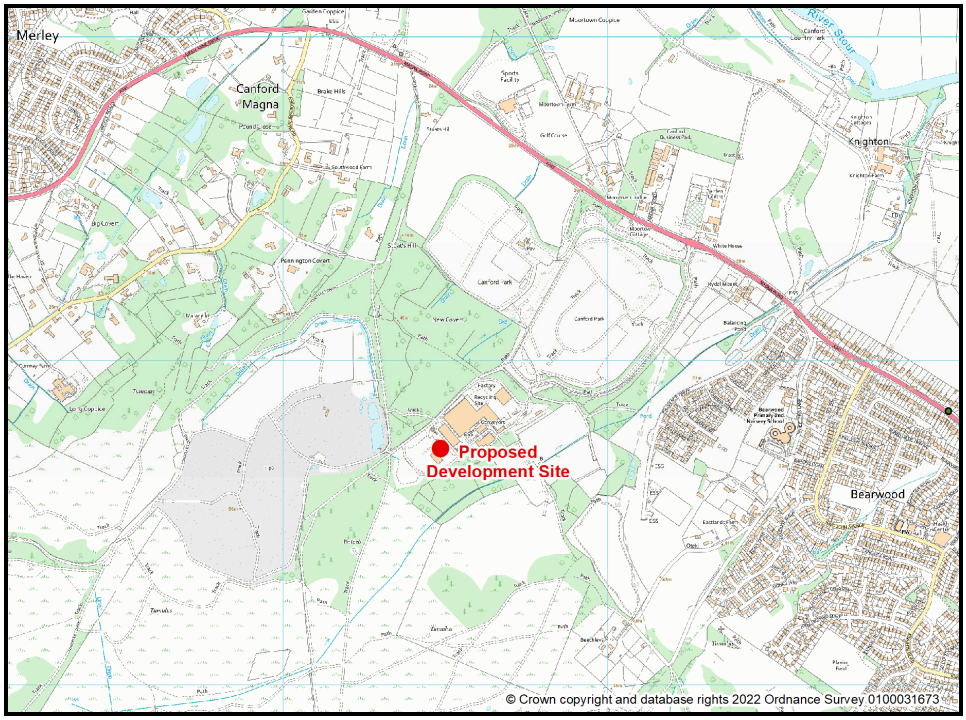
CANFORD ENERGY FROM WASTE COMBINED HEAT AND POWER FACILITY:

TRAFFIC-RELATED AIR QUALITY ASSESSMENT



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CONTENTS

1 INTRODUCTION

1.1 PURPOSE OF THE ASSESSMENT

Dr Amanda Gair of Gair Consulting Ltd has been commissioned by Savills to provide a detailed traffic-related air quality assessment from a proposed Energy from Waste (EfW) Combined Heat and Power (CHP) Facility (the EfW CHP Facility) at Canford Resource Park, Arena Way, Magna Road, Wimborne, Dorset, BH21 3BW. Operational impacts arising from emissions from the CHP Facility are provided in **Appendix 6.1 to the Environmental Statement**. Construction impacts associated with the Proposed Development have been provided by Savills and are presented in **Chapter 6** of the Environmental Statement.

The primary purpose of the EfW CHP Facility is to treat the waste from the Bournemouth, Christchurch, Poole, and surrounding areas of Dorset that cannot be recycled, reused, or composted, i.e., it is residual waste that would otherwise be landfilled or exported to alternative EfW facilities, either in the UK or Europe.

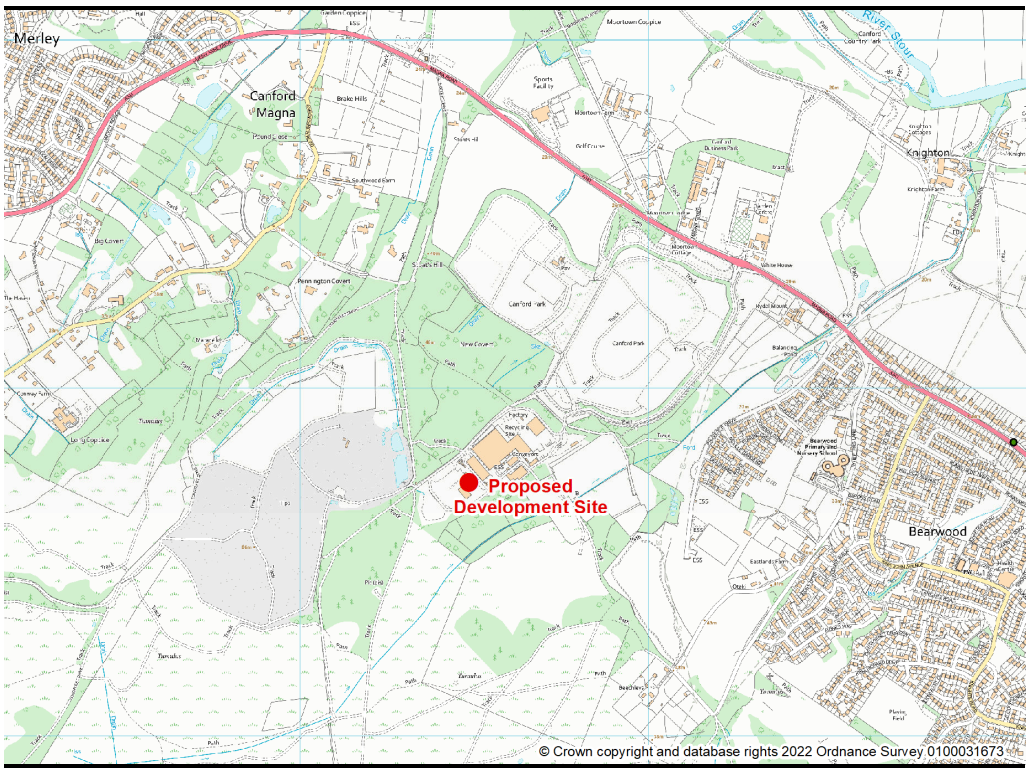
1.2 BACKGROUND TO THE IMPACT ASSESSMENT

The Proposed Development is located at the Canford Resource Park (refer *Figure 1.1*). The Proposed Development is located within the administrative area of Bournemouth, Christchurch and Poole (BCP) Council. BCP Council has declared two areas as Air Quality Management Areas (AQMAs). One of these is located within and around Ashley Road 4.6 km to the south of the EfW CHP Facility. The other (Poole AQMA) is located along Commercial Road and its junctions with Station Road and Curzon Road (5.3 km to the south). These are both declared due to exceedances of the annual mean air quality objective for nitrogen dioxide (NO_2). At these distances it is unlikely that traffic generated by the EfW CHP Facility would have a significant impact on air quality within these AQMAs. Therefore, the Proposed Development is not located within or close to an AQMA.

The nearest residential receptors to the Proposed Development are located off Provence Drive approximately 670 m east of the Proposed Development. Other sensitive receptors in close proximity to the Proposed Development include the proposed Provence Drive business units and Canford Sports Club.

Operational access to the Proposed Development would be along Arena Way off Magna Road (A341).

FIGURE 1.1 LOCATION OF THE PROPOSED DEVELOPMENT



1.3 SCOPE OF THE ASSESSMENT

Guidance is provided by the IAQM and Environmental Protection UK (EPUK) on indicative criteria for requiring a detailed traffic-related air quality assessment in their Land-use Planning Development Control: Planning for Air Quality (January 2017) [1]. For developments that are not located within an air quality management area (AQMA), these are 500 LDVs AADT (annual average daily traffic) and/or 100 HDVs AADT. Within an AQMA, these are reduced to 100 LDV and/or 25 HDV. The Proposed Development is not located within an AQMA.

During operation, the Proposed Development is expected to generate up to 162 HDV movements per day. Around 68% of these movements (110) would access/egress the Proposed Development in a westerly direction along Magna Road and 32% in an easterly direction (52 movements). Therefore, the number of vehicles movements along Magna Road to the west would exceed the IAQM HDV criterion for requiring a detailed assessment. However, HDV and other waste vehicles are already on the local road network and access existing waste management resources within Canford Resource Park (Materials Recycling Facility (MRF) and Mechanical Biological Treatment (MBT) facility) which are adjacent to the facility.

1 Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM (January 2017)

The Traffic Consultants for the Proposed Development (Paul Basham Associates) estimate that the Proposed Development would give rise to an additional 90 HDV movements. On this basis, it is estimated that there would be 90 additional HDV movements on Arena Way, 52 movements on Magna Road west and 38 movements on Magna Road east. These are all below the IAQM criterion for requiring a detailed assessment (100 HDV). However, it is feasible that all of the traffic generated by the Proposed Development could comprise new vehicles and a detailed assessment of traffic-related air quality impacts for the operation of the Proposed Development is provided on the basis of this worst-case scenario.

There are no sensitive habitat sites within 200 m of the road links considered in the assessment (i.e. those meeting the IAQM criterion). Therefore, the assessment has considered the impact of traffic emissions on human receptors only.

1.4 QUALIFICATIONS OF THE AUTHOR

Dr Amanda Gair of Gair Consulting Limited has over 30 years' experience in environmental consultancy specialising in air quality, odour and human health risk assessments. Qualifications and professional memberships include the following:

- Bachelor of Science (BSc) in Environmental Chemistry (Joint Honours);
- Doctor of Philosophy (PhD) in Atmospheric Chemistry;
- Member of the Institute of Air Quality Management (MIAQM);
- Member of the Institution of Environmental Sciences (MIEnvSc); and
- Chartered Environmentalist (CEnv).

Dr Gair provides technical support to the permitting of major projects via the completion of detailed air quality assessments and health risk assessments for planning applications, environmental permitting and general regulatory support. Dr Gair has extensive experience in power (including energy from waste, biomass and bioethanol facilities), waste management, ceramics and cement works, construction, chemical, wastewater and manufacturing industries.

1.5 STRUCTURE OF THE REPORT

The remainder of this report is structured as follows.

- *Section 2* – Methodology and Assessment Criteria - details the approach followed and summarises the relevant assessment criteria.

- *Section 3* – Baseline - includes a summary of air quality monitoring data in the vicinity of the Proposed Development and a discussion of local

meteorological conditions affecting the dispersion and dilution of emissions.

- *Section 4* – Operational Impacts – provides an assessment of the potential air quality impact arising from the additional traffic movements generated by the Proposed Development.

- *Section 5* summarises and concludes the assessment and provides recommendations for further work or consultation, where necessary.

2 METHODOLOGY AND ASSESSMENT CRITERIA

2.1 POLLUTANTS CONSIDERED

The primary pollutants arising from traffic emissions and considered in the assessment include:

- the oxides of nitrogen (NO_x) and nitrogen dioxide (NO_2); and
- fine particles (as PM_{10} and $PM_{2.5}$).

2.2 ASSESSMENT CRITERIA

2.2.1 Oxides of Nitrogen

The oxides of nitrogen comprise principally of nitric oxide (NO) and nitrogen dioxide (NO_2). The oxides of nitrogen (NO_x) in combustion processes may be formed from the oxidation of nitrogen in the fuel or from the reaction of nitrogen and oxygen at high temperatures. The majority of NO_x is emitted from combustion processes as NO (typically over 90%), a relatively innocuous substance that rapidly oxidises to NO_2 in ambient air. Health-based standards for NO_x generally relate to NO_2.

Directive (2008/50/EC of the European Parliament and of the Council of 21st May 2008, on ambient air quality and cleaner air for Europe) was adopted in June 2008. The Directive streamlined the European Union's air quality legislation by replacing four of the five existing Air Quality Directives within a single, integrated instrument.

Directive 2008/50/EC retains the air quality standards for NO_2, but provides greater clarity on where to assess air quality, so that the focus is on areas of potential public exposure. The Directive has been transposed into the UK Air Quality Standards Regulations 2010 [2], which come into force on 11th June 2010.

Air quality limits and objectives for nitrogen dioxide in the UK are summarised in *Table 2.1*.

TABLE 2.1 AIR QUALITY OBJECTIVES AND LIMIT VALUES FOR NITROGEN DIOXIDE

Pollutant	Averaging Period	EAL / AQS (µg/m³)	Comments
NO_2	Annual mean	40	UK AQO
	1-hour	200	UK AQO, not to be exceeded more than 18 times per annum (99.8th percentile of 1-hour means)

2 The Air Quality Standards Regulations 2010, Statutory Instrument 2010 No. 1001

2.2.2 Fine Particles (PM_{10} and $PM_{2.5}$)

Air quality objectives for particulate matter generally refer to particles of less than 10 micrometres in diameter, termed PM_{10} and particles of less than 2.5 micrometres in diameter, termed $PM_{2.5}$. Current air quality objectives and limit values for PM_{10} and $PM_{2.5}$ applicable to the assessment are summarised in *Table 2.2*.

TABLE 2.2 AIR QUALITY OBJECTIVES AND LIMIT VALUES FOR PM_{10} AND $PM_{2.5}$

Pollutant	Averaging Period	EAL / AQS (µg/m³)	Comments
PM_{10}	Annual mean	40	UK AQO
	24-hour mean	50	UK AQO, not to be exceeded more than 35 times per annum (90.4th percentile of 24-hour means)
$PM_{2.5}$	Annual mean	20	EU Limit Value

2.3 IMPACT SIGNIFICANCE CRITERIA

The Institute of Air Quality Management (IAQM) [3] provides guidance on impact descriptors and the assessment of significance. The impact descriptors for individual receptors are presented in *Table 2.3*. The table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers. Changes of 0% (i.e. less than 0.5%) would be described as 'negligible'.

TABLE 2.3 IMPACT DESCRIPTOR FOR INDIVIDUAL RECEPTORS

Concentration with Development	Percentage Change in Air Quality Relative to the Air Quality Assessment Level (AQAL)			
	1%	2 to 5%	6 to 10%	>10%
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 to 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 to 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 to 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

3 Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM (January 2017)

The assessment of significance is principally left to professional opinion and guidance is provided on the factors that need to be considered when judging significance and include the following:

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to impacts;
- the worst-case assumptions adopted when undertaking the prediction of impacts; and
- the extent to which the proposed development has adopted best practice to eliminate and minimise emissions.

2.4 TRAFFIC FLOW DATA

The Proposed Development is located within an area of relatively good air quality and concentrations of NO_2, PM_{10} and $PM_{2.5}$ are likely to be well below the relevant air quality standards and guidelines.

As discussed in *Section 1.3*, guidance is provided by the IAQM/EPUK on indicative criteria for requiring an air quality assessment in their land-use planning development control: planning for air quality (January 2017). On the basis of these criteria, the following road links have been included in the assessment:

- Arena Way (Proposed Development access road);
- Magna Road to the east of Arena Way;
- Magna Road to the west of Arena Way;
- A349 north of the Magna Road junction; and
- A349 south of the Magna Road junction.

Magna Road to the east of Arena Way falls below the IAQM criterion but has been included as there is a diffusion tube monitoring site on Magna Road to the north of Bearwood which can be used for model verification purposes. The A349 links also fall below the IAQM criterion but have been included in order to predict the impact at the A349/Magna Road junction where traffic emissions are likely to be higher.

A summary of baseline (2019), future (2027 including committed development) and future plus development traffic (2027) flows is presented in *Table 2.4*. Traffic data have been provided by the Transport Consultants for the Proposed Development (Paul Basham Associates). The 2019 baseline data is used for model verification purposes only. The 2027 plus committed development traffic data is representative of future traffic without the Proposed Development and the 2027 plus development is representative of future traffic with the Proposed Development.

TABLE 2.4 SUMMARY OF TWO-WAY EXISTING AND DEVELOPMENT TRAFFIC FLOWS

Road Link	2019 Baseline		2027 plus Committed Development		2027 plus Development	
	AADT	%HDV	AADT	%HDV	AADT	%HDV
Arena Way	535	66	535	66.0	799	64.4
Magna Road East	11,044	10	15,002	8.0	15,088	8.3
Magna Road West	11,003	10	14,957	8.0	15,135	8.6
A349 South	15,682	10	19,911	8.6	19,946	8.7
A239 North	14,813	10	19,265	8.4	19,409	8.7

2.5 DISPERSION MODEL INPUT DATA

2.5.1 Dispersion Model

Detailed air quality modelling has been undertaken using the Atmospheric Dispersion Modelling Systems Roads (ADMS Roads, Version 5.0) dispersion model and a suitable meteorological data set (Bournemouth Airport 2019). The assessment of traffic-related air quality impacts has been undertaken in accordance with the IAQM planning for air quality guidance (IAQM, January 2017). The assessment has considered the air quality impacts of the Proposed Development with respect to human health only as there are no habitat sites within 200 m of the road links that exceed the IAQM criterion.

2.5.2 Emissions and Background Concentrations

Emissions for each road link were calculated using Defra's 2021 Emission Factor Toolkit (EFT V11.0). Emissions were calculated for the Do Minimum (DM, without the development) and Do Something (DS, with the development) scenarios. A precautionary approach was taken regarding the decrease in emissions in the future as historically vehicle emissions and background concentrations in urban areas have not decreased as predicted. Therefore, it was assumed for the 2027 scenario that vehicle emissions were as predicted by Defra for 2023 and will be higher than for the assumed operational year of 2027. Assumed background concentrations were based on the 2019 Defra mapped data (refer *Section 3.2.4*). Therefore, for the detailed assessment, modelling was carried out for the following scenarios.

- Baseline 2019 scenario for model verification purposes (2019 emission factors and background concentrations); and
- Do Minimum and Do Something for 2027 (using 2023 emission factors and 2019 background concentrations).

2.5.3 Link Speeds

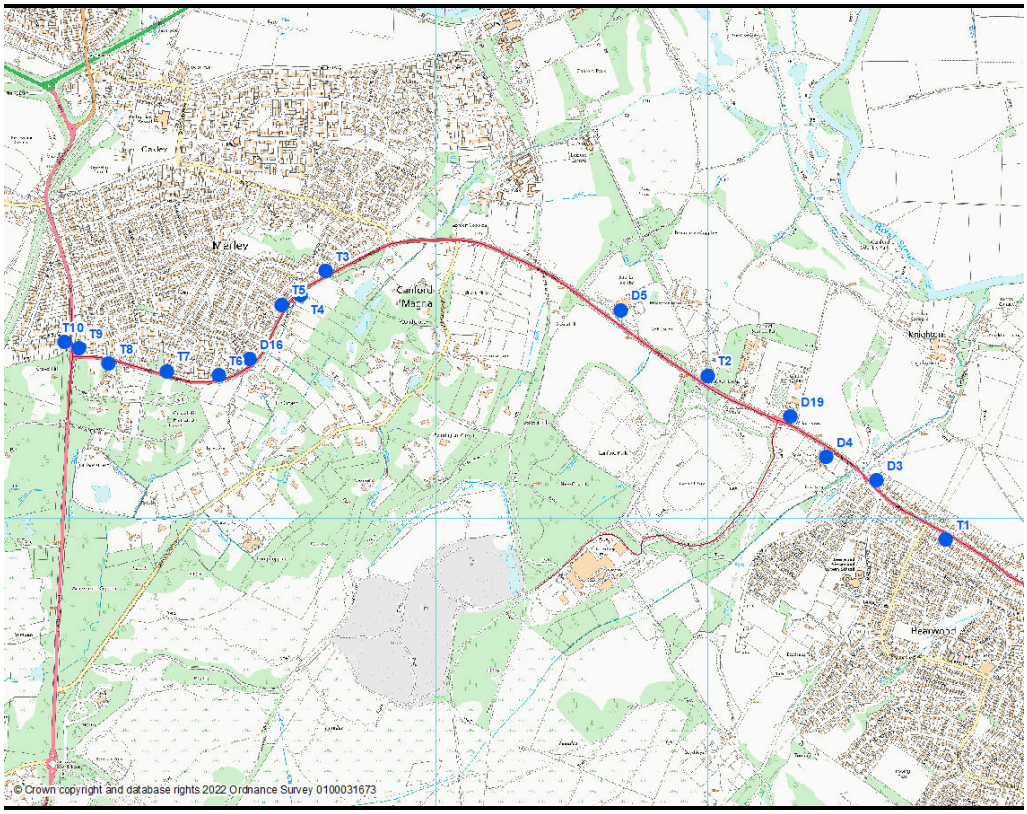
There is one recorded traffic speed on Magna Road to the west of Arena Way access where average speeds are comparable to the posted speed limit (40 mph). Therefore, free flowing traffic on Magna Road are assumed to be 40 mph and 30 mph on the A349 (posted speed limit). However, traffic light junctions at Arena Way and at the junction of Magna Road with the A349 will have reduced speeds at the approaches and exits from these junctions. Therefore, slower road links have been included for these as follows:

- for 50 m either side of the Magna Road/Arena Way junction, the speed is assumed to be 30 kph (18.8 mph);
- for 50 m to 25 m on all three links the speed at the Magna Road/A349 junction is assumed to be 20 kph (12.5 mph); and
- for 25 m to 0 m on all three links the speed at the Magna Road/A349 junction is assumed to be 10 kph (6.3 mph).

2.5.4 Sensitive Receptors

For the assessment of operational emissions from the EfW CHP Facility, nineteen discrete sensitive receptors were included. Five of these receptors (D3, D4, D5, D16 and D19) are located within 200 m of the road links included in the ADMS Roads model. In addition to these five receptors a further ten receptors have been included that are located closer to the road network or to junctions. Concentrations were also predicted at the diffusion tube used for model verification (P25). The location of these receptors is provided in *Figure 2.1*.

FIGURE 2.1 SENSITIVE RECEPTOR LOCATIONS FOR THE DETAILED MODELLING



3 BASELINE CONDITIONS

3.1 LOCAL CONDITIONS

3.1.1 The Dispersion and Dilution of Emissions

For meteorological data to be suitable for dispersion modelling purposes a number of meteorological parameters need to be measured, on an hourly basis. These parameters include wind speed, wind direction, cloud cover and temperature. There are only a limited number of sites where the required meteorological measurements are made. In the UK, all of these sites are quality controlled by the Met Office.

The most important climatological parameters governing the atmospheric dispersion of pollutants are as follows:

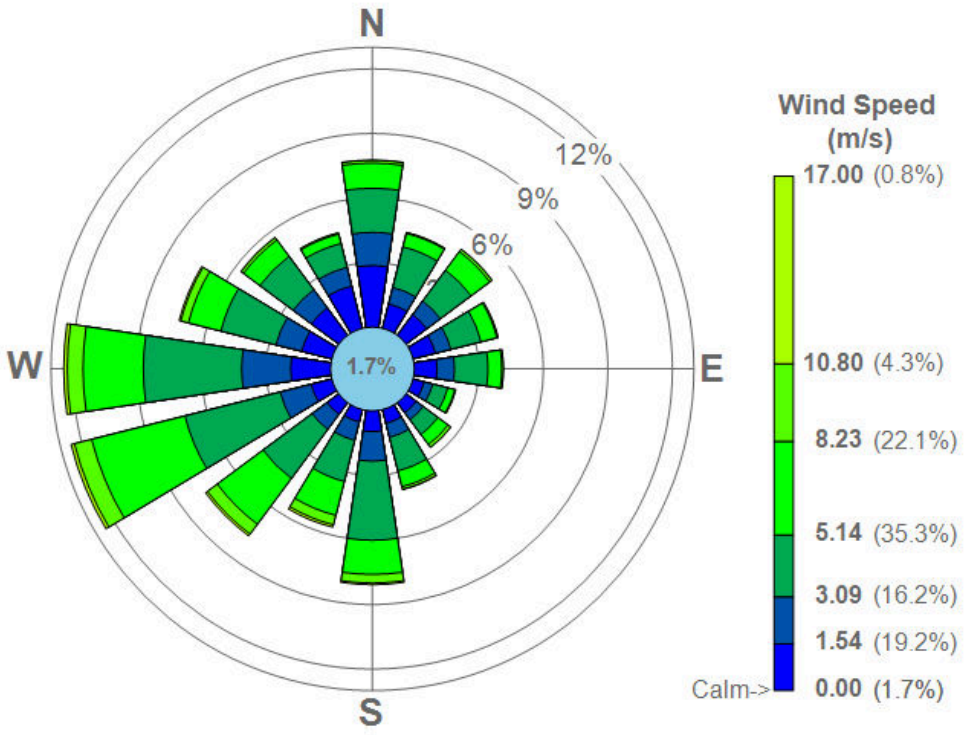
- **Wind direction** determines the broad transport of the emission and the sector of the compass into which the emission is dispersed.
- **Wind speed** will affect low-level emissions by increasing the initial dilution of pollutants in the emission whereas for high-level emissions, such as from a chimney, higher winds will bring the plume to ground sooner than otherwise would be the case.
- **Atmospheric stability** is a measure of the turbulence, particularly of the vertical motions present.

3.1.2 Local Wind Climate for the Location

Met Office observing stations are limited and the most appropriate Met Office observing station to the Proposed Development, with full data suitable for dispersion modelling, is located at Bournemouth Airport, approximately 8 km to the east. Five years of meteorological data have been obtained (2016 to 2020) and a wind rose for the five years is presented in *Figure 3.1*. The predominant wind directions are from the west-southwest (12.5%) and the west (12.4%). Calm conditions occur for 1.7% of the time.

For the traffic assessment one year of meteorological data has been used for modelling (2019) to coincide with the most recent pre-COVID monitoring data.

FIGURE 3.1 WIND ROSE FOR BOURNEMOUTH AIRPORT (2016 TO 2020)



3.2 BACKGROUND AIR QUALITY

3.2.1 Ambient Air Quality Monitoring

This section provides an assessment of baseline conditions for the Proposed Development and its surroundings. BCP Council carried out automatic ambient air quality monitoring of NO_2 at two sites in 2021. Both monitoring sites are affiliated to the Department for Environment, Food and Rural Affairs (Defra's) Automatic Urban and Rural Network (AURN). One of these (BORN) is located in Bournemouth 9.5 km to the east-southeast of the Proposed Development and is classed as an urban background site. Monitoring of the oxides of nitrogen (NO_x), ozone and $PM_{2.5}$ is carried out at this location. The other monitoring site is located in Christchurch, 3.3 km to the east-southeast of the Proposed Development and is classed as a roadside site. Monitoring of NO_x and $PM_{2.5}$ is undertaken at this location. BCP council also has an extensive network of diffusion tube locations for monitoring of nitrogen dioxide (NO_2) within its administrative area.

3.2.2 Nitrogen Dioxide (NO_2)

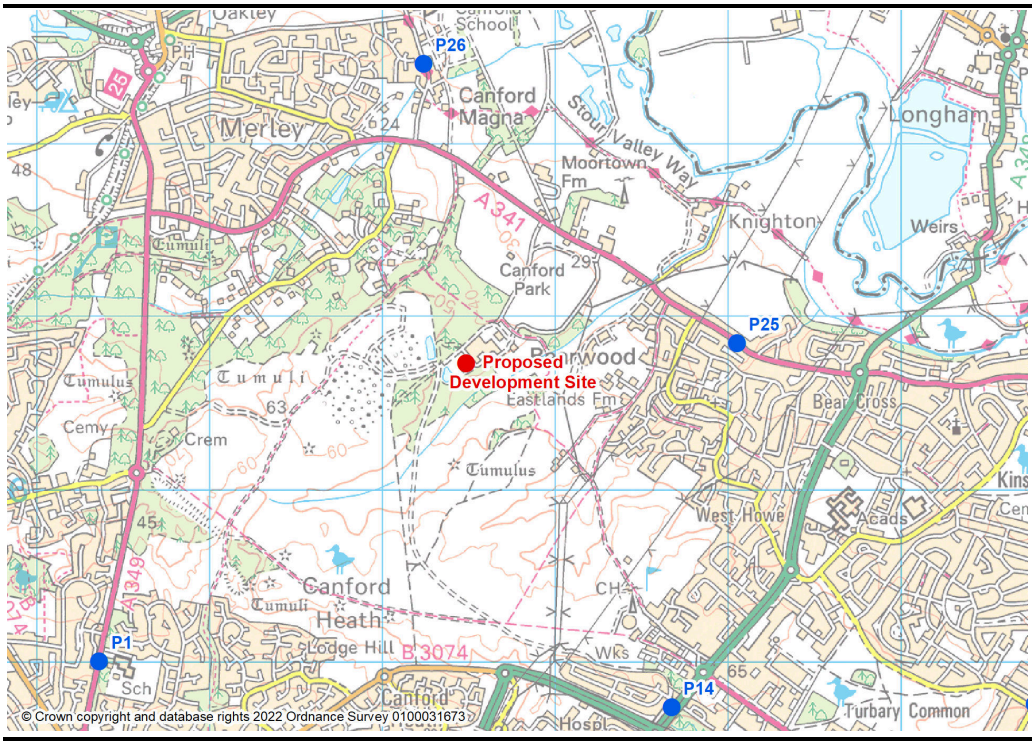
BCP Council has a network of 85 diffusion tube sites for monitoring NO_2. The majority of these are located at roadside sites within more urban areas than the Proposed Development. However, there are four monitoring locations within 3 km of the Proposed Development. The location of these is presented

in *Figure 3.2* and the site locations are described in *Table 3.1*. For model verification purposes, P25 is the most appropriate monitoring site as it is located adjacent to Magna Road, approximately 1 km to the east of the site access. Sites P1 and P14 are not located on the road links considered for the assessment and P26 is located in excess of 200 m of Magna Road.

TABLE 3.1 DETAILS OF NITROGEN DIOXIDE DIFFUSION TUBE MONITORING SITES

Location	Site Type	Distance to Relevant Exposure	Distance to Kerb of Nearest Road
P1. Gravel Hill	Kerbside	35.5 m	1.0 m
P14. Dolbery Road North	Kerbside	12.1 m	0.5 m
P25. 94 Magna Road	Roadside	13.9 m	1.5 m
P26. Canford Village	Kerbside	1.6 m	1.0 m

FIGURE 3.2 DIFFUSION TUBE LOCATIONS WITHIN 3 KM OF THE PROPOSED DEVELOPMENT



Measured concentrations of NO_2 at the four diffusion tube monitoring sites and the two continuous monitor sites between 2017 and 2021 are presented in *Table 3.2*.

TABLE 3.2 ANNUAL MEAN CONCENTRATIONS OF NO_2 ($\mu g\ m^{-3}$)

Site	Type (a)	2017	2018	2019	2020	2021
BORN	UB	13.9	11.5	11.3	9.4	10.1
CHBR	UT	20.6	20.1	19.4	14.8	17.2
P1. Gravel Hill	K	27.0	26.3	23.7	21.0	23.4
P14. Dolbery Road North	K	24.0	22.6	22.8	25.2	20.3
P25. 94 Magna Road	R	No data		24.2	19.1	19.6
P26. Canford Village	K	No data		16.3	14.6	12.5
(a) Key: R = Roadside, K = Kerbside, UB = Urban Background, UT = Urban Traffic, I = Industrial						

Measured concentrations in 2020 are generally much lower than previous years and are likely due to the COVID pandemic resulting in reduced traffic flows on local roads. It is also likely that concentrations measured in 2021 are also similarly affected but to a lesser extent. The measured concentration at P25 in 2019 is 24.2 $\mu g\ m^{-3}$ (60.5% of the air quality objective of 40 $\mu g\ m^{-3}$).

Background concentrations will include a contribution from road traffic and the amount at any location will depend on the proximity to nearby roads. For the assessment of traffic impacts it is necessary to determine the background concentration without the contribution from traffic. For each sensitive receptor, annual mean NO_x and NO_2 background concentrations for 2019 have been obtained from the Defra UK Background Air Pollution Maps, these are considered to be representative of the worst-case as mapped concentrations for 2023 and beyond are significantly lower. The latest background maps were issued in August 2020 and are based on 2018 monitoring data.

3.2.3 Fine Particles (PM_{10} and $PM_{2.5}$)

BCP Council undertook automatic monitoring of $PM_{2.5}$ only. Measured annual mean concentrations in 2018 and 2019 were up to 10.8 $\mu g\ m^{-3}$ at the Bournemouth site and up to 12.8 $\mu g\ m^{-3}$ at the Christchurch site. These are well below the target value for $PM_{2.5}$ of 20 $\mu g\ m^{-3}$. BCP Council did not undertake any continuous monitoring of PM_{10}.

3.2.4 Assumed Background Concentrations

The maximum Defra background mapped concentrations for 2019 have been used to determine the background PM_{10} and $PM_{2.5}$ concentrations at each location. A summary of NO_2, PM_{10} and $PM_{2.5}$ background concentrations at each receptor is provided in *Table 3.3*.

TABLE 3.3 ANNUAL MEAN CONCENTRATIONS OF NO_2, NO_x, PM_{10} AND $PM_{2.5}$ ($\mu g\ m^{-3}$)

Receptor	2019 NO_2	2019 NO_x	2019 PM_{10}	2019 $PM_{2.5}$
D3	9.4	12.2	12.4	8.3
D4	9.4	12.2	12.4	8.3
D5	9.4	12.3	12.1	8.3
D16	9.7	12.7	12.2	8.4
D19	9.4	12.2	12.4	8.3
T1	10.3	13.5	12.9	8.9
T2	9.4	12.2	12.4	8.3
T3	9.7	12.7	12.2	8.4
T4	9.7	12.7	12.2	8.4
T5	9.7	12.7	12.2	8.4
T6	9.7	12.7	12.2	8.4
T7	9.7	12.7	12.2	8.4
T8	9.5	12.4	12.2	8.3
T9	9.5	12.4	12.2	8.3
T10	9.5	12.4	12.2	8.3
P25	12.6	16.9	13.7	9.5

4 ASSESSMENT OF TRAFFIC-RELATED AIR QUALITY IMPACTS

4.1 MODEL VERIFICATION

Model verification has utilised one diffusion tube monitoring site on Magna Road (P25). The results of the model verification are provided in *Table 4.1*. A model verification factor of 1.83 was derived for the assessment. This has been applied to predicted concentrations of annual mean NO_2 as well as for PM_{10} and $PM_{2.5}$.

TABLE 4.1 SUMMARY OF MODEL VERIFICATION

Parameter	Modelled Concentrations ($\mu g\ m^{-3}$)	Monitored Concentrations ($\mu g\ m^{-3}$)5	Difference
Total annual mean NO_2	19.06	24.16	-21%
Uncorrected road NO_x	12.05	22.03	-45%
Adjusted road NO_x	22.05 (a)	22.03	0%
Adjusted total NO_2	24.17	24.16	0%
(a) Modelled road NO_x concentrations multiplied by the derived verification factor of 1.83			

4.2 ASSESSMENT OF HUMAN HEALTH IMPACTS

4.2.1 Annual Mean NO_2

A summary of the predicted annual mean NO_2 concentrations for each of the receptors is presented in *Table 4.2*. The model verification factor of 1.83 has been applied to all results. The following are provided:

- the change in annual mean NO_2 as a result of the Proposed Development;
- the change in annual mean NO_2 as a percentage of the air quality objective (AQO) of 40 $\mu g\ m^{-3}$;
- the total NO_2 (background concentration plus baseline traffic, committed development and development traffic contributions);
- the total NO_2 as a percentage of the AQO;
- the impact descriptor based on the IAQM planning guidance.

TABLE 4.2 PREDICTED ANNUAL MEAN NO_2 DUE TO THE PROPOSED DEVELOPMENT TRAFFIC

Receptor	Change in NO_2 ($\mu g\ m^{-3}$)	Change as % of AQO	Total NO_2 ($\mu g\ m^{-3}$)	Total NO_2 as a %age of the AQO	Impact Descriptor
D3	0.1	0%	16.4	41%	Negligible
D4	0.2	1%	16.1	40%	Negligible
D5	0.1	0%	13.8	35%	Negligible
D16	0.1	0%	15.9	40%	Negligible
D19	0.2	1%	16.4	41%	Negligible
T1	0.1	0%	18.3	46%	Negligible
T2	0.1	0%	14.6	37%	Negligible
T3	0.1	0%	15.8	40%	Negligible
T4	0.2	1%	22.7	57%	Negligible
T5	0.1	0%	15.6	39%	Negligible
T6	0.1	0%	17.5	44%	Negligible
T7	0.1	0%	18.1	45%	Negligible
T8	0.1	0%	21.6	54%	Negligible
T9	0.2	1%	25.4	64%	Negligible
T10	0.1	0%	18.7	47%	Negligible
P25	0.1	0%	22.5	56%	Negligible

The highest change in NO_2 concentrations as a result of the Proposed Development occurs at D4, D19, T4 and T9 (0.2 $\mu g\ m^{-3}$ increase, 1% of the AQO of 40 $\mu g\ m^{-3}$). These receptors are located close to the Proposed Development access/Magna Road junction (D4 and D19), one property in close proximity to Magna Road (T4) and at the junction of Magna Road and the A349 (T9). The highest total annual mean NO_2 concentration also occurs at T9 and at this receptor is 25.4 $\mu g\ m^{-3}$ (64% of the AQO) and the impact would be described as 'negligible' in accordance with the IAQM planning guidance.

4.2.2 Annual Mean PM_{10}

A summary of the predicted annual mean PM_{10} concentrations for each of the receptors is presented in *Table 4.3*. The model verification factor of 1.83 has been applied to all results.

TABLE 4.3 PREDICTED ANNUAL MEAN PM_{10} DUE TO THE PROPOSED DEVELOPMENT TRAFFIC

Receptor	Change in PM_{10} ($\mu g\ m^{-3}$)	Change as % of AQO	Total PM_{10} ($\mu g\ m^{-3}$)	Total PM_{10} as a %age of the AQO	Impact Descriptor
D3	0.1	0%	14.1	35%	Negligible
D4	0.0	0%	13.9	35%	Negligible
D5	0.0	0%	13.2	33%	Negligible
D16	0.0	0%	13.7	34%	Negligible
D19	0.0	0%	13.7	34%	Negligible
T1	0.0	0%	14.9	37%	Negligible
T2	0.0	0%	13.6	34%	Negligible
T3	0.0	0%	13.7	34%	Negligible
T4	0.1	0%	15.5	39%	Negligible
T5	0.0	0%	13.6	34%	Negligible
T6	0.1	0%	14.1	35%	Negligible
T7	0.0	0%	14.2	36%	Negligible
T8	0.1	0%	14.9	37%	Negligible
T9	0.0	0%	14.7	37%	Negligible
T10	0.1	0%	13.9	35%	Negligible
P25	0.0	0%	16.2	41%	Negligible

Changes in PM_{10} as a result of the Proposed Development are very small (less than or equal to 0.1 $\mu g\ m^{-3}$). The highest change in PM_{10} concentrations as a result of the development occurs at D3, T4, T6 and T10 (0.1 $\mu g\ m^{-3}$ increase, 0% of the AQO). The highest total annual mean PM_{10} concentration occurs at P25 (monitoring site) and at 16.2 $\mu g\ m^{-3}$ is 41% of the AQO of 40 $\mu g\ m^{-3}$. At this receptor the Proposed Development contributes 0.0 $\mu g\ m^{-3}$. The impact at all receptors would be described as 'negligible' in accordance with the IAQM planning guidance.

4.2.3 Annual Mean $PM_{2.5}$

A summary of the predicted annual mean $PM_{2.5}$ concentrations for each of the receptors is presented in *Table 4.4*. The model verification factor of 1.83 has been applied to all results.

TABLE 4.4 PREDICTED ANNUAL MEAN $PM_{2.5}$ DUE TO THE PROPOSED DEVELOPMENT TRAFFIC

Receptor	Change in $PM_{2.5}$ ($\mu g\ m^{-3}$)	Change as % of AQO	Total $PM_{2.5}$ ($\mu g\ m^{-3}$)	Total $PM_{2.5}$ as a %age of the AQO	Impact Descriptor
D3	0.0	0%	9.3	47%	Negligible
D4	0.0	0%	9.2	46%	Negligible
D5	0.1	1%	8.9	45%	Negligible
D16	0.1	1%	9.3	47%	Negligible
D19	0.0	0%	9.1	46%	Negligible
T1	0.0	0%	10.1	51%	Negligible
T2	0.1	1%	9.1	46%	Negligible
T3	0.1	1%	9.3	47%	Negligible
T4	0.1	1%	10.3	52%	Negligible
T5	0.0	0%	9.2	46%	Negligible
T6	0.0	0%	9.5	48%	Negligible
T7	0.1	1%	9.6	48%	Negligible
T8	0.0	0%	9.9	50%	Negligible
T9	0.0	0%	9.8	49%	Negligible
T10	0.0	0%	9.3	47%	Negligible
P25	0.0	0%	10.9	55%	Negligible

Changes in $PM_{2.5}$ as a result of the Proposed Development are very small (0.1 $\mu g\ m^{-3}$ or less). At all receptors the impact would be described as 'negligible' in accordance with the IAQM planning guidance.

5 SUMMARY AND CONCLUSIONS

5.1 SUMMARY

A detailed traffic-related air quality assessment for the proposed the EfW CHP Facility at Canford Resource Park has been provided.

The primary pollutants arising from road traffic are NO_x, PM_{10} and $PM_{2.5}$ and a review of local air quality indicates that air quality is relatively good at the Proposed Development compared to the relevant air quality standards and guidelines.

The detailed traffic-related air quality assessment has assessed the impact of additional traffic on the EfW CHP Facility Site access road (Arena Way), Magna Road and the A349. The impact of additional vehicle emissions on concentrations of NO_2, PM_{10} and $PM_{2.5}$ at sensitive human receptors was assessed. For all receptors and pollutants, the impact would be described as 'negligible'. Therefore, it is concluded that the impact of traffic on local air quality would be 'not significant'.

5.2 CONCLUSIONS

It is concluded that the Proposed Development traffic will not have a significant impact on local air quality.

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