Viridian-Air

Air Quality Assessment

Site: 30-38 CHESTER ROAD, NORTHWOOD, MIDDLESEX, HA6 1BQ

Client

Mr Salim Rhemtulla

Seymour House Residential Care Homes Limited

Report Control

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1 Introduction

1.1 Overview

Mr Salim Rhemtulla, Seymour House Residential Care Homes Limited has appointed Viridian-Air to provide an Air Quality Assessment with respect to the proposed development at 30 - 38 Chester Road, Northwood, Middlesex, HA6 1BQ. The proposal is for the construction of a 29-bed residential care home with 3 car parking spaces on the site of nos 30-32 Chester Road, Northwood and the change of use of three rear bedrooms to storage and ancillary rooms to No. 34 Chester Road. The planning application is to be submitted to the London Borough of Hillingdon.

The potential local air quality effects of the proposed development have been assessed using the latest planning guidance from Environmental Protection UK (EPUK), the Institute of Air Quality Management (IAQM)[1] and the Department for Environment, Food and Rural Affairs (Defra)[2]. Construction dust assessment and the development of the Dust Management Plan have been prepared based in the Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance (SPG) 2014[3]. This SPG is based on the latest IAQM guidance on construction dust[4].

1.1 Objective

This report provides air quality assessment (AQA) associated with the constructional and operational phase of the proposed development. It also included the air quality neutrality assessment. The AQA includes the following key aspects:

- Relevance to national, regional and local air quality and appropriate planning guidance
- Establishment of the background air quality at the site and comparison with the National Air Quality Objectives (AQOs).
- Assessment of the risk of dust impacts
    a) Define the potential dust emission magnitude
    b) Define the sensitivity of the area
    c) Define the risk of impacts
- 'Air Quality Neutral' Assessment to ensure there is no unacceptable risk from air pollution to sensitive receptors, with respect to prevailing (mostly traffic related) air quality in the vicinity; and
- Recommendations for dust and emission control measures.

1.2 Site Location

The site is located along at 30 - 38 Chester Road, Northwood, HA6 1BQ. The site faces Chester Road. Kemps Drive joins Chester Road towards the north of the site.

[1] IAQM (2017): 'Land Use Planning and Development Control: Planning for Air Quality v1.2'
[2] Defra (2016): 'Local Air Quality Management – Technical Guidance (TG16)'
[3] https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/planning-guidance-and-practice-notes/control-dust-and
4 IAQM (2016): 'Guidance on the Assessment of Dust from Demolition and Construction v1.1'.

Figure 1-1 shows the site location. There are no Site of Special Scientific Interest (SSIs) or other nationally designated sites within close proximity to the proposed development.

The site is not within the Air Quality Management Area (AQMA) declared by London Borough of Hillingdon[5] in 2003 for NO_2.

There are no sites of special interest within 1km of the sites, as shown in Figure 1-2.

Figure 1-1: Site Location

[5] Hillingdon AQMA https://uk-air.defra.gov.uk/aqma/details?aqma_ref=28

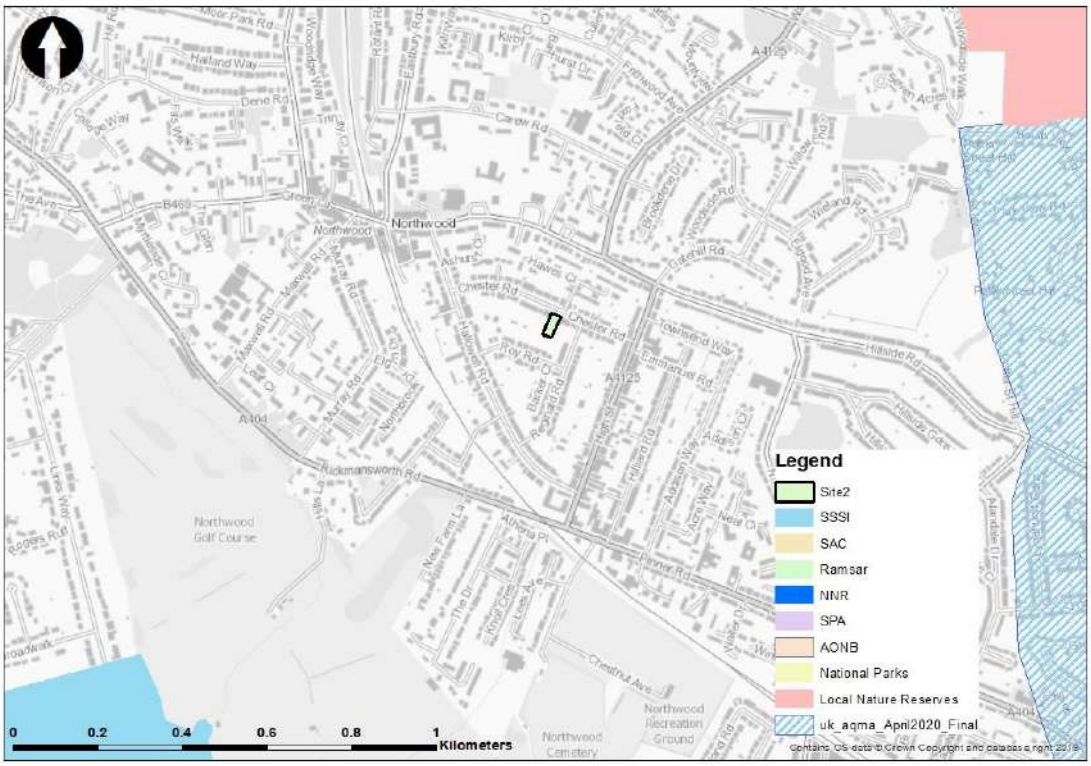


Figure 1-2 Sites of Special Interests near the Project Site

1.3 Key Pollutants

The key pollutants associated with the operational phase of the proposed development will be construction emissions, and road traffic emissions including nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). These pollutants are therefore considered as part of this assessment.

2. Legislation and Policy

This section summarises all legislation, policy, statutory and non-statutory guidelines relevant to the proposed development. Furthermore, the latest regional and local planning policy guidance specifically applicable to the proposed development has been reviewed.

2.1 National Level - England

The UK government has a legal responsibility to meet the EU limit values. Part IV of the 1995 Environment Act[6] sets guidelines for protecting air quality in the UK and forms the basis of the local air quality management. The Environment Act requires local authorities in the UK to review air quality in their area periodically and designate 'Air Quality Management Area' (AQMAs) if improvements are necessary. Where an AQMA is designated, local authorities are also required to produce an 'Air Quality

[6] Parliament of the United Kingdom. (1990), 'Environmental Protection Act', Chapter 43. Queen's Printer of Acts of Parliament.

Action Plan' (AQAP) detailing the pollution reduction measures that need to be adopted to achieve the relevant air quality objectives within an AQMA.

The 2008 EU ambient air quality directive 2008/50/EC was transposed to England law through the introduction of the Air Quality (Standards) Regulations in 2010[7] which also incorporated the fourth EU Daughter Directive (2004/107/EC) that set target values for certain toxic heavy metals and polycyclic aromatic hydrocarbons, (PAH).

2.1.1 National Planning Policy Framework

The principal national planning policy guidance in respect of the proposed development is the National Planning Policy Framework (NPPF)8. The most recent update of the NPPF was published in February 2019 by Department for Communities and Local Government (DCLG). The NPPF Section 170 states that:

"*The planning system should contribute to and enhance the natural and local environment by:……..... preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability……..."*

Section 170 states that: *"Planning policies and decisions should contribute to and enhance the natural and local environment by: …preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, ……..."* and

Section 181 states that: *"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement."*

2.1.2 Relevant National Planning Practice Guidance

The DCLG published a number of supporting web based resources of Planning Practice Guidance (PPG)[9] to supplement the NPPF. With respect to air quality PPG provide guidance on when air quality is relevant to a planning application. It states that:

"Concerns could arise if the development is likely to generate air quality impact in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality

[7] Statutory Instrument. (2010), 'The Air Quality Standards Regulations', No. 1001. Queen's Printer of Acts of Parliament.
[8] National Planning Policy Framework. Accessible at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf
[9] National Planning Practice Guidance web-based resource. Accessible at: http://planningguidance.planningportal.gov.uk/

strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife).”

2.1.3 Statutory Nuisance

It is recognised that the planning system presents a way of protecting amenity. However, in cases where planning conditions are not applicable to a development/installation, the requirements of the Environmental Protection Act 1990 still apply. Under Part III of the Environmental Protection Act 1990, local authorities have a statutory duty to investigate any complaints of:

- *“any premises in such a state as to be prejudicial to health or a nuisance*
- *smoke emitted from premises so as to be prejudicial to health or a nuisance*
- *fumes or gases emitted from premises so as to be prejudicial to health or a nuisance*
- *any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance*
- *any accumulation or deposit which is prejudicial to health or a nuisance”*

Where the local authority establishes any one of these issues constitutes a statutory nuisance and believes it to be unreasonably interfering with the use or enjoyment of someone’s premises and/or is prejudicial to health, an abatement notice will be served on the person responsible for the offence or the owner / occupier. Failure to comply with the notice could lead to a prosecution. However, it is considered as a defence if the best practicable means to prevent or to counteract the effects of the nuisance are employed.

2.1.4 Relevant National Air Quality Standards – England

A summary of the relevant Air Quality Standards/Objectives (henceforth referred to as ‘AQO’) and the types of receptors that are relevant to this assessment are presented in Table 2-1. The AQO listed in Table 2-1 applies only at locations with relevant exposure where a member of the public could be exposed to a level of pollution concentration for the specific averaging periods for that pollutant.

Table 2-1: AQO Relevant to the Proposed Development

Pollutant	Air Quality Objectives		Concentration measured as	Applicable to
	Concentration	Allowance		
Nitrogen Dioxide (NO_2)	200 µg/m^3	18 per calendar year	1 hour mean	All local authorities
	40 µg/m^3		Annual mean	All local authorities
Particulate Matter (PM_{10})	50 µg/m^3	35 per calendar year	24 hour mean	All local authorities
	40 µg/m^3		Annual mean	All local authorities
Particulate Matter ($PM_{2.5}$) Exposure reduction[(a)]	25 µg/m^3 [(a)]		Annual	England only

Notes: [(a)] This is a target value set for a 15% reduction in concentrations at urban background aimed to achieve between 2010 and 2020

Source: Department for Environment Food and Rural Affairs (2014): 'Local Air Quality Management Technical Guidance' (TG.16).

2.2 Regional (London)

2.2.1 The Mayor of London's Air Quality Strategy

The Mayor of London's Air Quality Strategy[10] includes transport and non-transport related policy measures. The document also include guidance on how regional and local planning processes will be used to enable future developments to be 'air quality neutral or better'. Policy 15 within the Mayor's air quality strategy is committed to reporting back regularly on the progress made since the strategy has been delivered. The progress report of 2015[11] includes:

- Analysis of recent trends in air pollution in London;
- An update on the latest understanding of health impacts of air pollution in London;
- An update on the implementation of the transport and non-transport policies included in the Mayor's Air Quality Strategy, including measures announced by the Mayor in February 2013 such as the Ultra-Low Emission Zone;
- Setting out what further action the Mayor will take to improve air quality.

[10] Greater London Authority (2010). Clearing the Air: The Mayor's Air Quality Strategy.
[11] Greater London Authority (2015). Cleaner Air for London: Progress Report on the Delivery of the Mayor's Air Quality Strategy.

2.2.2 London Plan

The London Plan[12] is the spatial development strategy for London. The document has gone through number of alterations with the most recent alterations published in March 2016.

The London Local Plan sets out the overall strategic plan for London with an integrated approach for economic, environmental, transport and social framework for the development of London over the next 20–25 years and covers a number of strategies including transport and environmental issues such as climate change and air quality.

Policy 3.2 "Improving Health and Addressing Health Inequalities" states:

- *"The policies in this Plan are intended to enable Londoners to live in well designed, high quality homes…limiting…exposure to poor air quality."*
- *"The Mayor…has also produced other strategies related to…Air Quality…The Mayor will ensure that policies in this Plan are complemented by those in other mayoral strategies (particularly the Mayor's Transport Strategy, which sets carbon dioxide reduction targets to be achieved in the transport system)."*

Policy 5.1 "Climate Change Mitigation" states:

- *"The Mayor seeks to achieve an overall reduction in London's carbon dioxide emissions of 60 per cent (below 1990 levels) by 2025. It is expected that the GLA Group, London boroughs and other organisations will contribute to meeting this strategic reduction target, and the GLA will monitor progress towards its achievement annually."*

Policy 5.3 "Sustainable design and Construction" states:

- *"Minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems)"*
- *"Minimising pollution (including…air)"*

Policy 7.14 "Improving Air Quality" states that:

- *"Minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans…;*
- *Promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance*

[12] Greater London Authority (2016). The London Plan: Spatial Development Strategy for London Consolidated with Alterations Since 2011.

in the GLA and London Councils' 'The control of dust and emissions from construction and demolition';

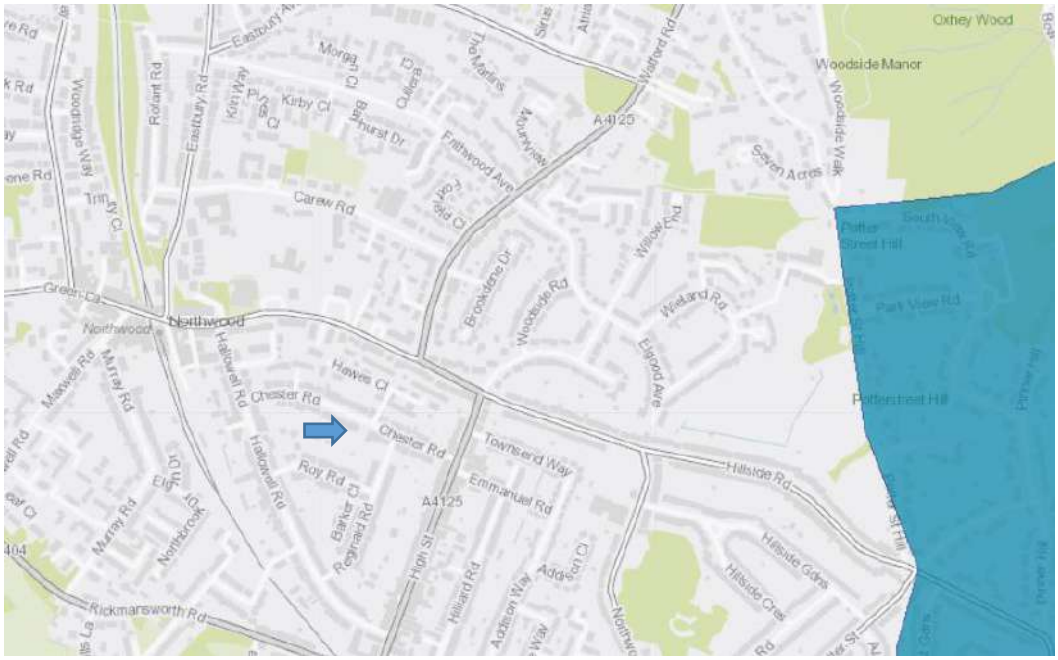
- *Be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs));*
- *Ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area based approaches*
- *Where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified."*

2.3 Local – London Borough of Hillingdon

2.3.1 Hillingdon Local Air Quality Management (LAQM)

Part 1V of the Environment Act 1995 introduced the framework for local air quality management (LAQM). Every local authority has a statutory duty to review and assess the local air quality within their boundary and, where appropriate, declare an Air Quality Management Area along with the provision of an Air Quality Action Plan (AQAP) to improve air quality. In 2003 the Council declared an Air Quality Management Area[13]. The details of the Hillingdon AQMA are available at Defra AQMA site: https://uk-air.defra.gov.uk/aqma/details?aqma_ref=28. The AQMA map for Hillingdon is shown in Figure 2-1. From this map, it is evident that ***the site is not within any AQMA including the Hillingdon AQMA.***

[13] Hillingdon AQMA Order http://www.hillingdon-air.info/pdf/aqma_order_2003.pdf



Source: http://www.hillingdon-air.info/pdf/Hillingdon_ASR_2018.pdf

Figure 2-1 Hillingdon AQMA Map

Hillingdon Air Quality Action Plan[14] was adopted in 2004. This contains a series of 8 packages, each containing a number of measures that address emissions from traffic, Heathrow Airport, industry, existing housing and new developments. A revised plan was finalised in June 2019. New Air Quality Action Plan 2019-2024[15] has incorporated recommendations from the Residents' Environmental Services Policy Overview Committee (RESPOC) and been informed by a public consultation. Progress against the New AQAP is monitored via the submission of annual reports to the GLA for approval.

3. Methodology

3.1 Overview

This section provides the details of the methodological approach taken to assess the impacts on air quality from the construction and operation of the proposed development. The guidance provided by Mayor of London's London Plan 2011: Implementation Framework, more specifically "The Control of Dust and Emissions During Construction and Demolition – Supplementary Planning Guidance (2014)"[16] has been used in this assessment. This SPG methodology is parallel to the IAQM's 2016 Construction Dust Guidance[17].

3.2 Scope of the Assessment

3.2.1 Demolition Phase Impact

Demolition of existing buildings at the site has already taken place before the commencement of this AQA, hence, the demolition stage dust emission assessment have not been included in this report.

3.2.2 Construction Phase Impact

A construction dust risk assessment was carried out to consider impacts from 'disamenity' (or 'nuisance') dust, associated with annoyance. The development has the potential to generate dust during the construction phase of the project. Although there are no standards (such as AQO) for dust disamenity or annoyance, various 'custom and practice' criteria have become established.

The Control of Dust and Emissions during Construction and Demolition – Supplementary Planning Guidance (2014) or SPG2014 provides a methodology to evaluate potential risk of dust generation for a development and the level of mitigation required. The impact of the development is described using one of the following three

[14] Hillingdon Air Quality Action Plan 2004 http://www.hillingdon-air.info/pdf/Hillingdon_AQAP.pdf
[15] New Air Quality Action Plan 2019-2024 http://www.hillingdon-air.info/pdf/Hillingdon_AQAP_2019_2024_finalversion.pdf
[16] The Control of Dust and Emissions During Construction and Demolition – Supplementary Planning Guidance (2014) https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/planning-guidance-and-practice-notes/control-dust-and and https://www.london.gov.uk/file/18750/download?token=zV3ZKTpP
[17] Institute of Air Quality Management (2016): 'Guidance on the Assessment of Dust from Demolition and Construction v1.1'

categories: ‘Low Risk’, ‘Medium Risk’ and ‘High Risk’. Based on the risk level, appropriate mitigation measures can be considered to minimise any effects of dust from the construction phase.

3.2.3 Operational Phase Impact

The proposed development consists of 29 bed residential care home. As per the London Borough of Hillingdon policy, if the floor area of a proposed development exceeds 1000m^2 it is considered a "major development". Therefore, this development with the total floor area of just over 1,146m^2 will be classified as a major application.

A detailed assessment is only considered to be necessary if the Annual Average Daily Traffic (AADT) flow exceeds the threshold of 100 Light Duty Vehicles (LDVs) when the site is within an AQMA. Based on the number of new parking spaces (three) the proposed development will not exceed the criteria of >100 AADT to proceed to a detailed tariff related assessment. Hence, a detailed air quality assessment including traffic emission modelling can be scoped out from this assessment.

The proposed development will not introduce any Biomass boilers. The proposed development will provide CHP for energy, hence a detailed energy and sustainability statement has been prepared by an independent consultant “EAL Consult”. The details of the energy emissions and sustainability are presented in 5.7.

An assessment for residential neutrality to investigate the existing air quality impacts on the proposed new residential receptors has been considered.

3.2.4 Assessment Scenarios

The following scenarios have been considered to assess air quality neutrality:

- 2019 Base Year (mainly because of the availability of background and monitored air quality for a complete year), and
- 2020 Earliest Year of Occupation.

3.2.5 Assessment of Background Concentrations

This assessment considers road traffic emission sources in detail, and as part of the predictive process, all non-road traffic related emission sources in the Defra data set were assigned appropriate ‘background’ concentrations at the modelled receptors. Further details regarding the assignment of background pollution concentration are presented in Section 4.3.

3.2.6 Relevant Sensitive Receptors

LAQM technical guidance (TG16) clarifies where likely exceedances of the objectives should be assessed and states that Review and Assessment should focus on: *“Locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the relevant air quality objective”.*

Above provides details of where the respective objectives should and should not apply and therefore the types of receptors that are relevant to the assessment. Based on the above, the greatest impact on a human health receptor situated within the proposed development is considered to be at the closet point of the proposed building façade with respect to nearby roads.

3.2.7 Criteria Used to Assess Significance

For the purpose of this assessment, air quality neutrality has been assessed by comparing the existing air quality near the site and modelled data against the relevant AQO as presented within Section 2.1.4.

4. Baseline Conditions

4.1 Overview

The following section sets out the baseline conditions in relation to air quality for the proposed development. Baseline air quality information is available from a number of sources including local and national monitoring data reports and websites. For the purpose of this assessment, data has been obtained from London Borough of Hillingdon's most recent Air Quality Annual Status Report 2018[18] which was published in July 2019.

4.2 Existing Baseline Conditions

Over the last years, Hillingdon has observed an overall trend towards improved air quality in the Borough. However, as elsewhere within the Greater London Area, exceedances of the annual mean limit value for NO_2 still remain at certain locations.

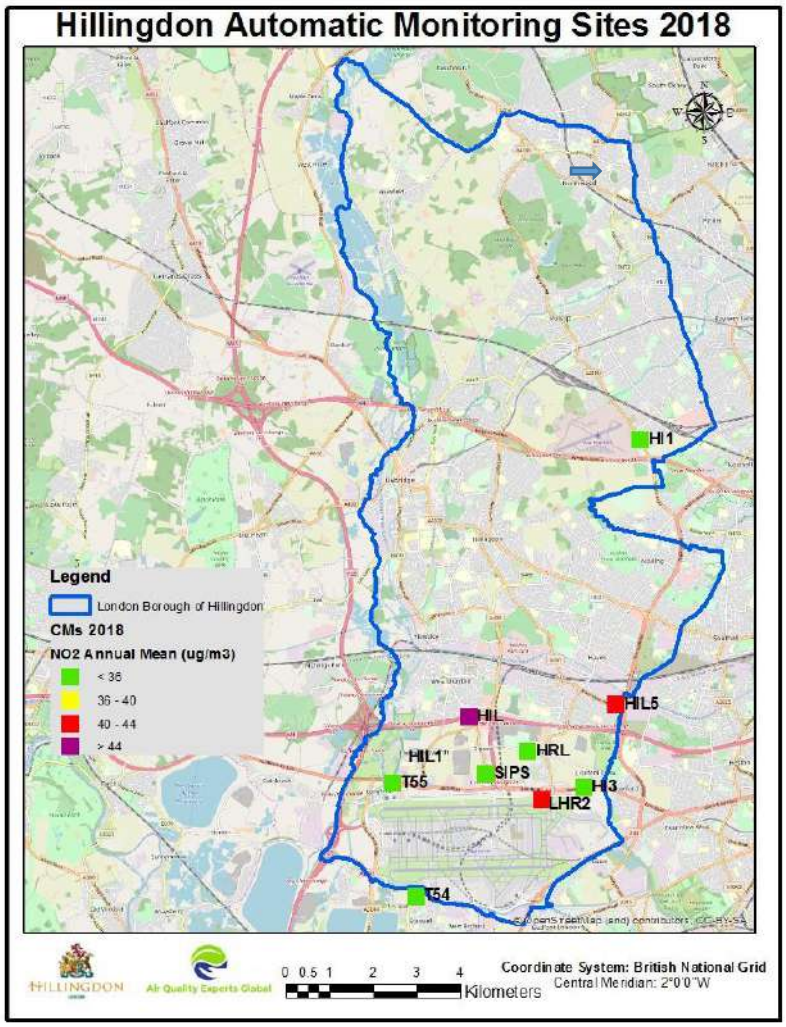
4.2.1 Automatic monitoring sites

A mild trend to improvement of annual mean NO_2 concentrations is observed in the 2018 data, though exceedances of the annual mean limit value are still present, some of them substantial. However, for PM_{10} there is no discernible improvement, though for this pollutant the Borough meets the statutory objectives.

There were 11 operational automatic continuous monitoring sites in the London Borough of Hillingdon in 2018. Hillingdon 1 (South Ruislip), Hillingdon 3 (Oxford Avenue), London Sipson, London Harmondsworth, Hillingdon Hayes, and London Harmondsworth Osiris (HIL4) are all part of the Borough monitoring network. London Hillingdon is part of the Defra - owned Automatic Urban and Rural Network (AURN). London Heathrow (LHR2), Heathrow Oaks Road, Heathrow Green Gates, and London Harlington are all part of the Heathrow Airport monitoring network.

[18] London Borough of Hillingdon Air Quality Annual Status Report 2018 http://www.hillingdon-air.info/pdf/Hillingdon_ASR_2018.pdf

Location of automatic air quality monitoring stations is shown in Figure 4-1. Details of the air quality monitoring station which is nearest to the site, viz. HI1, are shown in Figure 4-1. There are no automatic air quality monitoring stations near the project site (shown with an arrow). The nearest AQMS is Hillingdon 1 (HI1) which is at a considerable distance away from the site. Details of HI1 are shown in Table 4-1.



Source: http://www.hillingdon-air.info/pdf/Hillingdon_ASR_2018.pdf

Figure 4-1 Hillingdon Borough's Automatic Monitoring Stations

Table 4-1 Hillingdon 1 - Automatic Monitoring Station

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? (Y/N)	Inlet height (m)	Pollutants monitored
HI1	**Hillingdon 1 - South Ruislip**	**510857**	**184917**	**Roadside**	**Y**	**1.5**	**NO_2, PM_{10}**

4.2.2 Non-automatic monitoring sites

London Borough of Hillingdon carried out Passive diffusion tube monitoring of NO_2 at several locations across the Borough, supplementing the information generated by the automatic network. During 2018, NO_2 monitoring was undertaken using diffusion tubes at 39 sites. One of these sites (that has triplicate tubes) is co-located with the London Hillingdon automatic monitoring site.

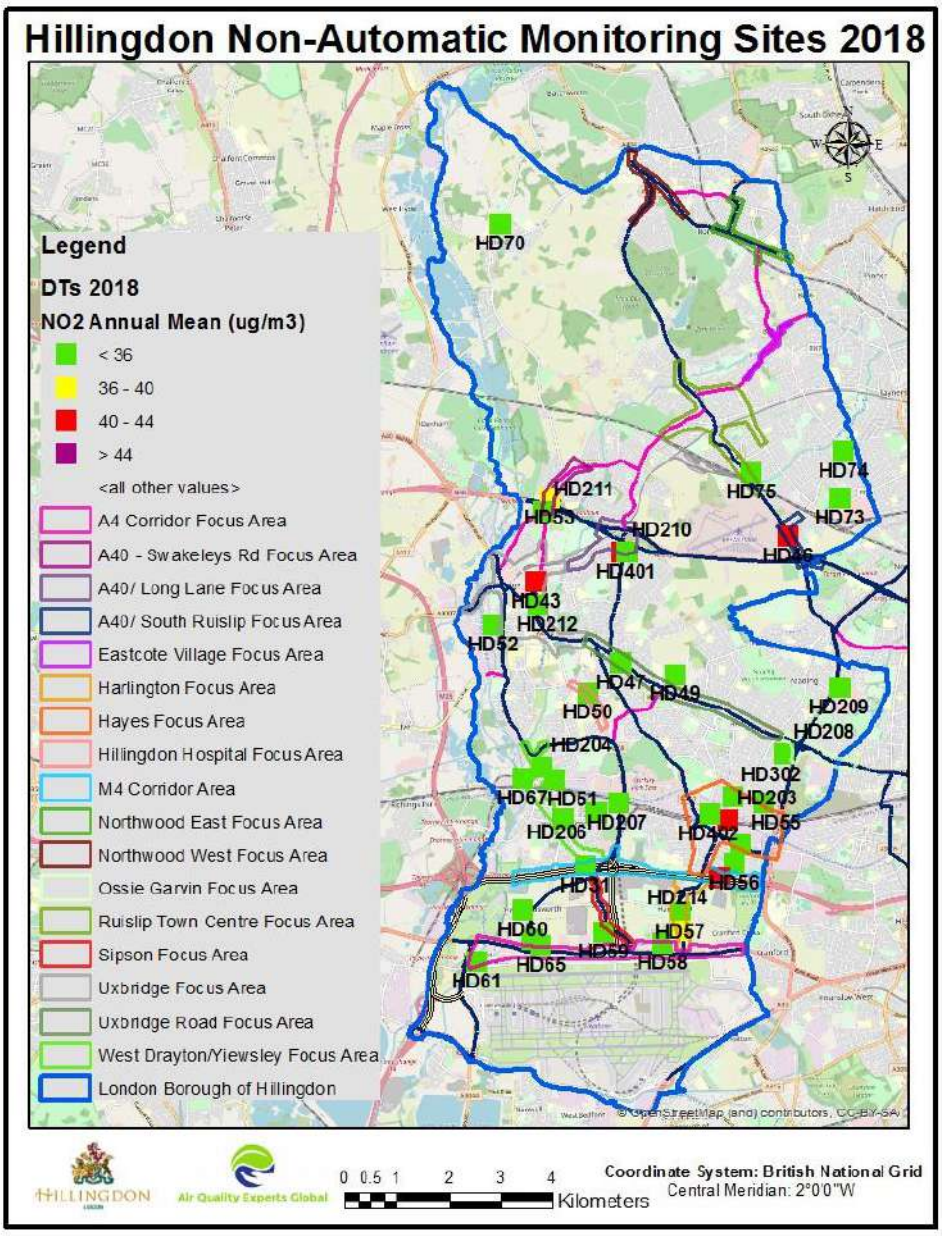
A further 17 non-automatic sites were operated in 2018 in the north of the Borough outside the AQMA. Fifteen of these were used to investigate whether the AQMA should be expanded north of the AQMA and two, with diffusion tubes set up by a local residents' group were located in Northwood.

The locations of all non-automatic air quality monitoring stations is shown in Figure 4-2. There are no diffusion tube locations near the project site although it falls within the Northwood East Focus Area as shown in Figure 4-2. The diffusion tube stations maintained by Hillingdon Borough, closest to the site are HD70, HD73, HD74 and HD75. There are two additional sites 'A' and 'B' run by Green Lane – Northwood's Voice Local Group. 'A' and 'B' are the closest diffusion tubes to the site. Details of these diffusion tube stations are shown in Table 4-2.

Table 4-2 Diffusion Tube Stations near the Site

Site ID	Site Name	X (m)	Y (m)	Distance from monitoring site to relevant exposure (m)	Inlet height (m)	Pollutants monitored
HD70	**Harefield Hospital Hill End Road (lamp-post outside entrance)**	**505299**	**190923**	**0**	**1.5**	**NO 2**
HD73	**Queensmead School South Ruislip (lamp-post opposite Jubilee Drive) (outside AQMA)**	**511825**	**185655**	**0**	**1.5**	**NO 2**
HD74	**Field End Road/Field End School S.Ruislip 3rd Lamp-post south of school entrance (outside AQMA)**	**511889**	**186563**	**8**	**1.5**	**NO 2**
HD75	**Sidmouth Drive South Ruislip (2nd lamppost from West End Road outside Nursery) (outside AQMA)**	**510125**	**186144**	**4**	**1.5**	**NO 2**
A	**Hard 8 Bar & Kitchen, 1 Eastbury Road, Northwood HA6 3BG**	**509236**	**191147**	**2.7**	**1.8**	**NO 2**
B	**Steve's Hairdressers, 60 Green Lane, Northwood HA6 2XW**	**509279**	**191450**	**0**	**1.8**	**NO 2**

Note: Diffusion Tube Sites A and B are run by Green Lane – Northwood's Voice Local Group



Source: http://www.hillingdon-air.info/pdf/Hillingdon_ASR_2018.pdf

Figure 4-2 Hillingdon Borough's Non-automatic Monitoring Stations

4.2.3 Measured NO_2 - Annual Mean

NO_2 annual mean for 2018 at the automatic air quality monitoring station, HI1, is below the AQO of 40 µg/m^3 as shown in Table 4-3. AQO exceedances are shown in bold.

Table 4-3 Air Quality Monitoring Stations

Site ID	Valid data capture for monitoring period %	Valid data capture, 2018, %	Annual Mean Concentration (µg.m^{-3})						
			2013	2014	2015	2016	2017	2018	2019
HI1	**94.20**	**94.20**	45.0	44.4	48.4	42.9	46	**36**	**34.3**

The annual mean NO_2 at the diffusion tube stations A, B, HD70, HD73, HD74 and HD75 are shown in Table 4-4. Annual mean NO_2 at these station are well below the AQO of 40 µg/m^3. 2019 data for the diffusion tubes was not available at http://www.hillingdon-air.info/diffusion_tube_data.php.

Table 4-4 Annual NO_2 at Diffusion Tube Stations near the Site

Site ID	Valid data capture for monitoring period %	Valid data capture, 2018, %	Annual Mean Concentration NO_2 (µg.m^{-3})						
			2013	2014	2015	2016	2017	2018	2019
HD70	**100**	**100**	**24.0**	**23.8**	**19.8**	**19.1**	**22.1**	**20.5**	**NA**
HD73	**91.7**	**91.7**	**27.1**	**28.1**	**21.7**	**32.8**	**27.7**	**25.4**	**NA**
HD74	**100**	**100**	**28.6**	**29.4**	**24.6**	**24.0**	**24.4**	**26.9**	**NA**
HD75	**100**	**100**	**28.5**	**28.7**	**23.7**	**22.8**	**26.9**	**25.8**	**NA**
A	**100**	**100**	**-**	**-**	**-**	40.6	**37.1**	**36.3**	**NA**
B	**100**	**100**	**-**	**-**	**-**	**35.7**	**31.6**	**35.4**	**NA**

4.2.4 Measured NO_2 - Hourly Mean

Site ID	Number of Hourly Means > 200 µg.m^{-3}						
	2012	2013	2014	2015	2016	2017	2018
HI1	**14**	**0**	**0**	**0**	**2**	**2**	**0**

Note: AQO of number of hours exceeding 200 µg m-3 no more than 35 times per year

4.2.5 Measured PM_{10} - Annual and 24-h Means

Table 4-5 presents the monitored PM_{10} annual mean for the automatic monitoring site HI1. It is clear from this table that PM_{10} annual mean AQO of 40 µg/m^3 was not exceeded in 2018. In 2018, the site also met the 24-hour mean standard of 50 ug/m3 not to be exceeded more than 35 times a year.

Table 4-5 Statistics for PM_{10} at Hillingdon Automatic Station (HI1)

Site ID	Site name	Annual Mean Concentration (µgm^{-3})						
		2013	2014	2015	2016	2017	2018	2019
HI1	**South Ruislip**	**22.6**	**23.2**	**24**	**22**	**17**	**17**	**17**

4.3 Defra Background Pollution Concentrations

Defra provides background pollution concentration estimates to assist local authorities undertake their 'Review and Assessment' work. This data is available to download from Defra air quality resource website for NO_x, NO_2, PM_{10} and $PM_{2.5}$ for every 1 km X 1 km grid square for all local authorities. The current dataset is based on 2017 background data. The background dataset provides breakdown of pollution concentrations by different sources (both road and non-road sources).

Table 4-6 presents the background concentrations for the study area for the year 2019 (Base year for air quality modelling) and 2020 (when the site will be under construction and also occupied). It is clear from this table that background concentrations at the project site are significantly below the AQO for NOx, NO_2, PM_{10} and $PM_{2.5}$.

Table 4-6: Defra Background Concentrations (2019 and 2020)

Pollutant	2019 concentration (µg/m^3)	2020 Concentration (µg/m^3)
NOx	19.56	14.50
NO_2	13.98	13.32
PM_{10}	14.15	13.94
$PM_{2.5}$	9.94	9.76

Note: Data presented within the table are derived from the following ordinance survey grid squares: 508500 190500.

5. Potential Impacts – Air Quality Risk Assessment

Air Quality Dust Risk Assessment (AQDRA) described below is part of the Air Quality Statement, with the planning application. The AQDRA includes:

Risk assessment for each phase of works (earthworks, construction, trackout), incorporating the risk evaluation process set out below, and identifies suitable mitigation measures for the relevant level of risk.

AQDRA also identifies whether each phase of activity on-site represents a low, medium or high risk by following the SPG2014[19].

5.1 Step 1 – Need for a Detailed Assessment

Detailed Dust Risk Assessment is required because there are 'human receptors' within 50m of the boundary of the Site.

[19] The Control of Dust and Emissions During Construction and Demolition – Supplementary Planning Guidance (2014) https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/planning-guidance-and-practice-notes/control-dust-and and https://www.london.gov.uk/file/18750/download?token=zV3ZKTpP

Detailed assessment of the effects on 'ecological receptors' in not required as there are no ecological receptors within 50m of the boundary of the Site or within 50m of the routes used by the construction vehicles on the public highway up to 500m from the Site entrance. Figure 5-1 shows the construction dust assessment study area based on the recommended distances by IAQM. Figure 5-1 shows buffer zones of 20m, 50m, 100m, 200m, 350m and 500m from the edge of the Site.

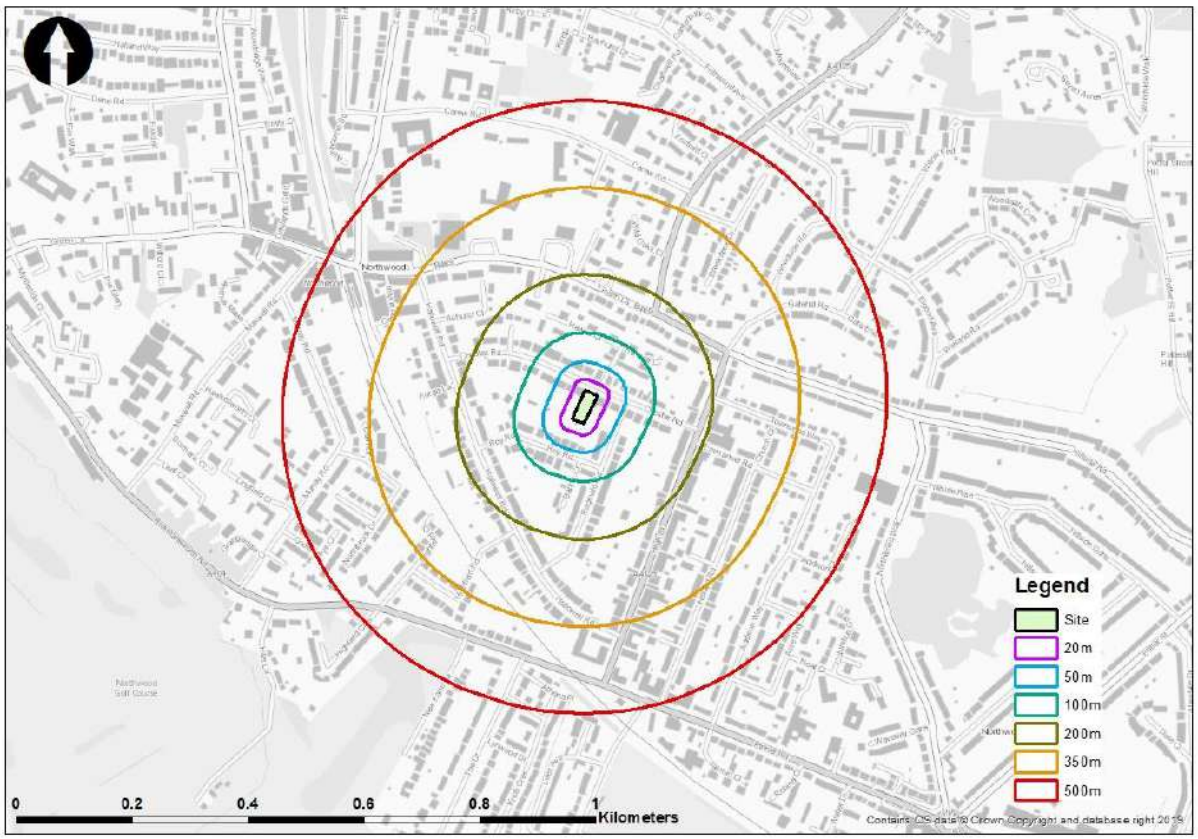


Figure 5-1: Construction Dust Risk Assessment Buffers

5.2 Construction Phase

For the purpose of this assessment, the earliest construction period is assumed to be 2020. The impacts from earthworks, construction and track-out have been considered. Demolition of old buildings has already taken place before this assessment.

The client has provided the following data which is used in construction dust assessment.

Total site area (for earthworks): 1,480.7 m^2

Total site area (for construction): 1,146.6 m^2

Total building volume (construction): 3,251 m^3

Due to the small scale of the construction activities, it is unlikely that there will be a significant amount of Heavy Duty Vehicles (HDV) movements involved. The client has indicated that on an average less than 10 HDVs per day will use the site.

Following sections describe various stages of the AQDRA for the proposed development.

5.3 Step 2 – Assessment of the Risk of Dust Impacts

This step considers the AQDRA for the earthwork, construction and trackout phases of the development. It considers the potential effects of each development phase on the nearest receptors including:

- the risk of health effects from an increase in exposure to PM_{10} and $PM_{2.5}$
- annoyance due to the deposition of dust; and
- harm to the natural environment.

5.3.1 Step 2A – Defining the Potential Dust Emission Magnitude

The dust emission magnitude is based on the scale of the anticipated works and is classified as Small, Medium, or Large.

Table 5-1 presents the potential dust emission magnitude based on project specific construction activities and is based on the criteria presented in SPG2014. As indicated earlier, the assessment does not include any demolition work; therefore, this has not been considered here.

Table 5-1: Dust Emission Magnitude

Activity Phase	Dust Emission Magnitude
Demolition	**None**
Earthworks	**Small** (Total site area <2,500 m^2)
Construction	**Small** (Total building volume <25,000 m^3)
Trackout	**Small** (<10 HDV (>3.5T) trips per day)

5.3.2 Step 2B – Defining the Sensitivity of the Area

The sensitivity of the area takes account of a number of factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and

- Site-specific factors, such as whether there are natural shelters, such as trees or other vegetation, to reduce the risk of wind-blown dust.

Type of receptors at different distances from the boundary of the Site has been considered and is based on a rough estimation using the Figure 5-1. SPG2014 indicates that "*exact counting of 'human receptors' is not required*. *Instead it is recommended that judgement is used to determine the receptors (a residential unit is one receptor) within each distance band".*

Table 5-2 presents the sensitivity of receptors to effects caused by construction activities and is based on the criteria presented in SPG2014. for this assessment, it is assumed that there are '**High Sensitivity Receptors'** within the study area. The number of receptors within 50m from the source or trackout routes are considered to be >100.

As indicated in Section 4.3 and Table 4-6 the annual mean PM_{10} concentrations in the grid 535500, 184500 is 18.70 µg/m3. This has been used to determine the sensitivity of the area to human health effects (Table 4.3 of the SPG 2014).

Table 5-2: Sensitivity of Study Area to Dust and Soiling Effects on People and Property

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Medium	Medium	Medium
Human Health	N/A	Low	Low	Low
Ecological	N/A	N/A	N/A	N/A

5.3.3 Step 2C – Defining the Risk of Impacts

The dust emission magnitude determined in STEP 2A is combined with the sensitivity of the area determined in STEP 2B to determine the risk of impacts with no mitigation applied. Tables 4.6, 4.7, 4.8 and 4.9 of SPG2014 have been used to determine the risk of each activity for this project. This in turn will be used in the next section to determine the level of site-specific mitigation measures that will be applied to this development. Table 5-3 provides the summary of the risk of earthwork, construction and trackout phases of the development. Risk is based on the criteria presented in SPG2014.

Table 5-3: Summary of the Risk of Construction Effects

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Low Risk	Low Risk	Negligible
Human Health	N/A	Negligible	Negligible	Negligible
Ecological	N/A	N/A	N/A	N/A

Based on the above, the largest risk associated with all earthwork activities are considered to be 'Low Risk' with regards to dust soiling and 'Negligible' with regards to human health. The largest risk associated with the construction activity are considered to be 'Low Risk' with regards to dust soiling and 'Negligible' with regards to human health. Finally, the largest risk associated with the trackout activity is 'Negligible' with regard to dust soiling and 'Negligible' with regards to human health. Based on the outcome of the construction dust assessment, mitigation measures appropriate for the proposed development have been presented in Section 6. Overall, the impacts from disamenity dust and PM_{10} from the construction phase of the proposed development are considered to be '**not significant**'.

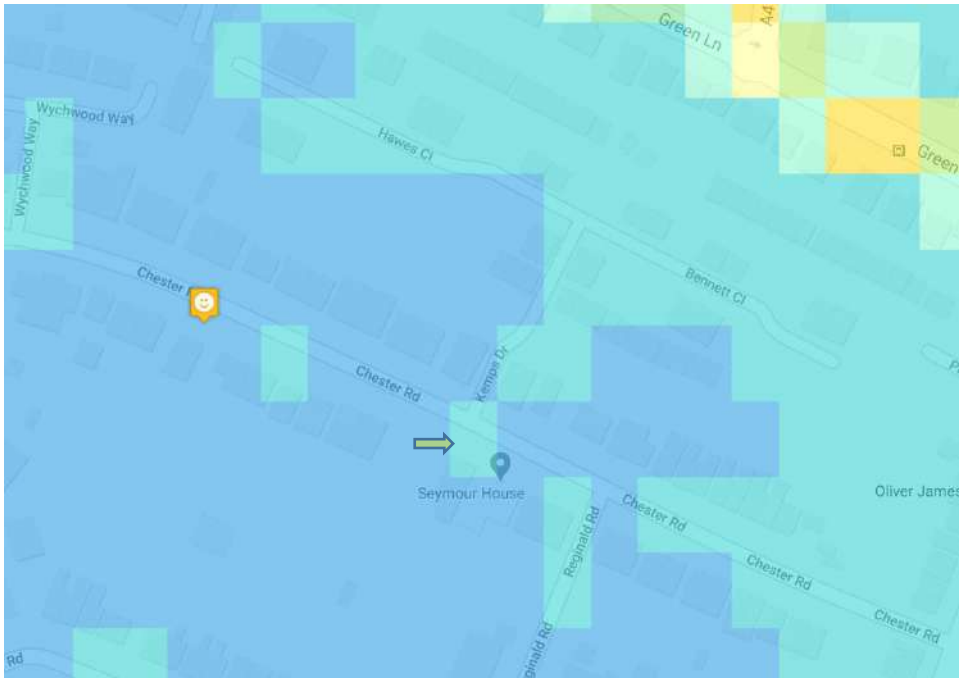
5.4 Operational Impacts

It is understood that the proposed development will not generate more than 100 trips per day. Therefore, based on the IAQM planning guidance, the operational impacts as a result of the trip generation associated with the proposed development are considered to be '**negligible'**.

5.5 Modelled NO_2 Concentrations at Sensitive Residential Receptors

The modelled air quality across London is available at London Air website. Annual mean NO_2 levels at any location can be determined using the interactive map at http://www.londonair.org.uk/london/asp/annualmaps.asp. This map shows the annual mean pollution for NO_2 during 2016 in detail across London. The maps also show which areas pass or fail the annual mean objective, if there is one.

Figure 5-3 shows the London Air modelled air quality for year 2016 near the site. From this Figure, it is estimated that annual NO_2 near the site is approximately 31 $\mu g/m^3$.



Modelled annual mean NO2 air pollution, based on measurements made during *2016*.

This map was used with permission from The Greater London Authority and Transport for London, who fund, develop and maintain the London Atmospheric Emissions Inventory. For more information please visit data.london.gov.uk

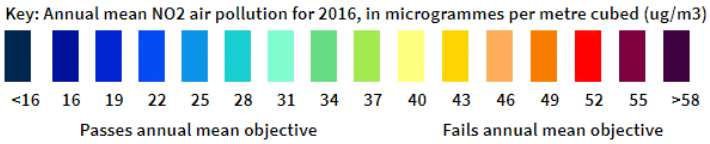


Figure 5-2 Modelled Annual Mean NO_2 - 2016

Future modelled NO_2 concentrations across London are available at http://www.londonair.org.uk/london/asp/futuremaps.asp. Figure 5-3 shows the modelled NO_2 annual mean near the project site. From Figure 5-3, it is estimated that annual NO_2 near the site is between 25 and 28 µg/m^3 for the year 2020, which is lower than the AQO of 40 µg/m^3.

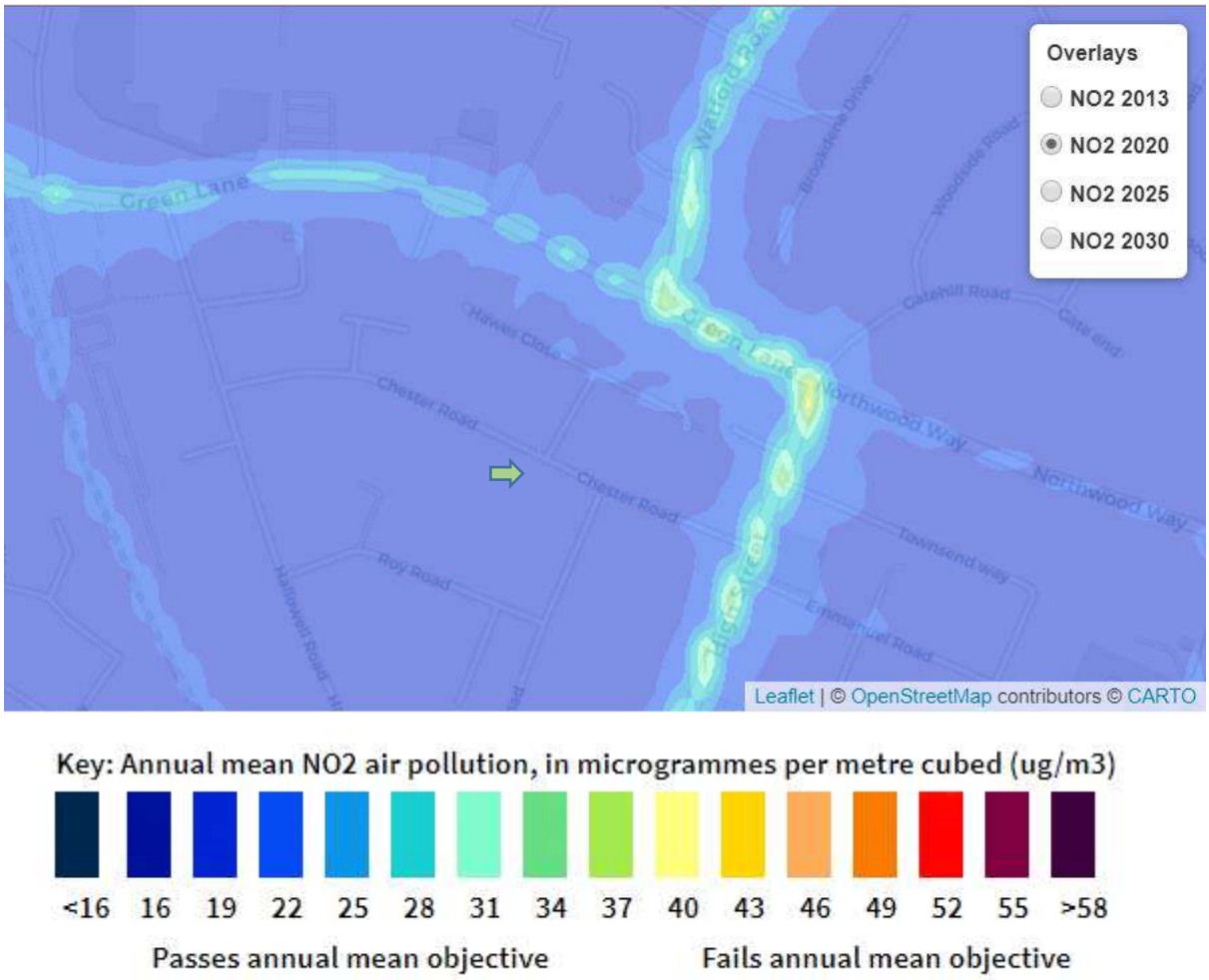


Figure 5-3 Modelled Annual Mean NO_2 - 2020

According to Defra LAQM.TG (16) guidance, exceedance of the one-hour NO_2 mean objective is generally unlikely to occur where annual mean concentrations do not exceed 60 µg/m^3. The annual mean NO_2 concentration at the site is comfortably lower than 60 µg/m^3 and it is unlikely the one-hour mean will be exceeded more than 18 times for any modelled receptor locations.

5.6 Air Quality Neutral: Transport Emissions

A transport statement has been prepared for the proposed development by Transport and Traffic Consultancy. The Transport Statement published in March 2020 indicates that the scheme provides three off street parking spaces including one disabled space. The level of parking provided meets the needs of the building and is appropriate for the scale of the development. It is also consistent with the recommended maximum parking standards listed within the UDL. PPG13 also seeks to reduce reliance on the private car in location such as this, thus having regard to the site being only 550m from the town, its relation to public transport and the town centre the proposal is adequate. The Transport Statement has the following key observations:

a) The proposed carehome development would be located within convenient walking distance of the shops and other services at the nearby High Street and in Northwood town centre. This site is very well served by public transport, with local bus routes on the High Street and Green Lane, and Northwood underground rail station also nearby. This would minimise the need and hence the desire of staff and visitors to use cars for travel to/from the carehome.

b) Traffic generation data from other carehome establishments in comparable outer London locations shows that the volume of traffic movement and parking generated would be very small, with no more than a few vehicles present at most even at the busiest times.

c) Any concerns about the parking and related impact of the approved and since implemented larger carehome development on the neighbouring site at 34-38 Chester Road were fully considered.., and it is clear that even the cumulative impact of both carehome developments would be minimal.

d) There would be no significant impact on on-street parking pressure or traffic conditions in the locality.

e) The proposed development, even together with the approved and implemented carehome developments in the neighbouring sites, would not impair parking or traffic conditions on-street, and that there is therefore no transport-related reason why the development should not be permitted.

Transport Emissions Air Quality Neutral Test

Minimal car parking space and the use of excellent public transport services in the area make this development car-free for the purpose of Air Quality Neutrality – Transport Emissions test.

5.7 Air Quality Neutral: Building Emissions

The energy and sustainability statement for the proposed development has been prepared by EAL Consult (October 2020). The development will incorporate sustainable design and construction measures capable of mitigating and adapting to climate change to meet future needs. The key observations from the Energy and Sustainability statement are shown below:

a) The evidence contained within, demonstrates that the development will meet the minimum policy requirements of the National Planning Policy Framework 2018, London Plan 2016 and London Borough of Hillingdon Local Plan 2012. The London Plan 2016 sets a target of Zero Carbon for non-residential developments.

b) The Energy strategy proposed adheres to the principles of the energy hierarchy by proposing "Lean and Clean" measures in order to reduce the overall energy consumption and use onsite renewable technology to reduce carbon emissions from the development.

c) As a result of the recommended energy strategy, scheme energy performance is significantly improved over Part L 2013 standards. The scheme achieves a calculated reduction in CO_2 emissions of 82% on Part L 2013 Target Emission Rate.

Building Emissions Air Quality Neutral Test

Due to the implementation of energy efficiency measures, the development passes the Air Quality Neutrality – Building Emissions building test.

5.8 Air Quality Neutral Statement

The Sustainable Design and Construction SPG, issued by the Mayor of London, sets out the requirement for all major developments in Greater London to undertake an Air Quality Neutral Test and be designed so that they are at least 'air quality neutral' (AQN). A development is considered to be AQN if it can be demonstrated either that emissions from the operation of a proposed development and transport as a result of the proposed development achieve the relevant emissions benchmarks provided in the AQN guidance. The development achieves both the transport and building AQN test and therefore achieves AQN status. No additional mitigation for the purposes of AQN is required.

6. Proposed Mitigation Measures

6.1 Earthworks and Construction Phases Mitigation Measures

6.1.1 Site Management

6.1.1.1 Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.

6.1.1.2 Display the head or regional office contact information.

6.1.1.3 Record and respond to all dust and air quality pollutant emissions complaints.

6.1.1.4 Make a complaints log available to the local authority when asked.

6.1.1.5 Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked.

6.1.1.6 Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions.

6.1.1.7 Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.

6.1.2 Preparing and Maintaining the Site

6.1.2.1 Plan site layout: machinery and dust causing activities should be located away from receptors.

6.1.2.2 Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.

6.1.2.3 Avoid site runoff of water or mud.

6.1.2.4 Keep site fencing, barriers and scaffolding clean using wet methods.

6.1.2.5 Remove materials from site as soon as possible.

6.1.3 Operating Vehicle/Machinery and Sustainable Travel

6.1.3.1 Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.

6.1.3.2 Ensure all non-road mobile machinery (NRMM) comply with the standards set within this guidance.

6.1.3.3 Ensure all vehicles switch off engines when stationary – no idling vehicles.

6.1.3.4 Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where possible.

6.1.3.5 Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes 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).

6.1.3.6 Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

6.1.4 Measures Specific to Construction

6.1.4.1 Avoid scabbling (roughening of concrete surfaces) if possible.

6.1.4.2 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.

6.1.4.3 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.

6.1.4.4 Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).

6.1.4.5 Use enclosed chutes, conveyors and covered skips.

6.1.4.6 Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

6.1.4.7 Reuse and recycle waste to reduce dust from waste materials.

6.1.4.8 Avoid bonfires and burning of waste materials.

6.2 Mitigation Measures during Operation Phase

The IAQM planning guidance states that new developments should be designed to minimise public exposure and that the planning system minimises any impacts as far as possible.

Air quality assessment, with respect to the observed air quality at the nearby monitoring stations, and after comparing with the modelled air quality at the site, indicates that the air quality at the carehome will meet the National Air Quality Objectives. Hence no additional measures have been recommended to further reduce the exposure to air pollution. The good practice measures of maintaining good ventilation within the residential units is need to be observed.

7. Conclusion

This report provides an assessment on the following key impacts associated with the constructional and operational phase of the proposed development:

- Relevance to national, regional and local air quality and appropriate planning guidance
- Establishment of the background air quality at the site and comparison with the National Air Quality Objectives (AQOs).
- Assessment of the risk of dust impacts
    a) The potential dust emission magnitude
    b) The sensitivity of the area
    c) The risk of impacts
- Assessment of the residential suitability of the new residential receptors with respect to existing air quality, more specifically from the road traffic emissions from nearby roads.
- Recommendations for dust and emission control measures during demolition, construction and trackout phases.
- Recommendation of mitigation measures to achieve the residential suitability of the new sensitive residential receptors.

A qualitative assessment of earthworks, construction and trackout dust effects has been undertaken for the proposed scheme.

Based on this, the largest risk associated with all earthwork activities are considered to be ‘Low Risk’ with regards to dust soiling and ‘Negligible’ with regards to human health. The largest risk associated with the construction activity are considered to be ‘Low Risk’ with regards to dust soiling and ‘Negligible’ with regards to human health.

Finally, the largest risk associated with the trackout activity is ‘Negligible’ with regard to dust soiling and ‘Negligible’ with regards to human health. Based on the outcome of the construction dust assessment, mitigation measures appropriate for the proposed development have been presented in Section 6. Overall, the impacts from disamenity dust and PM_{10} from the construction phase of the proposed development are considered to be ‘not significant’.

The proposed development is not located within any existing AQMA. Air quality assessment with respect to the observed air quality at the nearby monitoring stations, and after comparing with the modelled air quality at the site, indicates that the air quality at the carehome will meet the National Air Quality Objectives.

The development achieves both the transport and building Air Quality Neutral test and therefore achieves AQN status. No additional mitigation for the purposes of Air Quality Neutral is required.

Based on the assessment presented within this report, the proposed development is deemed suitable for residential uses, if the recommended mitigation measures as indicated in Section 6 are implemented. It can therefore be concluded that the proposed development, after the implementation of the recommended mitigation measures, will not conflict with any national, regional, or local planning policy.

Appendix A: Supporting Drawings

Appendix A (Figure 1): Site Location Plan

SCALE

0m 10m 20m 30m 40m 50m

1/1250 A4
LOCATION PLAN

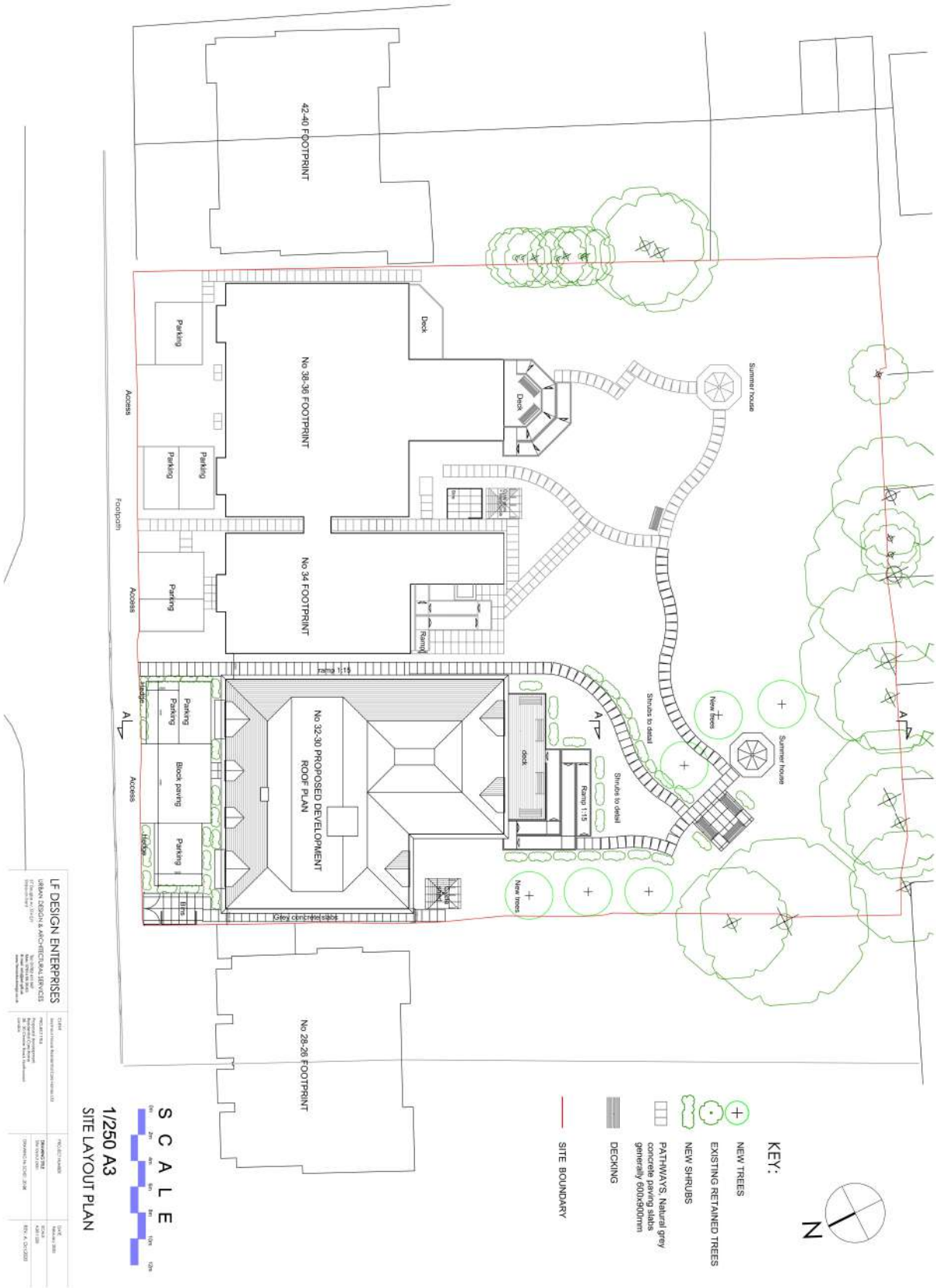
LF DESIGN ENTERPRISES
URBAN DESIGN & ARCHITECTURAL SERVICES
37 Douglas Av. ST4 5JY
Stoke-on-Trent
Tel: 01782 411 847
Mob: 0791 4 55-35-63
E-mail: info@lf-gift.uk
www.lenwicks-design.co.uk

PROJECT TITLE
Proposed development,
Residential Care Home
38-30 Chester Road Northwood
London

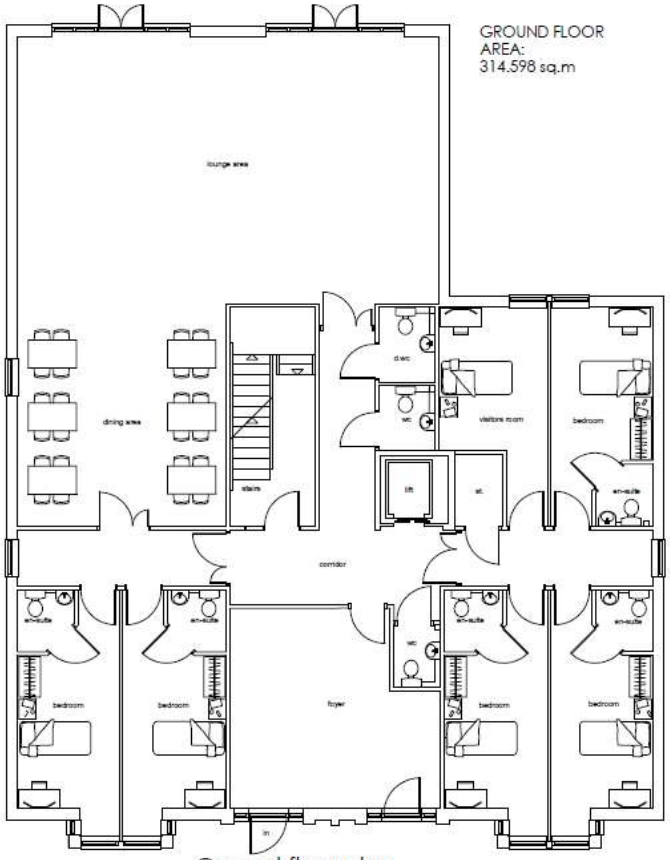
CLIENT
Seymour House Residential Care Homes LTD

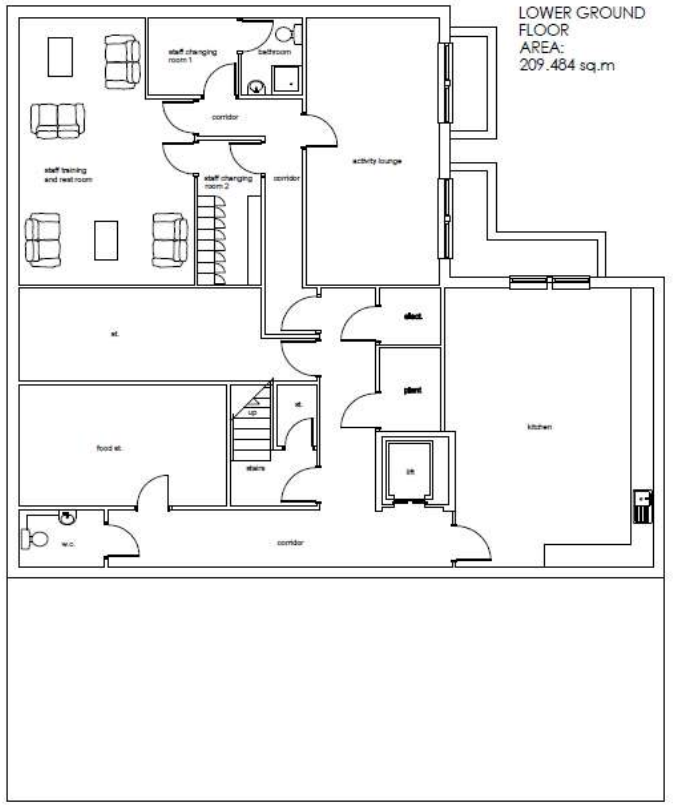
PROJECT NUMBER	DATE
	January 2020
DRAWING TITLE: Location plan	SCALE: A4@1:250
DRAWING No: SCH01_20-1	REV.

Appendix A (Figure 2): Site Layout Plan



Appendix A (Figure 3): Proposed Ground and Lower Ground Floor Plans



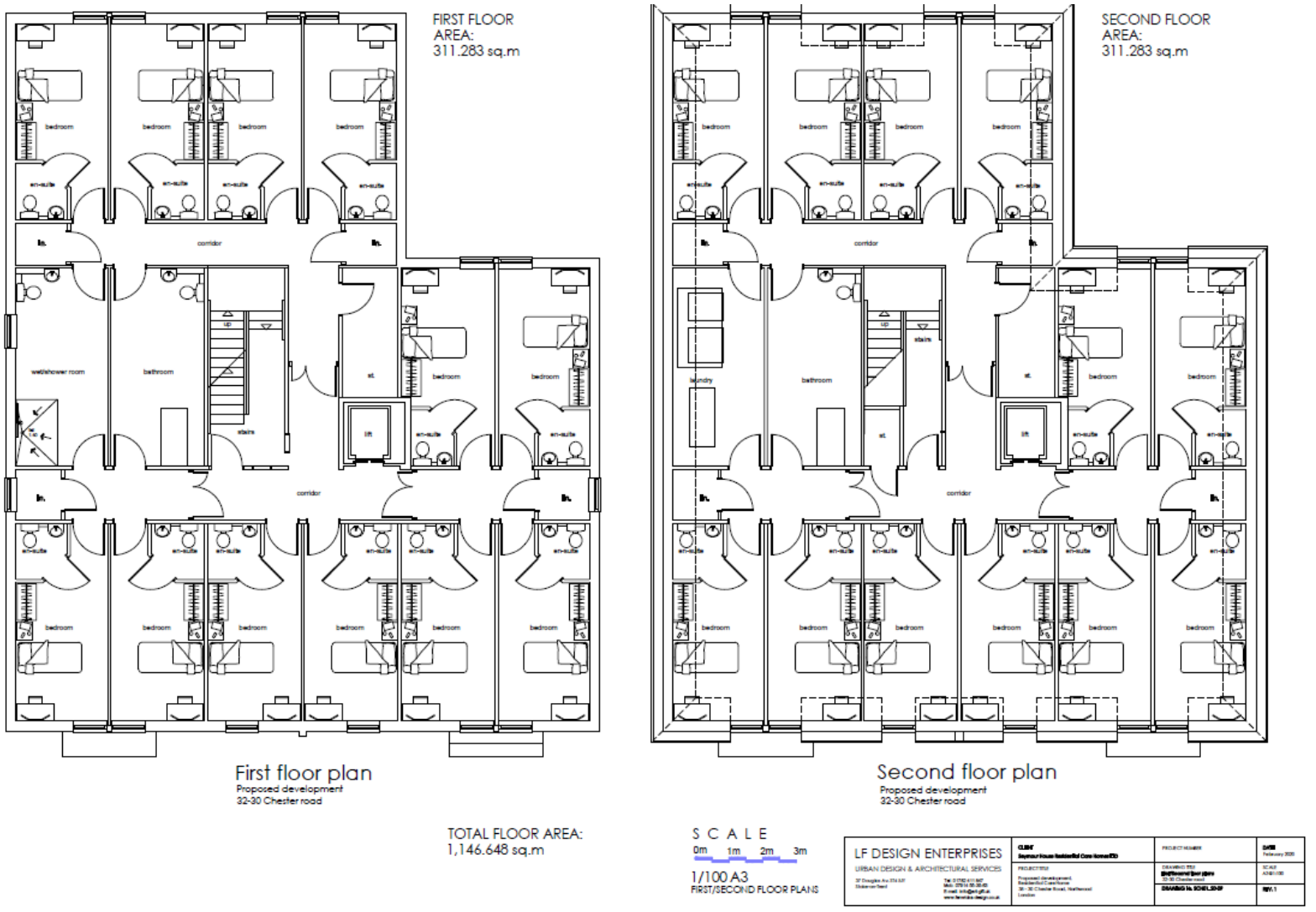


SCHEDULE
Accommodation 29 bedrooms,
2 bathrooms, 1 wet/shower room

SCALE
0m 1m 2m 3m
1/100 A3
GROUND / LOWER GROUND FLOOR PLANS

LF DESIGN ENTERPRISES
URBAN DESIGN & ARCHITECTURAL SERVICES

Appendix A (Figure 4): Proposed First and Second Floor Plans



Appendix A (Figure 5): Proposed Front and Rear Elevations