Mid Devon District Council

Tiverton Eastern Urban Extension (Site B)

Tiverton

Air Quality DMRB Screening Assessment

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Executive Summary

An air quality DMRB screening assessment has been undertaken for the proposed development in Tiverton, Devon.

Assessment results of air quality impacts during the construction phase indicate that dust emissions associated with the construction phase are not predicted to be significant following the implementation of the mitigation measures detailed in Section 7.

During the operational phase, the magnitude of the effects of changes in traffic flow as a result of the proposed development, with respects to NO_2 and PM_{10} exposure, is determined to 'negligible'.

Taking into the consideration the assessment methodology criteria established in section 3, air quality baseline conditions and the DMRB screening assessment result, it has been determined that the proposed development site does not require a detailed air quality assessment.

1. Introduction

Mid Devon District Council (MDDC) commissioned WYG Planning and Environment (WYG) to prepare an Air Quality DMRB Screening Assessment for the proposed development in Tiverton, Devon.

1.1 Site Location and Context

The approximate United Kingdom National Grid Reference of the site is 298684, 113302. The site is located east of Tiverton, to the north is the A361 and to the south, Post Hill. Reference should be made to Figure 1 for a map of the proposed development site and surrounding area.

The following assessment stages have been undertaken as part of this assessment:

- Baseline air quality evaluation;
- Assessment of Air Quality Impacts - Construction Phase; and
- DMRB Screening Assessment.

The DMRB screening assessment of the potential air quality impacts that are associated with the proposed development has focused on the predicted impact of changes in ambient nitrogen dioxide (NO_2) and particulate matter (PM_{10}) as a result of the development traffic at key local receptor locations. The changes have been referenced to EU air quality limits and UK air quality objectives and the magnitude and significance of the changes have been referenced to non statutory guidance issued by Environmental Protection UK.

The results of the assessment are detailed in the following sections of this report.

2. Policy and Legislative Context

2.1 Documents Consulted

The following documents were consulted during the undertaking of this assessment:

Legislation and Best Practice Guidance

- National Planning Policy Framework, Department for Communities and Local Government, March 2012;
- Planning Practice Guidance: Air Quality, March 2014;
- The Air Quality Standards Regulations, 2010
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007
- The Environment Act, 1995
- Local Air Quality Management Technical Guidance LAQM.TG(09), DEFRA, 2009
- Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, HA 207/07 - Air Quality, Highways Agency, 2007
- Land-Use Planning & Development Control: Planning For Air Quality, EPUK & IAQM, 2015.
- The Control of Dust and Emissions from Construction and Demolition – Best Practice Guide, Greater London Authority and London Councils, 2006
- Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management, 2014)
- Defra Local Air Quality Management Note on Projecting NO_2 concentrations (April 2012)

Websites Consulted

- Google maps (maps.google.co.uk)
- The UK National Air Quality Archive (www.airquality.co.uk)
- Department for Transport Matrix (www.dft.go.uk/matrix)
- emapsite.com
- MAGIC (http://magic.defra.gov.uk/)
- Planning Practice Guidance (http://planningguidance.planningportal.gov.uk/)

Site Specific Reference Documents

- Mid Devon District Council Local Plan (www.middevon.gov.uk)
- Mid Devon District Council 2015 Air Quality Updating and Screening Assessment

2.2 Air Quality Legislative Framework

European Legislation

European air quality legislation is consolidated under Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidates previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new air quality objectives for fine particulates. The consolidated Directives include:

- **Directive 1999/30/EC** – the First Air Quality "Daughter" Directive – sets ambient air limit values for nitrogen dioxide and oxides of nitrogen, sulphur dioxide, lead and particulate matter;
- **Directive 2000/69/EC** – the Second Air Quality "Daughter" Directive – sets ambient air limit values for benzene and carbon monoxide; and,
- **Directive 2002/3/EC** – the Third Air Quality "Daughter" Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

The fourth daughter Directive was not included within the consolidation and is described as:

- **Directive 2004/107/EC** – sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

UK Legislation

The Air Quality Standards Regulations (2010) seek to simplify air quality regulation and provide a new transposition of the Air Quality Framework Directive, First, Second and Third Daughter Directives and also transpose the Fourth Daughter Directive within the UK. The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards, with attainment dates in line with the European Directives. SI 2007 No. 64 Regulation 14 extends powers, under Section 85(5) of the Environment Act (1995), for the Secretary of State to give directions to Local Authorities (LAs) for the implementation of these Directives.

The UK Air Quality Strategy is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the effects of pollution.

For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations (2000) SI 928, and subsequent amendments.

The AQOs for pollutants included within the Air Quality Strategy and assessed as part of the scope of this report are presented in Table 1 along with European Commission (EC) Directive Limits and World Health Organisation (WHO) Guidelines.

Table 1 Air Quality Standards, Objectives, Limit and Target Values

Pollutant	Applies	Objective	Concentration Measured as[10]	Date to be achieved and maintained thereafter	European Obligations	Date to be achieved and maintained thereafter	New or existing
PM_{10}	UK	50µg/m^3 by end of 2004 (max 35 exceedances a year)	24-hour mean	1st January 2005	50µg/m^3 by end of 2004 (max 35 exceedances a year)	1st January 2005	Retain Existing
	UK	40µg/m^3 by end of 2004	Annual mean	1st January 2005	40µg/m^3	1st January 2005	
Nitrogen Dioxide	UK	200µg/m^3 not to be exceeded more than 18 times a year	1 Hour Mean	31st December 2005	200µg/m^3 not to be exceeded more than 18 times a year	1st January 2010	Retain Existing
	UK	40µg/m^3	Annual Mean	31st December 2005	40µg/m^3	1st January 2010	

Local Air Quality Management

Under Section 82 of the Environment Act (1995) (Part IV) LAs are required to periodically review and assess air quality within their area of jurisdiction under the system of LAQM. This review and assessment of air quality involves assessing present and likely future air quality against the AQOs. If it is predicted that levels at the façade of buildings where members of the public are regularly present (normally residential properties) are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

2.3 Planning and Policy Guidance

National Policy

The National Planning Policy Framework (NPPF) principally brings together and summarises the suite of Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) which previously guided planning policy making. The NPPF broadly retains the principles of PPS 23: Planning and Pollution Control and 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.'

The Planning Practice Guidance (PPG) web-based resource was launched by the Department for Communities and Local Government (DCLG) on 6 March 2014 to support the National Planning Policy Framework and make it more accessible. A review of PPG: Air Quality identified the following guidance:

'When deciding whether air quality is relevant to a planning application, local planning authorities should consider whether the development would:

Significantly affect traffic in the immediate vicinity of the proposed development site or further afield. This could be by generating or increasing traffic congestion; significantly changing traffic volumes, vehicle speed or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; adds to turnover in a large car park; or result in construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more.

Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; or extraction systems (including chimneys) which require approval under pollution control legislation or biomass boilers or biomass-fuelled CHP plant; centralised boilers or CHP plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area.

Expose people to existing sources of air pollutants. This could be by building new homes, workplaces or other development in places with poor air quality.

Give rise to potentially significant impact (such as dust) during construction for nearby sensitive locations.'

Local Policy

Part 3 of MDDCs Local plan adopted from 2013. The air quality management of Mid Devon is discussed in part 3, under Development management policies.

Under Development management policies, this discusses and provides details on policies on the management of individual developments which meets local communities needs, economically and socially while protecting the environment.

Following a review of these policies, the following have been identified as being relevant from an air quality perspective:

Policy DM6: Transport and air quality

"Development proposals that would give rise to the significant levels of vehicular movement must be accompanied by an integrated Transport Assessment, Travel Plan, traffic pollution assessment and Low Emission Assessment. The traffic pollution assessment must consider the impact of traffic-generated nitrogen oxides on environmental assets including protected sites listed in Policy DM30, and propose mitigation measures where appropriate. The Low Emission Assessment shall include the following:

a) Assessment of the impact on existing Air Quality Management Areas (AQMAs) or an impact likely to result in the declaration of an additional AQMA, in cases where a demonstrable negative impact on ambient concentrations of air pollutants is considered likely.

b) Modelling of local residual road transport emissions from the development without mitigation measures and

c) onsite mitigation measures to reduce negative impacts on local air quality.

3. Assessment Methodology

The potential environmental effects of the operational phase of the proposed development are identified, in so far as current knowledge of the site and development allows. The significance of potential environmental effects is assessed according to the latest guidance produced by EPUK and IAQM in May 2015.

The methodology used to determine the potential air quality impacts of the construction phase of the proposed development has been derived from the IAQM 'Guidance on the Assessment of the Impacts of Dust from Demolition and Construction' document and is summarised in Section 5.

3.1 Determining Significance of the Air Quality Effects

The significance of the effects during the operational phase of the development is based on the latest guidance produced by EPUK and IAQM in May 2015. The guidance lays a basis for a consistent approach that could be used by all parties associated with the planning process to professionally judge the overall significance of the air quality effects based on severity of air quality impacts.

The following rationale is used in determining the severity of the air quality impacts at individual receptors:

1. The change in concentration of air pollutants, air quality impacts, are quantified and evaluated in the context of air quality objectives. The impacts are provided as percentage of the Air Quality Assessment Level (AQAL), which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)';
2. The absolute concentrations are also considered in terms of the AQAL and are divided into categories for long term concentration. The categories are based on the sensitivity of the individual receptor in terms of harm potential. The degree of harm potential – to change - increases as absolute concentrations are close to or above the AQAL;
3. Severity of the impact is described as qualitative descriptors, negligible; slight; moderate or substantial, by taking into account in combination the harm potential and air quality impact. This means that a small increase at a receptor which is already close to or above the AQAL will have higher severity compared to a relatively large change at a receptor which is significantly below the AQAL, >75% AQAL.
4. The impacts can be adverse when air quality concentration increase or beneficial when concentration decrease as a result of development.
5. The judgement of overall significance of the effects is then based on severity of impacts on all the individual receptors considered.
6. Where a development is not resulting in any change in emissions itself, the significance of effect is based on the impact of surrounding sources on new residents or users of the development, i.e., will they be exposed to levels above the AQAL.

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% 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 of AQAL	Moderate	Substantial	Substantial	Substantial

3.2 DMRB Screening Assessment of Operational Phase

The Design Manual for Roads and Bridges Volume 11, Section 3, Part 1 paragraphs 3.12 to 3.14 states that roads that do not meet any of the following criteria as a result of a proposed development can be considered to be 'neutral' in terms of their air quality impact:

- Increase in 24-hour AADT flow of more than 1000 vehicles; and/or,
- Increase in 24-hour AADT HGV flows of more than 200 vehicles; and/or,
- Daily average traffic speed will change by 10km/h or more; and/or,
- Peak hour speed will change by 10km/h or more.

Non statutory air quality guidance issued by Environmental Protection UK also contains advice on the potential significance of changes in traffic flow on air quality. "Development Control: Planning for Air Quality" (2010 update) states in paragraph 5.6 that an air quality assessment is likely to be necessary when any development will;

- Generate or increase traffic congestion;
- Significantly change traffic volumes, typically by either 5% of the AADT or peak hour flows on roads with flows more than 10,000 in an AQMA or 10% of the AADT or peak hour flows on roads with flows more than 10,000 outside an AQMA;
- Increase HGV movements by 200 movements or more per day;
- Proposals that include significant new car parking, 100 spaces outside an AQMA and 50 spaces inside an AQMA. Consideration should be taken into account for duration of car parking on traffic flows in and out of the car park (i.e., short term or long term parking).

As recommended within DMRB methodology, if any of the following criteria above are met, then an air quality screening assessment should be undertaken to determine whether relevant Air Quality Objectives (AQO) of the identified pollutants of concern will be exceeded.

As part of the screening assessment, baseline, projected future year traffic (do minimum) and projected future year plus development traffic (do something) is obtained in order to assess the changes in traffic movements from the proposed development. Baseline conditions and initial DMRB screening calculations are also undertaken to determine existing pollution concentrations within the vicinity of the proposed development site.

The screening assessment conclusions consider the following; firstly, if the proposed development site generated traffic are likely to trigger the requirements as set under DMRB and EPUK methodology. Secondly, if baseline conditions and initial DMRB screening calculations show that the relevant Air Quality Objectives (AQOs) are likely to be exceeded. If the proposed development does not meet any of the conclusion criteria, then the site can be considered 'neutral' in terms of air quality and no further assessment is required.

3.3 Ecological Receptors

Air quality impacts associated with the proposed development have the potential to impact on receptors of ecological sensitivity within the vicinity of the site. The Conservation of Habitats and Species Regulations (2010) require competent authorities to review planning applications and consents that have the potential to impact on European designated sites (e.g. Special Protection Areas).

A study was undertaken to identify any statutory designated sites of ecological or nature conservation importance within the extents of the dispersion modelling assessment. This was completed using the Multi-Agency Geographic Information for the Countryside (MAGIC) web-based interactive mapping service, which draws together information on key environmental schemes and designations. Tidcombe Lane Fen Site of Special Scientific Interest (SSSI) and the Grand Western Canal Country Park Local Nature Reserve (LNR) were both identified as being within 1km of the site boundary and as such have been included as receptors within this assessment.

4. Baseline Conditions

4.1 Air Quality review and Assessment

This section provides a review of the existing air quality in the vicinity of the proposed development site in order to provide a benchmark against which to assess potential air quality impacts of the proposed development. Baseline air quality in the vicinity of the proposed development site has been defined from a number of sources, as described in the following sections.

Air Quality Review

As required under section 82 of the Environment Act 1995, Mid Devon District Council (MDDC) have designated two Air Quality Management areas (AQMAs). These were described as:

- No.1 Exeter Road and the High Street in Crediton (September 2004)
- No.2 Parts of Station Road, Higher Street and Fore Street, Cullompton (December 2006).

The proposed development site is located approximately 6.5 miles away from AQMA No.2. It is therefore unlikely that traffic associated with the proposed development will not influence the current AQMA.

Air Quality Monitoring

Monitoring of air quality within MDDC is undertaken through continuous and non-continuous monitoring methods. These have been reviewed in order to provide an indication of existing air quality in the area surrounding the proposed development site.

Continuous Monitoring

MDDC currently operates six continuous air quality monitoring stations. Annual mean concentrations of NO_2 and PM_{10} monitored at the automatic monitoring sites are presented within Table 2. However, monitoring was not collected during 2014 for NO_2 at these monitoring sites and the latest available monitoring is from 2011 as shown in Table 2 below. Unit 1 is closest to the site and was under the AQAL in 2014.

Table 2 Monitored Annual Mean NO_2 and PM_{10} Concentrations

Site ID	UK NGR(m)		Site Type	NO_2 Annual Mean Concentration 2014 ($\mu g/m^3$)	PM_{10} Annual Mean Concentration 2014 ($\mu g/m^3$)
	X	Y			
Crediton (Exeter Road)	303290	1110590	Roadside	67.19	29.19
Cullompton (Station Road)	302153	107533	Roadside	27.27	15.30

Non Continuous Monitoring

MDDC also operates a network of diffusion tubes. NO_2 concentrations were monitored at 19 locations between 2010 and 2014 within the borough. The closest NO_2 diffusion tube monitoring results are presented in Table 3 below.

Table 3 Nitrogen Dioxide Monitoring Locations

UK NGR(m)		Location	Within AQMA	NO_2 Annual Mean Concentration 2014 ($\mu g/m^3$)
X	Y			
296567.0	112786.0	3 Horsdon Terrace	N	23.67
295125.0	112718.0	17 Leat Street	N	29.36
294995.0	112931.0	11 Elm Terrace	N	24.88

As Table 3 illustrates, none of the nitrogen dioxide diffusion tube monitoring sites close to the development exceeded the National Air Quality Objective of 40µg/m^3 in 2014.

4.2 Background Concentrations

The use of background concentrations within the modelling process ensures that pollutant sources other than traffic are represented appropriately. Background sources of pollutants include industrial, domestic and rail emissions within the vicinity of the study site.

Background concentrations were referenced from the UK National Air Quality Information Archive database based on the National Grid Co-ordinates of 1 x 1 km grid squares nearest to the development site. In June 2014 Defra issued revised 2011 based background maps for NO_X, NO_2, PM_{10} and $PM_{2.5}$ which incorporate updates to the input data used for modelling.

The updated mapped background concentrations used in the assessment, are summarised in Table 4 below:

Table 4 Published Background Air Quality Levels ($\mu g/m^3$)

UK NGR(m)		2016		
X	Y	NO_2	NO_x	PM_{10}
458500	402500	22.33	32.54	17.90

5. Assessment of Air Quality Impacts - Construction Phase

5.1 Pollutant Sources

Other than negligible emissions from construction vehicles and equipment the main emissions during construction are likely to be dust and particulate matter generated during earth moving (particularly during dry months), or from construction materials. In respect of fires on site it should be noted that suitable management strategies will be in place to prevent burning of any material during the construction phase. The main potential effects of particulates/dust are:

- Visual – dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
- Physical and /or chemical contamination and corrosion of artefacts;
- Coating of vegetation and soil contamination;
- Health effects due to inhalation e.g. asthma or irritation of the eyes.

A number of other factors such as the amount of precipitation and other meteorological conditions will also greatly influence the amount of particulate matter generated.

Construction activities can give rise to short-term elevated dust/PM_{10} concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

5.2 Particulate Matter (PM_{10})

The UK Air Quality Standards seek to control the health implications of respirable particulate matter PM_{10} (a standard size fraction where the median diameter is 10 microns). However, the majority of particles released from construction will be greater than this in size.

Construction works on site have the potential to elevate localised PM_{10} concentrations in the area. On this basis, mitigation measures should still be taken to minimise these emissions as part of good site practice.

5.3 Dust

Particles greater than 10µm are likely to settle out relatively quickly and may cause annoyance due to their soiling capability. There are no formal standards or criteria for nuisance caused by deposited particles, however, a deposition rate of 200mg/m^2/day is often presented as a threshold for serious nuisance though this is usually only applied to long term exposure as people are generally more tolerant of dust for a short or defined period. Significant nuisance is likely when the dust coverage of surfaces is visible in contrast with adjacent clean areas, especially when it happens regularly. Severe dust nuisance occurs when the dust is perceptible without a clean reference surface.

Construction activities have the potential to suspend dust, which could result in annoyance of residents surrounding the site. Measures should be taken to minimise the emissions of dust as part of good site practice. Recommended mitigation measures proportionate to the risk associated with the development and based on best practice guidance are discussed in the following sections.

5.4 Methodology

The construction phase assessment utilises the IAQM Guidance on the Assessment of Dust from Demolition and Construction document published in February 2014.

Four construction processes are considered; these are demolition, earthworks, construction and trackout. For each of these phases, the significance of the potential dust impacts is derived following the determination of a dust emission magnitude and the distance of activities to the nearest sensitive receptor, therefore assessing worst case impacts. A full explanation of the methodology is contained in Appendix A.

5.5 Assessment Results

Based on the methodology detailed in Appendix A, the scale of the anticipated works has determined the potential dust emission magnitude for each process, as presented in the table below.

Table 5 Dust Emission Magnitude

Construction Process	Dust Emission Magnitude
Demolition	N/A
Earthworks	Large
Construction	Large
Trackout	Large

The sensitivity of the surrounding area to each construction process has been determined following stage 2B of the IAQM guidance. The assessment has determined the area sensitivities as shown in the table below.

Table 6 Sensitivity of the Area

Source	Area Sensitivity		
	Dust Soiling	Health Effects of PM_{10}	Ecological
Demolition	N/A	N/A	N/A
Earthworks	Large	Low	Low
Construction	Large	Low	Low
Trackout	Large	Low	Low

The dust emission magnitude determined in Table 5 has been combined with the sensitivity of the area determined in Table 6, to determine the risk of impacts prior to the implementation of appropriate mitigation

measures. The potential impact significance of dust emissions associated with the construction phase, without mitigation, is presented below.

Table 7 Impact Significance of Construction Activities without Mitigation

Source	Summary Risk of Impacts Prior to Mitigation		
	Dust Soiling	Health Effects of PM_{10}	Ecological
Demolition	N/A	N/A	N/A
Earthworks	High Risk	Low Risk	Low Risk
Construction	High Risk	Low Risk	Low Risk
Trackout	High Risk	Low Risk	Low Risk

Site specific mitigation measures are presented in Section 7. Following the adoption of these measures, the subsequent impact significance of the construction phase is not predicted to be significant.

6. DMRB Screening Assessment

An assessment of operational phase traffic flows has been undertaken to assess the potential impact of the proposed development with regards to increases in traffic flows along the local road network. Principal pollutants of concern considered within this assessment are nitrogen dioxide (NO_2) and particulate matter (PM_{10}).

The DMRB Screening Calculation Sheet V1.03c has been used to calculate pollutant concentrations. Screening receptor locations have been selected at existing property facades at locations where higher than average pollution concentrations are likely to be experienced, i.e. within the AQMA. Selecting receptors at such locations ensures a 'worst case scenario' prediction of pollutant concentrations. An assessment of the impact of existing air quality on proposed receptors has also been included.

Traffic data has been provided by WYG Transport Consultants for a number of different potential assessment scenarios as follows:

AADT Calculations 2-Way – All traffic is assigned via Mayfair. AADT data provided is recorded on Mayfair at the approach to the junction with Posthill.

AADT Calculations 1-Way – Inbound traffic is assigned southbound along Manley Lane outbound traffic northbound along Mayfair. Two way traffic movements will be retained at the top end of Mayfair and Manley Lane so that existing dwellings have two way access but all new development traffic will operate one way under this scenario.

The data is provided for the two traffic flow scenarios as follows:

- Without development traffic.
- With development traffic associated with 500 dwellings.

This Air Quality assessment has only considered the 500 dwelling scenario as a worst case assessment.

Table 8 Traffic Data

Link		2026 Do Minimum			2026 Do Something		
		AADT	%HGV	Speed (km/hr)	AADT	%HGV	Speed (km/hr)
Two Way Movement							
1	Mayfair	159	0	32	3047	2	32
2	Post Hill, West of Mayfair	8719	2	48	11338	2	48
3	Post Hill, East of Mayfair	8709	2	48	9000	2	48
One Way Movement							
1	Mayfair	159	0	32	1762	2	32
2	Post Hill, West of Mayfair	8719	2	48	11338	2	48
3	Post Hill, East of Mayfair	8709	2	48	10005	2	48
4	Manley Lane	53	0	32	3047	2	32

6.1.1 Limitations of DMRB Screening

The following limitations have been identified with the DRMB Screening Assessment:

- The assessment has only considered the impact on the identified affected roads, namely those included in Table 8.
- Background concentrations have been used from UK National Air Quality Archive.
- The DRMB screening result outputs are unadjusted results.

6.1.2 Screening Receptor Locations

Receptor locations have been identified to indicate the effects of the surrounding road network. The receptor locations are presented in Table 9 and reference should be made to Figure 1 for a visual representation.

Table 9 Screening Receptor Locations

Receptor		Distance from Link (m)			
ID	Location	From Link 1	From Link 2	From Link 3	From Link 4
R1	10 Mayfair	10	193	184	337
R2	12 Mayfair	10	138	126	325
R3	3 Mayfair	10	89	81	331
R4	34 Mayfair	10	43	63	362
R5	Corner House	10	32	46	360
R6	2 Mayfair	10	44	37	334
R7	4 Mayfair	10	91	93	297
R8	6 Mayfair	10	114	118	297
R9	8 Mayfair	10	138	142	297
R10	Highfield	269	373	123	10
R11	Woodleigh House	277	349	62	10
R12	Barns Close	304	384	85	10
R13	55 Post Lane	314	364	41	10
R14	57 Post Lane	345	389	30	10
PR1	Proposed Receptor 1	47	13	179	490

6.1.3 DMRB Screening Results

Predicted annual mean ground level NO_2 and PM_{10} concentrations for the 'do minimum' and 'do something' scenarios are illustrated in Table 10 below.

Table 10 DMRB Nitrogen Dioxide and Particulate Matter Screening Results (µg/m³)

Receptor ID		Predicted Annual Mean NO_2 Concentration (µg/m³)			Predicted Annual Mean PM_{10} Concentration (µg/m³)		
ID	Location	Do Minimum	Do Something	Development Contribution	Do Minimum	Do Something	Development Contribution
2 Way Traffic							
R1	10 Mayfair	22.45	23.25	0.80	17.93	18.18	0.25
R2	12 Mayfair	22.57	23.38	0.81	17.96	18.21	0.25
R3	3 Mayfair	23.00	23.88	0.88	18.08	18.34	0.26
R4	34 Mayfair	23.77	24.81	1.04	18.28	18.59	0.31
R5	Corner House	24.30	25.42	1.12	18.42	18.75	0.33
R6	2 Mayfair	24.21	25.25	1.04	18.39	18.71	0.32
R7	4 Mayfair	22.90	23.77	0.87	18.05	18.31	0.26
R8	6 Mayfair	22.66	23.49	0.83	17.99	18.24	0.25
R9	8 Mayfair	22.54	23.35	0.81	17.96	18.20	0.24
R10	Highfield	22.35	22.40	0.05	17.88	17.890	0.02
R11	Woodleigh House	22.49	22.77	0.28	17.94	18.01	0.07
R12	Barns Close	22.43	22.50	0.07	17.93	17.94	0.01
R13	55 Post Lane	23.07	23.11	0.04	18.09	18.10	0.01
R14	57 Post Lane	23.32	23.37	0.05	18.15	18.17	0.02
PR1	Proposed Receptor 1	24.28	25.14	0.86	18.41	18.65	0.24
1 Way Traffic							
R1	10 Mayfair	22.46	22.87	0.41	17.94	18.06	0.12
R2	12 Mayfair	22.58	23.02	0.44	17.97	18.10	0.13
R3	3 Mayfair	23.01	23.54	0.53	18.08	18.23	0.15
R4	34 Mayfair	23.77	24.48	0.71	18.28	18.48	0.20
R5	Corner House	24.31	25.13	0.82	18.42	18.65	0.23
R6	2 Mayfair	24.21	24.99	0.78	18.39	18.62	0.23
R7	4 Mayfair	22.91	23.43	0.52	18.05	18.21	0.16
R8	6 Mayfair	22.67	23.14	0.47	17.99	18.13	0.14
R9	8 Mayfair	22.54	22.99	0.45	17.96	18.09	0.13
R10	Highfield	22.33	23.10	0.77	17.90	18.14	0.24
R11	Woodleigh House	22.78	23.62	0.84	18.02	18.27	0.25
R12	Barns Close	22.51	23.30	0.79	17.95	18.19	0.24
R13	55 Post Lane	23.12	24.00	0.88	18.11	18.37	0.26
R14	57 Post Lane	23.38	24.28	0.90	18.17	18.45	0.28
PR1	Proposed Receptor 1	24.29	24.92	0.63	18.41	18.58	0.17

As illustrated in Table 10, the maximum predicted increase in annual average exposure to nitrogen dioxide, due to changes in traffic movements associated with the development at existing receptors is 1.12µg/m³ at R5 in the 2 way traffic scenario.

The maximum predicted increase in annual average exposure to particulate matter, due to changes in traffic movements associated with the proposed development at existing receptors is 0.33µg/m³ at R5.

The DMRB screening calculations have predicted that there will not be an exceedance of AQOs for nitrogen dioxide or particulate matter at either existing or proposed receptors, therefore no further on site mitigation will be necessary.

The significance of changes in traffic flow associated with the development with respect to annual mean NO_2 and PM_{10} exposure have been assessed to the criteria in section 3. The outcomes of the assessment are summarised in Table 12 and Table 13 below.

Table 11 Significance of Effects at Key Existing Receptors (NO_2)

NO_2 Significance Effects at Key Receptors				
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% Change in Concentration Relative to AQAL**	**% Annual Mean Concentration in Assessment Year**	**Significance**
R1	0.80	2.00	<75% of AQAL	Negligible
R2	0.81	2.03	<75% of AQAL	Negligible
R3	0.88	2.20	<75% of AQAL	Negligible
R4	1.04	2.60	<75% of AQAL	Negligible
R5	1.12	2.80	<75% of AQAL	Negligible
R6	1.04	2.60	<75% of AQAL	Negligible
R7	0.87	2.18	<75% of AQAL	Negligible
R8	0.83	2.08	<75% of AQAL	Negligible
R9	0.81	2.03	<75% of AQAL	Negligible
R10	0.05	0.13	<75% of AQAL	Negligible
R11	0.28	0.70	<75% of AQAL	Negligible
R12	0.07	0.18	<75% of AQAL	Negligible
R13	0.04	0.10	<75% of AQAL	Negligible
R14	0.05	0.13	<75% of AQAL	Negligible
PR1	0.86	2.15	<75% of AQAL	Negligible
R1	0.41	1.03	<75% of AQAL	Negligible
R2	0.44	1.10	<75% of AQAL	Negligible
R3	0.53	1.33	<75% of AQAL	Negligible
R4	0.71	1.78	<75% of AQAL	Negligible
R5	0.82	2.05	<75% of AQAL	Negligible
R6	0.78	1.95	<75% of AQAL	Negligible
R7	0.52	1.30	<75% of AQAL	Negligible
R8	0.47	1.18	<75% of AQAL	Negligible
R9	0.45	1.13	<75% of AQAL	Negligible
R10	0.77	1.93	<75% of AQAL	Negligible
R11	0.84	2.10	<75% of AQAL	Negligible
R12	0.79	1.98	<75% of AQAL	Negligible
R13	0.88	2.20	<75% of AQAL	Negligible
R14	0.90	2.25	<75% of AQAL	Negligible
PR1	0.63	1.58	<75% of AQAL	Negligible
0% means a change of <0.5%				

Table 12 Significance of Effects at Key Receptors (Particulate Matter)

PM_{10} Significance Effects at Key Receptors				
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% Change in Concentration Relative to AQAL**	**% Annual Mean Concentration in Assessment Year**	**Significance**
Two Way Movement				
R1	0.25	0.63	<75% of AQAL	Negligible
R2	0.25	0.63	<75% of AQAL	Negligible
R3	0.26	0.65	<75% of AQAL	Negligible
R4	0.31	0.78	<75% of AQAL	Negligible
R5	0.33	0.83	<75% of AQAL	Negligible
R6	0.32	0.80	<75% of AQAL	Negligible
R7	0.26	0.65	<75% of AQAL	Negligible
R8	0.25	0.63	<75% of AQAL	Negligible
R9	0.24	0.60	<75% of AQAL	Negligible
R10	0.02	0.05	<75% of AQAL	Negligible
R11	0.07	0.18	<75% of AQAL	Negligible
R12	0.01	0.03	<75% of AQAL	Negligible
R13	0.01	0.03	<75% of AQAL	Negligible
R14	0.02	0.05	<75% of AQAL	Negligible
PR1	0.24	0.60	<75% of AQAL	Negligible
One Way Movement				
R1	0.12	0.30	<75% of AQAL	Negligible
R2	0.13	0.33	<75% of AQAL	Negligible
R3	0.15	0.38	<75% of AQAL	Negligible
R4	0.20	0.50	<75% of AQAL	Negligible
R5	0.23	0.58	<75% of AQAL	Negligible
R6	0.23	0.58	<75% of AQAL	Negligible
R7	0.16	0.40	<75% of AQAL	Negligible
R8	0.14	0.35	<75% of AQAL	Negligible
R9	0.13	0.33	<75% of AQAL	Negligible
R10	0.24	0.60	<75% of AQAL	Negligible
R11	0.25	0.63	<75% of AQAL	Negligible
R12	0.24	0.60	<75% of AQAL	Negligible
R13	0.26	0.65	<75% of AQAL	Negligible
R14	0.28	0.70	<75% of AQAL	Negligible
PR1	0.17	0.43	<75% of AQAL	Negligible
0% means a change of <0.5%				

The magnitude of the effects of changes in traffic flow as a result of the proposed development, with respect to NO_2 and PM_{10} exposure, is determined to be 'negligible'. The change in concentration is likely to be accurate and this shows a 'negligible' change.

7. Mitigation

7.1 Construction Phase

The dust risk categories have been determined in Section 5 for each of the four construction activities. The assessment has determined that the potential impact significance of dust emissions associated with the construction phase of the proposed development is 'medium risk' at the worst affected receptors.

Using the methodology described in Appendix A, site specific mitigation measures associated with the determined level of risk can be found in Section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition and Construction. The mitigation measures have been divided into general communications and dust management measures applicable to all sites, and measures applicable specifically to demolition, earthworks, construction and trackout. They are categorised into 'highly recommended' and 'desirable' measures.

The mitigation measures for the proposed development are detailed in Table 14 and Table 15 below:

Table 13 Highly Recommended Construction Phase Mitigation Measures

Communications
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
Display the head or regional office contact information
Dust Management
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site.
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
Make the complaints log available to the local authority when asked.
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.

Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period
Avoid site runoff of water or mud.
Keep site fencing, barriers and scaffolding clean using wet methods.
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
Cover, seed or fence stockpiles to prevent wind whipping.
Ensure all vehicles switch off engines when stationary - no idling vehicles.
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
Use enclosed chutes and conveyors and covered skips
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods
Avoid bonfires and burning of waste materials.
Earthworks
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
Only remove the cover in small areas during work and not all at once
Construction
Avoid scabbling (roughening of concrete surfaces) if possible
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
Trackout
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
Avoid dry sweeping of large areas.
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
Record all inspections of haul routes and any subsequent action in a site log book.
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
Access gates to be located at least 10m from receptors where possible.

Table 14 Desirable Construction Phase Mitigation Measures

Construction
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Following the implementation of the mitigation measures detailed in the tables above, the impact significance of the construction phase is not considered to be significant.

8. Conclusion

An air quality DMRB screening assessment has been undertaken for the proposed development in Tiverton, Devon.

Assessment results of air quality impacts during the construction phase indicate that dust emissions associated with the construction phase are not predicted to be significant following the implementation of the mitigation measures detailed in Section 7.

During the operational phase, the magnitude of the effects of changes in traffic flow as a result of the proposed development, with respects to NO_2 and PM_{10} exposure, is determined to 'negligible'.

Taking into the consideration the assessment methodology criteria established in section 3, air quality baseline conditions and the DMRB screening assessment result, it has been determined that the proposed development site does not require a detailed air quality assessment.

Figures

Figure 1 Air Quality Assessment Area