



SHORT-TERM OPERATING RESERVE (STOR) POWER PLANT
TWIBELL STREET, BARNSELEY

AIR QUALITY ASSESSMENT

July 2017

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1.0 INTRODUCTION

1.1 Background

This air quality assessment has been undertaken by Isopleth Ltd on behalf of UK Capacity Reserve Ltd ('UKCR').

The assessment considers air quality impacts associated with the proposed development of a short-term operating reserve (STOR) peaking power plant at their site on land at Twibell Street, Barnsley, S71 1JE (Figure 1). The site lies within the administrative area of Barnsley Metropolitan Borough Council (MBC).

The potential impacts of the proposed development on local air quality during the construction and operational phases has been assessed. The type, source and significance of potential impacts are identified and the measures that should be employed to minimise these impacts are described.

The key pollutants associated with operation of the spark ignition engines considered in this assessment are: oxides of nitrogen (NO_x as NO_2), and carbon monoxide (CO), the primary pollutants arising from the combustion of natural gas. Other pollutants, such as sulphur dioxide (SO_2), sometimes associated with the operation of spark ignition engines (when run on biogas) are generated in negligible levels when using this fuel type. Predicted ground level concentrations of these pollutants are compared with relevant air quality standards and guidelines for the protection of human health and sensitive habitats.

The assessment approach and assumptions have been agreed with Chris Shields, Technical Officer (Pollution Control), Regulatory Services Barnsley MBC.

1.2 Scope

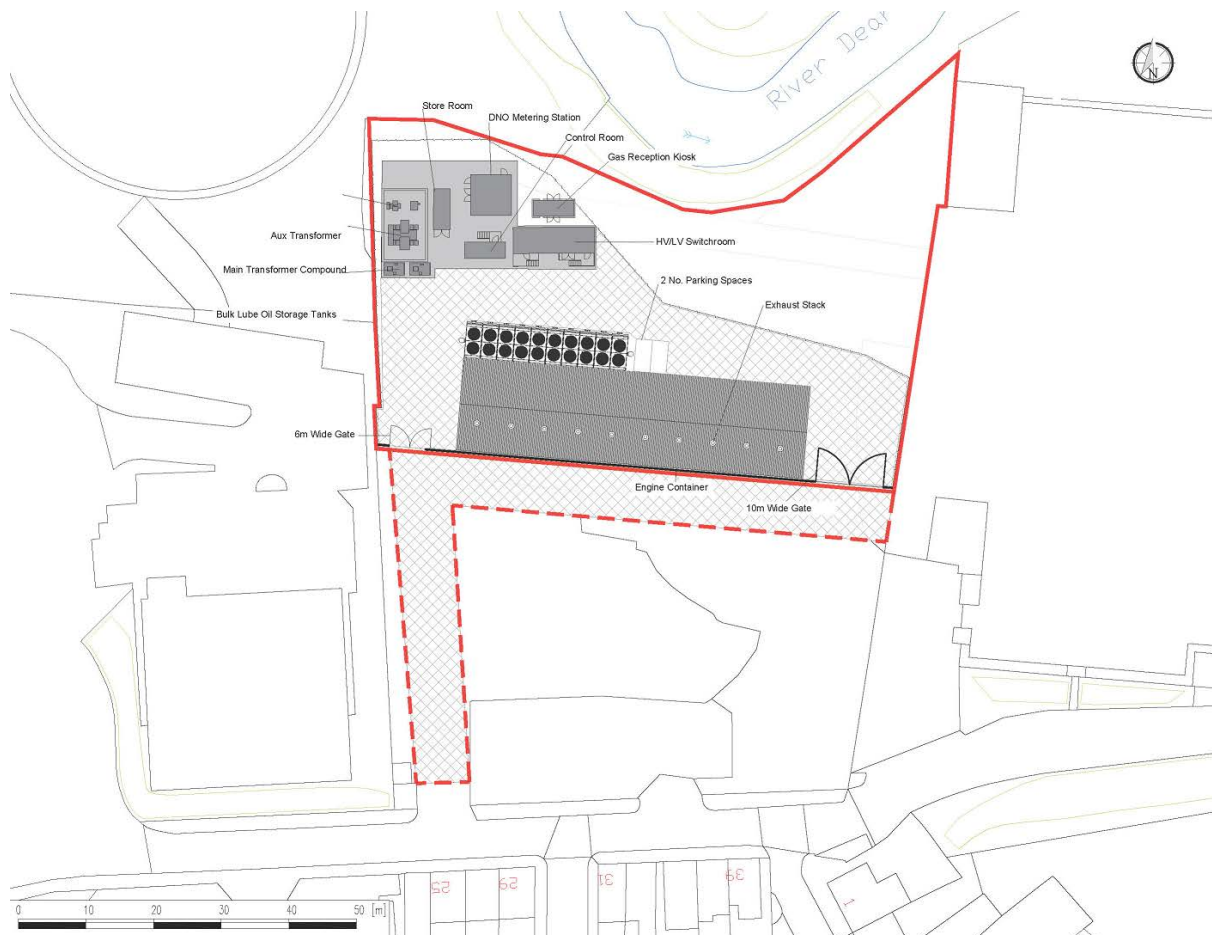
This detailed assessment report relates to the potential impact of air pollutants from the construction and operation of the STOR. Results of the dispersion modelling for engine exhaust emissions are presented in terms of concentrations, with a description of magnitude and also determination of significance where relevant.

2.0 SITE DESCRIPTION

2.1 Location

The site is located on land at Twibell Street, Barnsley, S71 1JE. The approximate National Grid Reference for the site is 435225, 407130. A layout and location plan of the site is presented as Figure 1.

Figure 1: Site Location



The closest residences are situated to the south along Twibell Street itself.

2.2 Proposed Development

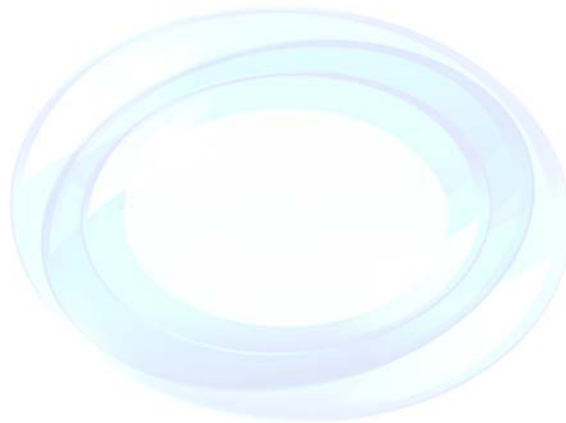
The site is to operate on a largely unmanned basis, remotely operated by National Grid and UKCR. The standby, natural gas fuelled spark ignition engines are to participate in the National Grid's Short Term Operating Reserve (STOR) programme to provide balance to the National Grid during unexpected periods of high demand for electricity or where there are constraints on electricity available in England and Wales.

Generally, a STOR power plant operates up to c.300 hrs per year, about 3.5% of the time, but in fact have just run for just a few 10's of hours per year and on average such units operate

for c.150 hours per year, almost entirely during the winter months. The latest National Grid Annual STOR report which indicates that the average running time for a STOR 'call' as approximately 100 minutes and that 90% of these calls were for less than 3½ hours in duration.

This air quality assessment assumes that the STOR will operate for a maximum of 1500 hours per year, which is considered to be a 'realistic worst case' scenario as it is envisaged that it will operate for fewer hours than this assumption.

This air quality assessment has been based on the installation of 10 No. 2.0MW_e Cummins spark ignition engines, fuelled by natural gas, for electricity generation that together will generate a total of 20.0MW_e with a thermal input just less than 50MW_{th}. Emissions to air will be via 10 No. engine exhausts of 13.6m in height, each serving a single engine. All engines will be housed inside a single building.



3.0 REGULATORY STANDARDS AND GUIDELINES

3.1 International Legislation and Policy

European Directive 2008/50/EC of the European Parliament and of the Council of 21st May 2008, sets legally-binding Europe-wide limit values for the protection of public health and sensitive habitats. The Directive streamlines the European Union's air quality legislation by replacing four of the five existing Air Quality Directives within a single, integrated instrument.

The pollutants included are sulphur dioxide (SO₂), nitrogen dioxide (NO₂), particulate matter of less than 10 micrometres (µm) in aerodynamic diameter (PM₁₀), particulate matter of less than 2.5 µm in aerodynamic diameter (PM_{2.5}), lead (Pb), carbon monoxide (CO), benzene (C₆H₆), ozone (O₃), polycyclic aromatic hydrocarbons (PAHs), cadmium (Cd), arsenic (As), nickel (Ni) and mercury (Hg).

Directive 2008/50/EC makes it clear that the ambient air quality standards shall not be enforced where there is no regular public access and fixed habitation:

'2. Compliance with the limit values directed at the protection of human health shall not be assessed at the following locations:

(a) any locations situated within areas where members of the public do not have access and there is no fixed habitation;

(b) in accordance with Article 2(1), on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply;

(c) on the carriageway of roads; and on the central reservations of roads except where there is normally pedestrian access to the central reservation.'

The Industrial Emissions Directive (2010/75/EU) covers combustion plant with a capacity of greater than 50MW_{th}. As such, the plant will not be regulated under IED. However, the medium combustion plant Directive (MCPD) which came into force on 18th December 2015 relates to combustion plant of a certain size (1-50MW_{th}) is regulated in terms of emissions to air, where it is not already covered by other Directives (such as IPPC, for example). The proposed scheme will be encompassed within the MCPD.

The principal requirements of the MCPD are that:

- All combustion plant of a certain size is regulated in terms of emissions to air, where it is not already covered by other Directives (such as IPPC, for example);
- That such plant is logged on a register and regulated by an 'appropriate authority' (likely to be the Environment Agency or Local Authorities);
- The emission concentrations are limited to those stated in the tables. Where they are located in a 'Zone' where the air quality Directive is being exceeded, more stringent limits would apply; and
- Member states may wish to exempt plant which is operating on an intermittent basis as long as the total operational hours remain within the threshold.

This Directive would need to be transposed into UK legislation before it must be applied and this must be achieved by December 2017. The DEFRA Consultation *Improving air quality: reducing emissions from Medium Combustion Plants and Generators* closed on 8th February 2017.

The implications of the UK decision to exit the European Union on the potential adoption of legislation such as the MCPD is unclear at the time of writing.

3.2 Air Quality Strategy for England, Scotland, Wales & Northern Ireland

The Government's policy on air quality within the UK is set out in the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland (AQS) published in July 2007, pursuant to the requirements of Part IV of the Environment Act 1995. The AQS sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK. The AQS is designed to be an evolving process that is monitored and regularly reviewed.

The AQS sets standards and objectives for ten main air pollutants to protect health, vegetation and ecosystems.

The air quality standards are long-term benchmarks for ambient pollutant concentrations which represent negligible or zero risk to health, based on medical and scientific evidence reviewed by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO). These are general concentration limits, above which sensitive members of the public (e.g. children, the elderly and the unwell) might experience adverse health effects.

The air quality objectives are medium-term policy based targets set by the Government which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to the EPAQS recommended standards or WHO guideline limits, whereas others involve a margin of tolerance, i.e. a limited number of permitted exceedences of the standard over a given period.

For some pollutants there is both a long-term (annual mean) standard and a short-term standard. In the case of NO₂, the short-term standard is for a 1-hour averaging period, whereas for CO it is the 8-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants.

Table 3-1
Air Quality Strategy Objectives

Pollutant	Concentrations	Measured As
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times per year	1 hour mean
	40 µg/m ³	Annual mean
Carbon monoxide (CO)	10 mg/m ³	Running 8-hour mean

3.3 Local Air Quality Management (LAQM)

Part IV of the Environment Act 1995 also requires local authorities to periodically Review and Assess the quality of air within their administrative area. The Reviews have to consider the present and future air quality and whether any air quality objectives prescribed in Regulations are being achieved or are likely to be achieved in the future.

Where any of the prescribed air quality objectives are not likely to be achieved the authority concerned must designate that part an Air Quality Management Area (AQMA).

For each AQMA, the local authority has a duty to draw up an Air Quality Action Plan (AQAP) setting out the measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the air quality objectives. Local authorities are not statutorily obliged to meet the objectives, but they must show that they are working towards them.

The Department of Environment, Food and Rural Affairs (DEFRA) has published technical guidance for use by local authorities in their Review and Assessment work. This guidance is commonly referred to as LAQM.TG(16). Full details are available on the DEFRA website.

3.4 National Planning Policy

National planning policy must be taken into account when a Council makes decisions on planning applications and produces its own planning policies.

Published on 27th March 2012, the National Planning Policy Framework (NPPF)⁸ sets out the Government's planning policies for England and how these are expected to be applied. It replaces Planning Policy Statement 23: Planning and Pollution Control⁹, which provided planning guidance for local authorities with regards to air quality.

At the heart of the NPPF is a presumption in favour of sustainable development. It requires Local Plans to be consistent with the principles and policies set out in the Framework with the objective of contributing to the achievement of sustainable development.

Current planning law requires that applications for planning permissions must be determined in accordance with the relevant development plan (i.e. Local Plan or Neighbourhood Plan). The NPPF should be taken into account in the preparation of development plans and therefore the policies set out within the Framework are a material consideration in planning decisions.

The NPPF identifies 12 core planning principles that should underpin both plan making and decision-taking, including a requirement for planning to *'contribute to conserving and enhancing the natural environment and reducing pollution'*.

Under Policy 11: Conserving and Enhancing the Natural Environment, the Framework requires the planning system to *'prevent both new and existing developments from contributing to or being put at unacceptable risk or being adversely affected by unacceptable levels of air pollution'*.

In dealing specifically with air quality the Framework states that:

‘planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in air Quality Management Areas is consistent with the local air quality action plan’.

3.5 Barnsley Metropolitan Borough Council Policies

The Barnsley Core Strategy contains policies (CSPs) which inform the development process in the borough. Two CSPs relate directly to air quality, including **CSP40** Pollution Control and Protection:

‘Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air, surface water and groundwater, noise, smell, dust, vibration, light or other pollution which would unacceptably affect or cause a nuisance to the natural and built environment or to people. We will not allow development of new housing or other environmentally sensitive development where existing air pollution, noise, smell, dust, vibration, light or other pollution levels are unacceptable and there is no reasonable prospect of that these can be mitigated against.’

Also **Policy AQ1** Development in Air Quality Management Areas:

‘Development which impact on areas sensitive to air pollution(a) will be expected to demonstrate that it will not have a harmful effect on the health or living conditions of any future users of the development in terms of air quality (including residents, employees, visitors and customers), taking into account any suitable and proportionate mitigation required for the development.

We will only allow residential development which impact on areas sensitive to air pollution where the developer provides an assessment that shows living conditions will be acceptable for future residents, subject to any required mitigation.

We will only allow development which impact on areas sensitive to air pollution which could cause more air pollution, where the developer provides an assessment that shows there will not be significantly harmful effect on air quality, again subject to any required mitigation.

Furthermore, development which impact on areas sensitive to air pollution due to traffic emissions will be expected to demonstrate suitable and proportionate mitigation relative to the increased traffic emissions generated by the development.’

A detailed review of the Barnsley MBC planning policies is outside the scope of this report.

3.6 Control of Dust and Particulates Associated with Construction

Section 79 of the Environmental Protection Act (1990) states that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Statutory nuisance is defined as:

‘Any dust or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance’, and

‘any accumulation or deposit which is prejudicial to health or a nuisance’.

Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

There are no statutory limit values for dust deposition above which ‘nuisance’ is deemed to exist – ‘nuisance’ is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred. However, research has been undertaken by a number of parties to determine community responses to such impacts and correlate these to dust deposition rates.

In the context of the proposed development, the main potential for nuisance of this nature will arise during the construction phase and this is assessed within this report.

The dust assessment has been completed in line with the requirements of IAQM (2014) ‘Guidance on the assessment of dust from demolition and construction’.

3.7 The Clean Air Act and Chimney Height Memorandum

The first Clean Air Act (CAA) of 1956 followed the Report of the Beaver Committee into Air Pollution, established after the December 1952 smog. This was followed by a second Clean Air Act in 1968. The Law Commission then consolidated the legislation into the Clean Air Act 1993, incorporating also parts of the Control of Pollution Act 1974.

In particular, the CAA:

- prohibits emissions of smoke within smoke control areas, unless using an exempted appliance or an authorised fuel;
- prohibits emissions of dark smoke from any chimney, or from industrial or trade premises, subject to certain exemptions;
- requires approval of many commercial furnaces to ensure they don’t emit too much smoke, grit and dust;
- requires approval of many furnace chimneys to ensure they are high enough to disperse any residual emissions; and
- prohibits cable burning except under an environmental permit.

The Act is generally regarded by the Government¹, Environmental Health professionals² and air quality specialists as outdated and not fit for purpose.

Local authorities are required to approve the chimney heights of 'furnaces' which gas fuels at 366.4 kW or more. The third edition of the Chimney Heights Memorandum (CHM), provides guidance to local authorities in exercising their functions under section 14 of the Clean Air Act 1993. The Memorandum is not a statutory document. It provides a very simple method of calculating the approximate height of chimneys desirable 'in normal circumstances'. Despite its age, the equation in the CHM is sometimes used as a basic screening tool for small boilers (less than 1MW).

The CHM itself states that:

2. Heights determined by these methods should be regarded as a guide rather than as a mathematically precise decision on chimney height. The conclusions may need to be modified in the light of particular local circumstances such as valleys, hills and other topographical features.

In particular, the CHM calculation assumes a relatively low efflux velocity and does not account for temperature or volume flow.

The CHM calculations are now generally regarded as a simple tool which has been superseded with more advanced approaches (such as the use of dispersion modelling derived industrial nomograms presented in DEFRA LAQM TG(16)). Even allowing for this, the method itself recognises that it should be used for screening only and detailed modelling will be required in circumstances where greater accuracy is required.

¹ As part of Government commitments under the 'Red Tape Challenge' a review of the Clean Air Act was commissioned.

² *The Future of the Clean Air Act* www.gov.uk

4.0 ASSESSMENT METHODOLOGY

4.1 Pre-Application Consultation

Pre-application consultation to agree the assessment approach was held with Chris Shields, Technical Officer (Pollution Control), Regulatory Services Barnsley Council. Mr Shields had no concerns regarding the proposed approach and his comments have been incorporated into this assessment.

This assessment has therefore been prepared in accordance with the proposed method and is also consistent with the requirements of *Barnsley MBC Air Quality and Emissions Good Practice Planning Guidance*, 2014.

4.2 Construction Dust

To assess the potential impacts associated with dust and PM₁₀ releases during the construction phase and to determine any necessary mitigation measures, an assessment based on the latest guidance from the Institute of Air Quality Management³ has been undertaken. This approach divides construction activities into the following four categories:

- demolition;
- earthworks;
- construction; and
- track-out.

The assessment methodology then considers three separate dust effects:

- annoyance due to dust soiling;
- harm to ecological receptors; and
- the risk of health effects due to a significant increase in exposure to PM₁₀.

The assessment of risk of dust effects is determined by the scale and nature of the works, which determine the risk of dust arising; and the proximity of sensitive receptors. Risks are described in terms of there being a low, medium or high risk of dust effects for each of the four separate potential activities. This assessment is based on both IAQM criteria and professional judgement.

Mitigation measures are identified where necessary and significance of dust effects determined following such mitigation.

³ IAQM (2014), Guidance on the Assessment of Dust from Demolition and Construction.

4.3 Construction and Operational Traffic

For a proposed development, the DMRB states that air quality impacts associated with traffic should be considered for roads that meet any of the following criteria⁴:

- road alignment will change by 5 m or more; or
- daily traffic flows will change by 1,000 AADT or more; or
- heavy goods vehicle (HGV) flows will change by 200 AADT or more; or
- daily average speed will change by 10 km/hr or more; or
- peak hour speed will change by 20 km/hr or more.

Only properties and designated sites within 200 m of roads affected by the project need be considered. If none of the roads in the network meet any of the traffic/alignment criteria or there are no properties or relevant designated sites near the affected roads, then the impact of the scheme can be considered to be neutral in terms of local air quality and no further air quality assessment is required.

In January 2017 Environmental Protection UK and the Institute of Air Quality Management released guidance for the consideration of air quality within the land-use planning and development control processes '*Land-Use Planning & Development Control: Planning For Air Quality*'. Table 6.2 of that guidance provides indicative criteria for requiring an air quality assessment. This is reproduced in Appendix D of this report.

The numbers of vehicles associated with construction are not predicted to be significant in terms of total emissions or construction duration. Similarly, the proposed development is run automatically, with intermittent maintenance visits.

Therefore on the basis of the DMRB and EPUK screening criteria, it is concluded that further assessment of the impact of traffic associated with the development (i.e. construction or operation) is not required.

4.4 Stack Emissions

The scope of the impact assessment for stack emissions from the proposed development has been determined in the following way:

- review of air quality data for the area surrounding the Site, including data from the Defra Air Quality Information Resource (UK-AIR) and the Air Pollution Information System (APIS);
- desk study to confirm the location of nearby areas that may be sensitive to changes in local air quality; and
- review of emission parameters for the proposed development and dispersion modelling using the Breeze AERMOD 7.12.0.24 dispersion model (version 16216r) to

⁴ Volume 11, Section 3, DMRB (HA 207/07)

predict ground-level concentrations of pollutants at sensitive human and habitat receptor locations.

A single model scenario been assessed which represents the proposed layout with the selected engine option. Manufacturer emission limits have been assumed for the purposes of the modelling assessment and the plant is assumed to be operating at full load:

- for the entire year (8760 hours per year) for short term impacts as these rely on a maximum value rather than average over the period; and
- for 17% of the entire year (1500 hours per year) for annual average impacts.

Environment Agency guidance has been used in relation to the input data for the prediction of annual average impacts from an intermittent process. On this basis each model has been set up to assume the operation of the plant for the entire year, however the long term emissions have been reduced by a factor of 5.84 in order that the same total mass emission is released that would be the case for only 17% of the year:

“You should describe how the concentrations of releases vary over time to ensure that representative operational situations have been assessed. Also describe the plant load at which the emissions are applicable, e.g. batch or continuous, average load or peak load. It may be necessary to evaluate more than one operating scenario to ensure that the risks resulting from the worst case situation have been assessed.

The emissions released from these different operational situations should be related to those that result in long term effects (e.g. continuous releases over a long time period, or regular batch releases, that do not result in great variation in concentration) and those that result in short-term effects caused by intermittent or periodic peak emissions at relatively high concentrations released over a short period of time.” H1 Annex f, p8.

“Different process options may lead to variations on the pattern of releases. For example, a process operated intermittently may give lower annual concentrations but an increased frequency of short-term peaks compared to one run continuously. Furthermore, although the long-term average concentration may have been rendered acceptable by generally good dispersion there may, on occasions, be unacceptable short term peaks.” H1 Annex f, p15.

The input parameters used in the assessment are identified in Appendix A.

4.5 Local Meteorological Data

The dispersion modelling has been carried out using five years (2011-2015) of hourly sequential meteorological data in order to take account of inter-annual variability and reduce the effect of any atypical conditions. Data from the Emley Moor meteorological station has been used for the assessment. This site is the most representative data currently available for the area which provides the level of completeness required for dispersion modelling (i.e. minimal missing data). The use of this meteorological data was agreed with Barnsley Metropolitan Borough Council.

A windrose for all years of meteorological data are presented in Appendix B.

4.6 Topography

The presence of elevated terrain can significantly affect the dispersion of pollutants and the resulting ground level concentration in a number of ways. Elevated terrain reduces the distance between the plume centre line and the ground level, thereby increasing ground level concentrations. Elevated terrain can also increase turbulence and, hence, plume mixing with the effect of increasing concentrations near to a source and reducing concentrations further away.

The proposed STOR facility lies at a basal elevation of around 53m AoD. Topography has been incorporated within the dispersion model and therefore takes into account the setting of the facility within the River Dearne valley.

AERMOD utilises digital elevation data to determine the impact of topography on dispersion from a source. Topographical data for the site has been obtained in OS digital (.ntf) format. Data was processed by the AERMAP function within AERMOD to calculate terrain heights, and interpolate data to calculate terrain heights for sources, buildings etc.

4.7 Building Downwash / Entrainment

The presence of buildings close to emission sources can significantly affect the dispersion of pollutants by leading to downwash. This occurs when a building distorts the wind flow, creating zones of increased turbulence. Increased turbulence causes the plume to come to ground earlier than otherwise would be the case and result in higher ground level concentrations closer to the stack.

Downwash effects are only significant where building heights are greater than 40% of the emission release height. The downwash structures also need to be sufficiently close for their influence to be significant.

The engine building will be 9m to ridge and 7.5m to eaves (an average of 8.25m above ground level) and has been included in the dispersion model to account for potential downwash effects. All other site buildings within 5 stack heights are lower than 40% of the stack and are therefore not relevant to the model.

4.8 Nitric Oxide to NO₂ Conversion

Oxides of nitrogen (NO_x) emitted to atmosphere as a result of combustion will consist largely of nitric oxide (NO), a relatively innocuous substance. Once released into the atmosphere, NO is oxidised to NO₂. The proportion of NO converted to NO₂ depends on a number of factors including wind speed, distance from the source, solar irradiation and the availability of oxidants, such as ozone (O₃).

A conversion ratio of 70% NO_x:NO₂ has been assumed for comparison of predicted concentrations with the long-term objectives for NO₂. A conversion ratio of 35% has been

utilised for the assessment of short-term impacts, as recommended by Environment Agency guidance⁵.

4.9 Sensitive Human Health Receptors

The term 'sensitive receptors' includes any persons, locations or systems that may be susceptible to changes as a consequence of the proposed development. Annual objectives only apply at residences.

A selection of the closest residential receptors to the development which have been used for modelling purposes are shown in Table 4.1.

Table 4-1
Modelled Receptors: Human

Reference	Description	OS GR Xm	OS GR Ym
D1	Twibell Street 1	435058.2	407054.6
D2	Twibell Street 2	435078.6	407051.7
D3	Twibell Street 3	435122.9	407056.6
D4	Twibell Street 4	435198.3	407063.9
D5	Twibell Street 5	435210.5	407064.9
D6	Twibell Street 6	435227.5	407064.4
D7	Twibell Street 7	435244.0	407065.8
D8	Twibell Street 8	435264.0	407069.2
D9	Eaming View 1	435268.9	407052.7
D10	Burton Road S 1	435274.7	407371.4
D11	Burton Road S 2	435292.7	407356.3
D12	Burton Road S 3	435330.2	407348.1
D13	Burton Road Primary School	435290.8	407403.0
D14	Burton Road N 1	435427.5	407344.2
D15	Burton Road N 2	435453.3	407333.9
D16	Burton Road N 3	435496.1	407313.5
D17	Meadow Street	434971.6	406932.3
D18	Newbridge Grove	435674.2	407195.0
D19	Tredis Close	435694.6	407118.1

It is recognised that this list is not exhaustive, however these receptors have been selected in order to provide an indication of impacts in all directions from the proposed development site.

Impacts have also been assessed by use of a receptor grid at 40m (i.e. approximately 3.5 stack heights) resolution across the model domain. These results have been presented as impact isopleths and this allows the concentration at all locations to be determined. These predicted

⁵ AQMAU, Conversion Rates for NO_x and NO₂.

ground level concentrations may then be compared with relevant long term air quality standards and guidelines for the protection of health.

Finally, impacts have been assessed at 10 No. Barnsley Metropolitan Borough Council NO₂ diffusion tube monitoring locations. This enables a comparison of the predicted impact at locations with actual monitoring data (rather than NAQIA backgrounds). It must be noted that not all of these tubes are representative of human exposure.

Table 4-2
Modelled Receptors: Diffusion Tubes

Reference	Tube Reference (2016 ASR)	OS GR Xm	OS GR Ym
M1	DT29	435148.0	407565.0
M2	DT30	435174.0	407499.0
M3	DT32	434757.0	406995.0
M4	DT33	434778.0	406988.0
M5	DT34	435230.0	407443.0
M6	DT35	435310.0	407372.0
M7	DT71	434955.0	406769.0
M8	DT72	434979.0	406918.0
M9	DT73	434951.0	407003.0
M10	DT74	435047.0	407033.0

4.10 Sensitive Habitats and Ecosystems

The presence of the following habitat sites have been assessed:

- Special Areas of Conservation (SACs) and candidate SACs (cSACs) designated under the EC Habitats Directive⁶;
- Special Protection Areas (SPAs) and potential SPAs designated under the EC Birds Directive⁷;
- Ramsar Sites designated under the Convention on Wetlands of International Importance⁸.
- Sites of Special Scientific Interest (SSSI);
- National Nature Reserves (NNR);
- Local Nature Reserved (LNR);
- local wildlife sites; and
- ancient woodland.

⁶ Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.

⁷ Council Directive 79/409/EEC on the conservation of wild birds.

⁸ Ramsar (1971), The Convention of Wetlands of International Importance especially as Waterfowl Habitat.

Where sensitive ecological receptors are present, maximum predicted ground level concentrations of NO_x are compared with relevant critical levels, thresholds of airborne pollutant concentrations above which damage may be sustained to sensitive plants and animals. The development is not a significant source of SO₂ or HCL / HF.

The critical levels are based on monitoring criteria and only apply in the following areas:

- more than 20 km from agglomerations; and
- more than 5 km away from other built up areas, industrial installations motorways and major roads with a traffic count of more than 50,000 vehicles per day.

Nationally, around 37% of designated sites currently fall outside the above criteria and are therefore excluded from the objectives, however, the Environment Agency H1 guidance states that *“the critical levels should be applied at all locations as a matter of policy, as they represent a standard against which to judge ecological harm”*.

Critical loads refer to the threshold beyond which deposition of pollutants to water or land results in measurable damage to vegetation and habitats. Predicted concentrations of SO₂, NO_x and HCl (where applicable) are also used to determine acid and nutrient nitrogen deposition rates, using typical deposition velocities. The maximum predicted deposition rates are compared with site specific critical loads obtained from APIS.

A summary of critical levels for the protection of sensitive ecosystems and vegetation is presented in Appendix C.

There no ecological sites of European or national importance within 2km of the proposed STOR development. The only ecological site within this radius of the site is the Dearne Valley Park Local Nature Reserve, which consists of acidic oak woodland with mosaic of wetland habitats and is of local importance only.

4.11 Council Review and Assessment of Air Quality

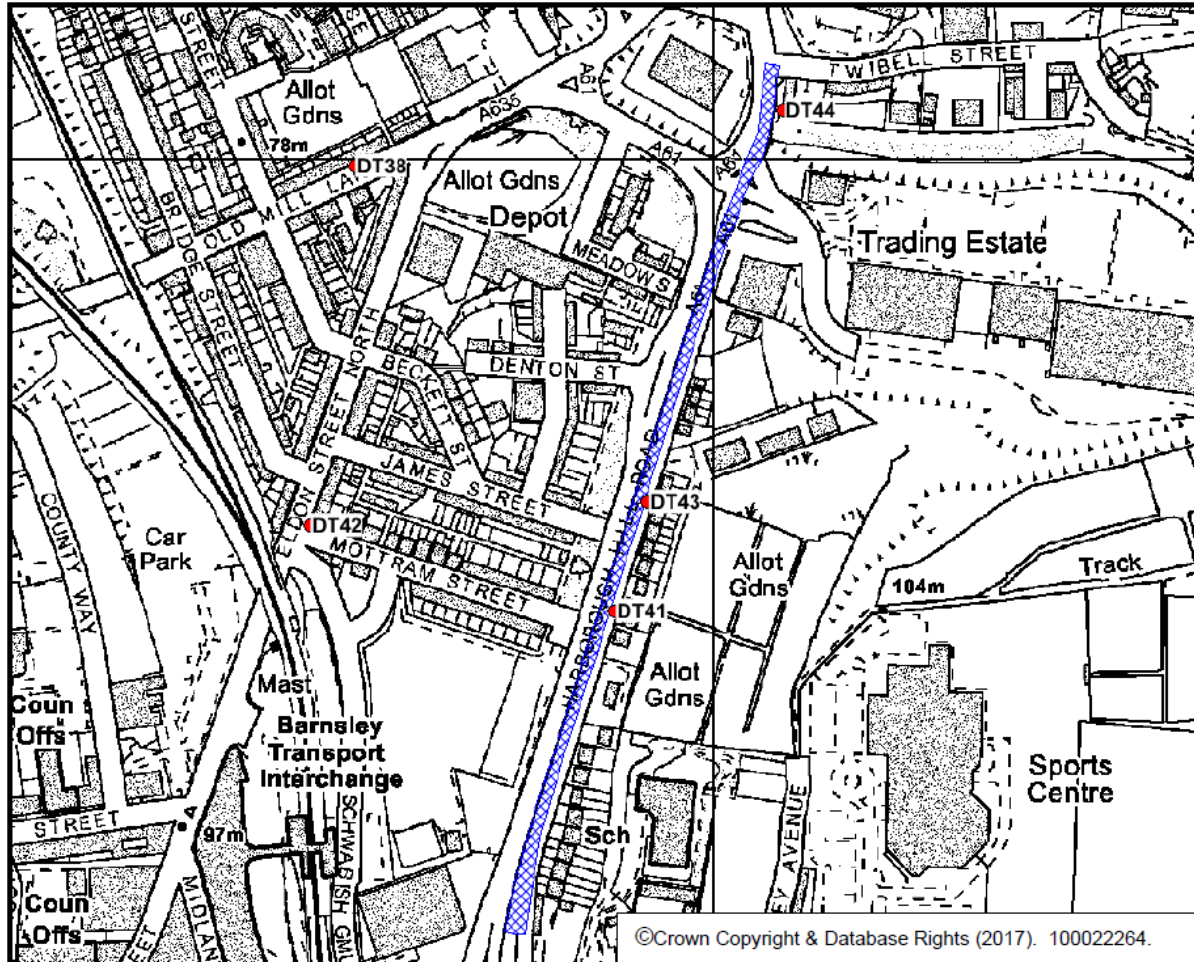
Barnsley MBC 2016 Air Quality Annual Status Report (ASR) (June 2016) is the most recent LAQM report accepted by DEFRA. The 2017 Air Quality ASR (June 2017) is currently in draft form whilst it awaits acceptance from DEFRA.

The review and assessment process for Barnsley MBC has identified an exceedances of the AQS for Nitrogen dioxide, including roads in the vicinity of the development site:

- M1 Motorway, 100 metres either side of the central reservation within the Barnsley Borough;
- A628 Dodworth Road;
- A61 Harborough Hill Road;
- Junction of A633 Rotherham Road and Burton Road;
- A616 passing through Langsett; and
- Junction of A61 Sheffield and A6133 Cemetery Road.

AQMA 4 encompassing and area of the A61 Harbrough Hill Road ends at Twibell Street. The ASR states that NO₂ concentrations within AQMA 4 are significantly affected by increased emissions due to an uphill gradient.

Figure 2: Barnsley AQMA 4



- figure taken from Barnsley ASR 2017

The site is therefore located within / has the potential to impact on, an AQMA.

4.12 Baseline Concentration

4.12.1 Local Monitoring Data

As shown in Table 4-2 above, there are a number of diffusion tubes relevant to the development site.

Diffusion tube results for 2015 and 2016 are shown in Table 4-3, below. A number of diffusion tubes have been re-numbered between the 2016 and 2017 ASR as such the DEFRA approved 2016 references have been used (rather than the draft 2017 ASR).

Table 4-3
Diffusion Tubes: NO₂ Results (µg/m³)

Tube Reference	2015	2016
DT29	29.0	No data
DT30 (DT37)	28.0	29.1
DT32 (DT38)	32.9	33.4
DT33	27.8	No data
DT34	25.6	No data
DT35	34.4	No data
DT71 (DT43)	51.5	52.5
DT72	31.1	No data
DT73	27.8	No data
DT74 (DT44)	43.0	41.1

[Note, references in brackets refer to 2017 ASR]

4.12.2 DEFRA Background Maps

Additional information on background concentrations in the vicinity of the development site has been obtained from the DEFRA background pollutant maps. Background concentrations from grid square 435500, 407500 which is closest to the proposed development site are provided in Table 4-4.

Background concentrations of CO are provided in the 2001 DEFRA background maps. Concentrations have been adjusted to provide estimated background concentrations in 2016 using the adjustment factors set out in the 2003 Technical guidance LAQM.TG(03)¹².

Table 4-4
Estimated background concentrations from DEFRA maps

Pollutant	2017 Concentration (µg/m ³)
NO ₂	19.9
CO	178

The data presented in Table 4-4 shows that estimated DEFRA background concentrations are 'well below' the relevant objectives. It should be noted however that the DEFRA background mapping NO₂ concentration is significantly below any of the 4 Barnsley MBC urban background concentrations (locations CM2, DT10, DT29, DT45) for 2016 as detailed in the 2017 ASR, the lowest of which was DT45 24.1µg/m³ although this location is a significant distance from the development site.

4.12.3 Concentration Used

The Council monitoring indicates that the DEFRA background map underestimates the NO₂ concentration within this area. For this reason, a background value of 25.6 µg/m³ has been used in this assessment which was the lowest monitored concentration in the area ASR 2016 DT34 concentration for 2015 (despite it being a kerbside location).

4.13 Significance of Impact

The EPUK Guidance describes that:

'Impacts on air quality, whether adverse or beneficial, will have an effect on human health that can be judged as 'significant' or 'not significant'. This is the primary requirement of the EIA regulations, but is also relevant to other air quality assessments.

It is important to distinguish between the meaning of 'impact' and 'effect' in this context. An impact is the change in the concentration of an air pollutant, as experienced by a receptor.

This may have an effect on the health of a human receptor, depending on the severity of the impact and other factors that may need to be taken into account. Judging the severity of an impact is generally easier than judging the significance of an effect.'

4.13.1 Construction

IAQM recommends that significance is only assigned to the effect after considering the construction activity with mitigation. Therefore, with suitable mitigation, impacts from construction dust will be 'not significant'.

4.13.2 Operation

In determining impact significance from the pollutants discharged to air, specific reference has been made to Table 6.3 of "Development Control: Planning for Air Quality", which presents descriptors for impact magnitude and impact significance. These descriptors are reproduced below and relate to annual average impacts.

Figure 3: EPUK Impact descriptors for individual receptors

Long term average Concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

The following standard terminology has been applied:

- Substantial beneficial;
- Moderate beneficial;
- Minor beneficial;
- Neutral/negligible;

- Minor adverse;
- Moderate adverse; and
- Substantial adverse.

In relation to short-term impacts, the EPUK guidance states:

'6.38 Where such peak short term concentrations from an elevated source are in the range 10-20% of the relevant AQAL, then their magnitude can be described as small, those in the range 20-50% medium and those above 50% as large. These are the maximum concentrations experienced in any year and the severity of this impact can be described as slight, moderate and substantial respectively, without the need to reference background or baseline concentrations. That is not to say that background concentrations are unimportant, but they will, on an annual average basis, be a much smaller quantity than the peak concentration caused by a substantial plume and it is the contribution that is used as a measure of the impact, not the overall concentration at a receptor. This approach is intended to be a streamlined and pragmatic assessment procedure that avoids undue complexity.'

Therefore, the following descriptors for impact magnitude resulting from short term impacts are applied in this assessment:

- <10%: Negligible;
- 10-20%: Small;
- 20-50%: Medium; and
- >50 Large.

The EPUK guidance also states that:

'judgement of the significance should be made by a competent professional who is suitably qualified. The reasons for reaching the conclusions should be transparent and set out logically.'

An impact which results in an exceedance of an air quality objective will normally be regarded as 'significant'.

5.0 PREDICTED IMPACTS

The assessment results for the modelled scenario are presented in the tables below. These relate to both operation and construction of the STOR facility at Twibell Street:

- Operational: detailed dispersion modelling assessment results for emissions from the engine stacks; and
- Construction: dust risk screening for the construction phase.

5.1 Human Receptors

The predicted process contribution (PC) at the maximum point of impact (offsite) is presented in Table 5.1 for short term limits. The annual objective does not apply at the point of maximum ground level concentration.

Table 5-1
Maximum Predicted Ground Level Concentrations ($\mu\text{g}/\text{m}^3$)

Pollutant	Averaging Period	EAL ($\mu\text{g}/\text{m}^3$)	PC ($\mu\text{g}/\text{m}^3$)	PC (%age of EAL)
NO ₂	1-hour	200	96.6	48 %
CO	8-hour	10000	1016.0	10 %

[*18th Highest value of operational period, equating to 99.79th percentile of entire year.]

The results show that the process contribution for all pollutants is below the relevant objective.

The potentially significant long-term and short-term impacts are compared with the baseline concentrations (i.e. PC + Baseline, or Predicted Environmental Concentration, 'PEC') for the proposed development in Table 5.2.

Table 5-2
Comparison of Predictions with Baseline Concentrations ($\mu\text{g}/\text{m}^3$)

Pollutant	EAL	Baseline	PEC	PEC (as a %age of EAL)
NO ₂	200	51.2	147.8	74 %
CO	10000	178.0	1194.0	12 %

In terms of impact at the point of maximum Ground Level Concentration (GLC):

- The magnitude of change in 1-hour NO₂ impact is 'medium'; and
- The magnitude of change in 8-hour CO impact is 'negligible'.

The results at the receptor locations (including where the annual objective does apply) are shown below.

Table 5-3
Receptor Impact Concentrations ($\mu\text{g}/\text{m}^3$)

Receptor Ref	PC Annual NO ₂	PEC Annual NO ₂	PC 1-hr NO ₂	PEC 1-hr NO ₂	PC 8-hr CO	PEC 8-hr CO
D1	1.1	26.7	49.0	100.2	531	709
D2	1.2	26.8	52.6	103.8	576	754
D3	1.5	27.1	65.0	116.2	744	922
D4	1.6	27.2	75.7	126.9	910	1088
D5	1.5	27.1	70.2	121.4	803	981
D6	1.5	27.1	66.7	117.9	794	972
D7	1.6	27.2	80.0	131.2	911	1089
D8	2.0	27.6	84.9	136.1	931	1109
D9	1.9	27.5	81.3	132.5	839	1017
D10	0.8	26.4	32.9	84.1	314	492
D11	0.9	26.5	35.4	86.6	318	496
D12	1.0	26.6	36.5	87.7	360	538
D13	0.7	26.3	31.4	82.6	261	439
D14	1.2	26.8	35.4	86.6	316	494
D15	1.2	26.8	35.0	86.2	310	488
D16	1.1	26.7	32.9	84.1	304	482
D17	0.4	26.0	30.7	81.9	299	477
D18	0.7	26.3	21.1	72.3	180	358
D19	0.7	26.3	20.4	71.6	158	336

Maximum predicted impacts at receptor locations are within 70% of the objective limits for protection of human health and annual impacts are dominated by the existing background, as can be seen in Table 5.3 and Appendix E. The highest impact is at residential receptor D8 where the increase is 5.0% and the overall PEC is less than 75% of the objective meaning that the impact is 'negligible' according to EPUK criteria.

The largest magnitude of change in 1-hour NO₂ impact at a receptor location is 'medium' at receptor D8.

5.2 Ecological Receptors

The annual and 24 hour NO₂ impacts, to be compared against the relevant critical level are shown in Appendix E. There are no significant effects on ecological receptors including the Dearne Valley Park LNR as the annual average process contribution does not exceed $30\mu\text{g}/\text{m}^3$ at any point and the 24-hour average does not exceed $75\mu\text{g}/\text{m}^3$.

5.3 Diffusion Tube Locations

The annual average NO₂ results at the BMBC diffusion tube locations are shown below.

Table 5-4
Concentration at BMBC Monitoring Locations (µg/m³)

Receptor Ref	PC Annual NO ₂	PEC Annual NO ₂
M1	0.3	29.3
M2	0.4	29.5
M3	0.2	33.6
M4	0.3	28.1
M5	0.6	26.2
M6	0.9	35.3
M7	0.2	52.7
M8	0.4	31.5
M9	0.5	28.3
M10	0.9	42.0

The greatest impact is at location M10 (DT74/DT44), where the predicted 2.2% increase falls in a location which currently falls below 103% of the objective and is therefore described as a 'slight' adverse effect.

5.4 Sensitivity Modelling

The approach taken to the short term predictions (i.e. the STOR operating for all hours of the year) ensures that a realistic worst case is considered given that the short term hourly NO₂ limit relies on a percentile value.

The long term (annual) average NO₂ result may simply be factored to predict the concentration should the STOR run for more or less than 1500 hours⁹.

5.5 Construction Dust Effects

Construction phase effects have been assessed in line with the latest IAQM Guidance, which divides construction activities into the following four categories:

- demolition;
- earthworks;
- construction; and
- trackout.

The assessment of the Site's risk category is primarily based on the following factors:

⁹ For example double the annual average NO₂ result for 3000 hours, halve it for 750 hours.

- the scale and nature of the works;
- the proximity of receptors; and
- professional judgement.

The nearest residential receptors are the residences along Twibell Street. There are no nearby ecological sites of European or national importance.

The precise behaviour of the dust, its residence time in the atmosphere, and the distance it may travel before being deposited will depend upon a number of factors. These include wind direction and strength, local topography and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

The Windrose for Emley Moor meteorological station (2012 to 2016) is provided in Appendix B.

5.5.1 Demolition

The site is currently unoccupied hence there are no significant (potentially dusty) structures that will require demolition prior to construction. The Site is therefore considered a 'Negligible Risk' with respect to dust generation from demolition activities at all receptor locations.

5.5.2 Earthworks

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. This may also involve levelling of the Site and landscaping.

No significant earthworks are expected to be undertaken as part of the construction process, therefore the Site is considered to represent a 'negligible risk' with respect to dust effects on human and ecological receptors during the earthworks phase.

5.5.3 Construction

Dust emissions during construction will depend on the scale of the works, method of construction, construction materials and duration of build.

Construction works at the site will be limited to the construction of the clad engine building. These activities are unlikely to result in significant dust impacts beyond the site boundary, therefore the Site is considered to represent a 'negligible risk' with respect to dust effects on human and ecological receptors during the construction phase.

5.5.4 Trackout

Factors influencing the degree of trackout and associated magnitude of effect include vehicle size, vehicle speed, vehicle numbers, geology and duration.

The number of vehicles accessing the site during the construction period will be insignificant given the small scale of the construction activities and therefore the Site is considered to

represent a 'negligible risk' with respect to dust effects on human and ecological receptors as a result of trackout.

5.5.5 Summary of Dust Risk Effects

A summary of the potential dust risk effects prior to mitigation are presented in Table 5.5.

Table 5-5
Summary of PM₁₀ and Dust Risk Effects

Source/ Receptor	Ecological Receptors	Industrial Users	Residential
Distance from Site	>200m	20 – 50 m	>100 m
Demolition	Negligible Risk	Negligible Risk	Negligible Risk
Earthworks	Negligible Risk	Negligible Risk	Negligible Risk
Construction	Negligible Risk	Negligible Risk	Negligible Risk
Trackout	Negligible Risk	Negligible Risk	Negligible Risk

5.6 Impact Significance: Summary

The dust impact as a result of the site construction will be low / negligible even without mitigation. With mitigation applied the impact will be negligible and therefore 'not significant'.

6.0 MITIGATION

6.1 Construction

It is recommended that 'best practice' measures be implemented, as appropriate, during the construction phase. These may include, for example:

- vehicles carrying loose aggregate and workings should be sheeted at all times;
- regular inspection and, if necessary, cleaning of local highways and site boundaries to check for dust deposits (and removal if necessary);
- visual inspection of site perimeter to check for dust deposition (evident as soiling and marking) on vegetation, cars and other objects and taking remedial measures if necessary;
- ensuring that all construction plant and equipment is maintained in good working order; and
- no unauthorised burning of any material anywhere on site.

The overall effects of potential dust impacts based on this guidance and professional judgement are considered to be "negligible" following the successful implementation of appropriate and best practice mitigation measures, as detailed above. The impact is therefore 'not significant'.

6.2 Operation

UKCR has selected 'lean burn' engines for the STOR proposal. This will lead to a 50% reduction in NO_x emissions at the cost of reduced engine efficiency. This is coupled with the use of elevated stack release (13.6m) which, although this adds to the capital cost of the project, will have significant benefits in terms of ground level impact reduction.

Maintenance of the engines in accordance with an approved service schedule will ensure that emission stay within manufacturers stated limits.

7.0 CONCLUSIONS

An assessment has been carried out to determine the local air quality impacts associated with the construction and operation of the proposed STOR development at Twibell Street. The assessment approach and assumptions have been agreed with Chris Shields, Technical Officer (Pollution Control), Regulatory Services at Barnsley Council.

A qualitative assessment of the impact of dust generating activities during the construction phase has been carried out in accordance with the Institute of Air Quality management Guidance. The Site was classified as posing a negligible risk for dust effects at receptor locations and ecological sites.

The numbers of vehicles associated with construction are not predicted to be significant in terms of total emissions or construction duration. Similarly operational traffic flows are expected to be insignificant compared with baseline flows and have been screened out of the assessment.

Detailed air quality modelling using the AERMOD 7 dispersion model has been undertaken to predict the impacts associated with stack emissions from the gas engines at the Twibell Street STOR. As a worst-case, emissions from the stacks have been assumed to occur for the full year when comparing against short term air quality limits. Actual operational hours are likely to be significantly lower and this is reflected in the long term emission assumptions.

All impacts, human and ecological, are predicted to be below limit values at locations where the Air Quality Directive states that they must be applied. When applying the realistic worst case assumptions above (i.e. that all engines in the STOR are operating for 1500 hours) it can be seen that there is a 'slight adverse' effect at one diffusion tube location within the A61 Harborough Hill Road AQMA. This effect is a result of background levels already being elevated due to traffic climbing the road gradient. There is no potential for a breach of the air quality objectives at residences or designated ecological sites.

Notice:

This report was produced by Isopleth Ltd to present the results of an air quality constraints assessment for the proposed STOR development on land at Twibell Street, Barnsley.

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APPENDIX A: INPUT DATA

Table A-1
Modelling Inputs

Parameter	Modelled Value
No. of engines	10
Engine rating (kWe)	2000
Total capacity (MWe)	20
NOx concentration (mg/nm ³)	250
CO concentration (mg/nm ³)	1000
Exhaust Temp (K)	730.2
Normalised Flow (Nm ³ /s per engine)	2.00
Actual Flow (Am ³ /s per engine)	6.9
NOx mass emission (g/s) per engine	0.50
CO mass emission (g/s) per engine	2.00
Stack Diameter (m)	0.45
Velocity of release (m/s)	43.2
Height of Stack (m)	13.6

Table A-2
Stack Locations

Stack	OS Xm	OS Ym
Engine 1	435205.3	407133.9
Engine 2	435210.3	407133.5
Engine 3	435215.3	407133.1
Engine 4	435220.3	407132.7
Engine 5	435225.3	407132.3
Engine 6	435230.2	407131.8
Engine 7	435235.2	407131.4
Engine 8	435240.2	407131.0
Engine 9	435245.2	407130.6
Engine 10	435250.2	407130.2

APPENDIX B: CLIMATE DATA

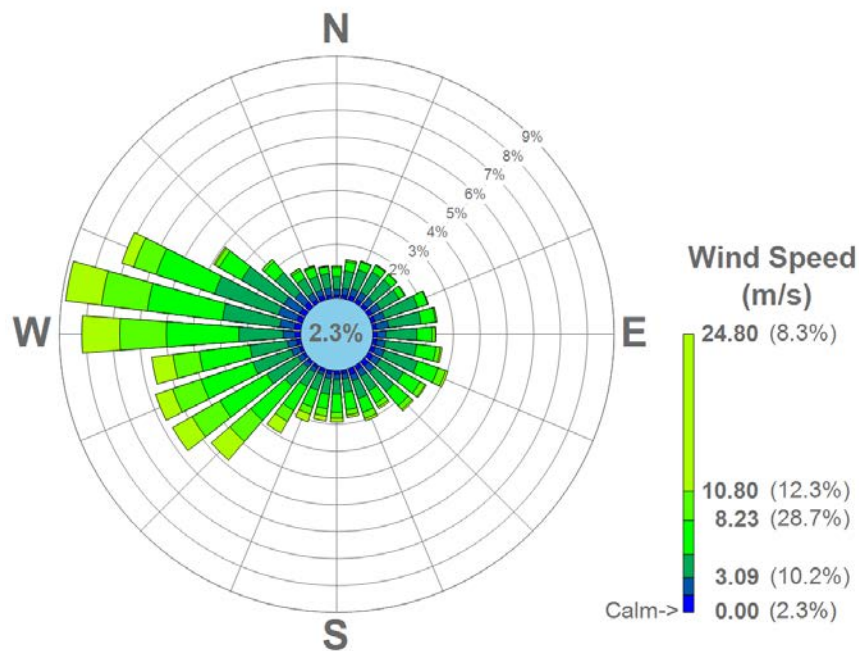


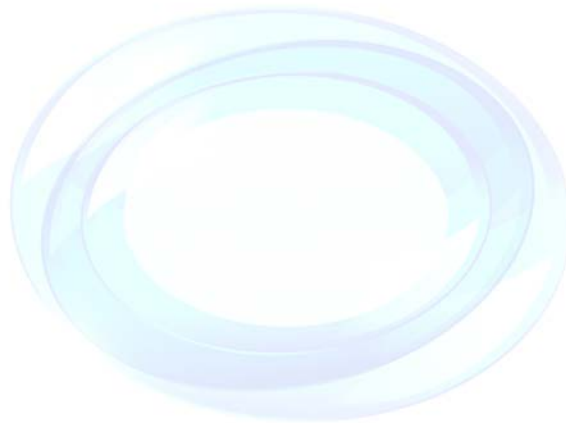
Table B-1
Rainfall (Sheffield 1980-2010)

Month	Rainfall (mm)	Days of rainfall ≥ 1 mm (days)
Jan	83.4	13.4
Feb	60.4	10.5
Mar	63.4	12.3
Apr	65.5	10.3
May	53.8	9.6
Jun	75.6	9.1
Jul	56.0	9.2
Aug	65.3	9.9
Sep	63.8	8.9
Oct	81.2	12.7
Nov	79.4	12.6
Dec	86.7	13.0
Annual	834.6	131.6

APPENDIX C: AIR QUALITY LIMITS

Table C-1
Air Quality Strategy Objectives

Pollutant	Concentrations	Measured As
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded	1 hour mean
	more than 18 times per year	
	40 µg/m ³	Annual mean
Nitrogen Dioxide (NO _x)	30 µg/m ³	Annual mean : Protection of Vegetation
	75 µg/m ³	24h: Protection of Vegetation
Carbon monoxide (CO)	10 mg/m ³	Running 8-hour mean



APPENDIX D: EPUK AQ ASSESSMENT CRITERIA

The following table has been reproduced from the Environmental Protection UK and Institute of Air Quality Management guidance for the consideration of air quality within the land-use planning and development control processes '*Land-Use Planning & Development Control: Planning For Air Quality (January 2017)*'.

Table 6.2: Indicative criteria for requiring an air quality assessment

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment ^a
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight)	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight)	A change of HDV flows of - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20 m of a relevant receptor Coupled with the car park having more than 100 movements per day (total in and out)
7. Have one or more substantial combustion processes	Where the combustion unit is: - any centralised plant using bio fuel - any combustion plant with single or combined thermal input >300kWh - a standby emergency generator associated with a centralised energy centre (if likely to be tested/used >18 hours a year)
8. Have a combustion process of any size	Where the pollutants are exhausted from a vent or stack in a location and at a height that may give rise to impacts at receptors through insufficient dispersion. This criterion is intended to address those situations where a new development may be close to other buildings that could be residential and/or which could adversely affect the plume's dispersion by way of their size and/or height.

APPENDIX E: IMPACT PLOTS

Figure E1: Annual Average NO₂ impact

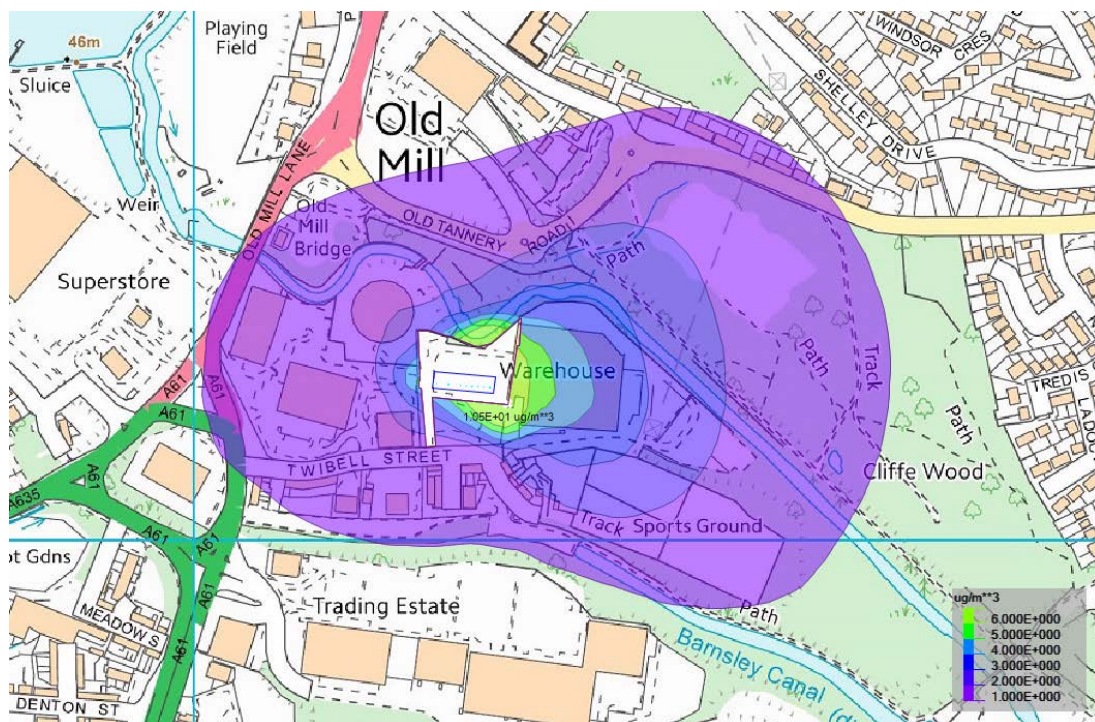


Figure E2: 1hr (99.79th percentile) NO₂ impact

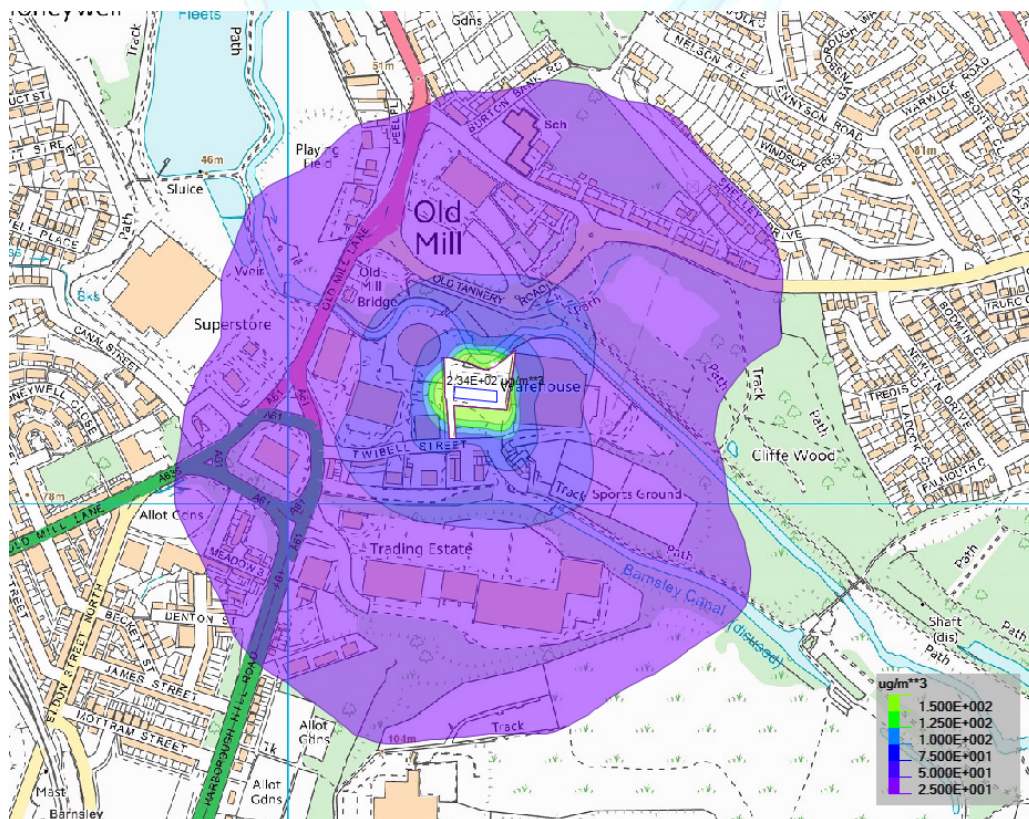


Figure E3: 8hr CO impact

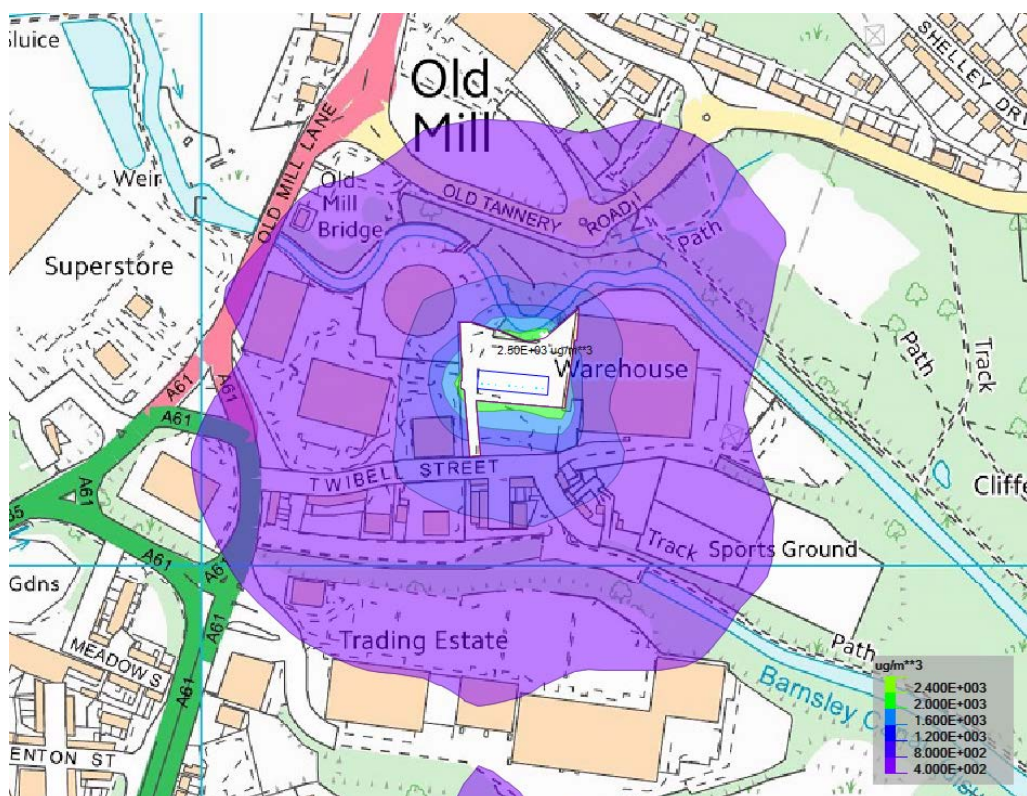
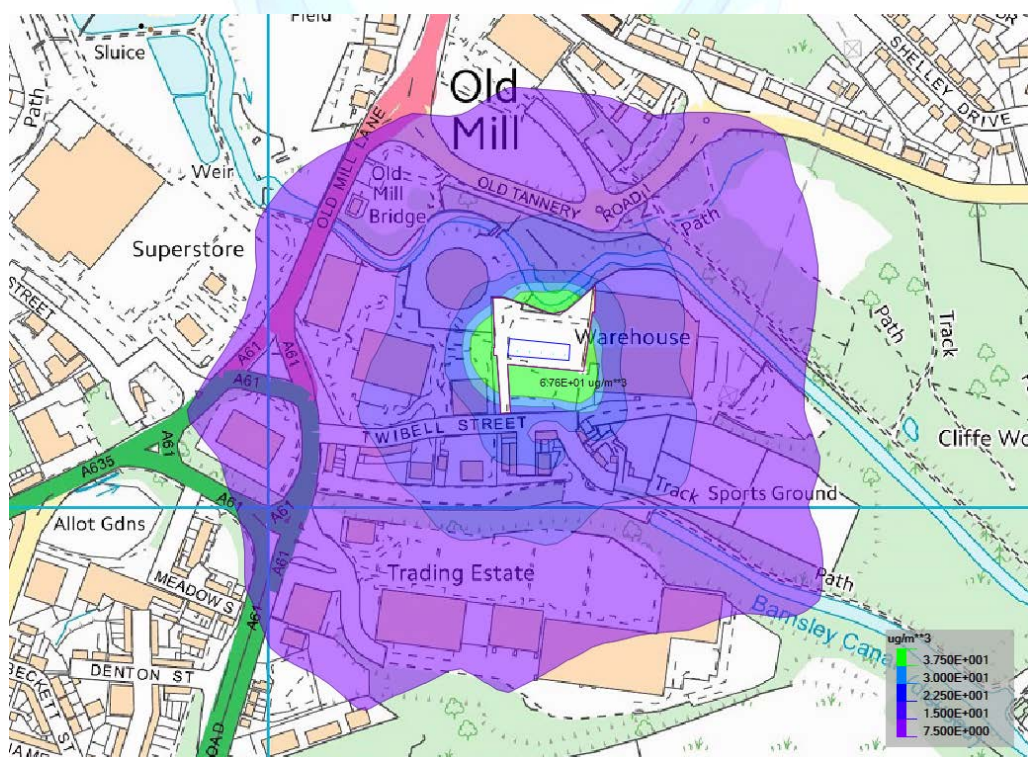
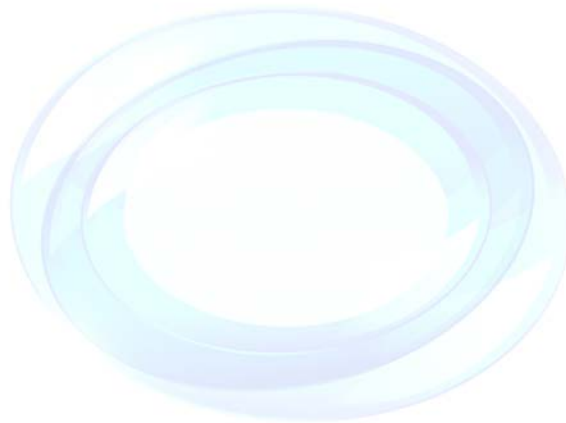


Figure E4: 24h NO₂ impact – ecological features.



APPENDIX F: ECOLOGICAL SITES





Legend

-  Local Nature Reserves (England)
-  National Nature Reserves (England)
-  Ramsar Sites (England)

Sites of Special Scientific Interest Units (England)

-  Favourable Condition
-  Unfavourable Recovering
-  Unfavourable no change
-  Unfavourable Declining
-  Part Destroyed
-  Destroyed
-  Not Assessed

-  Sites of Special Scientific Interest (England)

-  Special Areas of Conservation (England)

-  Special Protection Areas (England)

Projection = OSGB36

xmin = 430200

ymin = 404800

xmax = 440100

ymax = 409500

Map produced by MAGiC on 19 July, 2017.

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Site Check Report generated on Wed Jul 19 2017
You selected the location: Centroid Grid Ref: SE352071
 The following features have been found in your search area:

Local Nature Reserves (England) - points

Reference	1008867
Name	DEARNE VALLEY PARK
Hectares	49.34
Hyperlink	http://www.lnr.naturalengland.org.uk/special/lnr/lnr_details.asp?themeid=1008867

Local Nature Reserves (England)

Reference	1008867
Name	DEARNE VALLEY PARK
Hectares	49.34
Hyperlink	http://www.lnr.naturalengland.org.uk/special/lnr/lnr_details.asp?themeid=1008867

National Nature Reserves (England) - points

No Features found

National Nature Reserves (England)

No Features found

Ramsar Sites (England) - points

No Features found

Ramsar Sites (England)

No Features found

Sites of Special Scientific Interest Units (England) - points

No Features found

Sites of Special Scientific Interest Units (England)

No Features found

Sites of Special Scientific Interest (England) - points

No Features found

Sites of Special Scientific Interest (England)

No Features found

Special Areas of Conservation (England) - points

No Features found

Special Areas of Conservation (England)

No Features found

Special Protection Areas (England) - points

No Features found

Special Protection Areas (England)

No Features found


[LNR home](#)
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Local Nature Reserves

[back](#)

Dearne Valley Park

LNR Type:	Urban
County:	South Yorkshire
Natural England Regional Team:	Yorkshire and the Humber
Year of Declaration:	1996
Declaring Authority:	Barnsley Metropolitan Borough Council
Area (Ha):	Click here to open the site map (new window). Once displayed, click on the site to see area and other details.
Grid Reference:	SE 360 069
Location:	1 mile north east of Barnsley town centre
Owned by:	Barnsley Metropolitan Borough Council
Managed by:	Barnsley Metropolitan Borough Council Countryside Group
Link to site map:	Click here to open the site map from the MAGIC web site.
How to get there:	Approximately 1 mile east of Barnsley train station along Pontefract Road/ A628 (direction of Lundwood). Cycle access via roads or Trans Pennine Trail - Town Spur/Pontefract Road or Northern Spur at Lundwood - and then onto concessionary cycleway which runs the length of the park. Via car or foot the park can be accessed from all sides.
Visitor facilities:	Mixed use reserve developed from relict habitats and reclaimed colliery/associated uses around a river valley. One formal car park north of Pontefract Road (A628) at Hoyle Mill, close to which there is a children's play area and 2 large ponds - one run by the angling club. Some areas managed as amenity grassland but most as pockets of woodland. Network of public footpaths and a concessionary cycleway running the length of the park.
What to see:	Acidic oak woodland with mosaic of wetland habitats.
Volunteer and 'Friends of' groups:	Hoyle Mill Angling Club - contactable via Barnsley Metropolitan Borough Council
Contacts for further information and how to get involved:	For more details contact Parks Services on Tel: 01226 773136 or Public Rights of Way on Tel: 01226 772696 or e-mail: ParksServices@barnsley.gov.uk or write to Parks Services, PO Box 605, S70 9FF
Website address and other links:	www.barnsley.gov.uk/services/environment-and-planning/parks-and-open-spaces/general-information/dearne-valley-park/ or try www.barnsley.gov.uk and search for Dearne Valley Park

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