14. Population and Health

14.1 Introduction

14.1.1 MVV Environment Limited (the Applicant) has submitted a full planning application for a Carbon Capture Retrofit Ready (CCRR) Energy from Waste Combined Heat and Power (EfW CHP) Facility at Canford Resource Park (CRP), off Magna Road, in the northern part of Poole. Together with associated CHP Connection, Distribution Network Connection (DNC) and Temporary Construction Compounds (TCCs), these works are the Proposed Development.

14.1.2 The primary purpose of the Proposed Development is to treat Local Authority Collected Household (LACH) residual waste and similar residual Commercial and Industrial (C&I) waste from Bournemouth, Christchurch, Poole and surrounding areas, that cannot be recycled, reused or composted and that would otherwise be landfilled or exported to alternative EfW facilities further afield, either in the UK or Europe.

14.1.3 The Proposed Development would recover useful energy in the form of electricity and hot water from up to 260,000 tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of approximately 31 megawatts (MW), exporting around 28.5 MW of electricity to the grid. Subject to commercial contracts, the Proposed Development will have the capability to export heat (hot water) and electricity to occupiers of the Magna Business Park and lays the foundations for a future CHP network to connect to customers off Magna Road.

14.1.4 The location and the extent of the Proposed Development is identified by the red line shown on **Figure 1.1**. In total, the Proposed Development covers an area of 10.1 hectares (Ha).

14.1.5 A full description of the Proposed Development is provided in **ES Chapter 3: Description of the Proposed Development**. A list of terms and abbreviations can be found in **ES Appendix 1.1**.

14.1.6 This chapter presents the environmental assessment of the likely significant effects of the Proposed Development with respect to Population and Health.

14.1.7 The chapter should be read in conjunction with the description of the development provided in **ES Chapter 3: Description of the Proposed Development** and with respect to relevant parts of other chapters **ES Chapter 6: Air Quality, ES Chapter 13: Noise and Vibration** and **ES Chapter 15: Traffic and Transport** which inform the assessment of Population and Health.

14.2 Assessment Criteria & Methodology

Legislative Context, Technical Guidance and Best Practice

Legislative Context

EU Waste Framework Directive (2008/98/EC)

14.2.1 The Waste Framework Directive establishes major principles for waste management and requires that waste is handled in a way that does not have a negative impact on the environment or human health.

Guidance and Best Practice

IEMA Guide to Effective Scoping of Human Health in EIA

14.2.2 The guidance on 'Effective Scoping of Human Health in EIA' (IEMA, 2022) defines the approach for scoping wider determinants of health in or out of an EIA, and is derived from EU EIA Directive 2014/52/EU.

14.2.3 The guidance expects that an Environmental Statement will include a chapter on human health where wider determinants of health, not covered by other EIA technical topics, have been scoped in, or where other EIA technical topics have been scoped in to assess likely and potentially significant effects to human Receptors.

14.2.4 For human health chapters, the scoping process primarily relates to: deciding if there are wider health determinants and population groups to include in the assessment; deciding the correct spatial and temporal assessment boundaries; specifying assessment methods sufficient to the complexity and importance of the impact; and clarifying governance and engagement arrangements.

14.2.5 The guidance ensures that the EIA health chapter will align to Health Impact Assessment (HIA) principles and normally satisfy policies or validation requirements to undertake a HIA, without the need for a standalone HIA. This can be assured by early engagement with public health and planning stakeholders and the general public during scoping.

14.2.6 Engagement can further assist scoping of health in EIA. It can highlight: which wider determinants of health and population groups are most relevant to a project; the regulatory context; key public health priorities and desired population health outcomes relevant to the project; specific wider groups for further engagement; and any other useful information or data. Internal engagement with other EIA practitioners is also encouraged as other technical topics will inform the scope of the health assessment.

14.2.7 The guidance includes a non-exhaustive list of 21 wider health determinants to consider when scoping human health in EIA. These are varied and span the following categories: health related behaviours; social environment; economic environment; bio-physical environment; and institutional and built environment. When it comes to scoping health in EIA, the guidance recommends using this list as a foundation, where other wider health determinants that are not listed may be relevant for specific projects.

14.2.8 It is recommended that each determinant is scoped in or out following careful consideration of how each determinant relates to the following set of questions:

- Is likelihood for the wider health determinant, established through plausible source-pathway-receptor link(s), probable given the actual project activities? If no, scope-out, if yes, proceed.
- Is the effect on the wider determinant of health potentially significant because the expected scale of change is:
  - central/influential to the public health agenda of the relevant jurisdiction, as informed by an understanding of relevant scientific literature, local baseline conditions and local health priorities? If yes, scope-in, if no scope-out; or
  - contentious/unclear (negative effects) or strongly desired and in need of securing (positive effects), as informed by an understanding of relevant consultation responses, regulatory standards and the health policy context? If yes, scope-in, if no scope-out.

- For negative effects, does committed mitigation avoid potentially significant population health effects? And does committed mitigation proportionately further minimise other effects? If yes, scope-out, if no scope-in.
- For positive effects, do committed enhancements already proportionately maximise public health opportunity with no significant population health effects to discuss? If yes, scope-out, if no scope-in.

14.2.9 The guidance also highlights how health impacts vary temporally across project stages (e.g., pre-commencement, demolition, construction, operation and decommissioning) and that the scope should identify which stages should be included.

14.2.10 Geographic scope should also be considered when discussing health effects on different populations. For example, the health effects may vary between site-specific, local, regional, national and international populations. The geographic scope should identify areas where the project would exert most influence.

14.2.11 Finally, as population groups are the sensitive Receptors for health in EIA, sub-populations, other than the general population should be considered. These include those with vulnerability due to young age, older age, income or unemployment, health status, social disadvantage and access or geographic factors.

IEMA Guide to Determining Significance for Human Health in EIA

14.2.12 The guidance on 'Determining Significance for Human Health in EIA' (IEMA, 2022) responds to gaps and inconsistencies across existing guidance as to how health, particularly regarding significance, is assessed in EIA. This promotes greater consistency in the assessment process; particularly how EIA health conclusions are reached, interpreted and used.

14.2.13 The EIA process uses the term 'significance' to describe the weight that should be placed on an issue during a decision, i.e., the extent to which it is 'material' to the planning decision. The European Commission defines significance as an informed expert's judgement of the importance, desirability or acceptability of a change. In the case of human health, this relates to whether the change is important, desirable or acceptable for public health. The judgement, and its explanation, must be context dependent and must be evidence based to minimise subjectivity from the practitioner. Available evidence to cite may include: scientific literature; consultation responses; baseline conditions; local health priorities; and regulatory standards.

14.2.14 A matrix of sensitivity and magnitude is typically used to determine significance (refer to

14.2.15 **Table** 14-3 of this chapter). For health, this identifies a relevant population and their sensitivity (Receptor) and the level of change in determinants of health (magnitude of impact), which then gives an indication of the likely significant effects to population health outcomes. Major and moderate categories will normally be considered significant, supported with appropriate evidence and justification. However, significant effects can be amended to residual effects with implementation of suitable secured additional mitigation.

14.2.16 Sensitivity can be informed by baseline data, including demographic statistics, public health statistics and deprivation mapping. Magnitude can be informed by a full understanding of the project and the findings of other EIA chapters, including their zones of influence and expected degrees of change. Both sensitivity and magnitude can be informed by professional judgements, for example judgement can inform the characterisation of the relevant population, their capacity to adapt and any vulnerable groups.

14.2.17 The indicative health sensitivity criteria is explained in **Table 14-1** of this chapter, and relates to: levels of deprivation; shared resources; inequalities between the most and least healthy;

community outlook; ability to undertake daily activities; providing or requiring care; health status; and/or capacity to adapt.

14.2.18 The indicative health magnitude criteria is explained in **Table 14-2** of this chapter, and relates to: exposure; duration; frequency; morbidity or change in quality-of-life; amount of population affected; timespan of change; and/or service quality implications.

14.2.19 For each determinant of health, the levels of sensitivity and magnitude (from high to negligible) for the population and relevant sub-population(s) should be determined and then assigned a level of significance (from major to negligible) based on expert judgement. A narrative explaining this, with reference to local context and project-specifics, should be provided alongside the level of significance. A single level of significance that reflects the overall public health conclusion should also be reached, including any significant changes in health inequalities.

National and Local Policy

National Planning Policy Framework (July 2021)

14.2.20 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government, 2021) sets out the planning policies for England. Promoting healthy and safe communities is a central theme, whereby the NPPF states that planning policies and decisions should aim to achieve healthy, inclusive and safe places which promote social interaction (including opportunities for meetings between people who might not otherwise encounter each other), are safe and accessible and enable and support healthy lifestyles (paragraph 92).

14.2.21 Furthermore, the NPPF states that to provide the social, recreational and cultural facilities and services the community needs, planning policies and decisions should: plan positively for the provision and use of shared spaces, community facilities and other local services; take into account and support the delivery of local strategies to improve health, social and cultural wellbeing; guard against the unnecessary loss of valued facilities and services; ensure that established shops, facilities and services are able to develop and modernise, and are retained for the benefit of the community; and ensure an integrated approach to considering the location of housing, economic uses and community facilities and services (paragraph 93).

14.2.22 In December 2022, a draft update to the NPPF was published for consultation, with the final revised NPPF expected later in 2023.

National Planning Practice Guidance

14.2.23 The National Planning Practice Guidance (NPPG) (Ministry of Housing, Communities & Local Government, 2019) supports the NPPF and provides guidance across a range of topic areas, including 'healthy and safe communities'. It is recognised in the NPPG that the design and use of the built and natural environments, including green infrastructure are major determinants of health and wellbeing, whereby a "healthy place" is one which:

- supports and promotes healthy behaviours and environments and a reduction in health inequalities for people of all ages;
- will provide the community with opportunities to improve their physical and mental health and support community engagement and wellbeing;
- is inclusive and promotes social interaction; and,

- meets the needs of children and young people to grow and develop, as well as being adaptable to the needs of an increasingly elderly population and those with dementia and other sensory or mobility impairments.

14.2.24 As stated in the NPPG, planning and health need to be considered firstly in terms of creating environments that support and encourage healthy lifestyles and secondly in terms of healthcare capacity. In addition, engagement with individuals and/or organisations, such as the relevant Director(s) of Public Health, will help ensure local public health strategies and any inequalities are considered appropriately.

Bournemouth, Christchurch, Poole & Dorset Waste Plan (2019)

14.2.25 On the basis that a wide range of environmental, social and economic factors have the potential to influence health, many local policies which relate to these determinants are also relevant to health. To ensure a focussed list of relevant policies, and to avoid duplication of policies pertinent to the inter-related technical disciplines that inform the population and health chapter, the policies referenced in this section have been selected only if they explicitly mention health, wellbeing, amenity and/or quality of life.

14.2.26 The BCPDWP objectives have been developed from a clear understanding of the current waste management industry, national planning policy principles and priorities, evidence of future growth, the spatial characteristics of the Plan area and the issues that need to be addressed through the Waste Plan.

14.2.27 Objective 4 of the Waste Plan is:

"To safeguard and enhance local amenity, landscape and natural resources, environmental, cultural and economic assets, tourism and the health and wellbeing of the people."

14.2.28 Policy 13 (Amenity and quality of life) states that:

"Proposals for waste management facilities will be permitted where it is demonstrated that any potential adverse impacts on amenity arising from the operation of the facility and any associated transport can be satisfactorily avoided or mitigated to an acceptable level, having regard to sensitive receptors, specifically addressing all, but not limited to, the following considerations:

- *noise and vibration;*
- *airborne emissions, including dust;*
- *odour;*
- *litter and windblown materials;*
- *vermin, birds and pests;*
- *lighting, loss of light;*
- *loss of privacy;*
- *visual impact;*
- *site related traffic impacts; and*
- *stability of the land at and around the site, both above and below ground level."*

Poole Local Plan (2018)

14.2.29 As previously stated, to ensure a focussed list of relevant policies, and to avoid duplication of policies pertinent to the inter-related technical disciplines that inform the population and health chapter, the policies referenced in this section have been selected only if they explicitly mention health, wellbeing, amenity and/or quality of life.

14.2.30 Policy PP27 (Design) states that:

"Development will be permitted provided that, where relevant, it: […] c) is compatible with surrounding uses and would not result in a harmful impact upon amenity for both local residents and future occupiers considering levels of sunlight and daylight, privacy, noise and vibration, emissions, artificial light intrusion and whether the development is overbearing or oppressive"

Baseline Data Collection

14.2.31 Communities have varying susceptibilities to health impacts and/or benefits due to differing demographic structure, physical and mental health, lifestyle and behavioural risk factors and socio-economic circumstances.

14.2.32 The approach to establishing the baseline conditions is entirely desk-based. It involved collation and interpretation of published demographic, socio-economic and existing public health data. The following open-source websites and datasets have been used to establish the baseline:

- NOMIS;
- ONS;
- Office for Health Improvement and Disparities Local Health;
- Office for Health Improvement and Disparities Fingertips;
- NHS Digital; and,
- Ministry of Housing and Local Government.

14.2.33 These baseline data have been used to better understand local health and socio-economic circumstances. Where quantitative assessment methods are being applied, locally specific parameters can be used within equations to predict changes in baseline population health, and then assess the significance of an effect.

Predicting Effects

Receptor sensitivity

14.2.34 Within a defined population, individuals will range in level of sensitivity due to a series of factors such as age, socio-economic deprivation and the prevalence of any pre-existing health conditions which could become exacerbated. These individuals can be considered particularly vulnerable to changes in environmental and socio-economic factors (both adversely and beneficially) whereby they could experience disproportionate effects when compared to the general population.

14.2.35 As an example, the elderly, young children and individuals with chronic pre-existing respiratory conditions would be more sensitive to adverse changes to air quality, with the potential for emergency admission to hospital more likely than for someone of working age who has good respiratory health. On the other hand, an individual who has been

unemployed for a long period of time would benefit more from employment opportunities generated by the Proposed Development in comparison to an individual who is already employed.

14.2.36 The health sensitivity methodology criteria shown in **Table 14-1** has been used to inform the assessment of significance.

Table 14-1: Health sensitivity methodology criteria

Category/level	Indicative criteria
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt.
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt.
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt.
Very low	Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt.

Source: IEMA Guide to Determining Significance for Human Health in EIA (IEMA, 2022)

14.2.37 An extensive amount of baseline data has been collected to interpret local health circumstance. This information is detailed in **Section 14.3**. Overall, it is concluded that local health circumstance in Bearwood and Merley ward is generally good. Exceptions to this include emergency hospital admissions for coronary heart disease and stroke and mortality rate for stroke. All mental health statistics analysed (suicide rate and emergency hospital stays for self-harm) are also an exception to this general trend.

14.2.38 As such, when looking at the population in general, the existing burden of poor health is low. However, this does not exclude the probability that there will be individuals within a defined population who are particularly sensitive and could experience disproportionate effects.

14.2.39 To supplement this exercise, analysis was done on the overall Index of Multiple Deprivation (2019) and specific 'Health Deprivation and Disability' domain, the results of which are provided in **ES Appendix 14.2: Population and Health Deprivation Maps**. Results show that the majority of sensitive Receptor groups identified in **ES Chapter 6: Air Quality** and **ES Chapter 13: Noise and Vibration** (which are consistent with Receptors that are considered sensitive to population and human health effects) are located in areas which are

categorised to be in the least deprived 50% nationally and are therefore not considered to be particularly vulnerable. As such, no specific sub-populations have been analysed separately as part of the overarching assessment of population health.

14.2.40 On this basis, the sensitivity of the population within the local Study Area is considered to be “low”.

Magnitude of impact

14.2.41 The health magnitude methodology criteria shown in **Table 14-2** has been used to inform the assessment of significance.

Table 14-2: Health magnitude methodology criteria

Category/level	Indicative criteria
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/injury outcomes; majority of population affected; permanent change; substantial service quality implications.
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications.
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications.
Very low	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.

Source: IEMA Guide to Determining Significance for Human Health in EIA (IEMA, 2022)

Significance of effect

14.2.42 The significance of an effect is determined based on the sensitivity/value of a Receptor and the magnitude of an impact. The method employed for this assessment is presented in

14.2.43 **Table** 14-3. Where a range of significance levels are presented, the final assessment for each effect is based upon expert judgment.

14.2.44 In all cases, the evaluation of Receptor sensitivity, impact magnitude and significance of effect has been informed by professional judgment and is underpinned by narrative to explain the conclusions reached.

Table 14-3: Significance matrix

	Sensitivity			
	High	**Medium**	**Low**	**Very Low**

Magnitude	**High**	Major	Major/moderate	Moderate/minor	Minor/negligible
	Medium	Major/moderate	Moderate	Minor	Minor/negligible
	Low	Moderate/minor	Minor	Minor	Negligible
	Negligible	Minor/negligible	Minor/negligible	Negligible	Negligible

Source: IEMA Guide to Determining Significance for Human Health in EIA (IEMA, 2022)

14.2.45 **Table 14-4** provides a description of each significance level. For this assessment, any effects with a significance level of minor or less are not considered to be significant in terms of the EIA Regulations.

Table 14-4: Significance conclusion and reasoning related to public health

Category/level	Indicative criteria
Major (significant)	The narrative explains that this is significant for public health because: • Changes, due to the project, have a substantial effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size (magnitude and sensitivity levels), and as informed by consultation themes among stakeholders, particularly public health stakeholders, that show consensus on the importance of the effect. • Change, due to the project, could result in a regulatory threshold or statutory standard being crossed (if applicable). • There is likely to be a substantial change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a causal relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant study area are of specific relevance to the determinant of health or population group affected by the project.
Moderate (significant)	The narrative explains that this is significant for public health because: • Changes, due to the project, have an influential effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size, and as informed by consultation themes among stakeholders, which may show mixed views. • Change, due to the project, could result in a regulatory threshold or statutory standard being approached (if applicable). • There is likely to be a small change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a clear relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant study area are of general relevance to the determinant of health or population group affected by the project.
Minor (not significant)	The narrative explains that this is not significant for public health because: • Changes, due to the project, have a marginal effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size of limited policy influence and/or that no relevant consultation themes emerge among stakeholders.

Category/level	Indicative criteria
	• Change, due to the project, would be well within a regulatory threshold or statutory standard (if applicable); but could result in a guideline being crossed (if applicable). • There is likely to be a slight change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is only a suggestive relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant study area are of low relevance to the determinant of health or population group affected by the project.
Negligible (not significant)	The narrative explains that this is not significant for public health because: • Changes, due to the project, are not related to the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size or lack of relevant policy, and as informed by the project having no responses on this issue among stakeholders. • Change, due to the project, would not affect a regulatory threshold, statutory standard or guideline (if applicable). • There is likely to be a very limited change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is an unsupported relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant study area are not relevant to the determinant of health or population group affected by the project.

Geographical Scope

14.2.46 Environmental health determinants (such as changes to air quality and noise exposure) typically have a local distribution pattern, where the hazards are limited by their concentration and physical dispersion characteristics. Changes in transport nature and flow rate experience a similar distribution on the local road network.

14.2.47 As a result, the spatial scope for health-specific baseline statistics focuses on the Unitary Authority ward of Bearwood and Merley, using the Unitary Authority of Bournemouth, Christchurch and Poole, South West region and England averages as relevant comparators.

14.2.48 The Study Area defining the relevant sensitive Receptors identified for assessment purposes have been co-ordinated and remains consistent with the inter-related technical disciplines assessed within the ES (e.g., **ES Chapter 6: Air Quality, ES Chapter 13: Noise and Vibration** and **ES Chapter 15: Traffic and Transport**).

Temporal Scope

14.2.49 As detailed in **ES Chapter 3: Description of the Proposed Development**, should consent be granted in 2023, it is anticipated that construction of the proposed EfW CHP Facility will commence in 2024 and take approximately 36 months to complete. The proposed EfW CHP Facility would therefore be operational in 2027.

14.2.50 Proposed working hours would be 07:00 to 19:00 Monday to Friday, 08:00 to 16:00 on Saturdays, and no work on Sundays or Public holidays without prior approval from the LPA. A limited number of works may be required outside of these days and hours.

14.2.51 Once operational, the EfW CHP Facility would be capable of processing residual Household, Industrial and Commercial (HIC) waste 24-hours a day, up to 365-days a year. Operational hours for the acceptance of waste would be limited to 07:00 to 20:00.

14.2.52 A working assumption has been made that the proposed EfW CHP Facility has an operation lifespan of approximately 50-years. However, it should be noted that it is common for such developments to be operational for longer periods.

Consultation

14.2.53 As part of the Applicant's commitment to engage with the local community, three public exhibitions were held between 12 and 14 January 2023. The exhibitions occurred at the Hamworthy Club, Magna Road and Bearwood Community Centre, King John Avenue. Feedback from these events is reported in the Statement of Community Involvement that accompanies the planning application.

14.2.54 Representations outlined some general health concerns, with some specific concerns relating to changes in local air quality, odour and noise, and the proximity of the proposed EfW CHP Facility to residential and education Receptors.

14.2.55 In relation to concerns regarding the health effects of changes in local air quality, the hazard associated with this is well known and understood and are addressed by stringent regulatory controls to protect the environment and human health. There is an extensive set of scientific literature available, which is continuously updated and explores the relationship between air quality and health. The quantitative exposure response assessment undertaken in **Section 14.5** applies the best available health evidence base to determine the potential health effects associated with the proposed EfW CHP Facility.

14.2.56 Where appropriate, in undertaking this assessment, the community's feedback has been considered and a summary response provided in the **Statement of Community Involvement** that accompanies the planning application.

14.2.57 No health-specific consultation has been undertaken with statutory consultees and/or other relevant consultees in relation to the scope and/or the methodology of the assessment and the topic being assessed.

Assumption and Limitations

14.2.58 The Population and Health assessment draws from and builds upon the technical outputs from inter-related disciplines, namely: **ES Chapter 6: Air Quality, ES Chapter 13: Noise and Vibration** and **ES Chapter 15: Traffic and Transport**.

14.2.59 As a consequence, the assumptions and limitations of those assessments also apply to any information used in this chapter (e.g., for modelling work undertaken). It is, however, considered that the information available provides a suitable basis for the assessment of Population and Health.

14.3 Baseline Conditions

Current Baseline

14.3.1 Different communities have varying susceptibilities to both health impacts and benefits due to social and demographic structure, behaviour and relative economic circumstance. The purpose of the population and health baseline is to provide an insight into how potential

health determinants identified may act disproportionately upon certain communities and sensitive groups.

14.3.2 This section summarises the findings of the community profile, provided in **Appendix 14.1: Population and Human Health Baseline**.

14.3.3 Following a review of the available health and demographic statistics, the local community within the Unitary Authority ward of Bearwood and Merley typically has better health than the Unitary Authority of Bournemouth, Christchurch and Poole (BCP), the South West region and the England average.

14.3.4 The population of Bearwood and Merley are relatively elderly compared to the national average. Life expectancy for both males and females is higher than the national trend.

14.3.5 Mortality rates for all causes, cancer, circulatory disease, coronary heart disease and respiratory disease are all lower in Bearwood and Merley ward than the regional and national averages. The same is true for premature mortality rates from all causes, all cancer, circulatory disease and causes considered preventable. Stroke is the only factor in which the population of Bearwood and Merley ward shows higher mortality rates than the regional and national averages and so is a clear exception to the trend.

14.3.6 Emergency hospital admissions for all causes, myocardial infarction, chronic obstructive pulmonary disease and hip fractures in age 65+ were all lower in the Bearwood and Merley ward compared to the national average, with exceptions for coronary heart disease and stroke which are higher than the national average.

14.3.7 Conversely, mental health in the Bearwood and Merley ward is worse than nationally. Specifically, the population of Bearwood and Merley ward has a higher rate of hospital stays for self-harm and suicide rate compared to the national average.

14.3.8 In terms of lifestyle and behavioural risk factors, the population within the Bearwood and Merley ward have a lower prevalence of overweight and obese children in year 6 and the higher percentage of physically active adults. However, the prevalence of regular smoking at 15 years is higher at ward-level when compared to the national average, as are hospital stays for alcohol-related harm.

14.3.9 Finally, the population of Bearwood and Merley ward have lower levels of deprivation when compared to the regional and national averages. The only exception to this is the higher rate of long-term unemployment in the Bearwood and Merley ward compared to all relevant comparators.

14.3.10 On the above basis, local health circumstance is considered good, with consequent resilience to change also considered to be good.

Future Baseline

14.3.11 Overall, the existing health burden within the Study Area is lower than the national average and generally, public health data show positive trends. As it is challenging to predict health-specific data with high confidence, it is considered appropriate that the present-day statistics are used for the purpose of this assessment, offering a precautionary approach.

14.4 Inherent Design Mitigation

14.4.1 Mitigation measures adopted as part of the construction and operation of the proposed EfW CHP Facility focus on environmental precursors to adverse population and health outcomes; thereby providing an opportunity for intervention to prevent any manifest health outcome.

14.4.2 Construction would be undertaken in accordance with a Construction Environment Management Plan (CEMP). The CEMP would provide an overview of the standard construction management measures that would be implemented as part of the proposed EfW CHP Facility and will ensure that construction activities for the proposed EfW CHP Facility are carried out in accordance with legislation and best practice for minimising the effects of construction on the environment and local communities.

14.4.3 During operation, such mitigation measures are embedded within the design of the proposed EfW CHP Facility itself e.g., through the application of specific abatement technology and will be controlled by the Environmental Permit.

14.5 Potential Environmental Impact and Effects

Construction phase

Health effects from changes in local air quality

14.5.1 Prior to mitigation, the construction of the proposed EfW CHP Facility has the potential to influence population and health by contributing to nuisance dust from general on-site construction activities (including demolition, excavation and earthworks) and through trackout.

14.5.2 Potential human health effects from changes to air quality associated with construction-related traffic has not been assessed on the basis that the number of daily vehicle movements during construction is below the threshold for assessment, as explained in **ES Chapter 15: Traffic and Transport**.

14.5.3 Potential dust emissions would be managed through the implementation of a CEMP (refer to **ES Appendix 3.2**, specifically the Dust Management Plan, for more detail). As stated in **ES Chapter 6: Air Quality**, the potential impact from nuisance dust following the implementation of the Dust Management Plan would be negligible. As such, neither the change in concentration nor exposure to construction dust emissions are sufficient to quantify any change in health outcome at a population level.

14.5.4 On this basis, the magnitude of impact on population and health would be negligible, which, in an area of low sensitivity would result in a minor adverse effect, which is not considered to be significant.

Health effects from changes in noise exposure

14.5.5 There are currently two potential locations for the Temporary Construction Compound (TCC), one of which will be implemented to allow the construction of the proposed EfW CHP Facility. These are termed TCC1 and TCC2 and are described in detail in **ES Chapter 3: Description of the Proposed Development**.

14.5.6 As detailed in **ES Chapter 13: Noise and Vibration**, construction would take 36-months to complete, where noise producing work will be undertaken during the hours of 07:00-19:00 Mondays to Fridays, 08:00 to 16:00 on Saturdays, and no work on Sundays or Public holidays. As a result, potential population and health effects (if any) are likely to be limited to temporary annoyance during the daytime period only.

14.5.7 As stated in **ES Chapter 13: Noise and Vibration**, predicted construction noise levels from on-site construction activities fall below the Significant Observed Adverse Effect Level (SOAEL) criteria at all Receptors.

14.5.8 For the TCC1 option, the magnitude of impact during the daytime period at 5 of the 15 residential Receptors[1] is considered negligible in noise terms and the magnitude of impact at the remaining 10 residential Receptors is considered minor. For the TCC2 option, the magnitude of impact during the daytime period at 7 of the 15 residential Receptors is considered negligible in noise terms and the magnitude of impact at the remaining 8 residential Receptors is considered minor. It should be noted that for both options, any increase in noise exposure would be temporary and intermittent in nature.

14.5.9 Regarding vibration from on-site construction activities, predicted Peak Particle Velocity (PPV) levels at all Receptors falls below the Lowest Observed Adverse Effect Level (LOAEL) and result in a negligible magnitude of impact.

14.5.10 The magnitude of impact associated with changes in noise exposure associated with average traffic flows during the construction period would be negligible in noise terms.

14.5.11 As such, the potential change in noise exposure is below what is generally considered to be intrusive or perceptible and is not of a timing, duration or magnitude sufficient to result in sleep disturbance or manifest health outcome at a population level. Therefore, the magnitude of impact on population and human health would be very low, which in an area of low sensitivity, would result in a negligible significance of effect.

Health effects from changes in transport nature and flow rate

14.5.12 As set out in **ES Chapter 15: Traffic and Transport**, the construction hours will take place over a 12-hour (07:00-19:00) period, meaning the majority of staff will arrive outside the peak hours on a shift by shift basis.

14.5.13 Access to the EfW CHP Facility Site is from the Magna Road/Arena Way junction, and so most vehicle trips will be concentrated at this junction.

14.5.14 On average, there would be 46 two-way Heavy Goods Vehicle (HGV) movements and 103 two-way car movements per day during the construction period. This equates to a total average of 298 two-way vehicle movements per day.

14.5.15 During the peak construction period, around 60 HGVs and 200 cars would arrive daily; equating to 520 two-way vehicle movements.

14.5.16 Overall, the average and peak daily construction traffic represents a 1.8% and 3.1% increase in flow on Magna Road, respectively. Beyond this, construction trips disperse across the network and therefore would be lower on other road links supporting construction traffic.

14.5.17 As detailed in **ES Chapter 15: Traffic and Transport**, the screening process to establish likely significant effects (and subsequent detailed assessment) relies on two rules:

- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and,
- Rule 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more.

14.5.18 In this instance, the worst-case affected road link (i.e., the EfW CHP Facility Site access on Magna Road/Arena Way) is substantially below Rule 1 and Rule 2 thresholds. As such, the impact severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation

[1] As per ES Chapter 13: Noise and Vibration, there are a total of 15 residential Receptors. These comprise: R1, R2, R3, R4, R6, R9, R11, R12, R13, R15, R16, R18, R19, R20 and R21

and accidents and safety (in transport terms) during the construction phase would be negligible.

14.5.19 Therefore, the magnitude of impact on population and human health would be very low, which in an area of low sensitivity, would result in a negligible significance of effect.

Health effects from changes in socio-economic factors

14.5.20 Having a consistent income and being in long-term employment are two of the most important wider determinants of health.

14.5.21 As stated in **ES Chapter 3: Description of the Proposed Development**, over the duration of construction, there are likely to be around 600 construction personnel from a range of disciplines employed. During the peak periods of construction for all elements of the proposed EfW CHP Facility, there could be approximately 400 construction personnel present onsite at any one time.

14.5.22 While the number of jobs created are relatively high, construction jobs associated with the proposed EfW CHP Facility would be short-term and temporary in nature. As such, construction employment is only likely to provide benefits at an individual level.

14.5.23 On this basis, the magnitude of impact on population and human health would be low, which in an area of low sensitivity, would result in a negligible significance of effect.

Operational phase

Health effects from changes in local air quality

Introduction

14.5.24 The former Health Protection Agency (HPA) (now the UK Health Security Agency) first issued a statement giving advice on health issues in November 2005 as a result of concerns raised about the air pollution risks posed by municipal incinerators. More research on the possible air pollution risks posed by modern incinerators has been carried out since then, and in 2009 an updated statement was published. The 2009 statement has since been withdrawn; however, the conclusions have been reproduced in the 'Impact on Health of Emissions to Air from Municipal Waste Incinerators - RCE 13' report (Health Protection Agency, 2010), which states that:

"While it is not possible to rule out adverse health effects from modern, well-regulated municipal waste incinerators with complete certainty, any potential damage to the health of those living close-by is likely to be very small, if detectable. This view is based on detailed assessments of the effects of air pollutants on health and on the fact that modern and well managed municipal waste Incinerators make only a very small contribution to local concentrations of air pollutants."

14.5.25 Following the publication of results in two separate papers from a major study on modern municipal waste incinerators by the Small Area Health Statistics Unit (SAHSU) at Imperial College London (Ghosh, et al., 2019; Parkes, et al., 2020), Public Health England (PHE) submitted a statement in 2019 to confirm the above position from 2009 (Public Health England, 2019).

14.5.26 PHE state that the statement will continue to be reviewed in light of new substantial research on the health effects of incinerators published in peer-reviewed journals. No further research has been published to warrant an update to the most recent 2019 statement.

Particulate matter and nitrogen dioxide

14.5.27 **ES Chapter 6: Air Quality** has modelled emissions of nitrogen dioxide (NO_2) and particulate matter (PM) to air from the proposed EfW CHP Facility associated with the chimney across a 20km by 20km Cartesian grid of 160m grid resolution, alongside 19 discrete sensitive human Receptors.

14.5.28 Results show that the annual mean predicted environmental concentrations for PM_{10}, $PM_{2.5}$ and NO_2 would remain below the air quality objective thresholds set to protect the environment and human health at all discrete sensitive human Receptors assessed. The maximum change in air quality concentrations would be:

- 0.019µg/m^3 for PM_{10};
- 0.019µg/m^3 for $PM_{2.5}$; and
- 0.31µg/m^3 for NO_2.

14.5.29 While the air quality limits detailed within **ES Chapter 6: Air Quality** are set to protect the environment and health, the supporting health evidence base on non-threshold pollutants indicates that health effects may be experienced at concentrations below these limits.

14.5.30 On this basis, a quantitative concentration exposure response health assessment has been undertaken using air quality modelling outputs (absolute change in concentration of air pollutants directly attributable to the proposed EfW CHP Facility) to estimate the potential change in population health outcomes across the local Study Area. To do this, concentration-response functions (CRFs) recommended in the World Health Organisation's (WHO) Health Risks of Air Pollution in Europe (HRAPIE) guidance (World Health Organization, 2013) are applied with the absolute change in air quality (in µg/m^3), population estimates and various baseline health data for the Study Area.

14.5.31 The air quality modelling outputs intersect a total of 259 Lower Layer Super Output Areas (LSOAs)[2] located in Bournemouth, Christchurch, Poole and the surrounding areas of East Dorset, North Dorset, New Forest and Purbeck. The total population within the 259 LSOAs is 437,363, with an aged 30+ population of 291,246.

14.5.32 The assessment is completed at the LSOA level, with outputs across all 259 LSOAs summed to provide the total health effect across the affected population. As several grid points detailing modelled changes in air quality are located within each of the 259 LSOAs selected for analysis, the average increase in pollutant concentrations across each LSOA was calculated to use in the equation.

14.5.33 **Table 14-5** shows the potential health outcomes associated with the predicted change in air pollutant exposure.

Table 14-5: Air pollution exposure health outcomes

Health outcome	Number of cases
Annual mortality (aged 30+)	0.6
Annual respiratory and cardiovascular disease related emergency hospital admissions	0.2

[2] Lower Layer Super Output Area – are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales, typically containing an average population of 1,500 people or 650 households

Dioxins, furans (PCDD/F) and dioxin-like polychlorinated biphenyls (PCBs)

14.5.34 The Human Health Risk Assessment (HHRA), presented as **ES Appendix 6.2**, assessed the risk of emissions of several compounds of potential concern (COPCs) (i.e., dioxin, furans and dioxin-like PCBs) from the EfW CHP Facility through the application of the US EPA Human Health Risk Assessment Protocol (HHRAP) and the Industrial Risk Assessment Program (IRAP) health risk assessment model. The total exposure, through several exposure pathways, to dioxin, furans and dioxin-like PCBs was determined to assess the risk to human health.

14.5.35 The HHRA considered four farmer Receptors and nineteen residential Receptors. The HHRA identified the Canford Heath farmer Receptors as being representative of the worst-case scenario as they are located close to the Proposed Development Boundary.

14.5.36 The exposure pathways to the Receptors (i.e., farmer and resident) included ingestion and inhalation with the addition of the background exposure to the Receptors. Additionally, exposure to dioxins and furans for infants through ingestion of breast milk is an exposure pathway which was assessed as well.

14.5.37 Two available guidance documents were utilised in the HHRA. The World Health Organization (WHO) recommends a tolerable daily intake for dioxins/furans of 1 to 4pg I-TEQ kg-BW-1 d-1 (picogrammes as the International Toxic Equivalent per kilogram bodyweight per day) and the Committee on Toxicity (COT) Tolerable Daily Intake (TDI) for dioxins and dioxin-like PCBs recommends 2pg I-TEQ kg-BW-1 d-1.

14.5.38 The average (lifetime) daily intake of dioxins/furans for farmer and resident Receptor types (with the consideration of adult and child Receptors for both), were compared to both WHO TDI and the COT TDI. The maximum contribution of the EfW CHP Facility to the COT TDI for the farmer (child) is 1.2% and 0.85% for the farmer (adult). The maximum contribution of the facility to the COT TDI for the resident is 0.1%.

14.5.39 The contribution of the EfW CHP Facility to the total intake was provided by considering the predicted incremental intake due to the EfW CHP Facility, the average daily background intake referred to as the mean daily intake (MDI), the total intake (the sum of the predicted incremental intake and the background MDI) with the comparison to the TDI for dioxin/furans. The MDI for an adult Receptor was calculated as 0.7pg I-TEQ kg-1 d-1 (derived by Environment Agency MDI by a bodyweight of 70kg), whereas the MDI for a child Receptor was calculated as 1.8pg I-TEQ kg-1 d-1 (derived by dividing the Environment Agency MDI by a bodyweight of 20kg and applying an adult to a child correction factor of 0.74).

14.5.40 Based on the worst-case scenario, the total intake as a percentage of the COT TDI for the adult farmer and resident was 35.8% and 35% of the TDI, respectively and is below the COT TDI. Based on the worst-case scenario, the total intake as a percentage of the COT TDI for the child Receptor (farmer and resident) was 91.2% and 90.1% of the TDI, respectively and is below the COT TDI the total intake (as a percentage of the TDI) for the child Receptor.

14.5.41 The HHRA concluded the following related to exposure to COPCs to infants via ingestion of breast milk:

"Taking into account the extreme worst-case basis for the assessment, it is concluded that infant exposure to breast milk would be not significant. Furthermore, the WHO recognises that breast-fed infants will be exposed to higher intakes for a short duration, but also that breast feeding itself provides associated benefits."

14.5.42 Overall, the HHRA identified the plausible pathways of exposure to farmer and resident Receptors that would be more likely through the uptake of the COPCs through ingestion of

locally grown foods rather than direct inhalation. The HHRA concluded that "for the maximally exposed individual, exposure to dioxins, furans and dioxin-like PCBs is not significant".

Significance conclusion

14.5.43 Based on the above information relating to PM, NO_2 and dioxins, furans and dioxin-like PCBs, the magnitude of impact on population and human health would be very low, which in an area of low sensitivity, would result in a negligible significance of effect.

Health effects from changes in noise exposure

14.5.44 As stated in **ES Chapter 13: Noise and Vibration**, the facility will operate 24-hours a day 365-days per year, and waste deliveries would take place between the hours of 07:00 and 20:00.

14.5.45 Due to the continuous nature of the on-site energy production, there is potential for increases in noise exposure during the daytime period (from the facility itself and waste deliveries) and during the night-time period (from the facility itself but not waste deliveries as these would only occur during the daytime). As a result, the population and health assessment investigates potential health outcomes arising from both annoyance and sleep disturbance.

14.5.46 **ES Chapter 13: Noise and Vibration** details how the excess of rating over background sound level would be negative at all residential Receptors during daytime operation in both normal and bypass mode of the exhaust steam pipe. Therefore, no annoyance-related population and health effects are likely to occur, and so no changes in behaviour or attitude are anticipated.

14.5.47 During night-time operation, prior to any additional mitigation measures, the maximum excess of rating over background sound level is estimated to be +9 dB (at R11, which represents three properties) which would result in a moderate adverse impact in noise terms.

14.5.48 However, as mentioned in **ES Chapter 13: Noise and Vibration**, a partially open window can offer an attenuation of between 10 and 15 dB(A) from external noise sources. Subtracting this attenuation from the specific operational sound pressure level of 30 dB(A) results in an internal noise level of between 15-20 dB(A), which is considered to be barely audible or not detectable. In line with guidance presented in the EA's noise guidelines, barely audible or detectable noise should be categorised as 'low impact or no impact'.

14.5.49 As such, following the consideration of noise attenuation factors during the night-time period, the magnitude of impact on population and health would be very low, which in an area of low sensitivity, would result in a negligible significance of effect.

Health effects from changes in transport nature and flow rate

14.5.50 As set out in **ES Chapter 15: Traffic and Transport**, the proposed EfW CHP Facility seeks permission to process up to 260,000 tonnes per annum of waste. Assuming that all trips will be new and not already coming to the wider Canford Resource Park (CRP), (referred to as 'Scenario 1' in **ES Chapter 15: Traffic and Transport**, which is the worst-case scenario), a total of 20,536 vehicles per annum coming from Dorset, Poole, Bournemouth and Christchurch.

14.5.51 In this worst-case scenario (Scenario 1), 170 daily two-way HGV movements and 94 two-way Large Goods Vehicle (LGV)/car movements are anticipated to visit the EfW CHP Facility. Therefore, the total number of two-way daily vehicle movements would be 264,

which results in a percentage increase of 1.59% against a baseline Average Annual Daily Traffic (AADT) of 16,692.

14.5.52 For Scenario 2 (whereby a significant proportion of residual waste already managed at CRP is received at the EfW CHP Facility), the anticipated number of daily HGVs is reduced to 90 two-way movements. As the number of LGVs/cars would remain the same as Scenario 1, the total number of two-way daily vehicle movements would be 184, which results in a percentage increase of 1.10% against a baseline AADT of 16,692.

14.5.53 As detailed in **ES Chapter 15: Traffic and Transport**, and previously explained within this chapter, the screening process to establish likely significant effects (and subsequent detailed assessment) relies on two rules:

- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and,
- Rule 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more.

14.5.54 The percentage increase of 1.59% and 1.10% is substantially below Rule 1 and Rule 2 thresholds. As such, the impact on severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation, and accidents and safety (in transport terms) during the operational phase would be negligible.

14.5.55 Regarding the increase in HGVs specifically, the baseline AADT in the opening year of 2027 is forecast to be 1,700. Scenario 1 would constitute a 10.9% increase against the baseline, while Scenario 2 would constitute a 6.2% increase against the baseline.

14.5.56 In transport terms, the resultant impact of Scenario 1 would be minor in respect of severance, pedestrian delay, pedestrian amenity and fear and intimidation. Specific detailed assessments of the impact on driver delay demonstrate that the change is negligible. Furthermore, the safety record of the road network is such that the impact on highway safety would also not be significant. This would decrease when considering Scenario 2.

14.5.57 Therefore, the magnitude of impact on population and human health would be very low, which in an area of low sensitivity, would result in a negligible significance of effect.

Health effects from changes in socio-economic factors

14.5.58 As stated in **ES Chapter 3: Description of the Proposed Development**, up to 32 full-time jobs would be created by the proposed EfW CHP Facility. These would include direct employment opportunities in a mixture of skilled and unskilled roles, as well as indirect employment opportunities for local services.

14.5.59 While operational jobs associated with the proposed EfW CHP Facility are long-term and permanent in nature, the number of jobs created are relatively low. As such, operational employment is only likely to provide benefits at an individual level. Such opportunities are being optimised through the **Outline Employment and Skills Strategy**, submitted as part of the wider planning application documentation.

14.5.60 On this basis, the magnitude of impact on population and human health would be low, which in an area of low sensitivity, would result in a negligible significance of effect.

Decommissioning

14.5.1 A working assumption has been made that the Proposed Development has an operational lifespan of approximately 40-years. However, it should be noted that it is common for such

developments to be operational for longer periods. It is anticipated that the process of decommissioning would involve the termination of operational activity, following which there would be electrical and process isolation and demolition activities. The EfW CHP Facility Site (including the CHP Connection) and the DNC would be left in a clear and secure condition in accordance with a Decommissioning Plan. The decommissioning process is anticipated to last for one year.

14.5.2 For the purposes of this assessment, the environmental effects associated with the decommissioning phase would be of a similar level to those reported for the construction phase works, albeit with a lesser duration, of one year.

14.6 Additional Mitigation

14.6.1 Public health is, by definition, preventative in nature. Therefore, inherent mitigation measures adopted as part of the construction and operation of the proposed EfW CHP Facility (detailed in **Section 14.4**) focus on precursors to health and wellbeing outcomes, thereby providing an opportunity for intervention to prevent any adverse impacts.

14.6.2 On the basis that no significant adverse population and health effects are reported in **Section 14.5**, no additional health-specific mitigation measures are proposed.

14.7 Residual Effects

14.7.1 On the basis that no additional mitigation measures are proposed, the residual effects remain the same as the those reported in the main assessment (**Section 14.5**).

14.8 Implications of Climate Change

14.8.1 The primary impacts associated with climate change include increased temperatures, increased atmospheric CO_2, sea level rise and increased incidence of extreme weather events. These primary impacts affect several environmental functions (such as water availability, salinization, varying crop yields, wildfires, ozone/PM concentrations, and migration patterns) which could plausibly alter the prevalence of a range of population and health outcomes.

14.8.2 Of particular relevance in this context is the modification of atmospheric emission dispersion, related concentration hazard exposure and consequent changes in cardiovascular/respiratory disease prevalence associated with climate change driven meteorological variations.

14.8.3 However, at this stage it is not possible to predict future changes in climate change driven meteorological variations which have the potential to influence population and health. While the effects of climate change outlined above have the potential to exacerbate existing health and wellbeing outcomes at a population level, there are clear limitations associated with predicting future meteorological variations that influence health and wellbeing. Despite this, the effects of climate change likely to be realised during the operational lifetime of the proposed EfW CHP Facility are not expected to materially alter the conclusions of this assessment.

14.9 Cumulative Effects

14.9.1 **Table 14-6** provides the shortlist of cumulative developments, identifying which have been included or excluded from the population and human health cumulative assessment. Cumulative projects are only considered where there is the potential to interact with the health determinants assessed, modify exposure pathways or introduce new Receptors.

14.9.2 The occupation of all residential developments would introduce additional sensitive Receptors to the Study Area. Applying the UK average household size of 2.4 people per dwelling (and not considering any net additional effects i.e., individuals moving from within the Study Area), the additional population would equate to approximately 1,226 people.

14.9.3 In the context of the population assessed within the Study Area (a total population of 437,363 people) whereby no measurable change to population health outcomes is reported, the cumulative developments identified are not anticipated to change the results or conclusions of the main assessment undertaken in the above sections.

14.9.4 The following two energy facilities have been identified as cumulative developments:

- Eco Sustainable Solutions (ESS) Ltd, Chapel Lane, Parley, Christchurch is an Energy Recovery Facility (planning reference 8/21/0207/FUL); and
- Whittle Power (WH), Ferndown Industrial Estate, Wimborne is a 5MW gas fired peaking plant (planning reference 3/20/1945/FUL).

14.9.5 These ERFs are located some distance away and the cumulative contribution for NO_2 is assessed in **ES Chapter 6: Air Quality**. Results show that the annual mean predicted environmental concentrations for NO_2 would remain below the air quality objective thresholds set to be protective of the environment and human health at all discrete sensitive human Receptors assessed. The maximum change in air quality concentrations would be 0.36µg/m^3 for NO_2. Overall, the cumulative contribution is not anticipated to change the results or conclusions of the main assessment undertaken in the above sections.

Table 14-6: Cumulative development short-list

ID	Cumulative development	Address	Application Ref	Units	Details	Included/excluded from cumulative assessment
1	Hillbourne Site	Kitchener Crescent, Poole, Dorset, BH17 7HX	APP/21/00748/F	110	81 Houses & 29 Sheltered Flats	Include – additional residential Receptors
2	Leigh Road, Wimborne	Land South Of, Leigh Road, Wimborne, Dorset, BH21 2DA	3/21/1566/RM	174	174 Houses	Include – additional residential Receptors
3	Station Terrace, Wimborne	Wimborne Market, Station Terrace, Wimborne, Dorset, BH21	3/21/1556/FUL	101	66 Sheltered Flats/ 32 Bungalows/ 9 Houses	Include – additional residential Receptors
4	Wheelers Lane, Bournemouth	Land off Neville Gardens, Wheelers Lane, Bournemouth, Dorset, BH11 9UL	APP/21/00620/F	45	45 Houses	Include – additional residential Receptors
5	Leigh Road, Wimborne	Park Farm, Leigh Road, Wimborne, Dorset, BH21 2DA	3/21/0840/FUL	75	63 Houses & 12 Flats	Include – additional residential Receptors
6	Vantage Way, Poole	T, Fulcrum Business Park, Vantage Way, Poole, Dorset, BH12 4NU	APP/20/00252/F	1	Light Industrial & Office/ Warehouse	Exclude – non-residential Receptor that is not anticipated to contribute significantly to environmental or socio-economic changes
7	Magna Road, Bournemouth	Magna Business Park, Land Sout, Magna Road, Bournemouth, Dorset, BH11 9NB	APP/21/01186/F	3	Industrial Unit	Exclude – non-residential Receptor that is not anticipated to contribute significantly to environmental or socio-economic changes
8	81 Sopers Lane, Poole	81 Sopers Lane, Poole, Dorset, BH17 7EN	APP/21/00497/F	3	Industrial/ Warehouse/ Office	Exclude – non-residential Receptor that is not anticipated to contribute significantly to environmental or socio-economic changes

ID	Cumulative development	Address	Application Ref	Units	Details	Included/excluded from cumulative assessment
9	Vantage Way, Poole	Unit 1, The Fulcrum Centre, Vantage Way, Poole, Dorset, BH12 4NU	APP/20/00418/F	3	Office/Light Industry/ Storage	Exclude – non-residential Receptor that is not anticipated to contribute significantly to environmental or socio-economic changes
10	35 Cobham Road, Wimborne	35 Cobham Road, Ferndown Industrial Estate, Wimborne, Dorset, BH21 7PF	3/20/0880/FUL	2	Warehouse & Office	Exclude – non-residential Receptor that is not anticipated to contribute significantly to environmental or socio-economic changes
11	23 Whittle Road, Wimborne	Whittle Power Land On, 23 Whittle Road, Ferndown Industrial Estate, Wimborne, Dorset, BH21 7RP	3/20/1945/FUL	N/A	Energy Facility	Include – additional combustion source in local area
12	Mannings Heath Road, Poole	14 and land adjacent, Mannings Heath Road, Poole, Dorset, BH12 4NQ	APP/21/00309/F	10	10 Industrial/ Warehouse Units	Exclude – non-residential Receptor that is not anticipated to contribute significantly to environmental or socio-economic changes
13	Arena Way, Wimborne	Energy Site Control Centre, Arena Way, Wimborne, Dorset, BH21 3BW		N/A	Solar Farm	Exclude – no credible health impacts associated with a solar farm
14	Cobham Road, Wimborne	North Peartree Business Centre, Ferndown Industrial Estate, Vulcan Way, Wimborne, Dorset, BH21 7PT	3/21/0674/OUT	26	26 Industrial Units	Exclude – non-residential Receptor that is not anticipated to contribute significantly to environmental or socio-economic changes
15	15 Whittle Road, Wimborne	15 Whittle Road, Ferndown Industrial Estate, Wimborne, Dorset, BH21 7RL	3/21/0740/FUL	2	2 Starter Industrial Units	Exclude – non-residential Receptor that is not anticipated to contribute significantly to environmental or socio-economic changes
16	Chapel Lane	Eco Sustainable Solutions Ltd, Chapel Lane, Parley Christchurch, BH23 6BG	8/21/0207/FUL	N/A	Energy Recovery Facility	Include – additional combustion source in local area

14.10 Summary

14.10.1 A summary of the assessment is set out in **Table 14-7** overleaf.

Table 14-7: Summary of Effects

Receptor	Sensitivity of Receptor	Nature of potential impact	Proposed mitigation	Residual effect	Significant/not significant
Construction phase					
Health effects from changes in local air quality	Low	Very low	No additional health-specific mitigation proposed.	Negligible	Not significant
Health effects from changes in noise exposure	Low	Very low	No additional health-specific mitigation proposed.	Negligible	Not significant
Health effects from changes in transport nature and flow rate	Low	Very low	No additional health-specific mitigation proposed.	Negligible	Not significant
Health effects from changes in socio-economic factors	Low	Low	No additional health-specific mitigation proposed.	Negligible	Not significant
Operational phase					
Health effects from changes in local air quality	Low	Very low	No additional health-specific mitigation proposed.	Negligible	Not significant
Health effects from changes in noise exposure	Low	Very low	No additional health-specific mitigation proposed.	Negligible	Not significant

Receptor	Sensitivity of Receptor	Nature of potential impact	Proposed mitigation	Residual effect	Significant/not significant
Health effects from changes in transport nature and flow rate	Low	Very low	No additional health-specific mitigation proposed.	Negligible	Not significant
Health effects from changes in socio-economic factors	Low	Low	No additional health-specific mitigation proposed.	Negligible	Not significant
Decommissioning phase					
As per the construction phase assessment.					