[TRADING AS DARRINGTON QUARRIES LIMITED]

ENVIRONMENTAL PERMIT VARIATION APPLICATION SUPPORTING STATEMENT

SKELBROOKE QUARRY EXTENSION AREA
STRAIGHT LANE
SKELBROOKE
DONCASTER
SOUTH YORKSHIRE
DN6 8LY

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SiriUS Environmental

Project Quality Assurance
Information Sheet

ENVIRONMENTAL PERMIT VARIATION APPLICATION - SUPPORTING STATEMENT SKELBROOKE QUARRY EXTENSION AREA, STRAIGHT LANE, SKELBROOKE, DONCASTER

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1	August 2022	Updated to accommodate the revised planning consent and associated scheme of restoration	R Chapple	D Thomas
2	December 2023	Updated to include EMS summary information and lists of wastes	D Rowe	D Thomas
3	June 2024	Updates to in lieu of S5N (incl. AppSS2)	D Thomas	M Griffiths

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STRAIGHT LANE
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DONCASTER

ENVIRONMENTAL PERMIT VARIATION APPLICATION
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1.0 INTRODUCTION

1.1 Scope

1.1.1 Sirius Environmental Limited ('Sirius') has been commissioned by Darrington Quarries Limited ('DQL'), part of the FCC Group of Companies, to prepare an application to vary the Environmental Permit EPR/CP3994ZR to approve a revised scheme of restoration for the disused quarry extension area.

1.1.2 The current permit authorises a restoration of the quarry by means of landfill disposal operations, although the site is currently 'closed', and no wastes are therefore permitted to be deposited at the site. The revised scheme of quarry restoration seeks to achieve final levels by the permanent deposit of suitable wastes as a waste recovery operation due to the flooded nature of the void.

1.1.3 The application is supported by the following documents:-

- Application forms (Parts A, C2, C4 and F1);
- Non-Technical Summary;
- Supporting Statement;
- Environmental Setting and Site Design Report;
- Hydrogeological Risk Assessment;
- Environmental and Accident Risk Assessment;
- Waste Recovery Plan;
- Dust Management Plan; and
- Supporting Drawings.

1.2 Background

License History

1.2.1 Environmental Permit EPR/CP3994ZR was originally issued under the Waste Management Licensing Regulations 1994 in July 2001 (Licence Ref.: EAWML65052). The permit originally authorised the disposal of biodegradable wastes in engineered cells, although no cells have been engineered within the extension area to date and no wastes therefore deposited.

1.2.2 In 2007, the permit/licence was modified to remove conditions allowing the acceptance of waste at the site, with the exception of waste to support landfill restoration activities (where appropriate), subject to prior written agreement with the Environment Agency.

1.2.3 In January 2015, an EA initiated variation to the permit was determined to close the facility following which no wastes are currently permitted for disposal at the site. A Closure Plan (Doc. Ref.: 1776/R/025/1) dated October 2014 was incorporated into the permit as part of this variation.

1.2.4 The extension area forms part of wider former limestone quarry and landfill complex located to the southwest of the extension area, which has already been restored by landfilling under a separately regulated landfill activity (Environment Permit EPR/BV1470IE). Completion to the final levels approved under the planning consent for the site has yet to be achieved at the adjacent Skelbrooke Landfill facility, but all existing deposits are currently capped and definite closure has been agreed with the EA.

1.2.5 The extension area void is flooded due to groundwater levels within the surrounding geology, although the site also forms part of the surface water management system for the adjacent, closed landfill facility.

1.2.6 The site originally benefited from a discharge consent that allowed the discharge of surface water via a land drain located along the north-eastern boundary of the extension area, in which the volumes and rate of discharge were limited to 200m³/day and 20m³/hr respectively. This consent was subsequently incorporated into Environmental Permit EPR/BV1470IE for the main landfill.

Development History

1.2.7 Quarry operations at Skelbrooke Quarry have been present since the mid-1800's. The quarry has been developed within the Permian Magnesian Limestone, subject to a number of planning approvals. Messrs J. Hinchcliffe & Son Ltd developed quarry operations prior to the mid-1970's. Darrington Quarries Ltd has operated the site since 1976. Darrington Quarries became part of Waste Recycling Group plc in 1998. No other operations occurred within the area of Skelbrooke Quarry prior to the development of the quarry.

1.2.8 The development layout of the main Skelbrooke Landfill facility to the south of the northern extension area is illustrated in **Drawing No. WR7640/10/SS1**. Cell 1 of the main Skelbrooke Landfill Site was initially developed by Darrington Quarries in 1992. Landfilling within Cell 1 was completed in June 1993 and the cell capped off in August 1993. Subsequent landfill cells 2 to 5 were developed, filled and capped between June 1993 and October 2001. Tipping operations were suspended between August 1995 and October 1996, and again between November 1998 and July 1999. With landfilling operations within Cell 6 commencing in August 2001 and ceasing in 2005. The main landfill area is currently closed to the receipt of further waste deposits, although the site has yet to be filled to its approved final landform. The site was permitted to receive hazardous, non-hazardous and inert wastes.

1.2.9 Mineral extraction in the northern extension area commenced around 1998 and was completed prior to 2001/02, following which the void was allowed to flood with groundwater. Bathymetric surveys of the flooded section of the extension area indicates that this area has been excavated to depths of between ~16 and 20mAOD, relative to surrounding ground levels of ~35mAOD and 29mAOD along the south-western and north-eastern edges of the flooded extension area. This void is also now used to balance surface water run-off form the restored surface of the adjacent landfill site prior to pumped discharge of the waters to a tributary of The Skell river that flows north from the edge of the site.

2.0 WASTE MANAGEMENT AND CONTROL

2.1 Permitted Wastes

2.1.1 The waste codes and associated descriptions that will be permitted for recovery in the extension area are presented in **Appendix SS1.** All wastes will inert in nature and will consist of a pollution potential that is less than, or equal to, that of the surrounding geology/water, and will principally be sourced from sites within the locality of the site which will ensure a low risk of contamination. The waste to be accepted at the site will not have undergone significant physical, chemical and biological transformation. This will comprise of materials with low pollution potential from low contamination risk sources, including quarry, construction product manufacturing, construction, demolition and excavation wastes and products, as well as soils from local greenfield or low-risk brownfield development sites.

2.1.2 Materials to be accepted will be in line with Environment Agency guidance. Where required during pre-acceptance procedures, the operator will undertake an analysis of the material prior to deposit to ensure it is suitable.

2.1.3 Waste will be accepted at the site until final restoration levels are reached. This will require the deposit of material below the water table, which currently ranges between 24.3 and 31mAOD (range of groundwater levels recorded in groundwater monitoring borehole SK02), compared to the void basal levels of between 16 and 20 mAOD. In order to achieve the current approved scheme of restoration ~230,000 cubic metres of non-hazardous material will be deposited. This could be achieved over the period of a year or possibly longer, subject to waste availability. Note, under the previous approved scheme of restoration the modelled void capacity was estimated as ~235,100m^3. This volume has principally been reduced to provide greater flood attenuation and freeboard capacity in the surface water lagoon, in line with current guideline requirements. Furthermore, a review of materials balances will result in approximately 6,000m^3 of the 230,000m^3 being sourced from existing deposits at the site, reducing required import balance to ~224,000m^3.

2.1.4 A separate table of waste list is included in **Appendix SS1** to facilitate the construction of haul roads to support access requirements for the quarry restoration works.

2.2 Waste Acceptance Procedures

2.2.1 The facility is proposing to principally import mineral wastes from local quarries and soils from low contamination risk local development sites, although other low risk waste sources will also be accepted at the site.

2.2.2 DQL has defined procedures for the acceptance of waste at its waste facilities sites which are set out in accordance with the relevant EA guidance. This is to ensure that waste material received is acceptable for deposit at the facility.

2.2.3 The acceptance procedures ensure compliance with the requirement implicit under Duty of Care when dealing with waste materials, particularly the need to assess the material from initial customer enquiry to when it is deposited on site. The procedures are divided into 'Pre-acceptance' and 'Acceptance' measures.

Pre-Acceptance

2.2.4 Prior to acceptance of waste at the site the waste producer must provide adequate information relating to the waste to determine the correct waste code

and the characteristics of the waste to ensure that it complies with the waste streams suitable for deposit at the site.

2.2.5 Given that the majority of wastes to be accepted on site will be deposited below the water table, it has been determined that all incoming waste sources will be sampled and tested by the producer prior to acceptance. This includes both absolute non-hazardous and mirror entry EWC waste codes.

2.2.6 In order to determine if the waste displays any hazardous properties, the chemical composition of the waste should be identified in the first instance. This will be achieved via:

- Prior knowledge of the content of the waste, for example, accessing data from past testing of soils;
- Good understanding of the historic use of the site/waste to ensure there has a low risk from contaminative uses;
- Sampling and analysis.

2.2.7 Once an assessment for any hazardous properties has been undertaken, the appropriate EWC code can be applied to the waste. If testing of the waste demonstrates that it can be classified as non-hazardous then the waste can be accepted on site provided that the relevant duty of care paperwork is supplied by the provider. If testing demonstrates that the waste exceeds substance limits as set out in WM3 then the waste should be treated as hazardous and cannot be accepted at Skelbrooke.

2.2.8 This should be by means of the Company Waste Characterisation Form, or similar document, but must include the necessary information for a Level 1 Basic Characterisation as specified in the Landfill Regulations. The following information will be required as minimum:-

- Waste source and origin;
- The code applicable to the waste under the European Waste Catalogue (EWC);
- Determination if the waste has any hazardous properties as per WM3;
- The process producing the waste (including a description of the process, its SIC code and characteristics of its raw materials and products which may affect its behaviour upon deposit);
- The waste treatment applied, or a statement of why treatment is not considered necessary;
- The appearance of the waste (including smell, colour, consistency and physical form);
- Confirmation that the waste is not prohibited from deposit at the facility (for example liquid waste and whole used tyres);
- Confirmation of whether the waste requires testing.

2.2.9 Wastes may also not be accepted unless representative samples of the waste have been submitted for compliance leaching testing at a solid to liquid ratio (L/S) of 10 l/kg by a suitable laboratory, in accordance with BS EN 12457:2002. The wastes must not exceed the limit values provided in **Table SS1**. These values have been derived based on the natural baseline groundwater chemistry associated with the Magnesian Limestone.

Table SS1: Leaching Limit Values

Substance	L/S = 10l/kg Limit Value (mg/kg)
Arsenic	0.05
Cadmium	0.04

Substance	L/S = 10l/kg Limit Value (mg/kg)
Chromium	0.5
Copper	2
Nickel	0.4
Lead	<LoD
Mercury	<LoD
Nickel	0.4
Phenol	1
Zinc	4
Chloride	800
Fluoride	15
Sulphate	3,000

2.2.10 In addition to the leaching limit values above the wastes must meet the additional limit values provided in **Table SS2.**

Table SS2: Limits values for total content of organic parameters for inert waste

Parameter	Limit Value (mg/kg)
TOC*	30,000 or 3%w/w
BTEX	6
PCBs	1
Mineral Oil (C10 to C40)	500
PAHs	100

* - *In the case of soils a higher limit value may be admitted by the Environment Agency, provided that the Dissolved Organic Carbon value of 500 mg/kg is achieved at L/S 10 l/kg at the pH of the soil or at a pH.*

2.2.11 Further information on waste characterisation requirements can be found in Environment Agency guidance *"Waste acceptance procedures for deposit for recovery"*

Sample Frequencies

2.2.12 Statistical interpretation of analytical data will be used to interrogate analytical data for waste streams. The statistical analysis will consist of the 95% confidence interval for the whole waste, as defined in Technical Guidance 'WM3'.

2.2.13 To ensure statistical validity, sample numbers must be at the frequency as demonstrated in **Table SS3**.

Table SS3: Sample frequency for Waste Characterisation

Amount of waste (tonnes)	Homogeneous waste (number of samples)	Heterogeneous (number of samples)
Less than 100 t	2	5
100 to 500 t	3	8
500 to 1,000 t	5	14
1,000 to 10,000 t	11	22
Plus (per additional) 10,000 t	+5 (pro rata)	+10 (pro rata)

Waste Acceptance

2.2.14 Once the acceptable material arrives at site, as arranged during the Pre-acceptance measures, it will be subjected to the appropriate on-site verification 'Acceptance' checks. A record is kept of the:-

- Date and time of waste deliveries
- Quantities and the nature of the waste deposited at the site

- Name of the company and their representation delivering (if applicable) each load of waste and vehicle registration number

2.2.15 Where safe, deliveries will be visually inspected at the weighbridge by a trained staff person to determine the basic characteristics of the waste and ensure it accords with the pre-acceptance paperwork.

2.2.16 Should waste be found to be unsuitable, the load will remain on the vehicle for immediate off-site transfer. Any such events will be recorded in the site diary and the Regulator informed where necessary.

2.2.17 Where visual inspection of the waste on the vehicle is not feasible, waste will be tipped along the edge of the flooded void for inspection.

2.2.18 Should a load be deposited at the site and found to be non-compliant by machine operatives, the material will be immediately reloaded and rejected off site having given consideration for the relevant Duty of Care requirements. Should the producer/carrier have left the site, this load will be placed in a quarantine area awaiting collection for delivery to a suitably permitted facility. Such events will be recorded in the site diary.

2.2.19 Loads considered suitable for acceptance on site will undergo temporary storage until on-site verification testing is conducted. Initially, the temporary storage area for wastes will be located to the south of the void, and as different stages of infilling are accomplished, this storage area will transition to the filled void areas.

Verification Testing

2.2.20 In additional to basic visual inspection of the wastes, all waste sources that will be tipped directly into water will undergo verification testing as a sampling ratio of 1 sample for every 2,000 tonnes (or part there of).

2.2.21 For soils to be deposited above the water table, if the total quantity of waste to be received from a single source or carrier is to exceed 2,000 tonnes in any single project or year at least one sample will be retrieved from each source transferred to the site for disposal and subjected to testing as per the parameters specified in **Table SS1 and Table SS2.**

2.2.22 Once verification testing has been completed and the materials are found to be in compliance, they will then be permitted to be tipped into the landfill. Those that are found to not be suitable for tipping will be quarantined pending removal offsite at appropriate facility.

3.0 ENVIRONMENTAL MANAGEMENT SYSTEM SUMMARY

3.1 Introduction

3.1.1 The Operator currently benefits from the advantages of an environmental management system accredited to ISO 14001 and a quality management system accredited to ISO 9001, both overseeing the ongoing operations at the site.

3.1.2 Alongside a site-specific EMS, FCC Environment has opted to integrate the Operator Competence System developed by Energy & Utility Skills (EU Skills) and Environmental Services Associated (ESA) 'Competence Management System' (CMS). This CMS holds approval from DEFRA and the EA to fulfil the competency requirement for Environmental Permits, with relevant certifications detailed in **Appendix SS2**.

3.1.3 The EMS outlines the site's management structure, specifying the roles and responsibilities of all personnel. The development of the EMS encompasses an Environmental Policy, Health and Safety Procedures, and an operational guidance manual containing process plant operating procedures for both standard and emergency conditions.

3.1.4 To ensure proper functioning, the Operator will create documented management procedures and written work instructions that integrate environmental considerations into the operation of the facility.

3.1.5 The management system will also encompass various procedures and documents currently utilized in the site's ongoing operations. These will be reviewed and updated as and when necessary.

3.2 Outline Development Proposals

Geological Barrier

3.2.1 Due to the flooded nature of the quarry void, the construction of an Artificially Established Geological Barrier will not be possible. The requirement of Article 22 to the Environmental Permitting Regulations 2016 (as amended) will be met through the deposit of wastes in which their pollution potential is less than or equal to the natural quality of the surrounding geology/water and is physically, biologically and chemically suitable.

Groundwater Management

3.2.2 The adjacent engineered Skelbrooke Landfill Site (Cells 1-6); which operates under the principle of hydraulic containment, and the restored Doncaster Metropolitan Borough “dilute and attenuate” landfill are located immediately west and east of the Skelbrooke Quarry Extension Area respectively.

3.2.3 In order to ensure that the hydraulic containment conditions under which the main Skelbrooke Landfill Site (Cells 1-6) operates and to prevent the ingress of contaminated groundwaters from the neighbouring Doncaster MBC landfill it is proposed that groundwater management operations do not seek to draw down water levels significantly below the invert level of the existing inlet associated with the surface water management network for the adjacent landfill to ensure that hydraulic containment conditions are maintained in the adjacent Skelbrooke Landfill.

3.2.4 During periods when waste is actively tipping into the void there will be a suspension of pumping and discharge of waters from the flooded void to surface waters at discharge point 'SKSW04'.

3.2.5 Further discharges will be reinitiated following collection of a suitable sample at least 1m below the water surface and performance of colorimetric testing using an appropriately calibrated instrument.

3.2.6 If suspension periods are insufficient to allow for adequate settlement times consideration will be given to silt treatment techniques widely used in the construction industry e.g. Siltbuster treatment systems.

Stability Risk Assessment

3.2.7 As no engineered containment systems will be constructed and waste will be principally deposited directly into water no assessment of the stability risks is considered necessary for these elements. The final restored surface of the site will also consist of shallow gradients which are not at significant risk of becoming unstable.

3.3 Amenity Management and Monitoring

Introduction

3.3.1 The management system incorporates strategies to control odours, dust, noise, and other environmental emissions. The competent technical manager conducts daily checks to ensure the effectiveness of these measures, evaluating and determining the most suitable course of action as needed.

3.3.2 An Environmental and Accident Risk Assessment *(Doc. Ref.: WR7640/08)* has been carried out for the proposed quarry restoration operations. A plan detailing all nearby sensitive receptors has also been produced and is included in **Drawing No. WR7640/10/SS2.** Outlined details of the methods and procedures to be implemented to manage and monitor any potential emissions from the operations are presented below.

Dust/Particulate Matter

3.3.3 Owing to the fact that waste will largely be deposited directly into flooded quarry void the potential for the migration of dust and particulate matter is very low. As waste levels rise above water levels within the flooding void surface waters that will be continuously drained into the area and used to support dust suppression by means of a towed bowser or equivalent. Dust management will primarily comprise of enforcing speed limits on site, ensuring delivery vehicles are sheeted or fully enclosed and conducting visual assessments of dust generation on site. Seeding/planting will also be established as soon as reasonably practicable once final levels have been achieve across relevant areas. A Dust Management Plan *(Doc. Ref.: WR7640/12)* has been prepared in support of this application.

Odour

3.3.4 Due to the properties of the waste to be accepted at Skelbrooke, the odour generation potential of the operations is negligible. Odour management will therefore be limited to the assurance that only specific waste is accepted and deposited at the facility, supported by visual inspection of waste as they are delivered to and discharged at the site.

Mud & Debris

3.3.5 The dispersal of dirt and mud originating at the site onto public roads and the surrounding land will be controlled.

3.3.6 The following operational procedures will be implemented to ensure that dirt and mud do not reach the public highways and surrounding land:

- Metalled surfacing is provided between the site access point with Boundary Lane and the tipping areas;
- Wheel wash facilities will be located along internal haul routes;
- Plant and machinery will be thoroughly cleaned before leaving the site
- Mechanical sweeper to be deployed to remediate any mud and debris that has been deposited on to the public highway or metalled access road.

3.3.7 The Site Business Manager or nominated deputy will regularly inspect the entrance areas for evidence of mud and debris that has been trafficked.

Litter

3.3.8 The wastes to be deposited at the quarry will not contain any significant quantity of light fractions. All loads will be inspected upon delivery and/or discharge at the site to ensure contaminated wastes are not accepted.

3.3.9 The site will be inspected daily for evidence of litter, with litter picking undertaken as necessary.

Birds, Vermin and Insects

3.3.10 Due to the properties of the waste that will be accepted there is a low potential to attract birds, vermin and insects. No specific measures are therefore required, however, visual inspections of will be carried out by the weighbridge clerk at the point of acceptance with further assessment by site operatives when the waste is deposited. Daily site inspections will also be undertaken to identify any potential issues that may arise.

Noise and Vibration

3.3.11 A Noise Impact Assessment (NIA) was conducted in February 2021 to support the infilling and restoration works at Skelbrooke Quarry northern Extension area. This NIA has been included is **Appendix SS3**. The NIA assessed the impact from the infill and restoration work on the closest residential receptors, including properties along Straight Lane and off Doncaster Lane and Leys Lane, as well as Priory Farm.

3.3.12 The NIA is based on the following plant and equipment being used at the site to support the restoration works:-

- D6 Dozer
- A30 Dump Truck
- PC 210 Excavator
- HGV Tipper
- Water Pump
- Water Bowser (occasional)
- Portable Generator

3.3.13 The baseline sound measurements were undertaken in positions adjacent to potential receptors to identify typical background and residual levels when the site is not operational. The representative background sound measurements taken adjacent to the nearest residential receptors along Doncaster Road, Leys Lane and the A1 road network. The background noise environment is dominated by distant road traffic.

3.3.14 The greatest predicted rating noise levels modelled were modelled at +1 to +4 dB above the baseline sound level (LA90) at nearest noise sensitive receptors, located off Doncaster Lane, and are below the residual sound levels for this receptor position. The rating levels at all other receptor locations were all modelled at below the corresponding baseline sound levels.

3.3.15 The NIA recommendations included the below to ensure that 'best practice' is applied:

- All mobile plant used on site to have 'broadband' type reverse alarms (i.e. no tonal 'beeper' type).
- Proposed operating hours to be restricted to those described in the report.
- Maintain the mobile plant and ensure all silencers are fitted and in good working order and effective.
- Ensure the haul road between the plant area is well maintained, minimum gradient and as smooth as practicable.
- Drivers of HGV's or mobile plant should be instructed to avoid leaving engines running unnecessarily or excessive revving of engines.
- Avoid the use of speed restrictions 'humps'.
- As far as practicable, maintain maximum separation distance for plant to receptors located north off Doncaster Lane. For example, keep any fixed plant such as water pumps or portable generators as far south of the site as possible and HGV tipper vehicle haul roads as far south as practicable.
- Provide liaison with local residents to inform them of site activities and a means of contact in case of any complaints.

3.3.16 To reduce any potential impact on receptors, operational hours will be restricted to those outlined below to reduce any nuisance to the local population.

- 07:30 to 18:00 Monday to Friday
- 07:30 to 13:00 Saturday
- No working on Sundays or Bank Holidays

3.3.17 Owing to the results of the NIA presented in **Appendix SS3,** it is deemed that a Noise Management Plan (NMP) will not be necessary for the site.

3.3.18 The NIA recommendations comprise Best Available Techniques (BAT) which would be applied in relation to the plant operation and site noise management to comply with BS5228 guidance on mitigation and minimising noise.

Specific EMS Procedures

- IMS-FRM-019 Environmental Aspects and Impacts Form
- STC WI 007 Environmental Monitoring
- IMS-FRM-025 Daily Monitoring Form
- IMS-FRM-065 Environmental Monitoring Non-Conformance Form
- IMS-FRM-068 Emergency Management Plan
- IMS-PRO-005 CAR Response Procedure

- IMS-PRO-013 Accident and Incident Reporting Procedure
- IMS-PRO-014 Preventive and Corrective Action
- IMS-PRO-016 Aspects and Impacts Procedure
- IMS-PRO-044 Environmental Monitoring Procedure
- IMS-PRO-051 Environmental Installation Checks Procedure
- IMS-PRO-062 Control of Noise at Work Procedure
- IMS-PRO-089 Waste Acceptance Procedure
- IMS-PRO-093 Amenity Impact Control Procedure
- IMS-PRO-094 Waste Handling Procedure
- IMS-PRO-101 Monthly Site Inspection Procedure
- IMS-UG-015 Permit Breach Notification Guidance
- IMS-UG-016 Environmental Permit Installation Checks Guidance
- IMS-UG-017 Landfill Monitoring and Analysis Guidance
- IMS-UG-018 Environmental Aspects Assessment Guide

3.4 Management Systems

Groundwater

3.4.1 Due to the fact that the deposited waste will be uncontaminated and will principally consist of mineral wastes, and soils and stone originating from the locality, there is no requirement for groundwater management aside from continued pumping within the parameters of the current discharge consent to prevent overspill and potential localised flooding.

Surface Water

3.4.2 Surface water management will not be required. Surface water from the adjacent Skelbrooke Landfill Site will continue to be discharged into Skelbrooke Extension Area void whilst tipping is underway. During the final stage of the main Skelbrooke Landfill Site, a wetland area will be established within the footprint of the Skelbrooke Quarry Extension Area void to act as an attenuation lagoon for the Skelbrooke Landfill Site.

3.5 Equipment Maintenance

3.5.1 On-site, a Planned Preventative Maintenance program (PPM) will be implemented to minimize health, safety and environmental risks. This involves regular servicing and inspections of all relevant items and elements, following either a predetermined schedule or the manufacturers' maintenance recommendations.

3.5.2 A comprehensive inventory of the plant will be maintained on-site, including information on routine maintenance. Each piece of equipment will have a dedicated Maintenance log, contributing to a decrease in the probability of plant failure.

3.5.3 All site personnel will undergo appropriate training and are required to promptly report any incidents to the Site Manager.

Specific EMS Procedures

- STC WI 007 Environmental Monitoring
- IMS-PRO-093 Amenity Impact Control Procedure
- IMS-PRO-094 Waste Handling Procedure
- IMS-UG-031 Waste Acceptance Guidance
- IMS-PRO-164 Compliance Testing Procedure

- IMS-FRM-191 Waste Sampling Plan
- IMS-PRO-101 Monthly Site Inspection Procedure
- IMS-UG-016 Environmental Permit Installation Checks Guidance
- IMS-UG-018 Environmental Aspects Assessment Guide

3.6 Accident Management

Emergency Planning

3.6.1 An Environmental and Accidents Risk Assessment (*Doc. Ref.: WR7640/08*) has been prepared in support of this application. As part of this, a matrix has been prepared in accordance with EA guidance which identifies potential hazards, their likelihood, and resulting consequences, as well as the risk management measures that will be put in place to ensure that risks are acceptable.

3.6.2 To ensure ongoing conformance to management requirements and the facilitation of continuous improvement, the operator will subject the system to periodic audits conducted by independent auditors.

Emergency Contact

3.6.3 In the event of any significant environmental emergency/incident, a representative of DQL will notify the EA by telephone immediately, but first having due regard for the incident at hand and any remediation actions required to ensure the safety of site personnel and the immediate environment.

3.6.4 Details of any environmental incident will be confirmed to the EA in writing, on the next working day after identification of the incident. This confirmation will include: the time and duration of the incident, the receiving environmental medium or media where there has been any emission as a result of the incident, an initial estimate of the quantity and composition of any emission, the measures taken to prevent or minimise any further emission and a preliminary assessment of the cause of the incident.

3.6.5 Any incident notified to the EA will be investigated, and a report of the investigation sent to the EA. The report will detail, as a minimum, the circumstances of the incident, an assessment of any harm to the environment and the steps taken to bring the incident to an end. The report will also set out proposals for remediation and for preventing a repetition of the incident.

Control of Fires

3.6.6 As part of the ongoing operations, arrangements will be made, as necessary, with the local fire liaison officer to visit the site and discuss the relevant operations with the client. Any specific advice given by the fire liaison officer can then be incorporated into the site's management plan as appropriate.

3.6.7 No waste will be burned within the confines of the site boundary. Due to the nature of waste stored in other areas of the site, all fires within the facility will be treated as a potential emergency and dealt with accordingly. Fires may occur in relation to:

- Plant failure – fixed or mobile plant fires; and
- Within non-conforming waste loads awaiting removal from the site.

3.6.8 In the event that a fire occurs at the facility, the following actions would be undertaken:

- Person(s) discovering a fire will raise the alarm;
- Report the incident to the Site Business Manager / nominated person;
- All site personnel and visitors will be accounted for and evacuated to a safe location;
- Contact the emergency services and state the nature of the incident;
- Follow all instructions given by the emergency services;
- If the fire can be controlled without endangering operatives, appropriate actions will be undertaken using available firefighting equipment. Fires will be tackled by a minimum of two site operatives;
- Ensure access is clear for the emergency services but prevent access to the facility from anyone else until the emergency is over; and
- The EA will be informed forthwith of any fires that occur at the facility.

3.6.9 Firefighting equipment will be available at the facility and will be clearly marked and tested, at appropriate intervals, to confirm their suitability and functionality. Site personnel will be made aware of the locations of all firefighting equipment and will be trained in their correct use.

3.6.10 A record of the occurrence of a fire will be maintained in the site log, along with any actions taken. An Incident and Accident Report will be completed by the Site Business Manager.

3.6.11 Following approval by the fire services and/or facility manager the residues from the fire will be disposed of accordingly at a suitable permitted waste management facility.

Explosions

3.6.12 Due to the nature of the wastes accepted at the facility, the likelihood of the materials containing explosive elements is highly unlikely. However, awareness and caution will be practised with all staff and to ensure no other waste is accepted that has explosive properties, the waste acceptance procedures identified in **Section 2.0** will ensure that unauthorised waste types are prevented from entering the facility.

3.6.13 In the unlikely event that materials with explosive elements are discovered within a waste delivery that has already been accepted, the following action would be taken:

- Contact the Site Business Manager or in his absence the Site Supervisor;
- Check that all site personnel and visitors are accounted for and are moved to a safe location;
- Contact the emergency services and state the nature of the incident (including whether any fires have occurred);
- Follow all instructions given by the emergency services;
- If injuries have occurred medical assistance will be called;
- No further wastes will be accepted at the facility until the Site Business Manager has given authority; and
- The EA will be informed forthwith of any arisings of explosive materials or any explosions that occur.

3.6.14 Once the emergency is over and the emergency services have declared that the area is made safe, an incident/accident report shall be completed. A written account of the incident will also be forwarded to the EA no later than 14 days after the incident.

Flooding

3.6.15 Following a review of the Environment Agency flood risk map, the site is not at risk of flooding. The site is located outside the floodplain and is not likely to flood, even in extreme conditions. This takes into account the effect of any flood defences that may be in this area, whether or not these are currently illustrated on the EA Flood Map.

Control of Leaks and Spillages

3.6.16 Daily visual inspections of the operational and processing surfaces will be conducted. In the event of a spillage, facility operatives will inform the Site Business Manager or Supervisor who is responsible for assessing the situation and deciding on the most appropriate actions to be undertaken.

3.6.17 All necessary measures will be taken to contain any spillage or discharge by means of suitable material and equipment. The actions undertaken will depend on the size of the spillage, the location of the spillage in relation to sensitive receptors and the nature of the spilled material.

3.6.18 Where spillages of dry wastes occur, these will be cleared by either manual or mechanical means, for example handpicking, sweeping or shovelling, dependant on the size and location of the spillage.

3.6.19 Minor spillages of liquid will be contained using spillage kits or any suitable readily available absorbent material. This material will be disposed of in a manner appropriate to the type of material absorbed.

3.6.20 If a major spillage of liquid occurs, such as heavy plant oil/fuel, the following actions will be undertaken, where appropriate:-

- Ensure no risk of off-site transfer;
- Report the occurrence to the Site Business Manager immediately;
- Trained facility operatives will take immediate action to try and contain the leak where it is safe to do so;
- If it is safe to do so, the cause of the spill or leak will be isolated and/or moved to a bunded area;
- If the liquid spillage is large, inert low permeability material such as clay will be used to make a temporary containment bund to prevent further transfer of the spillage. The Site Business Manager or designated person will contact the EA to discuss best practicable disposal options;
- Access to the immediate area should be restricted until a disposal/clean up solution is implemented;
- If the spillage cannot be contained using approved methods, senior management will be contacted immediately, and specialist advice and help will be sought; and
- If a vehicle or item of plant is identified as leaking, wherever practicable, it will be stored on an impermeable pavement (at the site offices/garages) / highly compacted made ground within a bunded area, where the spillage can be contained until such time as a repair is affected.

3.6.21 The Environment Agency will also be informed immediately of major spillages, having due regard to first take appropriate measures to deal with any emergency in hand.

3.6.22 The locations of spillage kits and other emergency equipment will be detailed within an appropriate plan.

Investigation of Accidents and Incidents

3.6.23 For any accident, incident or dangerous occurrence, an Incident and Accident Report will be completed by the Site Business Manager. All relevant details of the accident, incident or dangerous occurrence will be recorded, together with any additional statement, photographs, logs or records that may assist in the full investigation of the accident, incident or dangerous occurrence.

3.6.24 After an Environmental Incident and Emergency has been made safe, an investigation will be conducted, if necessary, by the Site Business Manager and other Company Personnel as appropriate.

Specific EMS Procedures

- IMS-FRM-019 Environmental Aspects and Impacts Form
- IMS-FRM-025 Daily Monitoring Form
- IMS-FRM-037 Fire Risk Assessment Report
- IMS-FRM-065 Environmental Monitoring Non-Conformance Form
- IMS-FRM-068 Emergency Management Plan
- IMS-PRO-005 CAR Response Procedure
- IMS-PRO-013 Accident and Incident Reporting Procedure
- IMS-PRO-014 Preventive and Corrective Action
- IMS-PRO-016 Aspects and Impacts Procedure
- IMS-PRO-031 Fire Prevention Procedure
- IMS-PRO-051 Environmental Installation Checks Procedure
- IMS-PRO-093 Amenity Impact Control Procedure
- IMS-PRO-101 Monthly Site Inspection Procedure
- IMS-UG-015 Permit Breach Notification Guidance
- IMS-UG-016 Environmental Permit Installation Checks Guidance
- IMS-UG-017 Landfill Monitoring and Analysis Guidance
- IMS-UG-018 Environmental Aspects Assessment Guide
- IMS-PRO-017 Environment Incident Reporting Procedure
- IMS-PRO-067 Lessons Learnt Procedure

3.7 Operational Contingency Plans

Waste Acceptance and Deposition

3.7.1 Should the site be unable to function under normal conditions due to unforeseen events, including but not limited to plant breakdowns, emergency and/or environmental incidents, and logistical issues, alternative measures will be implemented. These alternative measures may include the following:

- Adjust delivery times/days for incoming waste
- Minimize waste activities
- Halt all waste operations
- Reroute scheduled waste deliveries to other appropriately permitted internal sites or authorized third-party locations

Vehicles, Plant and Equipment

3.7.2 In the event of a breakdown in vehicles, plant, or machinery, the supplier will be notified for investigation and repair of the breakdown. If the machine is not expected to be operational for an extended period, efforts will be made to procure an alternative machine from the supplier to facilitate continued operations in the interim.

Weighbridge

3.7.3 If the weighbridge system experiences a failure, upon the arrival of a waste-delivering vehicle at the weighbridge, the operator will inform the driver about the non-operational status of the system. If it is possible, manually generated computer-printed tickets will be produced, entering either estimated weights or those obtained from the weight indicators. In situations where ticket printing is not feasible, the operator will manually input details on the manual weighbridge ticket.

3.7.4 These details include the following:

- Facility address
- Permit number, License authority, and License holder
- Date and time
- Unique ticket number
- Gross weight
- Tare weight
- Net weight
- Customer details, including name, waste carrier's license, vehicle registration, and driver's name
- Waste type and EWC code
- Signatures from both the weighbridge attendant and the vehicle driver

3.7.5 The weighbridge operator will confirm the gross weight with the vehicle driver. If an historic tare weight is available, it will be entered, or the weight from the vehicle's MOT plate will be used to calculate the net weight.

3.8 Monitoring Plan

During Operations

3.8.1 Due to the nature of the waste to be deposited, there will not be any monitoring during the operational period will be limited to the groundwater and surface water, as detailed in the Hydrogeological Risk Assessment.

3.8.2 Landfill gas monitoring will not be required owing to the nature of the waste (primarily quarry fines and sub-soils) to be deposited.

Post Closure / Aftercare

3.8.3 The post closure management will be minimal owing to the nature of the waste. As the quarry fines, soil and stones that will be tipped into the void will be clean and compatible with the locality, the waste will be of very low pollution risk and will not produce gas. Therefore, there will be no subsequent aftercare or monitoring requirements.

3.8.4 Following completion of the waste activities, the void will be utilised to create wetland and ecological habitats. Subsequent to this restoration, the site permit will be surrendered.

3.9 Complaints

3.9.1 The company has established a Complaints Procedure, which is an integral component of the site's management system.

3.9.2 Contact information for the site is displayed on a notice board near to the site entrance. This information includes the name of the permit holder (Darlington

Quarries Limited), an emergency name and contact number, a statement that the site is permitted by the Environment Agency, the permit number (EPR/CP3994ZR), and the Environment Agency non-emergency contact number (03708 506506) and incident hotline number (0800 807060).

Specific EMS Procedures

- IMS-FRM-001 You Said We Did Form

3.10 Staff Training and Competence

Staff Training

3.10.1 The documented management systems will outline training requirements for all relevant staff, encompassing:

- Awareness of the regulatory implications of the Permit for their activity and work tasks.
- Awareness of all potential environmental effects resulting from operations under normal and abnormal circumstances.
- Awareness of the necessity to report any deviations from the Permit.
- Prevention of accidental emissions and the actions to be taken in the event of accidental emissions.

3.10.2 The skills and competencies necessary for key positions will be documented, and records of training needs and training received for these positions will be maintained. Key positions include those of contractors and individuals involved in purchasing equipment and materials.

3.10.3 The potential environmental risks associated with the work of contractors will be assessed, and instructions will be provided to contractors regarding the protection of the environment while working on site.

3.10.4 Compliance with existing industry standards or codes of practice for training, if available, is expected.

3.10.5 Training will be provided to ensure that all workers possess a satisfactory understanding of their responsibilities concerning environmental and health & safety issues on site.

Competency Management System (CMS)

3.10.6 FCC Environment has recently implemented a Competency Management System (CMS), which has received certification from its accrediting body.

3.10.7 The Competency Management System serves as an alternative mechanism to the Certificate of Technical Competence (COTC) / Technically Competent Management (TCM) regime for showcasing competence at sites with PPC permits.

3.10.8 Essentially, employees within the CMS Scheme (Managers, Supervisors, Technicians, Advisors, etc.) are required to:

- Successfully complete their CMS assessments within the designated timeframe set by their assessor.
- Review and uphold their competency through Continued Professional Development (CPD), participating in both Permit Compliance and Duty of Care courses, with refreshers every 3 years.

- Submit CPD records during IDS review for discussion with their line manager.
- Familiarize themselves with and adhere to the requirements of the relevant IMS procedures (detailed below) and their associated user guides and forms.
- Update pertinent site documents and procedures, including management plans and working plans, to reflect any changes.

Specific EMS Procedures

- IMS-PRO-001 Training - Planning Procedure
- IMS-PRO-003 Training - Employee New and Existing Procedure
- IMS-PRO-029 Agency Worker Induction Procedure
- IMS-PRO-103 Change of Manager Handover Induction Procedure
- IMS-FRM-101 Change of Manager Form
- IMS-FRM-017 Agency Worker Induction Checklist
- IMS-PRO-067 Lessons Learnt Procedure
- IMS-FRM-060 Working with Waste Form
- IMS-FRM-170 CMS Standardisation Meeting Agenda
- IMS-POL-007 Competence Management System Policy 2019
- IMS-PRO-086 Continued Professional Development Procedure
- IMS-PRO-087 CMS Planning Procedure
- IMS-PRO-168 Performance Monitoring and Measurement Procedure
- IMS-UG-030 CMS User Guide.
- IMS-UG-054 CMS Assessment Strategy User Guide.
- IMS-UG-055 Introduction to Task Books

3.11 Documentation of Legislative and Other Requirements

3.11.1 Copies of planning permissions, environmental permits, and other pertinent permissions are retained, either in the form of hard copy records or electronically.

3.11.2 Technically competent managers stay current with additional legal requirements and updates to relevant environmental legislation by monitoring trade magazines and the Environment Agency website.

Specific EMS Procedures

- IMS-UG-042 Site Filing System Guidance
- IMS-UG-006 Information Area Guide
- IMS-UG-001 IMS1 Document Library User Guide

3.12 Management Reviews

3.12.1 Management conducts periodic reviews of the company's environmental performance by examining environmental audit reports and daily site records.

3.12.2 The environmental policy statement is also subject to periodic reviews to ensure alignment with the company's operations and environmental objectives.

Specific EMS Procedures

- IMS-PRO-067 Lessons Learnt Procedure
- IMS-FRM-007 FCC Objectives and Target Report Template
- IMS-PRO-006 Management Review Procedure
- IMS-FRM-003 Management Review Agenda

- IMS-FRM-004 Management Review Meeting Minutes Template
- IMS-FRM-007 FCC Objectives and Target Report Template

3.13 Additional Management Certification

3.13.1 FCC Environment demonstrates its dedication to energy management by obtaining BSI certification to ISO 50001. ISO 50001 enables FCC Environment to meet statutory energy efficiency requirements, including reducing carbon emissions, lowering energy costs, and showcasing best practices in energy management to customers, employees, and other stakeholders. A copy of the Energy Management System ISO 50001 certificate is available on the FCC Environment website.

3.13.2 Beyond the requirements of the Environmental Management System, FCC Environment holds certification that encompasses written procedures for handling, investigating, communicating, and reporting environmental complaints, along with the implementation of appropriate actions. These procedures are covered in the BSI certification for 'Occupational Health & Safety Management System' (ISO 45001) and 'Occupational Health and Safety certificate' (OHSAS 18001). These certifications are also accessible on the FCC Environment website.

DRAWINGS

LEGEND

- Environmental Permit Boundary - Ref.: EPR/CP3994ZR (Skelbrooke Quarry Extension Area)
- Extent of Waste Deposits
- Environmental Permit Boundary - Ref.: EPR/BV1470IE (Skelbrooke Landfill Site)

REV	DESCRIPTION	DATE	BY

CLIENT

FCC Environment (UK) Limited
6 Sidings Court, White Rose Way, Doncaster. DN4 5NU

Office Suite 2, The Beacon Centre for Enterprise, Dafen, Llanelli., SA14 8LQ. 01554 780 544

JOB TITLE

ENVIRONMENTAL PERMIT VARIATION APPLICATION - SKELBROOKE QUARRY EXTENSION AREA

DRAWING TITLE

SKELBROOKE QUARRY COMPLEX SITE BOUNDARIES PLAN

DRAWN	DATE	APPROVED	DATE
M.K	17/03/2020	D.T	17/03/2020

SCALE	SHEET	DRAWING NUMBER	REVISION
1:2,500	A2L	WR7640/10/SS1	0

NOTES

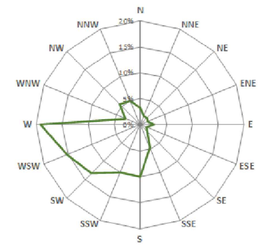
Environmental Permit Boundary

Search Buffer (500m)

R1 *Receptor*

ID	Receptor Name
R1	Principal Aquifer
R2	Doncaster Lane
R3	Straight Lane
R4	Foothpaths/Bridleway
R5	Skelbrooke Village
R6	Agricultural Land
R7	Bannister Lane
R8	Spring
R9	Stream (Tributary of The Skel)
R10	Skelbrooke Park
R11	The Skel River
R12	Harry Wood

Church Fenton Weather Station Wind Rose (2000-2010)



REV	DESCRIPTION	DATE	BY

CLIENT

FCC Environment

FCC Environment (UK) Limited
Ground Floor West, 900 Pavilion Drive, Northampton Business Park, Northampton, NN4 7RG

SiriUS Environmental

JOB TITLE

ENVIRONMENTAL PERMIT VARIATION APPLICATION
SKELBROOKE QUARRY EXTENSION AREA

DRAWING TITLE

RECEPTORS & PATHWAYS

DRAWN	DATE	APPROVED	DATE
L.E.	11/3/2020	D.T.	11/3/2020

SCALE	SHEET	DRAWING NUMBER	REVISION
1:5,000	A2L	WR7640/10/ESSD9	0

APPENDICES

APPENDIX SS1

List of Wastes

Table AppSSA1.1: Permitted waste types for quarry restoration

Source	Sub-source	Waste code	Description	Additional restrictions
01 Waste resulting from exploration, mining, quarrying and physical and chemical treatment of minerals	01 01 wastes from mineral excavation	01 01 02	Wastes from mineral non-metalliferous excavation	Restricted to waste overburden and interburden only.
	01 04 wastes from physical and chemical processing of non-metalliferous minerals	01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 06	
		01 04 09	Waste sand and clays	
17 Construction and demolition wastes	17 05 soil stones and dredging spoil	17 05 04	Soil and stones other than those mentioned in 17 05 03	Topsoil restricted to upper 500mm
20 Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions	20 02 garden and park wastes	20 02 02	Soil and stones	Topsoil restricted to upper 500mm

Table AppSSA1.2: Permitted waste types for the development of internal haul roads (maximum thickness of 500mm)

Source	Sub-source	Waste code	Description	Additional restrictions
01 Waste resulting from exploration, mining, quarrying and physical and chemical treatment of minerals	01 04 wastes from physical and chemical processing of non-metalliferous minerals	01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 06	
17 Construction and demolition wastes	17 01 concrete, bricks, tiles and ceramics	17 01 01	Concrete	For the construction of tracks only.
		17 01 02	Bricks	
		17 01 03	Tiles and ceramics	
19 Wastes from waste management facilities	19 12 wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	19 12 09	Minerals (for example sand, stones) only	For the construction of tracks only. Restricted to wastes from treatment of waste aggregates that are otherwise naturally occurring minerals. Does not include fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard.

APPENDIX SS2

Management System Certificates

Lloyd's Register

Current Issue Date:	14 March 2021	Original approval(s):
Expiry Date:	13 March 2024	CMS - 14 March 2018
Certificate Identity Number:	10343507	

Certificate of Approval

This is to certify that the Management System of:

FCC Recycling (UK) Limited t/a FCC Environment (UK) Ltd

Ground Floor West, 900 Pavilion Drive, Northampton Business Park, Northampton, NN4 7RG, United Kingdom

has been approved by Lloyd's Register to the following standards:

Competence Management System - Energy & Utility Skills (Private Standard) Version 4

Approval Number(s): CMS – 00014056

The scope of this approval is applicable to:

The operation of a Competence Management System for the management and operation of FCC sites with a waste management permit or exemption, excluding those associated with Liquid/Chemical Waste Treatment, Quarries, Energy from Waste and Collection Sites.

David Derrick

Area Operations Manager UK & Ireland

Issued by: Lloyd's Register Quality Assurance Limited

UKAS MANAGEMENT SYSTEMS
001

APPENDIX SS3

Skelbrooke Quarry Noise Impact Assessment (2021)

SECOR

SKELBROOKE QUARRY AND LANDFILL

ASSESSMENT OF ENVIRONMENTAL IMPACT OF NOISE AND DUST EMISSIONS FROM EASTERN EXTENSION

Prepared for

DARRINGTON QUARRIES LTD

Darrington Quarries Limited
Cridling Stubbs
Knottingley
North Yorkshire
WF11 0AH

April 1966

***SECOR* Limited**
Greenlands Business Centre
Studley Road
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WR7 4ED

Prepared by:

J J Leeson, BSc, MSc, FIQ, FGS
Principal

Reviewed by:

K D Owen

K D Owen, BA, MRTPI
Associate

Distribution:

DQL	8 copies
SECOR	2 Copies

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 At the request of Darrington Quarries Limited (DQL), *SECOR* Limited (*SECOR)* have undertaken assessments of the potential impacts arising from noise and dust emissions associated with a proposed eastward extension to DQL's Skelbrooke Quarry.

1.2 The proposal involves the extraction of Upper Magnesian Limestone from an area of arable land lying to the south of Skelbrooke Village followed by restoration of the land to agriculture by controlled landfilling.

1.3 This study assesses the potential impacts arising from noise and dust emissions relating to both of these activities and commenced with a site inspection and survey of existing noise levels around the site which was undertaken on 16 April 1996.

2.0 SITE INSPECTION

2.1 Site Setting

2.1.1 The extension site is located approximately 750 metres to the west of the A1 trunk road and approximately 300 metres to the south of the centre of the village of Skelbrooke. To the west of the site lies an extensive area of land from which limestone has been extracted and which is in the course of being restored by landfilling. At the time of the site inspection, quarry face activities were not taking place and the quarry plant was running only intermittently. It is understood that, if the extension proposals are accepted, the quarry plant would be moved from its current position to a location on the quarry floor beneath and to the immediate west of, the site weighbridge.

2.1.2 The site weighbridge lies on the line of the track of a disused railway which has now been removed. The former railway provides a good surfaced access to a C-class road known as Straight Lane.

2.1.3 The proposed extension area lies in a shallow valley which opens out to the east towards the A1. A topographic survey of the extension area, and an area of associated farmland which lies immediately to its northeast, indicates that ground levels drop from between 40 and 37 maOD, in the north of the site, to between 27 and 32 maOD in the floor of the valley before rising again to c. 36 maOD in the southern part of the extension area. Skelbrooke Hall, and the surrounding properties in the centre of Skelbrooke Village, lie in an adjacent gentle valley feature which also opens out to the east. To the immediate north of the site, a line of residential properties lies along the extension of Straight Lane lying between its junction with Doncaster Lane and towards Skelbrooke Church. These properties lie on the very gentle ridge which separates the two valleys described above and some of them have views over the southern part of the extension site.

2.1.4 The nearest residential property to the proposed extension area is a pair of semi-detached houses fronting Doncaster Lane immediately adjacent to its junction with Straight Lane. These properties lie at a minimum distance of 130 metres from the proposed closest approach of the proposed limestone excavation and landfilling activities. The remainder of the village of Skelbrooke lies at greater distances from the extension site. The closest properties, in other directions, are Priory Farm, which lies 860 metres to the south of the site, and Manor Farm, which lies 800 metres to the east of the site, adjacent to the A1.

2.2 Brief Description of Proposed Development

2.2.1 The proposed development involves an extension of the quarry over part of an arable field lying to the east of the current quarry and landfill site. It is intended that the limestone would be extracted using a hydraulic face excavator which would be powerful enough to extract the material without it being necessary to employ blasting techniques. This extraction method is

already used successfully at Skelbrooke Quarry and minimises potential generation of noise and dust as a result of the excavation activities.

2.2.2 A geological investigation undertaken by DQL indicates that the limestone horizon, in the extension site, is in the order of 9 m thick which, together with the overlying overburden, implies that the floor of the excavation would be c.10 m below existing ground levels, at elevations of between 17 and 22 maOD, in the northern part of the extension area rising gently to c. 26 maOD in the southern part of the extension area.

2.2.3 Once limestone extraction has been substantially completed, the excavation area would be restored progressively by controlled landfilling, following the construction of a landfill containment system within the quarry. Construction of the containment system would involve the use of the Middle Permian Marl, which underlies the Upper Magnesian Limestone. Once the landfilling of imported materials had been completed, the landfill would be capped with impermeable materials before being soiled and returned to agriculture.

3.0 NOISE SURVEY DETAILS

3.1 Survey Instrumentation

A Cirrus CRL 703A integrating sound level meter was utilised to monitor the noise climate at four locations surrounding the proposed extension area. The meter, which was set in a low response mode, was calibrated before and after the monitoring exercise and no significant drift in calibration was observed. The meter was set with A type frequency weighting to mimic the response of the human ear to noise. This setting filters out certain noise frequencies to which the human ear responds poorly.

3.2 Survey Dates and Personnel

The noise climate in the area surrounding Skelbrooke Quarry was measured between the hours of 09.00 and 17.00 hours on 16 April 1996. The survey was conducted by Mr K D Owen of *SECOR*.

3.3 Meteorological Conditions Prevailing During the Survey

Between 09.00 and 09.30 the weather was dry, still and overcast but by 09.30 a light wind from the south-east had sprung up. A period of heavy showers, between 10.20 and 14.30, caused noise monitoring operations to be suspended, after which the wind from the south-east continued with variable intensity and direction.

4.0 SURVEY METHOD

4.1 Introduction

The methodology described below was employed during the survey of the noise climate surrounding Skelbrooke Quarry.

4.2 Noise Measurement Techniques

At all survey locations the microphone was placed 1.5 metres above the ground and at least 3.5 metres from the nearest reflecting surface. The sound level meter was programmed to monitor over 10 to 20 minute periods and the following parameters were recorded:

- L_{Aeq}/dB(A)
- L_{A90}/dB(A)

4.3 Noise Measurement Locations

The four noise monitoring locations, which were visited, are listed below and were selected as being representative of the closest potential, and existing, noise receptors in the Skelbrooke area.

Location Number	Location Description
1.	Properties at Junction of Doncaster Lane and Straight Lane
2.	Centre of Skelbrooke Village
3.	Priory Farm
4.	Home Farm, Skelbrooke Village

The location of these monitoring sites is shown, together with that of the extension site, in Drawing SKD1.

4.4 Results of Noise Monitoring Survey

A summary of the results of the Noise Climate Survey is given in Table SK1. The survey showed that noise receptors in the Skelbrooke area receive considerable amounts of road noise from the A1 which is visible from the southern part of the village.

5.0 NOISE CRITERIA WITH RESPECT TO MINERAL & LANDFILL SITES

5.1 Noise Parameters

5.1.1 The ambient environmental noise at any location will vary according to activities taking place around that location. In the vicinity of a busy road, such as the A1, the noise level will remain fairly constant due to the relatively steady noise generated by the road traffic. At a site where the noise level varies, such as a quarry, where mobile plant can be a significant noise generator, the noise will vary over a much wider range. It is necessary, therefore, to consider how to quantify the existing noise levels in an area in order to accurately assess the environmental impact of the introduction of a new noise source.

5.1.2 Background noise level, defined as the L_{A90} parameter, represents the noise level which is exceeded for 90% of a given measurement period and represents, therefore, the "troughs" in an analogue representation of varying noise levels. It ignores the effects of short term higher level events.

5.1.3 The equivalent continuous sound pressure level, or L_{Aeq} parameter, is a measure of the average sound energy over a given period of time. It will include noise from all contributing sources.

5.2 Relevant British Standards and Planning Guidance Documents

5.2.1 British Standard (BS) 5228, 1984 (Reference 1), describes "Noise Control on Construction and Open Sites". British Standard (BS) 4142 (Reference 2), originally published in 1967, describes the "Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas". BS 5228 sets out how to predict noise levels associated with construction and open sites whilst BS 4142 rates industrial noise. It should be noted that industrial noise sources are taken to be static whereas noise from construction and open sites will be, in many instances, from mobile plant and different assessment criteria may, therefore, be appropriate.

5.2.2 In recognition of this potential discrepancy, the Department of the Environment (DoE) commissioned W S Atkins Engineering Sciences Limited to undertake a study into the Control of Noise at Surface Mineral Working the results of which were published in 1990 (Reference 3). This led to the DoE producing detailed recommendations to Mineral Planning Authorities in the Mineral Planning Guidance Note 11 (MPG 11) "Control of Noise at Surface Mineral Workings" (Reference 4), which was issued in April 1993. MPG 11 recommends that, with some modifications, BS 5228 can be used to predict noise levels from the operations of proposed minerals extraction and waste disposal sites. However, it goes on to give advice with regard to the acceptability of noise levels which differs from that contained in BS 4142 which merely identified noise levels at which complaints might become likely. BS 4142 suggested that this was done by comparing pre-development background levels to noise levels which would be generated by the development and indicated that, if these noise levels exceeded the background levels by more than 10 dB(A), then complaints were likely.

5.2.3 MPG 11 introduces the concept of maximum acceptable daytime noise levels, which are set, at properties surrounding minerals or waste disposal sites, at a level of 55 dB(A) L_{Aeq} reducing during night time hours to maximum levels of 42 dB(A) L_{Aeq}.

5.2.4. MPG 11 also recommends that the long term benefits of the construction of screen mounds and noise baffle banks, in positions relatively close to surrounding properties, should be recognised. In paragraph 42 it states that:

> *"...it will often be necessary to raise the noise limits to allow temporary but exceptionally noises phases in the mineral extraction operation which cannot meet these limits. A prime example would be to allow for the construction of baffle mounds, but there are other activities including soil stripping, removal of spoil heaps and the construction of new permanent land forms which would merit a temporary raised limit".*

5.2.5 Paragraph 61 of MPG 11 suggests that, for periods of up to six weeks per year, a 70 dB(A) L_{Aeq} limit should be allowed, by Planning Authorities, to facilitate such activities. The Planning Guidance note also leaves open the possibility of operators negotiating even higher noise limits for shorter periods of time and vice versa.

6.0 NOISE LEVEL PREDICTIONS

6.1 Introduction

6.1.1 Noise can be defined as sound which is undesired by a receptor. The effects of noise on human receptors are varied and complicated but can lead to interference with work or with sleep patterns and, in extreme cases, can give rise to increased levels of stress. It should be borne in mind, however, that individuals have different responses to noise.

6.1.2 The measure of environmental noise which is in general use, and which is accepted for the assessment of the environmental impact of noise from new developments, is the L_{Aeq} parameter. In the preceding section, various recommended noise limits contained in MPG 11 are described which utilise the L_{Aeq} parameter.

6.1.3 The level of noise surrounding a development site and experienced at local properties will depend upon a number of factors the most significant of which are:

- the sound power levels (SWL's) of the plant or equipment being used on the site
- the periods of operation of the plant on the site
- the distance between the source noise and the receiving position
- the presence or absence of screening effects due to barriers or ground absorption
- reflection effects due to the other sides of buildings or quarry faces etc

6.2 Prediction Methodology

6.2.1 The prediction method utilised by *SECOR* in this study is based on that outlined in BS 5228. MPG 11 accepts that with some modifications, BS 5228 can be used to predict the noise levels from operations at proposed minerals extraction or waste disposal sites.

6.2.2 The most significant modifications to BS 5228 which MPG 11 suggests, relate to two important attenuators of noise, which are the effect of barriers between the noise source and the receptor and the absorption effect of soft ground lying between the noise source and the receptor.

6.2.3 BS 5228 originally suggested that a maximum barrier attenuation of 10 dB(A) should be adopted whereas MPG 11 suggests that the amount of attenuation, which can be attributed to barriers, should be calculated. In order to more accurately assess the attenuation of noise from the minerals and landfill activities in the proposed extension site at Skelbrooke Quarry, the methods used in the 1988 DTp document, Calculation of Road Traffic Noise (CRTN) (Reference 5), have been employed. This document describes the method for estimating barrier attenuation by determining the path difference, along which noise is propagated, and which is caused by the inclusion of the barrier. It should be noted that, although maximum barrier attenuation of up to 25 dB per frequency band may be obtainable, a maximum barrier attenuation of 15 dB(A) has

been assumed in this study.

6.2.4 With regard to the attentuative capacity of soft ground, lying between a noise source and a receptor, MPG 11 suggests that these attenuative effects should be considered and, once again, the techniques to determine soft ground attenuation described in CRTN are utilised.

6.2.5 It should be noted that where both barrier and soft ground attenuation are available, MPG 11 suggests that only the most significant source of attenuation should be recognised and this approach has been adopted by *SECOR* in this study.

6.3 Complement of Plant

6.3.1 Three distinct phases of developments for the extension site are recognised, relating to overburden stripping and screen mound construction, mineral extraction and landfilling phases of development. For each of these phases of developments, separate complements of mobile plant would be utilised and have been recognised in the noise level predictions which are described below. The plant complements are based on information provided by DQL and are set out in Table SK 2 together with appropriate sound power levels derived from BS 5228 or from plant manufacturers.

6.4 Assumptions made in Noise Predictions

6.4.1 For the purposes of the prediction exercise, the worst case scenarios have been considered at all times. Whilst these typically represent situations where mobile plant is working at the closest approach to surrounding properties, alternative scenarios where plant is working in the direct line of site of properties, albeit at greater distances than the closest approach, have also been considered.

6.4.2 It should also be noted that worst case assumptions have been made with regard to the "on-time" of the items of mobile plant which would be utilised during the various phases of the site development. In all but one case, it has been assumed that plant would be operating for 100% of the time which is, necessarily, a conservative assumption.

7. RESULTS OF NOISE PREDICTION CALCULATIONS

7.1 Introduction

A summary of the worst case noise level predictions, at the four representative receptors described above, is given in Tables SK3, SK4 and SK5. Each table represents a different phase of development of the extension site. The results of the noise prediction exercises are described below for each of the phases.

7.2 Overburden Stripping and Earth Moving Activities

7.2.1 The first phase of development of the extension site would involve the removal of soils and overburden materials which overlie the Upper Magnesian Limestone deposit. The majority of these materials would be utilised immediately to construct a visual and noise screening and baffling mound to the north of the proposed extraction area. The soils and overburden materials would be stripped using a combination of hydraulic backacter, articulated dump truck and a light D6 bulldozer. These items of plant would also be used to construct and shape the screen/baffle mound.

7.2.2 Noise level predictions have been made assuming that site noise would be attenuated as a function of the distance of site operations from receptors and as a result of attenuation by the intervening soft ground. It has been assumed that, during this phase of development, the worst case situation would be one in which no barrier attenuation was taking place. This would be especially so during the formation of the screen mound where mobile plant would be operating on the barrier which would eventually attenuate noise levels during the subsequent operation of the site.

7.2.3 Predicted noise levels, relating to the overburden stripping, earth moving and embankment construction phase of development of the extension site, are set out in table SK3 to contrast it with the current noise climate. At location numbers 1 and 4, which are relatively close to the extension site, the predicted noise levels are well above observed background noise levels. However, the predicted noise levels at all potential receptors are significantly below the 70 dB(A) L_{Aeq} level suggested in paragraph 61 of MPG 11 specifically in relation to these temporary phases of development.

7.2.4 It can be concluded, therefore, that noise levels generated during the overburden removal and screen bank construction phase of development would be acceptable with respect to the recent guidance given in MPG 11.

7.3 Quarry Operations Phase

7.3.1 The limestone is extracted directly from the quarry face by a large hydraulic excavator and is then loaded into a 25 tonne dump truck for transportation to the quarry processing plant.

7.3.2 It is intended that the quarry processing plant would be moved closer to the extension site if consent is granted. The plant would be relocated at quarry floor level in an area adjacent to the quarry weighbridge and some 8 to 10 metres below weighbridge level. As such, it can be expected that the plant would be well screened from potential noise receptors. However, since plant details and elevations are not fully known, it has been assumed that some plant noise may propagate in direct line of sight to surrounding receptors and, therefore, only soft ground attenuation of the processing plant noise has been assumed. In reality, it is likely that some barrier attenuation would take place and the resulting calculations are, therefore, once again, conservative.

7.3.3 The results of noise prediction exercises relating to the mineral extraction processing phase are set out in Table SK4. As would be expected, noise levels generated by this phase of operation are highest at the pair of semi-detached houses on Doncaster Lane at monitoring location No. 1. At this location, worst case noise levels are predicted to be 54.0 dB(A) which lies within the 55 dB(A) limit proposed in MPG 11.

7.3.4 Given the conservative nature of the noise predictions, together with the short length of time over which limestone would be extracted at the closest approach to the property at monitoring Location 1, it is considered that the noise levels at this property would be acceptable. It should also be noted that the predicted noise levels lie within 10 dB(A) of the monitored average L_{A90} level at this location.

7.3.5 At all other locations, predicted noise levels during the mineral extraction processing phase are well within the 55 dB(A) limit suggested in MPG 11.

7.4 Landfilling Phase

7.4.1 During the landfilling phase, much of the development would take place beneath existing ground level and would benefit, therefore, from considerable barrier attenuation with respect to the propagation of noise beyond the site boundary. However, during the latter stages of development and restoration of the landfill site, mobile plant items would be operating at or above the original ground surface and there would be little potential, in these instances, for barrier attenuation of noise to take place.

7.4.2 On the advice of DQL, the plant complement for this phase of development is considered to be a CAT 826, or similar, compactor accompanied by a hydraulic backacter which would be used to assist the unloading of articulated trucks which import the waste to the site. Due to the

intermittent nature of deliveries of waste to the site an adjustment has been made for the on-time in respect of the backacter and road vehicles and an equivalent sound power level has been derived from Reference No. 44 in Table 7 of BS 5228 for an excavator/lorry combination.

7.4.3 In the case of the closest approach to noise monitoring location No. 1, it is assumed that the peripheral screen bank would still be in place and that significant barrier attenuation would be available. The worst case, in this instance, is at a stand-off of 240 metres where a direct line of sight between the upper surface of the landfill and the receptor would be available. In this latter instance, only soft ground attenuation of the noise generated by site activities can be assumed in the prediction process.

7.4.4 In all other instances, only soft ground attenuation of the noise resulting from the landfill operations has been allowed for in the worst case noise prediction calculations.

7.4.5 The results of the prediction exercises in respect of the landfill operations are contained in Table SK5. This indicates that predicted noise levels would be lower than those associated with the mineral extraction operations and, in all cases, less than 50 dB(A), and well within the 55 dB(A) limit set out in MPG 11.

8.0 RECOMMENDATIONS WITH RESPECT TO NOISE EMISSIONS

8.1 If the development proceeds it is recommended that the following steps should be taken in order to minimise noise levels associated with the development and surrounding properties.

8.2 Upon commencement of earth moving operations, a baffle mound should be constructed immediately to the north and north east of the excavation site boundary to a height of between 3 and 4 m.

8.3 Enquiries should be made with plant manufacturers or the suppliers of rented plant to ensure that plant utilised during the earth moving phase of development operates at sound power levels equivalent to, or lower than, those used in the prediction calculations.

8.4 Although barrier attenuation of the noise emitted by the mobile processing plant has not been allowed for in the noise predictions carried out in this study, it is recommended that, if the plant is relocated as envisaged, efforts should be made to ensure that all noise emitting parts of the plant should be located below the level of the adjacent original ground surface to ensure that barrier attenuation is achieved.

8.5 During the latter stages of development and surcharging of the landfill site, care should be taken to ensure that the sound power level of plant used to compact and then soil the landfill should be equivalent to, or less than, that used in the prediction calculations. Alternatively, some form of short term additional baffle screening could be employed for the short time that this particular part of this phase of development takes place. This could take the form of a row of large hay bales placed along the crest of the screen mound and along the north-eastern side of the boundary.

9.0 CONCLUSIONS WITH REGARD TO NOISE ASSESSMENT

9.1 Worst case noise prediction calculations carried out in respect of 3 discrete phases of development of the proposed extension to the Skelbrooke Quarry and Landfill indicate that, in each case, predicted noise levels at representative receptor locations would be within the 55 dB(A) L_{Aeq} standard suggested in MPG 11.

9.2 The existing noise climate in the vicinity of the quarry is heavily influenced by the proximity of the site and surrounding receptors to the A1.

9.3 Given the worst case nature of the noise predictions, and the high existing background noise levels as determined by the monitoring exercise, it is considered that, subject to observing the recommendations given above, the noise levels which would arise if the development proceeds would be acceptable with regard to recent Government guidance.

10.0 ENVIRONMENTAL IMPACT OF DUST EMISSIONS

10.1 Introduction

The potential environmental impact of dust emissions, from the proposed mineral extraction and processing and the landfilling activities at Skelbrooke Quarry, has been investigated. This task included a site inspection, carried out in conjunction with the noise monitoring exercise described above, and has involved an investigation into the meteorological conditions which prevail in the Skelbrooke area. Dust emissions from crushed rock quarry processes are now controlled by statute and the regulatory framework, within which the proposed extension to the quarry and landfill would operate, is set out in some detail.

10.2 The Regulatory Framework

10.2.1 There are, as yet, no statutory or universally recommended levels of dust deposition which are deemed in the UK to constitute a statutory nuisance. However, there are occupational exposure limits for dust in air which have been set recently by the Health and Safety Executive.

10.2.2 The latest Government advice relevant to the proposal to extend the quarry is "Pollution Guidance Note" PG3/8/91, Quarry Processes Including Roadstone Plants and the Size Reduction of Bricks, Tiles and Concrete" (Reference 6). This emphasises suitable dust control measures that can be undertaken to prevent nuisance and also sets standards for emissions of pollutants from "contained" sources only. These standards are not applicable to plant at Skelbrooke Quarry which does not operate on a contained basis.

10.2.3 British Standard BS 3405: 1983 (Reference 7), defines dust as *"solid particles that are smaller than grit but above 1 micron in diameter"*. Grit is defined as *"solid particles retained on a sieve of aperture size 75 microns"* and, therefore, dust is particulate matter in the size range 1- 74 microns in diameter.

10.2.4 The Control of Substances Hazardous to Health (COSHH) Regulations, 1988 (Reference 8) place a requirement on employers to prevent employees ingesting or coming into contact with substances harmful to health. The Health & Safety Executive publication EH 40 (Reference 9) lists the occupational exposure limits for employees to various substances including limestone dust. DQL have, therefore, an obligation under the COSHH Regulations to control dust emissions within the quarry workings in order to achieve compliance with the relevant exposure limited.

10.2.5 With regard to potential receptors of dust pollution located outside the quarry, the Environmental Protection Act (EPA), 1990 (Reference 10) brought in substantial changes to the control of polluting activities. Prior to the introduction of the EPA, pollution of the atmosphere from quarry processing activities was controlled by the Air Pollution Branch of Her Majesty's

Inspectorate of Pollution (HMIP). Operators were under a duty to use the "best practical means" to control emissions from their sites.

10.2.6 Part 1 of the EPA came into force on 1 April 1991 and repealed much of this previous legislation. The EPA introduced new concepts in pollution control for the minerals industry. The main change was that a new system of controlling "scheduled processes" was introduced and these processes are categorised as being "Part A" or "Part B" processes. Part A processes include those which are potentially more polluting and these remain subject to control by HMIP. Most mineral extraction, and associated processing operations, are placed in the "Part B" category and the control of these processes became the responsibility of the Local Authority.

10.2.7 At Skelbrooke Quarry, the Part B "Processes" include crushing, screening, handling and storage of limestone. The Local Authority is Doncaster Metropolitan Borough Council. As required by the legislation, DQL applied to register the process at Skelbrooke Quarry and a formal authorisation was issued by Doncaster MBC under Authorisation No. EPA 32. The authorisation, in common with normal practice, was subject to Conditions which, among other matters, required the submission for approval of an upgrading programme of dust emission control measures. DQL submitted their Upgrading Schedule, detailing the works proposed in respect of the plant at Skelbrooke Quarry, on 25 April 1993, and a copy of this submission is attached at Appendix 1. If the proposed development proceeds, the Quarry plant would be relocated to its new position on the quarry floor adjacent to and below the quarry access road and the upgrading programme improvements would be made as required by Doncaster MBC.

10.3 Recent Research

10.3.1 In 1995, the DoE published research findings regarding "The Environmental Effects pf Dust from Surface Mineral Workings" (Reference 11) following a project carried out by Arup Environmental. This research examined public perceptions of dust emissions from various mineral workings and noted that "previous research indicates that the majority of dust particles from mineral workings will deposit within 100 m of the source".

10.3.1 The report concluded that, inter alia,

> *"Stand-off distances from significant dust emitting sources (such as active storage mounds), should in most cases be between 100 - 200 m, though this can be reduced if appropriate and effective mitigation measures can be implemented".*

11.0 SOURCES OF DUST EMISSIONS AND APPROPRIATE CONTROL MEASURES

11.1 Dust generation, associated with quarrying, derives from two main operations; the winning of the rock from the quarry face (and associated soil stripping and rock transportation activities) and then from the crushing, screening and handling of the rock in the quarry plant. The quarry operations which can be identified as potential generators of dust emissions are considered to be as follows:

- Soils and overburden removal and replacement
- Extraction of rock from quarry face
- Loading at the quarry face and haulage to the processing plant
- Processing of the excavated rock, ie. crushing and screening
- Storage and stock piling of aggregates
- Loading and haulage of finished products off the site

11.2 The dust generating activities associated with landfilling operations can be identified separately and it is considered that these activities are as follows:

- The construction of the mineral liner for the landfill containment system
- Deposition of waste within the landfill together with its associated daily capping and compaction
- Landfill restoration

11.3 Each of these potential dust generating activities has been considered in turn and, where necessary, appropriate mitigation strategies have been identified. In addition, consideration has been given to the prevailing meteorological conditions in the vicinity of Skelbrooke Quarry since this is of importance in understanding the likelihood of potential receptors, of dust, from the extension site, being affected by any residual dust emissions which may occur following the implementation of the mitigation measures set out below.

12.0 ASSESSMENT OF DUST GENERATING ACTIVITIES

12.1 Soils and Overburden Removal and Placement

12.1.1 The geological survey carried out by DQL has indicated that the thickness of soil and overburden, resting on the limestone in the extension site, is in the order of between 1.0 and 1.5 metres. The total volume of material to be handled therefore, is relatively small and the overburden stripping scheme would take place in a phased manner, each phase being of short duration.

12.1.2 The construction of the screening mound, to the north of the proposed extraction site, would be the dust generating activity which would take place in closest proximity to properties in the southern part of Skelbrooke. The closest approach of these potential dust generating activities to a dust sensitive property would be 100 metres. However, construction of the screen mound would be an activity of short duration due to the relatively small quantities of soils required for its construction. Research into the environmental effects of dust from surface mineral workings (Reference 7) indicates that soil stripping and storage operations have the potential for a high level of dust emissions.

12.1.3 Given this situation, and the relative proximity of the area in which the screen mound would be constructed, in relation to the village, suitable mitigation strategies should be employed to ensure that dust emissions during the creation of the screen mound are minimised. The prime strategy would be to ensure that soil stripping does not take place when soils are dry and excessively friable. However, care must also be taken to avoid stripping soils when they are too moist as this can damage soil structure. A practical mitigation strategy would be to employ a water bowser during soil stripping operations, to damp down the soil as appropriate. Once completed, the screen mound should be soiled and seeded at the earliest opportunity to minimise the opportunity for windblow from the surface of the mound.

12.2 Extraction of Rock from the Quarry Face

12.2.1 As has already been indicated, the limestone at Skelbrooke Quarry is excavated from the quarry face using a hydraulic shovel. Drilling and blasting activities, which can potentially give rise to high levels of fugitive dust emissions, are not employed at this quarry and would not be necessary in the proposed extension area. The potential for dust emissions from extraction operations at the quarry face is considered, therefore, to be low.

12.2.2 There would be the potential for moderate to high levels of dust emissions arising from the transport of face rock to the processing plant. A well tried and tested mitigation measure in respect of dust generated from quarry haul roads is to employ a water bowser during periods of dry weather. In the case of Skelbrooke Quarry, a bowser is already employed as appropriate and would continue to be utilised if the extension area were to be developed.

12.3 Processing Activities

12.3.1 The crushing and screening of hard rocks such as limestone can give rise to fugitive dust emissions due to the agitation of rock and dust particles by the crushers and associated screens and also due to the winnowing action of wind on material being discharged from a conveyor onto a stock pile.

12.3.2 However, it is recognised (Reference 7), that appropriate regulatory controls over dust emissions from processing plant are the responsibility of the Local Authority's Environmental Health Department and that the effectiveness of dust control measures can be high.

12.3.3 Given that the quarry plant would be upgraded in line with the EPA Authorisation if it were moved as part of the extension proposals, it is considered that dust emissions from this source would be kept to a satisfactory level.

12.4 Storage and Stock Piling of Aggregates

12.4.1 At Skelbrooke Quarry processed aggregates are stock piled on the quarry floor. Stock piles are recognised (Reference 7) as having moderate potential to contribute to site dust emissions. Since the stock piles are situated on the floor of the quarry they are relatively well screened from exposure to wind. As such, it is considered that specific dust control measures, with respect to stock piles, are not required save for a requirement for the stock piles to be retained on the quarry floor and not placed at ground level.

12.5 Loading and Transport of Finished Products

12.5.1 As has been described above, processed aggregates at Skelbrooke Quarry are retained on the floor of the quarry. They are then loaded directly into road vehicles using a wheeled loader. In accordance with the requirements of the EPA, all lorries, carrying aggregates, with a diameter of less than 75 mm, are sheeted before they leave the quarry.

12.5.2 The quarry haul road is surfaced and is swept as necessary to reduce dust emissions by vehicles travelling along it. Vehicles leaving the site pass through a wheel rinsing device to remove dust and mud from their wheels before they travel along the access road thus further reducing the potential for dust emissions from this source.

12.6 Construction of Landfill Containment System

12.6.1 The landfill site at Skelbrooke Quarry is operated on a containment basis. Containment is provided by a mineral liner which is placed to specified engineering standards. The liner material is derived from the Middle Permian Marl, which underlies the Upper Magnesian

Limestone. The Marl is a stiff, non-friable clay and it is considered that its extraction and subsequent placement would not give rise to appreciable dust emissions. Nevertheless, a water bowser would be used to damp down the haul roads used during the construction operations if this were necessary.

12.7 Waste Disposal

Commercial and domestic waste does not normally contain a significant dust fraction. It is considered, therefore, that these activities are unlikely to give rise to fugitive dust emissions.

12.8 Landfill Restoration

12.8.1 Restoration of the landfilled quarry to agriculture would take place following the capping of the wastes with a layer of engineered clay and then placement of soils. The Middle Permian Marl would be utilised for the capping of the site. Since it is likely that the extension of the site would be the last part of the landfill and quarry to be restored, the Marl would have to be stockpiled and then recovered from the stockpile for use in the capping exercise. Similarly, the soil resources would have to be taken from stockpiles to allow the restoration of the landfill cap to agriculture. Spreading of the soils could give rise to dust emissions and, to mitigate these potential emissions, it would be necessary to ensure that the soiling operation took place during appropriate weather conditions.

12.8.2 Similar comments apply to the removal of the screen mound which would be constructed to the north of the extension site.

13.0 METEOROLOGY

13.1 Introduction

In contrast to other atmospheric pollutants, the transport of fugitive dust is particularly dependent upon weather conditions. In particular, wind speed and direction and precipitation are key meteorological conditions affecting the potential for dust dispersion with the highest potential occurring on dry, windy days. The risk of dust deposition at a vulnerable location is determined by the frequency of those dry day winds blowing towards it from a dust generating activity and its distance from that activity.

13.2 A dry wind rose, thought to be representative of conditions at Skelbrooke Quarry, has been constructed by correlating observations of dry days with wind frequency and strength. The data relates to a ten year period from 1985 - 1994 and are derived from a wind monitoring site at Finningley Airfield. Rainfall data were obtained from a rain gauge at Barnsley Sewage Works.

13.3 The data show that dry days, defined as those with less than 0.2mm of precipitation in 24 hours, occur for 59% of the year, ie on 215 days, on average. The wind rose is representative, therefore, of the directions in which any residual dust emissions would blow on these days.

13.4 The wind rose is presented as Drawing SKD2. Each arm of the rose represents the frequency at which winds blow from 30° sectors, together with a representation of the strength of these winds. The rose shows that the predominant dry wind direction is from the western sector. It can be calculated that dry winds will blow from the proposed extension site towards Skelbrooke, which is due north of the site, for as little as 6.5% of the year. These southerly winds are characterised by being relatively gentle and are predominantly of Beaufort Scale Force 3 or less. Dry winds of Beaufort Force 4, ie a moderate breeze, only blow towards Skelbrooke for 0.5% of the time.

13.5 It is considered, therefore, that there would be limited potential for residual dust emissions, occurring after the implementation of the mitigating measures described above, to reach the village of Skelbrooke. Such residual emissions would predominantly be carried over the arable fields which extend from north east, through east, to south of the proposed extension site or, alternatively, and on rare occasions, back over the existing landfill site itself.

14.0 RECOMMENDATIONS IN RESPECT OF POTENTIAL DUST EMISSIONS

14.1 The most sensitive operations, with respect to potential dust emissions, would relate to the construction and ultimate removal of the screen bank which would be constructed to the north of the proposed extraction and landfilling area. These activities would be carried out approximately 100 metres from the nearest potential receptor and at a distance recognised as being at the lower end of a recommended stand-off between sensitive receptors and medium to high dust generating activities of a continuous nature (Reference 7). Soil movement activities should ideally take place, therefore, when the soil is not in a friable condition.

14.2 Arrangements should be made to damp down quarry and landfill haul roads, during periods of dry weather, by use of a water bowser.

14.3 Stock piles should be kept on the quarry floor to minimise potential windblow effects.

14.4 The quarry access road should be kept free of dust by sweeping when necessary and by ensuring that vehicles leaving the site pass through the wheel rinsing device.

15.0 CONCLUSIONS IN RESPECT OF DUST ASSESSMENT

15.1 The closest approach of the proposed extension site at Skelbrooke Quarry, to the outskirts of the village of Skelbrooke, lies at the lower end of the recommended stand-off between sensitive receptors and moderate to high dust generating activities, of a continuous nature, as recommended by a recent DoE research project (Reference 7).

15.2 The most significant dust generating activities are considered to be in relation to soil stripping and the construction of a screen mound at the closest approach to the village of Skelbrooke. This particular activity would be of a short duration. Thereafter, the limestone extraction and processing operations are considered to have a low potential for dust emissions. The transport of face rock to the processing plant has the potential for moderate to high dust emissions but these can be mitigated successfully by use of a water bowser to damp down the haul road between quarry face and processing plant.

15.3 It is considered that the proposed landfill construction and waste disposal activities would have limited potential to generate fugitive dust emissions. Care would have to be taken, however, when the landfill site was being restored to agriculture, to ensure that dust emissions were minimised.

15.4 Any residual fugitive dust emissions remaining following the implementation of the recommended mitigating measures are unlikely to reach Skelbrooke since prevailing meteorological conditions indicate that dry day winds only blow northwards towards Skelbrooke for 6.5% of the time and then only at low wind speeds. Prevailing dry winds blow from the south west and west quadrants.

15.4 Subject to the implementation of the recommendations described above, it is considered that the environmental impact of dust emissions from the proposed extension to the quarry and landfill at Skelbrooke Quarry would be acceptable.

REFERENCES

1. British Standards Institution, Noise Control on Open Sites, BS 5228, 1984

2. British Standards Institution, Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas, BS 4142, 1967

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4. Department of the Environment, Control of Noise at Surface Mineral Workings, Mineral Planning Guidance Note 11 (MPG 11), 1993

5. Department of Transport, Calculation of Road Traffic Noise, 1988

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7. British Standards Institution, Simplified Methods for the Measurement of Grit and Dust Emissions, BS 3405, 1971

8. Health & Safety Executive, Control on Substances Hazardous to Health Regulations, 1988

9. Health & Safety Executive, Guidance Note EH40 - Occupational Exposure Limited, 1995

10. H M Government, Environmental Protection Act 1990

11. Arup Environmental, The Environmental Effects of Dust from Surface Mineral Workings, 1995

TABLES

SKELBROOKE QUARRY AND LANDFILL

TABLE SK 1

Results of Noise Climate Monitoring Exercise Carried out on 15 April 1996

Location		Monitoring Start Time	Monitoring Duration/Mins	L_{Aeq}/dB	L_{A90}/dB	Comments
No.	Site					
1.	Doncaster Lane	09.50 10.00 15.28	10 20 15	51.4 53.4 46.7	47.8 48.7 42.4	A1 visible and dominant noise source Quarry plant now operational Quarry plant inactive. Slight change in wind direction causes reduction in road noise.
2.	Bannister Lane	09.27 15.48	20 12	52.7 49.3	43.5 45.9	Occasional cars passing and tractors in fields. A1 road noise prominent. Reduced noise levels due to change in wind direction.
3.	Priory Farm	09.00	20	52.2	46.7	*Constant noise from A1 and A638*
4.	Home Farm, Skelbrooke	16.07	15	53.9	37.6	A1 road noise dominant although mobile plant or quarry/landfill audible

SKELBROOKE QUARRY AND LANDFILL

TABLE SK 2

PLANT COMPLEMENT

ACTIVITY	PLANT COMPLEMENT	SOUND POWER LEVEL (SWL)/dB(A)
Overburden Stripping/Earth Moving	CAT 235 Backacter Articulated Dumptruck CAT D6 Dozer	109[1] 110[2] 108[1]
Quarry Operations	Hydraulic Face Shovel Dump Truck (25 tonne) Mobile Quarry Processing Plant	116[2] 114[2] 116[2]
Landfill Operations	CAT 826 Compactor CAT 235 Backacter	113[1] 109[1]

Data Sources:

[1] - Manufacturer's data
[2] - Data from BS 5228

TABLE SK3

NOISE PREDICTIONS RELATING TO OVERBURDEN STRIPPING AND EARTHMOVING PHASE

Location		Closest Activity Approach/m	Predicted Noise Level/L_{Aeq}	Current Noise Climate[1] dB(A)	
No.	Site			L_{Aeq}	L_{A90}
1.	Doncaster Lane	100	57.0	49.1	45.2
2.	Bannister Lane	340	43.6	51.0	44.3
3.	Priory Farm	860	30.4	51.9	46.7
4.	Home Farm	230	46.9	51.9	37.6

[1] - Average of noise level measurements taken with plant non operational

TABLE SK4

NOISE PREDICTIONS RELATING TO MINERAL EXTRACTION AND PROCESSING PHASE

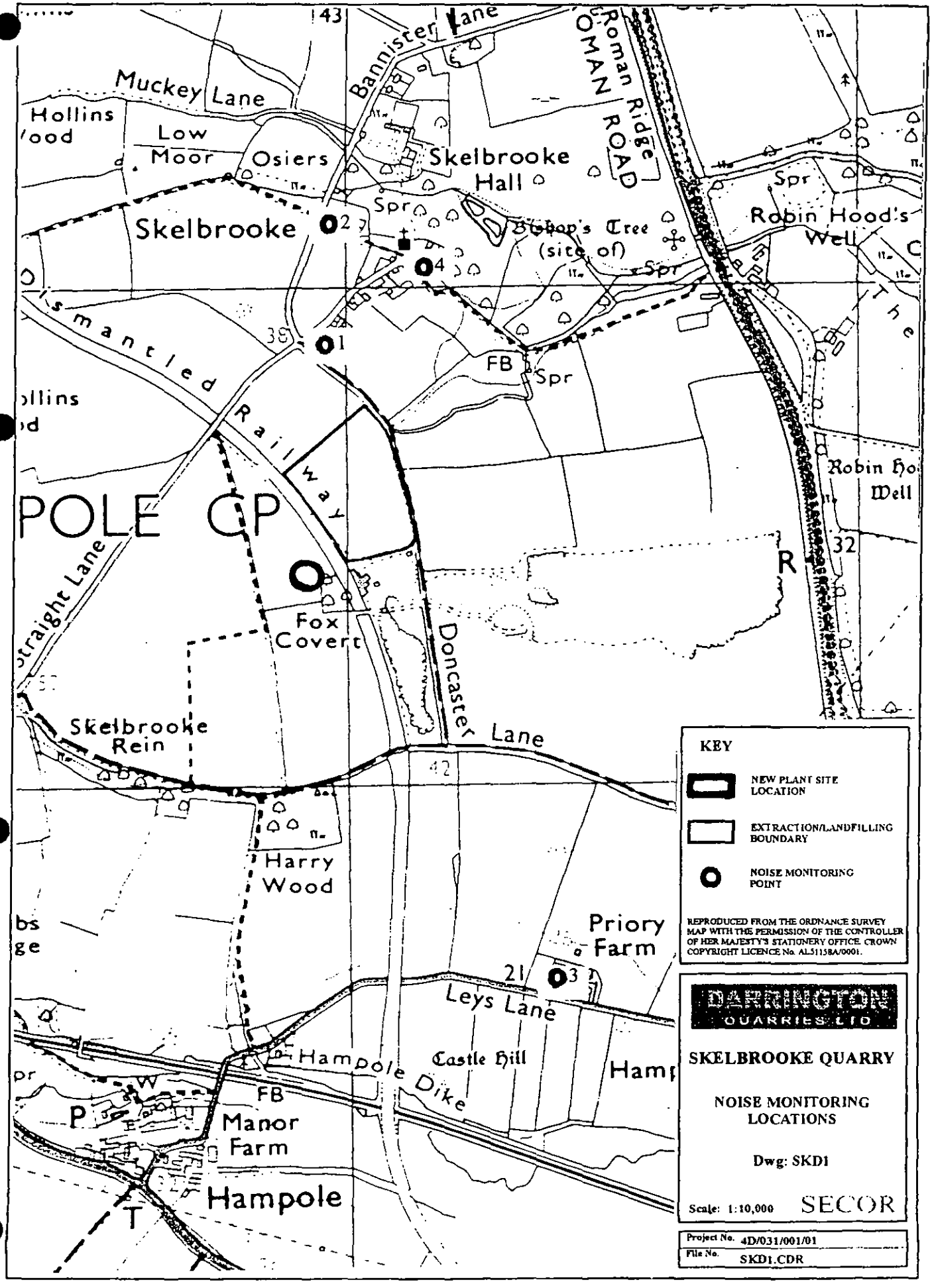
Location		Closest Activity Approach/m	Noise Predictions		
No.	Site		Face Operation Noise at Receptor/dBA	Plant Operation Noise at Receptor/dBA	Total Noise/dBA
1.	Doncaster Lane	130	52.8	47.7	54.0
2.	Bannister Lane	410	42.8	44.1	46.5
3.	Priory Farm	860	36.5	33.9	38.4
4.	Home Farm	260	46.8	45.7	49.3

TABLE SK5

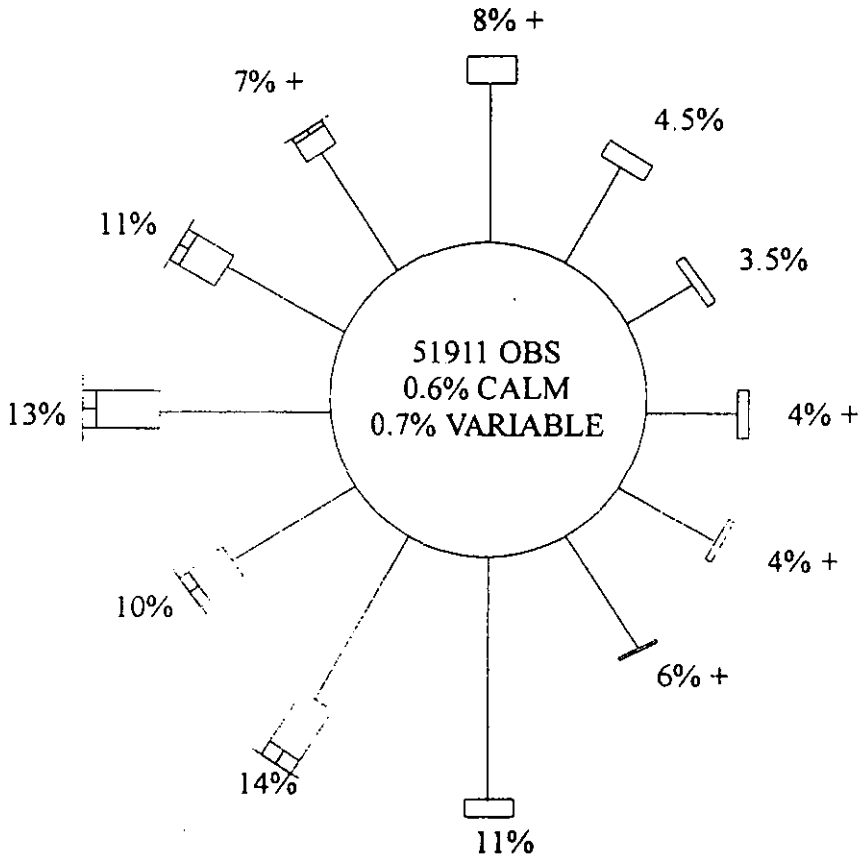
NOISE PREDICTIONS RELATING TO LANDFILLING AND RESTORATION PHASE

Location		Closest Activity Approach/ m	Total Attenuation /dB(A)	Predicted Noise Level/dB(A)	Current Noise Climate/dB(A)	
No.	Site				L_{Aeq}	L_{A90}
1.	Doncaster Lane	240 130	64.5 65.3	49.9 49.1	49.1	45.2
2.	Bannister Lane	410	70.2	44.1	51.0	44.7
3.	Priory Farm	860	78.7	35.7	51.9	46.7
4.	Home Farm	260	63.5	48.9	51.9	37.6

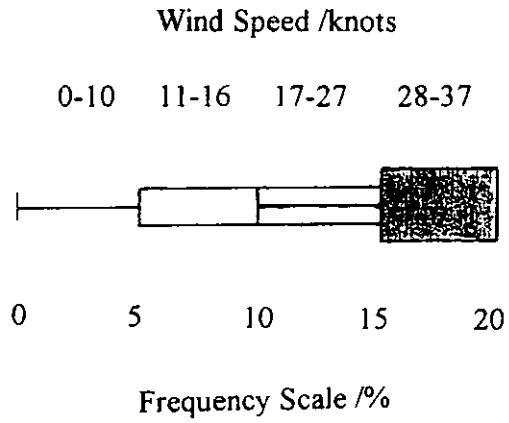
DRAWINGS


Muckey Lane
Hollins Wood
Low Moor
Osiers
Bannister Lane
Roman Ridge
ROMAN ROAD
Skelbrooke Hall
Skelbrooke
Spr
Bishop's Tree (site of)
Robin Hood's Well
The
Ismantled Railway
FB
POLE GP
Fox Covert
Doncaster Lane
Skelbrooke Rein
Harry Wood
Priory Farm
Leys Lane
Castle Hill
Hampole Dike
Manor Farm
Hampole
KEY
NEW PLANT SITE LOCATION
EXTRACTION/LANDFILLING BOUNDARY
NOISE MONITORING POINT
REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. CROWN COPYRIGHT LICENCE No. AL51158A/0001.
DARRINGTON QUARRIES LTD
SKELBROOKE QUARRY
NOISE MONITORING LOCATIONS
Dwg: SKD1
Scale: 1:10,000
SECOR
Project No. 4D/031/001/01
File No. SKD1.CDR

NORTH



KEY



DARRINGTON QUARRIES LTD

SKELBROOKE QUARRY

DRY DAY WIND ROSE

Dwg: SKD2

SECOR

Project No.	4D/031/001/01
File No.	SKD2.CDR

APPENDIX 1

Fao I P Kellett, Esq,
Doncaster Metropolitan Borough Council,
Directorate of Environmental Services,
PO Box 257,
The Council House,
College Road,
DONCASTER,
South Yorkshire,
DN1 1RN

Your Ref: IPK/JF
Our Ref: DQL/50/DRH

25 April 1993

Dear Sir,

ENVIRONMENTAL PROTECTION ACT 1990 PART 1
AUTHORISATION (EPA 32)

As required by the above authorisation, please find enclosed an upgrading schedule detailing the works proposed in respect of the plant at Skelbrooke Quarry.

With regard to Sutton Quarry, (authorisation EPA 33), it is currently dormant and the plant has been removed to prevent theft and vandalism. No upgrading schedule is therefore necessary.

I trust that the above is satisfactory. If there are any matters you would like to discuss, do not hesitate to contact me.

Yours faithfully,
for Darrington Quarries Ltd.,

D R Harper

SKELBROOKE QUARRY:
AUTHORISATION (EPA 32)

1. Plant feeder, grizzly, crusher: no action required.
2. Grizzly discharge chute: (a) in place.
3. Grizzly product conveyor: (b) in place, (c) & (d) required.
4. Scalping screen, oversize chute and product conveyor: no action required.
5. Scalping screen, undersize chute and product conveyor: (a) in place.
6. Primary crusher product chute: (a) in place.
7. Primary crusher product conveyor: (c) in place, (d) required.
8. Intermediate conveyor: (b) in place, (c) & (d) required.
9. Grading screen feed conveyor: (b) in place (c) & (d) required.
10. Grading screen, oversize product chute and conveyor: no action required.
11. Intermediate product chute and conveyor: no action required.
12. Grading screen, undersize product chute and conveyor: (a) in place, (c) & (d) required.
13. Secondary crusher: no action required.
14. Secondary crusher product chute and conveyor: (a) & (b) in place, (c) & (d) required.
15. Sub-base conveyor: (b) in place, (c) & (d) required.

(a) DISCHARGE CHUTES ONTO CONVEYORS

The base of the discharge chute will be fitted with a rubber skirt. This will be clamped to the sides and back so as to form a seal between the chute and the moving conveyor. The front of the chute will have "rubber fingers" covering the discharge apperture, but allowing the free flow of material.

(b) CONVEYOR FEED BOOTS

Mild steel feed boots will be attached to the conveyor stringers on two sides and back, independent of the discharge chute. A seal will be formed between three sides of the boot and the moving conveyor belt using strips of rubber clamped to the steel structure. Rubber skirts running along the length of the conveyor will be nominally 80mm less than the conveyor width and the feed boot will project nominally 1.0m forward of the discharge chute.

(c) CONVEYOR WIND BOARDS

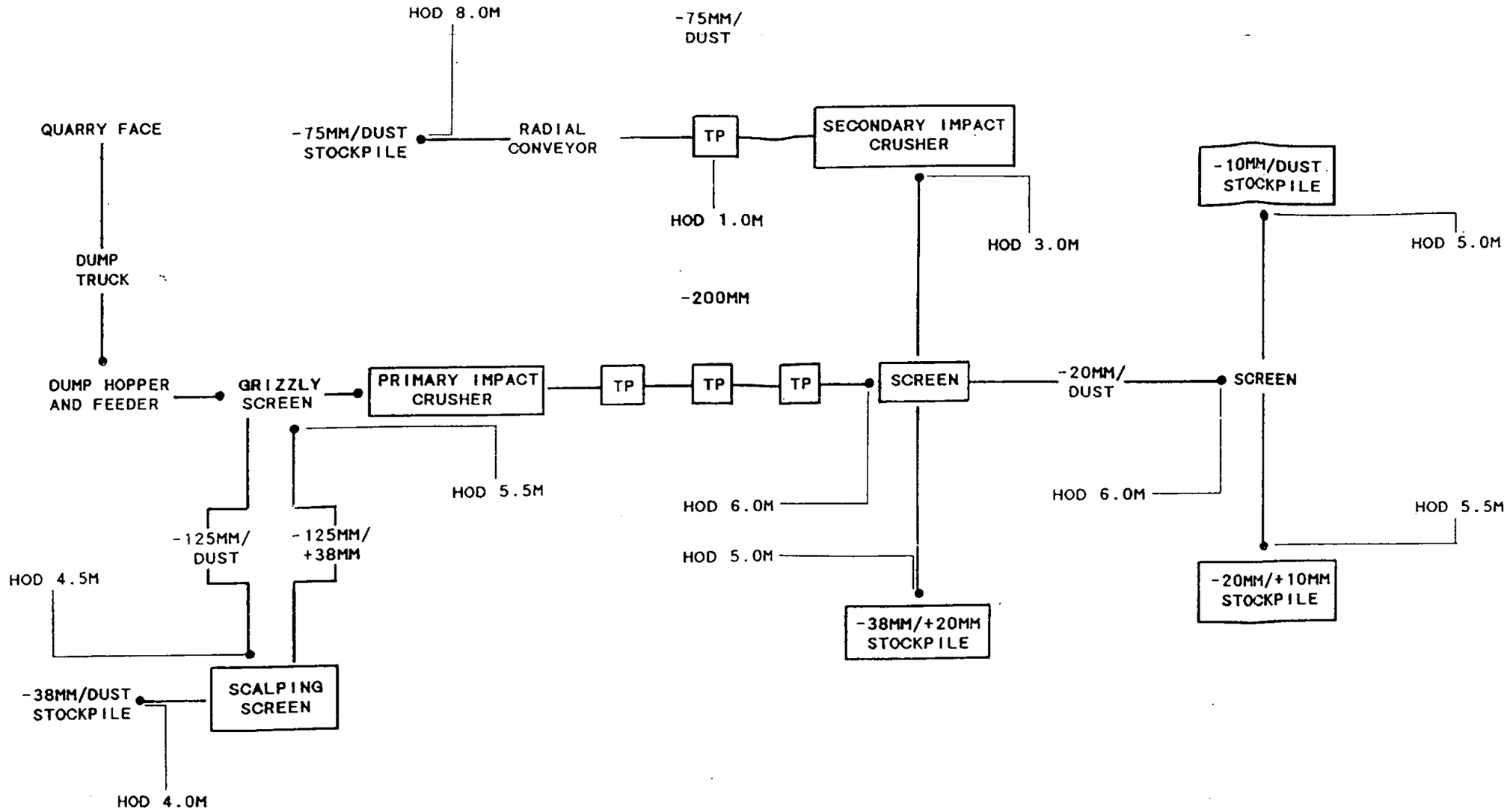
150mm high mild steel wind boards will be installed nominally 25mm above and 50mm inset along both sides of the conveyor belt. They will run the full length of the conveyor from the feed boot to the discharge point and if required they will be supplemented with rubber skirts which will form a seal between the board and the belt.

(d) CONVEYOR DISCHARGE POINTS

A sheet steel box will be constructed to form a conveyor head guard in accordance with Statutory Instrument 1992 No.3073, The Supply Of Machinery (Safety) Regulations 1992. Where the conveyor belt enters the head guard unit, it will pass through "rubber fingers". Where the head guard forms the discharge point of the conveyor, a rubber sock will be constructed.

Where the conveyor discharges onto another conveyor, the sock will be long enough to make contact with that conveyor, the front of the sock being fingered vertically.

Where the conveyor discharges onto a stockpile, the sock will be nominally 1.0m long.



DARRINGTON QUARRIES LTD.

Darrington Leys,
Cridling Stubbs,
Knottingley,
Yorkshire, WF11 0AH

PROJECT: SKELBROOKE APPLICATION

DRAWING TITLE: TYPICAL PLANT CONFIGURATION

DRAWING NUMBER: DQL/06/69

REVISION:

SCALE:

DRAWN BY:

DATE: DECEMBER 1995

KEY: