Moray Lodge, Northampton

Air Quality Assessment

May 2019

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This document has been prepared and checked in accordance with Waterman Group’s IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS OHSAS 18001:2007)

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Comments

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# Contents

1. Introduction .......................................................................................................................... 1

2. Air Quality Legislation and Planning Policy ...................................................................... 2
   Legislation .............................................................................................................................. 2
   Air Quality Standards Regulations, 2010 ................................................................. 2
   The UK Air Quality Strategy, 2007 .............................................................................. 2
   The Environment Act, 1995 .......................................................................................... 3
   National Planning Policy ............................................................................................... 3
   National Planning Policy Framework, 2019 ............................................................... 3
   Regional Planning Policy ............................................................................................... 4
   West Northamptonshire Joint Core Strategy Local Plan (Part 1), 2014 ..................... 4
   Local Planning Policy ...................................................................................................... 4
   Northampton Borough Council’s Planning Obligations Supplementary Planning Document, 2013 ................................................................. 4
   Guidance ........................................................................................................................... 4
   Department for Environment, Food and Rural Affairs, Clean Air Strategy, 2019 ........ 4
   Improving Air Quality in the UK: Tackling Nitrogen Dioxide in our Towns and Cities. UK Air Quality Plan for Tackling Nitrogen Dioxide, 2017 ................................................................. 5
   Environmental Protection UK & Institute of Air Quality Management Guidance; Land-Use Planning & Development Control: Planning for Air Quality, 2017 ................................................................. 6
   Planning Practice Guidance, 2014 ............................................................................... 6
   Local Air Quality Management Policy Guidance, 2016 ............................................ 7
   Institute of Air Quality Management: Guidance on the Assessment of Dust from Demolition and Construction, 2014 ................................................................. 7

3. Assessment Methodology and Significance ........................................................................ 9
   Assessment Methodology ............................................................................................... 9
   Construction Phase Assessment Methodology ............................................................. 9
   Dust Emissions .................................................................................................................. 9
   Construction Vehicle Exhaust and Plant Emissions ...................................................... 10
   Operational Phase Assessment Methodology .............................................................. 11
   Operational Effects ......................................................................................................... 11
   Future Occupants ........................................................................................................... 11
   Impact Significance ......................................................................................................... 11
   Demolition and Construction ......................................................................................... 11

4. Baseline Conditions .......................................................................................................... 14
   Northampton Borough Council Review and Assessment Process ................................ 14
   Northampton Borough Council Local Monitoring ..................................................... 14
Defra Air Quality Background Maps ..................................................................................................................15

5. Construction Phase Effects ..........................................................................................................................17
   Dust Emissions ...........................................................................................................................................17
   Demolition ..................................................................................................................................................17
   Earthworks ................................................................................................................................................17
   Construction .............................................................................................................................................17
   Trackout ...................................................................................................................................................17
   Sensitivity of the area .................................................................................................................................17
   Dust Risk Summary .................................................................................................................................18
   Demolition and Construction Vehicle Exhaust Emissions .................................................................18
   Demolition and Construction Plant Emissions .......................................................................................18

6. Operational Phase Effects ...........................................................................................................................19
   Traffic Impacts ..........................................................................................................................................19
   Proposed Heating ..................................................................................................................................19
   Residential Amenity ...............................................................................................................................19

7. Mitigation Measures and Residual Effects .................................................................................................20
   Construction ..............................................................................................................................................20
   Dust Emissions ......................................................................................................................................20
   Construction Vehicle Exhaust Emissions ...............................................................................................20
   Construction Plant Emissions ..................................................................................................................21
   Operational Phase ................................................................................................................................21

8. Summary and Conclusions ..........................................................................................................................22

Figures

Figure 1: Construction Phase Assessment Bands

Tables

Table 1: Summary of Relevant UK AQS Objectives ..................................................................................2
Table 2: Summary of the IAQM Guidance for Undertaking a Construction Dust Assessment ..........10
Table 3: Risk Category from Demolition Activities ................................................................................12
Table 4: Risk Category from Earthworks Activities ................................................................................12
Table 5: Risk Category from Construction Activities ...............................................................................12
Table 6: Risk Category from Trackout Activities .....................................................................................12
Table 7: Measured Concentrations at the NBC Wellingborough Road Automatic Monitor ........15
Table 8: Measured NO₂ Concentrations (µg/m³) at the 10 closest NBC diffusion tubes to the Site ....15
Table 9: Defra Background Map in 2017 for the Grid Square at the Location of the Site ..........16
Table 10: Summary of Dust Risk ...............................................................................................................18
Table 11: Summary of Mitigation Measures included as part of the Development ..........................21
Appendices

Appendix A  Consultation of Air Quality Scope
Appendix B  Air Quality Assessors Experience
Executive Summary

Waterman Infrastructure & Environment Ltd was instructed by Northampton Partnership Homes to undertake an air quality assessment for the redevelopment of Moray Lodge, Northampton. The redevelopment of the Site would comprise a new building consisting of 20 apartment units.

The main likely effects on local air quality during demolition and construction relates to construction dust. A range of measures to minimise or prevent dust would be implemented and it is considered that following mitigation, the effects from nuisance dust emissions would be not significant.

Emissions from construction vehicles would be small in comparison to the emissions from the volume of vehicles travelling on roads in the surrounding area of the Site and would not significantly affect air quality. Therefore, it is anticipated that the effect of construction vehicles entering and egressing the Site during the construction period would be not significant.

Emissions from plant operating on the Site would be small in comparison to the emissions from traffic movements on the roads adjacent to the Site. Therefore, the likely effect on local air quality would be not significant.

Based on air quality guidance, the generated by the Development is below the criteria of when likely significant impacts could occur as such the likely effect of traffic emissions is not significant.

Heating for the Development would be provided by individual boilers for each unit which would meet the emissions criteria of $<40\text{mgNOx/kWh}$. Therefore, there would be no unacceptable effects on air quality at local sensitive receptors because of the proposed heating and as such the effect is not significant.

Based on the results of the nearest local air quality monitoring and using professional judgement future users of the Site are unlikely to be exposed to poor air quality. The effect of introducing new residents is not significant.
1. Introduction

1.1. Waterman Infrastructure & Environment Ltd (hereafter referred to as ‘Waterman’) was instructed by Northampton Partnership Homes (hereafter referred to as the ‘Applicant’) to undertake an air quality assessment for the redevelopment of Moray Lodge, Northampton (hereafter referred to as the ‘Site’).

1.2. This redevelopment of the Site would comprise a new building consisting of 20 apartment units (hereafter referred to as the ‘Development’).

1.3. The Site is approximately 2,400m² in area within Northampton Borough Council (NBC) andcentred on Grid Reference 472036, 261366. The Site currently comprises a former care home and is bound by the residential properties to the north, east, and south and by Duston Garage to the west.

1.4. NBC has declared seven Air Quality Management Areas (AQMA’s), for exceedances of the annual mean nitrogen dioxide (NO₂) Air Quality Strategy (AQS) objective. The Site is not located in an AQMA, the nearest AQMA to the Site is the St James Road AQMA (Number 3), located approximately 1.9km southeast of the Site boundary.

1.5. This Air Quality Assessment provides a review of the existing air quality at and surrounding the Site and assesses the potential effect of the Development on local air quality during construction and on completion.

1.6. The most significant pollutant during construction relates to the creation of nuisance dust and emissions from construction vehicles and construction plant. A qualitative assessment has been undertaken based on relevant air quality guidance.

1.7. With regards to the operational phase, the most significant pollutants for human health are NO₂ and particulate matter (PM₁₀ and PM₂.₅) associated with road traffic emissions. The assessment focuses on these pollutants.

1.8. The operational effects of the Development have been considered against the criteria set out in the EPUK/IAQM guidance, this approach has been agreed with NBC (see Appendix A).

1.9. Section 2 of this air quality assessment gives a summary of legislation, planning policy and guidance relevant to air quality. Section 3 provides details of the assessment methodology and Section 4 sets out the baseline conditions at and around the Site. The results of the assessments are presented in Section 5 and Section 6. Section 7 describes any required mitigation measures. A summary of the findings and conclusions of the assessment is given in Section 8.
2. **Air Quality Legislation and Planning Policy**

**Legislation**


2.1. Air pollutants at high concentrations can have adverse effects on the health of humans and ecosystems. European Union (EU) legislation on air quality forms the basis for UK legislation and policy on air quality.

2.2. The EU Framework Directive 2008/50/EC\(^1\) on ambient air quality assessment and management came into force in May 2008 and was implemented by Member States, including the UK, by June 2010. The Directive aims to protect human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants.

**Air Quality Standards Regulations, 2010**

2.3. The Air Quality Standards Regulations\(^2\) implement Limit Values prescribed by the EU Framework Directive 2008/50/EC. The Limit Values are legally binding and the Secretary of State, on behalf of the UK Government, is responsible for their implementation.

**The UK Air Quality Strategy, 2007**

2.4. The current UK Air Quality Strategy (UK AQS) was published in July 2007\(^3\) and sets out the objectives for local planning authorities (LPA) in undertaking their Local Air Quality Management (LAQM) duties. The UK AQS objectives of air pollutants relevant to this assessment are summarised in **Table 1**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Objective</th>
<th>Date by which Objective to be Met</th>
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<tbody>
<tr>
<td>Nitrogen Dioxide (NO(_2))</td>
<td>200µg/m(^3) 1 hour mean not to be exceeded more than 18 times per year</td>
<td>31/12/2005</td>
</tr>
<tr>
<td></td>
<td>40µg/m(^3) Annual Mean</td>
<td>31/12/2005</td>
</tr>
<tr>
<td>Particulate Matter (PM(_{10})) (a)</td>
<td>50µg/m(^3) 24 hour mean not to be exceeded more than 35 times per year</td>
<td>31/12/2004</td>
</tr>
<tr>
<td></td>
<td>40µg/m(^3) Annual Mean</td>
<td>31/12/2004</td>
</tr>
<tr>
<td>Particulate Matter (PM(_{2.5})) (b)</td>
<td>Target of 15% reduction in concentrations at urban background locations</td>
<td>Annual Mean</td>
</tr>
<tr>
<td></td>
<td>25µg/m(^3) Annual Mean</td>
<td>01/01/2020</td>
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**Note:**

(a) Particulate matter with a mean aerodynamic diameter less than 10 microns (or micrometres – µm)

(b) Particulate matter with a mean aerodynamic diameter less than 2.5 microns

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2.5. Further to Table 1, the European Union (EU) also sets Limit Values for NO₂, PM₁₀ and PM₂.₅⁴, which have been adopted by the UK⁵. The Limit Value for NO₂ is the same numerical level as the AQS objective but the target date differs. Achievement of these values is a national obligation rather than a local obligation. In the UK, only monitoring and modelling carried out by Defra and Central Government meets the specification required to assess compliance with the Limit Values. Further, Defra and other central government agencies do not recognise local authority monitoring or local modelling studies when determining the likelihood of the Limit Values being exceeded. As such the Limit Values have not been considered further in the Air Quality Assessment.

The Environment Act, 1995

2.6. In a parallel process, the Environment Act 1995⁶ required the preparation of a national air quality strategy setting health-based air quality objectives for specified pollutants and outlining measures to be taken by LPAs in relation to meeting these objectives (the LAQM system).

2.7. Part IV of the Environment Act 1995 provides a system of LAQM under which LPAs are required to review and assess the future quality of the air in their area by way of a staged process. Should this process suggest that any of the AQS objectives will not be met by the target dates, the LPA must consider the declaration of an AQMA and the subsequent preparation of an Air Quality Action Plan (AQAP) to improve the air quality in that area in pursuit of the AQS objectives.

2.8. Seven Air Quality Management Area (AQMA’s) are currently declared in NBC for annual mean NO₂. The Site is not located within an AQMA. The nearest AQMA to the Site is the Campbell Square AQMA (Number 6), located approximately 350m north of the Site boundary.

2.9. To date, NBC are looking to amalgamate all the town centre AQMA’s including; The Horse Market, Broadstreet, Greyfriars and Lady’s Lane. The Site would not be included within this town centre AQMA.

National Planning Policy

National Planning Policy Framework, 2019

2.10. The National Planning Policy Framework (NPPF)⁷, published in July 2018, sets out the Government’s planning policies for England and how these should be applied.

2.11. Paragraph 170 states “… Development should, wherever possible, help to improve local environmental conditions such as air and water quality …”

2.12. Furthermore, Paragraph 180 states “…Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement…”.

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Regional Planning Policy

West Northamptonshire Joint Core Strategy Local Plan (Part 1), 2014

2.13. The Joint Core Strategy\(^8\) sets out the long-term vision and objectives for the whole of the West Northamptonshire area for the plan period up to 2029. Policy BN9 – Planning for Pollution Control states:

‘proposals for new development which are likely to cause pollution or likely to result in exposure to sources of pollution or risks to safety will need to demonstrate that they provide opportunities to minimise and where possible reduce pollution issues that are a barrier to achieving sustainable development and healthy communities including:

a) maintaining and improving air quality, particularly in poor air quality areas, in accordance with national air quality standards and best practice’.

Local Planning Policy

Northampton Borough Council’s Planning Obligations Supplementary Planning Document, 2013

2.14. NBC’s Planning Obligation Supplementary Planning Document (SPD)\(^9\) expands upon policies contained within the Northampton Local Plan. The SPD sets out NBC’s strategy for working with the local community, the development industry, adjoining local planning authorities and other interested parties to secure relevant planning obligations in relation to mitigating the impacts of new development.

2.15. New development has the potential to impact on local air quality either because of increase in traffic or as a new point source. PO9: Environmental Health and Air Quality states that development that has a detrimental impact on air quality which cannot be mitigated through planning conditions, would need to provide appropriate mitigating and offsetting measures.

Guidance

Department for Environment, Food and Rural Affairs, Clean Air Strategy, 2019

2.16. Published in January 2019 the Clean Air Strategy\(^10\) sets out a coherent framework and national action to improve air quality throughout the UK.

2.17. The Strategy is underpinned by new national powers to control major sources of air pollution, in line with the risk they pose to public health and the environment, plus new local powers to act in areas with an air pollution problem. The Strategy also supports the creation of Clean Air Zones to lower emissions from all sources of air pollution, backed up with clear enforcement mechanisms.
Improving Air Quality in the UK: Tackling Nitrogen Dioxide in our Towns and Cities. UK Air Quality Plan for Tackling Nitrogen Dioxide, 2017

2.18. The UK Government was required by the High Court to release an Air Quality Plan to meet the NO\textsubscript{2} Limit Value in the shortest timescale as possible. This document was adopted on 26 July 2017\textsuperscript{11}.

2.19. The plan focuses on reducing concentrations of NO\textsubscript{x} and NO\textsubscript{2} around road vehicle emissions within the shortest possible time. With the principal aims to:

a. reduce emissions of NO\textsubscript{x} from the current road vehicle fleet in problem locations now; and

b. accelerate road vehicle fleet turnover to cleaner vehicles to ensure that the problem remains addressed and does not move to other locations.

2.20. The other aims include reducing background concentrations of NO\textsubscript{x} from:

- Other forms of transport such as rail, aviation and shipping;
- Industry and non-road mobile machinery; and
- Buildings, both commercial and domestic, and other stationary sources.

2.21. The document provided additional measures to reduce NO\textsubscript{x} and NO\textsubscript{2} concentrations in the UK, such measures include:

- Mandate local authorities to implement Clean Air Zones within the shortest possible time;
- Consultation on proposal for a Clean Air Zone Framework for Wales;
- Consultation on a draft National Low Emission Framework for Scotland;
- Commitment to establishing a Low Emission Zone for Scotland by 2018;
- Tackling air pollution on the English Road network;
- New real driving emissions requirement to address real world NO\textsubscript{x} emissions;
- Additional funding to accelerate uptake of hydrogen vehicles and infrastructure;
- Additional funding to accelerate the uptake of electric taxis;
- Further investment in retrofitting alongside additional support of low emission buses and taxis;
- Regulatory changes to support the take up of alternatively fuelled light commercial vehicles;
- Exploring the appropriate tax treatment for diesel vehicles;
- Call for evidence on updating the existing HGV Road User Levy;
- Call for evidence on use of red diesel;
- Ensure wider environmental performance is apparent to consumers when purchasing cars;
- Updating Government procurement policy;
- New emissions standards for non-road mobile machinery;
- New measures to tackle NO\textsubscript{x} emissions from Medium Combustion Plants; and,
- New measures to tackle NO\textsubscript{x} emissions from generators.

2.22. The above measures do not provide any actions which are relevant to the operation or design of the Development.
2.23. A High Court ruling\(^{12}\) on 21st February 2018, stated the UK Governments air quality improvement plan adopted on 31st July 2017 was unlawful as ‘it does not contain measures sufficient to ensure substantive compliance with the 2008 Directive and the English Regulations’. The UK Government ‘must ensure steps are taken to achieve compliance as soon as possible, by the quickest route possible and by a means that makes that outcome likely’.

2.24. The judgement stated that the UK Government must produce a supplementary plan, setting out requirements for feasibility studies to be undertaken in 33 Local Authority Areas, NBC are not one of the named authorities.

2.25. In May 2018, it was announced the European Union (EU) was going to take the UK to the European Commission over failure to meet the Limit Values for NO\(_2\).

Environmental Protection UK & Institute of Air Quality Management Guidance; Land-Use Planning & Development Control: Planning for Air Quality, 2017

2.26. Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) Land-Use Planning & Development Control: Planning for Air Quality Guidance\(^{13}\) provides a framework for air quality considerations within local development control processes, promoting a consistent approach to the treatment of air quality issues.

2.27. The guidance explains how development proposals can adopt good design principals to reduce emissions and contribute to better air quality. The guidance also provides a method for screening the need for an air quality assessment and a consistent approach for describing the impacts at individual receptors.

2.28. The EPUK and IAQM Guidance, advises that:

“In arriving at a decision about a specific proposed development the local planning authority is required to achieve a balance between economic, social and environmental considerations. For this reason, appropriate consideration of issues such as air quality, noise and visual amenity is necessary. In terms of air quality, particular attention should be paid to:

- Compliance with national air quality objectives and of EU Limit Values;
- Whether the development will materially affect any air quality action plan or strategy;
- The overall degradation (or improvement) in local air quality; or
- Whether the development will introduce new public exposure into an area of existing poor air quality”.

Planning Practice Guidance, 2014

2.29. The Government's online Planning Practice Guidance\(^{14}\) (PPG) states that air quality concerns are more likely to arise where development is proposed within an area of existing poor air quality, or where it would adversely impact upon the implementation of air quality strategies and / or action plans. The PPG notes that when deciding whether air quality is relevant to a planning application, considerations would include whether the development would lead to:

- Significant effects on traffic, such as volume, congestion, vehicle speed, or composition;


• The introduction of new point sources of air pollution, such as furnaces, centralised boilers and Combined Heat and Power (CHP) plant; and
• Exposing occupants of any new developments to existing sources of air pollutants and areas with poor air quality.

Local Air Quality Management Policy Guidance, 2016

2.30. The Local Air Quality Management Policy Guidance LAQM.PG (16)\(^{15}\) provides additional guidance on the links between transport and air quality. LAQM.PG (16) describes how road transport contributes to local air pollution and how transport measures may bring improvements in air quality. Key transport-related Government initiatives are set out, including regulatory measures and standards to reduce vehicle emissions and improve fuels, tax-based measures and the development of an integrated transport strategy.

2.31. LAQM.PG (16) also provides guidance on the links between air quality and the land use planning system. The guidance advises that air quality considerations should be integrated within the planning process at the earliest stage, and is intended to aid local authorities in developing action plans to deal with specific air quality issues and create strategies to improve air quality. LAQM.PG (16) summarises the means in which the land use planning system can help deliver compliance with the air quality objectives.

Institute of Air Quality Management: Guidance on the Assessment of Dust from Demolition and Construction, 2014

2.32. The IAQM Construction Dust Guidance\(^{16}\) provides guidance to consultants and Environmental Health Officers on how to assess air quality impacts from construction related activities. The guidance provides a risk based approach based on the potential dust emission magnitude of the site (small, medium or large) and the sensitivity of the area to dust impacts. The importance of professional judgement is noted throughout the guidance. The guidance recommends that once the risk class of the site has been identified, the appropriate level of mitigation measures are implemented to ensure that the construction activities have no significant impacts.


2.33. The Northampton Low Emission Strategy (NLES)\(^{17}\) sets out actions and activities required to achieve a reduction in emissions. The NLES recognises actions implemented on a regional scale will have the greatest impact, such as regional transport planning, developing electric vehicle charging infrastructure and spatial planning policies.

2.34. To achieve a reduction in emissions, the NLES outlines three main themes:
• Evidence for Change – outlines evidence which is driving the need for change;
• Creating a Low Emission Future – considers what is required to achieve low emission travel; and
• Northampton Vehicle Emission Framework – emphasises reducing overall emissions by moving to cleaner fuels and technologies.

\(^{15}\) Defra (2016), 'Local Air Quality Management (LAQM) Policy guidance 2016 (LAQM.PG (16))', DEFRA, London.
\(^{16}\) Institute of Air Quality Management, 2014, 'Guidance on the Assessment of dust from demolition and construction.
\(^{17}\) Northampton Borough Council - Northampton Low Emission Strategy, 2017 – 2025
2.35. The NLES sets out a three-stage process to ensure a conservative air quality assessment is undertaken for new development:

- Stage 1: Determining the classification of the development proposal;
- Stage 2: Assessing and quantifying the impact on local air quality;
- Stage 3: Determining the level of a mitigation required by the proposal to meet Local Development Plan requirements.

2.36. This Air Quality Assessment follows the approach set out in the NLES, as requested by NBC during consultation (see Appendix A).
3. Assessment Methodology and Significance

Assessment Methodology

3.1. This air quality assessment was undertaken using a variety of information and procedures as follows:
   • Consultation with the Environmental Health Officer (EHO) at NBC to agree the methodology to be used within the assessment (see Appendix A: Consultation of Air Quality Scope);
   • Review of NBC’s air quality Review and Assessment statutory reports published as part of the LAQM regime to determine baseline conditions around the Site;
   • Review of the local area to identify potentially sensitive receptor locations that could be affected by changes in air quality arising from the construction works and the operation of the Development;
   • Determination of the likely significant effects of construction works and activities, and consideration of the environmental management controls likely to be employed during the works;
   • Identification of mitigation measures, where appropriate.

3.2. Emissions of total NO\(_x\) from motor vehicle exhausts comprise nitric oxide (NO) and nitrogen dioxide (NO\(_2\)). NO oxidises in the atmosphere to form NO\(_2\).

3.3. The most significant pollutants associated with road traffic emissions, in relation to human health, are NO\(_2\) and PM\(_{10}\). NBC has declared seven AQMAs for exceedences of the annual mean NO\(_2\) objectives, attributable to road traffic emissions (referred to later in this Report). This assessment therefore focuses on NO\(_2\) and particulate matter (PM\(_{10}\) and PM\(_{2.5}\)).

Construction Phase Assessment Methodology

Dust Emissions

3.4. The assessment of the effects of the construction activities in relation to dust has been based on the IAQM’s guidance on the Assessment of Dust from Demolition and Construction, 2014 and the following:
   • consideration of planned construction activities and their phasing; and
   • a review of the sensitive uses in the area immediately surrounding the Site.

3.5. The IAQM guidance identifies receptors within 350m of the Site boundary, and within 50m of construction routes would be sensitive to emissions and nuisance dust from construction activities. Figure 1 shows the area surrounding the Site, where sensitive receptors could be affected, considering the IAQM guidance.

3.6. Following the IAQM guidance, construction activities can be divided into the following four distinct activities:
   • demolition – any activity involved in the removal of an existing building;
   • earthworks – the excavation, haulage, tipping and stockpiling of material, but may also involve levelling the site and landscaping;
   • construction – any activity involved with the provision of a new structure; and
   • trackout – the movement of vehicles from unpaved ground on a site, where they can accumulate mud and dirt, onto the public road network where dust might be deposited.
3.7. The IAQM guidance considers three separate dust effects, with the proximity of sensitive receptors being taken into consideration for:

- annoyance due to dust soiling;
- potential effects on human health due to significant increase in exposure to PM$_{10}$; and
- harm to ecological receptors.

3.8. A summary of the four-step process which has been undertaken for the dust assessment of construction activities as set out in the IAQM guidance is presented in Table 2.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Screen the Need for a Detailed Assessment</td>
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</table>
| 2    | Assess the Risk of Dust Effects | The risk of dust arising in sufficient quantities to cause annoyance and/or health or ecological effects should be determined using three risk categories: low, medium and high based on the following factors:  
  - the scale and nature of the works, which determines the risk of dust arising (i.e. the magnitude of potential dust emissions) classed as small, medium or large; and  
  - the sensitivity of the area to dust effects, considered separately for ecological and human receptors (i.e. the potential for effects) defined as low, medium or high. |
| 3    | Site Specific Mitigation | Determine the site-specific measures to be adopted at the site based on the risk categories determined in Step 2 for the four activities. For the cases where the risk is 'insignificant' no mitigation measures beyond those required by legislation are required. Where a local authority has issued guidance on measures to be adopted these should be taken into account. |
| 4    | Determine Significant Effects | Following Steps 2 and 3, the significance of the potential dust effects should be determined, using professional judgement, taking into account the factors that define the sensitivity of the surrounding area and the overall pattern of potential risks. |

**Construction Vehicle Exhaust and Plant Emissions**

3.9. The IAQM guidance on assessing construction effects states that:

“Experience of assessing the exhaust emissions from on-site plant and site traffic suggests that they are unlikely to make a significant effect on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed.”

3.10. Given the area of the Site (approximately 2,400m$^2$) and based on professional judgement there would be a maximum estimated number of HDVs as 20 movements a day; in accordance with the
guidance, it is considered that a quantitative assessment of the exhaust emissions from construction plant and traffic is not required, and a qualitative assessment is appropriate.

**Operational Phase Assessment Methodology**

3.11. A qualitative review of the operational Development has been undertaken against relevant air quality guidance to determine the impact of the Development. The significance is based on professional judgement.

**Operational Effects**

3.12. The NLES sets out the level of assessment required depending on the classification of a development. The NLES guidance states an air quality assessment is required if a development meets the NBC/NCC threshold for a Transport Assessment and any of the following criteria:

- Where development is within of adjacent to an AQMA or CAZ;
- Where development requires an EIA and air quality is to be considered; or
- Any of the following criteria are triggered:
  - Proposals in areas where sustained compliance with EU Limit Values is at risk;
  - Any development proposing a net increase of 100 or more parking spaces;
  - Any development that could increase the existing traffic flows on roads of >10,000 AADT by 5% or more;
  - Any developments that could increase traffic flows by 5% or more in road canyons with >5,000 AADT;
  - Proposals that could introduce or significantly alter congestion and includes the introduction of substantial road infrastructure changes;
  - Proposals that reduce average speeds by more than 10km per hour
  - Proposals that include additional HGV movements by more than 10% of total trips;
  - Where significant demolition and construction works are proposed; or
  - Where a centralised combustion unit of thermal input >300kWh is proposed.

3.13. As agreed with the EHO at NBC (see Appendix A), the above criteria have been considered against the operational Development to quantify the potential impact to local air quality.

**Future Occupants**

3.14. LAQM.TG(16) states the annual mean AQS objectives should apply at ‘All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc’. As such the annual mean AQS objectives as well as the short-term AQS objectives have been considered for the residential uses.

**Impact Significance**

**Demolition and Construction**

**Dust Emissions**

3.15. The significance of effects of construction activities on air quality have been assessed based on professional judgement and with reference to the criteria set out in Step 2 of the IAQM guidance.
Appropriate site-specific mitigation measures that would need to be implemented to minimise any adverse effect have also been considered. Details of the assessor’s experience and competence to undertake the dust assessment is provided in **Appendix B: Air Quality Assessors Experience**.

3.16. The assessment of the risk of dust effects arising from each of the construction activities, as identified by the guidance, is based on the magnitude of potential dust emission and the sensitivity of the area. The risk category matrix for each of the construction activity types, taken from the guidance, are presented in **Table 3 to Table 6**.

<table>
<thead>
<tr>
<th>Sensitivity of Area</th>
<th>Dust Emission Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Large</td>
</tr>
<tr>
<td>High</td>
<td>High Risk</td>
</tr>
<tr>
<td>Medium</td>
<td>High Risk</td>
</tr>
<tr>
<td>Low</td>
<td>Medium Risk</td>
</tr>
</tbody>
</table>

**Table 4: Risk Category from Earthworks Activities**

<table>
<thead>
<tr>
<th>Sensitivity of Area</th>
<th>Dust Emission Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Large</td>
</tr>
<tr>
<td>High</td>
<td>High Risk</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium Risk</td>
</tr>
<tr>
<td>Low</td>
<td>Low Risk</td>
</tr>
</tbody>
</table>

**Table 5: Risk Category from Construction Activities**

<table>
<thead>
<tr>
<th>Sensitivity of Area</th>
<th>Dust Emission Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Large</td>
</tr>
<tr>
<td>High</td>
<td>High Risk</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium Risk</td>
</tr>
<tr>
<td>Low</td>
<td>Low Risk</td>
</tr>
</tbody>
</table>

**Table 6: Risk Category from Trackout Activities**

<table>
<thead>
<tr>
<th>Sensitivity of Area</th>
<th>Dust Emission Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Large</td>
</tr>
<tr>
<td>High</td>
<td>High Risk</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium Risk</td>
</tr>
<tr>
<td>Low</td>
<td>Low Risk</td>
</tr>
</tbody>
</table>

3.17. The risk category determined for each of the construction activity types is used to define the appropriate, site specific, mitigation measures that should be applied. The guidance recommends that significance is only assigned to the effect after considering mitigation and assumes that all actions to avoid or reduce the environmental effects are an inherent part of the proposed development, and that in the case of construction mitigation (secured through planning conditions, legal requirements or required by regulations), this will ensure that potential significant adverse effects will not occur.
3.18. Experience of implementing mitigation measures for construction activities demonstrates that total mitigation is normally possible. Accordingly, the guidance recommends that the significance of construction activity effects should only be considered post-mitigation where the residual effects (in accordance with the above evidence-based theory) would not be ‘significant’. It therefore follows that; within this assessment no significance criteria are provided for the pre-mitigation likely effects of the construction work.

Demolition and Construction Vehicle Exhaust Emissions
3.19. The significance of the effects from demolition and construction vehicle exhaust emissions on air quality were based on professional judgement.

Demolition and Construction Plant Emissions
3.20. The significance of the effects from construction plant emissions on air quality were also based on professional judgement.
4. **Baseline Conditions**

**Northampton Borough Council Review and Assessment Process**

4.1. In 2003, as part of the Air Quality Review and Assessment process, NBC concluded the AQS objective levels for annual mean NO\textsubscript{2} was likely to be exceeded alongside the southbound carriageway of the M1 motorway. AQMA No.1 was subsequently designated for annual mean NO\textsubscript{2} on the 6\textsuperscript{th} January 2003.

4.2. Between 2005 and 2009 a further ten AQMA’s were designated for annual mean NO\textsubscript{2}. The 11 AQMA’s designated are described as follows:

- AQMA Number 1 – The M1 Corridor, declared on 06/01/2003;
- AQMA Number 2 - Victoria Promenade, declared on 25/04/2005;
- AQMA Number 3 - St James Road, declared on 25/04/2005;
- AQMA Number 4 - Harborough Road, declared on 01/04/2008;
- AQMA Number 5 - A45 London Road, declared on 16/04/2009;
- AQMA Number 6 - Campbell Square, declared on 16/04/2009;
- AQMA Number 7 - Barack Road, declared on 16/04/2009;
- AQMA Number 8 - St Michaels Road, declared on 16/04/2009;
- AQMA Number 9 - Park Avenue North, declared on 16/04/2009;
- AQMA Number 10 - A43 Lumbertubs Way, declared on 16/04/2009; and

4.3. Based on the monitoring results, which showed concentrations were below the AQS objective, NBC revoked AQMA’s 7, 9, 10 and 11 in 2011. At the time of writing they are seven AQMA’s in NBC.

4.4. The Site is not located within an AQMA. The nearest AQMA to the Site is the St James Road AQMA (Number 3), located approximately 1.9km southeast of the Site boundary.

4.5. For consistency purposes NBC are looking to amalgamate all the town centre AQMA’s. Roads including The Horse Market (A508), Broadstreet, Lady’s Lane and Greyfriars could be included within this town centre AQMA. As such the Site would not be located in this AQMA.

**Northampton Borough Council Local Monitoring**

4.6. NBC currently undertakes monitoring of NO\textsubscript{2} and PM\textsubscript{2.5} at three locations within the Borough using automatic monitors. The automatic monitors are located:

- at Spring Park, an urban background monitor approximately 3.6km northeast of the Site (monitoring NO\textsubscript{2} and PM\textsubscript{2.5});
- on Wellingborough Road, a roadside monitor approximately 4.5km southeast of the Site (monitoring NO\textsubscript{2});
- at Kingsthorpe, an urban background monitor approximately 5.4km northeast of the Site (monitoring NO\textsubscript{2} and PM\textsubscript{2.5}).

4.7. The results for the Wellingborough Road roadside monitor, are presented in **Table 7** from 2013 to 2017.
Table 7: Measured Concentrations at the NBC Wellingborough Road Automatic Monitor

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>AQS Objective</th>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO₂</td>
<td>Annual Mean (µg/m³)</td>
<td>40µg/m³</td>
<td>34</td>
<td>33.3</td>
<td>34.5</td>
<td>37.7</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-Hour Mean (No. of Hours)</td>
<td>200µg/m³ not to be exceeded more than 18 times a year</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Note: Data obtained from Northampton Borough Council - Annual Status Report 2018

4.8. The monitoring results in Table 7 indicate the AQS NO₂ objectives were met at the Wellingborough Road roadside monitor in all years from 2013 to 2017.

4.9. NO₂ is also currently measured at 72 locations using diffusion tubes. The results for the ten nearest NO₂ diffusion tube locations to the Site are presented in Table 8.

Table 8: Measured NO₂ Concentrations (µg/m³) at the 10 closest NBC diffusion tubes to the Site

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Approximate Distance to Site (km)</th>
<th>Classification</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Weedon Road 1</td>
<td>1.84</td>
<td>Roadside</td>
<td>28.8</td>
<td>31.0</td>
<td>32.5</td>
<td>40.3</td>
<td>34.0</td>
</tr>
<tr>
<td>17</td>
<td>Weedon Road 2</td>
<td>2.05</td>
<td>Roadside</td>
<td>32.9</td>
<td>32.9</td>
<td>35.7</td>
<td>43.9</td>
<td>33.9</td>
</tr>
<tr>
<td>18</td>
<td>Weedon Road 3</td>
<td>2.08</td>
<td>Roadside</td>
<td>29.5</td>
<td>32.6</td>
<td>34.4</td>
<td>35.8</td>
<td>30.6</td>
</tr>
<tr>
<td>22</td>
<td>Harlestone Road</td>
<td>2.11</td>
<td>Roadside</td>
<td>38.9</td>
<td>40.8</td>
<td>40.8</td>
<td>44.4</td>
<td>35.0</td>
</tr>
<tr>
<td>21</td>
<td>Spencer Bridge Road 2</td>
<td>2.12</td>
<td>Roadside</td>
<td>37.8</td>
<td>38.4</td>
<td>33.5</td>
<td>44.0</td>
<td>35.1</td>
</tr>
<tr>
<td>26</td>
<td>Aberdeen Terrace</td>
<td>2.16</td>
<td>Roadside</td>
<td>40.6</td>
<td>43.5</td>
<td>39.9</td>
<td>53.0</td>
<td>44.3</td>
</tr>
<tr>
<td>20</td>
<td>Spencer Bridge Road 1</td>
<td>2.17</td>
<td>Roadside</td>
<td>43.7</td>
<td>40.5</td>
<td>35.9</td>
<td>48.3</td>
<td>41.4</td>
</tr>
<tr>
<td>19</td>
<td>Weedon Road 6</td>
<td>2.17</td>
<td>Roadside</td>
<td>28.3</td>
<td>29.1</td>
<td>29.4</td>
<td>33.1</td>
<td>32.5</td>
</tr>
<tr>
<td>23</td>
<td>Spencer Bridge Road 3</td>
<td>2.18</td>
<td>Roadside</td>
<td>43.7</td>
<td>48.8</td>
<td>48.4</td>
<td>53.3</td>
<td>43.8</td>
</tr>
<tr>
<td>24</td>
<td>Spencer Bridge Road 4</td>
<td>2.22</td>
<td>Roadside</td>
<td>34.5</td>
<td>33.6</td>
<td>39.5</td>
<td>39.2</td>
<td>31.9</td>
</tr>
</tbody>
</table>

Notes: Data obtained from Northampton Borough Council - Annual Status Report 2018
Exceedences of the AQS Objectives shown in bold

4.10. The monitoring results in Table 8 indicate that the annual mean NO₂ objective of 40µg/m³ was exceeded at 7 of the 10 roadside diffusion tube monitoring locations between 2013 and 2017. However, the 5 closest locations did not exceed the objective in 2017. However, the Site is located on a much less heavily trafficked road than the monitoring sites are located and is therefore likely to experience concentrations lower than those presented in Table 8.

Defra Air Quality Background Maps

4.11. No monitoring data is available for PM₁₀ near the Site, and NBC do not undertake PM₁₀ monitoring within their administrative boundary. Background concentrations of PM₁₀ and PM₂.₅ are available from the Defra Air Quality Archive for 1 x 1km grid squares for the years between 2015 and 2030. Table 9 presents the Defra background concentrations for the year 2017 for the grid square the Site is located within (472500,261500).
### Table 9: Defra Background Map in 2017 for the Grid Square at the Location of the Site

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Annual Mean Concentration</th>
<th>AQS Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM$_{10}$</td>
<td>15.7μg/m$^3$</td>
<td>40μg/m$^3$</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>10.6μg/m$^3$</td>
<td>25μg/m$^3$</td>
</tr>
</tbody>
</table>

4.12. The data in Table 9 shows that the PM$_{10}$ and PM$_{2.5}$ concentrations are below the respective AQS objectives.
5. **Construction Phase Effects**

5.1. Construction activities in relation to the Development have the potential to affect local air quality through Demolition, Earthworks, Construction and Trackout, as described above.

5.2. The site is in a predominantly residential area of Northampton. It is bound by residential properties to the north, east, and south, and by Duston Garage to the west. The nearest high sensitivity human receptors are residential properties within 20m, located to the north, east and south of the Site. There are no ecological receptors within 50m of the Site boundary or the routes used by construction vehicles, therefore ecological effects have not been considered further. The location of the Site and Construction Phase Assessment Bands are presented in Figure 1.

5.3. As there are existing receptors within 350m of the boundary of the Site and within 50m of the routes that would be used by construction vehicles on the public highway, it is therefore considered that a detailed assessment is required to determine the likely dust effects, as recommended by the IAQM guidance on construction dust. Results of this assessment are provided for each main activity (Demolition, Earthworks, Construction and Trackout) below.

**Dust Emissions**

**Demolition**

5.4. The total volume of all buildings to be demolished is estimated to be <20,000m³. Based on this and considering the criteria in Step 2A of the IAQM guidance, the potential dust emissions during demolition works would be of **small** magnitude.

**Earthworks**

5.5. The total area of the Site is approximately 2,400m², based on this and considering the criteria in Step 2A of the IAQM guidance, the potential dust emissions during construction activities would be of **small** magnitude.

**Construction**

5.6. The estimate for the total volume of buildings to be constructed would be between 25,000m³ and 100,000m³. Based on this and considering the criteria in Step 2A of the IAQM guidance, the potential dust emissions during construction activities would be of **medium** magnitude.

**Trackout**

5.7. It was estimated that the number of HDVs outward movements that leave the site after moving over unpaved ground would be less than 10 HDV trips per day (Monday to Saturday). Based on this and considering the criteria in Step 2A of the IAQM guidance, the potential for dust emissions due to trackout activities would be of **small** magnitude.

**Sensitivity of the area**

5.8. The sensitivity of the area to each main activity has been assessed based on the number and distance of the nearest sensitive receptors to the activity, and the sensitivity of these receptors to dust soiling and human health.
Sensitivities of People to Dust Soiling Effects

5.9. There were estimated to be between 10-100 highly sensitive residential receptors within 20m of the Site. On this basis (as set out in Table 2 of the IAQM Guidance) the sensitivity of the area to dust soiling is **high**.

Sensitivities of People to the Health Effects of PM$_{10}$

5.10. There were estimated to be between 10-100 highly sensitive residential receptors within 20m of the Site and the Defra background PM$_{10}$ concentration is less than 24µg/m$^3$. On this basis (as set out in Table 3 of the IAQM Guidance) the sensitivity of the area to dust soiling is **low**.

Dust Risk Summary

5.11. The dust risk categories, based on the potential magnitude of dust emissions and the sensitivity of the area to dust, are presented in **Table 10**.

<table>
<thead>
<tr>
<th>Potential Effect</th>
<th>Demolition Risk</th>
<th>Earthworks Risk</th>
<th>Construction Risk</th>
<th>Trackout Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust Soiling</td>
<td>Medium Risk</td>
<td>Low Risk</td>
<td>Low Risk</td>
<td>Low Risk</td>
</tr>
<tr>
<td>Human Health</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

5.12. The Site is a **Medium Risk** site, consequently as dust soiling risks are likely, Site specific mitigation measures would be required to ensure that there are no adverse effects from demolition and construction.

Demolition and Construction Vehicle Exhaust Emissions

5.13. Construction related vehicles entering and egressing the Site from the local road network would have the potential to increase local air pollutant concentrations, particularly in respect of NO$_2$ and particulate matter (both PM$_{10}$ and PM$_{2.5}$).

5.14. Based on the size of the Site, it is estimated that number of HDVs would be less than 10 HDV outward trips in any one day. Emissions from construction traffic would be relatively small compared to local road traffic emissions.

5.15. Considering the current traffic movements around the Site, the likely effect of construction vehicles entering and egressing the Site on air quality would be **not significant** during the construction period.

Demolition and Construction Plant Emissions

5.16. Any emissions from plant operating on the Site would be small in comparison to existing background concentrations, including the emissions from traffic movements on Greyfriars. It is therefore considered that the likely effect of construction plant on local air quality is **not significant**.
6. **Operational Phase Effects**

6.1. The Development has the potential to generate additional traffic on the surrounding road network. This, in turn, has the potential to affect local air quality at sensitive residential properties in proximity to the road network affected by the proposals. In addition, the Development proposals would introduce residential receptors to the Site.

**Traffic Impacts**

6.2. The project transport consultants (Waterman) have considered the effects of the Development on transport and access (see separate Transport Statement which accompanies this application). The Transport Statement states that the Development would generate 3 vehicular trips during the morning peak hour and 2 vehicular trips during the evening peak hour which equates to 20 vehicles per day. A number of these vehicular movements, associated with the site, would be expected to be linked trips involving people travelling from work to home, via the site for example. The above therefore is a worst-case in terms of possible new vehicular trips on the local highway network. The Development does not require a Transport Statement to be prepared and is therefore considered to be a Minor development and no air quality assessment is required.

6.3. Based on the above, according to the NLES guidance the Development is not expected to give rise to air quality impacts. As such the likely effect of the operational Development on local air quality would be **not significant**.

**Proposed Heating**

6.4. Heating for the Development would be provided by individual boilers for each unit which would meet the emissions criteria of $<40\text{mgNOx/kWh}$. Therefore, there would be no unacceptable effects on air quality at local sensitive receptors because of the proposed heating and as such the effect is **not significant**.

**Residential Amenity**

6.5. The results from the five nearest diffusion tubes to the Site show that existing concentrations are below the $\text{NO}_2$ objective of $40.0\mu\text{g/m}^3$ in 2017 (the most recent year of data available). No monitoring data is available near the Site for $\text{PM}_{10}$ and $\text{PM}_{2.5}$, however concentrations available from the Defra background maps show that the concentrations are below the relevant air quality objectives. This is consistent with NBC not declaring an AQMA for either $\text{PM}_{10}$ or $\text{PM}_{2.5}$ concentrations.

6.6. Based on the available information existing air quality conditions are not considered to present a significant constraint on residential use in this location. The effect of introducing new residents is **not significant**.
7. Mitigation Measures and Residual Effects

Construction

Dust Emissions

7.1. The Site is a medium-risk site in relation to nuisance dust emissions (referred to earlier in this Report), and therefore a range of environmental management controls would be developed with reference to the IAQM guidance for high-risk sites. The management controls would prevent the release of dust entering the atmosphere and / or being deposited on nearby receptors and would be included within a Construction Environmental Management Plan. The management controls would include:

- appropriate site management including implementation of a stakeholder communications plan, a dust management plan, and regular site inspections to monitor dust control procedures
- provision of appropriate hoarding and / or fencing to reduce dust dispersion and restrict public access;
- avoid site runoff of water and mud;
- maintenance of Site fencing, barriers and scaffolding clean using wet methods;
- removal of materials that have potential to produce dust, where possible
- avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment, where possible;
- fitting equipment (particularly cutting, grinding or sawing) with dust control measures such as water sprays, wherever possible;
- enclosing chutes, conveyors and covered skips;
- restricting drop heights onto lorries and other equipment;
- no fires would be allowed on the Site;
- control of cutting or grinding of materials on the Site and avoidance of scabbling;
- ensuring sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless required for a particular process and other control measures are in place;
- ensuring that a road sweeper is available to clean mud and other debris from hard-standing, roads and footpaths;
- ensuring vehicles entering and leaving the sites are securely covered; and
- using a wheel wash system (with rumble grids).

7.2. Such measures are routinely and successfully applied to construction projects throughout the UK and are proven to significantly reduce the potential for adverse nuisance dust effects associated with the various stages of the construction work. Therefore, it is considered that residual effects due to fugitive emissions would be not significant.

Construction Vehicle Exhaust Emissions

7.3. All construction traffic logistics would be agreed with NBC. Consideration would also be given to the avoidance, or limited use, of traffic routes in proximity to sensitive uses (i.e. residential roads etc.) and the avoidance, or limited use, of roads during peak hours, where practicable. The likely residual effect of construction vehicles entering and egressing the Site to air quality would remain as per the likely effect, not significant.
Construction Plant Emissions

7.4. Under the NLES developments would be required to implement suitable abatement controls for the use of non-road mobile machinery. The likely effect of any emissions from plant operation on the Site would remain as per the likely effect, not significant.

Operational Phase

7.5. Whilst the impact of the Development is not significant, Table 11 presents the NLES Type 1 mitigation measures inherent to the Development which are likely to have a benefit to air quality.

Table 11: Summary of Mitigation Measures included as part of the Development

<table>
<thead>
<tr>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating provided by low NOx (&lt;40mg/kWh) boilers.</td>
</tr>
<tr>
<td>Provision of Travel Plan.</td>
</tr>
<tr>
<td>All residents would receive a ‘Sustainable Travel Pack’ containing various information, including walking and cycling routes and public transport service information as well as time limited bus passes. This pack would also identify the full range of initiatives and facilities that are available to them.</td>
</tr>
</tbody>
</table>
8. Summary and Conclusions

8.1. The main likely effects on local air quality during construction relate to dust. A range of measures to minimise or prevent dust would be implemented and would be detailed in a CEMP. Following mitigation, the effects from nuisance dust emissions would be not significant.

8.2. Emissions from construction vehicles would be small in comparison to the emissions from the volume of vehicles travelling on roads in the surrounding area of the Site and would not significantly affect air quality. Therefore, it is anticipated that the effect of construction vehicles entering and egressing the Site during the construction period would be not significant.

8.3. Emissions from plant operating on the Site would be small in comparison to the emissions from traffic movements on the roads adjacent to the Site and all emissions would be abated. Therefore, the likely effect on local air quality would be not significant.

8.4. Based on the NLES guidance, the 20 daily traffic trips generated by the Development is below the criteria of when likely significant impacts could occur. As such the likely effect of traffic emissions associated with the operational Development on local air quality is not significant.

8.5. Heating for the Development would be provided by individual boilers for each unit which would meet the emissions criteria of <40mgNOx/kWh. Therefore, there would be no unacceptable effects on air quality at local sensitive receptors because of the proposed heating and as such the effect is not significant.

8.6. Based on the results of the nearest local air quality monitoring and using professional judgement future users of the Site are unlikely to be exposed to poor air quality. The effect of introducing new residents is not significant.
APPENDICES

Appendix A  Consultation of Air Quality Scope
Good Morning Chris,

Thank you for your e-mail with proposals for AQ assessments for two separate developments.

Your approach is acceptable but Northampton BC have developed a Low Emission Strategy that details our preferred methodology for AQ assessments. Part 3.3 of the guidance covers Land Use & Development Control Guidance outlines this.

This Council does not like the use of the EPUK Guidance on quality assessment due to its tendency to underestimate the true impact.

Based on the information provided I would assume that both developments would be of a minor impact classification and would require type 1 mitigation detailed in Table 8 of the document. For residential mitigation appropriate mitigation is as follows:

- 1 charging point per unit (dwelling with dedicated parking) or 1 charging point per 10 spaces (unallocated parking) and ensure appropriate cabling is provided to enable increase in future provision.
- All gas-fired boilers to meet a minimum standard of <40 mgNOx/kWh

I trust this response is sufficient.

Kind regards

Gavin Smith  |  Senior Environmental Health Officer
01604 837648

Environmental Protection Team | Northampton Borough Council | St Giles Square, Northampton | NN1 1DE

Hi Gavin,

Waterman are currently undertaking air quality assessments for the proposed developments on Billing Brook Road and Moray Lodge, a description of both sites is set out below.

**Billing Brook Road**
The site is a greenfield site adjacent to Billing Brook Road. The development site covers 0.5 hectares and will consist of a 8-dwelling supported living housing scheme with associated car parking. The site is bounded to the North by a Footway linking Thorplands via an overhead footbridge over Billing Brook Road; to the East and South by Thorplands residential housing; and to the West by Billing Brook Road.

**Moray Lodge**
The Site is located within Duston, Northampton, a town in the East Midlands, which is situated in the county of Northamptonshire. The Site is located at National Grid Reference 472036, 261366. The development will consist of a new building consisting of 20 apartment units.

We propose to undertake a qualitative assessment on the operational phase of the Development, inclusive of a baseline review of existing air quality conditions and a qualitative assessment of potential construction phase effects. Using our professional judgement, this is due to the following reasons:

- Neither site is located within, or near, an AQMA. The closest AQMA to Moray Lodge is AQMA 3 located 1.9km to the southeast of the Site and the closest AQMA to the Billing Brook Road development is AQMA 4 located 4.3km to the southwest of the Site; and
- The trips associated with the operational developments would not result in an increase of more than 500 LDVs or 100 HDVs - the indicative criteria of the EPUK & IAQM Guidance to proceed to an Air Quality Assessment.

I would be grateful if you could confirm that the above approach is acceptable.

Kind regards,
Chris
**Chris Brownlie**
Principal Consultant
**Waterman Infrastructure & Environment Ltd**
Appendix B  Air Quality Assessors Experience
Assessor Experience

Name: Christopher Brownlie

Years of Experience: 11

Qualifications:
BSc (Hons)
MSc
AIEMA (Associate Member of the Institute of Environmental Management and Assessment)
MIAQM (Member of the Institute of Air Quality Management)

Chris has over 11 years of experience in the assessment of air quality and odour for a variety of environmental impact assessment projects. Chris has knowledge and extensive experience of designing and undertaking ambient air quality monitoring programmes using real time equipment and passive diffusion tubes. This includes devising monitoring programs for dust deposition, typically to monitor levels of dust generated during construction activities in populated areas where there is the potential for nuisance to be caused.

Chris has been responsible for the technical delivery of a wide range of air quality projects for a variety of clients in both the public and private sector. These projects include consideration of emissions from both transportation and industrial sources, through both monitoring and modelling, and therefore he has an in depth understanding of the regulatory requirements for these sources and the published technical guidance for their assessment.
UK and Ireland Office Locations