes Limit Values which are legally binding ambient concentration thresholds, however, must be assessed at specific locations (micro and macroscale sampling points). Carriageways or central reservations of roads and any location where the public do not have access (e.g. industrial sites) are exempt. If the sampling point does not comply with the siting locations (Schedule 1: AQSR), then strict comparison cannot be made.

Following the UK's withdrawal from the EU, the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020⁵ was introduced to mirror revisions to supporting EU legislation. The fine particulate matter (PM_{2.5}) Limit Value is 20µg/m³ (to be met by 2020).

The responsibility of achieving the AQSR (and European equivalent Directives) is a national obligation for Central Government (Defra and Devolved Administrations) who undertake assessments on an annual basis. Local Authorities have no responsibility to achieve the AQSR or the European equivalent Directives, unless otherwise instructed to assist Central Government under Ministerial Direction.

In response to persistent exceedances, the Government published its 2017 plan⁶ for reducing roadside nitrogen dioxide (NO₂) concentrations in order to achieve compliance in the shortest time possible. This has resulted in the introduction of Clean Air Zones across England.

2.1.1.1 Environment Targets (Fine Particulate Matter) Regulations

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 introduced an annual mean concentration target of 10µg/m³ to be met across England by 2040. Central Government (Defra and Devolved Administrations) is responsible for meeting this target, however not until 2040. Local Authorities have no responsibility to achieve this target.

2.1.2 Local Obligations

Part IV of the Environment Act 1995 (as amended) requires the Secretary of State to publish a national Air Quality Strategy (AQS) every five years and established the system of Local Air Quality Management (LAQM) for Local Authorities to regularly review and assess air quality within its area.

The Air Quality (England) Regulations 2000 (as amended) ('the Regulations') provide the statutory basis for the Air Quality Objectives Local Authorities must adhere to under LAQM in England. PM_{2.5} is not currently cited within the Regulations; Local Authorities are however required to work towards reducing PM_{2.5}.

The Air Quality Objectives apply at locations where members of the public are regularly present and might reasonably be expected to be exposed to pollutant concentrations over the relevant averaging period (relevant exposure). Table B provides an indication of those locations. Where any of the prescribed Air Quality Objectives are not likely to be achieved, the authority must designate an Air Quality Management Area (AQMA). For each AQMA, the local authority is required to prepare an Air Quality Action Plan (AQAP), which details measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the objective.

⁴ The Air Quality Standards Regulations (England) 2010, Statutory Instrument No 1001, The Stationary Office Limited.

⁵ The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020, Statutory Instrument No. 1313, The Stationary Office Limited.

⁶ UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations, 2017.



The latest AQS for England was published in 2023 . The AQS provides the delivery framework for air quality management across England for local authorities and summarises the air quality standards and objectives operable within England for the protection of public health and the environment.

The ambient air quality standards of relevance this assessment (collectively termed Air Quality Assessment Levels (AQALs) throughout this report) are provided in Table A. These are primarily based upon the Air Quality Objectives Local Authorities are responsible for achieving – reflective of the Local Planning Authority’s duties. The PM_{2.5} AQSR AQAL has also been included for completeness, to provide an indicative assessment (as the sampling point may not comply with the siting locations prescribed under Schedule 1: AQSR).

Table A: Relevant Ambient AQALs

Pollutant	Standard	Averaging Period
Particles (PM ₁₀) (gravimetric)	40µg/m ³	Annual Mean
	50µg/m ³	24 Hour Mean. Not to be exceeded more than 35 times per calendar year
Particles (PM _{2.5}) (gravimetric)	20µg/m ³	Annual Mean
Nitrogen Dioxide (NO ₂)	40µg/m ³	Annual Mean
	200µg/m ³	1 Hour Mean. Not to be exceeded more than 18 times per calendar year

Table B: Human Health Relevant Public Exposure

AQAL Averaging Period	AQALs should apply at	AQALs should not apply at
Annual mean	Building facades of residential properties, schools, hospitals etc.	Facades of offices Hotels Gardens of residences Kerbside sites
24-hour mean	As above together with hotels and gardens of residential properties	Kerbside sites where public exposure is expected to be short term
1-hour mean	As above together with kerbside sites of regular access, car parks, bus stations etc.	Kerbside sites where public would not be expected to have regular access

2.1.3 Environmental Protection Act 1990

The Environmental Protection Act 1990⁷ sets out provisions for the regulation of statutory nuisances. Section 79 sets out this statutory nuisance as, ‘any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance’.

Section 79 requires that, where a complaint of a statutory nuisance is made to it by a person living within its area, a Local Authority must take steps as are reasonably practicable to investigate the complaint and decide whether the odour is prejudicial to health or a nuisance. Proposed developments which result in the introduction of future sensitive receptors are however subject to the Agent of Change principle to ensure potential interactions with the existing environment and operations are assessed and mitigated to minimise restrictions being placed on existing businesses.

Fractions of dust greater than 10µm (i.e. greater than PM₁₀) in diameter typically relate to nuisance effects as opposed to potential health effects and therefore are not covered within the UK AQS. In

⁷ The Environmental Protection Act 1990. Available at <http://www.legislation.gov.uk/ukpga/1990/43/contents>.



legislation there are currently no numerical limits in terms of what level of dust deposition constitutes a nuisance.

2.1.4 Ecological Habitats

Ecological habitats vary in terms of their sensitivity, perceived ecological value, geographic importance, and level of protection. Within the UK, there are three types of nature conservation designations: international, national and local designations, which are all provided environmental protection from developments, including from atmospheric emissions, with a greater level of protection afforded to the former, relative to the latter.

The Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations')⁸ introduces the precautionary principle for protected European sites, i.e. that projects can only be permitted to proceed; having ascertained that there will be no adverse effect on the integrity of the designated site. European sites include Special Areas of Conservation (SAC) and Special Protection Areas (SPA). These regulations were subsequently amended in 2019 to make them operable from 1 January 2021 despite the UK's withdrawal from the EU⁹.

Other sites of international significance are Ramsar sites, which are wetlands protected under the 1971 Ramsar Convention¹⁰. Many of these sites in the UK were initially selected on the basis of their importance to waterbirds and are therefore also classified as SPAs.

The Countryside and Rights of Way (CRoW) Act (2000) provides protection to Sites of Special Scientific Interest (SSSI) to ensure that developments are not likely to cause damage.

2.2 Planning Policy

2.2.1 National Policy

2.2.1.1 Clean Air Strategy

The 2019 Clean Air Strategy¹¹ sets out the Government's proposals aimed at delivering cleaner air in England and indicates how devolved administrations intend to make emissions reductions. It sets out the comprehensive action that is required from across all parts of government and society to deliver clean air.

2.2.1.2 Environment Improvement Plan 2023

The 2023 Environment Improvement Plan¹² is the first revision of the UK Government's 25 Year Environment Plan (25YEP) – planned on a five-year rolling cycle. This document sets out the 5-year delivery plan to improve the natural environment. The 2023 Environment Improvement Plan builds on the 2019 Clean Air Strategy by setting environmental targets and commitments to reduce air pollution.

2.2.1.3 National Planning Policy Framework

The 2021 update to the National Planning Policy Framework¹³ (NPPF) sets out planning policy for England. The NPPF states that the planning system should contribute to and enhance the natural and local environment, by preventing new development from contributing to or being adversely affected by unacceptable concentrations of air pollution and development should, wherever possible, help to

⁸ The Conservation of Habitats and Species Regulations 2017 Statutory Instrument 490.

⁹ The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

¹⁰ Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat.

¹¹ The Clean Air Strategy, Defra. January 2019.

¹² Environmental Improvement Plan 2023, Defra. 2023

¹³ National Planning Policy Framework, Ministry of Housing, Communities & Local Government. 2021



improve local environmental conditions such as air quality.

In specific relation to air quality policy, the document states:

Chapter 15 - Conserving and Enhancing the Natural Environment

“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.”

The NPPF is accompanied by web based supporting Planning Practice Guidance (PPG)¹⁴ which includes guiding principles on how planning can take account of the impacts of new development on air quality.

2.2.2 Local Policy

2.2.2.1 Chelmsford Local Plan, May 2020

At a local level, a number of the overarching policies within the Chelmsford Local Plan 2013 – 2036 seek to protect the amenity of local communities and mitigate against unacceptable impacts on air quality. The policies of relevance that have been considered within this assessment are as follows:

- Policy DM29 – Protecting Living and Working Environments

Planning permission will be granted for development proposals provided the development:

- i. safeguards the living environment of the occupiers of any nearby residential property by ensuring that the development is not overbearing and does not result in unacceptable overlooking or overshadowing. The development shall also not result in excessive noise, activity or vehicle movements;
- ii. is compatible with neighbouring or existing uses in the vicinity of the development by ensuring that the development avoids unacceptable levels of polluting emissions by reason of noise, light, smell, fumes, vibrations or other issues, unless appropriate mitigation measures can be put in place and permanently maintained.

- Policy DM30 - Contamination and Pollution

[...] B) Air Quality Management Area: For developments in or adjacent to an Air Quality Management Area, or where an air quality impact assessment has been provided, permission will only be granted where the Council is satisfied that after selection of appropriate mitigation the development will not have an unacceptable impact on air quality and the health and wellbeing of people.

2.2.2.2 Essex and Southend-on-Sea Waste Local Plan, July 2017

ECC and Southend-on-Sea Borough Council (SBC) are Waste Planning Authorities and as such prepared a Waste Local Plan to replace the joint Plan that was previously adopted in 2001. The Essex and Southend-on-Sea Waste Local Plan was prepared to ensure waste arising in the area is dealt with in a way which is least damaging to the environment and helps maintain quality of life for the residents. The policies within the document provide up to date planning policies for waste developments until 2032. As per ‘Strategic Objective SO8’ of the Plan, it seeks to “ensure waste facilities and their

¹⁴ Planning Practice Guidance Air Quality, Ministry of Housing, Communities and Local Government. November 2019.



proposed locations are sustainably designed, constructed and operated to reduce potential adverse effects on human health, amenity and the natural and historic environment”.

The policies of relevance that have been considered within this assessment are as follows:

- Policy 12 – Transport and Access

Proposals for waste management development will be permitted where it is demonstrated that the development would not have an unacceptable impact on the efficiency and effective operation of the road network, including safety and capacity, local amenity and the environment [...]

- Policy 10 – Development Management Criteria

Proposals for waste management development will be permitted where it can be demonstrated that the development would not have an unacceptable impact (including cumulative impact in combination with other existing or permitted development) on:

- a) local amenity (including noise levels, odour, air quality, dust, litter, light pollution and vibration);

2.3 Assessment Guidance

This assessment has been carried out in accordance with the following principles contained within the guidance documents below.

- Defra: Local Air Quality Management Technical Guidance (LAQM.TG(22))¹⁵;
- Defra: COVID-19: Supplementary Guidance. Local Air Quality Management Reporting in 2021¹⁶;
- Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM): Land-Use Planning and Development Control: Planning for Air Quality³;
- IAQM: Guidance on the Assessment of Mineral Dust Impacts for Planning²;
- IAQM: Implications of the COVID-19 pandemic on air quality monitoring and assessments¹⁷;
- IAQM: A guide to the assessment of air quality impacts on designated nature conservation sites¹⁸; and
- The Mineral Industry Research Organisation: A Good Practice Guide, 2011¹⁹.

3.0 Assessment Methodology

3.1 Operational Phase - Dust Risk Assessment

Dust emissions arising from the proposed restoration activities have the potential to reduce amenity in the local community and damage sensitive ecological receptors due to visible dust plumes and soiling / deposition; these coarse dust particles are referred to as deposited dust.

The dust assessment has been undertaken in accordance with the IAQM 'Guidance on the Assessment of Mineral Dust Impacts for Planning'². Although aimed at mineral developments, the

¹⁵ Local Air Quality Management Technical Guidance 22, Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland. August 2022.

¹⁶ Defra and the Greater London Authority, COVID-19: Supplementary Guidance. Local Air Quality Management Reporting in 2021. April 2021.

¹⁷ IAQM, Implications of the COVID-19 pandemic on air quality monitoring and assessments. 6th April 2021.

¹⁸ IAQM, A guide to the assessment of air quality impacts on designated nature conservation sites. June 2019

¹⁹ The Mineral Industry Research Organisation (MIRO). Good practice guide: control and measurement of nuisance dust and PM10 from the extractive industries. February 2011



guidance provides an effective methodology for activities similar in nature, size and duration to that of mineral sites. The methodology is summarised below and available to download on the IAQM website and therefore not reproduced in full within this assessment.

The IAQM method is a risk-based approach based on the source-pathway-receptor conceptual model, i.e. the hypothetical relationship between the source (S) of the pollutant, the pathway (P) by which exposure might occur, and the receptor (R) that could be adversely affected.

The key steps are:

- Assess Site Characteristics and Baseline Conditions. Incorporates a review of baseline conditions including PM₁₀ background concentrations, existing dust deposition data, and dust complaints; a description of Site activities to inform the Source Term; and characterisation of the Site setting in terms of the location and sensitivity of representative receptors, and meteorological conditions (wind patterns and rainfall);
- Estimate Dust Impact Risk. The Dust Impact Risk for each representative receptor is determined from the Source Term (residual dust risk after embedded mitigation) and Pathway. The 'pathway effectiveness' is based upon the distance of the receptor from the dust source (i.e. close <100m, intermediate 100m-200m, distant 200-400m) and the frequency at which it is down-wind from the source (factoring out the frequency of wet days); and
- Estimate Likely Magnitude of Effect. The risk predicted at each representative receptor is considered together with the sensitivity of that receptor, to give the likely magnitude of the effect that will be experienced.

With respect to PM₁₀, if background concentrations are less than 17µg/m³, it is considered there is little risk of the Process Contribution (PC) from the Site causing an exceedance of the annual mean AQAL. Where background concentrations are greater than 17µg/m³ the PC is estimated, and total Predicted Environmental Concentration (PEC) used to assess the potential significance of effects on the surrounding receptors.

The IAQM uses a distance-based screening criterion for both airborne concentrations and deposited dust. The guidance states "from the experience of the working group, adverse dust impacts from sand and gravel sites are uncommon beyond 250m and beyond 400m from hard rock quarries, measured from the nearest dust generating activity".

In accordance with the IAQM methodology, assessment of the effects of deposited dust can be screened out if there are no receptors within 250m from the dust source (considered applicable to handling and deposition of inert materials and soils). Assessment of the effects of PM₁₀ can be screened out if there are no receptors within 1km of the dust source, or if background concentrations are below 17µg/m³.

3.2 Operational Phase – Road Traffic Assessment

The operational phase assessment is required to consider the air quality impacts associated with the Proposed Development on the existing environment. The proposed restoration activities would require the importation of inert materials using Heavy Duty Vehicles (HDV) on the public road network.

The assessment of additional road vehicle movements generated during the Proposed Development on sensitive receptor locations has been undertaken with reference to established screening criteria. The screening criteria utilised is dependent on the application (i.e. there are different criteria for human and ecological receptors) and is discussed further below.

3.2.1 Human Receptors

Screening criteria provided within the EPUK & IAQM guidance document³ has been used to determine whether further assessment of generated traffic, using the local road highway network, on sensitive human receptor locations is required. If there is relevant human exposure located within 200m of an 'affected' road link, further consideration of effects is required.



The screening criteria for an 'affected road' link relevant to this assessment is as follows (specific to a development located outside of an AQMA):

- A change of traffic flows of light duty vehicle (LDV) flows of more than 500 annual average daily traffic (AADT); or
- A change of traffic flows of heavy duty vehicle (HDV) flows of more than 100 AADT.

If the traffic flows are not found to exceed any of the screening criteria presented, then effects are considered to be insignificant and can be screened out of further consideration.

3.2.2 Ecological Receptors

The assessment procedure outlined within the IAQM guidance document¹⁸ has been used in relation to the assessment of sensitive ecological receptors and off-site road traffic (i.e. traffic generated by The Proposed Development which will use the local road highway network). This initially comprises a screening assessment to indicate whether:

- Any sensitive qualifying features are located within 200 m of a road link projected to experience developmental-generated vehicle movements; and
- Activities are likely to generate either >1,000 (and/ or >200 HDV) AADT movements on a road link within 200 m of the ecological receptor.

For the purposes of assessing impacts on sensitive qualifying internationally designated ecological sites (e.g. Special Area of Conservation, Special Protection Area and Ramsar), screening will be undertaken in-combination with other projects and plans following the judicial outcomes of the Wealden Judgement, where located within 200m of an affected road link. However, when assessing impacts on national and/or local ecological designations, developmental trips will be assessed in isolation (i.e. project alone). This is reflective of the level of protection afforded to these sites.

The outcomes of the above will determine whether impacts associated with the Proposed Development could result in a likely significant effect on the assessed ecological feature.

If the above conditions are not met, then impacts on ecological designations are likely to be imperceptible, whereby resultant effects are considered to be not significant and no further assessment is required.

3.3 Operational Phase – Non-Road Mobile Machinery

Non-Road Mobile Machinery (NRMM) emissions for the Proposed Development have the potential to impact upon ecological and human receptors.

According to the IAQM 'Guidance on the Assessment of the Dust from Demolition and Construction', experience of assessing exhaust emissions from NRMM suggests that they are unlikely to make a significant impact on local air quality.

According to Defra's LAQM.TG(22) guidance, experience of assessing the exhaust emissions from on-site plant (NRMM) and site traffic suggests that, with suitable controls and site management, they are unlikely to make a significant impact on local air quality.

In accordance with Defra and IAQM guidance, impacts associated with the Proposed Development, with an anticipated duration similar to that of a construction site; generated NRMM emissions are not likely to be significant.

4.0 Baseline Conditions

4.1 Site Setting

The Site is located to the north-east of Chelmsford approximately 1.6 miles northwest of Boreham village at approximate National grid Reference (NGR) x574630, y212600.



The surrounding use of the Site is predominantly agricultural and industrial, with Bulls Lodge Quarry abutting the southwestern boundary. Isolated residential properties are located within the locale, the closest being Russell Green Cottages which lie approximately 85m to the north of the Site. Access to the Site is via a gated concrete-surfaced entrance off Boreham Road.

4.2 Sensitive Receptors

The term 'sensitive receptors' includes any persons, locations or systems that may be susceptible to changes in abiotic factors as a consequence of the development. These have been identified as human and ecological receptors sensitive to dust and vehicle emissions.

AQALs apply to locations where members of the public may be reasonably likely to be exposed to air pollution for the duration of the relevant AQALs as presented in Table A. Therefore, the annual mean should apply only at locations where people are likely to be present for long periods (examples given are residential properties, schools, hospitals and care homes). In the case of the 24-hour AQAL a relevant location would be one where the individuals may be exposed for eight hours or more in a day. As such, all residential and workplaces, other than the Site itself, within 1km are considered of relevance to the assessment of potential PM₁₀ impacts.

With respect to amenity impacts, the sensitivity will relate to the level of amenity that can be reasonably expected. The sensitivity of each receptor to dust amenity impacts has been considered relative to the IAQM minerals guidance. For example, residential dwellings and schools are typically more sensitive than industrial units or farms. Human and ecological receptor locations have been characterised as high, medium or low sensitivity in accordance with the IAQM guidance.

The IAQM guidance screening distance requiring detailed assessment for soft rock extraction (i.e. sand and gravel) is 250m for deposited dust and 1km for PM₁₀.

A selection of receptors representative of human health for both assessment of dust and road traffic emissions are presented in Figure B and detailed in Table C.



Table C: Sensitive Receptors

ID	Receptor	Type of Location	Distance to Site Boundary	Considered for Dust Assessment?
Human Receptors				
HR1	Russell Green Cottages	Residence	85m	Yes
HR2	Coldstream Cottages	Residence	145m	Yes
HR3	Russell Green Bungalow	Residence	165m	Yes
HR4	Brent Hall / Brent Hall Lodge	Residence	310m	Yes ^A
HR5	Boreham Vehicle Services	Industrial	500m	No
HR6	Police Workshop car park	Industrial	380m	No
HR7	Agricultural buildings	Industrial	310m	No
HR8	Residence	Residence	360m	No
Ecological Receptors				
ER1	Boreham Gravel Pits LWS (closest location)	Ecological, LWS	680m	No
Table Notes:				
A) Although >250m from the Site, HR3 is considered for dust assessment as it is within 50m of the route used by vehicles generated from the Site within 500m of the Site access, and therefore has the risk of impact from trackout.				

4.3 Baseline Air Quality

4.3.1 Local Air Quality Management

As required under Section 82 of the Environment Act 1995 (Part IV), Chelmsford City Council (CCC) has conducted an on-going exercise to review and assess air quality within their administrative areas.

CCC have declared two AQMAs due to exceedances of the nitrogen dioxide (NO₂) AQAL. Both AQMAs are in excess of 5km from the Application Site and are not located on routes utilised by traffic generated from the Site. As such there is no requirement to consider the impact of the Proposed Development on the AQMAs.

4.3.2 Monitoring Data

From review of national and local automatic monitoring networks, the closest monitor to the Application Site is greater than 5km away in Chelmsford and has therefore not been considered relevant to this assessment.

CCC undertake monitoring of NO₂ using passive diffusion tubes at numerous locations. The closest location to the Application Site however is in the urban area of Chelmsford at a distance of more than 3.5km and therefore not considered relevant to the Site locale.

4.3.3 Defra Modelled Backgrounds

Defra provides modelled background pollutant concentration data on a 1km x 1km resolution across the UK that is routinely used to support LAQM and Air Quality Assessments. Background pollutant concentrations are based upon a 2018 base year and projected forwards. They also provide a breakdown of the relative contributions of various sources for NO₂, PM₁₀ and PM_{2.5}.

The maximum background concentrations for the 1km grid squares containing the Site and surrounding receptors are presented below in Table D.



Table D: Defra Mapped Background Concentrations 2023

Grid Square (x,y)	Year	Annual Mean Concentration		
		NO ₂	PM ₁₀	PM _{2.5}
574500, 213500	2023	7.86	15.4	9.06
574500, 212500		8.05	15.6	9.15
575500, 212500		8.10	15.9	9.20

As noted in Table D, the mapped background concentrations are below the relevant annual mean AQALs. Where appropriate, these concentrations have been applied in the assessment.

4.3.4 Assessment Baseline

Given the lack of representative background fine particulate matter monitoring within the study area locale, the background PM₁₀ concentrations applied to the existing sensitive receptors have been obtained from the Defra background maps.

4.3.5 Baseline Dust

The Application Site locale is characterised by the existing mineral development of Bulls Lodge Quarry to the southwest and agricultural land-uses, both of which could occasionally give rise to dust emissions during certain periods and/or metrological conditions.

Bulls Lodge Quarry (Planning Permission CHL/1019/87 (Boreham)) abutting the Sites southwestern boundary is an active sand and gravel quarry that has been in operation since 1990. There have been no substantiated complaints received by CCC with regard to dust in the site locale within the past 3 years.

Whilst there is no information relating to baseline dust levels at the Application Site, a three month dust monitoring survey was undertaken at the adjacent Bulls Lodge Quarry in support of Planning Application ECC Ref ESS/147/20/CHL²⁰ from March to June 2019. The monitoring scheme was strategically set up to monitor both baseline levels in locations where active quarrying was not present, as well as locations in proximity to current operations (representative of soil stripping activities and unpaved haul route usage). The results of the survey concluded the following:

- levels of deposition outside of the Quarry boundary were generally well below the level at which impacts on amenity would be expected to occur;
- occasional increases in dust deposition could occur in close proximity to quarry operations (i.e. within 100m) but that such events are infrequent and rates remained below the 200mg/m²/day value at which impacts on amenity could be expected to occur; and
- elevated levels at a 'background' monitor were likely attributed to agricultural activity rather than quarry operations.

4.4 Meteorological Conditions

The most important climatic parameters governing the release and dispersal of fugitive emissions from the Site operations are wind speed, direction and rainfall:

- wind direction determines the broad direction of dispersal;
- wind speed affects ground level concentrations by increasing the initial dilution of pollutants in the emission. It will also affect the potential for dust entrainment; and
- rainfall naturally supresses dust release (>0.2mm rainfall per day is considered sufficient to suppress dust emissions).

²⁰ Aecom 2020. Bulls Lodge Quarry; ES Annex G - Air Quality and Dust Assessment. November 2020



Relevant rainfall data applicable to the Site has been obtained from the Meteorological Office website of UK mapped climate averages for 1991-2020. The average annual rainfall >0.2mm/day for the area of the Site is 150 to 160 days per year, comprising an average of 42% of the year.

The most representative observation station to the Site is Andrewsfield station, located approximately 12km north north-west of the Site. A 5-year average wind rose is presented in Figure A.

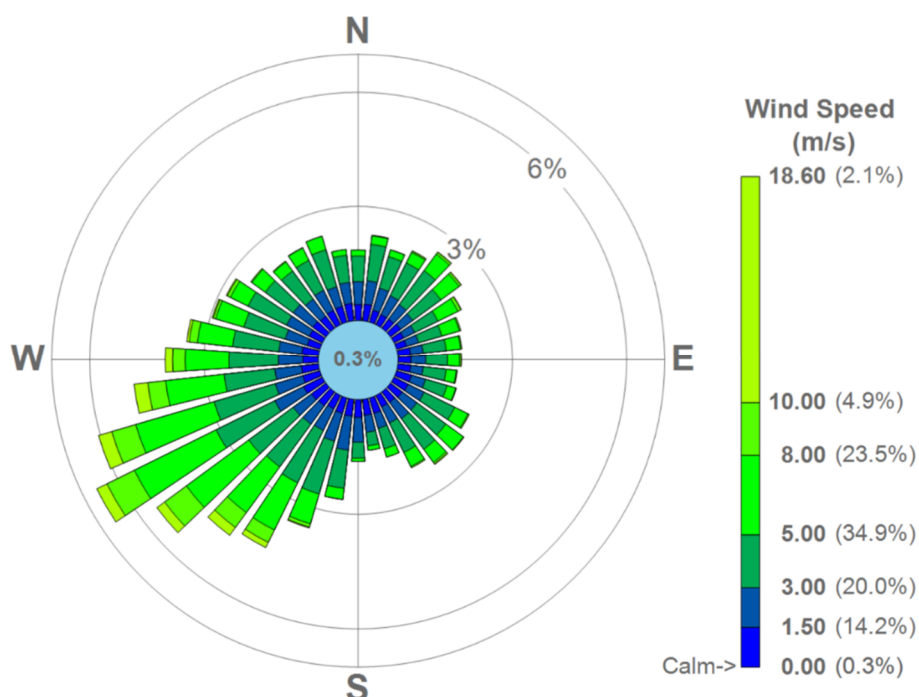


Figure A: Wind Rose for Andrewsfield Meteorological Station (2017 to 2021)

5.0 Assessment of Effects – Dust

The operations within the Site and their potential to generate dust emissions has been considered within this section.

On the basis of the adopted screening criteria an assessment of deposited dust and particulate matter (PM) is required at human receptors within 250m and 1km, respectively. On the basis that there are no ecological sites with features sensitive to dust deposition within 250m, an assessment of ecological effects has not been required.

The proposed operations on Site are limited to the importation and restoration using inert materials over a period of approximately 7 months, commencing by the end of 2023. Access would be via the gated concrete-surfaced entrance off Boreham Road. Inert material imported onto Site would be utilised as soon as practicable, with minimal storage requirements. Storage bunds on site would be limited to that of top soil storage bunds with a maximum height of 3.5m.

Plant that will be in use during the restoration works would include:

- 1No. dozer;
- 1No. digger;
- 1No. compactor;
- 1No. tractor /bowser



The importation of inert material would generate approximately 60 HDV trips per working day (120 daily movements) with all site traffic routed southbound from the Site access onto Boreham Road towards the A12.

5.1.1 Sources of Dust

Activities associated with the Proposed Development that have the potential to result in the release of dust emissions include:

- Site preparation & restoration;
- Storage of materials;
- On-site transportation; and
- Off-site transportation.

5.1.1.1 Site Preparation / Restoration

Site preparation works are limited to the removal of top soils and the construction of the screening bunds to store the soils until the importation and deposition of the inert waste is complete. The area whereby soil stripping is required is minimal due to the large presence of existing water bodies on the Site. Soil storage bunds would be located within the north / north-eastern margin of the Site perimeter.

Soil stripping would be undertaken using the on-site dozer and digger plant. The removal of soils has the potential to be an intense activity, albeit temporary and short term in nature which can be further exacerbated by adverse meteorological conditions (i.e. dry and windy) in the absence of mitigation measures. Given the small magnitude of soil stripping required onsite, it is considered to present a small dust emission potential in the absence of mitigation.

Whilst bund formation is considered an intense activity for dust potential, there is limited requirement for extensive soil removal and storage given then existing water bodies on site and activities would be intermittent and temporary in nature. The construction of bunds, albeit intermittent, is considered to present a medium dust emission potential in the absence of mitigation.

The restoration works comprise the unloading, handling and deposition of the imported inert material followed by re-instatement of the previously stored soils, which would be removed from the bunds and utilised in the final restoration profile. Restoration activities involve placement, shaping and compaction activities with potentially dusty material and are therefore of moderate dust potential in the absence of mitigation.

Given the above information and the magnitude of the Site, site preparation and restoration are considered to present a medium dust emission potential in the absence of additional mitigation.

5.1.1.2 Material Storage

The storage of materials is considered to be minimal as part of the Proposed Development; the operational method adopted would be that of material placement as soon as practicable following arrival on Site. Soils stripped during the preparation phase would be stored as screening bunds and would be seeded at the earliest opportunity; minimising the dust potential.

Given the above information, material storage is considered to present a low emissions potential in the absence of additional mitigation.

5.1.1.3 On-Site Transportation

The potential for dust emissions from unpaved haul roads is dependant on a number of factors, including the moisture content of the road and the vehicle speed, both of which can be controlled and mitigated.

The internal haul roads within the Application Site are limited to that between the Site access and the area of restoration, with internal roads within the restoration area relocating on a continuous basis



over the 7 month period as restoration progresses. Operations would be undertaken to ensure plant does not traverse over previously restored areas.

Overall and given the above, on-site transportation has the potential to present a moderate dust emission potential in the absence of mitigation.

5.1.1.4 Off-Site Transportation

Inert material would be transported to site using road HDVs which would enter the site, unload the material before exiting onto the local road network. This introduces the potential risk of trackout, whereby dirt and dust are transported onto the public road network where it may be deposited and then re-suspended by other vehicles.

All HDVs exiting the Site would be routed northbound onto Boreham Road before heading immediately eastbound along Wheelers Hill onto the A130 before heading southbound towards the A12 dual carriageway. The generation of HDVs would be 120 movements per working day, over the proposed operational period of 7 months.

Overall and given the above, off-site transportation presents a medium dust emission potential in the absence of mitigation.

5.1.2 Environmental Design Measures

Environmental designed in measures that are taken into account with regard to the potential residual source emission from the Site are as follows:

- Water bowser on site for application of water suppression as required;
- Wheel wash located approximately 50m from site exit;
- Access road between wheel wash and site exit hard paved;
- Speed limit of 5mph on Site and access road;
- All loaded road lorries to be sheeted;
- On-road HDVs would not permitted to traverse across restored areas; and
- all soil bunds a maximum of 3.5m height and seeded as soon as practicable (significantly reducing the dust potential as the bund naturally re-vegetates and stabilises).

5.2 Assessment of Effects – PM₁₀

With respect to PM₁₀, the maximum predicted annual mean background concentration for the area is 15.9µg/m³ in 2021 (Section 4.3.3).

This is below the recommended screening value of 17µg/m³ provided in the IAQM minerals guidance. Given that the predicted PM₁₀ background concentrations are below 17µg/m³ at the nearby receptor locations, it is considered that there is little risk of the contribution from the Site causing an exceedance of the PM₁₀ AQAL. The overall effect of the Proposed Development on PM₁₀ concentrations in the local area is therefore considered to be 'not significant'.

5.3 Assessment of Effects – Disamenity Dust

5.3.1 Summary of Residual Source Emissions Magnitude

The residual source emission magnitude (i.e. the potential magnitude of dust emissions after the designed in environmental measures have been taken into account) for each of the dust generating activities identified is presented in Table E.



Table E: Residual Source Emissions Magnitude

Activity	Factors / Environmental Measures	Location	IAQM Residual Source Magnitude
Site Preparation & Restoration			
Soil bund construction / dismantling	Small working area (<2.5ha) Low no. heavy plant (<5) Temporary, intermittent with low volume of material	Within limit of restoration	Small
Soil stripping / replacement	Water suppression (tractor and bowser) used, as required Progressive stripping in distinct areas to minimise exposed surfaces Temporary, intermittent with low volume of material		
Handling & deposition of inert material	Small working area (<2.5ha, with further division into distinct areas for progressive restoration) Low no. heavy plant (<5) Water bowser onsite, used as required	Within limit of restoration works	Small
Material Storage	Low volume of material exposed: bunds seeded as soon as practicable Infrequent material transfers No requirement for storage of inert restoration material Water suppression (tractor and bowser) used, as required	Within limit of restoration works	Small
On-Site Transportation (unpaved haulage)	Water suppression (tractor and bowser) used, as required Speed Limit 5mph Roads graded and maintained regularly Low no. permanent plant on site (<5) Total length of haul roads in use at one time low (<500m)	Internal haulage routes	Small
Off-Site Transportation	Road vehicles sheeted Use of wheel wash for all vehicles leaving Site Hard paved access road between wheel wash and site exit Water bowser and road sweeper used, as required HDV loads of 60 trips per working day Speed Limit of 5mph on access road	Access road & potential area of trackout (see Figure B)	Small

5.3.2 Summary of Pathway Effectiveness

This assessment has considered activities across the entirety of the Site’s boundary to ensure a cumulative assessment of all potential dust generating activities/areas. The IAQM screening distance of 250m has been applied to receptors in relation to their distance to the Site boundary where all receptors located >250m are ‘screened out’ of further assessment for deposited dust. As per Table C, receptors HR5 to HR8 and ER1 are greater than 250m and have thus been screened out of the assessment.

The pathway effectiveness at each receptor has been assigned in accordance with the IAQM criteria and is based on the distance of the receptor to the red-line boundary and the frequency of potentially dusty winds (>5m/s on dry days) from the direction of potential dust sources within 250m of the receptor. A summary of pathway effectiveness is displayed in Table E.



Table F: Summary of Pathway Effectiveness (On-site Sources)

Ref	Distance to Site Boundary	Distance Category	Relevant Wind Sectors	Frequency of Potentially Dusty Winds on Dry Days	Frequency Category	IAQM Pathway Effectiveness
HR1	85m	Close	100°-180°	1.5%	Infrequent	Ineffective
HR2	145m	Intermediate	120°-190°	1.4%	Infrequent	Ineffective
HR3	165m	Intermediate	245°-265°	5.9%	Mod. Frequent	Moderately Effective
HR4	310m	Distant	240°-290°	7.0%	Mod. Frequent	Ineffective

Due to the nature of dust generation from the area off-site potentially affected by trackout, the determination of pathway effectiveness has been undertaken separately:

- there are two discrete residential receptors within 50m of the potential trackout route (up to 500m from the Site access), located at approximately 150m (HR3) and 300m (HR4) from the Site access, respectively;
- a dense tree / woodland border is located between the road and the dwelling for both receptors; and
- taking into account the distance from the Site exit and the natural protection afforded by the existing natural environment, the pathway effectiveness is considered to be ineffective.

5.3.3 Summary of Dust Effects

On the basis of the source term (small applied), receptor sensitivity and pathway effectiveness, the magnitude of effect due to potential dust deposition at each receptor has been estimated. Table G presents a summary of the magnitude of effect at the receptor locations.

Table G: IAQM Risk of Impact and Magnitude of Effect

Ref	Receptor Type	Receptor Sensitivity	IAQM Pathway Effectiveness	Dust Impact ^(c)	Magnitude of Effect
HR1	Residential	High	Ineffective	Negligible	Negligible
HR2	Residential	High	Ineffective	Negligible	Negligible
HR3	Residential	High	Moderately Effective	Negligible	Negligible
HR4	Residential	High	Ineffective	Negligible	Negligible

In accordance with the IAQM guidance, the dust impact risk is classed as 'low' risk at three receptor and negligible risk at the remaining receptors. When the sensitivity of the considered receptors is combined with their individual dust impact risk, in accordance with the IAQM guidance, the magnitude of effect at these receptors is considered to have a slight adverse effect, whilst the effects at all other receptors are considered to be negligible.

5.3.4 Cumulative Effects

The surrounds of the Application Site are rural in nature, with the area to the southwest characterised by the active Bulls Lodge Quarry. In recognition of the proximity of a current minerals operation to the Proposed Development, a review of operations with the potential to cause cumulative dust impacts has been undertaken.

Planning permission was recently granted for Bulls Lodge Quarry to allow for amendments to the previous extraction phasing and restoration. The Air Quality and Dust Assessment submitted in support of the application determined that there would be no significant air quality / dust impacts as a result.



Under the new planning permission and as a result of the relocation of operations from the airfield area of Bulls Lodge Quarry to the Park Farm area, activities onsite would be greater than 250m from the Application Site for the duration of the Proposed Development.

Furthermore, all activities within Bulls Lodge Quarry would continue to be undertaken in accordance with their Dust Management Plan, which comprises suitable control measures to effectively control dust emissions. CCC have confirmed that there has been no dust relate complaints in the past 3 years of operations, thus providing evidence that the current dust control scheme at Bulls Lodge Quarry is satisfactory.

As such, it is considered that cumulative effects would be considered 'not significant'

5.3.4.1 Overall Significance of Impact

On the basis of the IAQM assessment, it is considered that, taking into account the environmental designed-in measures of the proposed working scheme, the overall significance of impact is considered to be negligible at all off-site receptors.

6.0 Traffic Emissions Screening Assessment

The Proposed Development would import 85,000 tonnes of inert waste into the Site, undertaken over a period of approximately 7 months. For an operational period of 7 months and a conservative assumption that operations are undertaken 7 days per week, this results in a trip generation of 64 Annual Average Daily Traffic Movements (AADT). Based upon the trip distribution, 100% of the generated HDV traffic would distribute southbound onto Boreham Road.

The proposed increase in vehicle movements on the local road network as a result of the Proposed Development is below the EPUK-IAQM 'indicative criterion for assessment' of 100 HDV movements (as AADT) for areas outside of an AQMA.

It is not therefore considered that further detailed assessment of vehicle emissions is required. In line with EPUK-IAQM guidance, the change in vehicle emissions resulting from the Proposed Development can be said to have a 'negligible effect' on air quality.

7.0 Mitigation Measures

7.1 Dust Control Measures

The assessment had predicted negligible effects with regard to the potential of both PM₁₀ and deposited dust emissions from the Proposed Development. In conjunction with the environmental designed in measures that have been taken in account within the assessment (see Section 5.1.2), a series of best practice measures are recommended for implementation. These are presented within the proposed Dust Management Plan (DMP) which is included as Appendix A of this document. The DMP should be seen as an active document which is kept on-site and referred to and updated, as required.

7.2 Traffic Emissions

The predicted effects on local air quality are considered to be negligible on the basis that the change in the level of vehicle movements compared to the existing, baseline scenario screen below the EPUK-IAQM 'indicative criterion for assessment' (i.e. change of <100 HDV movements in AADT).

Based on the above, it is considered that mitigation measures are not required from an air quality perspective.

7.3 Residual Effects

Residual effects are those impacts that cannot be reasonably mitigated. As set out in Section 7.1, appropriate dust mitigation and management measures shall implemented in accordance with the



proposed DMP. Such measures are generally accepted by regulatory bodies and the minerals industry as providing effective control against the impacts of airborne dust.

On the assumption that the control measures and management procedures of the DMP are implemented and adhered to, there are not considered to be any significant residual effects as a result of the Proposed Development.

8.0 Conclusions

The conclusions of this air quality assessment are that:

- the effect on amenity is considered to be 'not significant';
- the effect on PM₁₀ concentrations at receptors is considered to be 'not significant';
- the effect from dust on ecological receptors are considered to be 'not significant'; and
- emissions from road vehicles associated with scheme are considered to be 'negligible'.

The Proposed Development is therefore in line with the relevant policies contained within the Chelmsford Local Plan and the Essex and Southend-on-Sea Waste Local Plan.





Figure B: Site Setting & Receptor Locations





Appendix A Dust Management Plan

Air Quality Assessment & Dust Management Plan

Restoration of former Quarry on Land at Russell Green, Chelmsford

Land Logical

SLR Project No.: 402.064783.000001

25 July 2023

A.1 Introduction and Context

This Appendix presents the Dust Management Plan for the restoration of the former quarry pit on land at Russell Green. This DMP should be read in conjunction with the main text of the Air Quality Assessment & Dust Mitigation Plan report which contains an assessment of potential dust and PM₁₀ impacts on sensitive offsite receptors, in accordance with the IAQM Guidance on the assessment of mineral dust impacts for planning’.

The key guidance documents that have been consulted for preparation of this DMP are as follows:

- Mineral Industry Research Organisation (MIRO), Good practice guide: control and measurement of nuisance dust and PM₁₀ from the extractive industries (2011);
- Institute of Air Quality Management (IAQM), Guidance on the Assessment of Mineral Dust Impacts for Planning (2016); and
- The supporting Air Quality Assessment for the Planning Application.

A.2 Overview and Structure of the Document

The DMP is an active document which requires periodic evaluation and updating as operations and circumstances change. The components of the DMP are set out within this document as follows:

- Identification of dust sources and influencing factors
- Control Measures
- Monitoring
- Management, Review and Reporting

A.3 Dust Sources

A.3.1 Site Setting & Receptors

The Site is predominantly surrounded by agricultural land, with the operational Bulls Lodge Quarry abutting the Sites southwestern boundary. Figure B shows the Site setting and nearby receptors.

A.3.2 Meteorological Conditions

The most important climatic parameters governing the release and dispersal of fugitive emissions from the Proposed Development are wind speed, direction and rainfall:

- wind direction determines the broad direction of dispersal;
- wind speed affects ground level concentrations by increasing the initial dilution of pollutants in the emission. It will also affect the potential for dust entrainment; and
- rainfall naturally suppresses dust release (>0.2mm rainfall per day is considered sufficient to suppress dust emissions).

Relevant rainfall data applicable to the Site has been obtained from the Meteorological Office website of UK mapped climate averages for 1991-2020. The average annual rainfall >0.2mm/day for the area of the Site is 150 to 160 days per year, comprising an average of 42% of the year.

The most representative observation station to the Site is Andrewsfield station, located approximately 12km north north-west of the Site. A 5-year average wind rose is presented in Figure A.

A.3.3 Potential Dust Sources

Activities or sources with the potential to result in the release of dust across the Site are:



- site preparation and restoration;
 - o Soil bund construction / dismantling
 - o Soil stripping / replacement;
 - o Handling and deposition of inert restoration material;
- material storage ;
- on-site transportation; and
- off-site transportation.

The working hours of the Site are as follows. No operations shall take place on Sundays, Public or Bank Holidays except in the case of an emergency:

- Monday – Friday: 07:00 – 17:00; and
- Saturday: 07:00 – 13:00.

Table A- 1 sets out the potential dust sources and their emission potential consistent with the Air Quality Assessment:

Table A- 1: Potential Dust Sources

Activity	IAQM Residual Source Magnitude
Site Preparation & Restoration	Small
Material Storage	Small
On-Site Transportation (unpaved haulage)	Small
Off-Site Transportation	Small

A.4 Dust Control

The dust control measures that would be in operation throughout the Proposed Development are outlined in Table A- 2.

Table A- 2: Dust Control Measures

Activity	Factors / Environmental Measures
Site Preparation & Restoration	Water suppression (tractor and bowser) used, as required Progressive stripping in distinct areas to minimise exposed surfaces Small working area (<2.5ha, with further division into distinct areas for progressive restoration) Drop heights shall be reduced as much as practicable Temporary cessation of activities in the event of unacceptable dust emissions in the vicinity of offsite dust-sensitive receptors
Material Storage	Soil bunds shall be seeded as soon as practicable Soil bunds shall be a maximum of 3.5m in height Water suppression (tractor and bowser) used, as required prior to establishment of vegetation Storage areas shall be designated with minimal traversing of vehicles across the base
On-Site Transportation (unpaved haulage)	Water suppression (tractor and bowser) used, as required Speed limit 5mph Roads graded and maintained regularly Vehicles shall not be overloaded



Activity	Factors / Environmental Measures
	Controlled use of fixed haulage routes, where practicable Designated haul routes to be regularly maintained Water suppression system shall be maintained on site and used during periods of dry and/or windy weather conditions to dampen down routes
Off-Site Transportation	Wheel wash shall be installed and maintained accordingly with frequency inspections All loaded road vehicles shall be sheeted All vehicles exiting the Site shall use the wheel wash prior to exiting Site access road between the wheel wash & site exit shall be maintained as a hard surface Water bowser and road sweeper used, as required Speed limit of 5mph on access road to be implemented and enforced

A.5 Monitoring

A.5.1 Meteorological Conditions

Weather forecasts will be monitored on a daily basis to predict weather conditions; such as prolonged dry, hot spells or significantly strong winds which may generate elevated levels of dust. Using this information, the necessary precautionary measures are employed on Site, or certain activities are suspended if necessary.

A.5.2 Visual Dust Monitoring

Dust monitoring will be undertaken visually by Site personnel throughout the working day, i.e. routine vigilance. In addition, the Site Manager provides observations and anything noteworthy is recorded in the Site Diary of Environmental Management Log Book.

Targeted visual dust monitoring will be undertaken in response to incidents or contingency actions as appropriate. Such observations shall be recorded in the Site Diary or Environmental Management Log Book and would include the following as a minimum:

- weather conditions (wind speed (qualitative i.e. strong/light), wind direction, rainfall);
- current Site operations and areas;
- identification of any significant dust on Site or dust dispersion beyond the Site boundary; and
- additional mitigation measures put in place if required.

In the event of a complaint, more frequent or off-site visual monitoring will be undertaken, if required, until the issue is resolved as described in the Dust Action Plan contingency measures.

A.6 Dust Action Plan

A.6.1 Contingency Plans

The contingency plans have been defined to react to situations where monitoring indicates that a potential dust source is not completely under control, control measures have failed, or that an adverse impact has/or may occur.

This includes incidents that have the potential to cause an unacceptable impact on the local community.

Contingency measures for the following events have been defined in Table A- 3:

- malfunction in water suppression units, rendering them ineffective;
- malfunction of wheel wash, rendering it ineffective;



- failure in water supply;
- visual monitoring indicates dust generation in significant quantities, that is either likely to or is actually leaving the Site boundary in quantities likely to cause nuisance to sensitive receptors;
- weather monitoring indicates potential dust generation issues, i.e. prolonged dry spell followed by high winds; and
- complaints received from members of the public or neighbouring businesses.

Table A- 3: Contingency Plan

Event	Malfunction in water suppression units, rendering ineffective
Contingency Actions	<p>Notify management of malfunction so repairs can be made, engineer called out, or plant hired.</p> <p>Determine whether the water suppression equipment is required that day given meteorological conditions.</p> <p>If not, continue operation but continually monitor operations and meteorological conditions.</p> <p>If dust is likely to leave the Site boundary in sufficient quantities as to be unacceptable apply further controls: as required, apply manual hosing, use of road sweeper on access road, hire dust suppression units from off-site, move operational area.</p> <p>If impact is considered likely to occur, then cease operations until dust suppression unit is available.</p>
Comment	Record details in Site Environmental Management Log Book.
Event	Malfunction of wheel wash, rendering in-effective
Contingency Actions	<p>Notify management of malfunction so repairs can be made, or an engineer called out.</p> <p>Use manual hosing as required on vehicles.</p> <p>If mud is being tracked out onto the public highway in quantities likely to be a nuisance or a danger, then cease imports until effective wheel washing is reinstated.</p> <p>Deploy a road sweeper to manage any tracked-out mud.</p>
Comment	Essential spares to wheel wash should be retained on Site. Record details in Site Environmental Management Log Book.
Event	Water supply failure
Contingency Actions	<p>Determine through visual monitoring and weather forecast whether the application of water represents essential mitigation to continue operations.</p> <p>If 'yes' cease operations until a water supply is available.</p> <p>Notify relevant parties at earliest opportunity (site management, engineers, utility company)</p>
Comment	Record details in Site Environmental Management Log Book.
Event	Visual monitoring indicating dust leaving the Site boundary in quantities and direction likely to cause nuisance
Contingency Actions	<p>Notify management and record observations in Site Environmental Management Log Book (e.g. Pro-forma Table A-4).</p> <p>Continue to monitor situation by increased frequency of visual dust monitoring.</p> <p>Investigate and identify dust source.</p> <p>If dust is from a particular source (e.g. haul road, restoration phase etc) then review mitigation options.</p> <p>Review application of dust minimisation control measures.</p>



	<p>Apply appropriate contingency measures as required e.g.:</p> <ul style="list-style-type: none"> • more frequent/effective application of dust suppression unit to problem areas; • more frequent, additional washing of the access road; and/or • move operational area. <p>Ultimately cease identified operation if it cannot be effectively controlled.</p>
Comment	<p>Record details in Site Environmental Management Log Book. DMP may require updating on the basis of results of investigations.</p>
Event	Weather monitoring indicates potential dust generation issues
Contingency Actions	<p>Anticipate the level of abatement required (i.e. water suppression, postponement of activities), including the hire of additional equipment if necessary. Increase frequency of visual dust monitoring; management to advise all staff of greater vigilance. If dust is seen to be crossing the Site boundary, follow contingency measures as detailed above. If water supply runs out, follow contingency measures as detailed above.</p>
Comment	Record details in Site Environmental Management Log Book
Event	Complaints received from members of the public or neighbouring businesses
Contingency Actions	<p>Notify management. Follow complaint reporting and investigation procedure.</p>
Comment	<p>Complaints will be reported to the relevant authorities in accordance with any relevant permit requirements. DMP may require updating on the basis of results of investigations.</p>

A.6.2 Dust Complaints Procedure

Complaints may be notified to the Site Management either during or after an event, directly by the complainant or indirectly through a regulator (such as the Mineral Planning Authority or Environmental Health Department) who was notified. Complaints will be reported to the relevant authorities by the operator.

Complaint records will include the following (recorded in the Site Environmental Management Log Book):

- date, time, and name of complainant (if given);
- nature of complaint;
- locality of complaint; and
- a summary of investigation and actions taken and the outcome.

A complaint response will have the objective of investigating the incident and preventing any continuing issue, for example by putting in place additional control or management measures to prevent re-occurrence of the incident and updating the DMP.

Investigations may include but not be limited to:

- visit by Site personnel to the location of the complainant to verify issue (if the complaint is made 'after' rather than 'during' a dust event this may not be possible);
- review of Site activities at the time of the incident to investigate potential sources;
- if dust event is occurring or a recurring event, undertake more frequent targeted on-site and off-site visual monitoring and record findings;
- review of control measures and management actions at the time of the incident;
- review of meteorological conditions at the time of the incident;



- reporting of findings (either in a pro-forma or Site Environmental Management Log Book).

An example Dust Event Form is included in Table A- 4.

Table A- 4: Example Dust Event Form

Dust Event Form	
Name of Author	
Description of Event (e.g. complaint registered (name and address) or visible dust crossing site boundary during visual assessment)	
Date / Time	
Activities taking place during time of event	
Dust mitigation techniques employed at time of event	
Summary of weather conditions leading up to and during the event	
Details of corrective actions	

A.7 Management

A.7.1 Dust Control Responsibilities

There shall be a competent person on Site during working hours responsible for dust management measures. Responsibilities are allocated to specific personnel to ensure dust generation is effectively controlled (see Table A- 5). The contact details for the Site Manager will be clearly displayed at the Site entrance.

Table A- 5: Dust Management Responsibilities

Actions	Responsibility
Monitoring Meteorological Forecast	Site Manager / Supervisor
Routine Visual Dust Monitoring	Site Manager / Supervisor
Application of Plant / Dust Suppression	Operatives
Record keeping	Site Manager
Liaison with Public and Regulator	Site Manager

A.7.2 Liaison with Community and Regulators

The Site Manager (or nominated representative) will act as liaison with the MPA for issues relating to dust nuisance.

A.7.3 Record Keeping

The operator shall keep records of all dust monitoring, dust contingency actions, investigations, and complaints on Site in the Environmental Management Log Book in accordance with the DMP.





Appendix B ECC Air Quality Consultant Pre- Application Comments

Air Quality Assessment & Dust Management Plan

Restoration of former Quarry on Land at Russell Green, Chelmsford

Land Logical

SLR Project No.: 402.064783.000001

25 July 2023

Pre application request to infill and restore former quarry pit at Russell Green (Air Quality)

Consultation Request Details

Application Number	ESS/11/22/CHL/PRE
Site	Former Quarry on Land at Russell Green, Boreham Road, Chelmsford, CM3 3BB
Proposal	PRE-APPLICATION REQUEST: Importation of 85,000 tonnes of inert waste to restore former quarry pit including landscaping and ecological restoration
Case Officer	Tom sycamore
Date of request from ECC	16/02/2022
Date of response	01/03/2022
Jacobs Ref	B3553P13/82
Jacobs Consultee	Sarah Kirkman
Information reviewed	Pre Application Advice Cover Letter, Location Plan

Introduction and Application Background

A pre application advice request, for the restoration of a former quarry on land at Russell Green has been submitted. The Site was granted extraction permission for sand and gravels in 1983. An application (ref CHL/1673/82/3) was later submitted for a revised restoration scheme to allow amenity after-use. This permission or restoration was never implemented.

An application in 2014 (ESS/08/13/CHL) for the importation of approximately 85,000 tonnes of inert waste material (excavation soils) to stabilise the quarry face and restore the site to landscaped grassland and ponds was approved, but the waste material source required to in-fill did not materialise and subsequently, the site's lapsed.

Proposal

Land Logical Ltd and the landowner propose to seek permissions to implement a scheme similar to that granted permission for in 2014.

It is anticipated that the infill will take approximately seven months and materials would be sourced from three separate supply chains. The total number of Heavy Duty Vehicles (HDVs) required is approximately 60 per day (120 movements).

Comments and Recommendations

Vehicle pollutant emissions

The Institute of Air Quality Management (IAQM) guidance on *Land use-use planning and development control: Planning for air quality, 2017 v1.2* uses the screening criteria of 'a change of more than 100 HDVs as an Annual Average Daily Traffic (AADT) flow as a threshold for the requirement for an air quality assessment outside of an Air Quality Management Area (AQMA). The proposed daily movements of 120 HDVs (60 in / 60 out) is above this threshold. Whilst it is noted that the previous application's consent for this site, permitted 240 daily movements (120 in/ 120 out), guidance has since been updated. An air quality assessment for road traffic emissions in accordance with the guidance above would be required to demonstrate whether the proposal has the potential to give rise to significant air quality effects from vehicle pollutant emissions or provide evidence that the number of vehicles, as an AADT, is less than the thresholds set out in the IAQM guidance.

Plant and Non-Road Mobile Machinery (NRMM) pollutant emissions

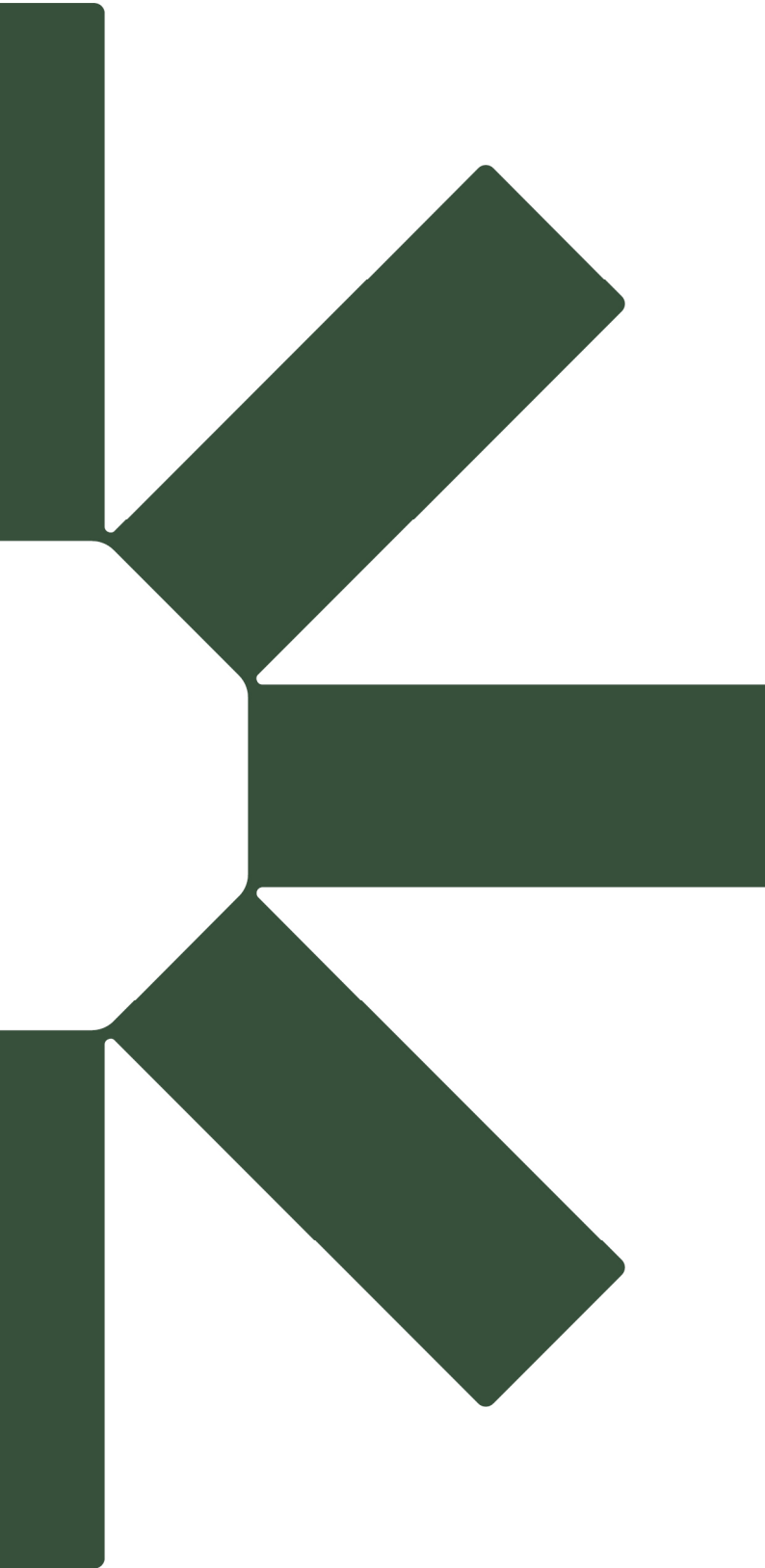
Details of any NRMM plant or generators, which may be used on site, should be outlined within the planning application, along with the employment of best available techniques to demonstrate that the exhaust emissions from NRMM and plant, will not be significant to local air quality.

Dust emissions

The application area indicated on the location plan is confined to the quarry ponds and access track. The closest residential property on Cranham Road is approximately 125m west northwest of the application boundary.

There is the potential for dust impacts from activities during site preparation and clearance, the infill process and the final restoration at nearby residential receptors. It is expected that full consideration would be given to the potential for dust risks to amenity, human health or ecological designations as a result of the proposed application in line with the Institute of Air Quality Management guidance on the *Assessment of Mineral Dust Impacts for Planning, 2016 v1.1*.





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