

ENVIRONMENT

Willmott Dixon Construction Limited
South Holland Health & Wellbeing Hub-
Extra Care Facility
Spalding
Air Quality Assessment

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Air Quality Assessment

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EXECUTIVE SUMMARY

BWB Consulting Limited was appointed by Willmott Dixon Construction Limited to undertake an air quality assessment for the proposed demolition and redevelopment of the existing swimming pool associated with South Holland Health and Wellbeing Club, Spalding to an Extra Care Facility.

The Site is located within the administrative area of South Holland District Council. The Site is not located within an existing Air Quality Management Area.

A qualitative construction phase dust assessment was undertaken in accordance with Institute of Air Quality Management guidance and measures were recommended to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions was considered to be 'not significant' in accordance with Institute of Air Quality Management guidance.

The proposed development trip generation was screened using the Institute of Air Quality Management and Environmental Protection UK two stage screening process, to determine whether a detailed road traffic emissions impact assessment was required. The proposed development trip generation did not exceed the Institute of Air Quality Management and Environmental Protection UK screening criteria for when a detailed assessment is required, therefore detailed dispersion modelling of development-generated road traffic was not undertaken.

Consideration was given to the suitability of the Site for the proposed end use with regard to the current relevant air quality objectives through a review of local air quality monitoring and emission sources. Local monitored pollutant concentrations in the vicinity of the Site were identified to be below the current relevant air quality objectives. The Site was therefore considered suitable for the proposed end use with regard to the current relevant air quality objectives.

Based on the assessment results, the impact of the proposed development on local air quality, with regards to the current relevant air quality objectives, was considered to be not significant; however measures included in the development which may be beneficial to air quality include electric vehicle charging and cycle storage.

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1. INTRODUCTION

- 1.1 BWB Consulting Limited (BWB) was instructed by Willmott Dixon Construction Limited (the Client) to undertake an air quality assessment for the proposed demolition and redevelopment of the existing swimming pool associated with the South Holland Health and Wellbeing Club, Spalding to an Extra Care Facility ('the Site').
- 1.2 The assessment considers construction phase dust impacts and operational phase road traffic emissions. A qualitative construction phase dust assessment was undertaken in accordance with relevant guidance. An operational phase road traffic emissions screening assessment was undertaken to consider the requirement for a detailed assessment of additional vehicles generated by the proposed development. In addition, a qualitative Site suitability assessment was undertaken to determine the suitability of the Site for the proposed end use with regard to the current relevant air quality objectives.
- 1.3 This report is necessarily technical in nature so to assist the reader a glossary of air quality terminology can be found in **Appendix A**.

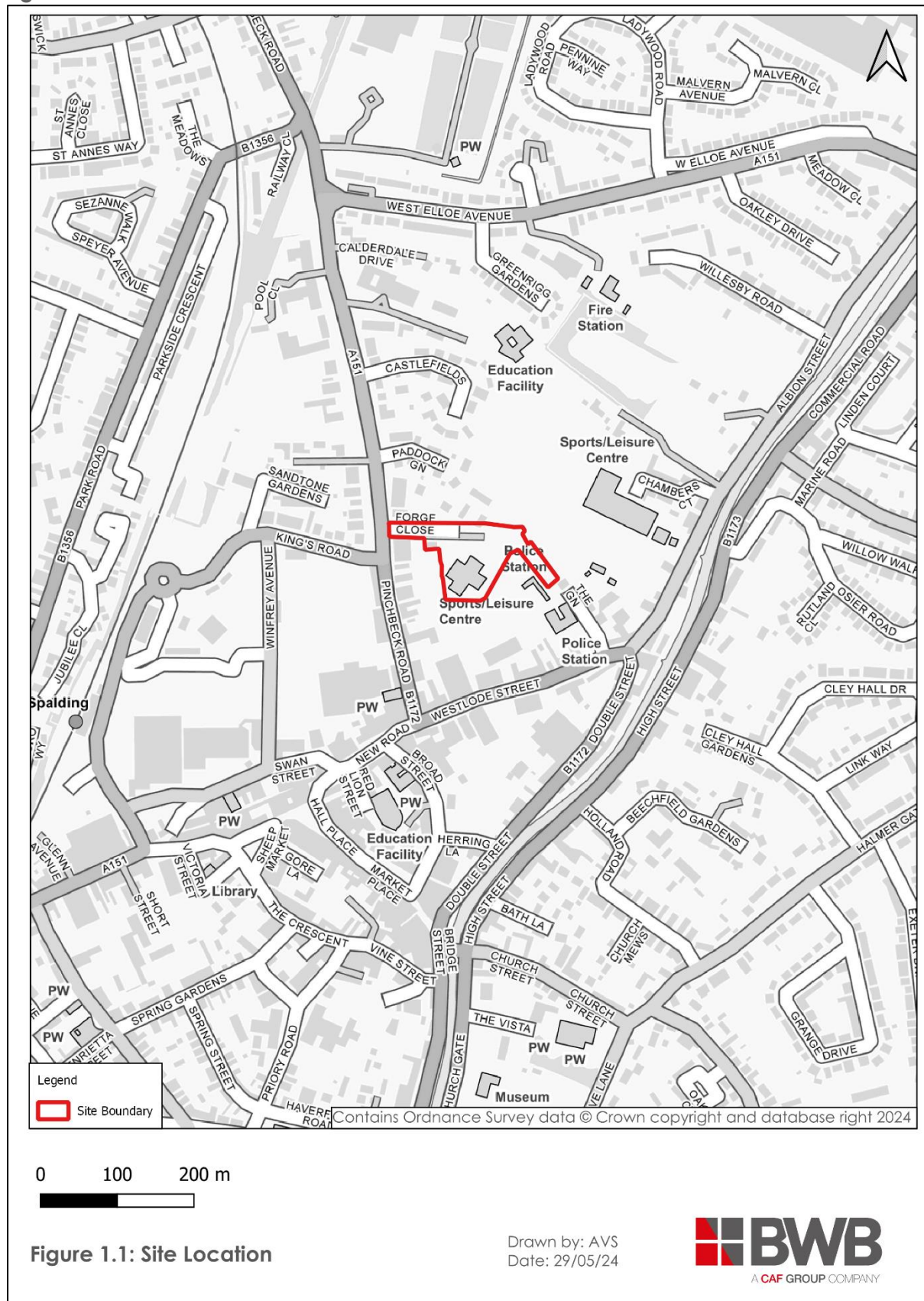
Site Setting

- 1.4 The Site is located off Forge Close, Spalding, and lies within the administrative area of South Holland District Council (SHDC). The Site is not located within, or in the vicinity of, an existing Air Quality Management Area (AQMA).
- 1.5 The Site currently comprises an existing swimming pool associated with the South Holland Health and Wellbeing Club. To the north of the Site there are residential dwellings and sports fields. To the east of the Site lies the South Holland Health and Wellbeing Club and a police station lies to the south. Residential dwellings border the eastern boundary of the Site with the A151 Pinchbeck Road beyond. **Figure 1.1** details the location of the proposed development.
- 1.6 Principal air pollution sources in the vicinity of the Site are likely to comprise road traffic emissions from the A151 Pinchbeck Road.

Proposed Development

- 1.7 The proposed development comprises the demolition of the existing Castle Swimming Pool, to be replaced by an Extra Care Facility comprising 62 units. A separate application is being submitted for the relocation of the existing Castle Swimming Pool to the east alongside the existing South Holland Health and Wellbeing Club sports facility which will be extended/refurbished. A separate air quality assessment was undertaken for this. The proposed development masterplan is detailed in **Appendix B**.

Figure 1.1: Site Location



2. LEGISLATION, PLANNING POLICY & GUIDANCE

National Legislation and Planning Policy

2.1 The following national legislation and planning policy is relevant to air quality and was considered in the undertaking of the assessment. A summary of the relevant national legislation and planning policy is provided in **Appendix C**:

- European Parliament, EU 2008 ambient Air Quality Directive (2008)¹;
- HMSO, Air Quality (England) Regulations (2000)²;
- HMSO, Environment Act (1995)³;
- HMSO, Environment Act (2021)⁴;
- HMSO, Air Quality (England) Regulations (2002)⁵;
- HMSO, Air Quality Standards Regulations (2010)⁶;
- Department for Environment, Air Quality Strategy (1997)⁷;
- Department for the Environment, Food and Rural Affairs, Air Quality Strategy (2007)⁸;
- Department for the Environment, Food and Rural Affairs, Air Quality Strategy (2023)⁹;
- Department for the Environment, Food and Rural Affairs, The Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020)¹⁰;
- HMSO, The Environmental Targets (Fine Particulate Matter) (England) Regulations (2023)¹¹;
- Ministry of Housing, Communities and Local Government, National Planning Policy Framework (NPPF) (2023)¹²; and
- Ministry for Housing, Communities and Local Government, Planning Practice Guidance (PPG) for air quality (2019)¹³.

Regional Planning Policy

2.2 The following regional planning policy was considered in the undertaking of the assessment and a summary is provided in **Appendix C**:

- South East Lincolnshire Local Plan 2011-2036¹⁴.

¹ European Parliament (2008) Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe

² HMSO (2000) Statutory Instrument 2000 No. 928, The Air Quality (England) Regulations 2000 (as amended), London: HMSO

³ HMSO (1995) The Environment Act 1995, London: TSO

⁴ HMSO (2021) The Environment Act 2021, London: TSO

⁵ HMSO (2002) Statutory Instruments 2002 No. 3043, The Air Quality (England) (Amendment) Regulations 2002, London: HMSO

⁶ HMSO (2010) Statutory Instruments 2010 No. 1001 Air Quality Standards Regulations 2010. London: HMSO

⁷ Department of the Environment (DoE) (1997) The UK National Air Quality Strategy, London: HMSO

⁸ Department of the Environment, Food and Rural Affairs (Defra) (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, London: HMSO

⁹ Department for the Environment, Food and Rural Affairs (Defra) (2023) Air Quality Strategy: Framework for Local Authority

¹⁰ Department of the Environment, Food and Rural Affairs (Defra) (2020) The Environment (Miscellaneous Amendments) (EU Exit) Regulations, London: HMSO

¹¹ HMSO (2023) Statutory Instruments 2023 No. 96 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

¹² Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework, HMSO London

¹³ Ministry for Housing, Communities and Local Government (2019) Planning Practice Guidance Air Quality

¹⁴ South East Lincolnshire Local Plan 2011-2036

Air Quality Assessment Guidance

2.3 The following guidance was utilised in the air quality assessment:

- Defra, Local Air Quality Management Technical Guidance (LAQM.TG(22)) (2022)¹⁵;
- Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction (2024)¹⁶; and
- Institute of Air Quality Management and Environmental Protection UK, Land-Use Planning and Development Control: Planning for Air Quality (2017)¹⁷.

¹⁵ Defra (2022) Local Air Quality Management Technical Guidance LAQM.TG(22)

¹⁶ Institute of Air Quality Management (2024) Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, London

¹⁷ Institute of Air Quality Management and Environmental Protection UK (2017) Land-Use Planning and Development Control: Planning for Air Quality

3. METHODOLOGY

Consultation with South Holland District Council

- 3.1 Consultation was undertaken with SHDC via email on the 29th May 2024, in which the proposed methodology was provided. A response was not received at the time of writing. The methodology, as provided to SHDC, is detailed below:
- Construction Phase - A construction phase dust assessment was undertaken and relevant measures to mitigate construction phase dust emissions were recommended. The assessment was undertaken in accordance with guidance provided by the Institute of Air Quality Management (IAQM)¹⁶.
 - Operational Phase – An operational phase road traffic emissions screening assessment was undertaken in accordance with IAQM and Environmental Protection UK (EPUK) guidance¹⁷. In addition, a qualitative Site suitability assessment was undertaken to determine the suitability of the Site for the proposed use.
- 3.2 Full details of the methodology used in the assessment, as provided to SHDC, are provided below.

Construction Phase Dust Assessment

- 3.3 An assessment of the potential impacts arising from the construction of the proposed development was undertaken in accordance with IAQM guidance¹⁶. The full assessment methodology is not reproduced within this report but a summary of the assessment steps are provided below:
- Step 1 – screen the requirement for a more detailed assessment. No assessment is required if there are no receptors within a certain distance of the works.
 - Step 2 – assess the risk of dust impacts separately for each of the four activities considered (demolition, earthworks, construction and trackout).
 - Step 2A – determine the potential dust emission magnitude for each of the four activities;
 - Step 2B – determine the sensitivity of the area;
 - Step 2C – determine the risk of dust impacts by combining the findings of steps 2A and 2B.
 - Step 3 – determine the site-specific mitigation for each of the four activities; and
 - Step 4 – examine the residual effects and determine significance.

Operational Phase Screening Assessment

IAQM/EPUK Guidance

- 3.4 Guidance published by the IAQM and EPUK in 2017¹⁷ provides a two-stage approach to determine the level of assessment required in the consideration of the impact of development-generated road traffic emissions on local air quality.

Stage 1

3.5 The Stage 1 criteria requires that the assessment progress to Stage 2 if any of the following apply:

- The development comprises:
 - 10 or more residential units or a site area of more than 0.5ha; or
 - More than 1,000m² of floor space for all other uses or a site area greater than 1ha;
- Coupled with any of the following:
 - The development has more than 10 parking spaces; or
 - The development will have a centralised energy facility or other centralised combustion process.

Note: Consideration should be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

Stage 2

3.6 The IAQM and EPUK guidance¹⁷ provides the following indicative criteria to determine whether a detailed road traffic emissions assessment is required for a proposed development.

3.7 The Stage 2 criteria relevant to the proposed development are:

- A change in Light Duty Vehicles (LDV) flow of more than 500 vehicles as a 24 hour Annual Average Daily Traffic (AADT) flow; and/or
- A change in Heavy Duty Vehicle (HDV) flow of more than 100 vehicles as a 24 hour AADT flow.

Site Suitability Assessment

3.8 Monitored concentrations undertaken by SHDC were compared to the current relevant air quality objectives⁷. The current relevant air quality standards and objectives are detailed in **Table 3.1**.

Table 3.1: Air Quality Standards and Objectives (England)

Pollutant	Averaging Period	Air Quality Objective (µg.m ⁻³)	Date to Achieve by
NO ₂	Annual Mean	40	31 December 2005
	1-hour mean not to be exceeded more than 18 times per year	200	31 December 2005
PM ₁₀	Annual Mean	40	31 December 2004
	24-hour mean not to be exceeded more than 35 times per year	50	31 December 2004

Pollutant	Averaging Period	Air Quality Objective ($\mu\text{g.m}^{-3}$)	Date to Achieve by
PM _{2.5}	Annual Mean	20	1 January 2020
	<i>Annual mean interim target as detailed within the Environmental Improvement Plan¹⁸</i>	12	31 January 2028
	Annual mean	10	31 December 2040

Italics notes future objective.

¹⁸ Defra (2023) Environmental Improvement Plan 2023, First revision of the 25 Year Environment Plan

4. CONSTRUCTION PHASE DUST ASSESSMENT

- 4.1 The construction phase of the proposed development will involve a number of activities which have the potential to impact on local air quality.
- 4.2 The location of sensitive receptors in relation to construction activities will affect the potential for such construction activities to cause dust soiling, nuisance and local air quality impacts. Meteorological conditions and the use of control measures will also contribute to the effects experienced.

Step 1: Screen the Need for a Detailed Assessment

- 4.3 Step 1 of the IAQM guidance¹⁶ involves a screening assessment to consider whether a more detailed construction phase dust assessment is required.
- 4.4 In accordance with the guidance, a detailed assessment is required if:
- Human receptors are located within 250m of the boundary of the site or 50m of routes used by construction vehicles on the public highways, up to 250m from the site entrances; or
 - Ecological receptors are located within 50m of the boundary of the site or 50m of routes used by construction vehicles on the public highways, up to 250m from the site entrances.
- 4.5 From a review of the Multi Agency Geographic Information for the Countryside (MAGIC) website¹⁹, no ecological designations were identified within the above screening distance and therefore the impact on ecological designations was not considered further. However human receptors are located within the above screening distances, with the closest of these receptors located along Pinchbeck Road and Forge Close. A construction phase assessment was therefore undertaken.

Step 2: Assess the Risk of Dust Impacts

Step 2A: Define the Potential Dust Emission Magnitude

- 4.6 The dust emission magnitudes for the construction activities were defined using the criteria detailed in the IAQM guidance¹⁶ as detailed in **Table 4.1**.

Table 4.1: Dust Emission Magnitude Criteria and Definition

Activity	IAQM Dust Emission Magnitude	IAQM Dust Emission Magnitude Criteria
Demolition	Large	Total building volume >75,000m ³ , potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12m above ground level.
	Medium	Total building volume 12,000m ³ – 75,000m ³ , potentially dusty construction material, demolition activities 6 - 12m above ground level.

¹⁹ Defra, Multi Agency Geographic Information for the Countryside (MAGIC) [<http://magic.defra.gov.uk/>]

Activity	IAQM Dust Emission Magnitude	IAQM Dust Emission Magnitude Criteria
	Small	Total building volume <12,000m ³ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6m above ground, demolition during wetter months.
Earthworks	Large	Total site area >110,000m ² , potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height.
	Medium	Total site area 18,000m ² – 110,000m ² , moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height.
	Small	Total site area <18,000m ² , soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height.
Construction	Large	Total building volume >75,000m ³ , on site concrete batching, sandblasting.
	Medium	Total building volume 12,000m ³ – 75,000m ³ , potentially dusty construction material (e.g. concrete), on site concrete batching.
	Small	Total building volume <12,000m ³ , construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m.
	Medium	20 - 50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m.
	Small	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

4.7 The following dust emission magnitudes were defined for the proposed development:

- Demolition – the total building volume to be demolished is between 12,000m³ and 75,000m³ with demolition activities 6-12m above ground level. Therefore, the dust emission magnitude for demolition was defined as **Medium**.
- Earthworks – the total site area where earthworks activities will be undertaken is below 18,000m². Therefore, the dust emission magnitude for earthworks was defined as **Small**.
- Construction – the proposed development will involve the construction of an Extra Care Facility comprising 62 units, with a total building volume between 12,000m³ and 75,000m³. Therefore, the dust emission magnitude for construction was defined as **Medium**.
- Trackout – due to the scale of the Site, it can be assumed that there will be less than 20 HDV outward movements in any one day. The Site will also have an unpaved road length of less than 50m. Therefore the dust emission magnitude associated with trackout activities was defined as **Small**. A trackout distance of up to 250m from the Site access was therefore used in accordance with IAQM guidance¹⁶.

4.8 A summary of the defined dust emission magnitudes for the development are provided in **Table 4.2**.

Table 4.2: Summary of Project Defined Dust Emission Magnitudes

Activity	Dust Emission Magnitude
Demolition	Medium

Activity	Dust Emission Magnitude
Earthworks	Small
Construction	Medium
Trackout	Small

Step 2B: Define the Sensitivity of the Area

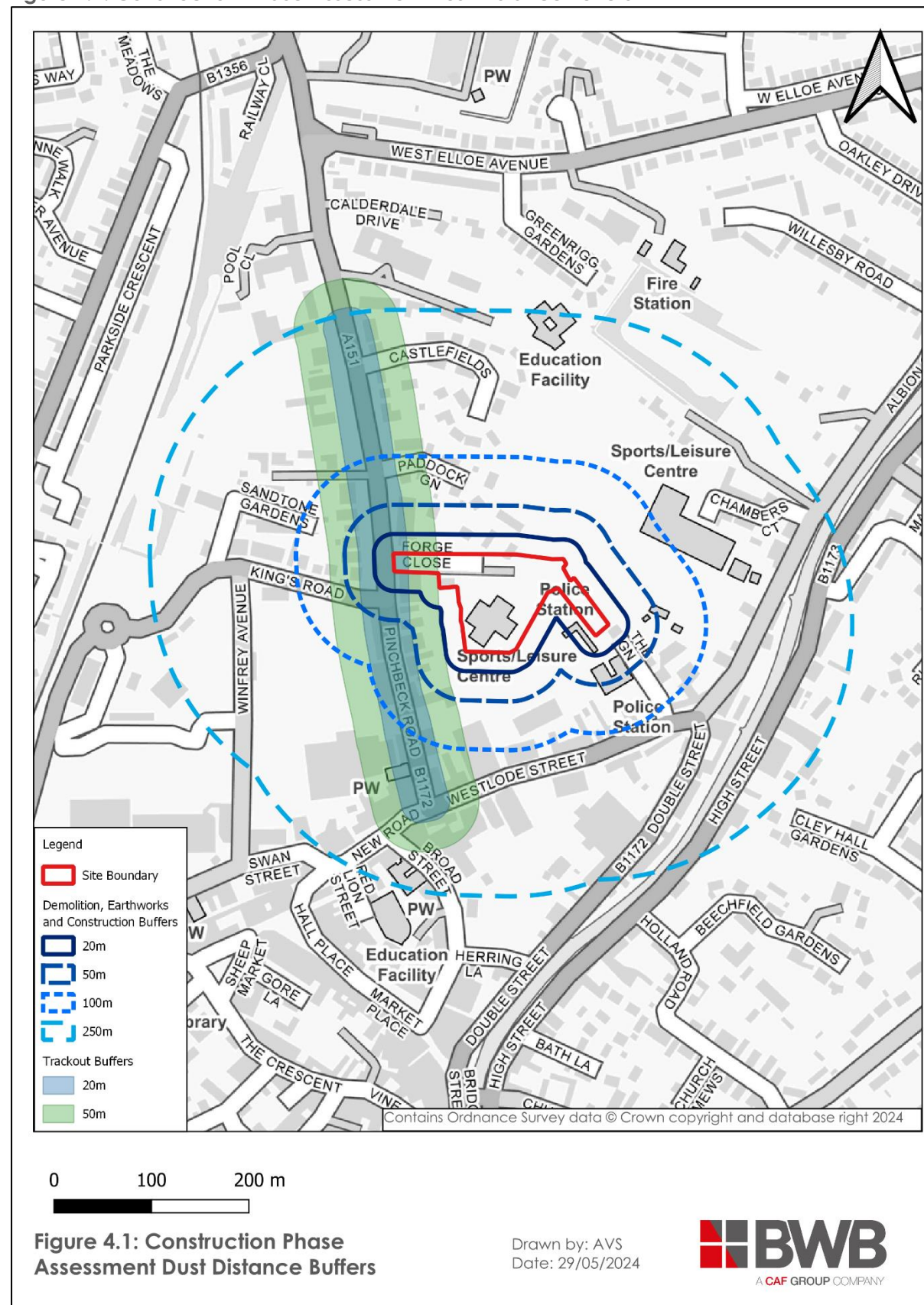
- 4.9 The assessment requires the determination of the sensitivity of the area for the purposes of dust soiling and human health. The sensitivity of the study area takes into account the specific receptors in the vicinity of the Site, the proximity and number of those receptors, the local background concentration of PM₁₀ and site-specific factors. **Table 4.1** as utilised to determine the number of receptors located within the distance bands provided in the IAQM guidance¹⁶ for determining receptor sensitivity.
- 4.10 The sensitivity of the area is defined below, in accordance with IAQM criteria¹⁶ and summarised in **Table 4.3**.
- Dust Soiling –there are between 10 and 100 highly sensitive residential dwellings and highly sensitive medium term car parking spaces within 20m of the Site boundary. The sensitivity of the area to dust soiling effects from demolition, earthworks and construction activities is therefore defined as **High**. There are also more than 100 highly sensitive residential receptors located within 20m of the assumed Site access roads. The sensitivity of the area to dust soiling associated with trackout activities is defined as **High**.
 - Human Health – the annual mean background PM₁₀ concentrations are below 24µg.m⁻³, in accordance with Defra background mapping²⁰. There are between one and 10 highly sensitive residential receptors located within 20m of the Site boundary.. The sensitivity of the area to human health impacts from demolition, earthworks and construction activities is therefore considered to be **Low**. There are over 100 highly sensitive residential receptors located within 20m of the assumed Site access roads. Therefore, the sensitivity of the area to human health effects with regard to trackout is defined as **Medium**.

Table 4.3: Determination of the Sensitivity of the Area

Potential Impact	Sensitivity		
	Earthworks	Construction	Trackout
Dust Soiling	High	High	High
Human Health	Low	Low	Medium

²⁰ Defra Background Mapping data for local authorities – 2018 (<https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>)

Figure 4.1: Construction Phase Assessment Dust Distance Buffers



Step 2C: Define the Risk of Impacts

- 4.11 The dust emission magnitude determined in Step 2A is then combined with the sensitivity of the area determined in Step 2B to define the risk of dust impacts with no mitigation applied. The results of this assessment are detailed in **Table 4.4**.

Table 4.4: Summary Dust Risk Table to Define Site Specific Risk

Activity	Step 2A: Dust Emission Magnitude	Step 2B: Sensitivity of the Area	Step 2C: Risk of Dust Impacts
<i>Dust Soiling Effects on People and Property</i>			
Demolition	Medium	High	Medium
Earthworks	Small	High	Low
Construction	Medium	High	Medium
Trackout	Small	High	Low
<i>Human Health Impacts</i>			
Demolition	Medium	Low	Low
Earthworks	Small	Low	Negligible
Construction	Medium	Low	Low
Trackout	Small	Medium	Low

Step 3: Site-Specific Mitigation

- 4.12 The risk of dust impacts, defined in Step 2C of the assessment, is used to determine the mitigation measures required to minimise the emission of dust during construction phase activities. The IAQM guidance¹⁶ provides details of highly recommended and desirable mitigation measures which are commensurate with the risk of dust impacts defined in Step 2C for, construction, earthworks and trackout activities. Where the mitigation measures are general in nature, the highest risk category was applied in accordance with the guidance¹⁶. The highest risk category identified was 'Medium Risk' and the recommended mitigation taken from the IAQM guidance¹⁶ is detailed in **Table 4.5** and **Table 4.6**.

Table 4.5: Mitigation Measures for a Medium Risk Site

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
Communication	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	None
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environmental manager/engineer or the site manager.	
	Display the head or regional office contact information.	
	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.	
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record the measures taken.	None
	Make the complaints log available to the local authority when asked.	
	Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.	
Monitoring	Carry out regular site inspections to monitor compliance with the DMP, record inspections results, and make an inspection log available to the local authority when asked.	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided as necessary.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	
Preparing and maintaining the site	Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	None
	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	
	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extended period.	
	Avoid site runoff of water or mud.	

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
	Keep site fencing, barriers and scaffolding clean using wet methods.	
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	
	Cover, seed or fence stockpiles to prevent wind whipping.	
Operating vehicle/ machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	
Operations	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.	None
	Ensure an adequate water supply on site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	
	Use enclosed chutes and conveyors and covered skips.	
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	
	Ensure equipment is readily available on site to clean and dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	
Waste Management	Avoid bonfires and burning of waste materials.	None

Table 4.6: Mitigation Measures Specific to Demolition, Earthworks, Construction and Trackout

Category	Mitigation Measures	
	Highly Recommended	Desirable
Demolition (Medium Risk Site)	Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
	Avoid explosive blasting, using appropriate manual or mechanical alternatives.	
	Bag and remove any biological debris or damp down such material before demolition.	
Earthworks (Low Risk Site)	None	None
Construction (Medium Risk Site)	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.	Avoid scabbling (roughening of concrete surfaces) if possible.
		Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
		For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout (Low Risk Site)	None	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any materials tracked out of the site. This may require the sweeper being continuously in use.
		Avoid dry sweeping of large areas.
		Ensure vehicles entering and leaving the sites are covered to prevent escape of materials during transport.
		Record all inspections of haul routes and any subsequent action in a site log book.
		Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Step 4: Determine Significant Effects

- 4.13 In accordance with IAQM guidance¹⁶, with the implementation of the mitigation measures detailed in Step 3, the residual impacts from the construction phase are considered to be 'not significant'.

5. OPERATIONAL PHASE ASSESSMENT

Road Traffic Emissions Screening Assessment

- 5.1 The trip generation for the proposed development was screened using IAQM and EPUK Stage 1 and Stage 2 criteria¹⁷ to determine whether a detailed air quality assessment was required.

Stage 1

- 5.2 The proposed development comprises more than 1,000m² of floor space and proposes more than 10 parking spaces; it was therefore necessary to proceed to Stage 2.

Stage 2

- 5.3 The trip generation for the proposed development was provided by BWB Consulting, the Transport Consultants for the project.
- 5.4 The predicated trip generation for the Extra Care Facility is 138 LDVs as a 24 hour AADT flow with no additional HDVs. Therefore, the predicted trip generation is not anticipated to exceed the IAQM and EPUK criteria of 500 LDV AADT and/or 100 HDV AADT for development outside of the AQMA and a detailed assessment is not required. Therefore, the impact of the proposed development on local air quality was determined to be 'not significant', in accordance with IAQM and EPUK guidance¹⁷ and detailed dispersion modelling was not undertaken.

Qualitative Site Suitability Assessment

- 5.5 A qualitative assessment was undertaken to consider the suitability of the Site for its proposed end use. This was undertaken through a review of local air quality monitoring data and a review of local emissions sources.
- 5.6 The Site is not located within, or the vicinity of, an existing AQMA.

Nitrogen Dioxide

- 5.7 SHDC undertakes NO₂ monitoring within its administrative area using a network of continuous monitoring sites and passive diffusion tubes. The closest monitoring location to the Site is SH17 located approximately 500m south of the Site.
- 5.8 Bias adjusted NO₂ monitoring results, for the locations in the vicinity of the Site, are detailed in **Table 5.1**. At the time of assessment 2020 and 2021 monitoring data were available and therefore were included in the review. The IAQM released a position statement²¹ in August 2021 with regard to 2020 and 2021 monitoring datasets. Due to the influence of the COVID-19 pandemic lockdown restrictions, 2020 and 2021 monitoring data are not considered representative of normal conditions. 2022 data were available and included in the review. As the IAQM has not released a position

²¹ Institute of Air Quality Management (2021) Position Statement: Use of 2020 and 2021 Monitoring Datasets

statement in relation to 2022 monitoring data, 2022 was considered representative of normal conditions.

Table 5.1: SHDC NO₂ Monitoring Data in 2016 – 2022

ID	Grid Reference	Site Monitoring Type	Distance from and direction to Site boundary	Monitored Annual Average Concentration (µg.m ⁻³)						
				2016	2017	2018	2019	2020	2021	2022
SH17	524892 322571	Roadside	425m south	27.5	24.2	22.8	20.3	18.7	19.0	22.2
SH13	524595 323793	Kerbside	610m north west	34.8	34.9	27.1	25.7	21.9	24.0	25.9
SH2a,2b,2c	524292 322587	Roadside*	695m south west	-	-	-	32.1	27.6	29.8	32.2
SH3	525694 321999	Urban background	1.2km south east	-	-	-	11.0	9.4	9.7	10.7
CM1	523168 322454	Urban background	1.7km south west	12.7	10.8	9.4	9.3	8.5	8.7	8.9
SH18	524191 321328	Roadside	1.8km south	26.5	23.4	20.2	19.8	16.7	17.3	18.7

- Indicates years where no data was available. Data is presented to available accuracy. *Recorded as Roadside in the Annual Status Report, however, is located less than 1m adjacent to road.

- 5.9 As shown in **Table 5.1**, monitored annual mean NO₂ concentrations were below the current annual mean NO₂ objective of 40µg.m⁻³ between 2016 and 2022 at all monitoring locations considered. The year on year trend for the monitored annual average concentration is variable, however decreases from 2016 to 2022.
- 5.10 All reported tubes are located within 1.5m from the kerbside and monitored concentrations are well below the current relevant air quality objectives. The area of the Site where new sensitive uses are proposed is located approximately 70m from the kerbside of the A151 Pinchbeck Road. SH13 is located along the A151 Pinchbeck Road which is the closest road to the Site boundary and monitored concentrations in 2022 were well below the current annual mean NO₂ air quality objective at this monitoring location. It is therefore anticipated that concentrations will be lower at the Site than those monitored at SH13, due to the larger distance from the kerb, and therefore no exceedances of the current annual mean NO₂ objective are anticipated across the Site.

- 5.11 With regard to short term air quality objectives for NO₂, the predicted annual mean NO₂ concentrations are less than 60µg.m⁻³ and therefore, in accordance with Defra guidance¹⁵, it may be assumed that exceedance of the 1-hour mean objective is unlikely.

Particulate Matter (PM₁₀ and PM_{2.5})

- 5.12 SHDC undertakes monitoring of PM₁₀ at monitoring location CM1, which is located 1.7km south west of the Site. **Table 5.2** summarises the monitored PM₁₀ concentrations from this location between 2016 and 2022.

Table 5.2: SHDC PM₁₀ Monitoring Data in 2016 - 2022

ID	Grid Reference	Site Monitoring Type	Distance from and direction to Site boundary	Monitored Annual Average Concentration (µg.m ⁻³)						
				2016	2017	2018	2019	2020	2021	2022
CM1	523168 322454	Urban background	1.7km south west	13.5	11.8	13.1	13.7	10.9	9.0	11.5

Data is presented to available accuracy.

- 5.13 Monitored annual mean PM₁₀ concentrations were below the current relevant annual mean PM₁₀ air quality objective at the CM1 monitoring location between 2016 and 2022, with no discernible trend in concentration observed.
- 5.14 The CM1 monitoring location is an urban background monitoring location situated at Spalding Monkhouse School along Pennygate, approximately 25m from the kerbside, and monitored concentrations were below the current relevant objectives in 2022. The Site where new sensitive uses are proposed is located approximately 70m from the kerbside of the A151 Pinchbeck Road. Therefore it is anticipated that concentrations will be similar at the Site than CM1, and therefore no exceedances of the annual mean PM₁₀ objective are predicted.
- 5.15 SHDC does not currently undertake PM_{2.5} monitoring within its administrative area.

Development measures

- 5.16 The proposed development is not predicted to have a significant impact with regards to the current relevant objectives and therefore mitigation measures are not required to minimise air quality impacts. However measures included in the development which may be beneficial to air quality include electric vehicle (EV) charging and cycle storage.

6. CONCLUSION

- 6.1 An air quality assessment was undertaken for the proposed redevelopment of the existing swimming pool associated with South Holland Health and Wellbeing Club, Spalding to an Extra Care Facility.
- 6.2 A qualitative construction phase assessment was undertaken, and measures were recommended to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions is considered to be 'not significant' in accordance with IAQM guidance¹⁶.
- 6.3 The trip generation associated with the proposed development was screened using the two-stage screening approach detailed in the IAQM and EPUK guidance¹⁷. The proposed development trip generation was below the screening criteria, therefore, the impact of the proposed development on local air quality was determined to be 'not significant', in accordance with IAQM and EPUK guidance¹⁷ and detailed dispersion modelling was not undertaken.
- 6.4 Following a review of local air quality monitoring data, it was considered that the current relevant air quality objectives for England are unlikely to be exceeded within the Site. The Site was therefore considered to be suitable for the proposed end use with regard to the current relevant air quality objectives.
- 6.5 Based on the assessment results, the impact of the proposed development with regards to the current relevant air quality objectives was considered to be not significant, and no mitigation is required, however measures included within the development which may be beneficial to air quality include EV charging and cycle storage.

APPENDICES

APPENDIX A: GLOSSARY OF TERMS

	Definition
AADT	Annual Average Daily Traffic flow.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between two years, which is useful for pollutants that have higher concentrations during the winter months.
AQAP	Air Quality Action Plan.
AQMA	Air Quality Management Area.
AQS	Air Quality Strategy.
Defra	Department for Environment, Food and Rural Affairs.
EPUK	Environmental Protection UK.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
HDV	Heavy Duty Vehicles (HGVs + buses and coaches)
HGV	Heavy Goods Vehicles.
IAQM	Institute of Air Quality Management.
LAQM	Local Air Quality Management.
LDV	Light Duty Vehicles (motorbikes, cars, vans and small trucks)
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO ₂	Nitrogen dioxide.
NO _x	Nitrogen oxides.
Percentile	The percentage of results below a given value.
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
micrograms per cubic metre (µg.m ⁻³)	A measure of concentration in terms of mass per unit volume. A concentration of 1µg.m ⁻³ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

APPENDIX B: PROPOSED DEVELOPMENT MASTERPLAN



Site Plan - Proposed
1 : 500

- No. Note
- 1 All dimensions to be verified on site by GENERAL CONTRACTOR prior to any work, setting out or shop drawings being prepared.
 - 2 Drawings not to be scaled. Work to figured dimensions only.
 - 3 If copyright SAUNDERS BOSTON LIMITED. All rights reserved.
This drawing remains the property of SAUNDERS BOSTON LIMITED at all times and may not be reproduced or copied in whole or in part without their prior written consent.
 - 4 This drawing and related specifications are for use only in the stated location.
 - 5 This drawing is to be read in conjunction with all other Consultants drawings and specifications.
 - 6 Drainage has not been surveyed and any/all pipe locations and below ground drainage runs are indicative.
 - 7 It is assumed that all works will be carried out by a competent contractor who will be working, where appropriate, to an approved method statement.



Legend

- Existing Trees
- Proposed Trees
- Trees to be removed
- Resident Communal Areas
- Staff Areas
- Circulation
- 1 Bed Apartment
- 2 Bed Apartment
- 3 Storey
- 4 Storey
- Existing Pool to be demolished

Accommodation Schedule

Apartments - Extra Care			
Floor	1B 2P	2B 3P	
Ground	11	2	
First	16	4	
Second	17	4	
Third	6	2	
Sub-Total	50	12	
Total		62	

Total Number of Units - 62
Total Number of Parking Spaces - 42
(inc 4no accessible bays)

E	Updated in line with landscape proposal	15.05.24	SL	NJ
D	Minor changes to suit tracking, staff cycle parking added.	07.05.24	SL	SL
C	Minor changes to site plan, site boundaries adjusted to suit H&W Hub.	25.04.24	SL	SL
B	Proposals updated following DTM.	18.04.24	SL	SL
A	Proposed plans updated to suit latest masterplan.	11.04.24	SL	SL
No.	Revision	Date	CHK	Auth

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SBA Project Code	Drawn	SL	Date	15.05.24
Client	Checked	DH		
Client	Willmott Dixon			
Site	South Holland Extra Care			
Drawing	Indicative Proposed Site Plan			
Scale	As indicated @A1		Revision	E
Project	Originator	Zone	Level	Type Role Number
2066	-SBA-XX-00-DR-A-0503			

APPENDIX C: PLANNING POLICY AND LEGISLATION

National Legislation and Planning Policy

The UK Air Quality Strategy

- C.1 European Union (EU) legislation forms the basis of air quality policy and legislation in the UK. The EU 2008 ambient Air Quality Directive¹ sets limits for ambient concentrations of air pollutants including nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). The air quality standards and objectives are prescribed through the Air Quality (England) Regulations 2000², as amended, for the purpose of the Local Air Quality Management Framework. The Air Quality (England) Regulations were amended in 2002⁵ and again in 2010⁶, with miscellaneous amendments added in 2020¹⁰ following the UK exit from the EU. Additionally, an updated PM_{2.5} objective was published in 2023⁹ with an interim target to be achieved by 2028¹⁸.
- C.2 The UK Government are required under the Environment Act 1995³ to produce a national Air Quality Strategy (AQS). The AQS was first published in 1997⁷ and was most recently reviewed and updated in 2007⁸ and most recently reviewed and updated in 2023⁹. The AQS provides an overview of the Government's ambient air quality policy and sets out the air quality standards and objectives to be achieved and measures to improve air quality.
- C.3 The Environment Act 2021⁴ was granted Royal Assent in November 2021 and contains amendments to Part IV of the Environment Act 1995³ with regard to the Local Air Quality Management regime. Under the Environment Act 2021⁴, the Secretary of State must lay a statement before Parliament setting out progress made in meeting air quality objectives and standard in England and steps taken towards achieving the standards. The Environment Act 2021⁴ also places responsibility on local authorities to co-operate with air quality partners in the preparation of Air Quality Action Plans and identification of measures which should be monitored within the Plan and dates by which they should be implemented.
- C.4 Part IV of the Environment Act³ requires local authorities in the UK to review local air quality within their administrative area and, if relevant air quality standards and objectives are likely to be exceeded, designate Air Quality Management Areas (AQMA). Following the designation of an AQMA, local authorities are required to publish an Air Quality Action Plan (AQAP) detailing measures to be taken to improve local air quality and work towards meeting the relevant air quality standards and objectives.

National Planning Policy Framework

- C.5 The National Planning Policy Framework (NPPF)¹² was amended in December 2023 and sets out the Government's planning policies for England and how these are expected to be applied.
- C.6 The NPPF¹² recognises air quality within Section 15: Conserving and enhancing the natural environment, and states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

[...]

e) 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, taking into account relevant information such as river basin management plans;

[...]

Ground conditions and pollution

[...]

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.

[...]

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. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

C.7 With regard to assessing cumulative effects the NPPF¹² states:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.

[...]"

Planning Practice Guidance

- C.8 The Planning Practice Guidance (PPG) for air quality¹³ was updated in November 2019 and provides guiding principles on how the planning process can take account of the impacts of new development on air quality.
- C.9 The PPG¹³ sets out the following with regard to air quality and planning:
- *“What air quality considerations does planning need to address;*
 - *What is the role of plan-making with regard to air quality;*
 - *Air quality concerns relevant to neighbourhood planning;*
 - *What information is available about air quality;*
 - *When could air quality considerations be relevant to the development management process;*
 - *What specific issues may need to be considered when assessing air quality impacts;*
 - *How detailed does an air quality assessment need to be; and*
 - *How can an impact on air quality be mitigated”.*
- C.10 The PPG¹³ sets out the pollutants for which there are legally binding limits for concentrations and those which the UK also has national emissions reduction commitments.
- C.11 The PPG¹³ states that development plans may need to consider:
- *“what are the observed trends shown by recent air quality monitoring data and what would happen to these trends in light of proposed development and / or allocations;*
 - *the impact of point sources of air pollution (pollution that originates from one place);*
 - *the potential cumulative impact of a number of smaller developments on air quality as well as the effect of more substantial developments, including their implications for vehicle emissions;*
 - *ways in which new development could be made appropriate in locations where air quality is or is likely to be a concern, and not give rise to unacceptable risks from pollution. This could, for example, entail identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable; and*
 - *opportunities to improve air quality or mitigate impacts, such as through traffic and travel management and green infrastructure provision and enhancement”.*
- C.12 The PPG¹³ also states what may be considered relevant to determining a planning application and these include whether a development would:
- *“Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield. This could be through the provision of*

electric vehicle charging infrastructure; altering the level of traffic congestion; significantly changing traffic volumes, vehicle speeds or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; could add to turnover in a large car park; or involve construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;

- Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; biomass boilers or biomass-fuelled Combined Heat and Power plant; centralised boilers or plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area; or extraction systems (including chimneys) which require approval or permits under pollution control legislation;
- Expose people to harmful concentrations of air pollutants, including dust. This could be by building new homes, schools, workplaces or other development in places with poor air quality;
- Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;
- Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value".

C.13 The PPG¹³ provides guidance regarding what should be included within an air quality assessment. Examples of potential air quality mitigation measures are also provided.

Regional Planning Policy

C.14 The South East Lincolnshire Local Plan 2011-2036¹⁴, was adopted by South Holland District Council in March 2019. It included the following policies related to air quality:

"Policy 30: Development proposals will not be permitted where, taking account of any proposed mitigation measures, they would lead to unacceptable adverse impacts upon:

1. *health and safety of the public;*
2. *the amenities of the area; or*
3. *the natural, historic and built environment;*

by way of

4. *air quality, including fumes and odour;*

[...]

Planning applications, except for development within the curtilage of a dwelling house as specified within Schedule 2, Part 1 of The Town and Country Planning (General Permitted Development) (England) Order 2015, or successor statutory instrument, must include an assessment of:

9. *impact on the proposed development from poor air quality from identified sources;*
10. *impact on air quality from the proposed development; and*

11. *impact on amenity from existing uses."*

C.15 The above policy was taken into consideration throughout the undertaking of the assessment

