16. Human Health

Introduction

16.1 This chapter assesses the effects of the proposed development on human health. The assessment considers the World Health Organisation definition of health, to include consideration of health as "*a state of complete physical, social and mental wellbeing*."

16.2 The chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect likely significant effects of the development arising from the wider determinants of health including place-making, environmental, economic and social factors, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by Stantec.

16.3 Within this chapter "the Site" refers to land that falls within the application boundaries A and B as identified in the Site Location Plans (**Volume 2a: Main Text Figures - Figure 1.1** and **Figure 1.2**).

Planning Policy Context

National Planning Policy

National Planning Policy Framework

16.4 The revised National Planning Policy Framework (NPPF) (2021) acknowledges the importance of considering health impacts during the planning process and covers many issues that are directly related to the determinants of health.

16.5 The NPPF identifies the three mutually dependent roles that the planning system needs to consider delivering the "*presumption in favour of sustainable development*". The role of particular relevance to health is the 'social role'. Paragraph 8 of the NPPF states the planning system should support "*strong, vibrant and healthy communities… by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being*."

16.6 The NPPF also acknowledges that planning policies and decisions should aim to achieve health, inclusive and safe places which:

"*a) promote social interaction, including opportunities for meetings between people who might not otherwise come into contact with each other – for example through mixed-use developments, strong neighbourhood centres, street layouts that allow for easy pedestrian and cycle connections within and between neighbourhoods, and active street frontages;*

b) are safe and accessible, so that crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion – for example through the use of attractive, well-designed, clear and legible pedestrian and cycle routes, and high quality public space, which encourage the active and continual use of public areas; and

c) enable and support healthy lifestyles, especially where this would address identified local health and well-being needs – for example through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food, allotments and layouts that encourage walking and cycling." (Paragraph 92)

National Planning Practice Guidance (Various)

16.7 The National Planning Practice Guidance (NPPG) includes guidance on the importance of addressing health and wellbeing through planning. The NPPG (para. 003 Reference ID: ID:53-003-20191101 (Revision Date 01 11 2019) defines a healthy place as:

"A healthy place is one which supports and promotes healthy behaviours and environments and a reduction in health inequalities for people of all ages. It will provide the community with opportunities to improve their physical and mental health, and support community engagement and wellbeing.

It is a place which is inclusive and promotes social interaction. The National Design Guide sets out further detail on promoting social interaction through inclusive design including guidance on tenure neutral design and spaces that can be shared by all residents.

It 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."

National Guidance and Strategies

The Marmot Review (2010)

16.8 Fair Society, Healthy Lives: A Strategic Review of Health Inequalities in England Post-2010 ('The Marmot Review') was published on 11 February 2010 (Institute of Health and Equity, 2010). This was the culmination of a year-long independent review into health inequalities in England. Six policy objectives were developed:

- Give every child the best start in life;
- Enable all children, young people and adults to maximise their capabilities and have control over their lives;
- Create fair employment and good work for all;
- Ensure healthy standard of living for all;
- Create and develop healthy and sustainable places and communities; and
- Strengthen the role and impact of ill health prevention.

16.9 The Marmot Review reported on a substantial body of evidence on the influence the built environment has on the determinants of health. According to the Commission on the Social Determinants of Health, "*Where people live affects their health and chances of leading flourishing lives. Communities and neighbourhoods that ensure access to basic goods, that are socially cohesive, that are designed to promote good physical and psychological wellbeing and that are protective of the natural environment are essential".*

16.10 In turn, the manner in which settlements are planned and designed contributes significantly to the health of the people who live in them. Bad planning and design results in poor health outcomes; conversely, good planning and design can be positively health-enhancing.

Health Equity in England: The Marmot Review 10 Years On (2020)

16.11 Health Equity in England: The Marmot Review 10 Years On was produced by the Institute of Health Equity and commissioned by the Health Foundation to mark 10 years on from the landmark study The Marmot Review. The report identified that since 2010:

- people can expect to spend more of their lives in poor health;
- improvements to life expectancy have stalled, and declined for the poorest 10% of women;
- the health gap has grown between wealthy and deprived areas; and
- place matters – living in a deprived area of the North East is worse for your health than living in a similarly deprived area in London, to the extent that life expectancy is nearly five years less.

16.12 The report identifies that actions are needed in all six domains set out in the 2010 Review to improve the lives people are able to lead and hence achieve a greater degree of health equity and better health and wellbeing for all. The report also sets out new recommendations in five of these areas, to account for profound changes in health and the social determinants since 2010.

Local Planning Policy

Central Lancashire Core Strategy (adopted in July 2012)

16.13 The Strategic Objectives for Health and wellbeing within the core strategy include the following:

- SO18 - To improve the health and wellbeing of all Central Lancashire's residents and reduce the health inequalities that affect the more deprived areas, particularly Inner East Preston.
- SO 19 - To improve access to health care, sport and recreation, open green spaces, culture, entertainment, and community facilities and services, including healthy food.
- SO 20 - To create environments in Central Lancashire that help to reduce crime, disorder and the fear of crime, especially in the more deprived areas which often experience higher levels of crime.

16.14 Policy 23 'Health' indicates that the council will integrate public health principles and planning and help to reduce health inequalities by requiring Health Impact Assessment on all strategic development proposals on Strategic Sites and Locations.

16.15 The Core Strategy also notes that *"Good design can help to shape places so that healthy lifestyles are encouraged for example, by supporting Green Infrastructure and safe, sustainable transport networks, and the provision of a well-designed network of healthcare services. Good design can promote community cohesion and significantly reduce the risk of crime."* It also notes that *"Climate change brings with it new health and wellbeing challenges. For example, more extreme weather events such as heat waves, floods and extreme cold weather spells are expected which have significant health impacts, especially on the elderly and infirm. Measures to promote healthier lifestyles, such as promoting walking and cycling, will lead to reductions in carbon dioxide emissions."*

South Ribble Local Plan (2012 – 2026 adopted in July 2015)

16.16 The Local Plan includes the following objectives associated with health:

- To improve the health and wellbeing of all residents and reduce the health inequalities that affect deprived areas of the borough;
- To improve access to health care, sport and recreation, open green spaces, and community facilities and services, including access to healthy food;
- To create environments in South Ribble that help to reduce crime, disorder and the fear of crime, especially in the more deprived areas which often experience higher levels of crime.

16.17 Policy H1 – Protection of Health, Education and Other Community Services and Facilities notes that *"Proposals and schemes, for all developments especially major sites for housing, employment or a range of uses should ensure appropriate health, cultural, recreational, sport and education facilities are provided either on site or in the surrounding area through CIL and/or developer contributions."*

16.18 In addition, specifically in relation to Pickering's Farm (allocated within the Plan) the objectives are "*To ensure this site is sustainable, community facilities (including a nursery and primary education provision), a small local centre and health care provision will need to be included within the infrastructure delivery schedule and provided through developer contributions. Green Infrastructure will be an integral part of the development to create a high quality attractive environment. This will include a 'village green' approach to provide a focal point in the development with linked green corridors providing cycleway, bridleway and footpath connections within the site and wider urban area and provide a buffer to adjoining communities."*

Penwortham Neighbourhood Plan 2016 – 2026

16.19 The Neighbourhood Development Plan includes the following objectives;

- Encouraging a thriving and prosperous community delivering an excellent quality of life

- Helping to promote a thriving and distinctive local economy meeting local employment needs.
- Supporting measured and appropriate sustainable development to allow all members of the community the opportunity to remain a part of it.
- Endorsing policies that have a positive effect on the environment such as reducing or removing flood risk, mitigate climate change, reduce carbon footprints and protect open spaces
- Maintaining open spaces and a high quality natural environment to promote healthier lifestyles.

16.20 There are specific polices relating to health including Policy 4: Types of Residential property which notes *"In addition to the requirements of Policy 7 of the Central Lancashire Core Strategy, new residential developments in Penwortham, in complying with Policy 3, should provide 10% of the affordable housing, as required by Policy 7 of the Central Lancashire Core Strategy, to be specifically for occupation by older people; and 10% of each development as single storey property suitable for use by older people."*

16.21 Policy 6: New Sporting Facilities notes that "*The Town Council will, in working through the Masterplan preparation for the Pickerings Farm site, seek to locate the new sporting facilities adjacent to the existing Community Centre... Additional sporting facilities requirements arising from residential developments in the Town area should be located adjacent to the Community Centre or be provided for by way of financial contribution to provide additional or enhanced facilities at the development site."*

16.22 Policy 8: Penwortham Cycle and Walking Route Penwortham Town Council notes that *"working with Lancashire County Council, South Ribble Borough Council, the developers of Pickerings Farm and local groups will protect from any form of development that would prejudice the delivery of, a dedicated circular route for cyclists and walkers..... The exact alignment of Penwortham Cycle and Walking Route through the Pickerings Farm site will be finalised in consultation with the site's developers."*

Lancashire Joint Strategic Needs Assessment

16.23 Lancashire's Joint Strategic Needs Assessment (JSNA) defines local health and wellbeing and its influences across the county. It makes recommendations about the issues that should be prioritised in commissioning plans to deliver appropriate services.

16.24 The JSNA Intelligence Report on Children and Young People in Lancashire (July, 2020) is the most recent update to the JSNA. The purpose of the report is to inform decision making and policies to ensure the needs of children and young people in Lancashire are met effectively. It sets out the key findings across several life stages from pre-natal up to 25 years old, and identifies cross-cutting themes of 'safeguarding and child protection' (ranging all areas where children need some form of social support, from mild cases such as needing advice right through to severe incidents of child mistreatment), 'children looked after' (most vulnerable children and young people), 'children with disabilities', 'youth offending', 'knife crime' and 'mental health'.

16.25 The 2020 JNSA Intelligence Report on health inequalities in Lancashire and South Cumbria is anticipated to be issued in 2021, however a supplementary data appendix is available. The data covers material deprivation (income maximisation, housing, environment, and employment), resilience deprivation and inequality (community cohesion, community safety, personal wellbeing, skills, and social capital), health behaviour (diet and nutrition, physical activity, and smoking), and health outcomes (cancer, chronic liver disease, circulatory disease, and excess winter deaths).

16.26 The JNSA has also issued an opensource interactive tool[1] which charts the relative health inequalities in Lancashire. The tool looks at mortality and admissions for several categories including various injuries, conditions and diseases.

Health and Wellbeing Strategy

16.27 The Lancashire Health and Wellbeing Strategy was developed by Lancashire's Health and Wellbeing Board, with the aim to promote walking together to achieve more effective collaboration and to learn from the collaboration. The overarching triple aim of the strategy is to improve outcomes, enhance quality of care, and reduce costs. The priorities highlighted through the JSNAs underpin the Health and Wellbeing Strategy. These are grouped into:

- Early years (schools, parenting, young people's mental health and wellbeing, young people not in education, employment, or training);
- Activating communities for health and wellbeing (healthy lifestyles, self-care, social isolation);
- Early help and managing demand (long term conditions, integration of services, unpaid careers, delayed transfers of care); and
- Wider determinants of health ('prevention' at scale, supporting independent living).

Other Relevant Policy, Standards and Guidance

Healthy Urban Planning Checklist (3rd Edition) (2017)

16.28 The checklist (London Healthy Urban Development Unit, 2017) (hereafter referred to as 'the HUDU Checklist') aims to promote healthy urban planning by ensuring that the health and wellbeing implications of local plans and major planning applications are consistently taken into account. Although created for London it has many principles that are applicable to any development, particularly where it is residential led.

16.29 The checklist is divided into four themes (see Table 16.1). Each theme contains a number of questions focussed on a planning issue. Under each theme are related health and wellbeing issues, many of which are identified in local joint strategic needs assessments and health and wellbeing strategies.

16.30 Other relevant guidance documents include:

[1] https://opensource.nexusintelligencenw.nhs.uk/health_inequalities_tool

- Health in Environmental Impact Assessment – A Primer for a Proportionate Approach (Institute of Environmental Management and Assessment, 2017)
- Addressing Human Health in Environmental Impact Assessment – Consultation Draft (International Association for Impact Assessment, 2019)
- Health Impact Assessment in Spatial Planning (Public Health England, 2020)

Assessment Methodology and Significance Criteria

Assessment Methodology

Scope of the Assessment

16.31 Scoping for this ES Chapter was undertaken within the EIA Scoping Report submitted in November 2018, which included information about the baseline and proposed methodology for assessment. The EIA Scoping Opinion received from SRC on 12th December 2018, did not include any comments specifically in relation to the scope of this chapter. The list of submission documents has also been agreed with SRBC, as outlined in Chapter 5.

16.32 Whilst there have been updates to the proposed development and EIA strategy since the Scoping Report was submitted the fundamental approach to this chapter has not changed. In addition to this, some of the baseline data and characteristics reported in the Scoping Report have since been updated and are referred to in this Chapter.

Baseline – Establishing Health Characteristics

16.33 The Health Characteristics section of the baseline provides details of current health and wellbeing issues in the study area population and aims to provide an indication of the distribution of vulnerable groups.

16.34 Different sources of information (noted below) present data at different geographical scales. The study area includes the following geographical areas for which baseline data is provided as relevant:

- Lancashire;
- South Ribble;
- The LSOA and Wards in which the site is located and in the surrounding areas including the residential areas of Penwortham, Bamber Bridge, south of Preston and north of Leyland.

16.35 Mapped data relating to vulnerable groups is provided for the latter (Refer to Appendices 16.1-16.9).

16.36 The following sources of information have been used to develop the baseline conditions:

- Active Lives Survey (Sport England, 2021);
- Lancashire Joint Strategic Needs Assessment (Lancashire County Council, 2020):

- Working-age population (WAP) final report (recommendations)
    - Lifestyle behaviours in the WAP
    - Long-term conditions in the WAP
    - The 50+ working-age population
    - Mental health in the WAP
    - Annual commentary 2017/18;
- Lancashire Insight (Lancashire County Council, 2020;
- Health and Wellbeing Strategy (Lancashire County Council and NHS, nd);
- Consumer Data Research Group maps (Consumer Data Research Group, 2017);
- Office for National Statistics, NOMIS Census Data (NOMIS, 2011);
- UK Census Data (UK Census Data, 2011);
- Local Authority Health Profiles (ONS, 2016);
- Local Health Profiles (Public Health England, 2019);
- Relevant baseline from environmental assessments; and
- Outputs of public and stakeholder consultation.

16.37 The baseline health characteristics and how the baseline may evolve in the future has also been identified. The evolution of the baseline is relevant to understand the likely health characteristics of specific receptor groups at the time significant effects may occur.

Identifying Sensitive Receptors

16.38 The geographical scope of this assessment is such that receptor groups which are likely to be significantly affected by the proposed development are included within the assessment. The scope of the HIA is therefore in part dependent upon the study areas identified by other disciplines (such as air quality, noise, transport and socio-economics) and the receptor groups within these study areas whose health may be adversely affected or benefitted by the proposed development.

16.39 The following groups have been identified as sensitive receptors to human health and are considered in the remainder of this chapter:

- Existing residents located adjacent to the site boundaries and those within the area immediately surrounding the site, primarily those within the wards of Charnock and Farington West (**Appendix 16.2**);

- Existing residents in the wider area of South Ribble where identified as applicable in other ES Chapters e.g the socio-economics assessment considers a 2 mile radius (Wards include Middleforth, Tardy Gate, Lostock Hall, Farington East, Golden Hill, Earnshaw Bridge, and Kingsfold);
- Existing community service users, including local schools, healthcare facilities and PRoW where appropriate to the particular health issue being considered (vehicular road users are considered from a connectivity perspective);
- New residents likely to live in the proposed development;
- New community service users likely to work or use facilities in the proposed development; and
- Construction workers during the demolition/construction of the proposed development.

16.40 Community service users have been identified as appropriate for the particular impact being considered. For example; schools are considered in relation to air quality, and PRoW and cycle route users are considered in relation to transport and visual impacts. The sensitivity of specific community service users to specific environmental effects are noted in the relevant chapters of the ES.

16.41 Furthermore, some groups are more vulnerable to health impacts from the proposed development and therefore disproportionally experience the effects of development. In addition to addressing the overall effects on health and wellbeing of the sensitive receptors noted above, the assessment identifies the impacts on specific vulnerable groups that could occupy the proposed development.

16.42 The vulnerable groups used in this assessment have been determined in consideration of the baseline health profile, local priorities and the characteristics of the proposed development. The vulnerable groups considered in this assessment are:

- Older people (65 and over);
- Children (aged 0-17);
- Those with a high level of deprivation, low income or unemployment;
- Groups with pre-existing health conditions;
- New parents or pregnant women;
- Groups with strong views / perceived risks or uncertainties regarding proposed development.

16.43 It is assumed that it is likely the first five groups listed (within the existing residents category) are more vulnerable to demolition/ construction impacts as they are more likely to be in the home during working hours.

Assessment Method

16.44 The approach to this assessment involves a desk-top investigation of health impacts.

16.45 The established definition of health from the World Health Organisation (WHO) is that "health is a state of complete physical, social and mental wellbeing and not simply the absence of disease or infirmity" . This assessment uses the WHO definition of health, recognising that although illness and disease (mortality and morbidity) are useful ways of understanding and measuring health, they need to be fitted within a broader understanding of health and wellbeing to be properly useful.

16.46 The definition of health reflects the understanding that an individual's inherited traits interact with lifestyle, community, environmental, social and economic factors as well as a much wider range of issues to determine their health outcomes, as shown in **Figure 16.1**.

16.47 Many of these 'determinants' can be influenced by the quality of people's living and working environments. Therefore, in planning for the proposed development it is understood that health is not only about avoiding environmental impacts but also contributing to the factors that improve wellbeing, it will include social cohesion, access to jobs, access to affordable housing and access to green infrastructure.

16.48 The assessment has been undertaken against determinants of health (or health issues). The determinants considered are presented within the structure from the HUDU checklist (see Table 16.1) and are based on national and local policy and guidance strategies.

16.49 Table 16.1 indicates the determinants of health that have been considered in this assessment and the associated pathways to specific health outcomes based upon themes in the HUDU planning checklist. By assessing the proposed development against these themes, it is possible to identify the positive or negative effect of the proposed development on the health and wellbeing of the sensitive receptors and provide a basis for setting actions for further mitigation and enhancement. Certain issues have been scoped out of the construction phase assessment (e.g. housing standards) where not considered applicable. Other scoping issues are noted in Table 16.1 to demonstrate how and where the HUDU defined 'planning issues' have been considered within the assessment.

16.50 The findings of this chapter have also drawn on various technical assessments included within the ES, including; air quality, noise, ground conditions, hydrology, flood risk and drainage, transport and socio-economics which have all considered potential risks to human health. The assessment undertaken is largely qualitative, except where data is readily available to enable quantification or where quantification of health impacts is undertaken in other assessments (e.g. other technical studies in this ES).

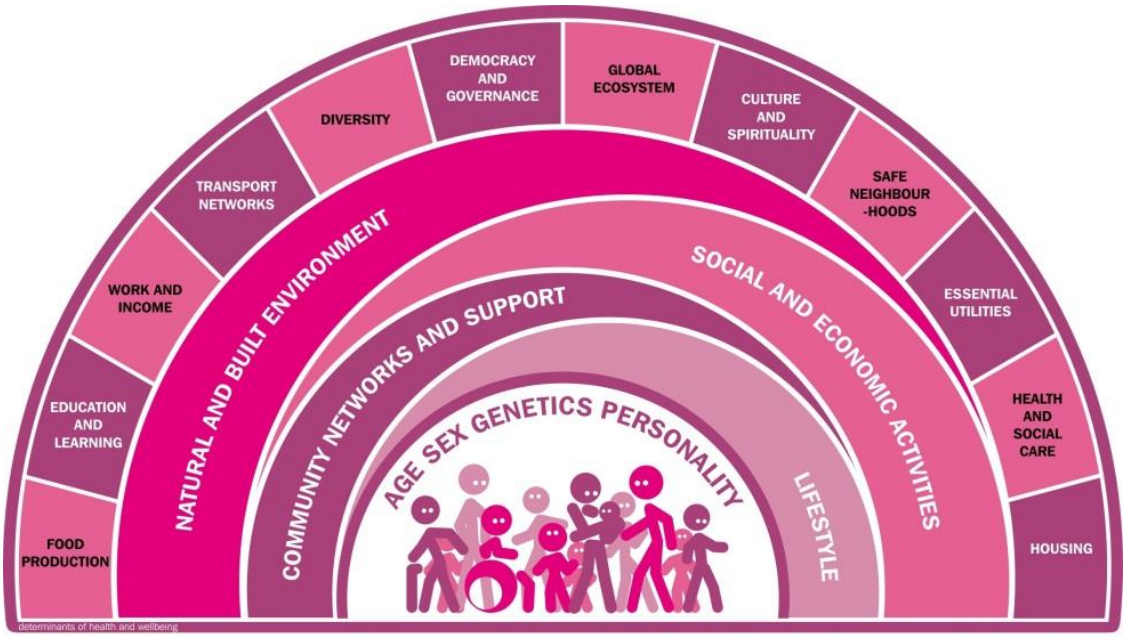

Figure 16.1 The Determinants of Health and Wellbeing (Peter Brett Associates, adopted from Dahlgren and Whitehead, 1991)

Table 16.1 Hudu Checklist – Assessment Framework

Theme	Planning Issue	Health and Wellbeing Issue	Scoping issues
Healthy Housing	• Housing design • Accessible housing • Healthy living • Housing mix and affordability	• Lack of living space - overcrowding • Unhealthy living environment – daylight, ventilation, noise • Excess deaths due to cold / overheating • Injuries in the home • Mental illness from social isolation and fear of crime	All issues considered.
Active Travel	• Promoting Walking and Cycling • Safety • Connectivity • Minimising Car Use	• Physical inactivity, cardiovascular disease and obesity • Road and traffic injuries • Mental illness from social isolation • Noise and air pollution from traffic	All issues considered.
Healthy Environment	• Construction • Air quality • Noise • Contaminated land • Open space • Play space • Biodiversity • Local food growing • Flood risk • Overheating	• Disturbance and stress caused by construction activity • Poor air quality - lung and heart disease • Disturbance from noisy activities and uses • Health risks from toxicity of contaminated land	• Biodiversity has been considered more broadly as 'access to nature'. Play space and open space are considered together along with physical recreation. It is considered that assessment against

Theme	Planning Issue	Health and Wellbeing Issue	Scoping issues
		• Physical inactivity, cardiovascular disease and obesity • Mental health benefits from access to nature and green space and water • Opportunities for food growing – active lifestyles, healthy diet and tackling food poverty • Excess summer deaths due to overheating	these issues, more accurately reflects potential health issues. • Overheating has not been explicitly considered as this is a detailed design issue. However, orientation and landscaping should consider this issue as the design progresses.
Vibrant Neighbourhoods	• Healthcare services • Education • Access to social infrastructure • Local employment and healthy workplaces • Access to local food shops • Public buildings and spaces	• Access to services and health inequalities • Mental illness and poor self-esteem associated with unemployment and poverty • Limited access to healthy food linked to obesity and related diseases • Poor environment leading to physical inactivity • Ill health exacerbated through isolation, lack of social contact and fear of crime	• Healthy workspaces have not been considered given there is limited information available regarding what the workspaces will be. However, workspace standards should be considered as the deign progresses. • Access to local food shops is considered together within access to social infrastructure. • Public buildings and spaces are considered within social infrastructure. • An additional category of Community Cohesion has been added given the proximity of the scheme to existing populations and existing PRoW connectivity

16.51 The likely significant effects within each health determinant, taking embedded mitigation into account, are considered for both construction and operational phases, where appropriate, and presented within the impact Tables 16.2-16.11.

Demolition and Construction phases

16.52 Due to the size of the development, a phased approach to construction will be undertaken. The sequencing of the delivery of the indicative phases is currently unknown. Should the application be approved, the Local Planning Authority is invited to impose a condition which requires a detailed phasing plan to be submitted to SRBC as part of the first reserved matters application. An indicative phasing plan for the outline residential-led application is presented at **Figure 5.9**.

16.53 The key potential impacts in relation to construction of the proposed development are in relation to noise and air quality (predominantly in relation to on site receptors), disruption to PRoW (with associated effects on connectivity, physical recreation and access to nature), highway safety and construction employment.

16.54 The impact tables note where existing or proposed receptors will be affected during construction.

Completed Development

16.55 For the completed development, the Transport Assessment, Air Quality Assessment and Noise Assessment used first occupation year emissions scenarios (2025) to ensure a conservative approach. Two additional sensitivity scenarios were undertaken: the first uses 2030 emission factors (the maximum output from the Emission Factor Toolkit (EFT) version 10) to best represent emissions in the development completion year (2031). The second scenario considers the dualling of Penwortham Way (planning ref. LCC/2020/0014).

16.56 For the purposes of the health impact assessment, the year of 2031 (completed development) has generally been used as the basis for the assessment however consideration has also been given to the impacts of phasing and the period between first occupation at the completed development in 2031 where relevant. As the health impact assessment draws upon other ES Chapters which consider different assessment years, where there are a variety of results presented for the assessment (e.g. transport and access) the scenario year which the effects relate to is noted where relevant in Tables 16.2- 16.8.

16.57 The key potential impacts in relation to completion of the proposed development are in relation to noise and air quality (predominantly in relation to on-site receptors), highway safety, fear of crime and disruption to PRoW (with associated effects on connectivity, physical recreation and access to nature). The increase in population of residents is likely to impact on specific local services and facilities, including schools, primary health facilities and open space. Impacts will also include the provision of new housing (including affordable housing) for the local area, and new amenities and facilities.

16.58 Cumulative and synergistic health impacts of this development for the full allocation of 1,350 units and other planned development have been considered in Chapter 18: Cumulative Effects.

Characterisation of Impact

16.59 An effect is deemed to be possible where there is a relevant source (aspect of the proposed development), pathway (route by which the source affects the receptor - causation) and receptor (recipient that can be affected by the source).

16.60 Qualitative judgement is needed where these factors are in place, to establish whether a significant effect is likely. This is related to the strength of the evidence base regarding causation, the magnitude of impact and the sensitivity of the receptors.

16.61 Whilst very localised issues may arise and warrant consideration within the application response, the key consideration with regard to significance is whether it is likely receptors will experience a change in health outcomes and whether this is likely to contribute or detract from providing a high level of protection to public health.

16.62 The following questions are relevant as noted below:

Strength of Evidence

- What is the strength of evidence base linking the aspect of the proposed development to health outcomes? (e.g. through use of Healthy people healthy places evidence tool (Bird et al, 2017))
- Have significant effects been identified in other assessments in the ES which are linked to human health (i.e. are environmental standards threatened)?;

Magnitude of Impact

- Is the effect at an individual or population level?;
- Is the impact linked to local public health priority objectives? (as identified through review of baseline sources);
- Is the impact reversible or irreversible?;
- Does the impact occur over the short (less than one year), medium (one to five years) or long (over five years) term?;
- Is the impact permanent or temporary?;
- Does the impact increase or decrease with time?;

Sensitivity of Receptors

- Are vulnerable groups (as identified for this assessment) likely to be affected?

Significance criteria

16.63 The IEMA 'Health in Environmental Impact Assessment – A Primer for a Proportionate Approach' notes the complexities to defining significance for population and human health. There is an absence of significance criteria or a defined threshold for determining significance for population and health in UK EIA practice.

16.64 In addition to this, the International Association for Impact Assessment (IAIA) 'Addressing Human Health in Environmental Impact Assessment – Consultation Draft' notes that whilst sensitivity and magnitude are part of determining health significance "*…they tend not to capture other information, on importance, desirability and acceptability, that is relevant to presenting a robust 'reasoned conclusion'. For this reason, a simple sensitivity v. magnitude matrix approach is not recommended*."

16.65 This guidance instead states that determination of significance should draw from a wider range of relevant information to support professional judgment including:

- Scientific literature;
- Baseline conditions for the population;
- Consultation for the project;
- Health priorities in the jurisdiction;
- Regulatory standards in the jurisdiction; and
- Policy context in the jurisdiction.

16.66 As such, the typical matrix of determining impact significant in EIAs, is therefore not applied in this health impact assessment. However, the generic significance criteria (noted in Chapter 2 of the ES) have been considered, taking into account the questions under 'Magnitude of Impact' and drawing on the wider range of relevant information as noted above.

16.67 Effects that are described as 'minor' or 'negligible' are determined to be 'Not Significant' and effects that are described as 'moderate', or 'major' are determined to be 'Significant'.

Assumptions/Limitations

16.68 As illustrated in **Figure 16.1**, there are many determinants that can have an impact on an individual's health. It is possible for the proposed development to create conditions that could lead to enhanced health outcomes, but there are other factors determining health that cannot be managed by the proposed development. These factors include:

- Performance of the wider economy;
- Existing health of the new population;
- Price of fresh food;

- National Government policy; and
- Genetic factors.

16.69 Census and other baseline health data characterises the study area at a single temporal point. Available census data is from 2011, which is likely to have evolved in the last 10 years. Data is often aggregated at different scales in different sources. For example, census data is aggregated at the lower super output area level in census data but regional trends presented within the JSNA. Therefore, comparisons can be limited.

16.70 There is a significant amount of literature regarding the evidence base for pathways between aspects of development and health outcomes. In order to provide a proportional assessment, a full literature review is not provided and the aspects considered in HUDU provide the starting point. However, a summary of pathways is provided in Table 16.1.

16.71 It should be noted that the focus of this assessment is public or population level health and individual occupational health and safety issues are not within the remint of this assessment.

Consultation

16.72 Consultation has been undertaken through the EIA scoping process since 2018. No specific comments were received in relation to the health assessment.

16.73 The public have been consulted through a process of consultation as described in the Statement of Community Involvement (SCI) submitted with the planning applications. Following an extensive visioning consultation in Summer 2018, a second tranche of consultation took place in Autumn/Winter 2018 in relation to the draft Masterplan. Key issues coming out of the process in relation to health are noted below:

- New walking and cycling routes were identified as a key priority by respondents, including in reference to health and wellbeing, sustainable travel and protection and enhancing of the environment – suggesting access to nature is important for local residents;
- There is some appetite for allotments locally;
- Provision of high quality homes was viewed as important along with housing for the elderly;
- The need for starter homes and more affordable homes became more popular in response to the masterplan;
- At the visioning stage a school was identified as the most popular service to be delivered on site, with health facilities being the most popular at the masterplan consultation stage;
- The top concerns regarding the project were related to traffic, followed by air quality and the loss of green space.
- A campaign group against the proposals has been established.

16.74 As outlined in the SCI submitted with the planning applications, comments and feedback were provided on the now withdrawn outline application for this scheme, and a 'revised' masterplan was prepared. A pre-application consultation was undertaken with SRBC on 19th July 2021, in which key changes to the masterplan were discussed. Key revisions include 30% overall provision of affordable housing.

Baseline Conditions

16.75 This section describes the baseline conditions of the study area. A description is given of the general health characteristics of the local population along with information under each of the HUDU Checklist themes.

16.76 The Site is located within the county of Lancashire, the borough of South Ribble and the wards of Charnock and Farington West (**Appendix 16.2**). The Lower Super Output Areas (LSOAs) in which the Site is situated are: South Ribble 005A, 006A, and 012C (**Appendix 16.1**). There are existing residents located adjacent to the site itself, with the LSOAs identified each containing 2,206, 1,440 and 1,521 residents, respectively (ONS, 2020).

16.77 There are a number of surrounding residential communities - Penwortham to the north west, with Preston 3 km to the north, Tardy Gate to the east with Bamber Bridge beyond and Farington to the south with Leyland beyond (Appendix 16.3).

16.78 The South Ribble Borough as a whole contained 110,788 residents in 2019.

General Health Characteristics and Distribution of Vulnerable Groups

Age profile

16.79 South Ribble (which encompasses Penwortham) has a smaller population of young working age people and a larger population of older working age and retirement age people, in comparison to England (**Figure 16.2**).

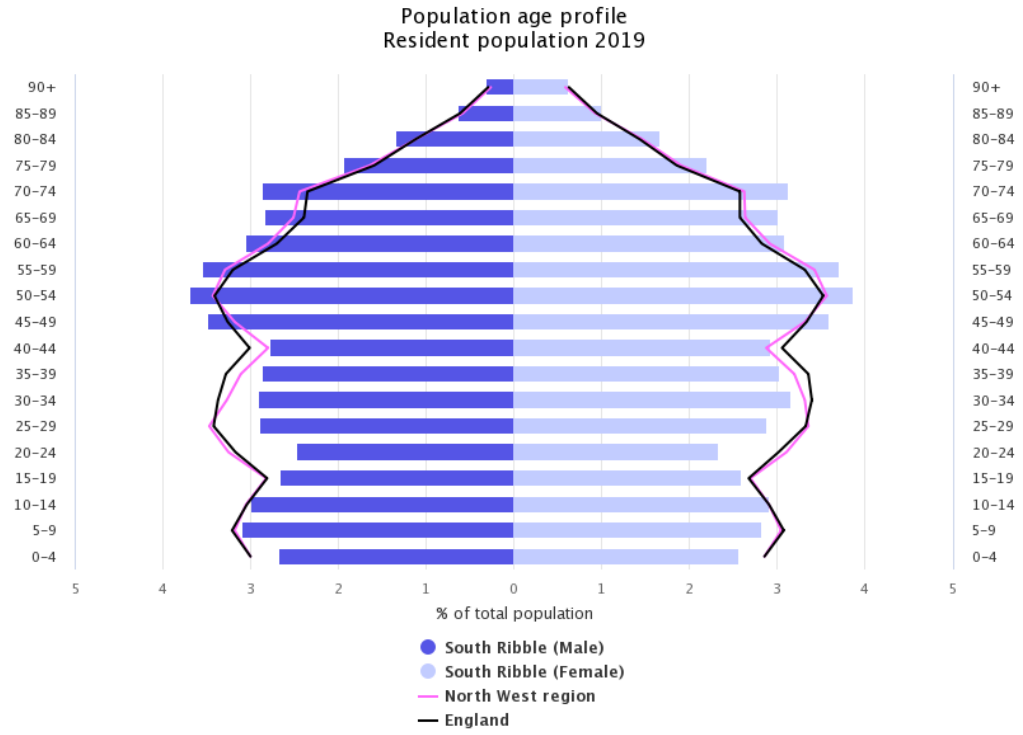

Figure 16.2 Age profile of South Ribble (Public Health England, 2019)

16.80 The distribution of people aged 65 and over, as shown in **Appendix 16.5**, is varied throughout the study area. Immediately to the west of the Site is a high proportion of older people and a lower proportion towards Preston to the north. In comparison, these areas had low and high percentages of young people aged below 18 (**Appendix 16.6**), respectively. The wards of Charnock and Farington West have a high percentage of people aged 45-59 and 65-69.

16.81 As noted in Chapter 15 Socio-economics, the South Ribble population has grown at a slower than average rate in comparison to national and regional averages. The working age population has shrunk by 4% between 2011 and 2019. In comparison, the retirement age population has increased by 22% in the same period. The dependency ratio, which is the number of non-working population (i.e. children 0-14 and persons 65+) to working population (i.e. 15-64 year olds) for South Ribble is projected to increase from 0.64 in 2021 to 0.85 in 2041, which suggests more residents retiring and difficulty for employers to recruit and replace the aging population. On a county level (Lancashire), the older population is estimated to continue to increase (JSNA, 2017). A larger population of retirement aged people in the future are likely to have specific housing needs including adaptable homes and single storey homes.

Deprivation, Income and Employment

16.82 As identified in Chapter 15 Socio-economics, key labour market indicators for South Ribble present a fairly positive picture, with high levels of economic activity amongst the resident base (83.7% compared to 79.5% nationally), and a lower than average unemployment rate (2.9%) (ONS, 2021). However, challenges remain in the borough,

including improving access to employment opportunities locally and in the wider Central Lancashire area for local residents, a below average resident population in employment with higher-level skills, as well as a working-age population which has contracted by 10% over nearly the last decade.

16.83 According to the Indices of Multiple Deprivation data (IMD) 2019 (**Appendix 16.4**), areas to the south of the Site (in Leyland), areas in the south of Preston, and areas in Penwortham adjacent to the site are some of the most deprived areas in the local area, as well as compared at a national level. To the west, are some of the least deprived areas. This correlates with employment rates (**Appendix 16.7**) (also refer to vibrant neighbourhood data).

16.84 Child poverty levels are significantly better than the England average in the ward of Charnock, they are also better than the averages for South Ribble and Lancashire.

Pre-existing health conditions

16.85 The north and north west region as a whole is highlighted as an area with low life expectancy in England. Life expectancy in South Ribble is 80.1 for men and 83.6 for women. These are comparable to the England averages and slightly higher than the figures for Lancashire. However, there is approximately 10.4 year disparity between the most and least deprived areas of South Ribble. Populations within Charnock are slightly lower than the England average for men (2 years) but higher for women (3 years).

16.86 In South Ribble, for adult health, overall the standard indicators are better than or similar to the England average, including under 75 mortality rate from all causes, cardiovascular disease, cancer, suicide rate, killed and seriously injured casualties on England's roads, emergency hospital admissions for intentional self-harm, diabetes diagnosis rate, dementia diagnosis rate, excess winter deaths, tuberculosis incidence, and sexually transmitted diseases).

16.87 As indicated by the PHE Local Health Profiles, the emergency hospital admissions are particularly high for all causes for the ward of Charnock, especially in regard to admissions for chronic obstructive pulmonary disease. All other indicators are similar to the England average, including incidence of all cancers, colorectal cancer, lung cancer and prostate cancer, except for incidence of breast cancer, which is better than the England average.

16.88 NHS Chorley and South Ribble CCG have the second highest spend on specialist mental health services per person, in comparison to surrounding NHS districts, which is higher than the national cost. There is also a higher estimated prevalence of common mental health disorders in NHS Chorley and South Ribble, in comparison to England (JSNA, 2017).

16.89 Within Lancashire, 65.9% of the adult population are classified as obese or overweight. Within this statistic it is estimated that the area of South Ribble has a significantly worse prevalence of obesity, at 72.6% which is worse than the England average (62.8%) (Local Authority Health Profiles, 2019). However, obesity in children (year 6) in South Ribble is similar to the England average (20.0%) at 20.2%.

16.90 The general health of South Ribble, according to the 2011 census is divided into five categories: very good, good, fair, bad, and very bad. 4% of respondents said that their health in general is bad and 1% responded that their health was very bad. Bad health responses are comparable to the north west and England average (4% and 5%, respectively), however the percentage of respondents that said their health was very bad is higher than the north west average (both 0.1%). Around 8% of respondents said that their day to day activities were limited a lot by long term health problems or disability. This is comparable to the England average but less than the average for the north west (10%) (Appendices 16.8 and 16.9).

Healthy Housing

16.91 As noted in Chapter 15 Socio-economics, South Ribble has aimed to meet a housing target of 417 dwellings per annum since 2003/04. Based on South Ribble Borough Council's annual monitoring data, over the 5 years from April 2015 to March 2020 South Ribble has delivered an average of 356 homes per annum, and delivered an average of 79 affordable homes per annum (22% of total new homes).

16.92 The average house price in the South Ribble is £161,000 and average earnings sits at £27,680. The Median house price to earnings ratio in South Ribble is therefore 5.8%. This compares to England's average ratio of 8.0%, the North West's average ratio of 5.8% and Lancashire average ratio of 5.48%. The lower-quartile house price to earnings ratio is the second highest in Lancashire at 6.6% meaning that house price affordability in South Ribble is challenging.

16.93 The JSNA notes that in comparison to the wider area, South Ribble has a middle level of housing affordability (JSNA, 2017), calculated in relation to median house prices and median earnings. Charnock has a relatively low average house price, however the average house prices in Farington West are significantly higher than the other wards in South Ribble.

Active Travel

16.94 The majority of households in South Ribble travel to work by car or van, this is similar to the wider area of Preston however people are more likely to walk in central Preston (Consumer Data Research Group, 2019).

16.95 As identified in Chapter 12 Transport, there are currently twenty-one Public Rights of Way (PRoWs) crossing or in the immediate proximity of the site. The majority of PRoWs are located in rural areas; however, five routes are situated wholly or partly in the Kingsfold residential area. These routes are provided with paved surfacing and street-lighting.

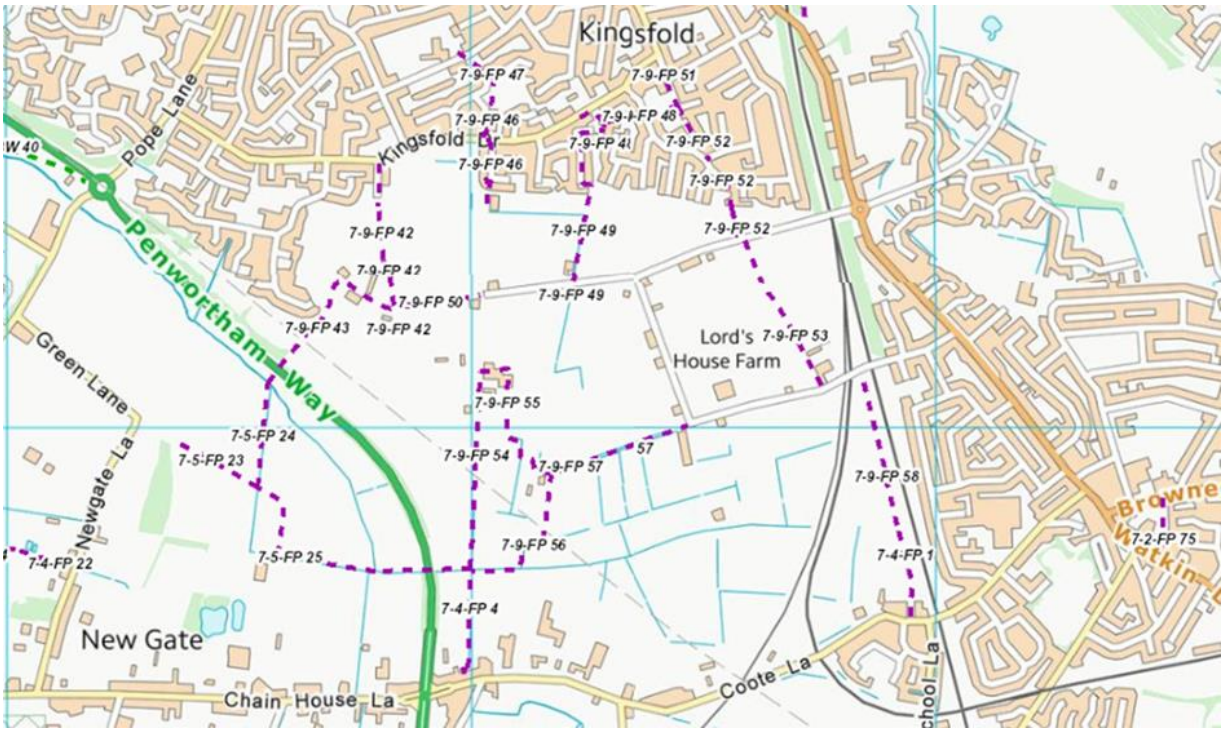

Figure 16.3 Public Rights of Way (Figure 9.2 illustrates how these have been considered in the visual assessment)

16.96 Several PROW are provided along single-lane rural carriageway (including Moss Lane) where there are no footways or street-lighting. The remaining PRoWs they are un-surfaced and un-lit routes situated in a rural location. Surface conditions vary along the lengths of each route.

16.97 Single-lane rural roads across and in the vicinity of the site include Bee Lane, Flag Lane, Nib Lane, Lords Lane, Moss Lane and Coote Lane/Chain House Lane. These routes are used by walkers and cyclists.

16.98 Chapter 7: Landscape and Visual notes that PRoWs 7-9-FP 42/46/49 and 52 link the residential neighbourhood of Kingsfold to the north into the site at Bee and Moss Lane and are well used. 7-9-FP 52/53 is also well used for access between Kingsfold and Tardy Gate however 7-9-FP 58/7-4-FP1 is not well walked. In combination with the lanes, and centred around Holme Farm, PRoW 7-9-FP 54, 55, 56 and 57 form a loop of PROW's within the landscape with 7-4-FP 4 and 25 allowing access from Nib/Moss Lane to the open countryside (across Penwortham Way) and Chain House Lane. However these routes do not appear to be well walked. A further important link to the open countryside is also achievable from Balshaw Farm in the north west corner of the site via 7-9-FP 43 and 24.

16.99 There are currently no bridleways within the site area or immediate environs. The nearest is 7-9-BW 24 located in Lower Penwortham, 1 km north of the site.

16.100 National Cycle Route 55 is located approximately 2.4 kilometres to the east of the site. National Cycle Route 62 is located approximately 2.6 kilometres to the north west of the site.

16.101 Further signed/advisory routes are located along Coote Lane/Chainhouse Lane/Church Lane/School Lane, approximately 600m to the south of the centre of the site and Wateringpool Lane, located approximately 1.4 kilometres to the east of the site. A traffic-free route is located along the Causeway which when complete will provide connections to National Route 55.

16.102 The nearest bus corridor serving the site is along the B5254 Leyland Road. The nearest bus stops to the site are located on Kingsfold Drive, approximately 800 m distance from the site..

16.103 The most accessible train station to the site is Lostock Hall. This is situated within the 2 km pedestrian catchment, as measured from the edge of the site.

16.104 Traffic accident data reviewed for the Transport Assessment process has not identified any untypical accidents.

Healthy Environment

16.105 The site has remained predominantly agricultural greenfield land since earliest mapping records. The surrounding area comprises a mix of largely agricultural land to the south and west, and residential housing to the north and east.

16.106 The site itself lies within the catchment of the River Ribble to which Mill Brook outfalls some 4.5 km to the north west of the site. The site is located within Environment Agency Flood Zone 1. As such the risk of flooding to the site and the magnitude of change is considered low. A number of pond features are noted on site including one that has been infilled on the sites north western boundary. Mill Brook is a notable feature in the south western corner of the site.

16.107 There are seven statutory designated sites for nature conservation within 10 km of the site and six non-statutory designated sites within 2 km of the site. The majority of habitats on site are considered to be widespread, unthreatened and resilient to project impacts' Notable habitats include parcels of orchard, woodland, trees and hedgerows.

16.108 As noted, there is a network of PRoW around the site which are used by locals for physical recreation and to access nature. Overall there has been slight increase of adult participation in sport and active recreation in Lancashire over the past 10 years or so. The increase is around 2% and averaging at 24% of adults in the county (Sport England, 2017). Activity levels changed significantly between the 2019-20 and 2018-19 periods, with a significant decrease in active adults and a corresponding significant increase in inactive adults. In South Ribble, 57.4% of the population are identified as 'Active' (150 minutes+ a week), 12.3% are 'Fairly Active' (30-149 minutes a week) and 30.3% are 'Inactive' (<30 minutes a week) (Sport England, 2019).

16.109 It should be acknowledged that the above data has been collected for the period mid-November 2019 to mid-November 2020 , during which time the UK has experienced the first eight months of coronavirus (Covid-19) restrictions. Sport England (2021) acknowledge the disruption this has caused to activity levels, in which the

number of active adults fell by 1.9% compared to 12 months earlier, whilst the number of inactive adults rose by 2.6% across the UK. Prior to the introduction of restrictions in mid-March 2020, activity levels in England were increasing. The types of activity changed, with increasing numbers of adults taking up activities such as walking, running and cycling, and at home alternatives emerged such as fitness classes. Their report found that the impact on activity levels was slightly greater amongst those from lower socio-economic groups.

16.110 As noted in Chapter 13 Air Quality and Dust, South Ribble Borough Council declared five Air Quality Management Areas (AQMA) within the Borough as annual mean concentrations of NO_2 (Nitrogen Dioxide – a pollutant from road traffic) have been above the relevant Air Quality Objective (AQO). The most relevant to the proposed development is described as;

- "AQMA No. 1 - The stretch of road between the junction of Priory lane/Cop lane and the A59 Liverpool Road, Penwortham. From Kingsway to the north of Priory Lane; Queensway to Kingsway along the A59 Liverpool Road and up to and including property number 32 of Cop Lane;
- AQMA No. 2 - An area encompassing the A6/A675 Victoria Road in Walton-le-Dale between the Bridge Inn/Ribble Crescent to the north and the Yew Tree Inn to the south; and
- AQMA 3 Lostock Hall– Junction of Leyland Lane, Watkin Lane and Brownedge Road, Lostock Hall."

16.111 The proposed development is located approximately 400 m west of AQMA 3.

16.112 Recent data from diffusion tube monitoring across the Borough indicates that the annual mean AQO for NO_2 was not exceeded during any location in 2019.

16.113 SRBC has concluded that concentrations of all other pollutants considered within the National Air Quality Strategy (including particulate matter) are currently below the relevant Objectives and as such no further AQMAs have been designated.

16.114 Existing receptors sensitive to both demolition / construction dust and operational air quality have been identified in the air quality assessment. There are multiple residential receptors within 350 m from the site boundary that may be sensitive to construction. Forty nine receptors were identified with regard to operational effects, 12 of these within the AQMA. The majority are residential with four schools also considered – Moor Hey which caters for primary and secondary age pupils with special educational needs, Cop Lane C of E Primary and St Gerad's RC Primary, Penwortham Girls High.

Vibrant Neighbourhoods

16.115 In terms of access to health services, there is an average level of accessibility on the Site, however there is notably a lack of access to the north west of the Site, in the ward of Walton-le-Dale West (CDRC, 2017). Chapter 15 Socio-economics notes that there are 13 GP surgeries within 2 miles of the proposed development. The average patient per full-time equivalent (FTE) GP ratio is 1,882, lower than the ratio of 1,908 for the NHS Chorley and South Ribble CCG area and higher than the NHS Greater Preston CCG patient FTE GP ratio of 1,642. St Fillan's Medical Centre and New Longton Surgery have notably high patient: GP ratios, both higher than 3,500. Nine of the 13 GP surgeries have a ratio lower than the Chorley and South Ribble CCG average. There is little capacity for new dental patients.

16.116 As noted in Chapter 15, there are 25 primary schools within 2 miles of the proposed development site. 4 of these are in Preston, with 21 in South Ribble. Existing information shows that there are 378 spare places across 19 of these schools. There are 16 secondary schools within 3 miles of the proposed development site. Overall there are 1,800 spare places across 15 of these schools, with over half of these located in Penwortham Priory Academy located 1.5 miles from the proposed development boundary.

16.117 As noted in Chapter 15, there were 59,000 jobs in South Ribble in 2019. Construction and manufacturing are the main sources of employment, together accounting for 31% of all employment in the Borough (compared to around 14% regionally and 13% nationally).

16.118 The closest food store to the site (Co-op Food) is located to the east of the Site, on Watkin Lane. It is approximately a 15 minute walk away from the Flag Lane access point.

Baseline Evolution

16.119 Whilst it is not possible to accurately characterise the health of the receptor groups at a defined point in time in the future, the following considerations are relevant when assessing the evolution of the baseline:

- Projected trends in health outcomes;
- Success of the strategic programmes for health improvement; and
- Projected changes in demographics including new communities being built.

16.120 The Lancashire Joint Strategic Needs Assessment describes the current trends with regard to health outcomes. They are:

- Populations are increasing, which may be positively impacted by large increases in housing completions in South Ribble;

- In the long term, the number of children will decline, and the working age population will decline, whereas the older population will increase;
- Life expectancy varies across areas, largely in relation to levels of deprivation and the increase has slowed or reversed;
- Rates of infant mortality are decreasing;
- South Ribble is relatively affluent and is becoming less deprived as a whole;
- All cause mortality rates have fallen over the past 10 years, in particular early death rates for heart disease, stroke, and cancer;
- Respiratory disease is one of the leading causes of premature deaths with Lancashire having a higher rate in comparison with England; and
- Gap in food poverty between most and least deprived areas is decreasing.

16.121 The socio-economics assessment identifies that the overall population growth in South Ribble is projected to be significantly lower than national projections with a reduction in working age population. This demographic is projected to increase the dependency ratio on South Ribble from 0.64 in 2016 to 0.85 in 2041 suggesting a tightening of the local labour market over time.

16.122 With regard to the specific population at the site, the socio-economics assessment has identified that the proposed development of 1,100 dwellings has the potential to accommodate around 3,600 residents once completed and fully occupied, with potential for 202 primary aged children and 97 secondary aged children.

16.123 It is estimated that 2,520 residents would be of working age (16-64), equivalent to 70% of the population. It is expected that the proposed development will be home to residents who will work across a range of occupations. The socio-economics assessment has concluded that the development is likely to encourage a higher skilled workforce to live in the area.

16.124 It is estimated that the proposed development's population is likely to include approximately 570 residents who would be considered higher skilled (senior managers and professionals). This assumption is based on looking at the occupational breakdown of residents from similar types of development in the local authority area.

16.125 The proposed development will include provision of a proportion of affordable housing and therefore those on lower oncomes could also form part of the new population.

Summary

16.126 Broadly, health indicators (e.g. life expectancy and employment rates) for South Ribble are comparable to national levels. There are pockets of disparity in the study area and the following points are notable:

- A higher number of over 65s are located to the west of the Site, which correlates with a high number of people reporting their day to day activities are limited by health problems. The working age population is shrinking;
- Within Preston to the north, Bamber Bridge to the east, and Leyland to the south, there are pockets of higher deprivation. This correlates to higher levels of unemployment and populations that consider their health to be bad or very bad. Deprivation is decreasing;
- Emergency hospital admissions are particularly high for the ward of Charnock, especially in regard to admissions for chronic obstructive pulmonary disease;
- Five Air Quality Management Areas have been designated with three close to the site. However, background levels were not found to be exceeding Air Quality objectives in 2019 within the air quality assessment;
- Some of the GPs in the area have a high ratio of patients to doctors and there is little capacity for new dental patients.
- There is a higher estimated prevalence of common mental health disorders in NHS Chorley and South Ribble, in comparison to England.

Embedded Mitigation

16.127 This section describes the measures which have been 'embedded' into the development. In addition, measures to engage the community that have already been implemented are described in the Statement of Community Consultation, which includes the preparation of an Awareness Leaflet distributed to all properties within the consultation boundary on 9th August to coincide with the submission of the outline application .

Demolition and Construction

16.128 Whilst the phasing plan is illustrative at this stage it can be assumed that the development will be implemented in a phased approach, thus construction effects anticipated are unlikely to affect single receptors for the entire construction period (approximately 8 years). With regards to air quality, the impact of individual phases on newly built proposed units will have a smaller dust source potential and the specific measures outlined within a Construction Environmental Management Plan (CEMP) would sufficiently mitigate the impacts at these proposed units as demonstrated within Chapter 13 Air Quality.

16.129 Best Practical Means with regard to noise will be followed on site considering the close proximity of existing residential receptors, which will be secured through the implementation of a CEMP.

The Completed and Operational Development

16.130 Mitigation embedded into the development parameter plans includes:

- Delivery of up to 1,100 homes
- 30% of homes to be affordable

- Delivery of a 2-form entry (FE) Primary School
- Mobility hub to promote alternative modes of transport including Active Travel
- Delivery of local services and potential employment space (use class E, F1, F2 and sui generis)
- Areas of public open space, play space and wildlife-friendly areas will be incorporated into the proposed development;
- Environmental buffers from Penwortham Way and the railway line;
- Retention of the majority of high and moderate value trees, important hedgerows, parcels of traditional orchard parcels, woodland adjacent to the site;
- The surface water drainage for the site will be embedded for the operational phase of the development. Overall development levels will be set to create overland flow paths to ensure that there is no increased risk of surface water flooding to existing property and, where achievable, any existing risk is mitigated;
- Existing Public Rights of Way will be retained along existing and diverted alignments to be determined within the detailed planning applications as the site is brought forward.

Assessment of Likely Significant Effects

16.131 This section sets out the predicted impacts and subsequent effects arising from the construction and occupation of the proposed development on human health. The assessment considers the embedded mitigation, which are incorporated into the parameter plans and reflected in the illustrative masterplan.

Demolition and Construction

16.132 Tables 16.2-16.4 summarise the assessment of significant effects to human health from the construction of the proposed development. Some of the health determinants categories are only applicable to the operation of the proposed development and therefore have not been considered within the demolition / construction assessment.

Table 16.2 The Assessment of the effects on the active travel health determinant from the construction of the proposed development

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Safety	As noted in Chapter 12 Transport, there would be increased volumes of traffic on the local highway network, particularly focussed on Penwortham Way and the A582 corridor associated with construction traffic as workers travel to and from the proposed development site each day along with the movement of materials by HGV. However, the volume of construction traffic, as estimated, is not expected to represent a significant increase in traffic. Chapter 12 Transport notes a temporary, short term moderate adverse effect on highway safety along the A582 Corridor and Bee Lane, however, it notes that overall the impacts of the construction phase would not be significant in respect of pedestrian/cycle amenity, driver delay and highway safety.	Receptor Groups: • Existing community service users – PROW / cycleways Vulnerable Groups: • All vulnerable groups identified	It is anticipated that there are likely to be adverse effects (not significant) on human health due to the increased risk of accidents. This is based on the fact that there will be additional construction traffic on the roads and accessing the site (albeit not a significant volume) rather than any specific safety issue identified which would be mitigated as noted.	The impact during the construction of the development will be appropriately managed via a proper planned and phased approach in terms of construction traffic and the phasing of development and this will be supported by a CEMP.
Connectivity	As noted in Chapter 12 Transport, there would be increased volumes of traffic on the local highway network, particularly focussed on Penwortham Way and the A582 corridor associated with construction traffic as workers	Receptor Groups: • Existing residents in the wider area of South Ribble	It is not anticipated that the construction phase will affect the ability of the existing or proposed community to access facilities or social networks and therefore no significant effects on	• Appropriate PRoW and cycle routes to be maintained throughout construction. • The impact during the construction of the

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
	travel to and from the site each day along with the movement of materials by HGV. There is potential for impact on pedestrians and cyclists in terms of delay, amenity and fear and intimidation. However, there is unlikely to be any links in the local highway network which would result in an increase in flows of 30% or more during the construction period. Overall impacts of the construction phase would not be significant in respect of pedestrian/cycle amenity, driver delay and highway safety.	• Existing community service users – PROW • New residents likely to live in the proposed development (when earlier phases are occupied) Vulnerable Groups: • All vulnerable groups identified	human health associated with connectivity are anticipated. However, it is anticipated that there are likely to be minor effects (not significant) on human health with regard to the presence of construction traffic which may deter some people from walking / cycling. (the impact on ability to access nature / recreation is considered under Access to Nature below)	development will be appropriately managed via a proper planned and phased approach in terms of construction traffic and the phasing of development and this will be supported by the CEMP. This would cover (through a condition): • Access arrangements to the site; • The estimated number of vehicles per day/week; • Details of the vehicle holding areas; • Wheel washing facilities; • Estimates for the number and type of parking suspensions that will be required; and • Details of any diversion, disruption or other abnormal use of the public highway during demolition, excavation and construction works.

Table 16.3 The assessment of effects on the healthy environment health determinant from the construction of the proposed development

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Air Quality	The undertaking of activities such as demolition, excavation, ground works, cutting, construction, concrete batching and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from haul road and highway surfaces. As noted in the air quality assessment, the potential risk of human health impacts is low from demolition and trackout and medium from earthworks and construction activities. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive area. Therefore, actual risk is likely to be lower than that predicted during the majority of the construction phase.	Receptor Groups: • Existing residents within the site and within the area immediately surrounding the site • New residents if earlier phases become occupied prior to completion of latter phases Vulnerable Groups: • All vulnerable groups identified	It is anticipated that there are likely to be substantial, potentially significant effects (without mitigation) on human health (stress / nuisance related) for receptors within 50 m of construction vehicle routes for limited periods of time during the construction period due to construction dust. This is more likely to affect vulnerable groups as they are most likely to be at home.	Refer to Table 13.31 within the air quality chapter. Implementation of measures through a CEMP as described within the Institute of Air Quality Management Guidance under the themes of communication, site management, monitoring, preparing and maintaining the site, operating vehicle machinery and sustainable travel, operations, waste management, demolition, earthworks and construction and trackout.
Noise	As noted in the noise assessment, it is inevitable with any major development that there will be some disturbance caused to those nearby during the clearance and construction phases of the site – limited to 15 years and localised to the nearest receptor to a particular phase.	Receptors Groups: • Existing residents within the site and within the area immediately surrounding the site • New residents if earlier phases become	It is anticipated that there may be potentially significant effects (without mitigation) on human health (stress / nuisance related) of receptors within 20 m of construction activity for limited periods of time during the construction period due to construction noise and	Best Practicable Means will be adopted to control noise on the construction site, which will be secured through a CEMP. The Chapter 14 Noise and Vibration has also identified that rotary bored piling be utilised, especially in close

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
	There are potentially significant effects associated with construction noise levels at four identified sensitive receptors– all within 20 m of the construction boundary. Additionally, there are potentially significant effects associated with vibration at these same receptors, if Driven Cast in Place piling operations and the use of vibratory rollers are undertaken within 20 m. No significant effects are anticipated with regards to construction generated road traffic, although any increase in noise levels will be limited to daytime hours only.	occupied prior to completion of latter phases Vulnerable Groups: • All vulnerable groups identified	vibration. This is more likely to affect vulnerable groups as they are most likely to be at home.	proximity to existing receptors along the boundary and on-site. It is proposed that that a CEMP will be produced and implemented including noise and vibration control measures.
Flood Risk	As noted in Chapter 11 Flood Risk and Drainage, flood risk to construction activities and the site and surrounding areas during construction will be mitigated and improved through an embedded surface water drainage strategy. Due to the low flow nature of the existing ditch network the effects of any deposition of silts and spillages of contaminants are likely to be highly localised and readily remediated. Such occurrences will be reduced by adoption of the CEMP.	Receptor Groups: • Existing residents within the site and within the area immediately surrounding the site, primarily those within the wards of Charnock and Farington West (Appendix 16.2) • Construction workers during the construction of the proposed development Vulnerable Groups:	No significant effects on human health anticipated.	Implementation of a surface water drainage strategy during construction and implementation of Pollution Prevention Guidance and good practice principles through a CEMP.

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
		• No specific groups identified		
Ground Conditions	Potential to disturb and release contaminants during construction, and exposure to unidentified sources of contamination hotspots within soils or groundwater and / or ground gas during construction process.	Receptor Groups: • Construction workers during the construction of the proposed development Vulnerable Groups: • No specific groups identified	Given that the site is largely greenfield nature it is considered unlikely significant sources of contamination will be encountered during development works. No likely significant effects on human health are anticipated. However, a programme of Ground Investigation will be undertaken prior to development and due consideration and mitigation for the management of localised hotspots will be required during the development process.	It is considered the risks posed to construction personnel can be adequately mitigated against by the use of full PPE (including personal gas protection measures) and the adoption of good hygiene and site practices.
Playspace open space, and physical recreation	PRoW may be diverted during construction with an associated impact on physical recreation.	Receptor Groups: • Existing community service users – PRoW Vulnerable Groups: • All vulnerable groups identified	It is anticipated that there are likely to be minor effects (not significant) on human health with regard to PRoW diversions and the presence of construction traffic which may deter some people from walking / cycling.	Appropriate PROW and cycle routes to be maintained throughout construction.

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
			(already noted in connectivity section).	
Access to Nature	As noted in Chapter 7 Ecology and Nature Conservation, there may be disturbance to certain species and habitat parcels through e.g. accidental damage, site run-off pollution or encroachment and soil compaction by construction machinery could result in loss of habitat. The presence of hoarding, plant (including lighting) storage areas and associated construction traffic within the site through the progression of the build, will affect the landscape character and certain viewpoints. Rural PRoW may be diverted during construction with an associated impact on ability to access nature.	Receptor Groups: • Existing community service users – PRoW • New residents likely to live in the proposed development in earlier phases Vulnerable Groups: • No specific groups identified	Whilst some localised effects on specific ecological features are anticipated, the key point of relevance to human health is whether access to nature is affected. It is anticipated that there are likely to be moderate synergistic effects on human health with regard to rural PRoW diversions and the presence of construction activities around the Lanes which may deter some people from accessing the natural environment.	Implementation of a CEMP to include measures to protect biodiversity, control noise and dust and consider PRoW diversions.

Table 16.4 The assessment of effects on the vibrant neighbourhoods health determinant from the construction of the proposed development

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Local Employment	The socio-economics assessment identifies that 275 temporary construction jobs will be created, increasing construction employment in South Ribble by 2.5%. This will provide a moderate benefit in the short term at local authority level.	Receptor Group: • Existing residents in the wider area of South Ribble Vulnerable Groups: • Those with a high level of deprivation, low income or unemployment	Given the distribution of jobs is likely to be spread geographically, it is not anticipated there will be any likely significant effects on human health associated with local employment.	Target local workers if possible.
Community cohesion	Given some objections have been raised with regard to the proposed development, there is potential for stress and uncertainty during the planning and construction phases.	Receptor Group: • Existing residents in the wider area of South Ribble Vulnerable Groups: • Groups with strong views / perceived risks or uncertainties regarding proposed development	There are likely moderate adverse effects on human health associated with stress to a vulnerable group during planning and construction phases.	Programme of communication, and implementation of further plans for engaging and seeking the views of the community

Completed Development

16.133 Tables 16.5-16.8 summarise the assessment of significant effects to human health from the completed development. Table 16.5 the assessment of effects on the healthy housing health determinant from the proposed development during operation.

Table 16.5: The Assessment of the effects on the Healthy Housing health determinant from the Proposed Development during operation

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Housing Design / Accessible Housing / Healthy Living	No commitment to housing design standards has been made at this stage given the outline nature of the application, however it is anticipated that 10% of units provided will be single story properties suitable for use by older people as outlined with local policy. C2 accommodation uses (residential institutions) are included in the proposals.	Receptors Groups: • New Residents Vulnerable Groups: • Older people (65 and over) • Groups with pre-existing health conditions	Due to the outline nature of the application, no commitment has been made at this stage. However, the proposed development must comply with the Building Regulations in force at the time of the Reserved Matters Applications, and therefore will be designed to be in accordance with Building Regulations (M4). It is therefore anticipated that no likely significant effects on human health are anticipated with regard to housing design.	Housing standards to be considered throughout detailed design including Building Regulations (M4), wheelchair accessibility and energy efficiency standards.
Housing Mix and affordability	The Socio-economics assessment reports a major beneficial effect on housing supply in South Ribble.	Receptors Groups: • New Residents Vulnerable Groups:	A minor beneficial effect on human health is anticipated due to contribution to housing supply and provision of	None identified.

	In accordance with local policy, 30% of homes will be affordable. No commitment to housing mix has been made at this stage given the outline nature of the application, however it will reflect local need.	• Those with a high level of deprivation, low income or unemployment	affordable housing – this particularly affects those with a high level of deprivation, low income or unemployment.	

Table 16.6: The assessment of effects on the active transport health determinant from the proposed Development during operation.

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Walking and Cycling	Chapter 15 Transport notes a negligible to minor adverse impact on pedestrian and cyclists on certain sections of the highway network in the vicinity of the proposed site access as a result of the new signalised crossing point. However, there is also potential for new pedestrian and cycle linkages between the site and surrounding area.	Receptor Groups: • Existing community service users, including (footpaths and cycleways) • New community service users (PROW and cycleways) Vulnerable Groups: • All vulnerable groups identified	There may be some delay to cyclists pedestrians on the highway network. However it is not anticipated there will be any likely significant effects on human health associated with this. Whilst some existing users of the rural PRoW may be deterred from using them (refer to 'access to nature') PRoW will be retained and new linkages created, therefore opportunities for walking and cycling in the area are likely to be improved with a minor beneficial (not significant) effect on health.	Retention of the existing PRoW network in the vicinity of the site. New pedestrian and cycle linkages between the site and the surrounding areas at well considered locations to encourage walking and cycling and improve connectivity. Consideration will be given to providing connectivity to the Penwortham Cycle and Walking Route at detailed design stages.

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Safety	Chapter 15 Transport does not note significant effects associated with safety.	Receptor Groups: • Existing community service users, including (PROW and cycleways) • New community service users (PROW and cycleways Vulnerable Groups: • All vulnerable groups identified	No significant effects on human health identified.	Road Safety Audit's and highways design measures to be implemented as appropriate.
Connectivity	Chapter 15 Transport notes that potential change in transport on the highways will be between 5 - 10%. No specific effects in relation to connectivity have been identified, and it is noted that the site benefits from an existing network of lanes which provide local access to properties within the site and provide part of an active travel network which also includes PRoW. New and existing active travel routes will converge at the mobility hub, a part of the proposed local centre, which will be the focal point for active and shared travel.	Receptor Groups: • Existing residents in the wider area of South Ribble • New residents • Existing community service users • New community service users Vulnerable Groups: • All vulnerable groups identified	PRoW will be retained, and new linkages created therefore connectivity in the area is likely to be improved with a minor (not significant) effect on health.	Retention of the existing PRoW network in the vicinity of the site; and New pedestrian and cycle linkages between the site and the surrounding areas at well considered locations to encourage walking and cycling and improve connectivity.

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Minimising Car Use	Measures will be implemented to encourage walking and cycling (new linkages) and sustainable modes of travel have been set out in the Framework Travel Plan (Vectos, 2021). The Access and Mobility Strategy includes the opportunities for shared travel routes for local and wider movement, a proposed new bus service. A range of modes of transport are considered, including public transport, 'classic' mobility (i.e. two wheels and two feet), car share, cycle-hire and emerging technologies. The developer will offer Personalised Travel Planning (PTP) for all future residents of the proposed development, which will help to identify specific travel needs individuals. The Travel Plan seeks to reduce single occupancy vehicle trips by 10% over its life.	Receptor Groups: • New residents Vulnerable Groups: • Older people (65 and over) • Children (aged 0-17) • Those with a high level of deprivation, low income or unemployment • Groups with pre-existing health conditions	Minor beneficial (not significant) effects on human health identified.	The developer would be required to review and revise the Travel Plan to set out additional measures, if necessary, to encourage residents to travel by sustainable modes.

Table 16.7: The assessment of effects on the healthy environment health determinant from the proposed development during operation

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Air Quality	The air quality assessment (Chapter 13) indicates the following: • When taking the proposed development into account - no risk of exceedance of annual mean AQO for NO_2, PM_{10} or $PM_{2.5}$ was identified at proposed residential receptors. • When taking the proposed development into account - Predicted annual mean NO_2 concentrations were not exceeded at any existing sensitive receptor location. • When taking the proposed development into account – predicted Annual mean PM_{10} and $PM_{2.5}$ concentrations were below the relevant AQO at all sensitive receptor locations.	Receptors Groups: • Existing Residents within and surrounding the site • Existing community service users (school) • New residents Vulnerable Groups: • All vulnerable groups identified	The air quality assessment (Chapter 13) indicates there will be no significant effects with regard to NO_2, PM_{10} or $PM_{2.5}$ on either proposed or existing residential receptors. Therefore no likely significant effects on human health are anticipated.	Measures for sustainable travel as noted in the travel plan, such as provision of electric vehicle charging points to encourage update of low emissions vehicles.
Noise	Upon completion of the proposals, it is anticipated that local road traffic noise levels may change as a result of development generated vehicle movements. As identified in the noise assessment, The Bypass will experience a long term major change in noise levels which are due to growth between 2018 and 2035 not related to the development. The vast majority of roads in the immediate vicinity of the Site are subject to a negligible adverse change in levels (comparing with and without the development in 2035). However, Leyland Road South, The Cawsey, Flag Lane and	Receptors Groups: • Existing Residents within and surrounding the site • New residents Vulnerable Groups • All vulnerable groups identified	Without good acoustic design and/or mitigation measures considered, there is a likely moderate effect on human health for new residents on certain areas of the site such as those along the boundaries closest to Penwortham Way.	Good acoustic design, particularly for areas closest to Penwortham Way, at the detailed design stage of proposals for the residential scheme in the form of consideration of the layout of the scheme (e.g. habitable rooms face away from noise sources), location and orientation of dwellings gardens and public open spaces, acoustic barriers, alternative

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
	Bee Lane are subject to long-term Moderate Impacts. Golden Lane (north of Millbrook Way), is subject to a long term, minor impact. However, the level of change is likely not to be perceptible to the human ear and the effect is considered to be negligible, therefore mitigation is not anticipated to be required. Given the outline nature of the outline application for the residential scheme, acoustic design has not yet been incorporated. Therefore, if dwellings are proposed on certain areas of the site, mitigation will be required, particularly for the areas surrounding commercial uses, areas to the south west of the site and areas with a line of sight to Penwortham Way (although environmental buffers are proposed along Penwortham Way and the Railway line).			ventilation, and consideration of glazing specification.
Play space, open space and physical recreation.	Playspaces, open spaces and PROW / cycleways will be incorporated into the proposed development with associated opportunities for physical recreation.	Receptor Groups: • Existing residents within the Site and within the area immediately surrounding the site • New residents likely to live in the proposed development Vulnerable Groups	There is anticipated to be a minor beneficial effect (not significant) on human health to the receptor groups.	Inclusive and thoughtful design of open and play spaces to encourage physical activity and social connections to be considered through detailed design. A Neighbourhood Plan Exercise Route will be included in the development plans. Consider potential and facilitation of flexible use of spaces.

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
		• All vulnerable groups identified		Retention and provision of PRoW. Consideration will be given to upgrading routes to bridleway status to accommodate equestrian activity.
Local Food Growing	Allotments will be provided on site to enable access for local residents to grow food. The parcel of traditional orchard has been excluded from the Site.	Receptor Groups: • Existing residents within the application site and within the area immediately surrounding the site • New residents likely to live in the proposed development Vulnerable Groups • Children (aged 0-17) • Those with a high level of deprivation, low income or unemployment	Minor (not significant) effects on human health are anticipated.	Further consideration of provision of allotments at detailed design stages.
Flood Risk	As noted in Chapter 11 Flood Risk and Drainage, following the incorporation of the embedded mitigation measures (implementation of a surface water drainage strategy), flood risk to the	Receptor Groups: • Existing Residents within and surrounding the site	No significant effects on human health anticipated.	No further mitigation above that embedded into the proposed development is required.

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
	development site and surrounding area is anticipated to be reduced.	• New residents Vulnerable Groups: • No specific groups identified		
Contaminated Land	Chapter 10 Ground Conditions reviewed the findings of the Phase 1 Desk-based review and Phase 2 site investigation, and identified that there is low risk of potential sources of contamination and low likelihood of linkage. It recommends that a series of site investigations are carried out to assess the chemical composition of sits soils and inform requirements for mitigation measures. Given the need to undertake further ground investigation and implement any remediation required as appropriate, (this may include removal of source contaminants, in-situ soil treatment, a clean soil capping layer or gas protection methods in buildings), no likely significant effects are anticipated.	Receptor Groups: • Existing Residents within and surrounding the site • New residents Vulnerable Groups: • No specific groups identified	No significant effects on human health anticipated.	Additional mitigation will be developed following a detailed programme of works to be undertaken prior to construction.
Access to Nature	As noted in Chapter 7 Ecology and Nature Conservation, there may be localised impacts to certain species and habitat parcels through e.g. through predation (cats), lighting disturbance and visitor pressure. The openness of the landscape, and its pattern of elements will be permanently lost to development, with the expansion of residential development and	Receptor Groups: • Existing community service users – PROW • New residents Vulnerable Groups:	Whilst some localised effects on specific ecological features are anticipated, the key point of relevance to human health is whether this affects access to nature. It is anticipated there are likely to be moderate	Biodiversity, landscaping and PRoW strategies to consider how local population will access nature.

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
	associated infrastructure becoming dominant features.	• No specific groups identified	adverse effects on human health associated with the urbanisation of a rural environment which is used by walkers and cyclists to access nature, albeit some PRoW are poorly used.	

Table 16.8 The assessment of effects on the social infrastructure health determinant from the proposed development during operation

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Health Services	The requirement for health services will impose additional demands and costs upon the existing provision. A fully occupied development would increase the average patient list size per FTE GP from 1,882 to 1,956, therefore rising higher than the average for the NHS Chorley and South Ribble CCG area.	Sensitive Receptors: • Existing community service users • New Community Service users Vulnerable Groups: • All vulnerable groups identified	A moderate effect is anticipated on human health with regard to access to healthcare given that there is limited capacity in existing services.	As outlined in the Supporting Planning Statement (Avison Young, 2021) SRBC have confirmed that healthcare contributions will be included within the Community Infrastructure Levy (CIL) payment, and therefore there will be no need for provision of new healthcare facility within the proposed local centre.
Education	As noted in the socio-economics assessment, there are 378 spare places in 19 existing primary schools within 2 miles of the	Receptor Groups:	No significant effects on human health anticipated.	As outlined in the Supporting Planning Statement (Avison Young, 2021), Application A proposes a

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
	proposed development. The proposed development also includes the provision of a 2 form entry primary school. It is estimated that this would provide an additional 420 school places, bringing the total number of spare primary school placed to 798. Therefore, based on existing capacity and in addition to the proposed 2 FE primary school, there is sufficient capacity from existing primary schools and the proposed primary school to accommodate pupils from the proposed development. There are 1,800 spare secondary school places in 15 schools within 2 miles of the proposed development. Therefore, there is sufficient capacity from secondary schools to accommodate pupils from the proposed development.	• Existing community service users • New Community Service users Vulnerable Groups: • Children (aged 0-17)		primary school on a site extending to approximately 2 hectares which is sufficient to accommodate the school area. The Developers will gift the land for the school at the time the school is required. This arrangement will be captured by the s106 Planning Obligation.
Access to Social Infrastructure, public buildings and spaces and local food shops	The proposed development comprises of a new local centre which could include a range of services and facilities such as a gym, pharmacy, shop, and community centre.	Receptor Groups: • Existing community service users • New Community Service users Vulnerable Groups: • All vulnerable groups identified	Given the uncertainty regarding land uses no likely significant effects on human health have been identified.	Consideration of infrastructure which fosters social connections throughout the detailed design process.

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
Local Employment	Chapter 15 Socio-economics notes that the proposed development is estimated to increase the population, with an estimated 2,520 of the population being working age and 570 being highly skilled. This will increase both the total and working age population of South Ribble by 3% and the highly skilled residents by 3%. This is identified as a moderate beneficial effect in socio-economic terms. The Employment and Skills Report (Avison Young, 2021) sets out a series of actions for the Developers and main contractor/house builders to enable job opportunities to be met locally, which have been agreed through consultation with SRBC and other stakeholders. Consideration will be given to maximisation job opportunities for people with disabilities, including learning disabilities, or people with long term health issues.	Receptor Groups: • Existing Residents within and surrounding the site • New residents Vulnerable Groups: • Those with a high level of deprivation, low income or unemployment	There are likely to be moderate beneficial effects on human health associated with an increase in the working age population and specifically the proportion of highly skilled people.	None identified.
Community Cohesion	Facilities as noted above will be provided as part of the development which will be available to all – a primary school, local centre, open and play spaces. However, there are some concerns within the local community and community integration should be facilitated.	Receptor Groups: • Existing Residents within and surrounding the site • New residents Vulnerable Groups:	Given the uncertainty around facilitation of community integration no likely significant effects on health have been identified.	Integration of communities should be considered throughout the design process. Secured by Design standard to be implemented through detailed design

Health Determinant	Potential Impacts	Receptor Group and Vulnerable Group	Likely Significant Effects	Additional Mitigation
		• All vulnerable groups identified		

Additional Mitigation / Enhancement Measures

Demolition and Construction

16.134 Additional mitigation has been detailed in tables 16.2 – 16.4 against the relevant health issue.

16.135 Of particular note for the demolition and construction phase is the Construction Environmental Management Plan (CEMP) has been produced prior to commencement on site and will be implemented during the construction stage. This includes measures to mitigate construction related impacts to human receptors such as noise and air quality.

The Completed and Operational Development

16.136 Additional mitigation for the completed development has been detailed in tables 16.5 – 16.8 against the relevant health issue.

Likely Residual Effects of the Development and their Significance

16.137 Significant effects identified in tables 16.2-16.8 have been taken forward into the table below.

Table 16.9: Residual Effects Summary

Description of Effect	Potential effect including significance	Mitigation	Residual Effect including significance
Construction and Demolition			
It is anticipated that there are likely to be moderate synergistic effects on human health with regard to rural PRoW diversions and the presence of construction activities around the Lanes which may deter some people from accessing the natural environment.	There are likely moderate adverse effects on human health.	Implementation of a CEMP which includes measures to protect biodiversity, control noise and dust and consider PRoW diversions.	Minor adverse (not significant)
There is potential for stress and uncertainty during the planning and construction phases with an associated effect on community cohesion. Whilst specific construction issues (e.g. noise and air quality) are not considered to be significant, it is recognised the synergistic	There are likely moderate adverse effects on human health during planning and construction phases.	Programme of communication, further plans for involving the community, including the actions listed within the Employment and Skills report (Avison Young, 2021).	Minor adverse (not significant)

Description of Effect	Potential effect including significance	Mitigation	Residual Effect including significance
effect of multiple construction related impacts may compound the issue.			
Completed Development			
The site includes areas where noise levels exceed relevant standards.	Without good acoustic design and/or mitigation measures considered, there could be a moderate significant effect on human health for new residents on certain areas of the site.	Good acoustic design at the detailed design stage of proposals in the form of consideration of the layout of the scheme, location and orientation of dwellings gardens and public open spaces, acoustic barriers, alternative ventilation, and consideration of glazing specification.	No significant effects on human health anticipated
The urbanisation of a rural environment which is used by walkers and cyclists to access nature.	It is anticipated there are likely to be moderate adverse effects on human health.	Biodiversity, landscaping and PRoW strategies to consider how local population will access nature.	Minor adverse (not significant)
The requirement for health services will impose additional demands and costs upon the existing provision. A fully occupied development would increase the average patient list size per FTE GP from 1,882 to 1,956, remaining higher than the average for the NHS Chorley and South Ribble CCG area.	A moderate effect is anticipated on human health with regard to access to healthcare given that there is limited capacity in existing services.	Provision is made in the proposed local centre for use class D1, which relates to Clinics and health centres as well as a number of other community amenities. Further discussion would be required between the applicant and the CCG to understand how best to accommodate additional demand for health care in accordance with the strategic health care vision. This may include on site provision or contribution to off-site provision through s106 contributions.	No significant effects on human health anticipated

Conclusions

16.138 This chapter presents the findings of a desk-based assessment of the human health impacts of the proposed development.

16.139 The chapter describes the methods used to assess the impacts, the relevant baseline health characteristics and the potential direct and indirect impacts on health and well-being of residential communities and other human receptor groups that may be affected during operation and construction of the proposed development. It also considers the mitigation measures embedded in the proposed development and those that are additionally required to prevent, reduce, or offset adverse effects and reduce health inequalities.

16.140 This assessment considers the wider determinants of human health, using the HUDU checklist as an assessment structure – drawing on the findings of other relevant chapters of this Environmental Statement and other relevant planning application documents.

16.141 It is anticipated that there will be likely significant effects associated with community cohesion during planning and construction predominantly affecting existing communities / PRoW users, however mitigation measures summarised in Table 16.9, including implementation of a CEMP and programme of communication will seek to reduce these effects to a not significant level.

16.142 Once the development is complete, noise levels and lack of capacity in health services could affect new residents and access to a reduction in opportunities to access nature could affect existing residents compared to the baseline situation. However, mitigation is available at future stages of planning and delivery to reduce these effects to a not significant level.

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