Air Quality Assessment

associated with a proposed extension
at

Collyweston Quarry
Peterborough Road
Duddington
Northamptonshire
PE9 3QA

July 2013
An Assessment of Potential Air Quality Impacts
associated with a proposed extension
at
Collyweston Quarry
operated by
Bullimores Sand and Gravel Limited
July 2013
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Executive Summary

This report has been based on the assessment requirements outlined in the Technical Guidance to the 2012 National Planning Policy Framework, Mineral Policy Statement 2 Annex 1: Dust, and the Secretary of State Process Guidance Note PG3/8 (12). Bullimores propose to extend their existing quarrying operations at Collyweston Quarry which are currently permitted under the Environmental Permitting (England and Wales) Regulations 2010 by East Northamptonshire Council. The existing EPR permit contains 36 conditions and has been developed specifically to ensure that air emissions are tightly controlled and resultant risks are minimised.

Bullimores propose to continue to employ industry best practice dust control measures, including the use of a mobile bowser to damp down materials when required. Potential dust emissions have been identified and dust control measures reviewed which are implemented to minimise potential risks. In most cases potential emissions will be managed by the careful application of water when required and regular housekeeping measures. The extension will utilise the existing quarry infrastructure including access, haul roads and screened mobile processing plant.

An analysis of wind patterns in the area confirmed the site experiences prevailing south-westerly winds and the susceptibility of neighbouring activities to dust dispersal has been assessed and identified as low/very low. The nearest neighbouring residential properties are located in Duddington, approximately 250m to the west of the extension area and experience infrequent easterly winds. The extension area is also well screened from easterly winds, which would be needed to potentially affect Duddington.

The distance to dust sensitive receivers and their location in relation to prevailing winds and existing vegetation screening will ensure that the potential for dust nuisance is low. As the potential for air emissions are considered to be low, and the distance and meteorological susceptibility is very low, it is therefore highly unlikely that any of the surrounding neighbouring activities will experience any change in air quality and the overall likelihood of any air quality impacts can be considered to be very low.

\textsuperscript{6} Mr Pinder has over 25 year’s technical expertise of dust assessments in the minerals and waste industry as a consultant, researcher and environmental director. He has given expert dust evidence at public inquiries and has participated in government and industry sponsored research into dust management and control. He is an Environmental Advisor to the UK Mineral Products Association and the European Ready Mixed Concrete Organisation. He has a BSc (HONS) in Environmental Studies, a Postgraduate Diploma in Advanced Environmental Practices, an MSc in Environmental Management, is a Fellow of the Institute of Environmental Management and Assessment, a Member of the Institution of Environmental Sciences, and a Chartered Environmental Scientist.
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I. Existing Situation

This report assesses the potential air quality impacts associated with a proposed extension to Collyweston Quarry. The assessment is based on legislative requirements, industry best practice, acknowledged research, and follows guidance contained in the Technical Guidance to the 2012 National Planning Policy Framework\(^1\), Mineral Policy Statement 2 Annex 1: Dust\(^2\) and the Secretary of State Process Guidance Note PG3/8 (12)\(^3\). The operators, Bullimores Sand and Gravel Ltd, are proposing an extension to the west of the existing Collyweston Quarry as indicated in Figure 1, releasing up to 2 million tonnes of saleable aggregate along with a proportion of building stone and Slate Log.

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\(^1\) Department for Communities and Local Government, Technical Guidance to the National Planning Policy Framework March 2012
\(^3\) Secretary of State Process Guidance Note 3/8 (12) Quarry Processes, September 2012
I.1 Legislative framework

The principal air emissions from quarries and waste/landfilling activities are wind-blown fugitive dusts (particulate matter) and nitrogen dioxide from engines in heavy goods vehicles and mobile plant. European Union (EU) air quality directives provides the framework for all UK air quality policy and EU air quality limit values have been incorporated into the UK Air Quality Standards Regulations 2010. The current UK Air Quality limit values are outlined in Table 1.

The air quality standards for dusts apply only to dust particles smaller than 10 µm (PM$_{10}$) or 2.5 µm (PM$_{2.5}$) in diameter. PM$_{10}$ and PM$_{2.5}$ usually remain suspended in the atmosphere for long periods of time and are of potential concern with regard to human health as they are capable of being inhaled into the lungs. They are, however, less likely to cause dust nuisance or disturbance as they rarely deposit out of the atmosphere. There are no air quality standards for dusts larger than 10 µm in diameter or for nuisance related dusts that may settle out of the atmosphere and lead to complaints.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>Limit Value/Objective</th>
<th>Year for Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine particulates (PM$_{10}$)</td>
<td>Daily mean</td>
<td>50 µg/m$^3$, not to be exceeded more than 35 times a year</td>
<td>31st Dec 2004</td>
</tr>
<tr>
<td></td>
<td>Annual mean</td>
<td>40 µg/m$^3$</td>
<td>31st Dec 2004</td>
</tr>
<tr>
<td>Fine particulates (PM$_{2.5}$)</td>
<td>Annual mean</td>
<td>25 µg/m$^3$</td>
<td>31st Dec 2020</td>
</tr>
<tr>
<td>Benzene</td>
<td>Running annual mean</td>
<td>16.25 µg/m$^3$</td>
<td>31st Dec 2003</td>
</tr>
<tr>
<td></td>
<td>Running annual mean</td>
<td>5.00 µg/m$^3$</td>
<td>31st Dec 2010</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>Running annual mean</td>
<td>2.25 µg/m$^3$</td>
<td>31st Dec 2003</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>Running 8-hour mean</td>
<td>10.0 mg/m$^3$</td>
<td>31st Dec 2003</td>
</tr>
<tr>
<td>Lead</td>
<td>Annual mean</td>
<td>0.5 µg/m$^3$</td>
<td>31st Dec 2004</td>
</tr>
<tr>
<td></td>
<td>Annual mean</td>
<td>0.25 µg/m$^3$</td>
<td>31st Dec 2008</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>1-hour mean</td>
<td>200 µg/m$^3$, not to be exceeded more than 18 times a year</td>
<td>31st Dec 2005</td>
</tr>
<tr>
<td></td>
<td>Annual mean</td>
<td>40 µg/m$^3$</td>
<td>31st Dec 2005</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>1-hour mean</td>
<td>350 µg/m$^3$, not to be exceeded more than 24 times a year</td>
<td>31st Dec 2004</td>
</tr>
<tr>
<td></td>
<td>24-hour mean</td>
<td>125 µg/m$^3$, not to be exceeded more than 3 times a year</td>
<td>31st Dec 2004</td>
</tr>
<tr>
<td></td>
<td>15-minute mean</td>
<td>266 µg/m$^3$, not to be exceeded more than 35 times a year</td>
<td>31st Dec 2005</td>
</tr>
</tbody>
</table>

* Measurement technique: Gravimetric
In addition to detailing ambient air quality standards, the UK National Air Quality Strategy\(^5\) also outlines measures to be taken by local authorities and others through a system of Local Air Quality Management in pursuit of the achievement of the national objectives.

Local air quality objectives associated with quarrying are enforced and managed by Local Authorities using a combination of wide ranging planning controls, which can impose dust conditions on quarries, and environmental permitting. It is a legal requirement for most quarries to hold an Environmental Permit as prescribed under section 3.5 Part B of Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2010. It is also a legal requirement for landfilling activities to hold environmental permits. Collyweston currently has a landfill permit regulated by the Environment Agency and an EPR permit (Appendix 1), regulated by East Northamptonshire Council, which contains 36 detailed site permit conditions\(^6\) requiring detailed design, monitoring and management requirements. Extensive best practice guidance, which is contained in the Secretary of State Quarry Process Guidance Note PG3/8 (12)\(^7\) has been used to create the site EPR Permit.

The aim of an Environmental EPR Permit for this type activity is to prevent potential nuisance dust emissions. Compliance with the Permit and effective site management and the use of environmental controls will create a site that is substantially free from dust emissions. East Northamptonshire Council are also required to serve an “enforcement notice” if it believes an operator has contravened, is contravening, or is likely to contravene any permit conditions, and the notices can specify the steps required to remedy the problem and the timescale in which they must be taken.

In addition to ambient air quality standards and environmental permitting, local authorities are also under a duty to regularly inspect their area for statutory nuisance and to investigate any complaints. If a statutory nuisance exists the local authority is also under a duty to serve an abatement notice requiring the nuisance to be stopped or reduced. Abatement notices will usually be served on the person responsible for that nuisance but may also be served on land owners. Failure to comply with the terms of an abatement notice without reasonable excuse is an offence and may result in a fine. Local Authorities can also take steps to abate the nuisance itself and recover costs.

Conviction in a Magistrates' Court can result in a maximum fine of £20,000, plus a daily fine of £500 for each day on which the offence continues after conviction. Although enforcement is undertaken by Local

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\(^6\) East Northamptonshire EPR Permit Number EPR/EN/3b
\(^7\) Secretary of State Process Guidance Note 3/8 (12) Quarry Processes, 2012
Authority environmental health officers, actions can also be brought by any person who is aggrieved by the existence of a nuisance by making a complaint directly to the court.

There are no statutory standards or mandatory guidelines relating specifically to thresholds for dust nuisance and there are recognised problems in identifying thresholds. In the absence of standards and a recognised method to measure dust deposition, nuisance is assessed by environmental health officers on a case-by-case basis.

1.2 Local Air Quality

Collyweston Quarry is located approximately 7km south-west of Stamford and 15 km north-west of Peterborough within the administrative district of East Northamptonshire Council. Detailed reviews of local air quality within the East Northamptonshire area have been undertaken as part of the National Air Quality Strategy updating and screening assessment programme. The objective of these assessments is to monitor relevant pollutants and identify any areas where residents may be exposed to air pollution that exceeds concentrations detailed in the UK Air Quality Criteria. Where potential exceedances are identified, Local Authorities are required to designate Air Quality Management Areas (AQMA), and detail action plans for reducing exposure. The last updated screening assessment in the East Northamptonshire area was conducted in 2013 and confirmed that air quality objectives were likely to be achieved for all pollutants and there were no specific concerns related to dust or NO₂. The main source of air pollution in the district is road traffic emissions from major roads, notably the A43 and A47.

In undertaking its screening assessment, East Northamptonshire Council has followed DEFRA technical guidance, LAQM.TG (09), which outlines the process for evaluating source specific emissions such as that from quarries. The guidance suggests that quarrying activities are unlikely to contribute to background PM₁₀ but recommends that the following approach is taken:

- If there are no relevant locations for public exposure within 1000 metres of the dust emissions source then there should be no need to undertake further assessment;
- If the PM₁₀ background is less than 26 µg/m³, as they are around Collyweston, then there is no need for further assessment if there are relevant locations for public exposure within 200 to 400 metres;
- Where properties lie closer than 200 metres to the source, local authorities are advised to investigate whether any dust nuisance complaints have been reported, as this may give a guide to potential problems. The absence of complaints is not alone a basis for saying that the objectives will

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* LAQM Progress Report 2013 East Northamptonshire Council
not be exceeded, and authorities are advised to take account of local background levels and their own professional judgement based on visual inspection of the operations.

No properties are located within 200m of the proposed extension area and the 2006 Air Quality Screening Assessment$^{10}$ undertaken by East Northamptonshire Council identified Collyweston Quarry as an active mineral working, and confirmed that it was unlikely to lead to PM$_{10}$ or NO$_2$ concentrations exceeding the air quality objectives.

East Northamptonshire Council does not undertake any continuous monitoring for PM$_{10}$ or NO$_2$, however, reference to the national background pollution maps suggests that PM$_{10}$ concentrations in the area are likely to range from 17 - 20 µg$m^{-3}$ and NO$_2$ concentrations in the area are likely to range from 10 – 20 µg$m^{-3}$.

In addition to the East Northamptonshire Council assessment of all local sources of air quality in the area, there have been numerous generic assessments of the potential local dust contribution from quarrying operations in the UK$^{12}$, all of which have shown quarries to be insignificant contributors to local PM$_{10}$ and NO$_2$ concentrations.

$^{10}$ Updating and Screening Assessment, May 2006, East Northamptonshire Council
$^{11}$ Air Pollution in the UK 2010, DEFRA Sept 2011
1.3 Local Meteorological Environment

The risk periods for dust generation always directly relate to meteorology. Analysis of precipitation, potential evapotranspiration, winds and atmospheric stability can give an indication of periods when dusty materials can dry quickly and dust control measures such as water spraying may be required. The greatest risk of dust generation is when drying conditions occur although dust generation is not restricted to these periods and can also occur during dry freezing conditions when dust control by damping down is not effective.

Wind rose data has been obtained from RAF Wittering, approximately 5 km to the north-east of the site. The wind rose in Figure 3 illustrates that, in common with most of the UK, the prevailing winds in the area are south westerly.

Wind frequency data in Table 2 can be used to calculate the frequency of winds that could potentially affect each neighbouring activity.
Table 2
Wind Frequency from RAF Wittering (2000 – 2009)
NGR TF042026 Altitude: 73 metres AOD

<table>
<thead>
<tr>
<th>Wind direction</th>
<th>% year with wind speeds between 0.5 and 4m/s</th>
<th>% year with wind speeds between 4 and 8 m/s</th>
<th>% year with wind speeds above 8 m/s</th>
<th>% wind in each direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>2.44</td>
<td>2.19</td>
<td>0.17</td>
<td>4.8</td>
</tr>
<tr>
<td>NNE</td>
<td>2.33</td>
<td>2.54</td>
<td>0.26</td>
<td>5.13</td>
</tr>
<tr>
<td>NE</td>
<td>2.12</td>
<td>2.57</td>
<td>0.50</td>
<td>5.19</td>
</tr>
<tr>
<td>ENE</td>
<td>1.71</td>
<td>1.66</td>
<td>0.21</td>
<td>3.58</td>
</tr>
<tr>
<td>E</td>
<td>1.31</td>
<td>0.72</td>
<td>0.04</td>
<td>2.07</td>
</tr>
<tr>
<td>ESE</td>
<td>1.70</td>
<td>0.86</td>
<td>0.04</td>
<td>2.6</td>
</tr>
<tr>
<td>SE</td>
<td>2.29</td>
<td>0.88</td>
<td>0.03</td>
<td>3.2</td>
</tr>
<tr>
<td>SSE</td>
<td>2.15</td>
<td>1.66</td>
<td>0.24</td>
<td>4.05</td>
</tr>
<tr>
<td>S</td>
<td>2.56</td>
<td>3.39</td>
<td>0.82</td>
<td>6.77</td>
</tr>
<tr>
<td>SSE</td>
<td>2.74</td>
<td>5.07</td>
<td>2.17</td>
<td>9.98</td>
</tr>
<tr>
<td>SW</td>
<td>2.65</td>
<td>5.41</td>
<td>2.63</td>
<td>10.69</td>
</tr>
<tr>
<td>WSW</td>
<td>2.84</td>
<td>6.64</td>
<td>2.33</td>
<td>11.81</td>
</tr>
<tr>
<td>W</td>
<td>3.27</td>
<td>5.02</td>
<td>1.70</td>
<td>9.99</td>
</tr>
<tr>
<td>WNW</td>
<td>2.84</td>
<td>4.08</td>
<td>1.04</td>
<td>7.96</td>
</tr>
<tr>
<td>NW</td>
<td>2.62</td>
<td>3.06</td>
<td>0.38</td>
<td>6.06</td>
</tr>
<tr>
<td>NNW</td>
<td>2.33</td>
<td>2.27</td>
<td>0.25</td>
<td>4.75</td>
</tr>
<tr>
<td>Total</td>
<td>37.80</td>
<td>48.03</td>
<td>12.80</td>
<td>98.63</td>
</tr>
</tbody>
</table>

*Note: The percentage of days with calm winds (<0.5m/s) is 1.37%*

To assist in characterising the susceptibility of neighbouring dust sensitive activities in relation to prevailing meteorological wind conditions Table 3 identifies the potential risk from dust dispersal as ‘high’ for receivers who receive over 20% wind frequency and are located less than 100m from the dust source. In comparison, receptors that are over 250m from the dust source can be considered to have a ‘very low’ susceptibility.

Table 3
Meteorological Susceptibility Rating

<table>
<thead>
<tr>
<th>Wind Frequency</th>
<th>Distance from dust source to sensitive receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;100m</td>
</tr>
<tr>
<td>&lt;6%</td>
<td>Low</td>
</tr>
<tr>
<td>6 - 13%</td>
<td>Moderate</td>
</tr>
<tr>
<td>13 - 20%</td>
<td>Moderate</td>
</tr>
<tr>
<td>&gt;20%</td>
<td>High</td>
</tr>
</tbody>
</table>

Rainfall data for the local area has also been obtained from RAF Wittering (Table 4). The rainfall data illustrates that the area receives an average rainfall when compared to the rest of the UK with rainfall occurring on approximately 113 days of the year (30 per cent of the time). This further reduces the potential for dust emissions.
### Table 4

<table>
<thead>
<tr>
<th>Month</th>
<th>Max Temp (deg C)</th>
<th>Min Temp (deg C)</th>
<th>Days of Air Frost (days)</th>
<th>Sunshine (hours)</th>
<th>Rainfall (mm)</th>
<th>Days of Rainfall &gt;=1mm (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>6.8</td>
<td>1.2</td>
<td>10.5</td>
<td>63.8</td>
<td>48.0</td>
<td>10.3</td>
</tr>
<tr>
<td>Feb</td>
<td>7.2</td>
<td>0.9</td>
<td>10.8</td>
<td>82.9</td>
<td>36.8</td>
<td>9.1</td>
</tr>
<tr>
<td>Mar</td>
<td>10.1</td>
<td>2.6</td>
<td>6.0</td>
<td>113.1</td>
<td>42.0</td>
<td>9.8</td>
</tr>
<tr>
<td>Apr</td>
<td>12.6</td>
<td>4.2</td>
<td>3.0</td>
<td>156.4</td>
<td>49.6</td>
<td>9.2</td>
</tr>
<tr>
<td>May</td>
<td>16.0</td>
<td>7.1</td>
<td>0.4</td>
<td>196.5</td>
<td>54.9</td>
<td>9.6</td>
</tr>
<tr>
<td>Jun</td>
<td>19.0</td>
<td>10.0</td>
<td>0.0</td>
<td>191.6</td>
<td>52.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Jul</td>
<td>21.7</td>
<td>12.1</td>
<td>0.0</td>
<td>204.3</td>
<td>52.4</td>
<td>8.3</td>
</tr>
<tr>
<td>Aug</td>
<td>21.5</td>
<td>12.1</td>
<td>0.0</td>
<td>192.3</td>
<td>55.8</td>
<td>8.9</td>
</tr>
<tr>
<td>Sep</td>
<td>18.4</td>
<td>10.1</td>
<td>0.0</td>
<td>146.8</td>
<td>55.2</td>
<td>8.4</td>
</tr>
<tr>
<td>Oct</td>
<td>14.1</td>
<td>7.1</td>
<td>1.0</td>
<td>115.5</td>
<td>59.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Nov</td>
<td>9.7</td>
<td>3.8</td>
<td>5.0</td>
<td>73.8</td>
<td>55.8</td>
<td>10.5</td>
</tr>
<tr>
<td>Dec</td>
<td>6.9</td>
<td>1.6</td>
<td>10.2</td>
<td>58.9</td>
<td>47.2</td>
<td>10.1</td>
</tr>
<tr>
<td>Year</td>
<td>13.7</td>
<td>6.1</td>
<td>46.8</td>
<td>1596.0</td>
<td>608.9</td>
<td>112.6</td>
</tr>
</tbody>
</table>

### I.4 Neighbouring Dust Sensitive Activities

Collyweston Quarry is situated in an area of predominantly agricultural land immediately to the east of Duddington. The existing site covers approximately 45 hectares and an assessment has been made of all activities surrounding the site, the majority of which have been identified as residential houses. Access to the quarry is via an entrance in the north east corner of the site from the A47 trunk road. The access is gated and locked during non-operational hours. Approximately 250m to the west of the extension area is Duddington village.

Potential dust sensitive activities can be categorised in relation to their dust sensitivity as potential increases in ambient dust levels will have varying degrees of potential impact dependant on the type and sensitivity of the receiver. Dust deposition on agricultural land, for example, is likely to have a much lower impact than similar levels of dust falling on a paint spraying or food processing facility, where very small amounts of dust can affect activities. Although this principle does not always apply, Table 5 categorises dust sensitive receivers and highlight their risk in relation to potential dust sources.

### Table 5
Dust sensitive activities

<table>
<thead>
<tr>
<th>High sensitivity</th>
<th>Moderate sensitivity</th>
<th>Low sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Hospitals</td>
<td>• Schools</td>
<td>• Agricultural land excluding</td>
</tr>
<tr>
<td>• Electronic industry</td>
<td>• Residential areas</td>
<td>market gardening</td>
</tr>
<tr>
<td>• Painting activities</td>
<td>• Shops</td>
<td>• Heavy industry</td>
</tr>
<tr>
<td>• Food processing</td>
<td>• Offices</td>
<td>• Parks and open spaces</td>
</tr>
</tbody>
</table>
A review of neighbouring activities and properties has been undertaken. Identified areas of potential dust sensitive receivers are shown in Figure 4 and Table 6. The assessment locations have been taken as indicative of a specific area and are not intended to be an exhaustive list of properties.

The area surrounding Collyweston Quarry is predominantly agricultural with mixed arable crops. The Collyweston Great Wood and Easton Hornstocks National Nature Reserve (NNR) and Site of Special Scientific Interest (SSSI) are located 750 east of the extension area. The reserve consists mainly of ancient woodland dominated by small-leaved lime trees. Birch, oak and ash are also common, and added interest is provided by open glades, rides and clearings.
The woods have been coppiced for centuries and this traditional form of management is continued today. Trees are felled on a 15-20 year rotation, creating a series of open, sunny glades and patches of dense shrubby re-growth.

There are no known high sensitivity land-use activities surrounding the site and no industrial or commercial manufacturing activity.

### Table 6
Potential Dust Sensitivity of Neighbouring Activities

<table>
<thead>
<tr>
<th>Indicative Receptor</th>
<th>NGR</th>
<th>Description</th>
<th>Indicative Dust Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cuckoo Lodge</td>
<td>TF003016</td>
<td>An isolated property adjoining the A47</td>
<td>Moderate</td>
</tr>
<tr>
<td>2 Collyweston Great Wood</td>
<td>TF002009</td>
<td>A designated NNR and SSSI</td>
<td>Low</td>
</tr>
<tr>
<td>3 Royal Oak Hotel</td>
<td>SK988004</td>
<td>A traditional country pub/hotel</td>
<td>Moderate</td>
</tr>
<tr>
<td>4 Smallholding</td>
<td>SK990005</td>
<td>A small group of barns use for ponies and other animals</td>
<td>Low</td>
</tr>
<tr>
<td>5 Manor Farm</td>
<td>SK989006</td>
<td>Property located between Duddington High Street and the A43</td>
<td>Moderate</td>
</tr>
<tr>
<td>6 The Pines, Green Lane</td>
<td>SK990008</td>
<td>Property located between Duddington High Street and the A43</td>
<td>Moderate</td>
</tr>
<tr>
<td>7 Robinswood</td>
<td>SK991011</td>
<td>Property located at the northern end of Duddington High Street and the A43</td>
<td>Moderate</td>
</tr>
<tr>
<td>8 Collyweston</td>
<td>SK994025</td>
<td>The southern part of the village closest to the quarry</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Although all the surrounding activities are classed as Moderate or Low sensitivity, this does not indicate that they are likely to be impacted by the quarry. Extensive research and study at other quarries has shown that the likelihood of dust impacts occurring at distances over 100m from a site is very low as the majority of fugitive dusts are likely to be greater than 30µm in size and will deposit easily within 100m of the source\(^{12}\).

No properties lie within 100m of the extension area. The closest properties are located on the eastern edge of Duddington approximately 250m from the extension area on the other side of the A43. The properties are well screened by existing mature vegetation either side of the A43 cutting (Figure 5) and by

screening bunds next to the internal access road. During activities close to Duddington, careful management and proactive dust control with water will prevent any contribution to background dust.

Table 7 details the location and bearing of potential dust sensitive activities in relation to the site and this has been compared against local meteorological conditions. Meteorological susceptibility has been determined based on the relationship of wind direction and distance from the site. Wind frequency is important as dust can only be dispersed by winds, and deposition of dust is a simple function of particle size, wind speed and distance. The closer the distance, the higher the potential risk of dust impact.

The prevailing winds in the area, in common with most of the UK, are south-westerly, thereby predominantly dispersing any potential dust emission to the north-east of the site. The nearest property to the north-east of the site is Cuckoo Lodge, approximately 1,000m from the extension area. As a consequence of the wind patterns, easterly winds, required to potentially transport dust towards Duddington, are very infrequent, only occurring for 2% of the time, and the likelihood is that properties to the west of the site have no risk of potentially elevated dust levels for 98% of the time. The risk is then further reduced as in the UK, rain or damp conditions occur for at least 30% of the time, thereby preventing any potential dust emissions. The meteorological susceptibility analysis identified that all the surrounding areas have low, or very low susceptibility.
Table 7
Meteorological Susceptibility of Potential Dust Sensitive Receivers

<table>
<thead>
<tr>
<th>Indicative Location</th>
<th>NGR</th>
<th>Bearing from the Extension</th>
<th>Nearest Phase</th>
<th>Approximate distance from nearest phase (m)</th>
<th>Wind Frequency (%)</th>
<th>Meteorological Susceptibility (from Table 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cuckoo Lodge</td>
<td>TF003016</td>
<td>ENE</td>
<td>11</td>
<td>1,000</td>
<td>11</td>
<td>Very Low</td>
</tr>
<tr>
<td>2 Collyweston Great Wood</td>
<td>TF002009</td>
<td>E</td>
<td>10/11</td>
<td>750</td>
<td>10</td>
<td>Very Low</td>
</tr>
<tr>
<td>3 Royal Oak Hotel</td>
<td>SK988004</td>
<td>W</td>
<td>1,2,3</td>
<td>250</td>
<td>2</td>
<td>Very Low</td>
</tr>
<tr>
<td>4 Smallholding</td>
<td>SK990005</td>
<td>W</td>
<td>3</td>
<td>100</td>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>5 Manor Farm</td>
<td>SK989006</td>
<td>W</td>
<td>5</td>
<td>250</td>
<td>2</td>
<td>Very Low</td>
</tr>
<tr>
<td>6 The Pines, Green Lane</td>
<td>SK990008</td>
<td>W</td>
<td>7</td>
<td>250</td>
<td>2</td>
<td>Very Low</td>
</tr>
<tr>
<td>7 Robinswood</td>
<td>SK991011</td>
<td>WNW</td>
<td>11</td>
<td>250</td>
<td>3</td>
<td>Very Low</td>
</tr>
<tr>
<td>8 Collyweston</td>
<td>SK994025</td>
<td>N</td>
<td>11</td>
<td>1,500</td>
<td>7</td>
<td>Very Low</td>
</tr>
</tbody>
</table>

The micrometeorology of the site is affected to a great extent by the presence of screening provided by existing vegetation and screening bunds. The internal access road for example, which borders the western part of the existing site is screened by a small copse and an existing screening bund (Figure 6) which will suppress dust emissions by reducing wind velocities over bare ground hence reducing the level of wind erosion. Tree lines can also act as an efficient dust filter and can be a useful dust control safeguard.
Studies by the United States Environmental Protection Agency\textsuperscript{14} suggest that a wind break of 50 per cent porosity, which is five times the length of the source width, of height equal to the emission height and positioned at a distance twice the height of the source, would reduce dust emissions by up to 60 per cent.

2. Assessment

2.1 Site Design and Sources of Dust

The proposed quarry extension area (to replace the remainder of the eastern extension) is located on land to the west of the existing quarry and backfill operations and has the potential to be worked in the same manner as the existing quarry and backfill operations.

The extension area is approximately 17 - 18 hectares and contains an estimated 3 million tonnes of limestone rock, with the potential to realize approximately 2 million tonnes of saleable mineral. The amount of potential recoverable/saleable rock aggregate and building stone is lower than the overall estimate of in-situ rock due to the limestone fines waste produced during the processing of the mineral.

The existing quarry processing area, involving mobile plant and machinery, is sited in the base of the main area of quarry working, which currently is in the eastern quarry extension area. As part of a western quarry extension the quarry plant would be sited in the base of the proposed workings.

During soil stripping a bulldozer is used to build and shape the screening/storage mounds. The existing site access and internal access roads would continue to be used by all traffic associated with the quarry and landfill. A bulldozer or excavator will be used to strip the top and sub-soils and place these in storage for eventual use in restoration. The hydraulic excavator would then be utilised to remove the mineral and load into articulated dump-trucks that operate between the extraction and processing areas. These intermittent operations provide a stockpile of material for processing and are subject to seasonal weather conditions.

All of the quarry infrastructure and processing plant already exists on site and no additional or new facilities are proposed. The retention of the quarrying operations would provide the essential continuity in the supply of minerals to the local area. The existing site infrastructure includes an office, toilets, mess room, weighbridge, diesel fuel storage and wheel cleaning equipment.

\textsuperscript{14} Relative effectiveness of chemical additives and wind screens for fugitive dust control. (2006) Drehmel D., Daniel B., Carnes D.
To access the limestone, soils will be stripped and placed into temporary storage for later use in restoration. The soils will be placed at the perimeter of the quarry workings to provide boundary screening. Any overburden will be stripped and placed directly as part of the backfilling and reclamation or held in temporary storage.

Limestone rock will be extracted using a 360 hydraulic excavator. The excavator will pull the limestone from the working face and will feed the rock directly through a mobile crushing and screening plant located on the worked quarry floor. The crushed and screened rock will produce a limestone aggregate for sale and export to construction projects. The screened limestone aggregate will be stockpiled on the quarry floor prior to sale and being transported off site.

The limestone aggregate will be collected from the quarry floor stockpiles by HGVs, which will be filled using a loading shovel. The HGVs will export the aggregate off the quarry site using the internal access road and via the weighbridge and then wheel wash facility.

The depth of working will be consistent with that in the existing quarry, with face heights not exceeding 12 m approx. The workings lie above the local water table and are dry without any need for dewatering. The limestone does however retain high moisture content.

As the limestone extraction progresses in the extension, backfilling and infilling will be carried out on a progressive basis to reclaim the quarry and restore the land to its current landform. The backfilling will involve the use of quarry waste/fines from the process, excess clays and overburden as well as clean, inert waste imported from construction projects.

As the infilling/backfilling approaches final levels - reflective of the current landform - soils will be replaced to secure the final restoration and after-use. Following restoration the land will be restored to agricultural use, along with the reinstatement of hedgerows and hedgerow trees, which will contribute to local biodiversity in the field boundaries.

The operating hours of the quarry working and export of minerals in the proposed extension area would be – 07:00-18:00 Monday to Friday and 07:00-13:00 on Saturday. There would be no mineral working or export of minerals from the proposed extension area on Sundays or public/bank holidays.

Site design considerations which will reduce the dust emission potential at Collyweston Quarry include:
- maintaining the existing screening by processing within the quarry void to reduce wind speeds and entrain any fugitive dust;
- placing storage bunds along the western boundary to provide protection from wind;
- material storage piles located within the sheltered quarry area.

Dust is ubiquitous in the environment being dispersed by wind from a wide range of both natural and anthropogenic sources. The existing dust environment around Collyweston Quarry is therefore likely to contain dusts, typically from local agricultural activities, the nearby A47 and from regional and trans-boundary dispersal of dust from the erosion of bare rock, sand, soil and pollen.

Dust is also one of the most complex pollutants to assess because of the infinite variation of sources, particle shapes, sizes, density and their resultant aerodynamic qualities. These qualities also determine the likelihood for a particle to be suspended by wind, transported and potentially deposited. Fugitive dust particles generated from materials handling typically range in diameter from 30 to 300 µm. The largest particles, because of their weight, generally travel only short distances and deposit near to the emission source. The smaller particle sizes however can travel further, especially during dry windy periods. The higher the wind speed the further a particle can be dispersed and the greater the size of particles that can be kept aloft.

The potential sources of dust at Collyweston Quarry can most easily be classed by the size of the emission area. The loading of trucks in the quarry, for example, can be classed as a point source as dust has the potential to be generated in a defined location. Emissions from vehicles travelling to and from the excavation area, in comparison, can be classed as line sources as emissions can occur along the entire route.

<table>
<thead>
<tr>
<th>Table 8</th>
<th>Potential Sources of Dust</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Point Sources</strong></td>
<td></td>
</tr>
<tr>
<td>Loading/Unloading</td>
<td>The site has a high moisture content which will help reduce any potential emissions during loading/unloading.</td>
</tr>
<tr>
<td>Mobile Processing plant</td>
<td>The processing plant has the potential to generate point source emissions of dust although this is well controlled with containment and suppression.</td>
</tr>
<tr>
<td><strong>Line sources</strong></td>
<td>Access/Haul road movements</td>
</tr>
<tr>
<td></td>
<td>Vehicle movements associated with the access/haul roads have the highest potential for dust emission but roads will be conditioned with water to reduce potential emissions.</td>
</tr>
<tr>
<td><strong>Area sources</strong></td>
<td>Soil handling</td>
</tr>
<tr>
<td></td>
<td>Soil handling during restoration will be managed carefully to ensure the risk of dust emissions is minimised.</td>
</tr>
<tr>
<td></td>
<td>Stockpiles</td>
</tr>
<tr>
<td></td>
<td>Storage of material in stockpiles can produce large areas of exposed dusty material subject to wind whipping.</td>
</tr>
</tbody>
</table>
Vehicle movements on the internal access/haul roads are likely to present the highest risk of dust nuisance as emissions can increase rapidly in proportion to vehicle speed and traffic volume but despite this risk, research has shown that the majority of 50 µm particles, typically produced from un-surfaced roads, deposit rapidly within 8m. For 20 µm particles a similar decline occurred at 30m\textsuperscript{15}. The movement of soil and the creation of bunds are also likely to present a high dust nuisance risk as this activity occurs outside the quarry void, often close to sensitive receivers when machinery movements can lift dust into the air. Disturbed soils, with no vegetation cover, can also become exposed to strong winds.

### 2.2 Site Dust Management

At Collyweston Quarry the site manager is responsible for ensuring effective dust control and this relies on good site operational controls such as:

- identifying and monitoring the intensity of potential dust generating activities;
- monitoring weather conditions during dust sensitive periods;
- responding to potential and actual dust problems;
- planning contingency measures;
- ceasing operations when major impacts cannot be avoided.

The Site Manager will have responsibility for ensuring that the risk of any potential dust nuisance arising from quarrying activities are minimised. The likelihood of failure of any dust prevention management techniques is likely to be low. A summary of the dust control techniques which are utilised at Collyweston Quarry are outlined in Table 9.

Should any problems arise action will be undertaken in accordance with the details in the Dust Management Plan. In response to the need to undertake any dust monitoring the Site Manager (or appropriate) shall undertake an immediate review of the management practices in order to identify and rectify potential problems.

\textsuperscript{15} Particle re-suspension from an asphalt road caused by car and truck traffic. Atmospheric Environment 7 p291-309
<table>
<thead>
<tr>
<th>Table 9</th>
<th>Callyweston Quarry Dust Control Plan</th>
</tr>
</thead>
</table>
| **General** | • A high standard of housekeeping shall be maintained at all times.  
• All operatives receive formal training and instruction in relation to the control of the process and emissions to air.  
• A daily log book is maintained  
• Visual dust assessments are made twice daily by competent persons |
| **Soil Striping and Handling** | • Soil removal will be restrict to low risk meteorological periods.  
• Only small scale plant will be used.  
• The duration of the activity will be minimal.  
• Disturbed surfaces will be re-seeded as soon as is practicable.  
• Screening bunds will be created to provide protection from winds. |
| **Extraction** | • The limestone has a high moisture content.  
• The materials handled will be wet/damp.  
• Drop heights will be minimised.  
• All vehicle loads will be sheeted and loads inspected to ensure no potential spillages.  
• A water bowser and sprays will be available to moisten material if required. |
| **Access/Haul road** | • Vehicle speeds will be restricted.  
• Unsurfaced roads will we damped down when required using a water bowser.  
• Loading and unloading will occur in areas protected from wind.  
• Drop heights will be kept to a minimum wherever practicable.  
• A water bowser and sprays will be available to moisten material if required. |
| **Mobile Processing plant** | • The processing of wet/damp materials will ensure that dust generation is minimised.  
• The weighbridge will be damped down when required.  
• All equipment referred to in the EPR Permit shall be well maintained and serviced.  
• Mobile Plant – all mobile plant brought onto site must hold a permit under the above legislation and operate in accordance with its permitted conditions |
| **Drilling Equipment** | • All rock drilling equipment shall be fitted with dust suppression.  
• Dusts collected by arrestment equipment shall be discharged into suitable containers that do not give rise to a secondary dust problem. |
| **Stockpiles** | • Stockpiles will be sprayed with water to maintain moisture content if required.  
• Stockpiled material washed and screened to remove dusty fractions prior to external storage.  
• Stockpiles will be located in areas protected from prevailing winds.  
• The storage areas are located away from sensitive areas. |
| **Waste Disposal** | • Drop heights from tipping trucks will be kept to a minimum.  
• Tipping will be undertaken a slowly as possible.  
• A water bowser and sprays will be available to moisten material if required. |
| **Vehicle Movements and Housekeeping** | • Yard area will be kept clean.  
• The site wheel wash shall be regularly maintained  
• Vehicle exhausts will be directed above the horizontal.  
• A road sweeper will be regularly used.  
• Training will be received for all employees.  
• Site procedures and daily records. |
| **Restoration** | • Restored areas will be grasses as soon as practicable.  
• Soil removal will be restrict to low risk meteorological periods. |

The results of all visual dust monitoring observations, along with remedial actions implemented and details of who carried out the monitoring is recorded. All personnel employed on-site are aware of and will undertake visual monitoring for dust throughout the working day. Daily monitoring in the form of a visual assessment is undertaken at the site.
Any problem observed, i.e. raised clouds of dust, is reported to the Site Manager (or the next level of management if they are unavailable), who is responsible for investigating the cause and implementing any necessary remedial action. All personnel who undertake particulate observations have received appropriate training, guidance and instruction in how to carry out the task.

Effective preventative maintenance are also undertaken on all plant and equipment concerned with the control of emissions to the air and spares and consumables are available at short notice in order to rectify breakdowns rapidly.

Plant personnel complete a daily site diary. This is kept on site, and is available for inspection. Daily comment is made about weather conditions on site when necessary. Daily checks are carried out to ensure that there are no visible emissions across the boundary.

### 2.3 Soil Stripping and Handling

Soil and overburden will be removed using a hydraulic excavator with dump trucks being used to take the material to either create a temporary storage/screen bund to place the soil directly on to a previously worked area for final restoration. A hydraulic excavator would also be used for bund formation.

The soil storage mounds will be created to the heights shown on the plans and profiled using the excavator and will be grass seeded to bind the soil to prevent any wind-blown dust arising and erosion.

### 2.4 Extraction

The limestone rock will be extracted using a 360 hydraulic excavator. The excavator will pull the limestone from the working face and will feed the rock directly through a mobile crushing and screening plant located on the worked quarry floor. The crushed and screened rock will produce a limestone aggregate for sale and export to construction projects. The screened limestone aggregate will be stockpiled on the quarry floor prior to sale and being transported off site.

When blasting is undertaken drilling equipment and blast design will utilise best practice dust control measures.
2.5 Access/Haul Roads

Excavated material will be loaded onto dump trucks and taken to the mobile processing plant via an internal haul road. Emissions from the haul roads are likely to have the highest potential to generate dust emissions. Haul roads will however be dampened in dry conditions, and haulage speeds controlled. The high moisture content of the limestone will ensure that the potential for dust emissions are reduced when compared to other types of quarrying. A dust suppression unit bowser (Figure 7) is used on a regular basis.

![Dust Suppression Unit](image)

2.6 Mobile Processing Plant

Bullimores propose to continue utilising the existing mobile processing plant. The plant is sited in the quarry void, in an area which is sheltered from the prevailing wind.

2.7 Stockpiles

Stockpiles will be generally sheltered from prevailing winds by the quarry void, existing vegetation and soil storage bunds. Profiling and minimised drop heights will reduce the likelihood of wind whipping. Loading to and from stockpiles will also be carried out in such a manner as to minimise wind-borne dust e.g. taking place at sheltered points. Periodic conditioning with water will occur depending upon weather conditions.
2.8 Loading/Unloading

Vehicles transporting mineral from the site will be loaded within the sheltered plant site area and when arriving or leaving the site with loads that may give rise to dust in transportation will be required to be sheeted. Such controls are not normally required for the transportation of materials which are above 75mm, as these materials are unlikely to give rise to dust emissions. Sheetig prevents dust emissions from road vehicles and when dry aggregates are loaded or unloaded dust emissions are minimised, when required, by water suppression. No loaded trucks carrying aggregate shall leave the site unsheeted. A wheel-wash is also provided for vehicles exiting the plant.

2.9 Restoration

Restoration of the site will be undertaken progressively using imported waste material to restore each phase to the levels required to receive the final soil placement. The final sub soil and topsoil covering to achieve the restoration profiles for each phase will be obtained from either direct placement of soils stripped as part of the preparation for the subsequent working phases or from the soil storage mounds of the previously stripped soils located around the edge of the site.

2.10 Landfilling

Landfill operations are regulated by the Environment Agency (EA) under Pollution Prevention and Control (PPC) Permit LP3036SB. The permit includes a number of housekeeping conditions designed to ensure that air emissions are minimised.

2.11 Vehicle Movements

Access from Collyweston Quarry onto the public highway is via the existing access/haul road leading onto the A47. It is proposed that the continued operations will not lead to any increase in HGV movements from the site. A wheel wash (Figure 8) is provided next to the weighbridge to prevent debris being carried onto the highway by vehicles. All vehicles exiting the site are required to use the wheel wash. A high standard of housekeeping is maintained and any spillages that may give rise to dust emissions are cleaned up promptly, normally using wet handling methods. Vehicle exhausts will be directed above the horizontal to prevent exhausts blowing onto road surfaces. All trucks are sheeted to prevent any dust arising.
Given the site dust control measures above there will be no dust on the highway as a result of the vehicle movements and no anticipated increase in NO$_2$ emissions.

3. Potential Impacts

An assessment of the existing and proposed extension activities at Collyweston Quarry has been undertaken and mitigation and control measures have been described and compared against industry best practices. It has been concluded that Collyweston employs industry best practice in managing potential dust emissions which are further enforced through a site environmental air pollution control permit. Landfilling activities involving the importation of waste materials have also been assessed which are also subject to environmental permitting. The highest potential risk of dust emissions at the site are from trucks travelling on the internal access/haul roads, however this can be easily managed by the use of water suppression and this activity is carefully regulated.

The potential risk of emissions is directly related to emission sources, inherent risk and the resultant control measures. A comparison with the classification of potential emissions in Table 10 indicates that the potential risk from Collyweston and the proposed extension can be classified as ‘low’.
Table 10
Risk of Potential Emissions

<table>
<thead>
<tr>
<th>Potential Risk</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>The proposal has a very high risk of emission. Management and control measures may be inadequate to control all identified sources of emission. It is very likely that the proposed site will cause exceedances of Local Air Quality Objectives.</td>
</tr>
<tr>
<td>Moderate</td>
<td>The management and control measures appear adequate but the proposals have a high inherent risk. Emissions could occur as a result of a procedural or design failure. There is a known potential for emissions to cause exceedances of Local Air Quality Objectives but exceedances are not certain.</td>
</tr>
<tr>
<td>Low</td>
<td>The proposal has inherently low risk, is well managed and controlled and/or has extensive regulatory controls to minimise emissions from all emission sources. There is likely to be no discernible change in local air quality as a result of the proposal.</td>
</tr>
</tbody>
</table>

By comparing the potential risk of an emission with the sensitivity and susceptibility information detailed in Table 6 and Table 7 an overall likelihood rating can be derived. The potential likelihood of dust related impacts on the closest dust sensitive receivers has been assessed and is presented in Table 11.

Table 11
Potential Risk of Air Quality Impacts from Collyweston Quarry

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Sensitivity (from table 6)</th>
<th>Susceptibility (from table 7)</th>
<th>Emission (from table 10)</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cuckoo Lodge</td>
<td>Moderate</td>
<td>Very Low</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>2 Collyweston Great Wood</td>
<td>Low</td>
<td>Very Low</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>3 Royal Oak Hotel</td>
<td>Moderate</td>
<td>Very Low</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>4 Smallholding</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>5 Manor Farm</td>
<td>Moderate</td>
<td>Very Low</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>6 The Pines, Green Lane</td>
<td>Moderate</td>
<td>Very Low</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>7 Robinswood</td>
<td>Moderate</td>
<td>Very Low</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>8 Collyweston</td>
<td>Moderate</td>
<td>Very Low</td>
<td>Low</td>
<td>Very Low</td>
</tr>
</tbody>
</table>

As the potential risk of emissions from the site is ‘low’, at locations with a ‘low’ or ‘very low’ susceptibility and ‘moderate’ sensitivity the overall classification of the likelihood of an impact is also classed as ‘very low’.

Risk ratings have been derived from assessment of the following:

- the potential risk of dust emissions associated with the proposed activities;
- the distance from potential dust emission sources to dust sensitive receivers;
- the frequency of winds from potential dust emission sources to dust sensitive receivers.
4. Conclusion

Quarrying activities at Collyweston Quarry are Permitted under the Environmental Permitting (England and Wales) Regulations 2010 by East Northamptonshire Council. The existing EPR permit contains 36 conditions which will ensure that emissions are tightly controlled and risks are minimised.

An assessment has been made of all sources of dust at the site and resultant management controls are in place to ensure that the potential for any emissions is low. Collyweston Quarry utilises extensive dust containment and mitigation measures and it is highly unlikely that any of the surrounding neighbouring activities will experience an increase in dust levels. The mobile processing plant is well screened within the quarry void and the site employs a number of additional best practice dust control measures.

There are no highly dust sensitive activities located near the quarry and an analysis of activities and sensitivities surrounding the site has been undertaken. An analysis of wind patterns in the area has also been undertaken and used to calculate susceptibility to dust dispersal. The assessment has identified neighbouring activities as having a low/very low susceptibility of potential dust impacts. The nearest sensitive locations are located in Duddington and during periods when the site is working close to Duddington the potential for dust related impacts will be carefully managed as Bullimores has indicated that it will take extra care to monitor meteorological conditions and will apply additional dust control measures such as water bowsers to prevent any potential dust emissions.

As the potential for air emissions from Collyweston Quarry are considered to be low, and the distance and meteorological susceptibility of neighbouring activities is very low, it is therefore highly unlikely that any of the surrounding areas will experience any change in air quality and the overall likelihood of any air quality impacts can be considered to be very low.

The proposed western extension to Collyweston Quarry has a low potential to cause dust related disturbance as:

- the site design and site regulatory conditions will ensure there is a low risk of potential dust emissions;
- the distance to dust sensitive receivers and their location with respect to prevailing winds and rainfall in the area ensure a low risk of potential impact on the nearest dust sensitive receivers;
- the quarry employs industry best practice design including extensive dust control measures; and
- the site is subject to extensive planning and environmental controls which can be used to monitor and regulate any potential emissions.
1. The Pegson XR400, serial number 400337EKXR and Kleeman Reiner 102, serial number 4040700, shall not be operated outside of the quarry boundary as shown in condition A.

2. The operator shall keep a log book for records of inspections, tests, monitoring, and visual assessments. Details shall include the date and time, the findings, any remedial action taken, name of person carrying out assessment. Any complaints received concerning emissions to air shall also be recorded. The records shall be:
   a) kept on site for the duration of the crushing
   b) kept by the operator for at least two years; and
   c) made available for the regulator to examine.

3. Any historical records kept off-site shall be made available for inspection within one working week of any request by the regulator.

4. Visual assessments of dust emissions shall be made frequently from the process, including screens, conveyors, stockpiles and loading operations. At least one visual assessment shall be made each morning and afternoon during normal operations. More frequent assessments shall be made during abnormal operating or weather conditions. The time, location and result of these assessments shall be recorded in the log book.

5. All visual assessments shall be made by competent persons who have been trained for the purpose of:
   a) assessing dust emissions to atmosphere from the process
   b) identifying any likelihood of contravention of this permit
   c) capable of controlling or rectifying operating and site conditions that might lead to any contravention of the permit.

6. Where, in the opinion of the regulator, there is evidence of airborne dust from the process off the site, corrective action shall be taken without delay. If the source of the emissions is uncertain the operator shall make their inspection and assessment, and where necessary undertake ambient monitoring with the aim of identifying those process operations giving rise to dust. The monitoring may either be by a British Standard method or a method agreed by the regulator. In these situations, determination of wind direction may be required.

7. All releases to air, other than condensed water vapour, shall be free from persistent visible emissions.

8. All emissions to air shall be free from droplets.

9. In the case of abnormal emissions, malfunction or breakdown leading to abnormal emissions the operator shall:
   a) investigate and undertake remedial action immediately
   b) adjust the process or activity to minimise those emissions; and
   c) promptly record the events in the log book and action taken.

10. East Northamptonshire Council should be informed without delay if there is an emission that is likely to have an effect on the local community.

11. Loading to and from stockpiles, and construction and management of stockpiles shall be carried out in such a manner as to minimise wind-borne dust, e.g. taking place at sheltered points.
12. Storage areas where there is vehicular movement should either have a consolidated surface which should be kept clean and in good repair, or should be kept wet. Sweeping, wetting or sealing techniques are techniques that may be used to reduce dust emissions from roads. The technique used depends upon the type of roads under consideration.

13. When using storage bays, storage heights should be lower than external walls of the bays unless suppression is provided to control emissions. Stock should not be piled forward of the bay.

14. Storage areas should be kept in a condition that does not give rise to visible dust emissions. Stockpiles should be wetted where necessary to minimise dust emissions. Fixed water sprays should be installed for long term stocking areas if appropriate.

15. Unused stocking areas should also be controlled to prevent visible dust emissions.

16. Where the use of water as a method of dust suppression is necessary in order to meet the emission limits, it should be used. In such circumstances, if water of the required pressure is not available for use on the suppression system, then the process should not operate.

17. A supply of water sufficient to simultaneously service all permitted plant and stockpile/surface dampening shall be maintained readily available in all climatic conditions.

18. Where water suppression does not provide adequate dust control to comply with the emission limits then the process should be carried out under cover. If necessary dust extraction and arrestment should be employed.

19. If dust extraction and arrestment plant is required to meet the emission limits then this should be operational.

20. The discharge from crushers and screens onto conveyors or into other equipment should be enclosed as far as practicable.

21. Conveyors shall be of sufficient capacity to handle maximum loads without spillage.

22. Where dusty materials are conveyed, the conveyor and any transfer points shall be provided with adequate protection against wind whipping.

23. The conveyor shall be fitted with means for keeping the belt clean.

24. Conveyor belts shall not be overloaded.

25. Vehicles should be loaded in such a way as to minimise airborne dust emissions.

26. The vehicle should be sheeted or otherwise totally enclosed as soon as possible after loading and before leaving the site. This need not be applied to the handling of crushed material greater than 75mm.

27. Where necessary wheel-cleaning facilities should be provided and used by vehicles before leaving the site.

28. Processed materials likely to generate dust should be conditioned with water prior to internal transfer.
29. Roadways in normal use and any other area where there is regular movement of vehicles should have a consolidated surface capable of being cleaned. They should be kept clean in order to prevent or minimise dust emissions. They should be kept in good repair.

Management

30. Spares and consumables – in particular, those subject to continual wear – should be held on site, or should be available at short notice from guaranteed local suppliers, so that plant breakdowns can be rectified rapidly.

31. Training of all staff with responsibility for operating the process should include:
   • awareness of their responsibilities under this permit, for example;
   • minimising emissions on start up and shut down
   • action to minimise emissions during abnormal conditions.

32. Only trained and competent persons appointed by the operator shall manage and operate the process, monitor process emissions and compliance with this permit, make progress records and reports, and maintain process equipment.

33. Records of all required competencies and training provided for purposes of securing compliance with this permit shall be kept in the log book. These training records shall confirm the identities, competencies and training of all persons authorised by the operator to manage, operate or monitor compliance of process operations.

34. A written maintenance programme shall be provided to the regulator with respect to pollution control equipment; and such a record shall be made available for inspection.

35. If the operator proposes to make a change in operation of the installation, he must, at least 14 days before making the change, notify the regulator in writing. The notification must contain a description of the proposed change in operation. It is not necessary to make such a notification if an application to vary this permit has been made and the application contains a description of the proposed change. In this condition ‘change in the operation’ means a change in the nature or functioning, or an extension of the installation, which may have consequences for the environment.

36. The best available techniques shall be used to prevent or, where that is not practicable, reduce emissions from the installation in relation to any aspect of the operation of the installation which is not regulated by any other condition of this permit.

End of Permit