



White Cross Offshore Wind Farm Environmental Statement

Chapter 24: Human Health



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Appendices

Appendix 24.A: Baseline Information

Glossary of Acronyms

Acronym	Definition
AONB	Area of Outstanding Natural Beauty
LSOAs	Lower Super Output Areas
BEIS	Department for Business, Energy and Industrial Strategy
EIA	Environmental Impact Assessment
ES	Environmental Statement
HIA	Health Impact Assessment
IEMA	Institute of Environmental Management and Assessment
LSOA	Lower Layer Super Output Area
MMO	Marine Management Organisation
OHH	Ocean and Human Health
OHID	Office for Health Improvement and Disparities
ONS	Office for National Statistics
PHE	Public Health England
PPG	Planning Practice Guidance
PRoW	Public Right of Way

Glossary of Terminology

Defined Term	Description
Applicant	Offshore Wind Limited
Blue space	The collective term for rivers, lakes and coastal waters.
Cumulative effects	The effect of the Offshore Project taken together with similar effects from a number of different projects, on the same single receptor/resource. Cumulative effects are those that result from changes caused by other past, present or reasonably foreseeable actions together with the Offshore Project.
Department for Business, Energy and Industrial Strategy (BEIS)	Government department that is responsible for business, industrial strategy, science and innovation and energy and climate change policy and consent under Section 36 of the Electricity Act.
Project Design Envelope	A description of the range of possible components that make up the Offshore Project design options under consideration. The Project Design Envelope, or 'Rochdale Envelope' is used to define the Offshore Project for Environmental Impact Assessment (EIA) purposes when the exact parameters are not yet known but a bounded range of parameters are known for each key project aspect.
Development Area	The area comprising the Onshore Development Area and the Offshore Development Area
Environmental Impact Assessment (EIA)	Assessment of the potential impact of the proposed Project on the physical, biological and human environment during construction, operation and decommissioning.
Export Cable Corridor	The area in which the export cables will be laid, either from the Offshore Substation or the inter-array cable junction box (if no offshore substation), to the NG Onshore Substation comprising both the Offshore Export Cable Corridor and Onshore Export Cable Corridor.
Green infrastructure	A network of multi-functional green and blue spaces and other natural features, urban and rural, which is capable of delivering a wide range of environmental, economic, health and wellbeing benefits for nature, climate, local and wider communities and prosperity (NPPF, p67)
Green space	Any area of vegetated land, urban or rural.
In-combination effects	In-combination effects are those effects that may arise from the development proposed in combination with other plans and projects proposed/consented but not yet built and operational.
Landfall	Where the offshore export cables come ashore
Lower Layer Super Output Area	A geographic area that is automatically generated, across England and Wales, and which is as consistent in population size as possible. LSOAs have a minimum population of 1,000 and a mean population of 1,500

Defined Term	Description
Mean high water springs	The average tidal height throughout the year of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest.
Mean low water springs	The average tidal height throughout a year of two successive low waters during those periods of 24 hours when the range of the tide is at its greatest.
Mitigation	<p>Mitigation measures have been proposed where the assessment identifies that an aspect of the development is likely to give rise to significant environmental impacts, and discussed with the relevant authorities and stakeholders in order to avoid, prevent or reduce impacts to acceptable levels.</p> <p>For the purposes of the EIA, two types of mitigation are defined:</p> <ul style="list-style-type: none"> • Embedded mitigation: consisting of mitigation measures that are identified and adopted as part of the evolution of the project design, and form part of the project design that is assessed in the EIA • Additional mitigation: consisting of mitigation measures that are identified during the EIA process specifically to reduce or eliminate any predicted significant impacts. Additional mitigation is therefore subsequently adopted by OWL as the EIA process progresses.
National Grid Onshore Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of the electrical transformers.
National Grid Connection Point	The point at which the White Cross Offshore Windfarm connects into the distribution network at East Yelland substation and the distributed electricity network. From East Yelland substation electricity is transmitted to Alverdiscott where it enters the national transmission network.
Offshore Development Area	The Windfarm Site (including wind turbine generators, substructures, mooring lines, seabed anchors, inter-array cables and Offshore Substation Platform (as applicable)) and Offshore Export Cable Corridor to MHWS at the Landfall. This encompasses the part of the project that is the focus of this application and Environmental Statement and the parts of the project consented under Section 36 of the Electricity Act and the Marine and Coastal Access Act 2009
Offshore Export Cables	The cables which bring electricity from the Offshore Substation Platform or the inter-array cables junction box to the Landfall
Offshore Export Cable Corridor	The proposed offshore area in which the export cables will be laid, from Offshore Substation Platform or the inter-array cable junction box to the Landfall
Offshore Infrastructure	All of the offshore infrastructure including wind turbine generators, substructures, mooring lines, seabed anchors, Offshore Substation Platform and all cable types (export and inter-array). This encompasses the infrastructure that is the focus of this application and Environmental Statement and the parts of the project consented under Section 36 of the Electricity Act and the Marine and Coastal Access Act 2009

Defined Term	Description
Offshore Transmission Assets	The aspects of the project related to the transmission of electricity from the generation assets including the Offshore Substation Platform (as applicable)) or offshore junction box, Offshore Cable Corridor to MHWS at the landfall
Onshore Development Area	The onshore area above MLWS including the underground onshore export cables connecting to the White Cross Onshore Substation and onward to the NG grid connection at East Yelland. The onshore development area will form part of a separate Planning application to the Local Planning Authority (LPA) under the Town and Country Planning Act 1990
Onshore Export Cables	The cables which bring electricity from MLWS at the Landfall to the White Cross Onshore Substation and onward to the NG grid connection at East Yelland
Onshore Export Cable Corridor	The proposed onshore area in which the export cables will be laid, from MLWS at the Landfall to the White Cross Onshore Substation and onward to the NG grid connection at East Yelland
Onshore Infrastructure	The combined name for all infrastructure associated with the Project from MLWS at the Landfall to the NG grid connection point at East Yelland. The onshore infrastructure will form part of a separate Planning application to the Local Planning Authority (LPA) under the Town and Country Planning Act 1990
Onshore Transmission Assets	The aspects of the project related to the transmission of electricity from MLWS at the Landfall to the NG grid connection at East Yelland including the Onshore Export Cable, the White Cross Onshore Substation and onward connection to the NG grid connection at East Yelland
Project	The Project for the offshore Section 36 and Marine Licence application includes all components offshore of MHWS. This includes the infrastructure within the windfarm site (e.g. wind turbine generators, substructures, mooring lines, seabed anchors, inter-array cables and Offshore Substation Platform (as applicable)) and all infrastructure associated with the export cable route and landfall (up to MHWS) including the cables and associated cable protection (if required).
White Cross Offshore Windfarm	Up to 100MW capacity offshore windfarm including associated onshore and offshore infrastructure
White Cross Onshore Substation	A new substation built specifically for the White Cross project. It is required to ensure electrical power produced by the offshore windfarm is compliant with NG electrical requirements at the grid connection at East Yelland.
Windfarm Site	The area within which the wind turbines, Offshore Substation Platform and inter-array cables will be present
Works completion date	Date at which construction works are deemed to be complete and the windfarm is handed to the operations team. In reality, this may take place over a period of time.

24. Human Health

24.1 Introduction

1. This chapter of the Environmental Statement (ES) presents the effects of the White Cross Offshore Windfarm Project (the Offshore Project) on human health. Specifically, this chapter considers the potential impact of the Offshore Project seaward of Mean High-Water Springs (MHWS) during its Construction, Operation and Maintenance, and Decommissioning phases.
2. The ES has been finalised with due consideration of pre-application consultation to date (see **Chapter 7: Consultation**) and the ES will accompany the application to the Marine Management Organisation (MMO) on behalf of the Secretary of State for Business for The Department for Business, Energy and Industrial Strategy (BEIS) for Section 36 Consent and relevant Marine Licences under Marine and Coastal Access Act 2009.
3. This ES chapter:
 - Presents the existing environmental baseline established from desk studies, and consultation
 - Presents the potential environmental effects on human health arising from the Offshore Project, based on the information gathered and the analysis and assessments undertaken
 - Identifies any assumptions and limitations encountered in compiling the environmental information
 - Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process.

24.2 Policy, Legislation and Guidance

4. **Chapter 3: Policy and Legislative Context** describes the wider policy and legislative context for the Offshore Project. The principal policy and legislation used to inform the assessment of potential impacts on human health for the Offshore Project are outlined in this section.

24.2.1 National Policy Statement

5. National Policy Statements (NPSs) are statutory documents which set out the government's policy on specific types of Nationally Significant Infrastructure Projects (NSIPs) and are published in accordance with the Planning Act 2008.
6. Although the Offshore Project is not an NSIP, it is recognised that due to its size of up to 100MW and its location in English waters, certain NPS are considered

relevant to the Offshore Project and decision-making and are referred to in this ES.

7. The specific assessment requirements for human health are set out within the overarching NPS for Energy (EN-1) and NPS for Renewable Energy Infrastructure (EN-3) (DECC, 2011a, 2011b) and summarised in **Table 24.1**.
8. NPS EN-1 and EN-3 are in the process of being revised. A draft version of each NPS was published for consultation in September 2021 (BEIS, 2021a, 2021b). A review of these draft versions has been undertaken in the context of the ES chapter.
9. **Table 24.1** includes a section for the draft version of the NPS, where relevant, in which additional NPS requirements not presented within the current NPS EN-1 have been included. A reference to the particular requirement's location within the draft NPS and to where within this ES chapter or wider ES it has been addressed has also been provided. Minor word changes within the draft version which do not materially influence the NPS requirements have not been reflected in **Table 24.1** EN-3 (current and draft version) does not specifically include details on the assessment of health in relation to offshore wind farm projects.

Table 24.1 Summary of NPS EN-1 and EN-3 provisions relevant to human health

Summary	How and where this is considered in the ES
<p>"The energy NPSs are likely to contribute positively towards improving the vitality and competitiveness of the UK energy market by providing greater clarity for developers which should improve the UK's security of supply and, less directly, have positive effects for health and well-being in the medium to longer term through helping to secure affordable supplies of energy and minimising fuel poverty; positive medium and long term effects are also likely for equalities." - EN-1 paragraph 1.7.2, bullet point 3</p>	<p>Wider societal benefits from the Offshore Project have been assessed in Chapter 2: Need for the Project.</p>
<p>"To consider the potential effects, including benefits, of a proposal for a project, the Infrastructure Planning Commission (IPC) will find it helpful if the applicant sets out information on the likely significant social and economic effects of the development, and shows how any likely significant negative effects would be avoided or mitigated. This information could include matters such as employment, equality, community cohesion and well-being." - EN-1 paragraph 4.2.2</p>	<p>Chapter 23: Socio-Economics (including Recreation and Tourism) considers Tourism. Well-being is considered throughout this chapter.</p>
<p>"Issues relating to discharges or emissions from a proposed project which affect air quality, water quality, land quality and the marine environment, or which include noise and vibration may be subject to separate regulation</p>	<p>In agreement with the MMO, offshore air quality has been scoped out of the assessment and is not</p>

Summary	How and where this is considered in the ES
<p>under the pollution control framework or other consenting and licensing regimes.” - EN-1 paragraph 4.10.1</p>	<p>considered further in the Offshore Environmental Statement. Potential discharges and noise emissions are considered in Chapter 9: Marine Water and Sediment Quality and Chapter 22: Noise and Vibration.</p>
<p>“The planning and pollution control systems are separate but complementary. The planning system controls the development and use of land in the public interest. It plays a key role in protecting and improving the natural environment, public health and safety, and amenity, for example by attaching conditions to allow developments which would otherwise not be environmentally acceptable to proceed and preventing harmful development which cannot be made acceptable even through conditions. Pollution control is concerned with preventing pollution through the use of measures to prohibit or limit the releases of substances to the environment from different sources to the lowest practicable level. It also ensures that ambient air and water quality meet standards that guard against impacts to the environment or human health.” - EN-1 paragraph 4.10.2</p>	<p>The protection and improvement of the natural environment, public health and safety, and amenity are considered in Section 24.5.1 and Section 24.6.1.</p>
<p>“Energy production has the potential to impact on the health and well-being (“health”) of the population. Access to energy is clearly beneficial to society and to our health as a whole. However, the production, distribution and use of energy may have negative impacts on some people’s health.” - EN-1 paragraph 4.13.1</p>	<p>Cumulative effects are examined in Section 24.8.</p>
<p>“As described in the relevant sections of this NPS and in the technology specific NPSs, where the proposed project has an effect on human beings, the ES should assess these effects for each element of the project, identifying any adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate. The impacts of more than one development may affect people simultaneously, so the applicant and the IPC should consider the cumulative effect on health.” - EN-1 paragraph 4.13.2</p>	<p>Cumulative effects are examined in Section 24.8.</p>
<p>“The direct impacts on health may include increased traffic, air or water pollution, dust, odour, hazardous waste and substances, noise, exposure to radiation, and increases in pests.” - EN-1 paragraph 4.13.3</p>	<p>The potential for these effects was considered in the Scoping Report are addressed in:</p>

Summary	How and where this is considered in the ES
	<ul style="list-style-type: none"> • exposure to radiation (EMF) is considered for marine species in Chapter 9: Marine Water and Sediment Quality and Chapter 10: Benthic and Intertidal Ecology. • water pollution and hazardous waste and substances are considered in Chapter 9: Marine Water and Sediment Quality • Chapter 21: Noise and Vibration. • Chapter 22: Traffic and Transport.
<p>“New energy infrastructure may also affect the composition, size and proximity of the local population, and in doing so have indirect health impacts, for example if it in some way affects access to key public services, transport or the use of open space for recreation and physical activity.” - EN-1 paragraph 4.13.4</p>	<p>The potential for these effects was considered in the Scoping Report and are addressed in this chapter and:</p> <ul style="list-style-type: none"> • water pollution and hazardous waste and substances are considered in Chapter 9: Marine Water and Sediment Quality • Chapter 21: Noise and Vibration. • Chapter 22: Traffic and Transport.
<p>“Generally, those aspects of energy infrastructure which are most likely to have a significantly detrimental impact on health are subject to separate regulation (for example air pollution) which will constitute effective mitigation of them, so that it is unlikely that health concerns will either constitute a reason to refused consents or require specific mitigation under the Planning Act 2008. However, the IPC will want to take account of health concerns when setting requirements relating to a range of impacts such as noise.” - EN-1 paragraph 4.13.5</p>	<p>In agreement with the MMO, offshore air quality has been scoped out of the assessment and is not considered further in the Offshore Environmental Statement.</p> <p>The potential for these effects was considered in the Scoping Report are addressed within this chapter and Chapter 21: Noise and Vibration.</p>
<p>“The Government’s policy is to ensure there is adequate provision of high quality open space (including green</p>	<p>infrastructure, which</p>

Summary	How and where this is considered in the ES
<p>infrastructure) and sports and recreation facilities to meet the needs of local communities. Open spaces, sports and recreational facilities all help to underpin people’s quality of life and have a vital role to play in promoting healthy living. Green infrastructure in particular will also play an increasingly important role in mitigating or adapting to the impacts of climate change.” EN-1 paragraph 5.10.2</p>	<p>includes both green and blue space, is considered in this chapter in relation to Open space, leisure and play (access).</p>
<p>“Operational noise, with respect to human receptors, should be assessed using the principles of the relevant British Standards and other guidance. Further information on assessment of particular noise sources may be contained in the technology-specific NPSs. In particular, for renewables (EN-3) and electricity networks (EN-5) there is assessment guidance for specific features of those technologies. For the prediction, assessment and management of construction noise, reference should be made to any relevant British Standards and other guidance which also give examples of mitigation strategies.” - EN-1 paragraph 5.11.6</p>	<p>The potential for these effects was considered in the Scoping Report and addressed in Chapter 21: Noise and Vibration.</p>
<p>“The IPC should not grant development consent unless it is satisfied that the proposals will meet the following aims:</p> <ul style="list-style-type: none"> • avoid significant adverse impacts on health and quality of life from noise; • mitigate and minimise other adverse impacts on health and quality of life from noise; and • where possible, contribute to improvements to health and quality of life through the effective management and control of noise.” <p>- EN-1 paragraph 5.11.9</p> 	<p>The potential for these effects is addressed in Chapter 21: Noise and Vibration.</p>
<p>“During the construction, operation and decommissioning phases, developments can lead to increased demand for water, involve discharges to water and cause adverse ecological effects resulting from physical modifications to the water environment. There may also be an increased risk of spills and leaks of pollutants to the water environment. These effects could lead to adverse impacts on health.” - EN-1 paragraph 5.15.1</p>	<p>The potential for these effects was considered in the Scoping Report and are addressed in Chapter 9: Marine Water and Sediment Quality.</p>

24.2.2 National Planning Policy Framework

10. The National Planning Policy Framework (NPPF) (MHCLG, 2021) is the primary source of national planning guidance in England. Sections relevant to this aspect of the ES are summarised below in **Table 24.2.**

Table 24.2 Summary of NPPF Policy relevant to human health

Summary	How and where this is considered in the ES
<p>“Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives): [...] b) a social objective – to support strong, vibrant and healthy communities ... by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities’ health, social and cultural well-being.” – NPPF, Section 2, Paragraph 8</p>	<p>The potential for these effects was considered in the Scoping Report and are addressed in Section 24.5.1 and 24.6.1 which examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access).</p>
<p>“Planning policies and decisions should aim to achieve healthy, inclusive and safe places which: [...] 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 infrastructure¹ ...” – NPPF, Section 8, Paragraph 92</p>	<p>The potential for these effects was considered in the Scoping Report and are addressed in Sections 24.5.1 and 24.6.1 examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access). Sections 24.5.2 and 186, examine the construction effects and the operation and maintenance effects, respectively, for Community safety.</p>
<p>“To provide the social, recreational and cultural facilities and services the community needs, planning policies and decisions should: [...] b) take into account and support the delivery of local strategies to improve health, social and cultural well-being for all sections of the community” – NPPF, Section 8, Paragraph 93</p>	<p>The potential for these effects was considered in the Scoping Report and are addressed in Section 24.5.1 and 24.6.1 below which examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access).</p>

¹ The NPPF defines green infrastructure as ‘a network of multi-functional green and blue spaces and other natural features, urban and rural, which is capable of delivering a wide range of environmental, economic, health and wellbeing benefits for nature, climate, local and wider communities and prosperity (p67).

Summary	How and where this is considered in the ES
<p>“Planning policies and decisions should support development that makes efficient use of land, taking into account: [...]</p> <p>e) the importance of securing well-designed, attractive and healthy places.” – NPPF, Section 11, Paragraph 124</p>	<p>The potential for these effects was considered in the Scoping Report and are addressed in Section 24.5.1 and 24.6.1 below which examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access).</p>
<p>“Planning policies and decisions should ensure that developments: [...]</p> <p>f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience.” – NPPF, Section 12, Paragraph 130</p>	<p>The potential for these effects was considered in the Scoping Report and the Scoping Opinion (Case reference: EIA/2022/00002) and are addressed in Section 24.5.1 and 24.6.1 below which examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access). Sections 24.5.2 and 186, examine the construction effects and the operation and maintenance effects, respectively, for Community safety.</p>
<p>“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should: a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life. [...]” – NPPF, Section 15, Paragraph 185</p>	<p>The potential for these effects was considered in the Scoping Report. Noise was scoped out of the assessment on human health. It is considered in Chapter 21: Noise and Vibration of the ES.</p>
<p>“Planning policies should: [...]</p> <p>f) set out criteria or requirements to ensure that permitted and proposed operations do not have unacceptable adverse impacts on the natural and historic environment or human health, taking into account the cumulative effects of multiple impacts from individual sites and/or a number of sites in a locality” – NPPF, Section 17, Paragraph 210</p>	<p>The potential for these effects was considered in the Scoping Report. Cumulative effects are addressed in Section 24.8 and throughout the ES.</p>

24.2.3 Legislation

11. The Health and Safety at Work Act 1974 (HM Government of Great Britain & Northern Ireland, 1974) places duties on employers. Companies have a duty of care to persons in their employment and to persons not in their employment. In both cases, the requirement for the company to reduce risks to As Low As Reasonably Practicable (ALARP) is fundamental and applies to all activities within the scope of the Health and Safety at Work Act 1974.
12. The Control of Major Hazards Regulations 2015 relate to the management of threshold quantities of dangerous substances (HM Government of Great Britain & Northern Ireland, 2015).
13. The Health Protection Regulations 2010 provide local authorities with powers to deal with incidents or emergencies where infection or contamination presents, or could present, a significant risk to human health (HM Government of Great Britain & Northern Ireland, 2010b).
14. The Clean Air Act aims to reduce pollution from smoke, grit and dust and gives local authorities powers to designate smoke control areas (HM Government of Great Britain & Northern Ireland, 1993). The Air Quality Standards Regulations 2010 (HM Government of Great Britain & Northern Ireland, 2010a) transpose into English law the requirements of Directives 2004/107/EC and 2008/50/EC on ambient air quality (European Parliament and Council of the European Union, 2004, 2008) by the use of the Limit Values and Target Values in the directives.
15. Part III of the Environmental Protection Act 1990 discusses control of emissions (including dust, noise and light) that may be prejudicial to health or a nuisance (HM Government of Great Britain & Northern Ireland, 1990).
16. The International Convention for the Prevention of Pollution from Ships (MARPOL) includes regulations aimed at preventing and minimising, both accidental and operational, pollution from ships (International Maritime Organization, 1973).
17. The revised Bathing Water Directive 2006/7/EC safeguards public health and clean bathing waters (European Parliament and Council of the European Union, 2006). Bathing waters are also protected under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended) which transpose into English law the requirements of Water Framework Directive 2000/60/EC (European Parliament and Council of the European Union, 2000).

24.2.4 Policies across Devon County

18. Devon's Joint Health and Wellbeing Strategy 2020–25 (Devon Health and Wellbeing Board, 2019) sets priorities and overall direction for the Devon Health

and Wellbeing Board and local health, care and wellbeing organisations. The priorities relevant to this aspect of the ES are shown in **Table 24.3**.

Table 24.3 Summary of Devon's Joint Health and Wellbeing Strategy 2020–2025

Summary	How and where this is considered in the ES
2. Healthy, safe, strong and sustainable communities [by] creating conditions for good health and wellbeing where we live, work and learn	
b. Create conditions for good health, physical activity and social interaction	The potential for these effects was considered in the Scoping Report and the Scoping Opinion and are addressed in Section 24.5.1 and 24.6.1 below which examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access).
d. Help keep communities and individuals safe	The potential for these effects was considered in the Scoping Report and the Scoping Opinion Sections 24.5.1 and 24.6.1 examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access). Sections 24.5.2 and 186 , examine the construction effects and the operation and maintenance effects, respectively, for Community safety.
3. Focus on mental health [by] building good emotional health and wellbeing, happiness and resilience	
a. Reduce loneliness in all age groups	The potential for these effects was considered in the Scoping Report and the Scoping Opinion and are addressed in Section 24.5.1 and 24.6.1 below which examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access).
b. Identify people at risk and intervene to improve poor mental health as soon as possible	
d. Promote a positive approach to mental health and wellbeing	Sections 24.5.2 and 186 , examine the construction effects and the operation and maintenance effects, respectively, for Community safety.
4. Maintain good health for all [by] supporting people to stay as healthy as possible for as long as possible	
a. Prevent ill health by enabling people to live healthier lives	The potential for these effects was considered in the Scoping Report and

Summary	How and where this is considered in the ES
c. Support those with long-term conditions to maintain a good quality of life	the Scoping Opinion and are addressed in Section 24.5.1 and 24.6.1 below which examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access).
d. Support carers to improve and maintain their own health & wellbeing	

19. The North Devon Coast AONB Management Plan 2019-2024 has one objective and one policy, relevant to the Offshore Project, for Open space, leisure and play (access) (North Devon Coast AONB, 2019). These are shown in **Table 24.4**.

Table 24.4 North Devon Coast AONB Management Plan 2019-2024

Summary	How and where this is considered in the ES
Access, Health and Wellbeing	
To ensure sustainable access to the AONB for the benefit of the health and wellbeing of local people and visitors, consistent with the designation	
H2 Support new opportunities and reduce barriers to improve the health and wellbeing of local people and visitors	The potential for these effects was considered in the Scoping Report and the Scoping Opinion and are addressed in Section 24.5.1 and 24.6.1 below which examine the construction effects and the operation and maintenance effects, respectively, for Open space, leisure and play (access).

20. The Management Plan notes the link between blue and green space and the health and wellbeing of the resident and visiting populations. It notes that North Devon is known for its water sports including but not limited to surfing and that AONB Partnership members seek to meet the needs of different groups within the population, including children in local schools and older isolated people (North Devon Coast AONB, 2019, 54).
21. The Devon Suicide Prevention Action Plan 2021-2022 has eight strategic priorities (Public Health Devon and Devon County Council, no date). The relevant priority is shown in **Table 24.3**. This action plan aligns with PHE's cross-government outcomes strategy to save lives (PHE, 2012).

Table 24.5 Devon Suicide Prevention Action Plan 2021-2022

Summary	How and where this is considered in the ES
Prevention of suicide in Public Places	The role of the Offshore Project in protecting the health of the public is addressed in Sections 24.5.2 and 186 , which examine the construction effects and the operation and maintenance effects, respectively, for Community safety.

24.2.5 North Devon and Torridge Local Plan

22. Policy DM02 in the North Devon District and Torridge District Joint Local Plan covers environmental protection and makes explicit reference to health (Torridge District Council and North Devon District Council, 2018). The text that is relevant to the scope of this assessment is shown in **Table 24.6**.

Table 24.6 North Devon and Torridge Local Plan 2011-2031

Summary	How and where this is considered in the ES
Policy DM02: Environmental Protection	
Pollution (2) Development will be supported where it does not result in unacceptable impacts to:	
(a) atmospheric pollution by gas or particulates, including smell, fumes, dust, grit, smoke and soot;	Offshore air quality impacts are scoped out of the assessment as outlined in the MMO Scoping Opinion (reference: EIA/2022/00002).
(b) pollution of surface or ground water (fresh and salt) including rivers, canals, other watercourses, water bodies, wetlands, water gathering grounds including catchment areas, aquifers, groundwater protection areas, harbours, estuaries or the sea;	water pollution and hazardous waste and substances are considered within Chapter 9: Marine Water and Sediment Quality
(c) noise or vibration; and	Noise and vibration is considered within Chapter 21: Noise and Vibration
(d) light pollution (sky glow, light intrusion and light spillage), where light overspills on to areas not intended to be lit. Areas particularly sensitive to light pollution include tranquil areas of open countryside, in particular areas of nature conservation value and Exmoor National Park's Dark Sky Reserve.	Light pollution associated with the Windfarm Site considered within Chapter 19: Offshore Seascape, Landscape and Visual Amenity . Impacts related to the Onshore Project will be assessed in the separate ES submitted with the TCPA planning application.

24.2.6 Civil Society priority with regard to water safety

23. The National Water Safety Forum seeks to prevent accidental drowning fatalities in the UK by working in partnership to ensure consistent guidance for the safe

enjoyment and management of activities in, on and around water (National Water Safety Forum, 2015). The priorities of its National Drowning Prevention Strategy include:

Table 24.7 National Drowning Prevention Strategy 2016-2026

Summary	How and where this is considered in the ES
<p>National Drowning Prevention Strategy</p> <ul style="list-style-type: none"> • Every community with water risks should have a community-level water safety risk assessment and water safety plan • To better understand water-related self-harm • Increase awareness of everyday risks in, on and around water.” 	<p>Sections 24.5.2 and 186, examine the construction effects and the operation and maintenance effects, respectively, for Community safety.</p>

24.3 Assessment Methodology

24.3.1 Study Area

24. Details of the location of the Offshore Project and the offshore infrastructure is set out within **Chapter 5: Project Description**.
25. The human health study area is defined by the distance over which impacts on human health might reasonably be expected from the Offshore Project components (i.e. Offshore Export Cable Corridor and Landfall) may occur and by the location of any receptors that may be affected by those potential impacts. The wind farm itself is not included in this assessment as it is 30km away from the coast and will not have an effect on human health.
26. The Offshore Project makes landfall at Saunton Sands as shown in **Chapter 5: Project Description Figure 5.1**.
27. The study areas used in other chapters of the ES are of relevance, but do not necessarily define the boundaries of potential health impacts, including physical and mental health. The health chapter uses study areas to broadly define representative population groups, relevant to determining sensitivity, rather than to set boundaries on the extent of potential effects. The study area has been divided into the following geographic area classifications:
 - Site-specific (LSOAs: North Devon 005B)
 - Local (North Devon)
 - Regional (Devon County)
 - National (England) and International.

28. The site-specific level considers localised effects through statistics collected for Lower Layer Super Output Areas (LSOAs) (see **Appendix 24.A: Health Baseline Information**). The site-specific study area (LSOA North Devon 005B) encompasses the population near landfall and the nearshore/intertidal zone.
29. The LSOAs selected are not intended to indicate the area of effect, but rather the profile of the population potentially affected. North Devon 005B encompasses the population at Landfall. The nearshore/intertidal zone is a small area defined by the MHWS and the MLWS. People visit this area, but they do not reside in it and thus the assessment of offshore effects focusses on this single LSOA. The assessment of onshore effects will consider neighbouring LSOAs. The representative area for the population who surf and swim at Saunton Sands is the local area, North Devon. People travel from further afield to surf and to swim but, as above, this is a representative worst-case, and so potential effects in other local authorities or across the county will be no greater than those assessed.
30. This has been established using professional judgement and is shown in **Table 24.8**.

Table 24.8 Representative LSOAs for the Landfall (up to MHWS)

Offshore Infrastructure Element	LSOAs crossed by the Offshore Project	Representative LSOA of Population	Justification
Landfall (up to MHWS)	North Devon 005B	North Devon 005B	The Landfall (up to MWHS) is situated in North Devon 005B The LSOA North Devon 005B is in the Index Multiple Deprivation (IMD) decile 9.*
* Decile 1 represents the most deprived and decile 10 represents the least deprived.			

24.3.2 Population Groups

31. Nine broadly defined population groups have been identified within the study areas adopted by this ES. The population groups have been defined according to geography and potential vulnerability. The intention of categorizing populations in this way is to allow for consistent discussion across health issues. People falling into more than one group may be especially sensitive.

24.3.2.1 Geographic Population Groups

32. Three geographic population groups have been identified for this assessment of effects in the nearshore/intertidal zone. These range in scale from site-specific to countywide. The geographic population groups align with the study areas in **Section 24.3.1**:
- The population near landfall at Saunton Sands (site-specific);
 - The population of North Devon (local); and
 - The population of Devon (regional).
33. The most relevant geographic scale is used for each determinant of health. For localised effects this is the site-specific level, where data available allows this. For wider more diffuse effects, such as community safety a broader geographic scale is the most appropriate basis for assessment.

24.3.2.2 Vulnerable Population Groups

34. The following six population groups were identified as being particularly vulnerable to different aspects:
- Children and young people;
 - Older people;
 - People experiencing social isolation;
 - People on low income;
 - People with existing poor health (physical and mental health); and
 - People indirectly affected by self-harm attempts including family members and acquaintances of people who self-harm and project workers who may be involved in a rescue operation
35. The role of first responders is acknowledged in dealing with people who attempt to self-harm and the toll of a rescue or a salvage operation this can have on their physical and mental health. Their role is not affected by the Offshore Project, and they are not considered further in this assessment.

24.3.3 Temporal scope

36. The temporal scope has been defined in **Table 24.9**.

Table 24.9 Definitions of Timescales Used Within this Chapter

Timescale	Definition	Example
Very short-term	Effects measured in hours, days or weeks	Effects in the nearshore/intertidal zone due to open cut trenching.
Short-term	Effects measured in months	Effects in the nearshore/intertidal zone due to trenchless technique.

Timescale	Definition	Example
Medium-term	Effects measured in years	Local employment during construction of the Offshore and Onshore Projects.
Long-term	Effects measured in decades	The operational stage

24.3.4 Approach to Assessment

37. The assessment methodology for human health aligns with that presented in **Chapter 6: EIA Methodology**. This section outlines the methodology used for the identification and assessment of any likely significant effects by the Offshore Project on human health, as is required by the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended).
38. The methods identify effects that either provide, or fail to provide, a high level of protection to human health. This includes reasoned conclusions in relation to health protection, health improvement and/or improving services.
39. A framework is presented to determine the 'likelihood' of a project having an effect on health, and the 'significance' of an effect in terms of the EIA Regulations. Effects are considered with regard to the general population and vulnerable groups.
40. The methodology in this chapter follows the best practice by IEMA (Cave et al., 2017, Pyper et al., 2022a), IAIA & EUPHA (Cave et al., 2020), PHE (2020) and IPH (Pyper et al., 2021). A population health approach has been used, as it would be disproportionate to reach conclusions on the potential health outcomes of individuals. To take account of potential inequalities, where appropriate, conclusions on a particular health issue are presented for:
 - the general population (or for a defined area)
 - a second separate sub-population conclusion for relevant vulnerable group (as a single defined class of sensitivities for that issue).
41. In the terminology of EIA, these populations are the receptors upon which the effects of the impacts are being assessed.

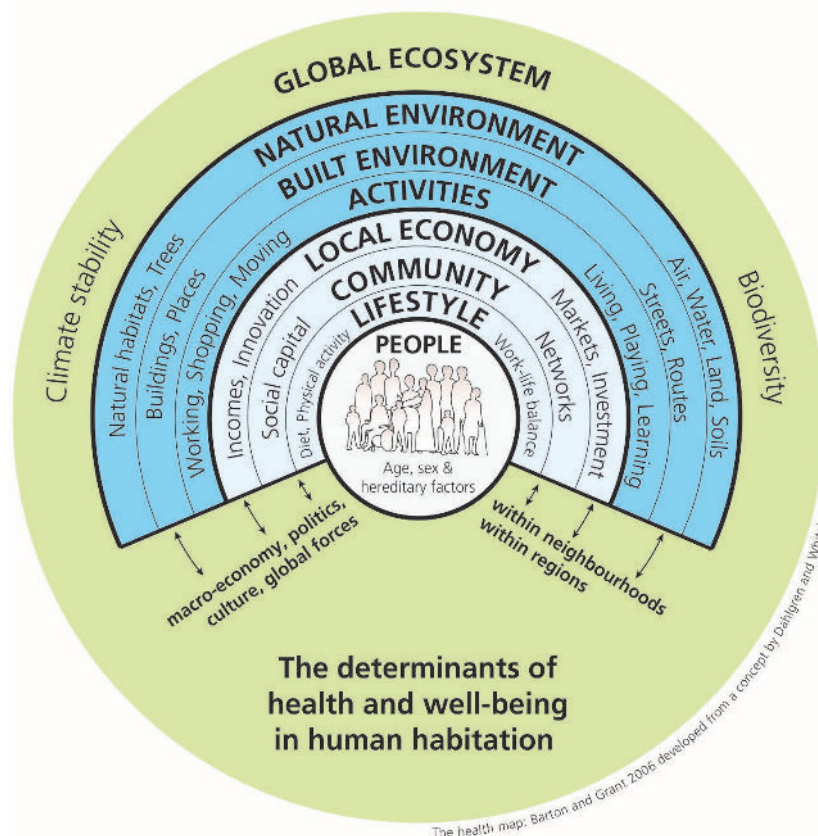
24.3.4.1 Health determinants

42. This chapter adopts the 'determinants of health' model, illustrated in **Plate 24.1** which shows how human health is affected by, and in turn affects, environmental, social, behavioural, economic and institutional factors. This is in line with Public Health England's HIA guidance (PHE, 2020) and with the World Health Organization's definition of health as 'a state of complete physical, mental

and social well-being and not merely the absence of disease or infirmity' (World Health Organization, 1946). This encompasses physical and mental health.

43. Changes in determinants have the potential to cause beneficial or adverse effects on health outcomes, either directly or indirectly. Change in a determinant of health are experienced differently by different population groups. As noted above, the assessment considers inequalities in health.

Plate 24.1 Wider determinants of public health



Source: based on the Dahlgren and Whitehead (1991) diagram as amended by Barton and Grant (2006).

44. This assessment uses the following categories for the determinants of health (from Pyper et al., 2022a):

- Health related behaviours
- Social environment
- Economic environment
- Bio-physical environment
- Institutional and built environment

24.3.4.2 Likelihood

45. The likelihood of a project having an effect is the first issue to consider as part of an assessment. A likely effect should be both probable and plausible:
- Plausible means there is a relevant source, pathway and receptor. Plausible effects relate to whether a causal relationship is adequately supported by the scientific literature
 - Probable relates to a qualitative judgement to exclude those effects that could only occur under certain very rare conditions, except where these relate to the Offshore Project's vulnerability to major accidents or disasters (as required by regulation 5(4) of the EIA Regulations 2017).
46. Likelihood considers the strength of evidence for there to be a source-pathway-receptor linkage in the particular circumstance of the Offshore Project. Source, pathway and receptor are defined as follows:
- A 'source' represents the features of the Offshore Project from which change originates (i.e. facility, structure, process, activity, vehicle fleet or workforce) and could lead to health outcomes of a receptor population
 - A 'pathway' describes the method or route by which the 'source' could affect the 'receptor' (either causation or association)
 - A 'receptor' is the recipient of an effect from the 'source', via the 'pathway'.
47. **Table 24.10** presents the 'Source-Pathway-Receptor' criteria, based on the definitions above, and shows how they identify plausible health effects.

Table 24.10 The 'Source-Pathway-Receptor' Model Used to Identify Plausible Health Effects

Source	Pathway	Receptor	Is there a plausible effect?	Justification
✓	✓	✗	No	No receptors which would be sensitive and vulnerable are present.
✓	✗	✓	No	There is no means of transmission from the source to a population.
✗	✓	✓	No	There is no source from which a potential effect could instigate.
✓	✓	✓	Yes	Identifying a source, pathway and receptor does not mean a health impact is a likely significant effect. The particular circumstance of the Offshore Project should also be considered, as should the potential significance of the effect.

From: Cave *et al.* (2017)

24.3.4.3 Impact assessment criteria

48. The terms used to define sensitivity and magnitude are outlined in **Table 24.11** and **Table 24.12**.

Table 24.11 Definition of terms relating to receptor sensitivity

Category/Score	Indicative criteria
High	high levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt.
Medium	moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt.
Low	low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt.
Negligible	very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt.
* Judgment based on most relevant criteria. It is likely in any given analysis that some criteria will span score categories.	

From IPH (Pyper et al., 2021) and IEMA (Pyper et al., 2022b)

24.3.4.3.1 General population and vulnerable populations

49. The following characteristics of how the 'general population' may differ from 'vulnerable group population' was considered when scoring sensitivity. These statements are not duplicated in each assessment and apply (as relevant) to the issues discussed for the Construction, Operation and Maintenance and Decommissioning phases.
- In terms of life stage, the general population can be characterised as including a high proportion of people who are independent, as well as those who are providing some care. By contrast, the vulnerable group population can be characterised as including a high proportion of people who are providing a lot of care, as well as those who are dependant.

- The general population can be characterised as experiencing low deprivation. However, the professional judgment is that the vulnerable group population experiences high deprivation (including where this is due to pockets of higher deprivation within low deprivation areas).
- The general population can be characterised as broadly comprised of people with good health status. Vulnerable groups, however, tend to include those parts of the population reporting bad or very bad health status.
- The general population tends to include a large majority of people who characterise their day-to-day activities as not limited. The vulnerable group population tends to represent those who rate their day-to-day activities as limited a little or limited a lot.
- Based on a professional judgement the general population’s resilience (capacity to adapt to change) can be characterised as high, whilst the vulnerable group population can be characterised as having limited resilience.
- Regarding the usage of affected infrastructure or facilities, the professional judgement is that the general population are more likely to have many alternatives to resources shared with the Offshore Project. For the vulnerable group population, the professional judgement is that they are more likely to have a reliance on shared resources.

Table 24.12 Definition of terms relating to magnitude of an impact

Category/Score	Indicative criteria*
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/injury outcomes; majority of population affected; permanent change; substantial service quality implications.
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications.
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications.
Negligible	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.
* Judgment based on most relevant criteria. It is likely in any given analysis that some criteria will span score categories).	

From IPH (Pyper et al., 2021) and IEMA (Pyper et al., 2022b)

50. Following guidance from IAIA/EUPHA (Cave et al., 2020) and IPH (Pyper et al., 2021), the EIA human health assessment is a qualitative analysis which draws on qualitative and quantitative inputs from other EIA topic chapters. This is the most appropriate methodology for assessing wider determinants of health proportionately, consistently and transparently.
51. The EIA health chapter conclusions comprise of EIA scores, such as major, moderate, minor or negligible. A narrative explaining this score with reference to evidence, local context and any inequalities is also provided.

24.3.4.4 Judgement Framework for Significance

52. The significance of the effect upon human health is determined by correlating the magnitude of the impact and the sensitivity of the receptor (see **Table 24.13**).

Table 24.13 Significance of an impact - resulting from each combination of receptor sensitivity and the magnitude of the effect upon it

		Negative Magnitude				Beneficial Magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Sensitivity	High	Major	Major	Moderate	Minor	Minor	Moderate	Major	Major
	Medium	Major	Moderate	Minor	Minor	Minor	Minor	Moderate	Major
	Low	Moderate	Minor	Minor	Negligible	Negligible	Minor	Minor	Moderate
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

53. Where the matrix offers more than one significance option, professional judgement is used to decide which option is most appropriate. This is based on recent guidance (Cave et al., 2020, Pyper et al., 2021, Pyper et al., 2022b) and can be applied consistently to all determinants of health. **Table 24.11** and **Table 24.12** guide the narrative conclusions. Considering the sensitivity of the receptor and the magnitude of the impact is consistent with other EIA topics. Other information sources also inform any professional judgement on significance to enable a reasoned and robust conclusion on population health. These are:

- scientific literature
- baseline conditions
- health priorities
- consultation responses
- regulatory standards
- policy context.

54. The professional judgement on significance with respect to human health thus follows the European Commission definition of EIA significance that:

"the assessment of significance relies on informed experts' judgements about what is important, desirable or acceptable with regards to changes triggered by the Project in question. These judgements are relative and must always be understood in their context ..." (European Commission, 2017: 42).

Table 24.14 Health Significance Methodology Criteria

Category/Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
Major (significant)	<p>The narrative explains that this is significant for public health because (select as appropriate):</p> <ul style="list-style-type: none"> • Changes, due to the project, have a substantial effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size (magnitude and sensitivity levels), and as informed by consultation themes among stakeholders, particularly public health stakeholders, that show consensus on the importance of the effect. • Change, due to the project, could result in a regulatory threshold or statutory standard being crossed (if applicable). • There is likely to be a substantial change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a causal relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant study area are of specific relevance to the determinant of health or population group affected by the project.
Moderate (significant)	<p>The narrative explains that this is significant for public health because (select as appropriate):</p> <ul style="list-style-type: none"> • Changes, due to the project, have an influential effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size, and as informed by consultation themes among stakeholders, which may show mixed views. • Change, due to the project, could result in a regulatory threshold or statutory standard being approached (if applicable). • There is likely to be a small change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a clear relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant study area are of general relevance to the determinant of health or population group affected by the project.

Category/Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
Minor (not significant)	<p>The narrative explains that this is not significant for public health because (select as appropriate):</p> <ul style="list-style-type: none"> • Changes, due to the project, have a marginal effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size of limited policy influence and/or that no relevant consultation themes emerge among stakeholders. • Change, due to the project, would be well within a regulatory threshold or statutory standard (if applicable); but could result in a guideline being crossed (if applicable). • There is likely to be a slight change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is only a suggestive relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant study area are of low relevance to the determinant of health or population group affected by the project.
Negligible (not significant)	<p>The narrative explains that this is not significant for public health because (select as appropriate):</p> <ul style="list-style-type: none"> • Changes, due to the project, are not related to the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size or lack of relevant policy, and as informed by the project having no responses on this issue among stakeholders. • Change, due to the project, would not affect a regulatory threshold, statutory standard or guideline (if applicable). • There is likely to be a very limited change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is an unsupported relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant study area are not relevant to the determinant of health or population group affected by the project.

From IPH (Pyper et al., 2021) and IEMA (Pyper et al., 2022b)

55. The assessment provides reasoned conclusions for the professional judgement as to whether in EIA terms an effect is significant, or not. Where appropriate, variation expressed in each evidence source has been reported. This approach is considered proportionate and in line with best practice for the consideration of human health in EIA.
56. For the purposes of the EIA, major and moderate effects are considered to be significant. In addition, whilst minor effects are not significant in their own right, it is important to distinguish these from other non-significant effects as they may contribute to significant cumulative effects.
57. Mitigation has been agreed in order to reduce the significance of an effect where significant adverse effects are identified.

58. The residual effects represent the output of iterative assessment, and they include consideration of the mitigation measures.
59. The health assessment takes as its starting point the residual effects as assessed and determined in other relevant EIA topic chapters. This takes account of the relevant embedded and standard good practice mitigation.

24.3.5 Worst-Case Scenario

60. In accordance with the assessment approach to the Project Design Envelope, or 'Rochdale Envelope', set out in **Chapter 6: EIA Methodology**, the impact assessment for human health has been undertaken based on a realistic worst-case scenario of predicted impacts. The Project Design Envelope for the Offshore Project is detailed in **Chapter 5: Project Description**.
61. **Table 24.15** presents the realistic worst-case scenario elements considered for the assessment of human health. As noted in **Chapter 5: Project Description**, cable installation methodology at the landfall will be selected based on a comparative assessment of environmental, commercial and technical factors. It is assumed that suitable technologies will include a mix of open cut trenching and trenchless technology such as Horizontal Directional Drilling (HDD). Each approach is considered in the **Table 24.15**.

Table 24.15 Definition of realistic worst-case scenario details relevant to the assessment of impacts in relation to human health

Impact	Realistic worst-case scenario	Rationale
Restriction, or disruption, of access to nearshore/ intertidal zone at Landfall (up to MHWS).	Landfall constructed using open cut trenching on the beach. Maximum temporary works duration construction activities will take a maximum of 30 days and from MHWS to MLWS will require 1 x 24hr continuous working period.	Health and safety requirements will impede access to nearshore/ intertidal zone. Disruption from the single period of 24-hour working.
	Landfall constructed using trenchless technology such as HDD. Maximum temporary works duration: 10 days mobilisation, 80 days drilling, 10 days de-mobilisation.	Disruption due to Health and safety requirements will impede access to nearshore/ intertidal zone during the sub-tidal trenchless exit activity (which will take place during the 80-day work programme).
	Vehicle and plant access requirements	Health and safety requirements will impede access to nearshore/ intertidal zone
Minimal engagement of Project workforce	Member of public attempts to self-harm in water at Saunton Sands.	Include all scenarios in engaging with the public for safety of workforce

Impact	Realistic worst-case scenario	Rationale
with beach users at Saunton Sands		and protection of the public.

24.3.6 Summary of Mitigation

24.3.6.1 Embedded Mitigation

62. This section outlines the embedded mitigation relevant to the human health assessment, which has been incorporated into the design of the projects (**Table 24.16**). Where other mitigation measures are proposed, these are detailed in the impact assessment

Table 24.16 Embedded mitigation measures relevant to the human health assessment

Component/Activity	Mitigation embedded into the design of the Offshore Project
Strategic approach to delivering White Cross	The Offshore Project has undergone an extensive site selection process which has involved incorporating environmental considerations in collaboration with the engineering design requirements.
EMF	Embedded design for EMF comprises the shielding part of the cable which is designed to the ICNIRP guidelines (1998, 2010). Embedded mitigation through the burial of cables, as EMF decreases rapidly with distance and by burying the cables, eliminates the magnetic field and creates distance between any receptor at the surface (even directly above the cables), resulting in a lower field than what the cable itself generates.
Communication and engagement	Communication and engagement activities to ensure that visitors to Saunton Sands are aware of the timing and extent of construction and/or operation and maintenance activities in the nearshore/intertidal zone.
Access	Maintaining access to Saunton Sands during construction and/or operation and maintenance – no closure of the beach.
Health and safety requirements	Apply health and safety requirements proportionately: for example, balance the need for fencing/hoarding/barriers in nearshore/intertidal zone to protect swimmers and surfers from accessing construction and/or operation and maintenance works with the need to maintain access to Saunton Sands.
Environmental Management Plans	Measures set out in the Construction Environmental Management Plan (CEMP)

Component/Activity	Mitigation embedded into the design of the Offshore Project
	that limit and manage the timing of construction and/or operation and maintenance activities.

63. In addition to the embedded mitigation measures as outlined above, the Applicant has also committed to the following additional mitigation measures summarised in **Table 24.17**.

Table 24.17 Additional mitigation measures relevant to the human health assessment

Component/Activity	Additional Mitigation
Protective and preventative measures for the protection of public health	Take protective and preventative measures for the protection of public health: increase capacity for human intervention if people are attempting or considering self-harm and provide signs and resources. For example, support local initiatives for non-health staff and members of the public to train and/or raise awareness about self-harm; provide signs with information about sources of help.

24.3.7 Baseline Data Sources

24.3.7.1 Desktop Study

64. A desk study was undertaken to obtain information on human health. Data were acquired within the study area through a detailed desktop review of existing studies and datasets.
65. Existing baseline statistics were obtained from publicly available data, such as from the Office of National Statistics (ONS) and Public Health England (PHE) and other publicly available sources, to provide information on population health (both general and vulnerable groups) in the study area. These were set out in the Scoping Report.
66. The sources of information presented in **Table 24.18** were consulted to inform the human health assessment.

Table 24.18 Data sources used to inform the human health assessment

Source	Summary
Scientific literature	A summary of scientific evidence of the relation between blue space and health (see Appendix 24.A).
Baseline statistics	The following sources have been used. Public Health Outcomes Framework (DoH, 2021)

Source	Summary
	Public Health England Local Authority Profile (PHE, 2019) Office for National Statistics (ONS, no date) Census 2011 and 2021, provided through Nomis* Index of Multiple Deprivation (IMD) (MHCLG) WAID (2021)
Health priorities	Devon’s Joint Health and Wellbeing Strategy 2020–25 (Devon Health and Wellbeing Board, 2019) Devon Suicide Prevention Action Plan 2021-2022 (Public Health Devon and Devon County Council, no date) National Water Safety Forum (2015)
Project specific consultation responses	MMO Scoping Opinion relating to human health.
Policy context	National Policy Statement (NPS) for Energy (EN-1) and NPS for Renewable Energy Infrastructure (EN-3) (BEIS, 2021a, 2021b) National Planning Policy Framework (NPPF) (MHCLG, 2021) North Devon and Torridge Local Plan (Torridge District Council and North Devon District Council, 2018) North Devon Coast AONB Management Plan 2019-2024 (North Devon Coast AONB, 2019)
ES chapters	Chapter 2: Need for the Project. Chapter 9: Marine Water and Sediment Quality Chapter 21: Noise and Vibration Chapter 23: Socio-Economics and Tourism
* Nomis is a service provided by the Office for National Statistics (ONS). Nomis publishes statistics related to population, society and the labour market at national, regional and local levels. These include data from current and previous censuses (Nomis, no date-h).	

24.3.8 Cumulative Effect Assessment Methodology

67. The Cumulative Effect Assessment (CEA) considers the effect caused by impacts from the Offshore Project and impacts from other projects/development cumulatively on the same receptor (see **Section 24.8**). These are considered for the following project geographies nearshore/intertidal zone. The potential effects are also considered for the vulnerable populations identified in **Section 24.3.2.2**.
68. Inter-relationships assesses the effect of impacts identified in different chapters on the same receptor (see **Section 24.9**). For example, at a specific location of

the Offshore Project whether changes to aspects such as noise levels, traffic density, air quality, water contamination, socio-economic or climate change would combine to provide a more significant effect than as individual impacts.

69. Interactions examines the effect from different impacts identified in this chapter on the same receptor.

24.3.9 Transboundary Impact Assessment Methodology

70. As shown in **Table 24.20** the MMO agreed as part of the Scoping Opinion that transboundary health effects are unlikely to occur, and that this can be scoped out of the assessment of human health.

24.3.10 Data Limitations

71. The key limitations of data used within the baseline are
 - lags in the release of publicly available statistics;
 - the effects of the COVID19 pandemic on longer-term trends;
 - applying scientific evidence from peer-reviewed literature to this specific Project;
72. Data from official statistical sources, such as the surveys carried out by the Office for National Statistics (ONS), are generally published with a lag of between one and two years. The Nomis local area reports are based on Census 2011 and so while based on the latest available data the local area reports may not reflect current status.
73. The COVID19 pandemic required social distancing and other non-pharmaceutical interventions (NPIs) to prevent and to control SARS-CoV-2 transmission in the community. This affected, and continues to affect, longer-term trends in health and health inequalities. This assessment specifies the source and timeframe for the data, and it provides context for the local data by including a national comparator.
74. Scientific evidence on health and blue space was reviewed to inform this assessment. The review is not exhaustive and provides a summary of the key issues relevant to this Project and to the scope of this chapter. This review is provided in **Appendix 24.A**.
75. None of the assumptions and limitations listed above is likely to affect the overall assessment of effects from the Construction, Operation and Maintenance and Decommissioning phases of the Offshore Project.

24.3.11 Scope

76. The scope has been finalised with consideration of the baseline environment, the project description outlined in **Chapter 5: Project Description** and the Scoping Opinion. Potential impacts upon human health that are “Scoped in” are shown in **Table 24.19**. The impacts that are “Scoped out” are presented, together with a justification for why they are not considered further, in **Table 24.20**.
77. The scope of the assessment of the Onshore Project will be determined through discussions with North Devon District Council.

Table 24.19 Summary of impacts scoped in relating to human health

Potential Impact	Justification
Open space, leisure and play (access) [Social environment]	Offshore Project activities will have an impact on people’s access to the nearshore/intertidal zone. This can be through the actual Project activities, and it can be through people’s understanding of the Offshore Project activities, for example assuming that construction activities have closed access to the beach. This includes consideration of the quality of the environment and of the ways in which people connect with nature. This is considered for the Construction phase and for the Operation and Maintenance phase.
Community Safety [Institutional and Built Environment]	The Offshore Project activities at Landfall have the potential to contribute to community safety at Saunton Sands and to averting water-related injuries and fatalities through self-harm. This is considered for the Construction phase and for the Operation and Maintenance phase.
Cumulative effects	The intra-Project cumulative effects are considered.

Table 24.20 Summary of impacts scoped out relating to human health

Potential Impact	Justification
Electro-magnetic fields (EMF) [Bio-physical Environment]	This is scoped out of further assessment, in this chapter, as Project electrical infrastructure will be built to comply with current standards, and it will be buried. There is also little scientific evidence linking EMF exposure to adverse health effects as indicated in many recent infrastructure projects and the application decisions. Chapter 10: Benthic and Intertidal Ecology considers EMF impacts to marine life.
Emissions to air [Bio-physical Environment]	The scale of air quality impacts from Landfall installation during the Construction phase are negligible. In the worst case, there will be temporary disturbance. There are no planned disturbance works, in the nearshore/intertidal zone, during the Operation and Maintenance phase, and traffic volumes from the Offshore Project will be low, intermittent and for monitoring purposes only. There is high variability in the levels of traffic across the local study area due to tourism and recreation and no measurable impact on air quality, from the Offshore Project, is identified. No significant health effect is likely during the Construction and the Operation and Management phases, and this is therefore scoped out from further assessment in this chapter. Offshore Air Quality impacts are scoped out of the wider assessment.

Potential Impact	Justification
Noise [Bio-physical Environment]	<p>The scale of noise impacts from Landfall installation during the Construction phase is negligible for open cut trenching and low for a trenchless technique such as HDD. In the worst case, there will be temporary disturbance.</p> <p>There are no planned disturbance works, in the nearshore/intertidal zone, during the Operation and Maintenance phase, and traffic volumes from the Offshore Project will be low, intermittent and for monitoring purposes only. There is high variability in the levels of traffic across the local study area due to tourism and recreation and no measurable impact, from the Offshore Project, on noise is identified.</p> <p>No significant health effect is likely during the Construction and the Operation and Management phases, and this is therefore scoped out from further assessment in this chapter. Offshore Noise impacts are scoped out of the wider assessment.</p>
Water quality [Bio-physical Environment]	<p>Chapter 9: Marine Water and Sediment Quality looks at the worst-case scenario for the installation of the cable at the landfall which would require trenching across the intertidal zone. It is assumed that the majority of these works would be undertaken at low tide using land-based plant and as such the resuspension of sediment would be minimal and the effect is of negligible significance. This is therefore scoped out from further assessment for effects on human health in this chapter.</p> <p>There are no planned disturbance works, in the nearshore/intertidal zone, during the Operation and Maintenance phase, therefore marine contamination impacts on human health are scoped out from further assessment.</p>
Water quality Ingestion of contaminants [Bio-physical Environment]	<p>There are no planned disturbance works, in the nearshore/intertidal zone, during the Operation and Maintenance phase. Pollution impacts on marine, freshwater or terrestrial receptor impacts on human health are scoped out from further assessment.</p>
Employment opportunities [Economic environment]	<p>The Offshore Project will increase employment opportunities across the Region during the Construction and the Operation and Management phases. This will be a short-term and positive, but it will be across a wide scale and so its effect will be negligible. Due to the limited benefit on the local population this impact is scoped out from further assessment in this chapter.</p>
Influx of non-resident workforce (and loss of or increased pressure on existing health, education, recreation, or other	<p>The Construction phase is short-term, and the Operation and Maintenance phase will require only an intermittent presence of workforce. In each phase, the workforce will be transient, and the study area experiences extensive annual tourism so the scale of any potential change would be negligible. This impact is scoped out from further assessment in this chapter.</p>

Potential Impact	Justification
community infrastructure or public services) [Institutional and built environment]	
Wider societal infrastructure and resources [Institutional and built environment]	<p>There are potential gains to wider societal infrastructure and resources as a result of the Operation and Maintenance phase of the Offshore Project. The benefits to human health will be experienced onshore and so this will be assessed in the onshore assessment. The potential impact arising from the Offshore Project's contribution to wider societal infrastructure and resources is scoped out from this offshore assessment.</p>
Open space, leisure and play [Social environment]	<p>The potential impact to existing Public Rights of Way (PRoWs), cycleways and bridleways during operation is scoped out from this offshore assessment.</p>
Transport [Social environment]	<p>The short-term and temporary increases in traffic are not expected to result in measurable increases in severance/connectivity. Construction traffic (and drivers) will be required, through their employers, to provide increased levels of consideration to local road users be they pedestrians, cyclists, equestrians, or vehicles.</p> <p>This is therefore scoped out from further assessment in this human health chapter.</p> <p>The Traffic and Transport topic considers local impacts on specific roads and junctions and incorporates any relevant mitigation measures to ensure improved road safety during construction.</p>
Transport (marine) [Social environment]	<p>No significant health effects are expected due to the guidelines and rules regarding navigation, the requirements and regulations to maintain safe navigation and avoidance of potential 'conflict' such as collisions, and the Notices to Mariners of potential static or related marine traffic activities.</p> <p>Health impacts to receptors due to increased vessel activity are scoped out from the Construction and the Operation and Management phases.</p>
Visual disturbance [Social environment]	<p>The construction works associated with the Landfall installation will result in short-term and temporary visual disturbance and presence of workers and associated plant and machinery. No significant health effect is likely, and this is therefore scoped out from further assessment. The Landscape and Visual topic considers any relevant mitigation measures to prevent significant localised visual impacts arising</p>

Potential Impact	Justification
Transboundary impacts	Given the localised nature of the work, impacts on human health will not extend outside the local study area. Transboundary impacts are scoped out from further assessment in this chapter.

24.3.12 Consultation

78. Consultation has been a key part of the development of the Offshore Project. An overview of the project consultation process is presented within **Chapter 7: Consultation**. A summary of the key issues raised during consultation specific to human health is outlined below in **Table 24.21**, together with how these issues have been considered in the production of this ES.
79. The Scoping Report and the MMO’s Scoping Opinion each consider the offshore and the onshore aspects of the Project as a whole. This current chapter focuses on the potential effects on human health receptors arising from the potential impact of the Offshore Project seaward of MHWS. The scope of this current chapter is informed by the MMO advice, as set out in section 4.2.11 and 8.2 of the Scoping Opinion, and it has been adapted to focus on the Offshore Project. The separate Onshore ES will give due regard to the MMO advice relating to the Onshore Project.

Table 24.21 Consultation responses

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
MMO	Scoping Opinion	In paragraph 78, section 4.2.11, the MMO states that it supports the Applicant’s Scoping Report, noting that it includes assessment of the potential impacts on air, land, water and traffic as well as the impacts on human health; that the assessment proposals appear to be in line with current UK practice and guidance; and that it considers Section 4.3 of the Scoping Report to demonstrate that a comprehensive assessment around determinants and impacts on human health will be carried out (paragraph 78).	Offshore air quality has been scoped out of the Offshore Environmental Statement. Discharges and noise emissions are considered in Chapter 9: Marine Water and Sediment Quality and Chapter 22: Noise and Vibration , traffic is considered in Chapter 22: Traffic and Transport . The assessment of human health uses the determinants of

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
			<p>health (Section 24.3.4.1). Open space, leisure and play (access) are considered in Section 24.5.1 and 24.6.1 of this chapter. Sections 24.5.2 and 186, consider Community safety.</p>
MMO	Scoping Opinion	The MMO recommends that in considering any impacts listed in the Scoping Report (section 4.3), that these should be in view of wider implications on human health under socio-economic impacts and climate impacts (section 4.2 and 4.4, respectively) (paragraph 78).	The cumulative effects of socio-economic impacts, climate impacts and health will be considered in the Onshore Project.
MMO	Scoping Opinion	The MMO states that the section [on human health] must summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health (paragraph 79).	This is replicated in the structure of this chapter. Open space, leisure and play (access) are considered in Section 24.5.1 and 24.6.1 of this chapter. Sections 24.5.2 and 186 , consider Community safety.
MMO	Scoping Opinion	MMO scopes out 'Ingestion of contaminants' during operation (paragraph 8.2.7).	Ingestion of contaminants has been scoped out of the Offshore Environmental

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
			Statement (see Table 24.20).
MMO	Scoping Opinion	The MMO recommends that consideration is given to measures that help people to better access the countryside for quiet enjoyment and opportunities to connect with nature (paragraph 8.2.12).	The impact of the Offshore Project on Open space, leisure and play (access) are considered in Section 24.5.1 and 24.6.1 of this chapter.
MMO	Scoping Opinion	The MMO recommends that consideration is given to the contribution the development could make to relevant local environmental initiatives and priorities to enhance the environmental quality of the development and deliver wider environmental gains (paragraph 8.2.13).	The impact of the Offshore Project on Open space, leisure and play (access) are considered in Section 24.5.1 and 24.6.1 of this chapter.
MMO	Scoping Opinion	The MMO sets out matters to “Scope In” and to “Scope Out” of the assessment (Section 8.2).	Potential impacts upon human health that are “Scoped in” are shown in Table 24.19 . The impacts that are “Scoped out” are presented, together with a justification for why they are not considered further, in Table 24.20 .

24.4 Existing Environment

80. This section describes the existing environment in relation to human health associated with the White Cross study area. It has been informed by a review of the sources listed in **Table 24.18**.

81. The data sources for this baseline are shown in **Table 24.18**.

24.4.1 Current baseline

82. The baseline for population health that is relevant for impacts associated with the Offshore Project is provided below. It has been informed by a review of the sources listed in **Table 24.18**. The information used in this profile is provided in the references cited and in **Appendix 25A: Health Baseline Statistics**.

83. The area where Landfall occurs, Saunton Beach, is rural. Data for the LSOA in which Landfall occurs (North Devon 005B) is used (see **Table 24.8**). Indicators for North Devon, Devon and England are also reported.

24.4.1.1 Population change

84. The projected population change for North Devon (100.8%) between 2019 and 2029 is higher than the England National average (100.6%) over the same time period (ONS, no date). The population of Devon county is approximately 800,000: it has an older population profile than England and population growth above the national average, influenced by the inward migration of people aged 40 to 75 (Devon Health and Wellbeing Board, 2019). In 2019, the population was predicted to grow by 88,000 (11%) over the following 20 years, with low growth in under 65s (2%), with considerable growth in the older population (94% increase in people aged 85 and over) (Devon Health and Wellbeing Board, 2019). Between 2011 and 2021, the number of people aged 65 to 74 years rose by around 2,300 (an increase of 20.9%), while the number of residents between 35 and 49 years fell by around 2,100 (11.7% decrease) (ONS, 2023).

85. In 2011, LSOA 005B (25.9%) had a higher percentage of retirement-aged people (65+) when compared with North Devon local authority area (22.2%), Devon County (22.5%) and with the national UK average (18.5%) (Nomis, no date-b, no date-d, no date-e, no date-g). Figures from the 2021 Census from district to national level show that the percentage of people in the 0-19 and 20-64 age groups continues to be lower than the national averages. The percentage of people in the older age group (65+) is higher (25.8%) than the national average (18.4%) (Nomis, no date-a, no date-c, no date-f) (see **Table 24.22**).

Table 24.22 Age profile: 2011 and 2021

Age structure	North Devon 005B*	North Devon	Devon	England
2011				
Age 0 to 19	20.0%	22.1%	21.4%	24.0%
Age 20 to 64	54.1%	55.7%	56.0%	59.7%
Age 65 and over	25.9%	22.2%	22.6%	16.3%
2021				
Age 0 to 19	-	20.6%	20.3%	23.1%
Age 20 to 64	-	53.6%	53.9%	58.5%
Age 65 and over	-	25.8%	25.8%	18.4%

* Data for 2021 at this level (LSOA) is not currently available.

Data: Nomis (Census 2011 and 2021) (Nomis, no date-a, no date-b, no date-c, no date-d, no date-e, no date-f, no date-g)

24.4.1.2 Self-reported health

86. The self-assessment of health is an indicator of general wellbeing and health-related quality of life across a population and data on this comes from the census. In 005B self-reported good health is close to the proportions reported at North Devon, Devon and national levels. In 005B, 34.9% of the population report good health compared to 33.8% in North Devon, 34.7% in Devon and 34.2% in England. A higher proportion of people report bad health in North Devon (5.2%) compared to 4.0% in Devon and 4.2% in England (Nomis, no date-b, no date-d, no date-e, no date-g).
87. In 2021, 49.7% of North Devon residents described their health as "very good", increasing from 48.1% in 2011. Those describing their health as "good" fell from 33.6% to 33.0% (ONS, 2023).

24.4.1.3 Health inequalities

88. Socioeconomic and health deprivation decreases resilience and increases sensitivity to change and so is considered in the assessment. Health inequalities refer to differences in health between population groups and so they can be measured in different ways.
89. PHE states that, in the most deprived areas of North Devon, life expectancy at birth is 7.5 years lower for men and 3.1 years lower for women than in the least deprived areas and that this is comparable to the regional and national indicators (PHE, 2019). At a national level, and looking at trends over time, life expectancy in England

is improving for the top 60% of the population and not for the bottom 40% (Marmot, 2020) so health inequalities are growing.

90. Across Devon, fuel poverty and poor housing conditions, particularly in the private rented sector, are a major issue in many areas, especially in rural parts of Northern and Western Devon. This has effects on health and wellbeing and in 2019 the Devon Health and Wellbeing Board noted increases in child poverty and in the numbers of people accessing emergency food supplies (Devon Health and Wellbeing Board, 2019).

24.4.1.4 Unpaid care

91. 6.2% of people in 005B provide 1 to 19 hours of unpaid care a week; 1.2% provide 20 to 49 hours a week and 2.9% provide more than 50 hours a week. In North Devon, 7.1% provide 1 to 19 hours of unpaid care a week; 1.3% provide 20 to 49 hours a week and 2.6% provide more than 50 hours a week. Across Devon, 7.6% provide 1 to 19 hours of unpaid care a week; 1.3% provide 20 to 49 hours a week and 2.5% provide more than 50 hours a week. This is comparable to the national average which is 6.5%, 1.4% and 2.4% respectively (Nomis, no date-b, no date-d, no date-e, no date-g).
92. In 2021, 4.6% of North Devon residents (aged five years and over) reported providing up to 19 hours of unpaid care each week. This figure decreased from 7.2% in 2011 (ONS, 2023).

24.4.1.5 Disability

93. The 2011 Census identified disability by asking "Are your day-to-day activities limited because of a health problem or disability which has lasted, or expected to last, at least 12 months?". People state the extent to which their activities are limited. The responses in 005B for the categories 'limited a lot' (8.0%) and limited a little' (12.0%), North Devon (limited a lot: 8.7%; limited a little: 10.9%) and in Devon (limited a lot: 8.6%; limited a little: 10.9%) are close to or higher than the national averages (limited a lot: 8.3%; limited a little: 9.3%).
94. In 2021, 7.2% of North Devon residents were identified as being disabled and limited a lot. This figure decreased from 7.9% in 2011 (ONS, 2023)

24.4.1.1 Social isolation

95. The percentage of adult carers who have as much social contact as they would like is lower in the South West than in England for adult carers who are 18 and over and those who are 65 and over. This measure draws on self-reported levels of social

contact as an indicator of social isolation for both users of social care and carers (OHID, 2023b, 2023c). There is no data for this indicator below the regional level.

24.4.1.2 Water-related fatalities

96. The Offshore Project construction activities at Landfall have the potential to contribute to community safety at Saunton Sands and to averting water-related injuries and fatalities through self-harm. WAID (2021) report the following for England in 2021:

- There were 442 water-related fatalities.
- There were 155 suicide suspected fatalities at or near water.
- There were 182 accidental fatalities, of which 35% were at coastal waters
 - Recreational activities accounted for 56% of accidental fatalities
 - 27% of accidental fatality reports noted the presence of drugs or alcohol
 - 86% of accidental fatalities were male
 - Males 30-39 and 50-59 were the highest group for accidental fatalities
- The rate of accidental drowning is reducing (0.32 per 100,000 in 2021) compared to 0.45 in baseline.
- When considering rates across 2017-2021, there is some variation by age groups for males.

24.4.1.3 Public Health Outcomes Framework

97. Unless otherwise stated, the information in this section is from OHID (no date). In this section 'significant' refers to a change that is statistically significant. OHID has compared the confidence intervals for the respective time points in the different indicators. If the confidence intervals do not overlap, OHID has flagged the change as statistically significant.

24.4.1.4 Wider determinants of health

98. In 2019-2020 the percentage of adults, in North Devon, who feel lonely often / always or some of the time was 17.6% which is lower than the national average of 22.3%.

24.4.1.5 Health improvement

99. The standardised admission ratio, between 2016/17 and 2020/21, for Emergency hospital admissions for intentional self harm is higher in North Devon than in Devon (OHID, 2022b). Both are higher than the national value. In 2020-2021 the rate for emergency hospital admissions for self-harm, in North Devon, was significantly

higher than the national average: 308.2 per 100,000 people compared to 181.2 at national level.

100. In 2020-2021 the rate for admission episodes for alcohol-related conditions, in North Devon, was significantly higher than the national average: 520.0 per 100,000 people compared to 455.9 at national level.

24.4.1.6 Healthcare and premature mortality

101. In 2020, the under 75 mortality rate, in North Devon, from causes considered preventable was 123.6 per 100,000 which was not significantly different to the national value of 140.5 per 100,000). This pattern is repeated for the other under 75 mortality rates.
102. The mortality rates for the same age group from respiratory disease (17.4 per 100,000), and from respiratory diseases considered preventable (8.93 per 100,000), were significantly lower than the national values (29.4 and 17.1 per 100,000 respectively).
103. In 2020-2021 the rate of hip fractures in people aged 65 and over, in North Devon, was 658.7 per 100,000. This was significantly higher than the national average of 528.7 per 100,000 people. Over the same time period, the rate of hip fractures for people in North Devon, aged 65-79 was not significantly different than the national average, but for people aged 80+ it was significantly higher (1,745 compared to 1,426).
104. In 2022, the estimated dementia diagnosis rate (aged 65+), in North Devon, is below the national average (55.8% and 62.0% respectively).
105. Public Health Devon and Devon County Council (no date) note that common mental health problems among the population increased during the COVID-19 restrictions and also that suicide increases when there is an economic downturn. The suicide rate per 100,000, from 2001 to 2019, for persons in North Devon went both below and above the national value and in Devon it remained close to or above the national value. OHID reports that the rate for North Devon, for 2019-2021, shows no significant change (OHID, 2022a).

24.4.2 Do Nothing Scenario

106. The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) require that "an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of

environmental information and scientific knowledge” is included within the ES (EIA Regulations, Schedule 4, Paragraph 3). From the point of assessment, over the course of the development and operational lifetime of the Offshore Project (operational lifetime anticipated to be a minimum of 25 years), long-term trends mean that the condition of the baseline environment is expected to evolve. This section provides a qualitative description of the evolution of the baseline environment, on the assumption that the Offshore Project is not constructed, using available information and scientific knowledge of human health.

107. The health and wellbeing of the population within the study area is shaped by environmental, social, behavioural, economic and institutional factors as described in **Section 24.3.4.1**, above. In a Do Nothing Scenario, trends in population health would be expected to continue to be influenced by trends across wider society which show life expectancy reducing and health inequalities widening.

24.5 Potential impacts during Construction

108. The potential impacts during construction of the Offshore Project have been assessed for human health. A description of the potential effect on human health caused by each identified impact is given in this section.
109. The focus is on human health effects associated with the Offshore Project activities up to MHWS and therefore predominately relate to potential impacts in the nearshore and inter-tidal zone. Potential impacts relating to the Onshore Project will be considered within the separate Onshore EIA.

24.5.1 Impact 1: Open space, leisure and play (access)

110. The Offshore Project construction activities at Landfall have the potential to affect access to open space (green and blue) and physical activity (including in natural habitats) in the nearshore/intertidal zone such as surfing and swimming and to influence people’s ability to connect with nature.
111. There are different options for cable installation methodology in the nearshore/intertidal zone as set out in **Chapter 5: Project Description**. These include open cut trenching through the intertidal zone and a trenchless technique from a point onshore above MHWS out to the subtidal zone. These have different implications. Open cut has the greatest effect on beach access but requires only one period of continuous activity over 24 hours to install the cable. The work programme for HDD is up to 100 days and has the potential to close a portion of the Saunton Sands car park.

24.5.1.1 Assessment

24.5.1.1.1 Populations affected (receptors)

112. The populations affected are residents in the site-specific area 005B. Visitors to Saunton Sands will also be affected and they are represented by the local area (North Devon). The impact on these populations is due to their use of Saunton Sands for leisure activities, specifically marine activities in the nearshore/intertidal zone such as surfing and swimming.
113. Populations that may be considered vulnerable are children and young people, older people, people experiencing social isolation and people with existing poor physical and mental health for whom swimming at Saunton Sands is an important part of their routine. Population groups that experience challenges regarding access will also be vulnerable, this includes children and young people, older people and people on low incomes.

24.5.1.1.2 Health effect

114. Health effects are likely to be associated with the actual changes effected by Project construction activities, for example, construction activity and safety marshals at Saunton Sands. The way in which people understand how they will be affected by the construction activities will also influence levels of leisure activity at Saunton Sands during construction, for example, the expectation of closure of Saunton Sands.
115. A potential health effect is considered *likely* because, based on the methods described in **Section 24.3.2**, there is a plausible source-pathway-receptor relationship where:
- Source – the construction areas and activities
 - Pathway – people’s understanding of change in the usability of Saunton Sands
 - Receptors – people who use Saunton Sands and who may reduce their levels of outdoor recreation.
116. Furthermore, the potential effect is probable as no unusual conditions are required for the source-pathway-receptor linkage.

24.5.1.1.3 Scientific literature

117. The scientific literature shows that leisure activity in the ocean is associated with improved physical and mental health. The literature does not identify thresholds for effects, and it is inferred that interruptions to this could have adverse effects on physical and mental health. Much of the activity in blue spaces, at least in high income countries, is not water-based but occurs on land, e.g. beach walks; and it is

this activity that predominantly explains any link between coastal proximity and health (White et al., 2020). The assessment has regard to the population groups identified in the literature that may be particularly sensitive: children and young people, older people, people experiencing social isolation; population groups that experience challenges regarding access, this includes the groups listed above and also people on low incomes. It is noted that the whole population benefits from a physically active lifestyle and this includes leisure activity in the ocean.

24.5.1.1.4 Baseline

118. Saunton Sands is a popular destination for swimming and surfing. The baseline (see **Appendix 24.A**) shows how the site-specific area and the local area have an older population than the national average. The baseline for the site-specific area shows that the percentage of people reporting that their day-to-day activities are limited 'a little' is higher in the site-specific area (005B) and the local area than in England. The measure for self-reported social isolation is higher in the South West than in England. Maintaining levels of physical activity is important to maintain respiratory health and to reduce injuries, such as hip fractures. The baseline does not identify any geographic or population features that suggest effects could be unusually amplified.

24.5.1.1.5 Policy

119. Government policy sets the following expectations for access to open space (green and blue) and physical activity (including in natural habitats) in the local area:

- protecting and improving the natural environment (EN-1 paragraph 4.10.2)
- protection of the water environment (EN-1 paragraph 5.15.1).

24.5.1.1.6 Health priorities

120. Relevant priorities from Devon's Joint Health and Wellbeing Strategy 2020–25 (Devon Health and Wellbeing Board, 2019) are provided below:

- 2. Healthy, safe, strong and sustainable communities [by] creating conditions for good health and wellbeing where we live, work and learn and (b) create conditions for good health, physical activity and social interaction.
- 3. Focus on mental health, building good emotional health and wellbeing, happiness and resilience [by actions that] (a) reduce loneliness in all age groups; (b) identify people at risk and intervene to improve poor mental health as soon as possible; and (d) promote a positive approach to mental health and wellbeing.
- 4. Maintain good health for all [by] supporting people to stay as healthy as possible for as long as possible and (c) support those with long-term conditions to maintain a good quality of life.

121. The North Devon Coast AONB wish to ensure sustainable access to the AONB for the benefit of the health and wellbeing of local people and visitors (North Devon Coast AONB, 2019).

24.5.1.1.7 Embedded mitigation

122. The following mitigation forms part of the Offshore Project and has been taken into account as part of the assessment of construction activities at Landfall and the potential to affect access to open space (green and blue) and physical activity (including in natural habitats) in the nearshore/intertidal zone such as surfing and swimming:

- Communication and engagement activities to ensure that visitors to Saunton Sands are aware of the timing and extent of construction activities in the nearshore/intertidal zone.
- Maintaining access to Saunton Sands during construction – no closure of the beach.
- Providing safety marshals for the protection of the public.
- Apply health and safety requirements proportionately: for example, balance the need for fencing/hoarding/barriers in nearshore/intertidal zone to protect swimmers and surfers from accessing construction and/or maintenance works with the need to maintain access to Saunton Sands.
- Measures set out in the CEMP that limit and manage the timing of construction activities.

24.5.1.2 Magnitude of impact

123. During construction, the magnitude of the change due to the Offshore Project is **negligible** for open-cut trenching and **low** for a trenchless technique such as HDD.

124. In relation to access to open space, leisure and play (access), the magnitude of impact ranges from **negligible** to low for the site specific and the local population, with the duration being very short-term and a one-off frequency for open cut trenching (1 x 24 hour working period) and of short-term duration for a trenchless technique such as HDD (disruption for a short period in the sub-tidal area at one from the 80-day work programme). There would be a minor change in quality of life. There would be no implications for healthcare services.

125. The magnitude of impact on vulnerable groups also ranges from **negligible** to **low**, determined by the technology used, open-cut trenching or a trenchless technique such as HDD, respectively.

24.5.1.3 Sensitivity of the receptor

126. The sensitivity of the general population is considered to be **negligible**: the ways in which people report their health is broadly similar for the site-specific area (005B), the local area (North Devon) and England. The baselines for ages 16 to 64 in the site-specific area (005B), the local area (North Devon) and England for level of limitation to daily activities are broadly consistent. Furthermore, visiting Saunton Sands and swimming in the nearshore/intertidal zone, would for most people be an occasional or seasonal event and it is reasonable to expect that people would have access to other beaches.
127. The sensitivity of vulnerable groups is considered **low** (not significant): the baselines for all ages in the site-specific area (005B), the local area (North Devon) and England for level of limitation to daily activities are broadly consistent. The percentage of people reporting that their day-to-day activities are limited 'a little' is higher in the site-specific area (005B) and the local area than in England (12%, 10.9% and 9.3% respectively). The percentage of adult carers who have as much social contact as they would like is lower in the South West than in England for adult carers who are 18 and over and those who are 65 and over (OHID, 2023b, 2023c). It is estimated that, from a life stage perspective, a high proportion of swimmers and surfers in the site-specific and local area are young people and older people who go to the beach regularly. The populations in the site-specific and the local areas have moderate levels of deprivation. The level of public concern regarding this matter is not known.

24.5.1.4 Significance of effect

128. Change to the population health baseline from open cut trenching is expected to be negligible and from a trenchless technique, such as HDD, it will be low. The assessment acknowledges that there is a causal pathway established in the scientific literature and there are relevant regional health priorities. No adverse effect is expected with regards to delivering local health policy.
129. There would be a differential effect between the general population and vulnerable groups, but the construction activities will have limited potential to widen inequalities due to the targeted use of mitigation. The conclusion is that the residual significance of the effect would be **negligible** for the general population and, allowing for the fact that communication and engagement activities seldom reach a whole population, up to **minor negative** (not significant) for vulnerable groups.

24.5.2 Impact 2: Community safety

130. The Offshore Project construction activities at Landfall have the potential to contribute to community safety at Saunton Sands and to averting water-related injuries and fatalities.

24.5.2.1.1 Populations affected (receptors)

131. The affected populations are residents in the site-specific area 005B and visitors to Saunton Sands who are represented by the population of the local area (North Devon). The population for Devon county is also considered as people who are intending to self-harm may travel to an area where they are not known. The impact on these populations is due to their access to Saunton Sands: this includes access to the sea for people who are considering self-harm.

132. People with existing poor mental health and who may be considering self-harm are considered vulnerable. Research evidence, summarised below, suggests that, within this population, older people and women may be particularly vulnerable. Family members and acquaintances of people who self-harm are considered vulnerable.

133. Construction workers and safety marshals will be affected if there is an incident at Saunton Sands whilst construction work is underway.

24.5.2.1.2 Health effect

134. Health effects will be associated with the actual changes brought about by Offshore Project construction activities, for example the increased signage and the presence of construction workers and safety marshals at Saunton Sands.

135. This assessment distinguishes between injuries and drowning from surfing and swimming (recreational marine activities in the nearshore/intertidal zone) and from attempts at self-harm. The construction activities of the Offshore Project will not have an effect on the risk of injury or drowning associated with surfing and swimming (recreational marine activities in the nearshore/intertidal zone). The embedded mitigation of the safety hoarding and safety marshals will ensure that surfers and swimmers are not at risk from the construction machinery and activities.

136. A potential health effect is considered *likely* for attempts at self-harm because, based on the methods described in **Section 24.3.2**, there is a plausible source-pathway-receptor relationship where:

- Source – the construction activities, signage and presence of safety marshals
- Pathway – increased capacity for human intervention
- Receptors – people with existing poor mental health who may be considering self-harm; family members and acquaintances of people who self-harm; construction

workers who may be involved in a rescue operation and in dealing with any aftermath.

137. The potential effect is probable as no unusual conditions are required for the source-pathway-receptor linkage.

24.5.2.1.3 Scientific literature

138. Drowning outcomes include death and a range of non-fatal outcomes ranging from survival with no lasting consequence to survival with permanent neurological impairment (Beerman et al., 2018).
139. Drowning can be an intentional act of self-harm; it is a relatively uncommon method of suicide in most high-income countries; there are challenges in establishing a baseline as it can be hard to distinguish between a suicide and unintentional drowning; and, as a method, it is more likely to be chosen by older people (Haw and Hawton, 2016). Research in the Netherlands concluded that living close to the coast is associated with greater suicide risk for women (Helbich et al., 2022). Research in Australia reported that people travelled to reach the coast for increased anonymity so as to reduce the chance of being interrupted, that coastal suicides were higher in males than females and that female decedents had a higher incidence of mental ill health or a history of suicidal behaviours (Lawes et al., 2021). Financial downturn leads to an increase in mental ill health across the population that can, in turn, translate into despair and self-harm (Hawton and Haw, 2013). It is estimated that, for every suicide, between six and 20 people, usually family members and acquaintances of those who died, are adversely affected psychologically and emotionally (Andriessen et al., 2019).
140. Those who protect the public, such as first responders, are at greater risk for mental ill health and compromised well-being than the general population and strategies for supporting mental health and well-being need to be implemented early in the first responder career and then reinforced throughout and into retirement (Smith et al., 2021). This assessment applies this finding to the construction workers.

24.5.2.1.4 Baseline

141. Saunton Sands is a popular destination for swimming and surfing. The baseline (see **Appendix 24.A**) shows how the site-specific area, the local area and the county have an older population than the national average. The standardised admission ratio, between 2016/17 and 2020/21, for Emergency hospital admissions for intentional self harm is higher in North Devon than in Devon (OHID, 2022b). Both are higher than the national value. The baseline does not identify any geographic or population features that suggest effects could be unusually amplified.

24.5.2.1.5 Policy

142. Government policy sets the following expectations for access to open space (green and blue) and physical activity (including in natural habitats) in the local area:
- protecting and improving the natural environment (EN-1 paragraph 4.10.2)
 - protection of the water environment (EN-1 paragraph 5.15.1).
143. Section 8, Paragraph 92 of the NPPF (MHCLG, 2021) states that planning [...] decisions should aim to achieve healthy, inclusive and safe places which [...] 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.

24.5.2.1.6 Health priorities

144. Relevant priorities from Devon’s Joint Health and Wellbeing Strategy 2020–25 (Devon Health and Wellbeing Board, 2019) are provided below:
- 2. Healthy, safe, strong and sustainable communities [by] creating conditions for good health and wellbeing where we live, work and learn and (b) create conditions for good health, physical activity and social interaction.
 - 3. Focus on mental health, building good emotional health and wellbeing, happiness and resilience [by actions that] (a) reduce loneliness in all age groups; (b) identify people at risk and intervene to improve poor mental health as soon as possible; and (d) promote a positive approach to mental health and wellbeing.
145. The North Devon Coast AONB wishes to ensure sustainable access to the AONB for the benefit of the health and wellbeing of local people and visitors (North Devon Coast AONB, 2019).
146. The England and Devon strategies for suicide prevention each include a priority of reducing access to means of suicide (PHE, 2012, Public Health Devon and Devon County Council, no date).
147. The priorities of the National Drowning Prevention Strategy (National Water Safety Forum, 2015) include:
- Every community with water risks should have a community-level water safety risk assessment and water safety plan
 - To better understand water-related self-harm
 - Increase awareness of everyday risks in, on and around water

24.5.2.1.7 Embedded mitigation

148. The following mitigation forms part of the Offshore Project and has been taken into account as part of the assessment of construction activities at Landfall and the potential to affect community safety in the nearshore/intertidal zone:
- Maintaining access to Saunton Sands during construction – no closure of the beach.
 - Providing safety marshals for the protection of the public,
 - Apply health and safety requirements proportionately: for example, balance the need for fencing/hoarding/barriers in nearshore/intertidal zone to protect swimmers and surfers from accessing construction works with the need to maintain access to Saunton Sands.

24.5.2.2 Magnitude of impact

149. The magnitude of the impact of someone attempting to self-harm spans the entire range of scores (see **Table 24.12**). While the Construction Phase of the Offshore Project will not increase the likelihood of someone attempting to self-harm, it is reasonable to suppose that the presence of the construction workforce at Saunton Sands would increase the opportunity to deter someone from attempting to self-harm. This is considered below, once the different magnitudes of impact of someone attempting to self-harm are considered.
150. A self-harm event on Saunton Sands during the Construction Phase is considered to be rare and on this basis the impact for the general population is of **negligible** magnitude. If an event were to occur, the health outcome, for the individual concerned could range from injuries with no lasting consequences (**negligible** magnitude) to permanent impairment or death (**high** magnitude). The family members and acquaintances of people who self-harm would be adversely affected psychologically and emotionally, and the magnitude would range from **low** to **high**.
151. The construction workforce would potentially become involved, and workers involved in rescue attempts and in dealing with any aftermath, may experience mental ill health and compromised well-being (**medium** magnitude). An event of this kind has implications for healthcare services that range from treatment of minor injury and the need for mental health services for the individual concerned (**low to medium** magnitude) to requirement for emergency care and longer-term need for mental health services for the individual, their wider network and the construction worker (**high** magnitude).
152. The magnitudes of the impacts of an event range from **negligible**, due to the rarity of this as an event, to **high** (negative) if such an event does occur. The presence

of construction workers may act as a deterrent and would therefore avert injury or a fatality and would be **high** magnitude (beneficial).

24.5.2.3 Sensitivity of the receptor

153. The site specific, local and county populations are considered **moderate** sensitivity due to the baseline indicating higher regional levels of self-harm than are reported nationally.
154. People with poor mental health are at increased risk of self-harm and suicide. Research indicates that women are at increased risk of suicide in coastal areas and that older people are more likely to choose drowning as a method of suicide. These groups are **highly** sensitive.
155. The outlook of family members and acquaintances of people who self-harm is one of uncertainty and concern and their sensitivity is **medium**.
156. Construction workers may become involved in prevention or rescue attempts or witness the aftermath. Their sensitivity ranges from **negligible** to **low** as they will have a good health status and a high capacity to adapt to a changing situation.

24.5.2.4 Significance of effect

157. The construction activities in the nearshore/intertidal zone would be very short-term (open-cut trenching) to short-term (a trenchless technique such as HDD). The assessment considers the mitigation that has been developed.
158. Fatality in coastal waters is a rare event with a very high impact (see **Section 24.4.1.1**). Change to the population health baseline is expected to be small as a result of the Offshore Project but the prevention of fatalities will make a positive contribution to regional priorities (Public Health Devon and Devon County Council, no date) and to the National Water Safety Form's Drowning Prevention Strategy (National Water Safety Forum, 2015). It will assist in ensuring that the Offshore Project contributes to Saunton Sands remaining a healthy, inclusive and safe place, *as per* Section 8, Paragraph 92 of the NPPF (MHCLG, 2021). The assessment acknowledges that there is a causal pathway established in the scientific literature. No adverse effect is expected with regards to delivering local health policy.
159. The conclusion is that the effect would be **negligible** for the general population. The construction activities will have limited potential to widen inequalities as the events are rare.
160. The effect for people with mental ill health who are considering self-harm goes up to **minor beneficial** (not significant). This allows for the presence of the

construction workers to provide a measure of deterrent. This **minor beneficial** (not significant) effect applies also to the family members and acquaintances of the person who is considering self-harm. The construction workers will be affected if an event does occur. The effect will depend upon the event and the effect will range from **minor negative** effect (not significant) to **moderate negative** (significant) for construction workers who witness, or become involved in, an event.

24.5.2.1 Additional enhancement

161. The Offshore Project has the opportunity to enhance community safety at Saunton Sands by providing resources and by increasing capacity for human intervention if people are attempting or considering self-harm. This is a professional judgement and is made with medium level of confidence based on academic and scientific studies. It is acknowledged that a self-harm event, leading to injury or fatality, is low probability but that it would also be very serious.
162. The additional enhancement would comprise of signs that provide information about safety and sources of help for those considering self-harm; and training for safety marshals to train increase awareness about self-harm and actions to take. The CEMP would include water safety risk assessment and water safety plans and relevant training for safety marshals and other operation and maintenance workers. An Outline CEMP is provided in **Appendix 5.A**.

24.5.2.2 Residual significance

163. There would be a differential effect between the general population and vulnerable groups. The construction activities, the signage and the presence of the workforce, will have limited potential to widen inequalities as the events are rare, but the targeted use of enhancement can have a deterrent or a protective effect. The conclusion is that the residual significance of the effect would be **negligible** for the general population and up to **moderate beneficial** (significant) for people with mental ill health who are considering self-harm, for their family members and acquaintances and for the construction workers.

24.6 Potential impacts during Operation and Maintenance

164. The potential impacts of the operation and maintenance of the Offshore Project have been assessed on human health. A description of the potential effect on human health caused by each identified impact is given in this section.

24.6.1 Impact 1: Open space, leisure and play (access)

165. The activities at Landfall during the Offshore Project's Operation and Maintenance phase have the potential to affect access to blue space and physical activity (including in natural habitats) in the nearshore/intertidal zone such as surfing and swimming. This will also influence people's ability to connect with nature.

24.6.1.1.1 Populations affected (receptors)

166. The populations affected are residents in the site-specific area (005B). Visitors to Saunton Sands will also be affected and they are represented by the local area (North Devon). The impact on these populations is due to their use of Saunton Sands for leisure activities, specifically marine activities in the nearshore/intertidal zone such as surfing and swimming.

167. Populations that may be considered vulnerable are children and young people, older people, people experiencing social isolation and people with existing poor physical and mental health for whom swimming at Saunton Sands is an important part of their routine. Population groups that experience challenges regarding access will also be vulnerable, this includes children and young people, older people and people on low incomes.

24.6.1.1.2 Health effect

168. Health effects are likely to be associated with the actual changes effected by the Offshore Project's Operation and Maintenance phase activities, for example, the replacement or reburial of any export cables in case of either failure or exposure.

169. The way in which people understand how they will be affected by the activities during the Operation and Maintenance phase will also influence levels of leisure activity at Saunton Sands during this phase, for example, the expectation of closure of Saunton Sands.

170. A potential health effect is considered *likely* because, based on the methods described in **Section 24.3.2**, there is a plausible source-pathway-receptor relationship where:

- Source – the operation and maintenance areas and activities
- Pathway – people's understanding of change in the usability of Saunton Sands
- Receptors – people who use Saunton Sands and who may reduce their levels of outdoor recreation.

171. Furthermore, the potential effect is probable as no unusual conditions are required for the source-pathway-receptor linkage.

24.6.1.1.3 Scientific literature

172. The scientific literature shows that leisure activity in the ocean is associated with improved physical and mental health. The literature does not identify thresholds for effects, and it is inferred that interruptions to this could have adverse effects on physical and mental health. White et al (2020) state that much of the activity in blue spaces, at least in high income countries, is not water-based but occurs on land, e.g. beach walks; and it is this activity that predominantly explains any link between coastal proximity and health. The assessment has had regard to the population groups identified in the literature that may be particularly sensitive: children and young people, older people, people experiencing social isolation; population groups that experience challenges regarding access will also be vulnerable, this includes the groups listed above and also people on low incomes. It is noted that the whole population benefits from a physically active lifestyle and this includes leisure activity in the ocean.

24.6.1.1.4 Baseline

173. Saunton Sands is a popular destination for swimming and surfing. The baseline (see **Appendix 24.A**) shows how the site-specific area and the local area have an older population than the national average. The baseline for the site-specific area shows that the percentage of people reporting that their day-to-day activities are limited 'a little' is higher in the site-specific area (005B) and the local area than in England. The measure for self-reported social isolation is higher in the South West than in England. Maintaining levels of physical activity is important to maintain respiratory health and to reduce injuries, such as hip fractures. The baseline does not identify any geographic or population features that suggest effects could be unusually amplified.

24.6.1.1.5 Policy

174. Government policy sets the following expectations for access to open space (green and blue) and physical activity (including in natural habitats) in the local area:

- protecting and improving the natural environment (EN-1 paragraph 4.10.2)
- protection of the water environment (EN-1 paragraph 5.15.1).

24.6.1.1.6 Health priorities

175. Devon's Joint Health and Wellbeing Strategy 2020–25 (Devon Health and Wellbeing Board, 2019)

- 2. Healthy, safe, strong and sustainable communities [by] creating conditions for good health and wellbeing where we live, work and learn and (b) Create conditions for good health, physical activity and social interaction.

- 4. Maintain good health for all [by] supporting people to stay as healthy as possible for as long as possible and (c) support those with long-term conditions to maintain a good quality of life.

176. The North Devon Coast AONB wish to ensure sustainable access to the AONB for the benefit of the health and wellbeing of local people and visitors (North Devon Coast AONB, 2019).

24.6.1.1.7 Embedded mitigation

177. The following mitigation forms part of the Offshore Project and has been taken into account as part of the assessment of construction activities at Landfall and the potential to affect access to open space (green and blue) and physical activity (including in natural habitats) in the nearshore/intertidal zone such as surfing and swimming:

- Maintaining access to Saunton Sands during the Operation and Maintenance phase and during maintenance activities – no closure of the beach.
- Communication and engagement activities to ensure that visitors to Saunton Sands are aware of the timing and extent of activities during the Operation and Maintenance phase in the nearshore/intertidal zone.
- Measures set out in the Environmental Management Plan that limit and manage the timing of operation and maintenance activities.
- Fencing/hoarding/barriers in nearshore/intertidal zone to prevent access to operation and maintenance works and to protect swimmers and surfers.

24.6.1.2 Magnitude of impact

178. During the Operation and Maintenance phase, the magnitude of the change due to the Offshore Project is **negligible**.

179. In relation to access to open space, leisure and play (access), the magnitude of impact ranges from **negligible** to low for the site specific and the local population, with the duration being very short-term and a one-off frequency for open cut trenching (1 x 24 hour working period) and of short-term duration for a trenchless technique such as HDD (disruption for a short period in the sub-tidal area at one from the 80-day work programme). There would be a minor change in quality of life. There would be no implications for healthcare services.

180. The magnitude of impact on vulnerable groups also ranges from **negligible to low**, determined by the technology used, open-cut trenching or a trenchless technique such as HDD, respectively.

24.6.1.3 Sensitivity of the receptor

181. The sensitivity of the general population is considered to be **negligible** as the baseline for site-specific area (005B) and for the local area (North Devon) show that the self-reported health status and level of limitation to daily activities is broadly consistent with the North Devon and England averages. Furthermore, visiting Saunton Sands and swimming in the nearshore/intertidal zone, would for most people be an occasional or seasonal event and people could have access to other beaches.
182. The sensitivity of vulnerable groups is considered **low**. The baseline for the site-specific area shows that the percentage of people reporting that their day-to-day activities are limited 'a little' is higher in the site-specific area (005B) than in England. It is estimated that, from a life stage perspective, a high proportion of swimmers and surfers in the site-specific and local area are young people and older people who go to the beach regularly. The populations in the site-specific and the local areas have moderate levels of deprivation. The level of public concern regarding this matter is not known.

24.6.1.4 Significance of effect

183. The operation and maintenance activities in the nearshore/intertidal zone would be short-term.
184. Change to the population health baseline is expected to be negligible as a result of the Offshore Project. The assessment acknowledges that there is a causal pathway established in the scientific literature and there are relevant regional health priorities. No adverse effect is expected with regards to delivering local health policy.
185. The assessment considers the mitigation that has been developed. This mitigation is listed in **Section 24.3.6**.
186. There would be a differential effect between the general population and vulnerable groups, but the construction activities will have limited potential to widen inequalities due to the targeted use of mitigation. The conclusion is that the residual significance of the effect would be **negligible** for the general population and, allowing for the fact that communication and engagement activities seldom reach a whole population, up to **minor negative** (not significant) for vulnerable groups.

24.6.2 Impact 2: Community safety

187. The Offshore Project operation and maintenance activities at Landfall have the potential to contribute to community safety at Saunton Sands and to averting water-related injuries and fatalities.

24.6.2.1.1 Populations affected (receptors)

188. The affected populations are residents in the site-specific area 005B and visitors to Saunton Sands who are represented by the population of the local area (North Devon). The population for Devon county is also considered as people who are intending to self-harm may travel to an area where they are not known. The impact on these populations is due to their access to Saunton Sands: this includes access to the sea for people who are considering self-harm.

189. People with existing poor mental health and who may be considering self-harm are considered vulnerable. Research evidence, summarised below, suggests that, within this population, older people and women may be particularly vulnerable. Family members and acquaintances of people who self-harm are considered vulnerable.

190. Operation and Maintenance workers, including safety marshals, will be affected if there is an incident at Saunton Sands whilst operation and maintenance work is underway.

24.6.2.1.2 Health effect

191. Health effects are likely to be associated with the actual changes brought about by Offshore Project activities, for example, extraction of cables, increased signage and the presence of safety marshals at Saunton Sands.

192. This assessment distinguishes between injuries and drowning from surfing and swimming (recreational marine activities in the nearshore/intertidal zone) and from attempts at self-harm. The operation and maintenance activities of the Offshore Project will not have an effect on the risk of injury or drowning associated with surfing and swimming (recreational marine activities in the nearshore/intertidal zone). The embedded mitigation of the safety hoarding and safety marshals will ensure that surfers and swimmers are not at risk from machinery and activities.

193. A potential health effect is considered *likely* for attempts at self-harm because, based on the methods described in **Section 24.3.2**, there is a plausible source-pathway-receptor relationship where:

- Source – the operation and maintenance activities, signage and presence of safety marshals
- Pathway – increased capacity for human intervention

- Receptors –people with existing poor mental health who may be considering self-harm; family members and acquaintances of people who self-harm; operation and maintenance workers who may be involved in a rescue operation and in dealing with any aftermath.

194. The potential effect is probable as no unusual conditions are required for the source-pathway-receptor linkage.

24.6.2.1.3 Scientific literature

195. Drowning outcomes include death and a range of non-fatal outcomes ranging from survival with no lasting consequence to survival with permanent neurological impairment (Beerman et al., 2018).

196. Drowning can be an intentional act of self-harm; it is a relatively uncommon method of suicide in most high-income countries; there are challenges in establishing a baseline as it can be hard to distinguish between a suicide and unintentional drowning; and, as a method, it is more likely to be chosen by older people (Haw and Hawton, 2016). Research in the Netherlands concluded that living close to the coast is associated with greater suicide risk for women (Helbich et al., 2022). Research in Australia reported that people travelled to reach the coast for increased anonymity so as to reduce the chance of being interrupted, that coastal suicides were higher in males than females and that female decedents had a higher incidence of mental ill health or a history of suicidal behaviours (Lawes et al., 2021). Financial downturn leads to an increase in mental ill health across the population that can, in turn, translate into despair and self-harm (Hawton and Haw, 2013). It is estimated that, for every suicide, between six and 20 people, usually family members and acquaintances of those who died, are adversely affected psychologically and emotionally (Andriessen et al., 2019).

197. Those who protect the public, such as first responders, are at greater risk for mental ill health and compromised well-being than the general population and strategies for supporting mental health and well-being need to be implemented early in the first responder career and then reinforced throughout and into retirement (Smith et al., 2021). This assessment applies this finding to the operation and maintenance workers.

24.6.2.1.4 Baseline

198. Saunton Sands is a popular destination for swimming and surfing. The baseline (see **Appendix 24.A**) shows how the site-specific area, the local area and the county have an older population than the national average. The standardised admission ratio, between 2016/17 and 2020/21, for Emergency hospital admissions for

intentional self harm is higher in North Devon than in Devon (OHID, 2022b). Both are higher than the national value. The baseline does not identify any geographic or population features that suggest effects could be unusually amplified.

24.6.2.1.5 Policy

199. Government policy sets the following expectations for access to open space (green and blue) and physical activity (including in natural habitats) in the local area:

- protecting and improving the natural environment (EN-1 paragraph 4.10.2)
- protection of the water environment (EN-1 paragraph 5.15.1).

200. Section 8, Paragraph 92 of the NPPF (MHCLG, 2021) states that planning [...] decisions should aim to achieve healthy, inclusive and safe places which [...] 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.

24.6.2.1.6 Health priorities

201. Relevant priorities from Devon’s Joint Health and Wellbeing Strategy 2020–25 (Devon Health and Wellbeing Board, 2019) are provided below:

- 2. Healthy, safe, strong and sustainable communities [by] creating conditions for good health and wellbeing where we live, work and learn and (b) create conditions for good health, physical activity and social interaction.
- 3. Focus on mental health, building good emotional health and wellbeing, happiness and resilience [by actions that] (a) reduce loneliness in all age groups; (b) identify people at risk and intervene to improve poor mental health as soon as possible; and (d) promote a positive approach to mental health and wellbeing.

202. The North Devon Coast AONB wishes to ensure sustainable access to the AONB for the benefit of the health and wellbeing of local people and visitors (North Devon Coast AONB, 2019).

203. The England and Devon strategies for suicide prevention each include a priority of reducing access to means of suicide (PHE, 2012, Public Health Devon and Devon County Council, no date).

204. The priorities of the National Drowning Prevention Strategy (National Water Safety Forum, 2015) include:

- Every community with water risks should have a community-level water safety risk assessment and water safety plan
- To better understand water-related self-harm

- Increase awareness of everyday risks in, on and around water.

24.6.2.1.7 Embedded mitigation

205. The following mitigation forms part of the Offshore Project and has been taken into account as part of the assessment of operation and maintenance activities at Landfall and the potential to affect community safety in the nearshore/intertidal zone:

- Maintaining access to Saunton Sands during operation and maintenance – no closure of the beach.
- Providing safety marshals for the protection of the public,
- Apply health and safety requirements proportionately: for example, balance the need for fencing/hoarding/barriers in nearshore/intertidal zone to protect swimmers and surfers from accessing operation and maintenance works with the need to maintain access to Saunton Sands.

24.6.2.2 Magnitude of impact

206. The magnitude of the impact of someone attempting to self-harm spans the entire range of scores (see **Table 24.12**). While the Operation and Maintenance Phase of the Offshore Project will not increase the likelihood of someone attempting to self-harm, it is reasonable to suppose that the presence of the operation and maintenance workforce at Saunton Sands would increase the opportunity to deter someone from attempting to self-harm. This is considered below, once the different magnitudes of impact of someone attempting to self-harm are considered.

207. A self-harm event on Saunton Sands during the Operation and Maintenance Phase is considered to be rare and on this basis is of **negligible** magnitude. If an event were to occur, the health outcome, for the individual concerned could range from injuries with no lasting consequences (**negligible** magnitude) to permanent impairment or death (**high** magnitude). The family members and acquaintances of people who self-harm would be adversely affected psychologically and emotionally, and the magnitude would range from **low** to **high**.

208. The operation and maintenance workforce would potentially become involved. Operation and maintenance workers, involved in rescue attempts and in dealing with any aftermath, may experience mental ill health and compromised well-being (**medium** magnitude). An event of this kind has implications for healthcare services that range from treatment of minor injury and the need for mental health services for the individual concerned (**low to medium** magnitude) to requirement for

emergency care and longer-term need for mental health services for the individual, their wider network and the operation and maintenance worker (**high** magnitude).

209. The magnitudes of the impacts of an event range from **negligible**, due to the rarity of this as an event, to **high** (negative) if such an event does occur. The presence of operation and maintenance workers may act as a deterrent and would therefore avert injury or a fatality and would be **high** magnitude (beneficial).

24.6.2.3 Sensitivity of the receptor

210. The site specific, local and county populations are considered **moderate** sensitivity due to the baseline indicating higher regional levels of self-harm than are reported nationally.
211. People with poor mental health are at increased risk of suicide and research indicates that women are at increased risk of suicide in coastal areas and that older people are more likely to choose drowning as a method of suicide. These groups are **highly** sensitive.
212. The outlook of family members and acquaintances of people who self-harm is one of uncertainty and concern and their sensitivity is **medium**.
213. Operation and maintenance workers may become involved in prevention or rescue attempts or witness the aftermath. Their sensitivity is **medium**.

24.6.2.4 Significance of effect

214. The operation and maintenance activities in the nearshore/intertidal zone would be infrequent and short-term. The assessment considers the mitigation that has been developed.
215. Fatality in coastal waters is a rare event with a very high impact. Change to the population health baseline is expected to be small as a result of the Offshore Project but reduction in, and prevention of, fatalities will make a positive contribution to regional priorities (Public Health Devon and Devon County Council, no date) and to the National Water Safety Form's Drowning Prevention Strategy (National Water Safety Forum, 2015). It will assist in ensuring that the Offshore Project contributes to Saunton Sands remaining a healthy, inclusive and safe place, *as per* Section 8, Paragraph 92 of the NPPF (MHCLG, 2021). The assessment acknowledges that there is a causal pathway established in the scientific literature. No adverse effect is expected with regards to delivering local health policy.
216. The conclusion is that the effect would be **negligible** for the general population.

217. The effect for people with mental ill health who are considering self-harm is **minor beneficial** (not significant) as the presence of operation and maintenance workers will provide some measure of deterrent. This applies also to their family members and acquaintances. The operation and maintenance workers will be affected if an event does occur. The effect will depend upon the event and the effect will range from **minor negative** effect (not significant) to **moderate negative** (significant) for operation and maintenance workers who witness, or become involved in, an event.

24.6.2.5 Additional enhancement

218. The Offshore Project has the opportunity to enhance community safety at Saunton Sands by providing resources and by increasing capacity for human intervention if people are attempting or considering self-harm. This is a professional judgement and is made with medium level of confidence based on academic and scientific studies. It is acknowledged that a self-harm event, leading to injury or fatality, is low probability but that it would also be very serious.

219. The additional enhancement would comprise of signs that provide information about safety and sources of help for those considering self-harm; and training for safety marshals to train increase awareness about self-harm and actions to take. The CEMP would include water safety risk assessment and water safety plans and relevant training for safety marshals and other operation and maintenance workers. An Outline CEMP is provided in **Appendix 5.A**.

24.6.2.6 Residual significance

220. There would be a differential effect between the general population and vulnerable groups. The operation and maintenance activities, the signage and the presence of the workforce, will have limited potential to widen inequalities as the events are rare, but the targeted use of enhancement can have a deterrent or a protective effect. The conclusion is that the residual significance of the effect would be **negligible** for the general population and up to **moderate beneficial** (significant) for people with mental ill health who are considering self-harm, for their family members and acquaintances and for the operation and maintenance workers.

24.7 Potential impacts during Decommissioning

221. No decision has been made regarding the final decommissioning policy for the Offshore Project as it is recognised that industry best practice, rules and legislation change over time. The decommissioning methodology would be finalised nearer to the end of the lifetime of the Offshore Project to be in line with current guidance,

policy and legalisation at that point. Any such methodology would be agreed with the relevant authorities and statutory consultees. The decommissioning works are likely to be subject to a separate licencing and consenting approach.

222. The anticipated decommissioning activities are outlined in **Section 5.10 of Chapter 5: Project Description**. The potential impacts of the decommissioning of the Offshore Project have been assessed for human health on the assumption that decommissioning methods will be similar or of a lesser scale than those deployed for construction. The types of impact would be comparable to those identified for the construction phase:

- Impact 1: Open space, leisure and play (access)
- Impact 2: Community safety

223. The significance of impacts would be comparable to or less than those identified for the construction phase. Accordingly, given the construction phase assessments concluded “negligible effect”, “minor adverse effect” and “moderate beneficial” for human health receptors, it is anticipated that the same would be valid for the decommissioning phase regardless of the final decommissioning methodologies. A summary of potential effects is shown in **Table 24.29**.

24.8 Potential cumulative effects

224. The approach to cumulative effect assessment (CEA) is set out in **Chapter 6: EIA Methodology**. Only projects which are reasonably well described and sufficiently advanced to provide information on which to base a meaningful and robust assessment have been included in the CEA. Projects which are sufficiently implemented during the site characterisation for the Offshore Project have been considered as part of the baseline for the EIA.

225. The cumulative impact assessment for human health was undertaken in two stages. The first stage was to consider the potential for the impacts assessed as part of the Offshore Project to lead to cumulative impacts in conjunction with other projects. The first stage of the assessment is detailed in **Table 24.23**. Only potential impacts assessed in **Sections 24.5 and 24.6** as negligible or above are included in the CIA (i.e. those assessed as ‘no impact’ are not taken forward as there is no potential for them to contribute to a cumulative impact).

Table 24.23 Potential cumulative effects considered for human health

Impact	Potential for cumulative effect	Rationale
Construction		
Impact 1: Open space, leisure and play (access)	Yes	Onshore construction activities could overlap with construction activities in the nearshore/intertidal zone.
Impact 2: Community safety	Yes	Onshore construction activities could overlap with construction activities in the nearshore/intertidal zone.
Operation and Maintenance		
Impact 1: Open space, leisure and play (access)	Yes	Onshore operation and maintenance activities could overlap with operation and maintenance activities in the nearshore/intertidal zone.
Impact 2: Community safety	Yes	Onshore operation and maintenance activities could overlap with operation and maintenance activities in the nearshore/intertidal zone.

226. The second stage of the CEA is to evaluate the projects considered for the CEA to determine whether a cumulative impact is likely to arise. The list of considered projects (identified in **Chapter 6: EIA Methodology**) and their anticipated potential for cumulative impacts are summarised in **Table 24.24**). In all cases but one, the projects are several 10s of km's away from the Offshore Project and there is therefore no potential for cumulative impact on the identified receptors.

Table 24.24 Projects considered in the cumulative impact assessment on human health

Project	Status	Distance from Offshore Development Area (km)	Included in the CIA?	Rationale
White Cross Onshore Project	Planned	0 (Landfall)	Yes	This is included as part of the assessment as it is interrelated with the offshore components considered in this chapter.

227. It is noted that the only project listed is the Town and Country Planning Application for the White Cross Onshore Project which is separate to the offshore Section 36 consent and marine licences applications for which this ES is prepared. The specific

combined project elements are assessed cumulatively first and then cumulatively with all other projects.

24.8.1 Cumulative Impact 1: [Construction] Open space, leisure and play (access)

228. There is potential for temporal overlap of offshore export cable construction across the landfall zone of northern Saunton Sands and the onshore installation of the cables.

24.8.1.1 Magnitude of impact and significance of the effect

229. Based on an assumption that the installation of the landfall cable across Saunton Sands would take place over a period of up to two days, a temporal overlap in cable construction activities is unlikely. The installation of the export cable in the subtidal zone and the installation of the onshore cable landwards would have no interaction and the move from the Offshore to the Onshore Project would necessitate neither new equipment nor a change in workforce. The magnitude of impact on access to open space and to leisure is therefore considered negligible. The overall significance of the effect under a worst case scenario on the identified receptors is deemed **negligible**.

24.8.1.2 Further Mitigation

230. No further mitigation is required.

24.8.2 Cumulative Impact 2: [Construction] Community safety

231. There is potential for temporal overlap of offshore export cable construction across the landfall zone of northern Saunton Sands and the onshore installation of the cables.

24.8.2.1 Magnitude of impact and significance of the effect

232. Based on an assumption that the installation of the landfall cable across Saunton Sands would take place over a period of up to two days, a temporal overlap in cable construction activities is unlikely. The installation of the export cable in the subtidal zone and the installation of the onshore cable landwards would have no interaction and the move from the Offshore to the Onshore Project would necessitate neither new equipment nor a change in workforce. The magnitude of impact on community safety is therefore considered negligible. The overall significance of the effect under a worst case scenario on the identified receptors is deemed **negligible**.

24.8.2.2 Further Mitigation

233. No further mitigation is required.

24.8.3 Cumulative Impact 1: [Operation and Maintenance] Open space, leisure and play (access)

234. There is potential for temporal overlap of offshore export cable operation and maintenance across the landfall zone of northern Saunton Sands and the onshore operation and maintenance of the cables.

24.8.3.1 Magnitude of impact and significance of the effect

235. The operation and maintenance activities for the export cable in the subtidal zone and for the onshore cable landwards are not likely to have any interaction. The magnitude of impact on access to open space and to leisure is therefore considered negligible. The overall significance of the effect under a worst case scenario on the identified receptors is deemed **negligible**.

24.8.3.2 Further Mitigation

236. No further mitigation is required.

24.8.4 Cumulative Impact 2: [Operation and Maintenance] Community safety

237. There is potential for temporal overlap of offshore export cable construction across the landfall zone of northern Saunton Sands and the onshore installation of the cables.

24.8.4.1 Magnitude of impact and significance of the effect

238. The operation and maintenance activities for the export cable in the subtidal zone and for the onshore cable landwards are not likely to have any interaction. The magnitude of impact on community safety is therefore considered negligible. The overall significance of the effect under a worst case scenario on the identified receptors is deemed **negligible**.

24.8.4.2 Further Mitigation

239. No further mitigation is required.

24.9 Inter-relationships

240. Inter-relationship effects are covered as part of the assessment and consider impacts from the construction, operation or decommissioning of the Offshore

Project on the same receptor (or group). A description of the process to identify and assess these effects is presented in **Chapter 6: EIA Methodology**.

241. Inter-relationships between the human health topic and several other that have been considered within this ES (in that they have informed this chapter). These are as follows:

- **Chapter 9: Marine Sediment and Water quality**
- **Chapter 14: Commercial Fisheries**
- **Chapter 15: Shipping and Navigation**
- **Chapter 18: Infrastructure and Other Users**
- **Chapter 19: Seascape, Landscape and Visual Impact Assessment**
- **Chapter 23: Socio-Economics (including Tourism and Recreation)**
- **Chapter 26: Major Accidents and Disasters**

24.10 Potential transboundary impacts

242. The Scoping Report identified that there was no potential for significant transboundary effects regarding human health from the Offshore Project upon the interests of other EEA States and this is therefore **scoped out**.

24.11 Interactions

243. The population health effects of individual determinants of health identified and assessed in this chapter have the potential to be experienced by the same populations, potentially giving rise to additive or synergistic effects.

244. The areas of interaction between impacts are presented in **Table 24.25**, **Table 24.26** and **Table 24.27** along with an indication as to whether the interaction may give rise to synergistic impacts. This provides a screening tool for which impacts have the potential to interact.

245. **Table 24.28** then provides an assessment for each receptor (or receptor group) related to these impacts in two ways. Firstly, the impacts are considered within a development phase (i.e., construction, operation, maintenance or decommissioning) to see if, for example, multiple construction impacts could combine. Secondly, a lifetime assessment is undertaken which considers the potential for impacts to affect receptors across development phases. The significance of each individual impact is determined by the sensitivity of the receptor and the magnitude of impact; the sensitivity is constant whereas the magnitude may differ. Therefore, when considering the potential for impacts to be additive it is the magnitude of impact which is important – the magnitudes of the different effects are combined upon the

same sensitivity receptor. If minor impact and minor impact were added this would effectively double count the sensitivity.

Table 24.25 Interaction between impacts during construction

Construction	Potential impact	
	Impact 1: Open space, leisure and play (access)	Impact 2: Community safety
Impact 1: Open space, leisure and play (access)		Yes
Impact 2: Community safety	Yes	

Table 24.26: Interaction between impacts during operation and maintenance

Operation and maintenance	Potential impact	
	Impact 1: Open space, leisure and play (access)	Impact 2: Community safety
Impact 1: Open space, leisure and play (access)		Yes
Impact 2: Community safety	Yes	

Table 24.27: Interaction between impacts during decommissioning

Decommissioning	Potential impact	
	Impact 1: Open space, leisure and play (access)	Impact 2: Community safety
Impact 1: Open space, leisure and play (access)		Yes
Impact 2: Community safety	Yes	

Table 24.28 Potential interactions between impacts on human health.

Receptor	Construction	Operation and Maintenance	Decommissioning	Lifetime Assessment
Population near landfall at Saunton Sands (site-specific)	Negligible	Negligible	Negligible	Negligible
Population of North Devon (local)	Negligible	Negligible	Negligible	Negligible
Population of Devon (regional)	Negligible	Negligible	Negligible	Negligible
Children and young people	Negligible	Negligible	Negligible	Negligible
Older people	Negligible	Negligible	Negligible	Negligible
People experiencing social isolation	Negligible	Negligible	Negligible	Negligible
People on low income	Negligible	Negligible	Negligible	Negligible
People with existing poor health (physical and mental health)	Negligible to high beneficial	Negligible to high beneficial	Negligible to high beneficial	Negligible to high beneficial
People indirectly affected by self-harm attempts	n/a	n/a	n/a	n/a

24.12 Summary

246. This chapter has investigated the potential effects on human health receptors arising from the potential impact of the Offshore Project seaward of Mean High-Water Springs (MHWS) during the Construction phase, the Operation and Maintenance phase, and the Decommissioning phase. The range of potential impacts and associated effects considered has been informed by the Scoping Opinion as well as reference to existing policy and guidance. The impacts considered include those brought about directly as well as indirectly.
247. The site-specific study area in LSOA 005B and the local area is North Devon. LSOA 005B is in the ninth decile for the IMD, and thus has low levels of deprivation. The population of Devon county is older than England and has population growth above the national average, influenced by the inward migration of people aged 40 to 75 (Devon Health and Wellbeing Board, 2019). The population is set to grow by 88,000 over the next 20 years, with low growth in under 65s and with considerable growth in the older population (Devon Health and Wellbeing Board, 2019). LSOA 005B has a higher percentage of retirement-aged people (65+) when compared with North Devon local authority area, Devon and with the national UK average (Nomis, no date-b, no date-d, no date-e, no date-g).
248. **Table 24.29** presents a summary of the impacts assessed within this ES chapter, any commitments made, and mitigation required and the residual effects. Adverse significant residual effects have not been identified. The potential for limited beneficial impacts arising from Community Safety measures have been identified.
249. The assessment of cumulative effects from the Offshore Project, and its embedded mitigation, and other developments and activities concluded that effects would be negligible for the general population. For relevant vulnerable groups, combined proximity and increased sensitivity may result in a range of effects from minor adverse (not significant) to moderate beneficial (significant). The final conclusion is that the cumulative effects will be negligible for vulnerable groups.
250. The screening of transboundary impacts was not required.

Table 24.29 Summary of potential impacts for human health during construction, operation, maintenance and decommission of the Offshore Project

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation measure	Residual effect
Construction						
Impact 1: Open space, leisure and play (access)	Site-specific area 005B	Negligible	Negligible to low	Negligible to minor negative (not significant)	Maintaining access to Saunton Sands during construction – no closure of the beach. Communication and engagement activities to ensure that visitors to Saunton Sands are aware of the timing and extent of construction activities in the nearshore/intertidal zone. Measures set out in the CEMP that limit and manage the timing of construction activities. Fencing/hoarding/barriers in nearshore/intertidal zone to prevent access to construction works and to protect swimmers and surfers. An Outline CEMP is provided in Appendix 5.A.	Negligible
	Local area (North Devon)	Negligible	Negligible to low	Negligible to minor negative (not significant)		Negligible
	Children and young people	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	Older people	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	People experiencing social isolation	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	People on low incomes	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	People with existing poor physical and mental health	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation measure	Residual effect
Impact 2: Community safety	Site-specific area 005B	Medium	Low	Minor beneficial (not significant)	Providing resources and increasing capacity for human intervention if people are attempting or considering self-harm. This would comprise of signs with information about safety, to reduce accidental fatality, and sources of help for those considering self-harm; support to local initiatives for non-health staff and members of the public to train and/or raise awareness about self-harm. The CEMP will include water safety risk assessment and water safety plan and other relevant training for safety marshals and other construction workers. An Outline CEMP is provided in Appendix 5.A .	Moderate beneficial (significant)
	Local area (North Devon)	Medium	Low	Minor beneficial (not significant)		Moderate beneficial (significant)
	Regional (Devon)	Medium	Low	Minor beneficial (not significant)		Moderate beneficial (significant)
	People with existing poor physical and mental health (including women and older people)	High	High	Minor beneficial (not significant)		Moderate beneficial (significant)
	People indirectly affected by self-harm attempts	Medium	Low to high	Up to moderate negative (significant) to minor beneficial (significant)		Moderate beneficial (significant)
Operation and Maintenance Phase						
Impact 1: Open space, leisure	Site-specific area 005B	Negligible	Negligible to low	Negligible to minor negative (not significant)	Maintaining access to Saunton Sands during operation and	Negligible

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation measure	Residual effect
and play (access)	Local area (North Devon)	Negligible	Negligible to low	Negligible to minor negative (not significant)	maintenance – no closure of the beach. Communication and engagement activities to ensure that visitors to Saunton Sands are aware of the timing and extent of operation and maintenance activities in the nearshore/intertidal zone. Measures set out in the Environmental Management Plan that limit and manage the timing of operation and maintenance activities. Fencing/hoarding/barriers in nearshore/intertidal zone to prevent access to operation and maintenance works and to protect swimmers and surfers.	Negligible
	Children and young people	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	Older people	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	People experiencing social isolation	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	People on low incomes	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	People with existing poor physical and mental health	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
Impact 2: Community safety	Site-specific area 005B	Medium	Low	Minor beneficial (not significant)	Providing resources and increasing capacity for human intervention if people are attempting or considering self-harm. This would comprise of signs with information about safety, to reduce accidental fatality, and	Moderate beneficial (significant)
	Local area (North Devon)	Medium	Low	Minor beneficial (not significant)		Moderate beneficial (significant)
	Regional (Devon)	Medium	Low	Minor beneficial (not significant)		Moderate beneficial (significant)

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation measure	Residual effect
	People with existing poor physical and mental health (including women and older people)	High	High	Minor beneficial (not significant)	sources of help for those considering self-harm; support to local initiatives for non-health staff and members of the public to train and/or raise awareness about self-harm. The CEMP will include water safety risk assessment and water safety plan and other relevant training for safety marshals and other construction workers. An Outline CEMP is provided in Appendix 5.A .	Moderate beneficial (significant)
	People indirectly affected by self-harm attempts	Medium	Low to high	Up to moderate negative (significant) to minor beneficial (significant)		Moderate beneficial (significant)
Decommissioning						
Impact 1: Open space, leisure and play (access)	Site-specific area 005B	Negligible	Negligible to low	Negligible to minor negative (not significant)	Maintaining access to Saunton Sands during decommissioning – no closure of the beach. Communication and engagement activities to ensure that visitors to Saunton Sands are aware of the timing and extent of decommissioning activities in the nearshore/intertidal zone.	Negligible
	Local area (North Devon)	Negligible	Negligible to low	Negligible to minor negative (not significant)		Negligible
	Children and young people	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation measure	Residual effect
	Older people	Low	Negligible to low	Minor negative (not significant)	Measures set out in the Construction Environmental Management Plan that limit and manage the timing of decommissioning activities. Fencing/hoarding/barriers in nearshore/intertidal zone to prevent access to decommissioning works and to protect swimmers and surfers	Minor negative (not significant)
	People experiencing social isolation	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	People on low incomes	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
	People with existing poor physical and mental health	Low	Negligible to low	Minor negative (not significant)		Minor negative (not significant)
Impact 2: Community safety	Site-specific area 005B	Medium	Low	Minor beneficial (not significant)	Providing resources and increasing capacity for human intervention if people are attempting or considering self-harm. This would comprise of signs with information about safety, to reduce accidental fatality, and sources of help for those considering self-harm; support to local initiatives	Moderate beneficial (significant)
	Local area (North Devon)	Medium	Low	Minor beneficial (not significant)		Moderate beneficial (significant)
	Regional (Devon)	Medium	Low	Minor beneficial (not significant)		Moderate beneficial (significant)

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation measure	Residual effect
	People with existing poor physical and mental health (including women and older people)	High	High	Minor beneficial (not significant)	for non-health staff and members of the public to train and/or raise awareness about self-harm. The CEMP could include water safety risk assessment and water safety plan and other relevant training for safety marshals and other decommissioning workers. An Outline CEMP is provided in Appendix 5.A.	Moderate beneficial (significant)
	People indirectly affected by self-harm attempts	Medium	Low to high	Up to moderate negative (significant) to minor beneficial (significant)		Moderate beneficial (significant)

24.13 References

Barton, H. & Grant, M. 2006. A health map for the local human habitat. *The Journal of the Royal Society for the Promotion of Health*, 126, 252-253.

Beerman, S., Bierens, J., Clemens, T., et al. 2018. Clarification and categorization of non-fatal drowning: A draft position statement for review and input by the global drowning community. World Health Organization. Toronto.
<https://www.who.int/publications/m/item/clarification-and-categorization-of-non-fatal-drowning>

BEIS. 2021a. Draft National Policy Statement for Renewable Energy Infrastructure (EN-3). Department for Business Energy and Industrial Strategy, The Stationery Office. London. <https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-review-of-energy-national-policy-statements>

BEIS. 2021b. Draft Overarching National Policy Statement for Energy (EN-1). Department for Business Energy and Industrial Strategy, The Stationery Office. London. <https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-review-of-energy-national-policy-statements>

Cave, B., Claßen, T., Fischer-Bonde, B., et al. 2020. Human health: ensuring a high level of protection. A reference paper on addressing Human Health in Environmental Impact Assessment as per EU Directive 2011/92/EU amended by 2014/52/EU. International Association for Impact Assessment and European Public Health Association. Fargo. <https://www.iaia.org/reference-and-guidance-documents.php> [Accessed 21 October 2022]

Cave, B., Fothergill, J., Pyper, R., et al. 2017. Health in Environmental Impact Assessment: a primer for a proportionate approach. Ben Cave Associates Ltd, IEMA and the Faculty of Public Health. Lincoln, England. <https://www.bcainsight.com/resources> [Accessed 21 October 2022]

Dahlgren, G. & Whitehead, M. 1991. "The main determinants of health" model.

DECC. 2011a. National Policy Statement for Renewable Energy Infrastructure (EN-3). The Stationery Office. London. www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure

DECC. 2011b. Overarching National Policy Statement for Energy (EN-1). The Stationery Office. London. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/37046/1938-overarching-nps-for-energy-en1.pdf

Devon Health and Wellbeing Board. 2019. Healthy and Happy Communities. Devon's Joint Health and Wellbeing Strategy 2020–25. <https://www.devonhealthandwellbeing.org.uk/strategies/>

DoH. 2021. *Public Health Outcomes Framework* [Online]. Department of Health. Available: <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework> [Accessed 21 October 2022].

European Commission. 2017. Environmental Impact Assessment of Projects: Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU). European Union. Luxembourg. http://ec.europa.eu/environment/eia/pdf/EIA_guidance_Scoping_final.pdf

European Parliament & Council of the European Union. 2000. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32000L0060&qid=1670863932615>

European Parliament & Council of the European Union. 2004. Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air. <http://data.europa.eu/eli/dir/2004/107/oj>

European Parliament & Council of the European Union. 2006. Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0007>

European Parliament & Council of the European Union. 2008. Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe. <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0050>

Haw, C. & Hawton, K. 2016. Suicide and Self-Harm by Drowning: A Review of the Literature. *Archives of Suicide Research*, 20, 95-112. <https://doi.org/10.1080/13811118.2015.1025120>

Hawton, K. & Haw, C. 2013. Economic recession and suicide. *BMJ : British Medical Journal*, 347, f5612. <https://doi.org/10.1136/bmj.f5612>

Helbich, M., Browning, M. H. E. M., White, M., et al. 2022. Living near coasts is associated with higher suicide rates among females but not males: A register-based linkage study in the Netherlands. *Science of The Total Environment*, 845, 157329. <https://doi.org/10.1016/j.scitotenv.2022.157329>

HM Government of Great Britain & Northern Ireland. 1974. Health and Safety at Work etc. Act. www.legislation.gov.uk/ukpga/1974/37

HM Government of Great Britain & Northern Ireland. 1990. Environmental Protection Act. <http://www.legislation.gov.uk/ukpga/1990/43/contents>

HM Government of Great Britain & Northern Ireland. 1993. Clean Air Act. www.legislation.gov.uk/ukpga/1993/11/contents

HM Government of Great Britain & Northern Ireland. 2010a. The Air Quality Standards Regulations. London. www.legislation.gov.uk/uksi/2010/1001/contents/made

HM Government of Great Britain & Northern Ireland. 2010b. The Health Protection (Notification) Regulations 2010. No. 659. <https://www.legislation.gov.uk/uksi/2010/659/contents>

HM Government of Great Britain & Northern Ireland. 2015. Control Of Major Accident Hazards Regulations 2015 (COMAH). No. 483. <https://www.legislation.gov.uk/uksi/2015/483/contents/made>

ICNIRP 1998. ICNIRP guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz). *Health Physics*, 74, 494-522.

ICNIRP 2010. Guidelines for limiting exposure to time-varying electric and magnetic fields (1 hz – 100 khz). *Health Physics*, 99, 818-836.

International Maritime Organization. 1973. International Convention for the Prevention of Pollution from Ships (MARPOL) [www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)

Lawes, J. C., Peden, A. E., Bugeja, L., et al. 2021. Suicide along the Australian coast: Exploring the epidemiology and risk factors. *PLOS ONE*, 16, e0251938. <https://doi.org/10.1371/journal.pone.0251938>

Marmot, M. 2020. Health equity in England: the Marmot review 10 years on. *BMJ*, m693. <https://doi.org/10.1136/bmj.m693>

MHCLG. 2021. National Planning Policy Framework. Ministry of Housing Communities & Local Government. <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

National Water Safety Forum. 2015. A future without drowning: The UK National Drowning Prevention Strategy 2016-2026.

<https://www.nationalwatersafety.org.uk/media/1005/uk-drowning-prevention-strategy.pdf>

Nomis. no date-a. *Devon County: 2021 Census Area Profile* [Online]. Office for National Statistics. Available:

https://www.nomisweb.co.uk/sources/census_2021/report?compare=E10000008

[Accessed 15 February 2023].

Nomis. no date-b. *Devon County: Local Area Report* [Online]. Office for National Statistics. Available:

<https://www.nomisweb.co.uk/reports/localarea?compare=E10000008> [Accessed 24

January 2023].

Nomis. no date-c. *England Country: 2021 Census Area Profile* [Online]. Office for National Statistics. Available:

https://www.nomisweb.co.uk/sources/census_2021/report?compare=E92000001

[Accessed 15 February 2023].

Nomis. no date-d. *England Country: Local Area Report* [Online]. Office for National Statistics. Available:

<https://www.nomisweb.co.uk/reports/localarea?compare=E92000001> [Accessed 24

January 2023].

Nomis. no date-e. *North Devon 005B Lower-layer SOA: Local Area Report* [Online]. Office for National Statistics. Available:

<https://www.nomisweb.co.uk/reports/localarea?compare=E01020091> [Accessed 24

January 2023].

Nomis. no date-f. *North Devon Local Authority: 2021 Census Area Profile* [Online]. Office for National Statistics. Available:

https://www.nomisweb.co.uk/sources/census_2021/report?compare=E07000043

[Accessed 15 February 2023].

Nomis. no date-g. *North Devon Local Authority: Local Area Report* [Online]. Office for National Statistics. Available:

<https://www.nomisweb.co.uk/reports/localarea?compare=E07000043> [Accessed 24

January 2023].

Nomis. no date-h. *Welcome to Nomis* [Online]. Available: <https://www.nomisweb.co.uk/> [Accessed 19 January 2023].

North Devon Coast AONB. 2019. North Devon Coast AONB Management Plan 2019-2024. Devon. <https://www.northdevon-aonb.org.uk/resources/north-coast-aonb-management-plan-2019-2024>

OHID. 2022a. *Public health profiles: Indicator: Suicide rate (Persons) 2019-2021* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: https://fingertips.phe.org.uk/search/self%20harm#page/3/gid/1938132828/pat/6/par/E12000009/atj/401/are/E07000043/iid/41001/age/285/sex/4/cat/-1/ctp/-1/yr/3/cid/4/tbm/1/page-options/tre-ao-0_car-do-0_car-ao-0 [Accessed 17 February 2023].

OHID. 2022b. *Self harm (North Devon)* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: https://fingertips.phe.org.uk/search/self%20harm#page/1/gid/1938132695/pat/6/par/E12000009/atj/401/are/E07000043/iid/21001/age/1/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1/page-options/tre-ao-0_car-ao-0_car-do-0 [Accessed 17 February 2023].

OHID. no date. Public Health Outcomes Framework - at a glance summary. North Devon. Office for Health Improvement and Disparities. <https://fingertips.phe.org.uk/static-reports/public-health-outcomes-framework/at-a-glance/E07000043.html?area-name=North%20Devon> [Accessed 21 October 2022]

ONS. 2023. *How life has changed in North Devon: Census 2021* [Online]. Office for National Statistics,. Available: <https://www.ons.gov.uk/visualisations/censusareachanges/E07000043/> [Accessed 15 February 2023].

ONS. no date. *3. Local area population change* [Online]. Office of National Statistics. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2020> [Accessed 21 October 2022].

PHE. 2012. Preventing Suicide in England: a cross-government outcomes strategy to save lives. Public Health England. <https://www.gov.uk/government/publications/suicide-prevention-strategy-for-england>

PHE. 2019. *Local Authority Health Profile: North Devon* [Online]. Public Health England. Available: <https://fingertips.phe.org.uk/static-reports/health-profiles/2019/E07000043.html?area-name=North%20Devon> [Accessed 21 October 2022].

PHE. 2020. Guide for local authority public health and planning teams to improve the use of HIAs in spatial planning Public Health England. London. <https://www.gov.uk/government/publications/health-impact-assessment-in-spatial-planning>

Public Health Devon & Devon County Council. no date. Devon Suicide Prevention Action Plan 2021-2022. <https://devoncc.sharepoint.com/sites/PublicDocs/PublicHealth/Wellbeing/Forms/AllItems.aspx?id=%2Fsites%2FPublicDocs%2FPublicHealth%2FWellbeing%2FStrategies%2FDevon%20Suicide%20Prevention%20Action%20Plan%202021%2D22%2Epdf&parent=%2Fsites%2FPublicDocs%2FPublicHealth%2FWellbeing%2FStrategies&p=true&ga=1>

Pyper, R., Cave, B., Purdy, J., et al. 2021. Health Impact Assessment Guidance: A Manual and Technical Guidance. Institute of Public Health in Ireland. Dublin and Belfast. <https://publichealth.ie/hia-guidance/> [Accessed 21 October 2022]

Pyper, R., Lamming, M., Beard, C., et al. 2022a. Guide to Effective Scoping of Human Health in Environmental Impact Assessment. Institute of Environmental Management and Assessment (IEMA). <https://www.iema.net/resources/reading-room/2022/11/18/iema-guides-health-in-eia>

Pyper, R., Waples, H., Beard, C., et al. 2022b. Guide to Determining Significance For Human Health In Environmental Impact Assessment. Institute of Environmental Management and Assessment (IEMA). <https://www.iema.net/resources/reading-room/2022/11/18/iema-guides-health-in-eia>

Smith, E., Dean, G. & Holmes, L. 2021. Supporting the Mental Health and Well-Being of First Responders from Career to Retirement: A Scoping Review. *Prehospital and Disaster Medicine*, 36, 1-6. <https://doi.org/10.1017/s1049023x21000431>

Torridge District Council & North Devon District Council. 2018. North Devon and Torridge Local Plan 2011-2031. <https://consult.torridge.gov.uk/portal/planning/localplan/adoption/>

WAID. 2021. Summary for England. Overall water-related fatalities. Water Incident Database. <https://nationalwatersafety.org.uk/waid/annual-reports-and-data/>

White, M. P., Elliott, L. R., Gascon, M., et al. 2020. Blue space, health and well-being: A narrative overview and synthesis of potential benefits. *Environmental Research*, 191, 110169. <https://doi.org/https://doi.org/10.1016/j.envres.2020.110169>

World Health Organization. 1946. Constitution. World Health Organization. Basic Documents, Forty-fifth edition, Supplement, October 2006. Geneva.
<https://www.who.int/about/governance/constitution>



White Cross Offshore Wind Farm Environmental Statement

Appendix 24.A: Baseline Information



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Appendix 24.A: Human Health: Baseline Information

1. Introduction

1. This Appendix sets out additional information relevant to human health within the Project study area. It needs to be read in conjunction with the **Chapter 24: Human Health**.
2. The first section provides census data and other baseline information components.
3. The second section provides summaries from academic and scientific studies examining the links between human health and blue spaces.

1.1 Census data

1.1.1 Census 2011

Table 1.1 Local area reports relevant to Human Health (2011)

Geography Measures	N Devon 005B		N Devon		Devon		England
	No.	%	No.	%	No.	%	%
All categories: Long-term health problem or disability	1,296	100	93,667	100	746,399	100.0	100
Day-to-day activities							
limited a lot	104	8	8,180	8.7	63,834	8.6	8.3
limited a little	155	12	10,219	10.9	81,345	10.9	9.3
not limited	1,037	80	75,268	80.4	601,220	80.5	82.4
Day-to-day activities (age 16 to 64)							
limited a lot	27	2.1	3,023	3.2	23,609	3.2	3.6
limited a little	50	3.9	4,382	4.7	34,116	4.6	4.6
not limited	677	52.2	49,165	52.5	397,074	53.2	56.5
Health							
Very good	596	46	43,441	46.4	344,059	46.1	47.2
Good	452	34.9	31,704	33.8	259,032	34.7	34.2
Fair	172	13.3	13,264	14.2	104,498	14.0	13.1
Bad	67	5.2	4,064	4.3	30,137	4.0	4.2
Very bad	9	0.7	1,194	1.3	8,673	1.2	1.2
Unpaid care per week							
Provides no unpaid care	1,162	89.7	83,324	89	661,515	88.6	89.8
Provides 1 to 19 hours	80	6.2	6,634	7.1	56,528	7.6	6.5
Provides 20 to 49 hours	16	1.2	1,260	1.3	9,868	1.3	1.4
Provides 50+ hours	38	2.9	2,449	2.6	18,488	2.5	2.4

Data: Nomis local area reports (based on Census 2011) (Nomis, no date-b, no date-d, no date-e, no date-g)

Table 1.2 Age profile (2011)

Age structure	North Devon 005B		North Devon		Devon		England	
	No.	%	No.	%	No.	%	No.	%
All usual residents	1,296	1	93,667	1	746,399	1	53,012,456	1
Age 0 to 4	59	4.6%	5,014	5.4%	37,479	5.0%	3,318,449	6.3%
Age 5 to 7	45	3.5%	2,930	3.1%	22,022	3.0%	1,827,610	3.4%
Age 8 to 9	20	1.5%	1,871	2.0%	14,310	1.9%	1,145,022	2.2%
Age 10 to 14	65	5.0%	5,286	5.6%	40,518	5.4%	3,080,929	5.8%
Age 15	17	1.3%	1,188	1.3%	8,845	1.2%	650,826	1.2%
Age 16 to 17	28	2.2%	2,317	2.5%	17,586	2.4%	1,314,124	2.5%
Age 18 to 19	25	1.9%	2,070	2.2%	18,977	2.5%	1,375,315	2.6%
Age 20 to 24	55	4.2%	4,821	5.1%	42,929	5.8%	3,595,321	6.8%
Age 25 to 29	43	3.3%	4,565	4.9%	36,415	4.9%	3,650,881	6.9%
Age 30 to 44	235	18.1%	16,192	17.3%	126,570	17.0%	10,944,271	20.6%
Age 45 to 59	251	19.4%	19,366	20.7%	154,693	20.7%	10,276,902	19.4%
Age 60 to 64	117	9.0%	7,239	7.7%	57,629	7.7%	3,172,277	6.0%
Age 65 to 74	184	14.2%	10,937	11.7%	86,420	11.6%	4,552,283	8.6%
Age 75 to 84	112	8.6%	6,856	7.3%	56,246	7.5%	2,928,118	5.5%
Age 85 to 89	24	1.9%	1,911	2.0%	16,645	2.2%	776,311	1.5%
Age 90 and over	16	1.2%	1,104	1.2%	9,115	1.2%	403,817	0.8%
Age 0 to 19		20.0%		22.1%		21.4%		24.0%
Age 20 to 64		54.1%		55.7%		56.0%		59.7%
Age 65 and over		25.9%		22.2%		22.6%		16.3%

Data: Nomis local area reports (based on Census 2011) (Nomis, no date-b, no date-d, no date-e, no date-g)

1.1.2 Census 2021

Table 1.3 Local area reports relevant to Human Health (2021)

Geography	North Devon		Devon		England	
General health						
Total: All usual residents	98,611	100.0%	811,640	100.0%	56,490,046	100.0%
Very good health	46,135	46.8%	382,463	47.1%	27,390,829	48.5%
Good health	33,154	33.6%	277,928	34.2%	19,040,735	33.7%
Fair health	13,705	13.9%	109,469	13.5%	7,147,346	12.7%
Bad health	4,352	4.4%	32,648	4.0%	2,248,255	4.0%
Very bad health	1,265	1.3%	9,132	1.1%	662,881	1.2%
Disability						
Total: All usual residents	98,611	100.0%	811,640	100.0%	56,490,048	100.0%
Day-to-day activities limited a lot	7,866	8.0%	62,303	7.7%	4,140,357	7.3%
Day-to-day activities limited a little	11,432	11.6%	96,027	11.8%	5,634,153	10.0%
Has long term physical or mental health condition but day-to-day activities are not limited	7,665	7.8%	65,128	8.0%	3,856,029	6.8%
No long term physical or mental health conditions	71,648	72.7%	588,182	72.5%	42,859,509	75.9%
Provision of unpaid care						
Total: All usual residents aged 5 and over	94,098	100.0%	776,300	100.0%	53,413,098	100.0%
Provides no unpaid care	85,130	90.5%	701,556	90.4%	48,734,833	91.2%
Provides 19 hours or less unpaid care a week	4,459	4.7%	39,271	5.1%	2,303,725	4.3%
Provides 20 to 49 hours unpaid care a week	1,662	1.8%	13,465	1.7%	969,769	1.8%

Geography	North Devon		Devon		England	
Provides 50 or more hours unpaid care a week	2,847	3.0%	22,008	2.8%	1,404,771	2.6%

Data: Nomis Area Profile (based on Census 2021) (Nomis, no date-a, no date-c, no date-f)

Table 1.4 Age profile (2021)

Geography	North Devon		Devon		England	
Total: All usual residents	98,608	100.0%	811,638	100.0%	56,490,045	100.0%
4 years and under	4,512	4.6%	35,345	4.4%	3,076,950	5.4%
5 to 9 years	5,226	5.3%	41,294	5.1%	3,348,701	5.9%
10 to 15 years	6,680	6.8%	51,534	6.3%	4,057,443	7.2%
16 to 19 years	3,925	4.0%	36,500	4.5%	2,574,781	4.6%
20 to 24 years	4,237	4.3%	44,202	5.4%	3,414,450	6.0%
25 to 34 years	10,418	10.6%	84,568	10.4%	7,667,865	13.6%
35 to 49 years	16,289	16.5%	134,032	16.5%	10,978,437	19.4%
50 to 64 years	21,867	22.2%	174,769	21.5%	10,970,118	19.4%
65 to 74 years	13,221	13.4%	109,049	13.4%	5,564,143	9.8%
75 to 84 years	8,738	8.9%	71,152	8.8%	3,464,857	6.1%
85 years and over	3,495	3.5%	29,193	3.6%	1,372,300	2.4%

Data: Nomis Area Profile (based on Census 2021) (Nomis, no date-a, no date-c, no date-f)

1.1.3 Changes 2011 to 2021: North Devon

4. The ONS summarise notable changes for the population of North Devon between the censuses of 2011 and 2021 (ONS, 2023).
 - The population of North Devon increased by 5.3%, from around 93,700 in 2011 to around 98,600 in 2021.
 - The average (median) age of North Devon increased by three years, from 45 to 48 years of age. The number of people aged 65 to 74 years rose by around 2,300 (an increase of 20.9%), while the number of residents between 35 and 49 years fell by around 2,100 (11.7% decrease).
 - In 2021, 7.2% of North Devon residents were identified as being disabled and limited a lot. This figure decreased from 7.9% in 2011. The ONS advises caution, for this indicator, when making comparisons between 2011 and 2021 because of changes in question wording and response options.
 - In 2021, 4.6% of North Devon residents (aged five years and over) reported providing up to 19 hours of unpaid care each week. This figure decreased from 7.2% in 2011. The ONS advises caution, for this indicator, when making comparisons between 2011 and 2021 because of changes in question wording and response options.
 - In 2021, 49.7% of North Devon residents described their health as "very good", increasing from 48.1% in 2011. Those describing their health as "good" fell from 33.6% to 33.0%. The ONS advises that the pandemic may have influenced how people perceived and rated their health, and therefore may have affected how people chose to respond.

1.2 Public Health Outcomes Framework

5. **Figure 1.1** to **Figure 1.6** are from the Public Health Outcomes Framework and are published by the Office for Health Improvement and Disparities (no date) (OHID). OHID notes the following (no date):
 - Indicators that are shaded blue rather than red/amber/green are presented in this way because it is not straightforward to determine for these indicators whether a high value is good or bad.
 - The *Change from previous* column shows whether there has been a change in value compared to the previous data point. Statistically significant changes highlighted in this column have been calculated by comparing the confidence intervals for the respective time points. If the confidence intervals do not overlap, the change has been flagged as significant.

- Recent trend refers to the analysis done in the Fingertips tool which tests for a statistical trend. Changes in this column are calculated using a chi-squared statistical test for trend. This is currently only available for certain indicator types; full details are available in the tool.
- Increases or decreases are only shown if they are statistically significant. Where no arrow is shown, no comparison has been made. This may be due to the fact that the required data to make the comparison is not available for the time point, or that no confidence interval values are available for the indicator.

Figure 1.1 Key to OHID Public Health Outcomes Framework

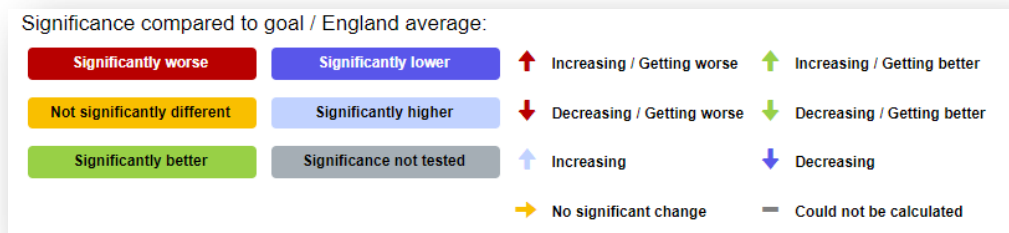


Figure 1.2 OHID Public Health Outcomes Framework: A. Overarching indicators – North Devon

Indicator	Age	Sex	Period	Value	Value (England)	Unit	Recent trend	Change from previous
A01b - Life expectancy at birth	All ages	Male	2020	79.7	78.7	Years	—	→
A01b - Life expectancy at birth	All ages	Female	2020	84.7	82.6	Years	—	→
A02a - Inequality in life expectancy at birth	All ages	Male	2018 - 20	6.40	9.70	Years	—	→
A02a - Inequality in life expectancy at birth	All ages	Female	2018 - 20	2.70	7.90	Years	—	→
A01b - Life expectancy at 65	65	Male	2020	19.1	18.1	Years	—	→
A01b - Life expectancy at 65	65	Female	2020	22.3	20.7	Years	—	→
A02a - Inequality in life expectancy at 65	65	Male	2018 - 20	2.40	5.20	Years	—	→
A02a - Inequality in life expectancy at 65	65	Female	2018 - 20	2.30	4.80	Years	—	→

Figure 1.3 OHID Public Health Outcomes Framework: B. Wider determinants of health – North Devon

Indicator	Age	Sex	Period	Value	Value (England)	Unit	Recent trend	Change from previous
B01b - Children in absolute low income families (under 16s)	<16 yrs	Persons	2020/21	13.2	15.1	%	→	→
B01b - Children in relative low income families (under 16s)	<16 yrs	Persons	2020/21	16.6	18.5	%	→	→
B03 - Pupil absence	5-15 yrs	Persons	2020/21	4.75	4.62	%	→	→
B08a - Gap in the employment rate between those with a physical or mental long term health condition (aged 16 to 64) and the overall employment rate	16-64 yrs	Persons	2020/21	21.3	10.7	Percentage points	—	→
B08a - The percentage of the population with a physical or mental long term health condition in employment (aged 16 to 64)	16-64 yrs	Persons	2020/21	61.5	64.4	%	—	—
B08b - The percentage of the population who are in receipt of long term support for a learning disability that are in paid employment (aged 18 to 64)	18-64 yrs	Persons	2020/21	-	5.14	%	—	—
B08d - Percentage of people in employment	16-64 yrs	Persons	2020/21	82.8	75.1	%	→	→
B09a - Sickness absence - the percentage of employees who had at least one day off in the previous week	16+ yrs	Persons	2018 - 20	1.36	1.92	%	—	→
B09b - Sickness absence - the percentage of working days lost due to sickness absence	16+ yrs	Persons	2018 - 20	0.79	1.02	%	—	→
B12a - Violent crime - hospital admissions for violence (including sexual violence)	All ages	Persons	2018/19 - 20/21	25.7	41.9	per 100,000	—	→
B12b - Violent crime - violence offences per 1,000 population	All ages	Persons	2020/21	18.8 ~	29.5 &	per 1,000	—	→
B12c - Violent crime - sexual offences per 1,000 population	All ages	Persons	2020/21	1.77 ~	2.29 &	per 1,000	—	→
B13a - Re-offending levels - percentage of offenders who re-offend	All ages	Persons	2019/20	22.2	25.4	%	—	—
B13b - Re-offending levels - average number of re-offences per re-offender	All ages	Persons	2019/20	3.21	3.74	per re-offender	—	—
B14a - The rate of complaints about noise	All ages	Persons	2019/20	4.06	6.37 x	per 1,000	→	→
B15a - Homelessness - households owed a duty under the Homelessness Reduction Act	Not applicable	Not applicable	2020/21	23.7	11.3	per 1,000	—	→
B15c - Homelessness - households in temporary accommodation	Not applicable	Not applicable	2020/21	0.83	4.03	per 1,000	—	→
B17 - Fuel poverty (low income, low energy efficiency methodology)	Not applicable	Not applicable	2020	12.3	13.2	%	—	—
B19 - Loneliness: Percentage of adults who feel lonely often / always or some of the time	16+ yrs	Persons	2019/20	17.6	22.3	%	—	—
1.01i - Children in low income families (all dependent children under 20)	0-19 yrs	Persons	2016	13.1	17.0	%	→	→

Figure 1.4 OHID Public Health Outcomes Framework: C. Health improvement – North Devon

Indicator	Age	Sex	Period	Value	Value (England)	Unit	Recent trend	Change from previous
C01 - Total prescribed LARC excluding injections rate / 1,000	All ages	Female	2020	59.7	34.6	per 1,000	→	↓
C02a - Under 18s conception rate / 1,000	<18 yrs	Female	2020	13.3	13.0	per 1,000	→	→
C04 - Low birth weight of term babies	=37 weeks gestational age at birth	Persons	2020	1.92	2.86	%	→	→
C06 - Smoking status at time of delivery	All ages	Female	2020/21	11.0	9.60	%	→	→
C09a - Reception: Prevalence of overweight (including obesity)	4-5 yrs	Persons	2019/20	19.4	23.0	%	→	→
C09b - Year 6: Prevalence of overweight (including obesity)	10-11 yrs	Persons	2019/20	29.1	35.2	%	→	→
C10 - Percentage of physically active children and young people	5-16 yrs	Persons	2020/21	47.7	44.6	%	→	→
C11a - Hospital admissions caused by unintentional and deliberate injuries in children (aged 0-14 years)	<15 yrs	Persons	2020/21	69.5	75.7	per 10,000	↓	↓
C11a - Hospital admissions caused by unintentional and deliberate injuries in children (aged 0-4 years)	0-4 yrs	Persons	2020/21	96.5	108.7	per 10,000	→	→
C11b - Hospital admissions caused by unintentional and deliberate injuries in young people (aged 15-24 years)	15-24 yrs	Persons	2020/21	177.4	112.4	per 10,000	→	→
C14b - Emergency Hospital Admissions for Intentional Self-Harm	All ages	Persons	2020/21	308.2	181.2	per 100,000	→	→
C15 - Proportion of the population meeting the recommended '5-a-day' on a 'usual day' (adults)	16+ yrs	Persons	2019/20	61.9	55.4	%	→	→
C16 - Percentage of adults (aged 18+) classified as overweight or obese	18+ yrs	Persons	2020/21	64.1	63.5	%	→	→
C17a - Percentage of physically active adults	19+ yrs	Persons	2020/21	71.2	65.9	%	→	→
C17b - Percentage of physically inactive adults	19+ yrs	Persons	2020/21	20.3	23.4	%	→	→
C18 - Smoking Prevalence in adults (18+) - current smokers (APS) (2020 definition)	18+ yrs	Persons	2020	10.3	12.1	%	→	→
C19d - Deaths from drug misuse	All ages	Persons	2018 - 20	6.33	5.02	per 100,000	→	→
C21 - Admission episodes for alcohol-related conditions (Narrow): New method. This indicator uses a new set of attributable fractions, and so differ from that originally published.	All ages	Persons	2020/21	520.0	455.9	per 100,000	→	→
C22 - Estimated diabetes diagnosis rate	17+ yrs	Persons	2018	71.8	78.0	%	→	→
C23 - Percentage of cancers diagnosed at stages 1 and 2	All ages	Persons	2019	57.3	55.0	%	→	→
C24a - Cancer screening coverage: breast cancer	53-70 yrs	Female	2021	50.6	64.1 &	%	↓	↓
C24b - Cancer screening coverage: cervical cancer (aged 25 to 49 years old)	25-49 yrs	Female	2021	75.6	68.0 &	%	→	↓
C24c - Cancer screening coverage: cervical cancer (aged 50 to 64 years old)	50-64 yrs	Female	2021	77.4	74.7 &	%	→	→
C24d - Cancer screening coverage: bowel cancer	60-74 yrs	Persons	2021	69.5	65.2 &	%	↑	↑
C24e - Abdominal Aortic Aneurysm Screening Coverage	65	Male	2020/21	95.8	55.0 &	%	→	→
C27 - Percentage reporting a long-term Musculoskeletal (MSK) problem	16+ yrs	Persons	2021	18.7	17.0	%	→	→
C29 - Emergency hospital admissions due to falls in people aged 65 and over	65+ yrs	Persons	2020/21	1859	2023	per 100,000	→	→
C29 - Emergency hospital admissions due to falls in people aged 65-79	65-79 yrs	Persons	2020/21	824.4	936.6	per 100,000	→	→
C29 - Emergency hospital admissions due to falls in people aged 80+	80+ yrs	Persons	2020/21	489	5174	per 100,000	→	→

Figure 1.5 OHID Public Health Outcomes Framework: D. Health protection – North Devon

Indicator	Age	Sex	Period	Value	Value (England)	Unit	Recent trend	Change from previous
D01 - Fraction of mortality attributable to particulate air pollution (new method)	30+ yrs	Persons	2020	4.43	5.64	%	—	—
D02a - Chlamydia detection rate per 100,000 aged 15 to 24	15-24 yrs	Persons	2021	1120	1334	per 100,000	↓	→
D02a - Chlamydia detection rate per 100,000 aged 15 to 24	15-24 yrs	Male	2021	912.6	859.8	per 100,000	→	→
D02a - Chlamydia detection rate per 100,000 aged 15 to 24	15-24 yrs	Female	2021	1347	1762	per 100,000	↓	→
D02b - New STI diagnoses (exclude chlamydia aged under 25) per 100,000	All ages	Persons	2021	266.9	394.5	per 100,000	↓	→
D04d - Population vaccination coverage - Flu (primary school aged children)	4-11 yrs	Persons	2021	- *	57.4 *	%	—	—
D07 - HIV late diagnosis in people first diagnosed with HIV in the UK	15+ yrs	Persons	2019 - 21	100.0 *	43.4 *	%	—	→
D08b - TB incidence (three year average)	All ages	Persons	2018 - 20	1.04	7.96	per 100,000	—	→
D10 - Adjusted antibiotic prescribing in primary care by the NHS	All ages	Persons	2021	0.75 *	0.74 *	per STAR-PU	—	↓

Figure 1.6 OHID Public Health Outcomes Framework: E. Healthcare and premature mortality – North Devon

Indicator	Age	Sex	Period	Value	Value (England)	Unit	Recent trend	Change from previous
E01 - Infant mortality rate	<1 yr	Persons	2018 - 20	2.05	3.90	per 1,000	—	→
E02 - Percentage of 5 year olds with experience of visually obvious dental decay	5 yrs	Persons	2018/19	22.5	23.4	%	—	→
E03 - Under 75 mortality rate from causes considered preventable (2019 definition)	<75 yrs	Persons	2020	123.6	140.5	per 100,000	→	→
E04a - Under 75 mortality rate from all cardiovascular diseases	<75 yrs	Persons	2020	73.1	73.8	per 100,000	→	→
E04b - Under 75 mortality rate from cardiovascular diseases considered preventable (2019 definition)	<75 yrs	Persons	2020	27.9	29.2	per 100,000	→	→
E05a - Under 75 mortality rate from cancer	<75 yrs	Persons	2020	114.7	125.1	per 100,000	→	→
E05b - Under 75 mortality rate from cancer considered preventable (2019 definition)	<75 yrs	Persons	2020	45.8	51.5	per 100,000	→	→
E06a - Under 75 mortality rate from liver disease	<75 yrs	Persons	2020	14.4	20.6	per 100,000	→	→
E06b - Under 75 mortality rate from liver disease considered preventable (2019 definition)	<75 yrs	Persons	2020	13.6	18.2	per 100,000	→	→
E07a - Under 75 mortality rate from respiratory disease	<75 yrs	Persons	2020	17.4	29.4	per 100,000	→	→
E07b - Under 75 mortality rate from respiratory disease considered preventable (2019 definition)	<75 yrs	Persons	2020	8.93	17.1	per 100,000	→	→
E08 - Mortality rate from a range of specified communicable diseases, including influenza	All ages	Persons	2020	- ^	8.25	per 100,000	—	—
E10 - Suicide rate	10+ yrs	Persons	2019 - 21	11.0	10.4	per 100,000	—	→
E11 - Emergency readmissions within 30 days of discharge from hospital	All ages	Persons	2020/21	15.6	15.5	%	—	→
E13 - Hip fractures in people aged 65 and over	65+ yrs	Persons	2020/21	658.7	528.7	per 100,000	→	→
E13 - Hip fractures in people aged 65-79	65-79 yrs	Persons	2020/21	283.9	219.3	per 100,000	→	→
E13 - Hip fractures in people aged 80+	80+ yrs	Persons	2020/21	1745	1426	per 100,000	→	→
E14 - Excess winter deaths index	All ages	Persons	Aug 2019 - Jul 2020	10.4	17.4	%	—	→
E14 - Excess winter deaths index (age 85+)	85+ yrs	Persons	Aug 2019 - Jul 2020	10.5	20.8	%	—	→
E15 - Estimated dementia diagnosis rate (aged 65 and over)	65+ yrs	Persons	2022	55.8 *	62.0 *	%	→	→

1.3 Social isolation

6. There is a clear link between loneliness and poor mental and physical health. The percentage of adult carers who have as much social contact as they would like is lower in the South West than in England for adult carers who are 18 and over and those who are 65 and over. This measure draws on self-reported levels of social contact as an indicator of social isolation for both users of social care and carers (OHID, 2023b, 2023c).

Table 1.5 Social Isolation: percentage of adult carers who have as much social contact as they would like

Area Name	Age	Value	CI 95.0 limit		Count
			Lower	Upper	
England	18+ yrs	28.0%	27.4%	28.6%	90,255
South West region	18+ yrs	23.9%	21.8%	26.0%	13,935
England	65+ yrs	28.8%	27.9%	29.7%	48,805
South West region	65+ yrs	26.0%	23.1%	28.9%	9,100

(OHID, 2023a)

1.4 Mental ill health

7. OHID uses an indicator of intentional self-harm to present mental health and well-being. OHID recognises that it is not possible to include a suitable indicator representing all aspects of mental health and well-being (OHID, 2022a). The standardised admission ratio, between 2016/17 and 2020/21, for Emergency hospital admissions for intentional self harm is higher in North Devon than in Devon (OHID, 2022d). Both are higher than the national value.

Table 1.6 Emergency hospital admissions for intentional self harm, standardised admission ratio (2016/17 - 2020/21)

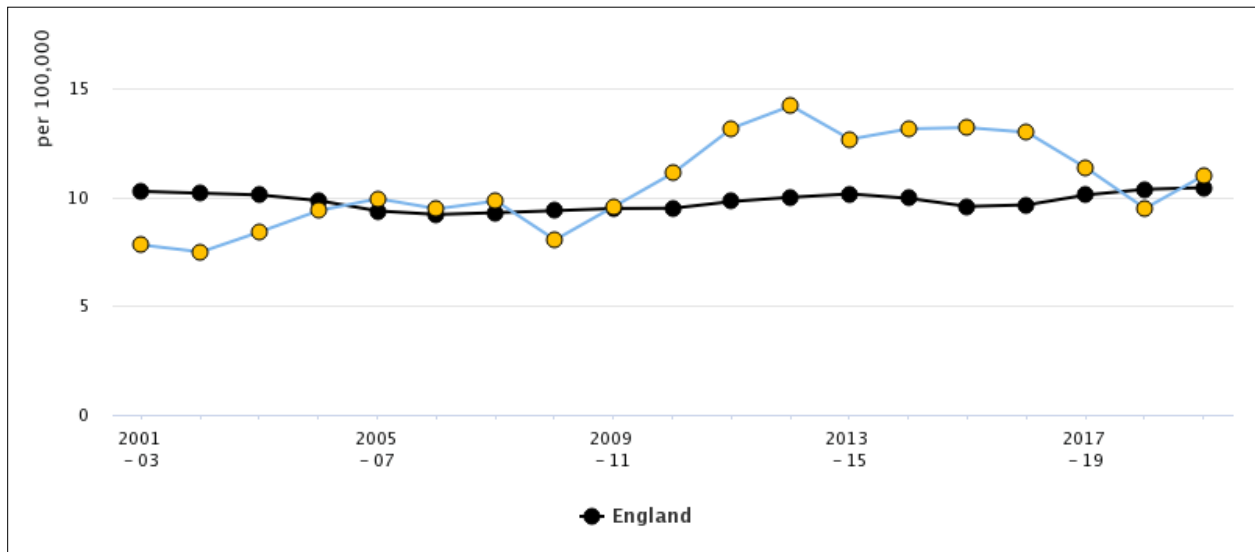
Area Name	Sex	Value	CI 95.0 limit	
			Lower	Upper
England	Persons	100	99.729	100.2715
Devon	Persons	116.0724	113.5372	118.65
North Devon	Persons	169.6631	160.7904	178.8981

Data for all ages. (OHID, 2022d)

8. OHID states that suicide is a significant cause of death in young adults, and is seen as an indicator of underlying rates of mental ill-health. Suicide is a major issue for

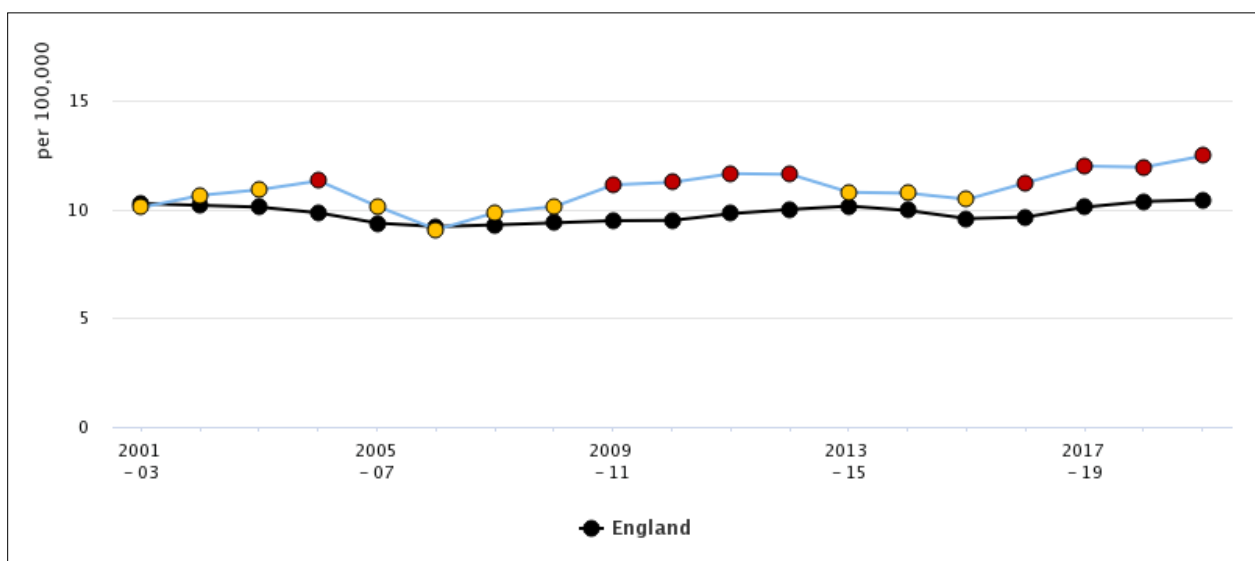
society and a leading cause of years of life lost. Suicide is often the end point of a complex history of risk factors and distressing events, but there are many ways in which services, communities, individuals and society as a whole can help to prevent suicides (OHID, 2022b). The suicide rate per 100,000, from 2001 to 2019, for persons in North Devon (Figure 1.7) went both below and above the national value and in Devon (Figure 1.8) it remained close to or above the national value. OHID reports that the rate for North Devon, for 2019-2021, shows no significant change (OHID, 2022c).

Figure 1.7 Suicide rate (Persons) for North Devon



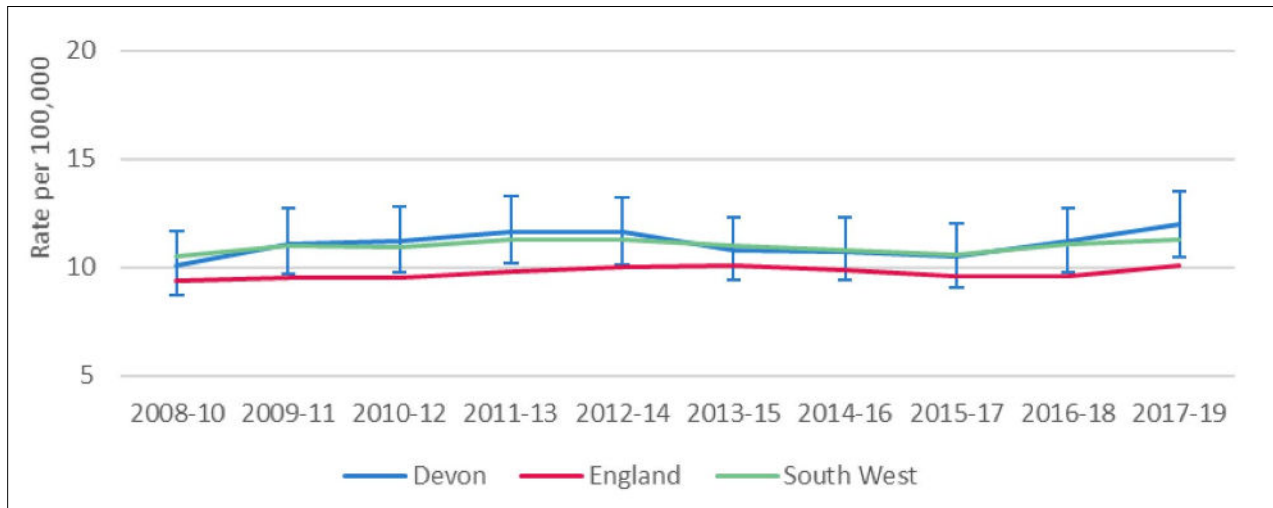
(OHID, 2022f)

Figure 1.8 Suicide rate (Persons) for Devon



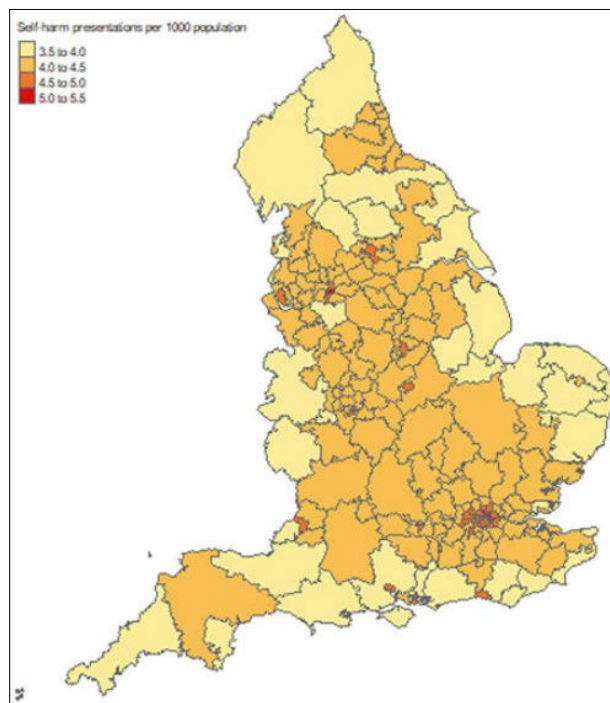
(OHID, 2022e)

Figure 1.9 Trend in mortality from suicide and undetermined intent – Devon, 2008-2019



Extracted from Public Health Devon and Devon County Council (no date)

Figure 1.10 Estimated self-harm episodes in England in 2013



From Tsiachristas et al (2020)

2. Human health: scientific evidence

2.1 Blue space and health

2.1.1 Climatic and non-climatic stressors

9. Dermawan et al (2022) state that ocean life forms are fundamentally well adapted to natural environmental variations, and they can even tolerate extreme conditions for a short time. They identify anthropogenic stressors that are causing drastic changes in the ocean ecosystem. The review outlines the impact of climatic and non-climatic stressors on ocean life, and it also outlines the synergistic impact of both stressors. The points are summarised below and are not all equally relevant to the current Project.

- Non-climatic stressors can directly affect human health by poisoning humans. For example, Harmful Algal Blooms (HABs) and microplastics can enter the food chain, which will be dangerous to human health. Non-climatic stressors can produce potentially toxic compounds that cause harm to humans by direct contact, inhalation, or consumption of contaminated seafood.
- Climatic stressors reduce the ocean ecosystem services by delivering an appropriate environment for the growth of HABs and broadening the spread of HABs, pathogens, hazardous chemicals, and microplastic. Climatic stressors may impact HAB events, their intensity, and their consequences.
- Synergistic impact: human health consequences linked to the ocean are typically linked to the consumption of toxin-contaminated, pathogen contaminated, or chemically contaminated seafood; exposure to toxins from HABs; and the effects of weather and climate on the rates, modes of transmission, and severity of infectious diseases. The combined effect of climatic and non-climatic stressors can worsen the ecosystem services and amplify and broaden the impact of non-climatic stressors.

2.1.2 Blue space, health and well-being

10. White et al (2020) explore exposure through five mechanisms:

- Proximity & other exposures: people who live closer to blue spaces tend to have greater indirect, intentional and incidental exposure.
- Proximity and health and well-being outcomes: some evidence that living near the coast or inland water bodies is associated with better mental health, better evidence to suggest people report better mental and general health in the years

when they live close to the coast (<5 km) versus inland and the modifying role played by income.

- Indirect & incidental exposure and health and well-being outcomes: blue space views from home may be particularly important to older adults with poorer mobility.
- Intentional exposure and health and well-being outcomes: visiting a blue space for recreation at least once a week was associated with longer-term better mental health and individuals who swim outdoors regularly report experiencing increased connection to place and the natural environment, which may in turn lead to behaviours aimed at protecting the health promoting aspects of these blue spaces.
- Exposure, planetary health and pro-environmental behaviours: an English study with over 24,000 participants found that living near the coast (<5 km vs. >20 km) was associated with higher likelihoods of a number of pro-environmental behaviours including: recycling, buying local/seasonal produce, walking/cycling instead of using a car for short journeys, and being a member of an environmental organisation.

11. White et al (2020; 5) state that much of the activity in blue spaces, at least in high income countries, is not water-based but occurs on land, e.g. beach walks; and it is this activity that predominantly explains any link between coastal proximity and health.
12. A review for Natural England (Lovell et al., 2020; 11-12) reports that the availability of natural spaces and attractive views of nature in the living environment is a determinant of physical activity behaviours, and notes variation in impact between socio-demographic group and between areas. Blue space is noted as supporting higher rates of participation and greater intensity of activity. A 2018 survey monitoring engagement with the natural environment showed differences in access with regard to natural spaces: younger people (age 16-24) were the most frequent visitors, compared to other age groups; people aged 65 and over, black, and minority ethnic groups and residents living in the most deprived areas of England were the least frequent visitors.

2.1.3 Oceans and human health

13. Fleming et al (2021) state that healthy oceans foster healthy people. For more than 4.5 billion people, approximately 15% of their daily per capita intake of animal protein comes from marine products. ... Studies over the past 10 years have demonstrated that spending time in high quality “blue” spaces (through leisure

activities or living in a coastal environment) directly supports and enhances health and well-being, combatting obesity and mental health problems, particularly in deprived populations. This highlights an enormous potential for these well-being promotion initiatives and healthcare interventions to address both pre-existing and emerging health issues beyond the lifetime of the pandemic.

14. Fleming et al (2021) also state that dangers to health and well-being arising in coastal waters, regional seas, and the global ocean have long been recognized by marine scientists but less so by the medical and public health community. Worldwide, more than 250 million clinical cases of gastroenteritis and respiratory disease are linked annually to swimming in contaminated seas. Other direct health threats arise through disease transmission and ingestion of toxic substances.

2.1.4 Injury and drowning

15. Injuries associated with marine activities in the nearshore/intertidal zone such as surfing and swimming include lacerations and bruising (Moran and Webber, 2013). Drowning outcomes include death and a range of non-fatal outcomes from survival with no lasting consequence to survival with permanent neurological impairment (Beerman et al., 2018).
16. Koon et al conducted a scoping review of coastal drowning (Koon et al., 2021). They define drowning as the process of respiratory impairment from submersion or immersion in liquid and they state that it is a major global health problem. The burden of drowning is disproportionately high in low-income countries and, of direct relevance to the current assessment, among males, children and young people (Franklin et al., 2020). Koon et al (2021) state that the individual, community and societal cost of drowning is immense, multi-faceted and worthy of research that informs robust prevention efforts
17. The health of people living in coastal areas is also affected by macroeconomic factors and financial downturns lead to an increase in mental ill health across the population that can, in turn, translate into despair and self-harm (Hawton and Haw, 2013). Suicide is a rare event with a large impact. It is estimated that, for every suicide, between six and 20 people, usually family members and acquaintances of those who died, are adversely affected psychologically and emotionally (Andriessen et al., 2019).
18. In 2016, it was reported that drowning is a relatively uncommon method of suicide in most high-income countries, that there are challenges in establishing a baseline and that older age groups are more likely to choose drowning as a method (Haw and Hawton, 2016). Analysis of data from 16-64 year-olds in the Netherlands

concluded that living close to the coast is associated with greater suicide risk for women (Helbich et al., 2022). The health-supportive effects of coastal areas may not hold for woman facing suicide risk.

19. Research in Australia reported that people travelled to reach the coast for increased anonymity so as to reduce the chance of being interrupted, that coastal suicides were higher in males than females and that female suicide deaths reported a higher incidence of mental ill health or a history of suicidal behaviours (Lawes et al., 2021).

Occupational exposure to self-harm

20. First responders are at greater risk for mental ill health and compromised well-being than the general population and strategies for supporting mental health and well-being need to be implemented early in the first responder career and then reinforced throughout and into retirement (Smith et al., 2021).

Prevention

21. The complexity surrounding suicide prevention, and the interrelated contributing factors within these incidents, suggests that individual and community-level strategies that aim to reduce suicidal behaviours through the incorporation of multiple protective factors are required to make communities and individuals more resilient and to reduce suicidal behaviour (Lawes et al., 2021).
22. The England and Devon strategies for suicide prevention each include a priority of reducing access to means of suicide (PHE, 2012, Public Health Devon and Devon County Council, no date). Protective and preventative measures include increasing capacity for human intervention and the provision of signs and resources. For example, training and/or awareness-raising for non-health staff and members of the public in addition to including advice such as 'Dial 999 and ask for the Coastguard' on RNLI signage (Chadwick et al., 2019) if people are attempting or considering self-harm.

2.1.5 Actions to protect and promote health

23. In **Table 2.1** Fleming et al (2021) provide actions that would be beneficial to Ocean(s) and Human Health (Fleming et al (2021) state that). These have been addressed through the assessment process and taken into account in the design and in the embedded, and other, mitigation for the Project.

Table 2.1 Possible First Steps to Improve OHH Interactions for the Public Health and Other Communities, Not Exhaustive

Actors	Possible (First) Steps ^a
Medical and social care sector (doctors, nurses, mental health experts, social workers), public health experts	Integrate with individual and community health promotion activities, “Blue prescriptions” (and monitoring) ^b
	Include OHH in medical curriculum
	Work with environmental and city planners to seek co-benefits in planning for humans and the environment
	Get involved in advice and activities at local, national, and global levels
Researchers	Build on the OHH Strategic Research Agenda (a first step) ^b
	Research the evidence gaps and provide evidence to policymakers
	Promote transdisciplinary training
	Design and support implementation of dedicated OHH indicators, data streams, and repositories
	Get involved in community cocreation and listen!
	Get involved in science advice activities at local, national, and global levels to facilitate evidence-based policy
Citizens (local residents and tourists)	Enjoy the sea, coasts, and blue spaces safely and sustainably
	Encourage school projects on ocean literacy, respect for the sea, sustainability, and citizen responsibility and involvement
	Participate in clean-up activities (e.g. Plogging, Sweden; Surfers Against Sewage, United Kingdom)
	Seek out science activities near your home involving citizens (monitoring, counting)
	Listen to stories from the elderly and others about the sea
Private organizations (tourism operators, holiday rentals, camp sites, etc.), businesses, and nongovernmental organizations	Inform clients on what a stay by the sea can do for their health and the importance of ocean health for their health
	Involve clients in citizen science projects
	Ask their feedback on their experiences including impact on their health and well-being
	Share these experiences (Web site, OHH platform)
Large international and local businesses*	Review and act on the impacts of supply chain, waste, and other business activities on ocean health
	Share these actions within and beyond the individual business (Web site, OHH platform)
	Support employee and local community activities that support ocean health
	Join with other similar businesses and supply chains to share best practices and drive innovation toward a healthy ocean
Local planners and policymakers*	Integrate OHH as part of your local programming
	Engage in listening and cocreation events with local citizens
	Secure equitable access to the coasts and sea in spatial plans with environmental sustainability and quality at the forefront

Actors	Possible (First) Steps ^a
	Work with public health and environment officers on benefits and risks from the ocean
National and regional ministries (health, water, environment, fisheries and agriculture, industry) *	Monitor continuously the effects on downstream usages in policy development (system-based approach) on health of humans and the environment
	Assess environment and human health in collaboration with citizens and experts
	Develop a common language and work with diverse stakeholders
Policymakers*	Prioritize the OHH agenda and work on awareness across different directorates
	Develop a common language on OHH
	Facilitate interdisciplinary discussions and funding for OHH research and training cocreated with communities
	Include the interdependencies of environment and health in all policy development
Diverse groups	Consider coming together to propose specific local, regional, and global UN Ocean Decade Actions (e.g., networks, dedicated resources, research programs, etc.) ^c
a	Examples can be found at https://sophie2020.eu ; https://en.unesco.org/biosphere ; https://www.blueclimateinitiative.org .
b	Examples can be found at https://sophie2020.eu/strategic-research-agenda .
c	Examples can be found at https://www.oceandecade.org/events/134/United-Nations-Decade-of-Ocean-Science-for-Sustainable-Development-2021-2030-Call-for-Decade-Actions-No-012020 .
*	Addressed through the assessment process and taken into account in the design and in the embedded, and other, mitigation for the Project.

Table adapted from Fleming et al (2021)

3. References

Andriessen, K., Krysinska, K., Hill, N. T. M., et al. 2019. Effectiveness of interventions for people bereaved through suicide: a systematic review of controlled studies of grief, psychosocial and suicide-related outcomes. *BMC Psychiatry*, 19. <https://doi.org/10.1186/s12888-019-2020-z>

Beerman, S., Bierens, J., Clemens, T., et al. 2018. Clarification and categorization of non-fatal drowning: A draft position statement for review and input by the global drowning community. World Health Organization. Toronto. <https://www.who.int/publications/m/item/clarification-and-categorization-of-non-fatal-drowning>

Chadwick, T., Owens, C. & Morrissey, J. 2019. Local suicide prevention planning in England. An independent progress report. Samaritans and University of Exeter. [https://media.samaritans.org/documents/Local suicide prevention planning in England full report.pdf](https://media.samaritans.org/documents/Local_suicide_prevention_planning_in_England_full_report.pdf)

Dermawan, D., Wang, Y.-F., You, S.-J., et al. 2022. Impact of climatic and non-climatic stressors on ocean life and human health: A review. *Science of The Total Environment*, 821, 153387. <https://doi.org/https://doi.org/10.1016/j.scitotenv.2022.153387>

Fleming, L. E., Depledge, M., Bouley, T., et al. 2021. The Ocean Decade—Opportunities for Oceans and Human Health Programs to Contribute to Public Health. *American Journal of Public Health*, 111, 808-811. <https://doi.org/10.2105/AJPH.2021.306229>

Franklin, R. C., Peden, A. E., Hamilton, E. B., et al. 2020. The burden of unintentional drowning: global, regional and national estimates of mortality from the Global Burden of Disease 2017 Study. *Injury Prevention*, 26, i83-i95. <https://doi.org/10.1136/injuryprev-2019-043484>

Haw, C. & Hawton, K. 2016. Suicide and Self-Harm by Drowning: A Review of the Literature. *Archives of Suicide Research*, 20, 95-112. <https://doi.org/10.1080/13811118.2015.1025120>

Hawton, K. & Haw, C. 2013. Economic recession and suicide. *BMJ : British Medical Journal*, 347, f5612. <https://doi.org/10.1136/bmj.f5612>

Helbich, M., Browning, M. H. E. M., White, M., et al. 2022. Living near coasts is associated with higher suicide rates among females but not males: A register-based linkage study in the Netherlands. *Science of The Total Environment*, 845, 157329. <https://doi.org/10.1016/j.scitotenv.2022.157329>

Koon, W., Peden, A., Lawes, J. C., et al. 2021. Coastal drowning: A scoping review of burden, risk factors, and prevention strategies. *PLOS ONE*, 16, e0246034. <https://doi.org/10.1371/journal.pone.0246034>

Lawes, J. C., Peden, A. E., Bugeja, L., et al. 2021. Suicide along the Australian coast: Exploring the epidemiology and risk factors. *PLOS ONE*, 16, e0251938. <https://doi.org/10.1371/journal.pone.0251938>

Lovell, R., White, M. P., Wheeler, B., et al. 2020. A rapid scoping review of health and wellbeing evidence for the Green Infrastructure Standards. for Natural England, Department for the Environment, Food and Rural Affairs, Public Health England, and Ministry for Housing, Communities and Local Government by the European Centre for Environment and Human Health. <http://publications.naturalengland.org.uk/publication/4799558023643136>

Moran, K. & Webber, J. 2013. Surfing injuries requiring first aid in New Zealand, 2007-2012. *International Journal of Aquatic Research and Education*, 7, 3. <https://doi.org/10.25035/ijare.07.03.03>

Nomis. no date-a. *Devon County: 2021 Census Area Profile* [Online]. Office for National Statistics. Available: https://www.nomisweb.co.uk/sources/census_2021/report?compare=E10000008 [Accessed 15 February 2023].

Nomis. no date-b. *Devon County: Local Area Report* [Online]. Office for National Statistics. Available: <https://www.nomisweb.co.uk/reports/localarea?compare=E10000008> [Accessed 24 January 2023].

Nomis. no date-c. *England Country: 2021 Census Area Profile* [Online]. Office for National Statistics. Available: https://www.nomisweb.co.uk/sources/census_2021/report?compare=E92000001 [Accessed 15 February 2023].

Nomis. no date-d. *England Country: Local Area Report* [Online]. Office for National Statistics. Available: <https://www.nomisweb.co.uk/reports/localarea?compare=E92000001> [Accessed 24 January 2023].

Nomis. no date-e. *North Devon 005B Lower-layer SOA: Local Area Report* [Online]. Office for National Statistics. Available: <https://www.nomisweb.co.uk/reports/localarea?compare=E01020091> [Accessed 24 January 2023].

Nomis. no date-f. *North Devon Local Authority: 2021 Census Area Profile* [Online]. Office for National Statistics. Available: https://www.nomisweb.co.uk/sources/census_2021/report?compare=E07000043 [Accessed 15 February 2023].

Nomis. no date-g. *North Devon Local Authority: Local Area Report* [Online]. Office for National Statistics. Available: <https://www.nomisweb.co.uk/reports/localarea?compare=E07000043> [Accessed 24 January 2023].

OHID. 2022a. *Public health profiles: Indicator: Emergency hospital admissions for intentional self harm* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: <https://fingertips.phe.org.uk/search/self%20harm#page/6/gid/1938133184/pat/6/par/E12000009/ati/402/are/E10000008/iid/93239/age/1/sex/4/cat/-1/ctp/-1/yr/5/cid/4/tbm/1/page-options/tre-ao-0> [Accessed 17 February 2023].

OHID. 2022b. *Public health profiles: Indicator: Suicide rate (Persons)* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: <https://fingertips.phe.org.uk/search/self%20harm#page/6/gid/1938132828/pat/6/par/E12000009/ati/401/are/E07000043/iid/41001/age/285/sex/4/cat/-1/ctp/-1/yr/3/cid/4/tbm/1/page-options/tre-ao-0> [Accessed 17 February 2023].

OHID. 2022c. *Public health profiles: Indicator: Suicide rate (Persons) 2019-2021* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: <https://fingertips.phe.org.uk/search/self%20harm#page/3/gid/1938132828/pat/6/par/E12000009/ati/401/are/E07000043/iid/41001/age/285/sex/4/cat/-1/ctp/-1/yr/3/cid/4/tbm/1/page-options/tre-ao-0> [Accessed 17 February 2023].

OHID. 2022d. *Self harm (North Devon)* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: <https://fingertips.phe.org.uk/search/self%20harm#page/1/gid/1938132695/pat/6/par/E12000009/ati/401/are/E07000043/iid/21001/age/1/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1/page-options/tre-ao-0> [Accessed 17 February 2023].

OHID. 2022e. *Suicide rate (Persons) for Devon* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: <https://fingertips.phe.org.uk/search/self%20harm#page/4/gid/1938132828/pat/6/ati/402/are/E10000008/iid/41001/age/285/sex/4/cat/-1/ctp/-1/yr/3/cid/4/tbm/1/page-options/tre-ao-0> [Accessed 17 February 2023].

OHID. 2022f. *Suicide rate (Persons) for North Devon* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: <https://fingertips.phe.org.uk/search/self%20harm#page/4/gid/1938132828/pat/6/par/E12000009/ati/401/are/E07000043/iid/41001/age/285/sex/4/cat/-1/ctp/-1/yr/3/cid/4/tbm/1/page-options/tre-ao-0> [Accessed 17 February 2023].

OHID. 2023a. *Public health profiles: Indicator: Social Isolation: percentage of adult carers who have as much social contact as they would like 2021-2022* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: <https://fingertips.phe.org.uk/search/carers%20and%20social%20isolation#page/1/gid/1/pat/15/par/E92000001/ati/6/are/E12000009/iid/90638/age/168/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1> [Accessed 17 February 2023].

OHID. 2023b. *Public health profiles: Indicator: Social Isolation: percentage of adult carers who have as much social contact as they would like (18+). Indicator Definitions and Supporting Information* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: <https://fingertips.phe.org.uk/search/carers%20and%20social%20isolation#page/6/gid/1/pat/15/par/E92000001/ati/6/are/E12000009/iid/90638/age/168/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1> [Accessed 17 February 2023].

OHID. 2023c. *Public health profiles: Indicator: Social Isolation: percentage of adult carers who have as much social contact as they would like (65+). Indicator Definitions and Supporting Information* [Online]. ©Crown Copyright, source: Office for Health Improvement and Disparities. Available: <https://fingertips.phe.org.uk/search/carers%20and%20social%20isolation#page/6/gid/1938133250/pat/15/par/E92000001/ati/6/are/E12000009/iid/90638/age/27/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1> [Accessed 17 February 2023].

OHID. no date. *Public Health Outcomes Framework - at a glance summary. North Devon.* Office for Health Improvement and Disparities. <https://fingertips.phe.org.uk/static-reports/public-health-outcomes-framework/at-a-glance/E07000043.html?area-name=North%20Devon> [Accessed 21 October 2022]

ONS. 2023. *How life has changed in North Devon: Census 2021* [Online]. Office for National Statistics,. Available: <https://www.ons.gov.uk/visualisations/censusareachanges/E07000043/> [Accessed 15 February 2023].

PHE. 2012. *Preventing Suicide in England: a cross-government outcomes strategy to save lives.* Public Health England. <https://www.gov.uk/government/publications/suicide-prevention-strategy-for-england>

Public Health Devon & Devon County Council. no date. Devon Suicide Prevention Action Plan 2021-2022.

<https://devoncc.sharepoint.com/sites/PublicDocs/PublicHealth/Wellbeing/Forms/AllItems.aspx?id=%2Fsites%2FPublicDocs%2FPublicHealth%2FWellbeing%2FStrategies%2FDevon%20Suicide%20Prevention%20Action%20Plan%202021%2D22%2Epdf&parent=%2Fsites%2FPublicDocs%2FPublicHealth%2FWellbeing%2FStrategies&p=true&ga=1>

Smith, E., Dean, G. & Holmes, L. 2021. Supporting the Mental Health and Well-Being of First Responders from Career to Retirement: A Scoping Review. *Prehospital and Disaster Medicine*, 36, 1-6. <https://doi.org/10.1017/s1049023x21000431>

Tsiachristas, A., Geulayov, G., Casey, D., et al. 2020. Incidence and general hospital costs of self-harm across England: estimates based on the multicentre study of self-harm. *Epidemiology and Psychiatric Sciences*, 29. <https://doi.org/10.1017/s2045796020000189>

White, M. P., Elliott, L. R., Gascon, M., et al. 2020. Blue space, health and well-being: A narrative overview and synthesis of potential benefits. *Environmental Research*, 191, 110169. <https://doi.org/https://doi.org/10.1016/j.envres.2020.110169>