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AIR QUALITY ASSESSMENT

AT

WÄRTSILÄ SHAFT LINE SOLUTIONS

AQ1047

08 SEPTMBER 2023

Prepared For

Wärtsilä Shaft Line Solutions
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Alkali Environmental

TABLE OF CONTENTS

EXECUTIVE SUMMARY **4**
1.0 INTRODUCTION **5**
1.1 Background 5
1.2 Site Location and Context 5
1.3 Limitations 5
2.0 LEGISLATION, POLICY & ENVIRONMENTAL STANDARDS **6**
2.1 Environmental Standards – Human Health 6
2.1 Environmental Standards - Ecological 7
2.2 Local Planning Policy 7
3.0 METHODOLOGY **8**
3.1 Dispersion Model 8
3.2 Modelling Scenarios 8
3.3 Stack Information 9
3.4 Process Conditions 9
3.5 Emissions 9
3.6 Time Varied Emissions 9
3.7 Meteorological Data 9
3.8 Roughness Length 10
3.9 Monin-Obukhov Length 10
3.10 Building Effects 10
3.11 Significance of Predicted Impacts 11
3.12 Modelling Uncertainty 11
4.0 BASELINE **13**
4.1 Local Air Quality Management 13
4.2 Local Air Quality Monitoring 13
4.3 Background Pollutant Concentrations 13
4.4 Sensitive Receptors 13
5.0 RESULTS **15**
5.1 Human Sensitive Receptors 15
6.0 CONCLUSION **17**
7.0 ABBREVIATIONS **18**

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EXECUTIVE SUMMARY

Alkali Environmental Consultants was commissioned by Wärtsilä Shaft Line Solutions to undertake an Air Quality Assessment in support of a proposed new stack at the existing Wärtsilä Shaft Line Solutions facility, Havant. The assessment has been undertaken to assess the release of Particulate Matter (PM_{10}) only, using emission concentrations from a monitoring survey undertaken on 24th January 2023, by Alkali Environmental.

During the operation of the facility, there is the potential for environmental impacts at sensitive receptors as a result of pollutant emissions. As such, an Air Quality Assessment is required in order to determine the significance of any effects.

An emissions monitoring survey was undertaken by Alkali Environmental consultants to determine the release of PM_{10} from the plant under normal operating conditions, the Impacts were based on the monitored concentrations, modelled for a full calendar year, as well the use of the maximum concentrations over 5 assessment years. As such, predicted impacts are likely to be an overestimation of actual impacts.

The dispersion modelling results indicated that impacts upon existing pollutant concentrations at sensitive receptors were predicted to be **not significant** at all locations within the assessment extents.

Based on the predictions and the use of maximum emission limits, it is considered that predicted air quality impacts associated with the development are deemed **not significant.** The site is therefore considered suitable for the proposed end use and complies with Havant Borough Council Local Planning Framework.

1.0 INTRODUCTION

1.1 Background

Alkali Environmental was commissioned by Wärtsilä Shaft Line Solutions, hereafter referred to as “the Client” to undertake an Air Quality Assessment in support of a new stack at the existing Wärtsilä Shaft Line Solutions facility herein after referred to as the “Proposed Development”.

1.2 Site Location and Context

The Proposed Development is located within the existing Wärtsilä Shaft Line Solutions facility, Havant at approximate National Grid Reference (NGR): 470802, 106179.

Reference should be made to Figure 1 within Appendix A for a map of the site location, surrounding area, and the modelling domain.

During the operation of the Proposed Development, pollutant emissions from the processes associated with the provision of new stack will have the potential for environmental impacts at sensitive receptors as a result of pollutant emissions associated with the operations of the Wärtsilä Shaft Line Solutions facility. As such, an Air Quality Assessment is required in order to determine the significance of any effects and will be undertaken in accordance with Havant Borough Council (HBC) Local Development Framework.

1.3 Limitations

This report has been produced in accordance with Alkali Environmental Consultants standard terms of engagement. Alkali Environmental Consultants has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Alkali Environmental Consultants; a charge may be levied against such approval.

2.0 LEGISLATION, POLICY & ENVIRONMENTAL STANDARDS

The following legislation, guidance and policy will be considered and adhered to during the preparation of the Air Quality Assessment:

- *European Union (EU) Directive 2008/50/EC;*
- *Section 82 of the Environment Act (Part IV), updated 9th November 2021;*
- *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department for Environment, Food and Rural Affairs (DEFRA), 2007[1];*
- *Local Air Quality Management Technical Guidance LAQM (TG16)[2];*
- *Land-Use Planning and Development Control: Planning for Air Quality, Environmental Protection UK (EPUK) and IAQM, January 2017[3];*
- *Air emissions risk assessment for your environmental permit, Environment Agency (EA), updated on 3rd September 2021[4];*
- *Environmental permitting: air dispersion modelling reports, EA, updated on 19th January 2021[5];*
- *AQTAG 06: Technical guidance on detailed modelling approach for an appropriate assessment for emissions to air, EA, March 2014[6]; and*
- *Havant Borough Council Local Development Framework, March 2011[7]*

2.1 Environmental Standards – Human Health

Part IV of the Environment Act (2021) requires UK government to produce a national Air Quality Strategy (AQS) which contains standards, objectives, and measures for improving ambient air quality. The most recent AQS was produced by DEFRA and published in July 2007[1]. The AQS sets out Air Quality Objectives (AQOs) that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale. These are generally in line with the AQLVs, although the requirements for compliance vary slightly.

Table 1: Environmental Quality Standards for Human Health

Pollutant	Environmental Quality Standard	
	Concentration (µg/m³)	Averaging Periods
PM_{10}	40	Annual mean
	50	24-hour mean; not to be exceeded more than 35 times a year

Table 2 summarises the advice provided in the LAQM (TG16) on where the EQSs for the pollutants considered within this report apply.

1 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA, 2007
2 Local Air Quality Management Technical Guidance LAQM (TG16), 2016.
3 Land-Use Planning and Development Control: Planning for Air Quality, EPUK and IAQM, January 2017.
4 https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit
5 https://www.gov.uk/guidance/environmental-permitting-air-dispersion-modelling-reports
6 AQTAG 06: Technical guidance on detailed modelling approach for an appropriate assessment for emissions to air, EA, 2014
7 Havant Borough Council Local Development Framework , HBC, March 2011.

Table 2: Examples of Where the Air Environmental Quality Standards Apply

Period	Objectives Should Apply At	Objectives Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades 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 and 8-hour mean	All locations where the annual mean objective would apply, together with hotels and 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-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

2.1 Environmental Standards - Ecological

The Site lies north of the Langstone Harbour, the Chichester Harbour and Warblington Meadow which are classified as a Site's of Special Scientific Interest (SSSI), the ecological receptors do not have any priority habitats sensitive to Particulate Matter (PM), therefore we are unable to assess whether the critical load for the habitats are exceeded and have not been considered further.

2.2 Local Planning Policy

The Havant Borough Council Local Development Framework was adopted in March 2011 and provides a framework for development within their area of administration. A review of the Havant Borough Council Local Development Framework indicated the following policies that are relevant to this assessment:

- ***Policy DM10: Pollution***

Reference has been made to these policies during the undertaking of this Air Quality Assessment.

3.0 METHODOLOGY

Emissions associated with the operations of the Proposed Development have the potential to cause increases in pollutant concentrations in the vicinity of the site.

The following sources at the Proposed Development have been considered as part of the assessment:

- 1 proposed Stack at the Wärtsilä Shaft Line Solutions plant

Pollutant concentrations have been quantified through dispersion modelling in accordance with the methodology outlined in the following Sections.

An industry standard atmospheric dispersion model, ADMS 6, was used to model releases of the identified substances. The dispersion modelling procedure was as follows:

- Information on stack dimensions and position were provided by the Client and emissions monitoring report;
- Process conditions were based off of emissions monitoring undertaken by Alkali Environmental consultants;
- Emission rates were based on the emissions monitoring undertaken by Alkali Environmental consultants;
- Appropriate data to describe meteorological conditions in the vicinity of the site were obtained from Atmospheric Dispersion Modelling (ADM) Ltd;
- The above information was entered into the dispersion model;
- The dispersion model was run to determine pollutant concentrations in the vicinity of the site; and
- The study results were compared with the relevant assessment criteria.

3.1 Dispersion Model

Dispersion modelling was undertaken using ADMS 6 which is developed by Cambridge Environmental Research Consultants (CERC) Ltd. ADMS 6 is a short-range dispersion modelling software package that simulates a wide range of buoyant and passive releases to atmosphere. It is a new generation model utilising boundary layer height and Monin-Obukhov length to describe the atmospheric boundary layer and a skewed Gaussian concentration distribution to calculate dispersion under convective conditions.

The model utilises hourly meteorological data to define conditions for plume rise, transport and diffusion. It estimates the concentration for each source and receptor combination for each hour of meteorological data input, and calculates user-selected long-term and short-term averages.

It should be noted the modelling prediction produce by the ADMS-6 are widely accepted by the EA.

3.2 Modelling Scenarios

The scenarios considered in the modelling assessment are summarised in Table 3.

Table 3: Dispersion Modelling Scenarios

Pollutant	Modelled As	
	Short Term	Long Term
PM_{10}	-	Annual mean
PM_{10}	90.41 percentile (%ile) 24-hour mean	Annual mean

Some short-term air quality criteria are framed in terms of the number of occasions in a calendar year on which the concentration should not be exceeded. As such, the percentiles (%ile) shown in Table 3 were selected to represent the relationship between the permitted number of exceedances of short-period concentrations and the number of periods within a calendar year.

3.3 Stack Information

Combustion products associated with the proposed plant will be emitted from a dedicated stack. Stack details for the proposed sources are presented in Table 4. Reference should be made to Figure 1 within Appendix A for a graphical representation of the stack locations.

Table 4: Stack Information – Proposed Sources

Stack Reference	Stack Location NGR (m)		Height (m)	Diameter (m)
	X	Y		
Stack 1	470797	106180	5	0.7

3.4 Process Conditions

The process conditions for the proposed sources that will be used were based off the relevant technical data sheets and from information obtained by the Client. These are shown in Table 5.

Table 5: Process Conditions – Proposed Sources

Stack Reference	Flue Gas Efflux Velocity (m/s)	Volumetric Flow Rate (Actual) (m^3/s)	Temperature (˚C)
Stack 1	13.43	5.17	21

3.5 Emissions

Table 6: Mass Emission Rates – Proposed Chimney Stacks

Stack Reference	Pollutant	Emission Maximum (mg/m^3)	Emission Rate (g/s)
Stack 1	PM_{10}	2.6	0.013

3.6 Time Varied Emissions

Specific operating hours are not known for the Stack and total flexibly is required throughout the year to reflect the demand. Therefore, the ADMS model was run for a full calendar year (8,760 hours) of continuous operation to ensure that the varying hourly meteorological conditions were captured. This results in overestimations of actual long-term and short-term pollutant concentrations and subsequently ensures a worst-case assessment have been considered.

3.7 Meteorological Data

Meteorological data used in this assessment will be obtained from Thorney Island meteorological station over the period 1st January 2015 to 31st December 2019 (inclusive), to account for 5 years of data. Thorney Island meteorological station is located at approximate NGR: 476210,103299, which is approximately 6km south-east of the site and is considered to be representative of likely meteorological conditions at the development site, due to the coastal influences.

All meteorological records used in the assessment will be provided by Atmospheric Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 2 within Appendix A for wind roses of utilised meteorological data. The maximum emissions were utilised for the whole five years of meteorological data to ensure a worse case assessment. Hourly sequential formats were used with the dispersion modelling.

3.8 Roughness Length

The specific roughness length (z_0) values used to represent conditions in the vicinity of the development site, as well as conditions at the meteorological station are summarised in Table 7.

Table 7: Roughness Lengths

Location	Roughness Length, z_0 (m)	ADMS Description
Proposed Development	0.5	Parkland Open Suburbia
Meteorological station	0.2	Agricultural Areas (min)

The value of z_0 specified in Table 7 is considered appropriate for the morphology of the assessment area.

3.9 Monin-Obukhov Length

The Monin-Obukhov length provides a measure of the stability of the atmosphere. The specific length values used to represent conditions in the vicinity of the development site, as well as conditions at the meteorological station are summarised in Table 8.

Table 8: Utilised Monin-Obukhov Lengths

Location	Monin-Obukhov Length (m)	ADMS Description
Proposed Development	10	Small towns <50,000

The Monin-Obukhov value specified in Table 8 is considered appropriate for the morphology of the assessment area.

3.10 Building Effects

Analysis of the site and surrounding area indicated several buildings that will be included within the model in order to take account of effects on pollutant dispersion. Input geometries are shown in Table 9.

Table 9: Building Geometries

Building		NGR (m)		Height (m)	Length (m)	Width (m)	Angle (˚)
		X	Y				
1	Main Building	470830.4	106163.7	10.0	60.8	48.8	199.8
2	ADR Cell	470806.6	106199.1	5.0	10.3	18.7	199.7
3	Goods Building	470803.8	106190.9	6.8	6.7	18.8	200.6
4	Lean Shed	470801.4	106184.7	6.8	6.5	18.9	200.3

Reference should be made to Figure 1 within Appendix A for a graphical representation of the modelled building layout and the ADMS 6 model input.

3.11 Significance of Predicted Impacts

3.11.1 Human Sensitive Receptors

Predicted pollutant concentrations are summarised in the following formats:

- *PC - Predicted pollutant concentration as a result of emissions from the site only; and*
- *Predicted environmental concentration (PEC) - Total predicted pollutant concentration as a result of emissions from the site and existing baseline levels.*

The significance of predicted impact will be assessed in accordance with the criteria outlined within the EA guidance and through consideration of likely effects as a result of the facility. The EA guidance states that process contributions can be considered insignificant if:

- *the short-term PC is less than 10% of the short-term environmental standard; and*
- *the long-term PC is less than 1% of the long-term environmental standard.*

If you meet both of these criteria, you don't need to do any further assessment of the substance.
If these criteria are not met, then a second stage of screening to determine the impact of the PEC is required.

- *The short-term PC is less than 20% of the short-term environmental standards minus twice the long-term background concentration; and*
- *The long-term PEC is less than 70% of the long-term environmental standards.*

In the case in which PCs and PECs cannot be screened as insignificant, the EA guidance[5] suggest that significance should be based on professional judgement and considered on site specific circumstances.

3.12 Modelling Uncertainty

Uncertainty in dispersion modelling predictions can be associated with a variety of factors, including:

- **Model uncertainty** - due to model limitations;
- **Data uncertainty** - due to errors in input data, including emission estimates, operational procedures, land use characteristics and meteorology; and
- **Variability** - randomness of measurements used.

Potential uncertainties in model results were minimised as far as practicable and worst-case inputs used in order to provide a robust assessment. This included the following:

- ***Choice of model*** - ADMS 6.0.0.1 is a commonly used atmospheric dispersion model and results have been verified through a number of studies to ensure predictions are as accurate as possible;
- ***Meteorological data*** - Modelling was undertaken using five meteorological data sets (2015-2019) from the most appropriate observation site to the facility to take account of worst-case conditions;
- ***Plant operating conditions*** - Operational parameters were based off the emissions monitoring survey undertaken by Alkali Environmental. As such, these are considered to be representative of likely operating conditions;
- ***Emission rates*** - were derived from the emissions monitoring survey undertaken by Alkali Environmental and therefore, represent the maximum potential emissions. Emissions were also assumed to be constant throughout the modelling period for assessment against the short term EQSs, which does not allow for

plant shut down or reduced load. These assumptions are likely to significantly overestimate actual emissions and therefore result in a worst-case assessment.

- ***Background concentrations*** - Obtained from the DEFRA mapping study. Although these may underestimate actual concentrations in the vicinity of pollutant sources, such as roads, they are considered suitable for an assessment of this nature;
- ***Receptor locations*** - Specified receptor points were included at sensitive locations to provide additional consideration of these areas, varied heights were included to represent the window elevations of each associated building; and
- ***Variability*** - All model inputs are as accurate as possible and worst-case conditions have been considered where necessary in order to ensure a robust assessment of potential pollutant concentrations.

Results were considered in the context of the relevant EQSs detailed in Table 1 . It is considered that the use of the stated measures to reduce uncertainty and the use of worst-case assumptions when necessary has resulted in model accuracy of an acceptable level.

4.0 BASELINE

Existing air quality conditions in the vicinity of the plant were identified in order to provide a baseline for assessment. These are detailed in the following sections.

4.1 Local Air Quality Management

As required by the Environment Act (2021), Havant Borough Council has undertaken review and assessment of air quality within their area of administration. This process concluded that there is no requirement to declare any air quality management areas (AQMA's).

4.2 Local Air Quality Monitoring

A review of HBC's most recent air quality monitoring data available indicated that HBC, does not undertake monitoring of particulate matter within its administrative boundary. Therefore, local monitoring locations cannot be considered within this assessment.

4.3 Background Pollutant Concentrations

Predictions of background PM_{10} concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The development site is located in the grid square with NGR: 470500, 106500.

Data for this location was downloaded from the DEFRA website[8] for the purpose of this assessment. The 2023 background concentrations are summarised in Table 10.

Table 10: Predicted Background Pollutant Concentrations

Pollutant	Predicated Background Concentration (µg/m³)
PM_{10}	14.9

These are the most recent predictions available from DEFRA and are therefore considered to provide a reasonable representation of background concentrations in the vicinity of the site.

The EA guidance advises that an estimate of the background short-term concentration can be obtained by adding the maximum predicted short-term concentration due to emissions from the source to twice the annual mean background concentration. This approach will be adopted throughout the assessment.

4.4 Sensitive Receptors

A sensitive receptor is defined as any location which may be affected by changes in air quality. These have been defined for operational and construction phase impacts in the following Sections.

4.4.1 Human Sensitive Receptor Locations

A desk-top study was undertaken in order to identify any sensitive human receptor locations in the vicinity of the site that required specific consideration during the assessment. These were modelled at the height of 1.5m in order to represent ground floor level and are summarised in Table 11.

8 http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html.

Table 11: Sensitive Human Receptor Locations

Receptor		Use	NGR (m)	
			X	Y
R1	2 Longcroft Way	Residential	470878.3	106198.4
R2	2 Abrams Way	Residential	470815.6	106218.0
R3	1 Longcroft Way	Residential	470897.0	106171.2
R4	Osmond House	Residential	470816.1	106242.9
R5	1 Brockhampton Road	Residential	470982.2	106142.3
R6	3 Ranelagh Road	Residential	470901.0	106289.5
R7	4 Ranelagh Road	Residential	470829.8	106341.8
R8	2 Brockhampton Road	Residential	471004.6	106202.6

Receptors are modelled at 1.5m to represent the average UK "breathing height" above ground level. Reference should be made to Figure 1 within Appendix A for a graphical representation of sensitive human receptor locations.

The pollutant 2023 background concentrations for each receptor location are detailed in Table 12. These have been sourced from DEFRA background maps as detailed in Section4.3.

Table 12: Sensitive Human Receptors

Receptor	Address	Predicated Background Concentration (µg/m³)
		PM_{10}
R1	2 Longcroft Way	14.9
R2	2 Abrams Way	14.9
R3	1 Longcroft Way	14.9
R4	Osmond House	14.9
R5	1 Brockhampton Road	14.9
R6	3 Ranelagh Road	14.9
R7	4 Ranelagh Road	14.9
R8	2 Brockhampton Road	14.3

5.0 RESULTS

5.1 Human Sensitive Receptors

5.1.1 Predicted PM_{10} Results – Annual Mean

Predicted annual mean PM_{10} concentrations at sensitive human receptor locations are summarised in Table 13. It should be noted that only residential receptors were considered for predicted changes in annual mean NO_2 concentrations as they are considered sensitive to annual mean concentrations in accordance with the LAQM.TG(16) guidance[2].

Table 13: Predicted Annual Mean PM_{10} Concentrations

Receptor		Predicted Annual Mean PM_{10} Concentration (µg/m³)		Proportion of EQS (%)	
		PC	PEC	PC	PEC
R1	2 Longcroft Way	0.05	15.0	0.1	37.4
R2	2 Abrams Way	0.09	15.0	0.2	37.5
R3	1 Longcroft Way	0.04	14.9	0.1	37.3
R4	Osmond House	0.04	14.9	0.1	37.4
R5	1 Brockhampton Road	0.02	14.9	0.0	37.3
R6	3 Ranelagh Road	0.02	14.9	0.0	37.3
R7	4 Ranelagh Road	0.01	14.9	0.0	37.3
R8	2 Brockhampton Road	0.01	14.3	0.0	35.8

Note: Predicted concentrations were assessed against the relevant EQS: Annual mean AQO of 40µg/m³.

As indicated in Table 13, predicted annual mean PM_{10} concentrations were below the relevant long term EQS at all sensitive receptor locations.

The PC proportion of the EQS is less than 1% at all receptor locations sensitive to long-term exposure. As such, impacts on annual mean NO_2 concentrations at this location can be screened out as **insignificant**.

It is important to note that the model has assumed that the proposed stack is operational 24/7 (8,760 hours per year). As such, predicted impacts are considered to be a significant overestimation of actual impacts.

5.1.2 Predicted PM_{10} Results – 24-Hour Mean

Predicted 1-hour mean PM_{10} concentrations at sensitive human receptor locations are summarised in Table 14.

Table 14: Predicted 1-Hour Mean PM_{10} Concentrations

Receptor		Predicted 1-Hour Mean PM_{10} Concentration (µg/m³)		Proportion of EQS (%)	
		PC	PEC	PC	PEC[a]
R1	2 Longcroft Way	0.1	29.9	0.3	60

Receptor		Predicted 1-Hour Mean PM_{10} Concentration (µg/m³)		Proportion of EQS (%)	
		PC	PEC	PC	PEC[a]
R2	2 Abrams Way	0.3	30.1	0.6	60
R3	1 Longcroft Way	0.1	29.9	0.2	60
R4	Osmond House	0.1	29.9	0.3	60
R5	1 Brockhampton Road	0.0	29.8	0.1	60
R6	3 Ranelagh Road	0.0	29.8	0.1	60
R7	4 Ranelagh Road	0.0	29.8	0.1	60
R8	2 Brockhampton Road	0.0	28.6	0.1	57

Note: Predicted concentrations were assessed against the relevant EQS: 1-hour mean AQO of 50µg/m³.
a: PC proportion of the EQS minus twice the long-term background

As indicated in Table 14, predicted 1-hour mean NO_2 concentrations were below the relevant EQS at all sensitive receptor locations.

The PC proportion of the EQS is less than 10% at all receptor locations. As such, impacts on 1-hour mean NO_2 concentrations at all locations can be screened out as **insignificant**.

During the secondary stage of assessment, the PEC proportion of the EQS is predicted to be above 20% at all receptor locations. As such, impacts on 24-hour mean PM_{10} concentrations at these locations cannot be screened as **insignificant** in accordance with the EA screening criteria. Critically, all 8 are below the 24-hour mean EQS.

It is also important to note that the results are considered to be overestimations this is because the model has been run for the full calendar year (8,760 hours) for the assessment of short-term impacts, and as such, predicted concentrations are significant overestimations. Overall, impacts on 24-hour PM_{10} concentrations are therefore considered **not significant**.

6.0 CONCLUSION

Alkali Environmental was commissioned by the Client to undertake an Air Quality Assessment for PM_{10} concentrations for the proposals at the existing Wärtsilä Shaft Line Solutions facility.

Dispersion modelling of the pollutants associated with the existing operations and the proposals was undertaken using ADMS 6. Impacts at sensitive receptors were quantified and the results compared with the relevant EQSs.

Impacts were based on the proposed stack emitting the monitored pollutant concentrations obtained during a monitoring survey undertaken on 24th January 2023, by Alkali Environmental. and modelled for a full calendar year, as well the use of the maximum concentrations over 5 assessment years. As such, predicted impacts are likely to be a significant overestimation of actual impacts.

The relevant EQSs were not exceeded at any location within the assessment extents.

Based on the predictions and the use of worst-case emissions, it is considered that the overall air quality impacts of the development would be **not significant.**

7.0 ABBREVIATIONS

%ile	Percentile
ADM	Atmospheric Dispersion Modelling
AQMA	Air Quality Management Area
CERC	Cambridge Environmental Research Consultants
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EAL	Environment Assessment Level
ELV	Emission Limit Value
EU	European Union
HBC	Havant Borough Council
LAQM	Local Air Quality Management
NGR	National Grid Reference
PC	Process Contribution
PEC	Predicted Environmental Concentration
PM	Particulate Matter
SSSI	Site of Special Scientific Interest
z_0	Roughness Length

END OF REPORT

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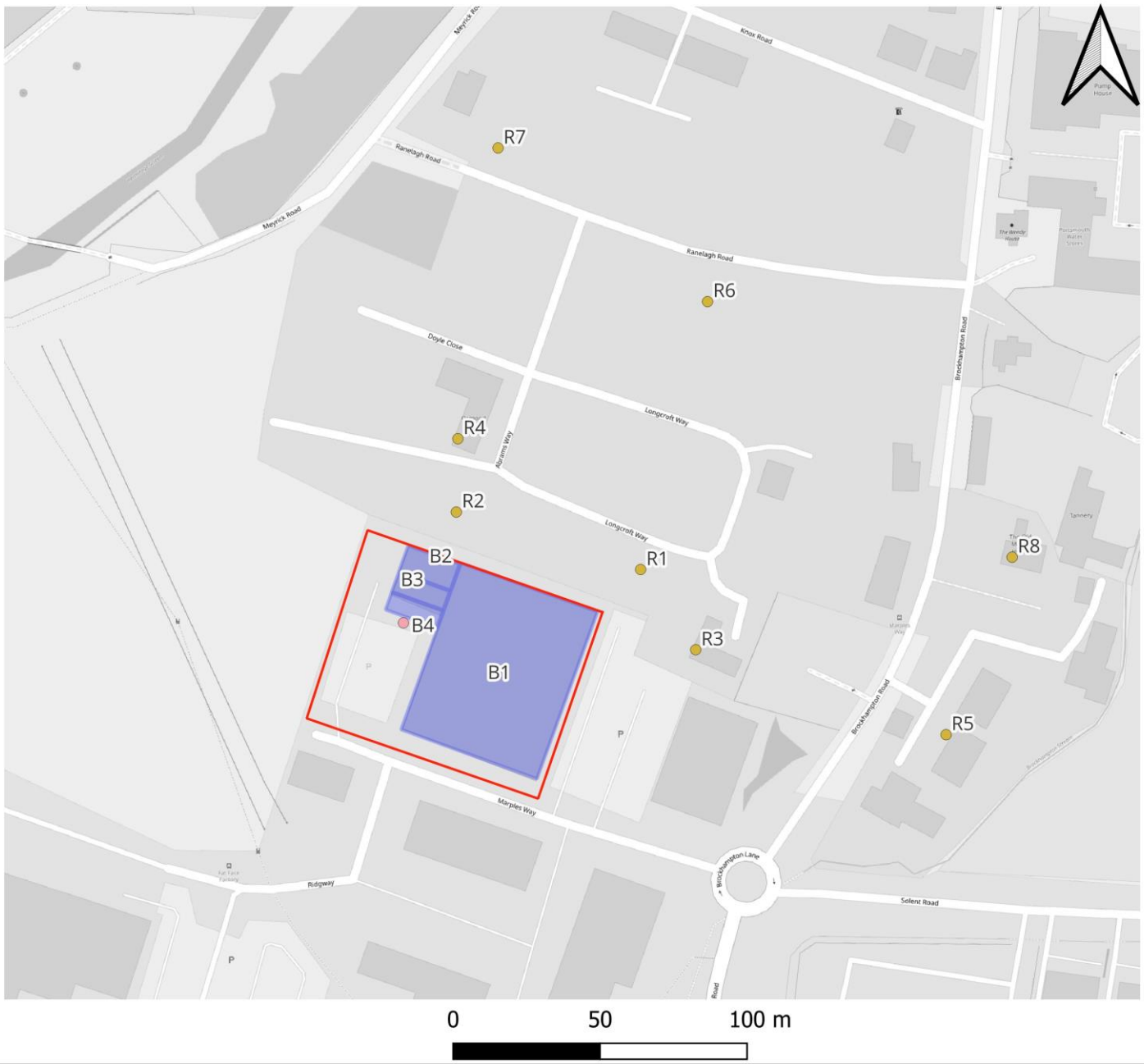
APPENDIX A - FIGURES



Legend

- Site Boundary
- Modelled Stack
- Sensitive Receptors
- Modelled Buildings

Figure 1:
Site Boundary and ADMS Inputs

Project:
Wartsila, Havant

Project Number:
AQ1047

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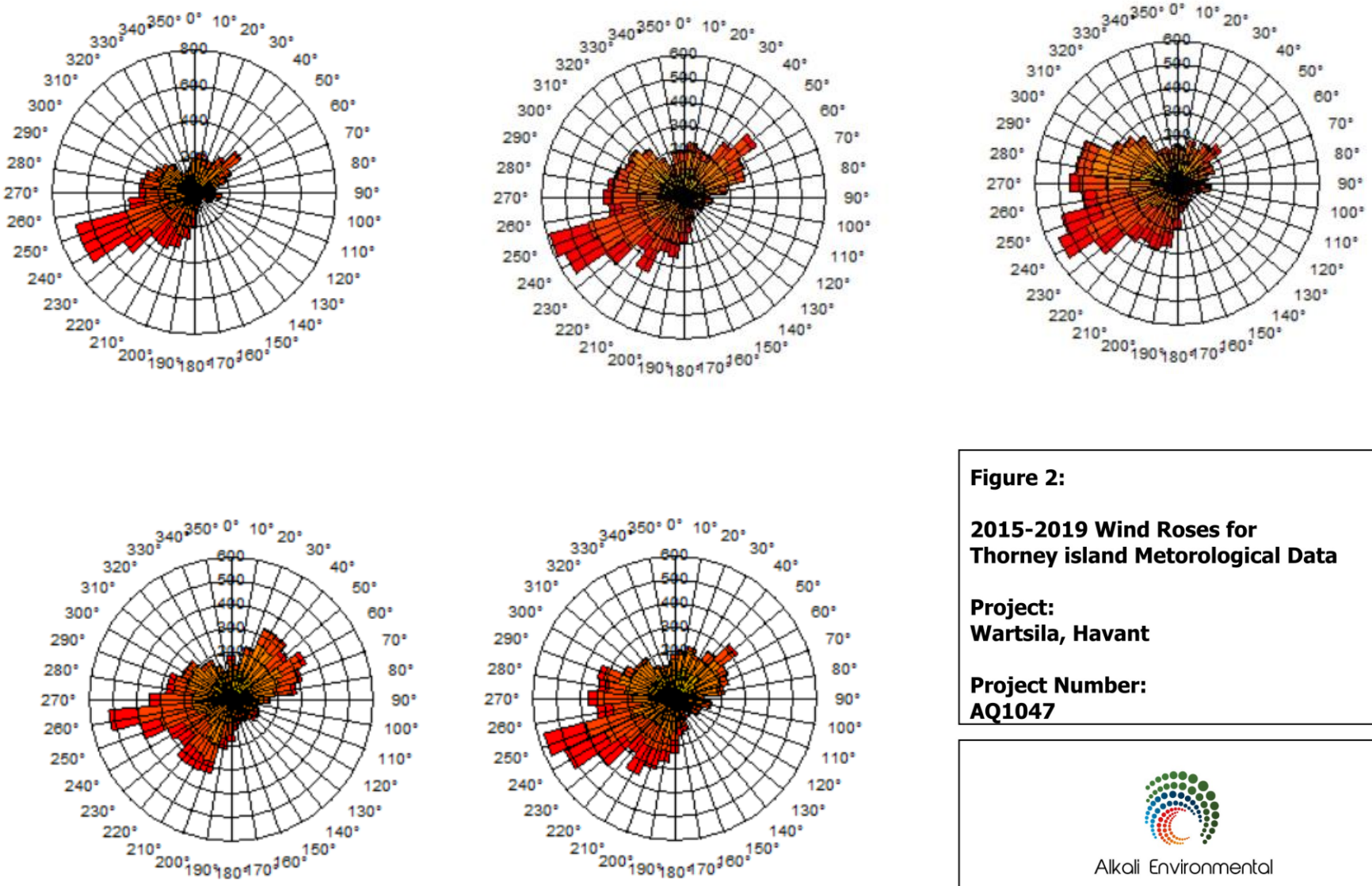

Figure 2:

2015-2019 Wind Roses for Thorney island Metorological Data

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Project Number:
AQ1047

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APPENDIX C – ASSESSORS CURRICULUM VITAE

Alkali Environmental

Alessandra Boccuzzi
Senior Air Quality Consultant

KEY EXPERIENCE

Alessandra is a Senior Air Quality Consultant with specialist experience in the air quality sector. She has a solid understanding of the sector and has 5 years of experience working in the Air Quality field across consultancy.
Her key capabilities include:

- Detailed and qualitative air quality assessments for private and public sector
- Detailed dispersion modelling of road vehicle emissions using ADMS-Roads. Studies have included impact assessment of pollutant concentrations at various floor levels and assessment of suitability of development sites for proposed end-use.
- Assessment of dust impacts from construction sites to the Institute of Air Quality Management (IAQM) methodology.
- Assessment of Odour Impact from commercial and industrial processes in line with IAQM methodologies and guidance.
- Air Quality monitoring of transport, and dust sources

SELECT PROJECTS SUMMARY

ES Chapters
- Little Chalfont – residential development of 700 dwellings, care home, and school.
- A595 Bothel Strategic Improvement - road development and realignment scheme.
- Marina Village – Site remediation scheme including mineral dust assessment.

Air Quality
- Building 85, Sugar House Island, Stratford – Air Quality assessment with construction for residential development in London.
- Wheatsheaf, Bluntisham -AQA for widening and realignment of road sections leading to junction
- Oakleigh Road Depot- AQA for consolidation of its current municipal refuse collection vehicle depots based in Barnet, London.
- Junction 3, Peterborough- AQA for widening and realignment of carriageway and ecological impacts on designated sites adjacent to scheme.
- Guys Hospital – Production of AQA for construction of an extension to Guys Hospital London.

Monitoring
- Rail Freight Facility, Cricklewood- long term dust monitoring reports to satisfy conditions at rail freight facility for aggregates located in close proximity to residential area.
- NO^2 diffusion tube monitoring and odour sniff test surveys at various locations across London, Essex and Hertfordshire

QUALIFICATIONS

- BSc (Hons) Environmental Sciences
- IAQM Air Quality Management Course