140 Caerleon Road – Air Quality Assessment

For: Kiveo Properties Ltd

Site: 140 Caerleon Road, Newport, NP19 7GS

Date: 26/02/2025

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Quality Assurance

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Section 1.0 Introduction

1.1 Background

Kiveo Properties Ltd are submitting a planning application for a proposed housing development (hereafter referred to as the 'Proposed Development') at 140 Caerleon Road, Newport, NP19 7GS.

Given the site's proximity to an existing Air Quality Management Area (AQMA), an air quality assessment has been requested.

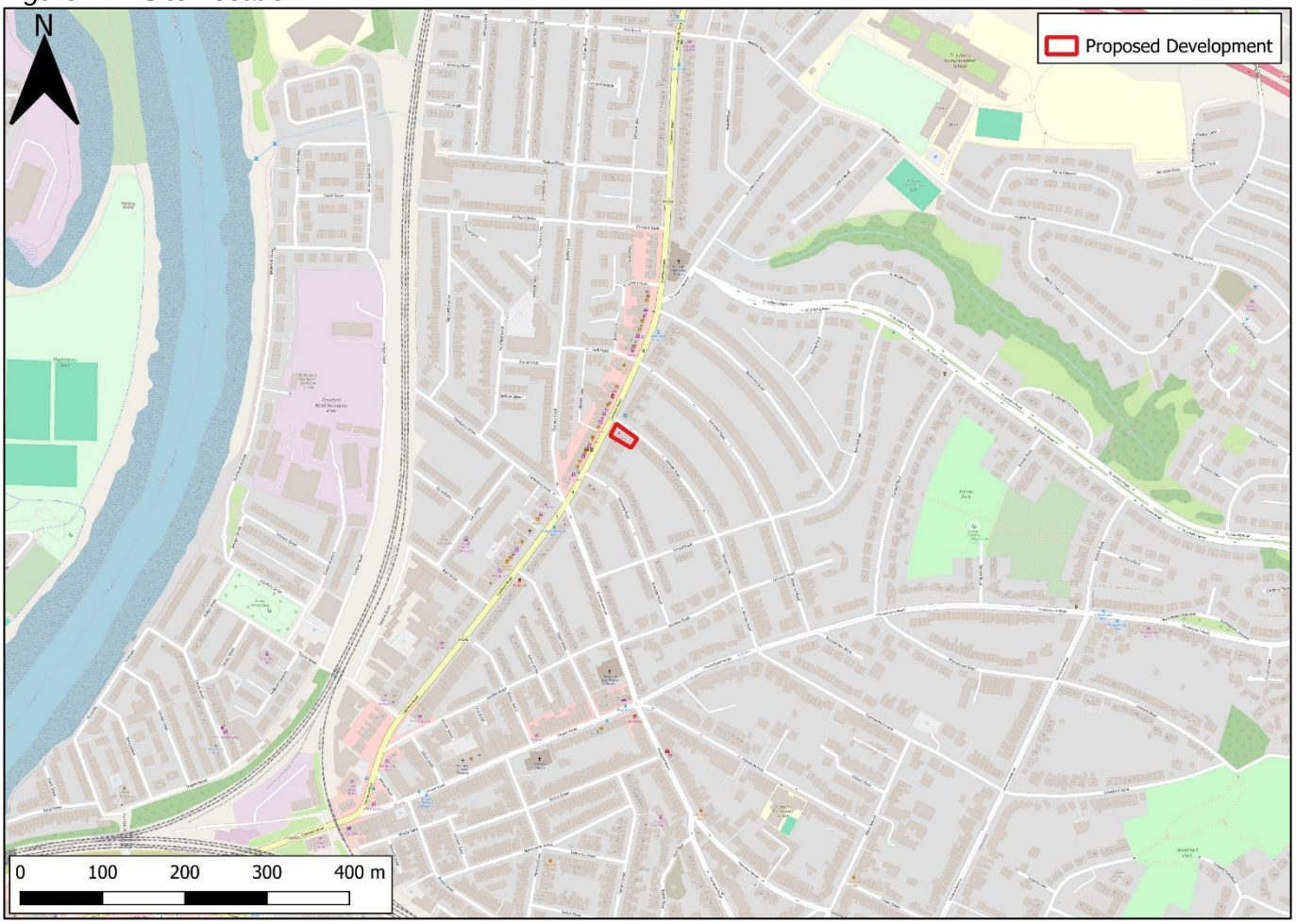
Arthian has been appointed to provide support with regards to air quality.

1.2 Site Description

The site is located at 140 Caerleon Road, NP19 7GS approximately 1.2km from Newport city centre. The site is bounded to the north by Morden Road and residential dwellings, to the east and south by residential dwellings, and to the west by the B4596 and commercial buildings. The site is located entirely within the boundary of Newport City Council (NCC).

A location plan of the Proposed Development and the surrounding area is shown below in Figure 1.1. The site is highlighted by a red boundary.

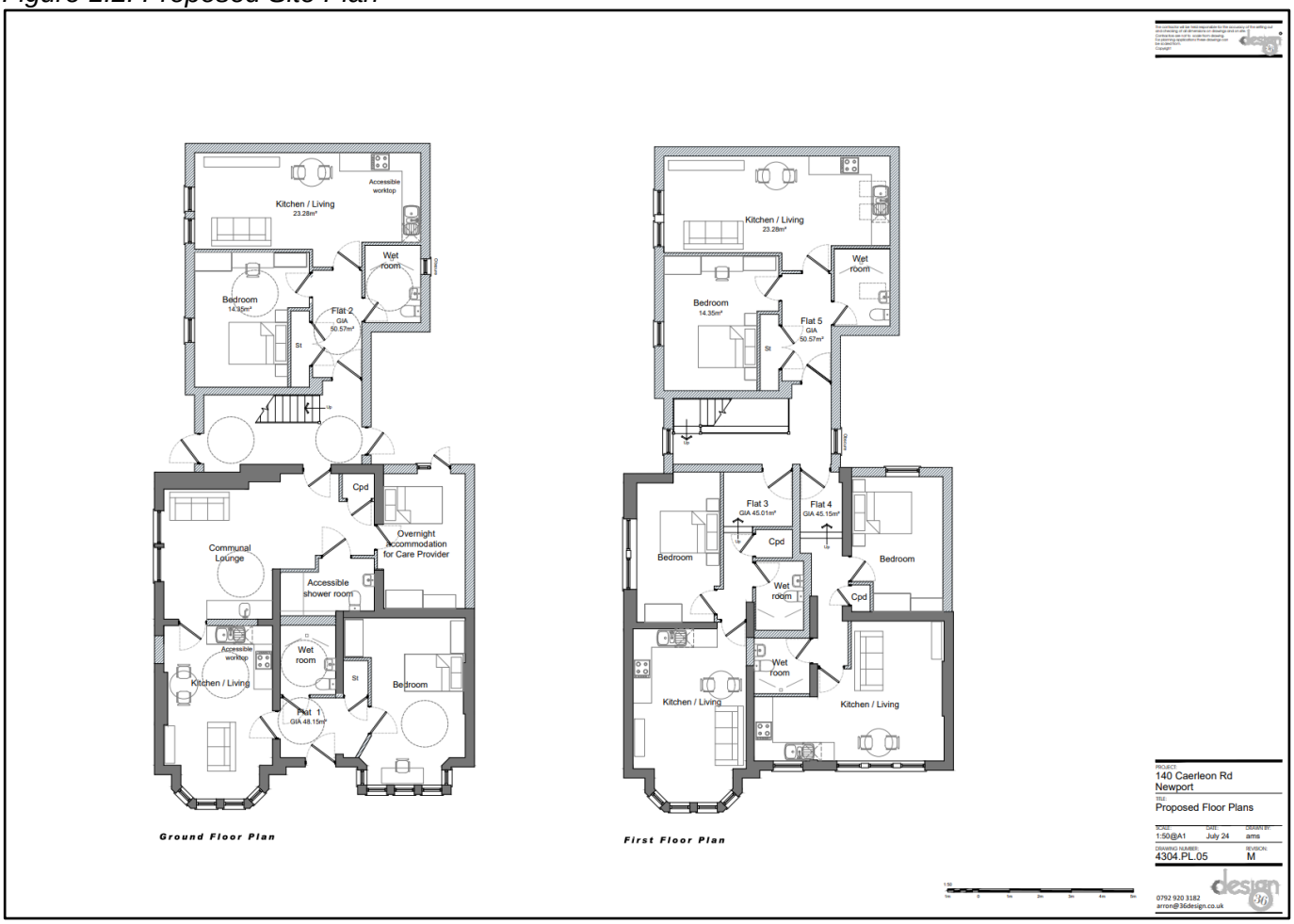
Figure 1.1: Site Location



1.3 Proposed Development

The Proposed Development involves the conversion of the existing building into specialised supported housing consisting of 5 care units and one unit for caregivers. A plan for the Proposed Development is shown in Figure 1.2.

Figure 1.2: Proposed Site Plan



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1.4 Scope of Work

This Air Quality Assessment considers the suitability of the proposed development for residential use and has also screened potential impact during the operational phase.

The assessment was undertaken in accordance with:

- Local Air Quality Management Technical Guidance (LAQM.TG22), published by the Department for Environment, Food and Rural Affairs (Defra) and the devolved administrations.
- Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) Land-Use Planning & Development Control: Planning for Air Quality guidance.
- NCC Development Management Air Quality Supplementary Planning Guidance (SPG).

It consisted of two main parts:

1.4.1 Baseline Air Quality

An assessment of the baseline air quality at the proposed development was undertaken by reviewing available documentation and monitoring data, based on Local Air Quality Management (LAQM) reports and data available from the air quality background maps and other LAQM tools.

1.4.2 Operational Impacts

A qualitative screening assessment was undertaken to understand the likely development impact on surrounding air quality in accordance with the EPUK & IAQM Guidance *Land-Use Planning & Development Control: Planning for Air Quality* and NCC's *Development Management Air Quality Supplementary Planning Guidance*.

1.5 Matters Scoped Out

1.5.1 Construction Dust

Given the small size of the proposed development, potential impacts related to construction dust are considered to be ‘low risk’ in line with the IAQM’s Guidance on the assessment of dust from demolition and construction. Provided mitigation measures, as outlined in the IAQM guidance, will be adhered to, potential impacts from construction dust are considered to be negligible and have been scoped out of further assessment.

Section 2.0 Legislation, Policy & Guidance

2.1 National Legislation & Policy

2.1.1 Air Quality Strategy

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 1 (Air Quality Strategy) establishes the policy for ambient air quality in the UK. It includes the National Air Quality Objectives (NAQOs) for the protection of human health and vegetation for 11 pollutants. NO_2, PM_{10} and $PM_{2.5}$ are considered the pollutants of greatest concern in relation to the development and are the focus of this air quality assessment.

Table 2.1 summarises the relevant NAQOs for NO_2, PM_{10} and $PM_{2.5}$ that apply in Wales.

Table 2.1: NAQOs

Pollutant	Objective	Reference	Additional Information
NO_2	200 µg/m^3	1-hour Mean	Maximum 18 exceedances a year
	40 µg/m^3	Annual Mean	-
PM_{10}	50 µg/m^3	24-hour Mean	Maximum 35 exceedances a year
	40 µg/m^3	Annual Mean	-
$PM_{2.5}$	20 µg/m^3	Annual Mean	-

Local Air Quality Management (LAQM) Technical Guidance document LAQM.TG22 summarises locations at which these objectives should apply, based on associated averaging periods. This has been reproduced in Appendix A. It is also noted that the objectives do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (e.g. centre of roadways).

LAQM.TG22 states that in the absence of site-specific monitoring, exceedance of the 1-hour mean NO_2 objective is likely to occur where annual mean concentrations are in excess of 60 µg/m^3. Therefore, receptors will be assessed against an annual mean concentration of 60 µg/m^3 for comparison against the 1-hour mean NO_2 objective.

For the PM_{10} short-term (24-hour mean) objective, the number of potential annual exceedances can be estimated by using the following relationship within LAQM.TG22 in the absence of site-specific monitoring:

No. 24-hour mean exceedances = -18.5 + 0.00145 × annual mean^3 + (206/annual mean)

2.1.2 Planning Policy Wales

The latest guidance published in February 2024, the Planning Policy Wales (PPW) sets out the land use policies of the Welsh Government and how these are expected to be applied. The primary objective of the PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales. The PPW should be taken into account in the preparation of development plans and therefore the policies set out within the PPW are a material consideration in planning decisions.

Under paragraph 3.8, it states that:
"Good design can help to ensure high environmental quality. Landscape and green infrastructure considerations are an integral part of the design process. Integrating green infrastructure is not limited to focusing on landscape and ecology, rather, consideration should be given to all features of the natural environment and how these function together to contribute toward the quality of places. This embraces the principles of 'ecosystems services' and sustainable management of natural resources where multiple benefits solution become an integral part of good design. In a similar manner, addressing environmental risks can make a positive contribution to environmental protection and improvement, addressing land

contamination, instability and flood risk and providing for biodiversity, climate protection, improved air quality, soundscape and water resources benefits."

Under paragraph 4.1.8, it states that:
"The Welsh Government is committed to reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport. Delivering this objective will make an important contribution to decarbonisation, improving air quality, increasing physical activity, improving the health of the nation and realising the goals of the Well-being of Future Generations Act."

Under paragraph 6.1.32, it states that:
"When considering a scheme of enabling development, planning permission should be granted only where all of the following can be applied: […]

- The enabling development does not give rise to significant risks, for example residential development in the floodplain or significantly impact on air quality or soundscape."

Under paragraph 6.7.6, it states that:
"In proposing new development, planning authorities and developers must, therefore:

- *Address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;*
- *Not create areas of poor air quality or inappropriate soundscape; and*
- *Seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes."*

2.1.3 UK Clean Air Strategy 2019

The Defra Clean Air Strategy 2019 aims to shows how the UK will tackle all sources of air pollution, make air healthier to breathe, protect nature and boost the economy.

The strategy builds on an extensive consultation process which indicated broad-based support for many of the actions Defra were proposing. There was also a range of constructive feedback and challenge that has enabled Defra to improve and extend its ambition even further in certain key areas. A document summarising the responses to the consultation is published alongside the strategy. The strategy sets out these proposals in detail and indicates how devolved administrations intend to make their share of emissions reductions.

2.2 Local Planning Policy

2.2.1 Newport Local Development Plan 2011 - 2026

The Local Development Plan is the councils primary planning document which sets out the policies used for determining planning applications within NCC. The Local Development Plan contains the following policy related to air quality:

"GP2 General Development Principles – General Amenity

Development will be permitted where, as applicable:

i) There will not be a significant adverse effect on local amenity, including in terms of noise disturbance, privacy, overbearing, light, odours and air quality."

2.3 Guidance

A summary of the publications referred to in the undertaking of this assessment is provided below.

2.3.1 Local Air Quality Management Review and Assessment Technical Guidance

Defra has published technical guidance for use by local authorities in their review and assessment work. This guidance, referred to in this document as LAQM.TG22, has been used where appropriate in the assessment presented herein.

2.3.2 Land-Use Planning & Development Control: Planning For Air Quality

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance that offers comprehensive advice on: when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures that may be implemented to minimise these impacts.

2.3.3 NCC Development Management Air Quality Supplementary Planning Guidance

NCC have published guidance to support the way air quality is considered through the planning system. For the purposes of this report, the NCC guidance has been used to supplement the EPUK and IAQM guidance.

Section 3.0 Baseline Air Quality

3.1 Local Air Quality Management

The UK Air Quality Strategy establishes a framework for the improvement of air quality and focusses on measures agreed at a national and international level. However, it was recognised, that despite such strategic measures, areas of poor air quality would likely remain, and that these will best be dealt with using local measures implemented through the LAQM regime. Part IV of The Environment Act 1995 sets provisions for protecting air quality in the UK and for local air quality management.

The LAQM regime has been in place in the UK since 1997. The role of the regime is to review local air quality and identify all relevant locations where the air quality objectives are being or are likely to be exceeded. Where an area of exceedance is identified, the local authority is required to declare an Air Quality Management Area (AQMA) and implement an Air Quality Action Plan to improve air quality within the areas. As part of this process, the authority is required to regularly review and assess air quality within its boundary.

NCC has declared eleven AMQAs within its jurisdiction, the closest of which, Newport Caerleon Road AQMA, is located less than 10m south-west of the Proposed Development. The Caerleon Road AQMA was declared in 2005 for exceedances of the annual mean objective for NO_2. The AQMA encompasses a large section of Caerleon Road into Clarence Place and also encompasses a large section of Chepstow Road up to Victoria Avenue. Given its proximity to the proposed development, potential impacts on this AQMA have been considered in this assessment.

All other NCC AQMAs are located more than 1km from the proposed development. Given the size of the proposed development and location of these AQMAs, potential impacts on them are considered to be negligible.

3.2 Local Emissions Sources

3.2.1 Roads

The site is adjacent to the B4596 (Caerleon Road), which is a B road which connects to the M4 motorway. The B4596 is considered to be the main source of emissions at the site.

3.2.2 Industrial Sources

A review of industrial sources within the vicinity of the development site has indicated that there are no significant industrial emission sources in the local area.

3.3 Air Quality Monitoring Data

A review of the available local monitoring data has been undertaken. During 2022, NCC operated two automatic monitoring site and monitored NO_2 concentrations at eighty-one diffusion tubes sites. Of these monitors, eighteen diffusion tubes are located within 1km of the proposed development. Two automatic monitoring sites are located within 5km of the proposed development. Annual mean concentrations of these monitoring sites are presented below in Table 3.1 and Table 3.2 with their location shown in Figure 3.1.

Table 3.1: NCC NO_2 Diffusion Tube Monitoring Data

Site ID	Distance to Site (m)	Type	Annual Mean NO_2 Concentration (µg/m^3)			
			2019	2020	2021	2022
NCC28B	25	Roadside	34.2	28.4	29.6	26.4
NCC69	75	Roadside	27	21.7	22.1	21.4
NCC37	620	Background	18.5	14.4	13.5	13.3
1S1	660	Façade	-	-	20.6	17.1
1S2	660	Roadside	-	-	18.9	17.3
NCC16A	660	Roadside	27.5	22.6	21.8	22.1
1S3	660	Roadside	-	-	20.6	19.4
1S4	660	Façade	-	-	17.1	16.3

Site ID	Distance to Site (m)	Type	Annual Mean NO_2 Concentration ($\mu g/m^3$)			
			2019	2020	2021	2022
NCC1	660	Roadside	30.2	24.1	24.1	23.4
NCC81	670	Roadside	39.5	27.8	28.0	29.0
NCC66	710	Roadside	34.8	25.7	28.2	29.4
NCC24C	740	Façade	35.8	26.3	27.5	28.9
NCC46B	760	Roadside	**48.1**	35	37.3	35.3
NCC50	770	Roadside	**41.4**	30.2	32.3	28.5
NCC65	790	Roadside	**45**	31.9	33.6	30.1
NCC21D	800	N/A	**48.5**	**46.7**	34.7	33.8
NCC67	810	Façade	34.6	26	25.9	23.1
NCC68	920	Roadside	32.1	20.4	23.5	23.5

Monitoring data from Table 3.1 shows that there have been no recorded exceedances of the annual mean NO_2 objective, between 2021 and 2022, from diffusion tubes located within 1km of the proposed development.

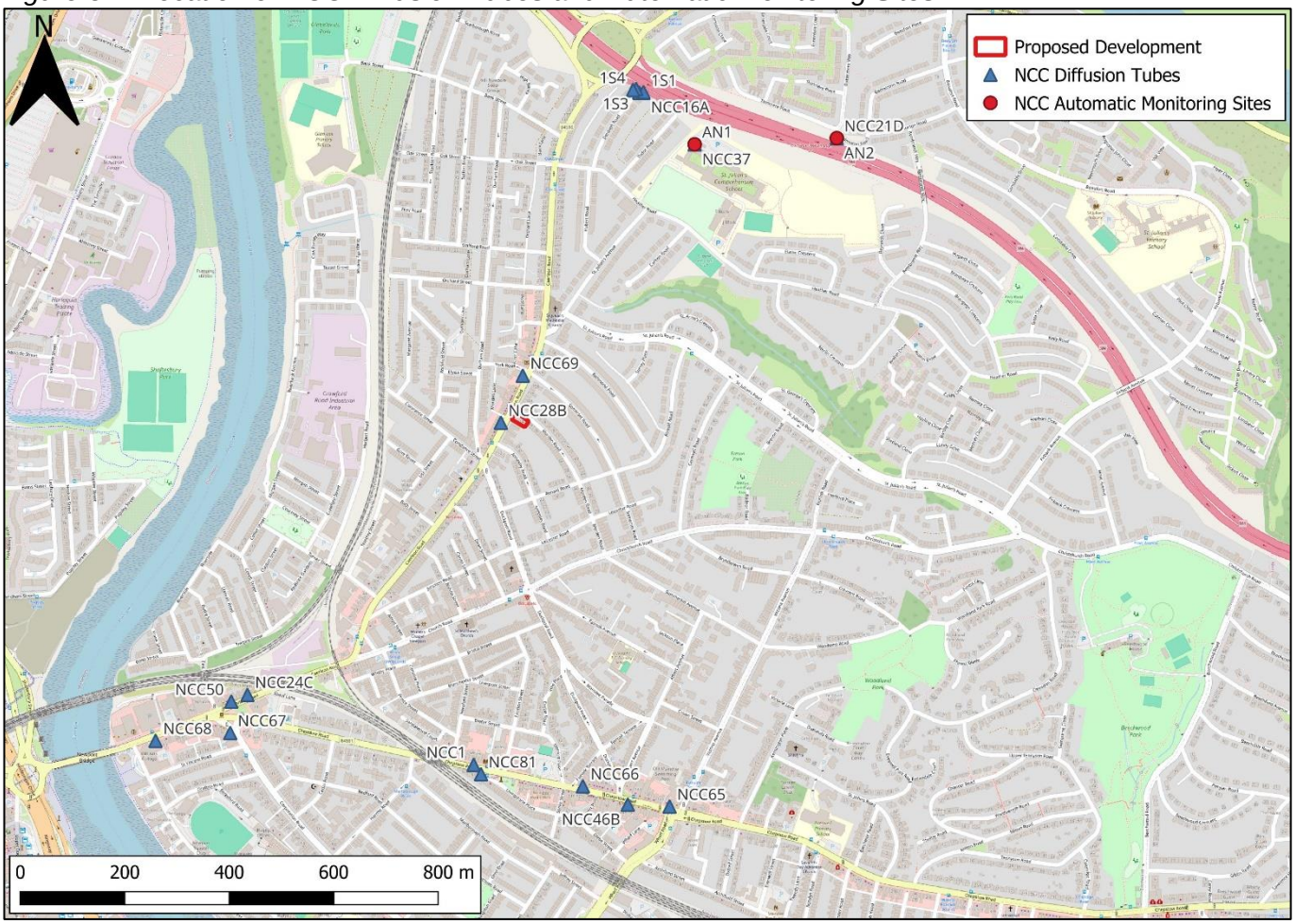
Of the diffusion tubes detailed above, diffusion tube NCC28B is considered to be most representative of conditions at the Proposed Development, as it lies on Caerleon Road within 25m of the site boundary. Diffusion tube recorded a concentration of 26.4 $\mu g/m^3$ in 2022 which is below the annual mean objective by 13.6 $\mu g/m^3$. Monitored concentrations were also below the annual mean objective in previous years.

Table 3.2: NCC Automatic Monitoring Data

Site ID	Type	Pollutant	Distance to Site (m)	Annual Mean Concentrations ($\mu g/m^3$)			
				2019	2020	2021	2022
AN1	Urban Background	NO_2	620	20.0	15.0	15.1	15.0
		PM_{10}		15	13	12	13
		$PM_{2.5}$		10	8	7	7
AN2	Roadside	NO_2	800	36.5	28.3	32.4	29.2

The data from Table 3.2, shows that concentrations have been below the respective annual mean NO_2, PM_{10} and $PM_{2.5}$ objectives at all automatic monitors between 2019 and 2022. Of the monitors detailed above, neither are considered to be particularly representative of potential conditions at the proposed development as both are in close vicinity of the M4 which is considered to be a larger source of emissions than what is likely to be expected at the Proposed Development. As the most recent (2022) monitored concentrations from AN2 were still below the annual mean NO_2, the PM_{10} and the $PM_{2.5}$ objectives, the conditions at the Proposed Development are also likely to be below the mean annual objectives.

Figure 3.1: Location of NCC Diffusion Tubes and Automatic Monitoring Sites



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3.4 Background Pollutant Data

1km square background data (as per the Defra UK Air Information Resource website) was reviewed for comparison purposes against the monitoring data in Table 3.1 and Table 3.2. Annual mean data is presented in Table 3.3 below covering the Site (grid reference 332500, 189500).

Table 3.3: Annual Mean Background Pollutant Grid Data at the Site

Location	Grid Reference[1]	Year	NO_2 µg/m^3	PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3
Site	332500, 189500	2021	13.7	15.6	9.1
		2022	13.1	15.4	8.9
		2023	12.6	15.3	8.7
		2024	11.9	15.1	8.6
		2025	11.2	14.9	8.4

The Defra estimated background concentrations of NO_2, PM_{10} and $PM_{2.5}$ are below their respective air quality objectives and are predicted to decrease in future years. Defra has predicted background pollutant decreases in future years due to future developments in vehicle technology and changes to national and local policy.

[1] Central point of 1km x 1km square

Section 4.0 Operational Impact

4.1 Impact of the Local Area on the Proposed Development

A review of existing air quality has been undertaken to determine the suitability of the site for its proposed uses. The proposed development is for the conversion of 140 Caerleon Road into specialised supported housing. As per Appendix A, both short-term (hourly and 24-hour average) and long term (annual average) air quality objectives apply at this location.

NCC monitored diffusion tube data (Table 3.1), and Defra background data (Table 3.3) from the site and surrounding area indicates that concentrations of NO_2, PM_{10} and $PM_{2.5}$ are likely to be below the annual mean air quality objective.

LAQM.TG22 states that in the absence of site-specific monitoring, exceedance of the 1-hour mean NO_2 objective is likely to occur where annual mean concentrations are in excess of an annual mean concentration of 60 µg/m^3. Therefore, receptors may be assessed against an annual mean concentration of 60 µg/m^3 for comparison against the 1-hour mean NO_2 objective. NCC monitored, and Defra estimated, annual mean concentrations in the vicinity of the site are well below 60 µg/m^3. This indicates that exceedance of the 1-hour mean NO_2 objective is unlikely to occur at the proposed development.

For the PM_{10} short-term (24-hour mean) objective, the number of potential exceedances can be estimated by using the following relationship within LAQM.TG22 in the absence of site-specific monitoring:

No. 24-hour mean exceedances = -18.5 + 0.00145 × annual mean^3 + (206/annual mean)

Annual mean Defra background concentrations at the site are 14.9 µg/m^3 in the current year (2025). Using the above formula, this leads to less than 1 exceedance day per year, which is well below the maximum number of 35. As such, exceedances of the 24-hour mean objective is unlikely to occur at the proposed development.

Therefore, future occupants of the Proposed Development would not be exposed to unacceptable air quality and the site is deemed suitable for its proposed future use in this respect.

4.2 Impacts on Surrounding Air Quality

EPUK & IAQM guidance includes a number of indicative criteria that should be used to assess whether there is a need to proceed to a detailed air quality assessment. The criteria also state that exceeding the criteria does not automatically lead to a requirement to undertake a detailed assessment using air dispersion modelling. However, if a qualitative assessment is used it will need to provide a robust conclusion on whether a proposed development is likely to significantly affect air quality.

The results of Stage 1 of the screening assessment are presented in Table 4.1.

Table 4.1: EPUK & IAQM Stage 1 Screening Criteria

Screening Criteria	Development Proposal
A: If any of the following apply	
> 10 residential units or a site area of > 0.5ha	No, 6 residential units (5 care units and 1 unit for caregivers) and a site area of < 0.5ha
> 1,000 m^2 of floor space for all other uses or a site area > 1 ha	No, site area is < 1,000 m^2
B. Coupled with any of the following	
Development > 10 parking spaces	No, there are no proposed parking spaces

Screening Criteria	Development Proposal
Central energy facility or centralised combustion process	No, central energy facility or centralised combustion process are not proposed.

Table 4.1 indicates that the Proposed Development will not exceed the Stage 1 criteria. As such, the Proposed Development does not need to be further considered against the Stage 2 screening criteria presented within Appendix A.

Therefore, with none of the criteria met, the air quality impact of the Proposed Development on the local area can be considered as 'not significant'.

4.3 Impacts on Newport Caerleon Road AQMA

As detailed in Section 3.1, the Proposed Development borders Newport Caerleon AQMA. NCC monitor annual mean NO_2 concentrations at eleven diffusion tube locations (NCC69, NCC28B, NCC24C, NCC50, NCC67, NCC68, NCC1, NCC81, NCC66, NCC46B and NCC65) within the AQMA.

Monitoring data from these eleven diffusion tubes (Table 3.1) shows that there have been no exceedances of the annual mean objective in the most recent monitored year (2022). A maximum concentration of 35.3 $\mu g/m^3$ was recorded in 2021 which is below the annual mean objective by 4.7 $\mu g/m^3$.

EPUK & IAQM guidance includes two sets of traffic screening thresholds for proposed developments. The guidance includes screening thresholds for proposed developments located within or adjacent to AQMAs as detailed below:

- Change of Light Duty Vehicles (LDV) flows > 100 Annual Average Daily Traffic (AADT)
- Change of Heavy Duty Vehicles (HDV) flows >25 AADT

Given the scale of the Proposed Development, it is predicted that there will be no significant change to LDV or HDV flows during construction or operational periods.

Considering the baseline air quality conditions within the AQMA and the size and type of development, potential impacts on the Caerleon Road AQMA are considered to be 'not significant'.

4.4 Mitigation

Potential impacts of the Proposed Development on surrounding air quality (including the Cefn Road AQMA) are considered to be 'not significant' in accordance with EPUK and IAQM guidance. As such, mitigation measures are not required.

Although mitigation measures are not required, the EPUK and IAQM guidance provides the following principles of good practice methods that may be considered during the operational phase:

- *The provision of at least 1 Electric Vehicle (EV) "fast charge" point per 10 residential dwellings and/or 1000m^2 of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made.*

Section 5.0 Conclusions

An assessment of the potential air quality impacts from the Proposed Development was undertaken under the operational phase.

Regarding the suitability of air quality at the site for its intended uses, a review of baseline air quality data indicated that pollutant concentrations at the site are likely to be below the relevant health-based objectives. As such, the future occupants of the proposed development would not be exposed to unacceptable air quality and the site is deemed suitable for its proposed future uses in this respect.

Regarding the impact of the Proposed Development on the surrounding area, including the Caerleon Road AQMA, an air quality impact screening assessment of the operational phase was undertaken in accordance with the applicable guidance. The operation of the Proposed Development will not generate high levels of traffic on the local road network. Based on the qualitative assessment undertaken, air quality impacts from the Proposed Development during the operational phase would be 'not significant'. Although no mitigation measures are required, the EPUK and IAQM guidance and NCC Air Quality guidance provide several principles of good practice/mitigation measures that may be considered to further reduce emissions.

The overall impacts of the Proposed Development on local air quality are considered to be 'not significant'. The Proposed Development is considered to be compliant with national and local policy including the Newport Local Development Plan.

Appendix A: Examples of Where the Air Quality Objectives should Apply

Averaging Period	Objectives should ap'ply at:	Objectives should generally not apply at:
Annual Mean	▪ All locations where members of the public might be regularly exposed. ▪ Building facades of residential properties, schools, hospitals, care homes, etc.	▪ Building facades of offices or other places of work where members of the public do not have regular access. ▪ Hotels, unless people live there as their permanent residence. ▪ Gardens of residential properties. ▪ Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24 Hour Mean and 8 Hour Mean	▪ All locations where the annual mean objectives would apply, together with hotels. ▪ Gardens of residential properties.	▪ Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1 Hour Mean	▪ All locations where the annual mean and 24 and 8 hour mean objectives would apply. ▪ Kerbsite sites (e.g. pavements of busy shopping streets). ▪ Those parts of car parks, bus stations and railway stations, etc. which are not fully enclosed, where the public might reasonably be expected to spend one hour or more. ▪ Any outdoor locations at which the public may be expected to spend one hour or longer.	▪ Kerbside sites where the public would not be expected to have regular access.
15 Minute Mean	▪ All locations where members of the public might reasonably be expected to spend a period of 15 minutes or longer.	