South East Strategic Reservoir Option

Preliminary Environmental Information Report

# Chapter 16 - Human health

Date: October 2025

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# 16 Human health

## 16.1 Introduction

16.1.1 This chapter of the Preliminary Environmental Information (PEI) Report provides the preliminary assessment of likely significant effects on Human health from the construction and operation of the proposed SESRO Project (the Project, as detailed in Chapter 2: Project description).

16.1.2 Within this chapter, aspect-specific sections are included on:

- Legislation, policy and guidance (Section 16.2)
- Consultation, engagement and scoping (Section 16.3)
- Assessment methodology (Section 16.4)
- Study area (Section 16.5)
- Baseline conditions (Section 16.6)
- Project parameters, assumptions and limitations (Section 16.7)
- Embedded design mitigation and standard good practice (16.8)
- Preliminary assessment of likely significant effects (Section 16.9)
- Next steps (Section 16.10)

16.1.3 This chapter considers potential likely significant effects of the Project on health determinants that focus on healthy lifestyles, safe and cohesive communities and socio-economic and environmental conditions, for example, transport, education, health and social care services and air quality. Potential likely significant effects are considered with respect to receptors including the general population and vulnerable groups such as children, older people, low-income groups, people living in deprived areas and people with disabilities or long-term illnesses who may experience disproportionate impacts.

16.1.4 This chapter should be read in conjunction with Chapter 2: Project description and other chapters of key relevance, namely:

- Chapter 5: Water environment – informs effects on health determinant of water (bathing water quality, drinking water quality and quantity, exposure to vector borne infection or toxins)
- Chapter 8: Historic environment – informs effects on specific community receptors that intersect with historic environments
- Chapter 9: Landscape and visual – informs effects of visual and landscape impacts on sense of place, related to community identity and cohesion
- Chapter 10: Geology and soils – informs effects on health related to the mobilisation of historic pollution, risk of new ground contamination, and food security (agricultural land availability)
- Chapter 12: Traffic and transport – informs effects on health, related to road safety, public transport, journey times, emergency response times and community services
- Chapter 13: Air quality – informs effects of air quality on health, related to construction dust, emissions and odour
- Chapter 14: Noise and vibration – informs effects on health, related to noise and vibration from construction activities and construction traffic movements

- Chapter 15: Socio-economics and communities – informs impact to education and employment opportunities as well as access to health and social care services
- Chapter 18: Climate resilience – informs public health vulnerabilities to climate change including extreme weather events during construction
- Chapter 19: Major accidents and disasters – informs perceived and actual risk from events or hazards arising from the Project

16.1.5 This chapter is supported by the following figures and appendices:

- Figure 16.1: Local study area and Index of Multiple Deprivation
- Figure 16.2: Human health receptors
- Appendix 16.1: Evidence Review of Health determinants
- Appendix 16.2: Preliminary assessment of effects for Human health

16.1.6 This PEI Report does not constitute a draft Environmental Statement (ES). Assessments reported within this PEI Report chapter are considered a reasonable 'worst case' as a precautionary approach has been taken where design, construction or baseline information is being developed. Nevertheless, the preliminary assessment is considered sufficiently robust to enable consultees to understand the likely significant environmental effects of the Project, based on current design information and understanding of the baseline environment. Gaps in information identified within the PEI Report will be considered and addressed as part of the assessment during the production of the ES, as noted in Section 16.10: Next steps.

16.1.7 Where initial likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed and the design and mitigation are further developed. The ES will be submitted with the Development Consent Order (DCO) application and will provide the final assessment of likely significant effects; this will be informed by the ongoing Environmental Impact Assessment (EIA) process and ongoing consultation and engagement.

## 16.2 Legislation, policy and guidance

16.2.1 Table 16.1 lists the legislation, policy and guidance relevant to Human health for the Project and specifies where in the PEI Report information is provided in relation to these. A full policy compliance assessment will be presented within the Planning Statement as part of the DCO application.

16.2.2 National Policy Statements (NPS) form the principal policy for developments progressing through the Planning Act 2008 process. The NPS for Water Resources Infrastructure (NPSWRI) is the primary NPS for the Project. In addition, the Secretary of State must also have regard to any other matters which they think are both important and relevant to the decision and this could include regional and local planning policies.

16.2.3 The Project is located mainly within the Vale of White Horse District, with the exception of the far eastern extent on the eastern bank of the River Thames, which falls within the South Oxfordshire District. The Project is wholly within the county of Oxfordshire. The regional and local planning policies most relevant to the assessment within this chapter are included in Table 16.1.

Table 16.1 Relevant legislation, policy and guidance for Human health

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| Legislation | | |
| **Construction Design and Management (CDM) Regulations 2015**<br>Ensure proper planning, coordination, and information sharing to minimise risks for workers and the public. | The CDM Regulations are assumed in the assessment to protect the public from some potential harms arising from construction activities | Section 16.7: Project parameters, assumptions and limitations notes this assumption, and relevant embedded design and standard good practice mitigation is recorded in Section 16.8. |
| National Policy Statement for Water Resources Infrastructure (NPSWRI) | | |
| **Paragraphs 3.12.1 to 3.12.4**<br>highlight the potential for impacts to health from water resources infrastructure and state that 'where the proposed project has likely significant environmental impacts that would have an effect on human population or health, the applicant should identify and set out the assessment of any likely significant health impacts.' | The Scoping Report has identified that the SESRO Project could result in potential significant effects on health, and that these should be assessed. | Potential effects on health identified and scoped into the assessment are listed in paragraph 16.4.6, and assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| **Paragraphs 4.10.6 to 4.10.8**<br>note the positive environmental, social, health and economic benefits of green and blue infrastructure. | The SESRO Project includes proposed access to new public blue and green spaces. Access to blue and green spaces can provide multiple health benefits such as increased physical activity and improved mental health and wellbeing. Such spaces can also contribute towards cleaner water resources, reduced exposure to noise and air pollution and mitigating high temperatures. | Health effects associated with access to green and blue spaces are scoped in under the 'Healthy lifestyles' and 'Environmental conditions' health determinants in paragraph 16.4.6 and assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| **Paragraphs 4.13.1 to 4.13.6**<br>state that reservoirs offer long-term opportunities for the provision of recreational and/or educational facilities as well as economic and social impacts on local | The SESRO Project will require a large construction workforce and a small but permanent operational workforce. During operation, recreation and educational facilities are proposed. This may impact wider socio-economic conditions | Health effects associated with employment, training and education opportunities, and recreation opportunities are scoped in under the 'Socio-economic conditions' and 'Healthy lifestyles' health |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| communities. Applicants should look to maximise local employment opportunities during construction and operational phases. | and the health and wellbeing of local communities. | determinants respectively in paragraph 16.4.6 and assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| **Sections 4.2, 4.4, 4.7, 4.9, 4.11, 4.12 4.14, 4.15**<br>Note impacts to the physical environment and to human health that may arise from water resources infrastructure | Environmental conditions are a key determinant of health, which the SESRO Project may impact through construction and operational activities. | Environmental conditions, including air quality, noise and visual aspects, are scoped in under the 'Environmental conditions' health determinant in paragraph 16.4.6 and assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| Other national policy | | |
| **National Planning Policy Framework (NPPF) (MHCLG, 2024)**<br>Sets out government's planning policies for England and how these are expected to be applied.<br>**Paragraph 8**<br>Supports economic growth, promotes healthy communities and protects the natural environment, through the social objective – to support [...] communities' health, social and cultural well-being. | The SESRO Project has the potential to support economic growth and promote healthy communities and a healthy natural environment. There is also a potential for adverse effects on communities and the natural environment during operation. | Health and well-being effects are scoped in under a range of health determinants in paragraph 16.4.6 and assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| **NPPF Section 8**<br>Focuses on promoting social interaction, safety and accessibility in communities and supporting healthy lifestyles through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food and allotments and layouts that encourage walking and | The SESRO Project includes proposed access to new public blue and green spaces and changes to PROW, potentially impacting active travel and physical activity. The SESRO Project may also directly or indirectly impact access to, or availability of, community resources through transport impacts and the provision or removal of community facilities. | Access to open space, activity travel and physical activity are scoped in under the 'Healthy lifestyles' health determinant and community assets are scoped in under the 'Safe and cohesive communities' health determinants in paragraph 16.4.6. Effects to these determinants are assessed in Section 16.9: Preliminary |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| cycling, including protecting and enhancing Public Rights of Way and access routes. | | assessment of likely significant effects. |
| **NPPF Paragraph 117**<br>Focuses on providing for pedestrians and cyclists, ensuring access for people with disabilities and reduced mobility, and creating places that are safe and attractive to move through. | The SESRO Project includes new walking, wheeling, cycling and horse riding routes and improvements to existing routes, promoting inclusive active travel. | Access to active travel and recreational routes are scoped in under the 'Healthy lifestyles' health determinant in paragraph 16.4.6 and assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| Regional and local policy | | |
| **Vale of White Horse/South Oxfordshire District Council Draft Joint Local Plan pre-submission publication (Regulation 19) (October 2024)**<br>Contains developing planning policies that help address the climate emergency, restore nature, and meet the needs of residents.<br>Policy HP1 – Healthy Place Shaping: Major development proposals must include a Health Impact Assessment (HIA) to evaluate and mitigate health and wellbeing impacts, ensuring the design addresses local needs, including those of an ageing population. The HIA should follow the Oxfordshire Health Impact Assessment Toolkit and be proportionate to the development's scale. | Engagement for the SESRO Project undertaken during 2024 and recorded in the Scoping Report included discussion and agreement of the incorporation of Human health in the EIA in substitution for a standalone HIA. | The Human health assessment set out in this chapter aligns with the methodology proposed in the Oxfordshire HIA Toolkit. The PEI Report methodology for Human health is set out in Section 16.4: Assessment methodology. |
| **Vale of White Horse/South Oxfordshire District Council Draft Joint Local Plan pre-submission publication (Regulation 19) (October 2024)**<br>Policy HP2 – Community facilities and services | The SESRO Project may directly or indirectly impact access to, or availability of, community resources through transport impacts and the provision or removal of community facilities. The SESRO Project includes proposed access to new | Community assets are scoped in under the 'Safe and cohesive communities' health determinants in paragraph 16.4.6. Health and social care services are scoped in under the 'Socio-economic conditions' health determinants. Health effects |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| The policy emphasises the protection and enhancement of essential community facilities, ensuring they remain accessible and beneficial to local residents. This is vital for maintaining community health and well-being. | public blue and green spaces, and recreation and educational facilities. | associated with these determinants are assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| **Vale of White Horse/South Oxfordshire District Council Draft Joint Local Plan pre-submission publication (Regulation 19) (October 2024)**<br>Policy HP5 - New facilities for sport, physical activity and recreation<br>The policy focuses on developing sports and recreational facilities, emphasising their integration within communities, accessibility, and sustainable management. These provisions promote physical activity, enhancing community well-being, and ensuring long-term health benefits. | The SESRO Project includes proposed access to new public blue and green spaces, changes to PROW, and sports and recreation facilities that will promote physical activity. | Health effects associated with access to open space and physical activity are scoped in under the 'Healthy lifestyles' health determinants, and community assets are scoped in under the 'Safe and cohesive communities' health determinants in paragraph 16.4.6. Effects to these determinants are assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| **South Oxfordshire Local Plan 2011-2035**<br>Sets out the future for development in South Oxfordshire up to 2035.<br>Policy ENV 12: Pollution - Impact of Development on Human Health, the Natural Environment and/or Local Amenity (Potential Sources of Pollution)<br>The policy aims to ensure that development proposals are located in suitable areas and designed to avoid significant adverse impacts | Environmental conditions are a key determinant of health, which the SESRO Project may impact through construction and operational activities. | Health effects associated with environmental conditions, including air quality, noise and visual aspects, are scoped in under the 'Environmental conditions' health determinant in paragraph 16.4.6 and assessed in Section 16.9: Preliminary assessment of likely significant effects. |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| on human health, the natural environment, and local amenities. By addressing factors like pollution and noise, it promotes healthier living environments and reduces potential health risks. | | |
| Neighbourhood plans set out specific planning policies for the local areas.<br>**Drayton Neighbourhood Plan (2015-2031),** Policy P-LF3 and P-LF7<br>**East Hanney Neighbourhood Plan (2021-2031),** Policy EHNP1 and EHNP17<br>**Sutton Courtenay Neighbourhood Plan 2031,** Policy SC10<br>**Wootton and St Helen Neighbourhood Plan 2019-2031,** Policy DG1 and DG3 (DG3.4)<br>**Culham Neighbourhood Plan 2020-2041,** Policy CU4<br>These polices focus on maintaining and enhancing the character of the area. This includes protecting views of the landscape context and public spaces that reflect or recognise aspects of the area's history and heritage. There is also a focus on reducing actual or perceived opportunities for criminal activity on site and surrounding area. | The SESRO Project will include new resources that will contribute to the character and amenity of the local area such as the Nature Education Centre, the recreational lakes, the visitor center and recreational routes. Additionally, the Project will include measures to prevent antisocial behavior and crime. | Health effects associated with access to open space and physical activity are scoped in under the 'Healthy lifestyles' health determinants, and community assets are scoped in under the 'Safe and cohesive communities' health determinants in paragraph 16.4.6. Effects to these determinants are assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| **East Hanney Neighbourhood Plan (2021-2031),** Policy EHNP17<br>**Wootton and St Helen Neighbourhood Plan 2019-2031,** Policy DG3 (3.3) | The SESRO Project includes new walking, wheeling, cycling and horse riding routes and improvements to existing routes, promoting inclusive active travel. | Access to active travel and recreational routes are scoped in under the 'Healthy lifestyles' health determinant in paragraph 16.4.6 and assessed in Section 16.9: |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| **Culham Neighbourhood Plan 2020-2041,** Policy CUL8<br>These policies focus on enabling active travel, walking and cycling, through the provision of accessible active travel infrastructure for all, including people with mobility and sensory difficulties and communal bicycle parking provision. They also encourage safe and secure access to the required social infrastructure through new, and with improvements to existing cycleways, footpaths, and bus services. | | Preliminary assessment of likely significant effects. |
| **Drayton Neighbourhood Plan (2015-2031),** Policy P-LF3<br>**East Hanney Neighbourhood Plan (2021-2031),** Policy ENHP13 and EHNP17<br>**Sutton Courtenay Neighbourhood Plan 2031,** Policy SC6<br>**Wootton and St Helen Neighbourhood Plan 2019-2031,** Policy DG1 and DG3 (D3.5)<br>**Culham Neighbourhood Plan 2020-2041,** Policy CU7<br>These policies focus on introducing new and protecting existing public and private blue and green spaces. They also encourage biodiversity enhancements for new residential developments, resulting in enhancements on public open space. | The SESRO Project includes proposed access to new public blue and green spaces, changes to PRoW, and sports and recreation facilities that will promote physical activity. | Health effects associated with access to open space and physical activity are scoped in under the 'Healthy lifestyles' health determinants, and community assets are scoped in under the 'Safe and cohesive communities' health determinants in paragraph 16.4.6. Effects to these determinants are assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| **Sutton Courtenay Neighbourhood Plan 2031,** Policy SC7 | The SESRO Project will ensure flood risk to residential properties does not increase, communities may | Health and wellbeing effects due to stress or anxiety associated with risk of flooding to residential |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| **East Hanney Neighbourhood Plan (2021-2031),** Policy EHNP16<br>These policies focus on ensuring that development proposals do not cause adverse impacts relating to flood risk to neighbouring properties and their settings. | experience uncertainty, anxiety and stress. | properties or neighboring areas are scoped in under the 'Safe and cohesive communities' health determinant in paragraph 16.4.6 and assessed in Section 16.9: Preliminary assessment of likely significant effects. |
| Guidance | | |
| **The IEMA Guide to Determining Significance for Human Health in Environmental Impact Assessment (IEMA, 2022)**<br>This guidance provides a framework for determining the significance of health effects in the EIA health assessment. | The Scoping Report has identified that the SESRO Project could result in potential significant effects on health, and that these should be assessed. The assessment should be informed by the best practice approach set out in the guidance. | This guidance has been considered throughout the Human health assessment. The PEI Report methodology for Human health is set out in Section 16.4: Assessment methodology. |
| **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 (Cave, 2020)**<br>This guidance sets out principles and good practice guidance for health assessment across each stage of assessment. | The assessment should be informed by relevant best practice set out in the guidance, taking particular note of the assessment, consultation and monitoring stages. | This guidance has been considered throughout the Human health assessment. The PEI Report methodology for Human health is set out in Section 16.4: Assessment methodology. Consultation is summarised in Section 16.3: Consultation, engagement and scoping, and mitigation measures are set out in Section 16.8: Embedded design mitigation and standard good practice and Section 16.9: Preliminary assessment of likely significant effects. |
| **HIA in spatial planning (Chang, Sharpe, Stimpson, Petrokofsky, & Netherton, 2020)**<br>This guidance sets out principles and good practice guidance for health assessment, including health determinants that HIA can | The assessment should take an approach that considers the wider determinants of health.<br>The guidance notes that where a development is subject to EIA, there is an opportunity to integrate HIA within this process. EIA for the SESRO Project will include a Human | The PEI Report methodology for Human health, as set out in Section 16.4: Assessment methodology, defines a process for identifying changes to the wider determinants of health and assessing the likely health effects arising from these |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| seek to address, and integrating HIA with other assessments. | health assessment in substitution for a standalone HIA. | changes. The assessment of health effects is reported in Section 16.9: Preliminary assessment of likely significant effects. |
| **International Association of Impact Assessment, International Best Practice Principles for Health Impact Assessment (Winkler, et al., 2020)**<br>This guidance sets out high-level principles and good practice for health assessment, including that HIA should seek to consider wider health determinants, and an overview of the steps in the process. | The assessment should take an approach that considers the wider determinants of health.<br>The assessment should undergo a detailed scoping process, baseline identification, assessment and reporting, and implementation of mitigation. | The PEI Report methodology for Human health, as set out in Section 16.4: Assessment methodology, sets out a process for identifying changes to the wider determinants of health and assessing the likely health effects arising from these changes. The assessment of health effects identified under these determinants is reported in Section 16.9: Preliminary assessment of likely significant effects. |

## 16.3 Consultation, engagement and scoping

16.3.1 Feedback from consultation and engagement is used to define the assessment approach and to ensure that appropriate baseline information is used. Feedback is also used to drive the design of the Project to avoid, prevent and reduce any likely significant environmental effects. In particular, feedback from stakeholders has informed the Project's proposed mitigation measures. Specific mitigation measures relevant to the Human health assessment are summarised in Section 16.8: Embedded design mitigation and standard good practice of this chapter. Engagement is ongoing and will continue to inform the EIA and design process.

### Scoping Opinion

16.3.2 The EIA Scoping Report (Thames Water, 2024) was issued to the Planning Inspectorate (PINS) on 28 August 2024. PINS provided its EIA Scoping Opinion (The Planning Inspectorate, 2024) on 8 October 2024, which included feedback from consultation bodies that it formally consulted.

16.3.3 Table 16.2 captures the key Scoping Opinion comments received from PINS and other key comments received from consultation bodies relevant to the Human health assessment, along with the Applicant's response to these at this stage of the assessment. Key activities to inform the final assessment that will be undertaken between the PEI Report and ES are covered in Section 16.10: Next steps. The full consultee comments on the EIA Scoping Report and responses to these will be provided in the ES.

Table 16.2 Key Scoping feedback for Human health

| Stakeholder | Scoping comment | Applicant response |
|---|---|---|
| PINS | 3.12.14 Air quality impacts to Human Health with regard to plant, process and vehicle emissions and odour.<br>*'The Applicant proposed to scope this matter out for both the construction and operation phases on the basis that significant effects are not expected. The Inspectorate considers that there is potential for significant effects from air quality on sensitive receptors, including human receptors and therefore does not agree to scope this matter out. Please see boxes 3.8.1, 3.8.3 and 3.8.4 of the Scoping Opinion for further detail.'* | Potential air quality impacts to human health related to plant, process, vehicle emissions and odour have been scoped into the assessment for both construction and operation phases (refer to paragraphs 16.4.6 and 16.4.7).<br>PINS comment 3.8.1, 3.8.3 and 3.8.4 and the responses detailing how these are addressed is presented in Table 13.3 of Chapter 13: Air quality. |
| PINS | 3.12.16 Radiation with regard to the risk of electro- magnetic fields actual risk.<br>*'The Applicant proposed to scope these matters out for both the construction and operation phases on the basis that significant effects are not expected. Paragraph 12.6.17 of the Scoping Report identifies that there is potential to divert overhead powerlines of >132kV. The Inspectorate therefore does not agree to scope this matter out and the ES should identify the location and proposed diversions of any cables 132kV and above in relation to the location of sensitive receptors and assess significant effects on human health where they are likely to occur, or provide evidence of agreement with relevant consultation bodies.'* | Potential impacts to Human health related to the perception of risk and actual risk from electromagnetic fields from overhead power lines have been scoped into the assessment for both construction and operation phases (refer to paragraphs 16.4.6 and 16.4.7). |
| PINS | 3.12.17 Drinking water quality.<br>*'The Applicant proposed to scope this matter out for both the construction and operation phases without explanation. Considering that there will be intake and outfall to the River Thames where water is abstracted, the Inspectorate considers that there is pathway for effect. On this basis, the Inspectorate does not agree to scope this matter out; the ES should provide an assessment of significant effects on drinking water quality where they are likely to occur.'* | Potential impacts to Human health related to drinking water quality have been scoped into the assessment for both construction and operation phases (refer to paragraphs 16.4.6 and 16.4.7). |
| PINS | 3.12.19 Environmental conditions: climate change during the construction phase.<br>*'The Applicant refers to the reasoning provided in Scoping Report section 16. The Inspectorate does* | Potential impacts to Human health related to climate change (including impacts from construction activities |

| Stakeholder | Scoping comment | Applicant response |
|---|---|---|
| | *not agree to scope this matter out on the basis that not enough information has been provided. Please see box 3.11.1 of the Scoping Opinion for further information.'* | combined with extreme weather events) have been scoped into the assessment for the construction phase (refer to paragraph 16.4.6). |
| PINS | 3.12.20 Environmental conditions: air quality during the operational phase.<br>*'The Applicant proposes to scope out this matter based on the reasoning provided in the Air Quality section. The Inspectorate does not agree to scope this matter out on the basis that not enough information has been provided in relation to operational traffic movements and routing. Please see box 3.8.5 of this Scoping Opinion for further information"* | Potential impacts to Human health related to air quality have been scoped into the assessment for the operational phase (refer to paragraph 16.4.7)<br>PINS comment 3.8.5 and the response detailing how this is addressed is presented in Table 13.3 of Chapter 13: Air quality. |

### Non-statutory public consultation

16.3.4 Non-statutory public consultation on the emerging proposals for the Project was undertaken with stakeholders and local communities in Summer 2024. Formal responses to this non-statutory consultation feedback have been provided within the 'Statement of Response' (Thames Water 2025). Any feedback relevant to the health assessment has been taken into account where appropriate.

### Ongoing engagement

16.3.5 This section summarises the ongoing technical engagement for health with key stakeholders since EIA scoping. This includes a Technical Liaison Group (TLG) attended by stakeholders outlined in Table 16.3

16.3.6 Table 16.3 provides a summary of the ongoing technical engagement for health, including the issues raised and outcomes for the assessment.

Table 16.3 Key ongoing engagement for health

| Stakeholder | Topics | Outcome |
|---|---|---|
| Human health TLG including the directors of Public Health for Oxfordshire and West Berkshire (or representatives from the Public Health teams), Community Officers from South Oxfordshire & Vale of White Horse District Councils, Buckinghamshire, Oxfordshire and Berkshire West Integrated Care Board (all one thing), UKHSA and OHID | Discussed the approach to the assessment, health issues and priorities for the study area, approaches to improve health outcomes and reduce inequalities, and potential health effects primarily relating to:<br>• impacts to traffic, access and environmental amenity during construction and<br>• access to green and blue space, sports and leisure and facilities during operation. | The Human health TLG will continue to liaise and the outcomes will be addressed in the ES. |

## 16.4 Assessment methodology

16.4.1 The project-wide approach to the assessment methodology is set out in Chapter 4: Approach to environmental assessment. This has informed the approach used in this Human health assessment. Any further data collection, studies or additional assessments that are still to be undertaken to inform the ES are set out in Section 16.10: Next steps.

16.4.2 This section outlines the methodology followed to assess the likely significant effects of the Project in relation to health including:

- Effects scoped into the assessment
- Study area
- Criteria for determining likely significant effects
- Assessment of cumulative effects

16.4.3 The assessment has been undertaken following available guidance including:

- Institute of Environmental Management and Assessment (IEMA) Guide to Determining Significance for Human Health in Environmental Impact Assessment (IEMA, 2022).
- Institute of Public Health's Health Impact Assessment (HIA) Manual (Pyper, et al., 2021).
- International Association of Impact Assessment, International Best Practice Principles for Health Impact Assessment (Winkler, et al., 2021).

### Scope of the assessment

16.4.4 The scope of the assessment has been informed by the EIA Scoping process, including the EIA Scoping Report (Thames Water, 2024) and Scoping Opinion (The Planning Inspectorate, 2024), combined with subsequent changes to the current solar and an enhanced understanding of the baseline environment.

16.4.5 Matters that have been scoped out of the Human health assessment are documented within Appendix 4.1: Matters scoped out of the EIA, along with justification for this scoping approach. In summary, matters scoped out are:

- Construction and operation effects of:
  - Substance misuse, problem gambling, communicable illness and diet
  - Housing determinants with regard to dwelling mix, social housing, affordability and adaptations
  - Safeguarding and modern slavery
  - Population out-migration
  - Economic/employment determinants with regard to recruitment and retention of staff, working conditions, displacement, labour productivity and economic loss
  - Social determinants with regard to transitional arrangements for education and family structures
  - Wider health determinants with regard to food production, malnutrition and exacerbation of chronic conditions
  - Wider societal benefits from communication and IT infrastructure and climate change

  - Radiation with regard to the risk of new ground pollution, ionising actual risk and ionising risk perception
- Operational effects of:
  - Procurement and investment, working conditions and family structure
  - Impact of the Proposed Development on health and social care services
  - Risk of new ground pollution, mobilisation of historic pollution and food resources and safety

16.4.6 Effects on health are considered in relation to health determinants (factors that affect health). Health determinants that are scoped in for the health assessment that are relevant to the construction phase are listed below along with the corresponding health issues and health risk factors:

*Healthy lifestyles:*

- Active travel and physical activity
- Open space, leisure and play (including access to green space, and connectivity)

*Safe and cohesive communities*

- Housing (Flood risk, residential segregation, loss of existing housing, housing market impacts)
- Built environment (neighbourhood design, community assets, spatial planning/land allocations)
- Transport (health impacts related to road safety, public transport, journey times, emergency response times, and access to community services)
- Community safety (personal safety, opportunities for antisocial behaviour, crime and fear of crime, emergency response times)
- Community identity and cohesion (residential segregation, in-migration, social networks, effects of visual and landscape impacts on sense of place)

*Socio-economic conditions*

- Education (school accessibility, capacity and quality, adult skills development)
- Socio-economic status (employment opportunities, wider economic effects))
- Health and social care services (access, quality, capacity)

*Environmental conditions*

- Climate change (public health vulnerabilities to climate change including extreme weather events during construction)
- Air quality (impacts to human health that are related to construction dust, plant, process, vehicle emissions and odour)
- Water (bathing water quality, drinking water quality and quantity)
- Soil (impacts to human health that are related to the mobilisation of historic pollution, risk of new ground contamination, and food security (agricultural land availability))
- Noise (impacts to human health related to noise and vibration from construction activities and construction traffic movements)

- Radiation (perception of risk and actual risk from electromagnetic fields from overhead powerlines)

16.4.7 Effects that are scoped in for the health assessment relevant to the operation phase are:

*Healthy lifestyles:*

- Active travel and physical activity
- Open space, leisure and play (including access to green and blue space and connectivity)

*Safe and cohesive communities*

- Housing (Flood risk, residential segregation)
- Built environment (neighbourhood design, community assets, spatial planning/land allocations)
- Transport (health impacts related to road safety, public transport, journey times, emergency response times and access to community services)
- Community safety (personal safety, opportunities for antisocial behaviour crime and fear of crime)
- Community identity and cohesion (effects of visual and landscape impacts on sense of place, social networks/opportunities for social and cultural activities)

*Socio-economic conditions*

- Education (school accessibility, capacity and quality, adult skills development, new public education facilities)
- Socio-economic status (employment opportunities, wider economic effects)
- Health and social care services (access, quality, capacity)

*Environmental conditions*

- Climate change (public health vulnerabilities to climate change including extreme weather events during operation)
- Air quality (impacts to human health that are related to plant, process, vehicle emissions and odour)
- Water (bathing water quality, drinking water quality and quantity, exposure to vector borne infection or toxins)
- Soil (impacts to human health related to new ground contamination)
- Noise (impacts to human health related to noise from operational activities and traffic)
- Radiation (perception of risk and actual risk from electromagnetic fields from overhead powerlines)

## Study area

16.4.8 The study area for the health assessment has been defined based on the draft Order limits in addition to the information about the Project related to both the construction and operational phases. Health effects vary spatially depending on the nature of the health determinant being assessed. To proportionately identify potential health effects and to

identify the relevant population groups which are anticipated to be affected by them, the following study areas have been applied:

- **Regional study area:** A regional study area has been utilised to establish the population health baseline with regards to health determinants that interact with populations at a more regional level. This includes for example, employment and economic effects, and availability of housing. The regional study area encompasses the local authority areas of Vale of White Horse, South Oxfordshire, and the Oxfordshire County Council and Integrated Care Board (ICB) of Oxfordshire.
- **Local study area:** A local study area has been defined to establish the population health baseline with regards to health determinants that interact with populations at a more local level, including site specific. This includes for example, local environmental conditions (including air quality, noise, visual amenity, water quality, and radiation), as well as local access, opportunities for physical activity, community participation, and community safety. For the health assessment the local study area is defined as the lower super output areas (LSOAs)[1] that fall within a 5km buffer of the draft Order limits.
- **Site specific study area:** An area that identifies population groups mostly likely to be directly affected by the Project, including landowners, residents, recreational users of the area within draft Order limits, people employed in the local area (including future site workers). For the purpose of the health assessment the site-specific study area comprises the draft Order limits.

## Methodology

### *Baseline*

#### Data collection

16.4.9 Baseline data collection has been undertaken to obtain information for the study areas. This section provides the approach used in collecting baseline data. For the regional study area, data has been collected at local and county authority / ICB level. For the local study area, data has been collected at LSOA level or, where not available, at Middle Super Output Area (MSOA) level.

16.4.10 The following data sources have been accessed to inform the baseline with respect to health:

- Office for National Statistics (ONS) Census Data (ONS 2021)
- Fingertips – local health profiles (Office for Health Improvements and Disparities (OHID) 2024)
- Oxfordshire Data Hub – a platform that includes public health information for the area including Oxfordshire Joint Strategic Needs Assessment (JSNA), (Oxfordshire County Council 2025)
- Index of Multiple Deprivation (IMD) (Ministry of Housing, Communities and Local Government 2019)
- Active Lives Survey (Sport England 2022)
- ONS Wellbeing survey (ONS 2022)

[1] LSOAs are small statistical areas comprising an average population of around 1500 people.

- AddressBase Plus (Ordnance Survey 2024)
- Access to Healthy Assets & Hazards from the Consumer Data Research Centre

16.4.11 In addition to these data sources, the health assessment also draws on environmental baseline data collated for other aspects, specifically, baseline data presented in Chapter 5: Water environment, Chapter 9: Landscape and visual amenity, Chapter 12: Traffic and transport, Chapter 13: Air quality, Chapter 14: Noise and vibration, Chapter 15: Socio-economics and communities, and Chapter 18: Climate resilience.

### Site surveys

16.4.12 Baseline data collection for the health assessment is desk-based. No surveys specific to the health assessment have informed the PEI Report. However, walkover surveys of some areas were carried out to better understand the local context such as access to open space and likely routes to community facilities.

### Vulnerable groups

16.4.13 The term 'vulnerable groups' refers to groups of individuals who are made vulnerable by the situations and environments they are exposed to. This includes groups of people who may be more sensitive to changes in health determinants. The population group most likely to experience any health effects are those living and working within or close to the draft Order limits. However, vulnerable groups include for example, age related groups (e.g. children and young people, older people) groups at higher risk of discrimination or other social disadvantage (e.g. black and ethnic minority groups, disabled people, refugee groups, gypsies and travellers, carers), income related groups (e.g. economically inactive, people on low incomes, unemployed), and geographical groups (e.g. people living in deprived areas, people living in rural areas, people in frequently visited settings such as workplaces, schools, hospitals) (WHIASU 2021). The assessment identifies vulnerable groups in relation to each health determinant, based on the outcomes of the baseline review, where vulnerable groups are likely to be present and where there is the potential for an effect on those groups that is different to the effect on the general population.

16.4.14 Consideration of vulnerable groups will take into account:

- how an impact on a health determinant is shown in scientific literature, or reasonably expected, to affect a particular section of the community differently to the general population.
- whether the affected community is already facing existing disadvantages (social, economic or environmental) that could serve to intensify or change the impact(s) of the Project.
- characteristics such as age, health conditions, or other physical or mental characteristics that make people more likely to be exposed to adverse impacts resulting from the Project.

### Future baseline

16.4.15 The assessment has considered the likely evolution of the baseline without the implementation of the Project. The future baseline for the health assessment includes the following:

- Population projections (e.g. population size, density, age profile)

- Likely future health trends of the study area population (based on past trends, e.g. obesity, life expectancy)
- Availability and capacity of health and social care services
- Likely changes in health determinants scoped into the assessment (see paragraphs 16.4.6 and 16.4.7)
- Any relevant other developments expected to be operational prior to or during the construction and operation of the Project

16.4.16 The following data sources have been accessed to inform the future baseline with respect to health:

- Refer to Chapter 20: Cumulative effects for the methodology used to prepare the list of other developments relevant to the future baseline
- Data sources in paragraphs 16.4.10 and 16.4.11

*Criteria for the assessment of significance*

16.4.17 Plate 16.1 provides an overview of the health assessment methodology that has been followed.

Plate 16.1 Health assessment methodology

| Characterise population | | |
|---|---|---|
| Identify population potentially exposed to impacts of Project | Develop a health profile of the population within the study area | Identify vulnerable groups within the population which may have increased susceptibility to certain health impacts |

| Identify baseline health determinants | |
|---|---|
| Collate data on quality of biophysical, social and economic environmental conditions | Identify assets important to community health and wellbeing |

| Identify and assess potential impacts on determinants | |
|---|---|
| Identify potential impacts on baseline health determinants | Assign magnitude of impact and the characteristics of the effect. |

| Identify potential health effects | | | |
|---|---|---|---|
| Identify health effects, based on evidence and professional judgement, and considering embedded design mitigation and standard good practice | Estimate the proportion of the population likely to be affected and assess its sensitivity | Consider potential differences in health effects experienced by vulnerable groups compared to the general population | Consider whether health inequalities are likely to be widened or narrowed by effects. |

| Identify additional mitigation and enhancement |
|---|
| Identify measures that can reduce adverse health effects and/or improve health effects and/or reduce health inequalities |

| Assessment outcomes | | |
|---|---|---|
| Describe likely residual health effects[2] associated with the Project | Conclude whether health effects would be significant, beneficial or adverse | Identify whether existing health inequalities are likely to be widened or narrowed by the impacts |

[2] As described in Chapter 4, the likely significant effects reported within the PEI Report have been assessed prior to the implementation of additional mitigation measures. Residual effects remaining following the application of additional mitigation will be reported in the ES.

16.4.18 The methodology for assessing effects is based on the principle that the environmental effects of the Project, in relation to a receptor, should be determined by identifying the receptor's sensitivity, assessing the magnitude of impact the Project would have on the receptor and then using professional judgement in combining these two components to identify the significance of effect.

16.4.19 The criteria used for assessing sensitivity and magnitude and the matrix used for identifying significance of effect have been updated from the Scoping Report. This is to provide a consistent approach, as far as is reasonable, across aspects assessed within the PEI Report.

### Assessment of sensitivity

16.4.20 Table 16.4 provides further detail on the criteria for establishing the sensitivity of receptors. Sensitivities may change depending on which health determinant is being considered. For some effects, including those from flooding, major accidents and disasters, and exposure to hazardous substances, all members of the community are considered to be of high sensitivity regardless of indicative criteria.

Table 16.4 Criteria for establishing the sensitivity of receptors

| Sensitivity of receptor | Indicative criteria |
|---|---|
| Negligible | • Very low levels of deprivation<br>• No shared resources<br>• Existing narrow inequalities between the most and least healthy<br>• A community whose outlook is predominantly support with some concern<br>• People who are not limited from undertaking daily activities<br>• People who are independent (not a carer or dependent)<br>• People with good health status<br>• People with a very high capacity to adapt |
| Low | • Low levels of deprivation<br>• Many alternatives to shared resources<br>• Existing narrowing inequalities between the most and least healthy<br>• A community whose outlook is predominantly ambivalence with some concern<br>• People who are slightly limited from undertaking daily activities<br>• People providing or requiring some care<br>• People with fair health status<br>• People with a high capacity to adapt |
| Moderate | • Moderate levels of deprivation<br>• Few alternatives to shared resources<br>• Existing widening inequalities between the most and least healthy<br>• A community whose outlook is predominantly uncertain with some concern<br>• People who are highly limited from undertaking daily activities<br>• People providing or requiring a lot of care |

| Sensitivity of receptor | Indicative criteria |
|---|---|
| | • People with poor health status<br>• People with a limited capacity to adapt |
| High | • High levels of deprivation (including pockets of deprivation)<br>• Reliance on resources shared (between the population and the project)<br>• Existing wide inequalities between the most and least healthy<br>• A community whose outlook is predominantly anxiety or concern<br>• People who are prevented from undertaking daily activities<br>• Dependents<br>• People with very poor health status<br>• People with a very low capacity to adapt |

### Magnitude of impact

16.4.21 The approach used to assess magnitude of impact on health receptors considers the nature and magnitude of impact upon the receptor. The approach used is based on professional judgment and experience with reference to defined criteria from guidance. Table 16.5 provides further detail on the criteria for assessing the magnitude of impact.

Table 16.5 Criteria for assessing the magnitude of impact

| Magnitude of impact | Description and nature of change |
|---|---|
| Negligible | • Negligible exposure or scale<br>• Very short-term duration<br>• One-off frequency<br>• Severity predominantly relates to a minor change in quality-of-life<br>• Very few people affected<br>• Immediate reversal once activity complete<br>• No service quality implication |
| Small | • Very low exposure or small scale<br>• Short-term duration<br>• Occasional events<br>• Severity predominantly related to minor change in morbidity or moderate change in quality-of-life<br>• Small minority of population affected<br>• Rapid reversal<br>• Slight service quality implications |
| Medium | • Low exposure or medium scale<br>• Medium-term duration<br>• Frequent events |

| Magnitude of impact | Description and nature of change |
|---|---|
| | • Severity predominantly related to moderate changes in morbidity or major change in quality-of-life<br>• Large minority of population affected<br>• Gradual reversal<br>• Small service quality implications |
| Large | • High exposure or scale<br>• Long-term duration<br>• Continuous frequency<br>• Severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/ injury outcomes<br>• Majority of population affected<br>• Permanent change<br>• Substantial service quality implications |

### Significance of effect

16.4.22 The significance of effect is determined by combining the sensitivity of each receptor and the magnitude of impact. The resultant effects may be either adverse or beneficial, depending on the nature of the change. Table 16.6 shows how the sensitivity of receptor and magnitude of impact are combined to deduce the significance of effect. Effects that are moderate or major are deemed to be significant.

Table 16.6 Significance matrix

| Receptor sensitivity | Magnitude of impact | | | | |
|---|---|---|---|---|---|
| | No change | Negligible | Small | Medium | Large |
| **Negligible** | None | Neutral | Neutral | Minor | Minor |
| **Low** | None | Neutral | Minor | Minor | Moderate (significant) |
| **Moderate** | None | Minor | Minor | Moderate (significant) | Moderate (significant) |
| **High** | None | Minor | Moderate (significant) | Moderate (significant) | Major (significant) |

16.4.23 For this preliminary assessment, the assessment of effects has assumed that 'embedded design mitigation' and 'standard good practice mitigation' relevant to the Human health assessment are in place (these measures are presented in Section 16.8: Embedded design mitigation and standard good practice). Nevertheless, as noted in Section 16.9: Preliminary assessment of likely significant effects, the preliminary assessment assumes that additional mitigation that may reduce any identified likely significant adverse effects is not applied, as the viability, nature, and extent of these are not confirmed at this stage in the EIA process. As a result, consideration of residual effects (those that remain after the

implementation of all mitigation, including additional mitigation) has not been completed for this preliminary assessment; this will be undertaken in the ES. Additional mitigation that is being explored is presented in Section 16.10: Next steps.

16.4.24 Professional judgement of significance requires the consideration of a range of information including:

- Literature review
- Baseline conditions for the population
- Health priorities in the study area
- Regulatory standards in England and health policy context within the study area and/or England

16.4.25 The assessment is supported by a literature review of the current scientific consensus on links between health determinants and health outcomes (Appendix 16.1: Evidence review of health determinants). The literature review uses evidence compiled by public health stakeholders, such as Spatial Planning for Health – an evidence resource for planning and designing healthier places (Public Health England, 2017). The literature review has sought out peer reviewed literature and systematic reviews where available. Systematic reviews provide a summary of all the literature available on a particular aspect which meet pre-defined eligibility criteria, which included date, geography and integrity of the source.

#### *Qualitative assessment*

16.4.26 The health assessment is qualitative because there is no reliable means of quantifying the health impacts from the data available and size of population likely to be exposed to effects. The assessment will therefore comprise a qualitative description of the health effects associated with changes in determinants of health resulting from the Project, guided by the assessment criteria set out in the IEMA Guide to Determining Significance for Human Health in Environmental Impact Assessment (IEMA, 2022) and supported by expert interpretation of evidence from the literature review.

16.4.27 A source-pathway-receptor approach is taken in the assessment. This approach assumes that in order for there to be an effect on a receptor (population group), there must be a source of effect (i.e. change in health determinant) and a pathway (i.e. an established causation or association between the source and health effects) through which receptors can be exposed to these changes.

### Assessment of cumulative effects

16.4.28 The cumulative effects assessment approach for both inter- and intra-project cumulative effects is broadly set out in Chapter 20: Cumulative effects. However, for this aspect further detail on the assessment process for intra-project cumulative effects is set out below.

16.4.29 Intra-project cumulative effects are the combined effects on a population of multiple changes in wider determinants of health from a single project (i.e. in this case this Project). Following the assessment methodology outlined above, each health determinant is assessed in relation to the defined populations set out in the study area. Consideration of the combined effects from all health determinants on the population (and sub populations of vulnerable groups) has then been made.

16.4.30 The assessment of intra-project cumulative effects on health is an iterative process and takes into account the outcomes of the other EIA aspect assessments.

16.4.31 The outcomes of the inter-project cumulative effects assessment are reported in Chapter 20: Cumulative effects. The intra-project cumulative effects assessment is summarised within Chapter 20: Cumulative effects, and within Chapter 20 signposts are provided to the location of the intra-project cumulative effects assessment (where it has been possible to provide at this stage).

## 16.5 Study area

16.5.1 The study areas are defined according to the sensitivity of the receiving environment and the potential effects of the Project. The methodology used to define the study areas are outlined in Section 16.4: Assessment methodology above. The study areas for health are shown in PEI Report Figure 16.1: Local study area and Index of Multiple Deprivation.

16.5.2 The study areas have changed since the EIA scoping stage as a result of changes to the design and the associated draft Order limits. See Chapter 2: Project description for details of the Project parameters and assumptions for the PEI Report.

16.5.3 The local study area includes LSOAs within a 5km radius of the draft Order limits (where LSOA data is not available, the corresponding Middle Super Output Areas (MSOAs) are used in the baseline assessment below).

16.5.4 The local study area is largely rural and contains a number of villages, the nearest of which are Marcham, Garford, Frilford, East and West Hanney, Steventon and Drayton, as well as the larger settlements of Abingdon, Didcot and Wantage. Individual and small groups of rural properties are located outside these settlements, throughout the local study area.

16.5.5 The regional study area covers the local authorities of Vale of White Horse, South Oxfordshire, and Oxfordshire County Council. For the purpose of this preliminary baseline, county-level data is presented for the regional study area.

16.5.6 Social infrastructure in the study area (including education, healthcare, community and commercial facilities) is described in the baseline section of Chapter 15: Socio-economics and communities, and baseline information on environmental determinants of health are described in Chapter 9: Landscape and visual, Chapter 13: Air quality, Chapter 14: Noise and vibration.

## 16.6 Baseline conditions

16.6.1 To assess the significance of effects arising from the Project in relation to health, it is necessary to identify and understand the baseline environment within the study areas. This provides a reference state against which any potential effects on health can be assessed.

16.6.2 This section outlines the existing baseline and expected future baseline conditions of health in the study areas.

### Existing baseline

16.6.3 This assessment has considered the known receptors within the study areas. Key existing baseline features for health are the demographic, socio-economic and health profiles of the

population within the study area. Overall deprivation, which is a fundamental feature of the baseline as it is encompasses both socio-economic and health indicators and is closely correlated with key health outcomes such as life expectancy, is shown in PEI Report Figure 16.1: Local study area and Index of Multiple Deprivation.

*Demographic profile*

### Population density

16.6.4 There are 148,901 people residing in the LSOAs which intersect with the local study area, across an area of 625 square kilometres ($km^2$). This area has an overall average population density of 238 residents per square kilometre, which is lower than Oxfordshire with 278 and England with 434 (ONS, 2021a). There is significant variation in density between rural areas and settlements in the local study area. For example, the LSOA South Oxfordshire 010F, in Didcot West, has the highest population density in the study area with 7,980 residents per $km^2$ and the LSOA West Berkshire 001C in Chieveley & Cold Ash, Newbury has the lowest with 27 residents per $km^2$.

### Age profile

16.6.5 On average, 17.8% of the population in the LSOAs within the local study area is under 15 years old, which is higher than Oxfordshire with 16.8% and England with 17.3% (ONS, 2021b). There is a high degree of variation; for example, in two LSOAs, located in Didcot and Wallingford, more than 28% of the population is in the 0-15 age bracket.

16.6.6 With regards to the older population (aged 65 and above), the LSOAs in the local study area have a slightly higher average of 18.6% as compared to Oxfordshire with 17.9% and England with 18.4%. There is a high degree of variation; for example, in an LSOA located in Abingdon, more than 30% of the population is aged 65 and above.

### Ethnic group

16.6.7 On average, 91.2% of the people in the local study area LSOAs are ethnically white which is higher than Oxfordshire (86.9%) and England (81.0%) (ONS 2021c). There is significant variation; for example, the most ethnically diverse LSOA in the study area is Vale of White Horse 003A in Wootton, with 19.5% Asian people, 15.6 percentage points more than study area average and 13.4% Black people, which is 11.8 percentage points more than the study area average.

*Socio-economic profile*

### Overall deprivation

16.6.8 The area has low levels of deprivation, according to the English Indices of Multiple Deprivation (IMD)[3] (MHCLG, 2019a). Generally, the LSOAs in the local study area are ranked in the 20% least deprived areas of England. However, there are pockets of higher deprivation, largely in urban areas, including areas in Didcot and Abingdon. Vale of White

[3] Note that some LSOA boundaries have changed and are different from the ones reflected in the IMD LSOA boundaries, this has been accounted for when looking at the IMD scores for the study area.

Horse 008C in Abingdon (south of the River Thames) is the most deprived area in the study area.

### Economic activity

16.6.9 On average, 65.6% of the population of the local study area are economically active, which is higher than Oxfordshire with 61.4% and England with 58.6% (ONS 2021d). 33% of the local study area is economically inactive, which is lower than Oxfordshire with 36.3% and England with 39.1%.

16.6.10 The average rate of unemployment[4] in the local study area is 1.9% which is lower than the Oxfordshire and national averages of 2.0% and 2.9% respectively. There is significant variation; for example, the LSOA South Oxfordshire 013D in Didcot North East has the highest rate of unemployment with 4.5%.

16.6.11 The LSOA Vale of White Horse 003C in Wootton has the highest proportion of economically inactive people with 57%, primarily due to a high student population of 30.1%. This value is 24 percentage points more than the study area average.

### Socio-economic classification

16.6.12 Approximated Social Grade is a socio-economic classification allocated to all usual residents in a household aged 16 to 64 years. The grades, calculated from census data, include higher and intermediate managerial, administrative and professional occupations (AB), supervisory, clerical and junior managerial, administrative and professional occupations (C1), skilled manual occupations (C2), and semi-skilled and unskilled manual and lowest grade occupations (DE).

16.6.13 On average, 35.1% of the population of the LSOAs in the local study area are in the AB social grade, which is higher than Oxfordshire with 32.5% (ONS 2021e). Both are significantly higher than the national average of 23.5%. The LSOA with the highest proportion of people in the AB social grade is in Abingdon (north of River Thames) with 55.7%, which is 20.6 percentage points more than the study area average and more than double the national average.

16.6.14 With regards to the DE social grade, on average 13.8% of the people in the local study area are in this category, which is lower than Oxfordshire's average of 16.2% and the national average of 22.5%. The LSOA with the highest proportion of people in the DE social grade is also in Abingdon (south of the River Thames) with 39.5%, which is 25.7 percentage points more than the study area average and almost double the national average, highlighting a high degree of variation in social grade across the study area.

### Highest level of qualifications

16.6.15 On average, 13% of the population in the LSOAs in the local study area have no qualifications, which is comparable to Oxfordshire with 13.5% and lower than the national average of 18.1% (ONS 2021f). Additionally, the study area has 42.1% people with Level 4 qualifications or above, which is similar to Oxfordshire with 42% and higher than England's average of 33.9%.

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[4] Note that the unemployment figures have been taken directly from ONS Census 2021 and may differ from the unemployment figures in the socio-economic chapter as they represent the unemployed proportion of the economically active population instead.

16.6.16 The area of Abingdon with the highest proportion of people in the lowest social grades in the study area (see above) also has the highest proportion of people with no qualifications, with 31.6%, which is 18.6 percentage points more than the study area average.

*Health profile*

### Life expectancy

16.6.17 OHID data (2021-2023) shows that the area of Oxfordshire has a male life expectancy of 81.3 years and female life expectancy of 84.9 years, which is higher than the national averages of 79.1 years and 83.1 years respectively (OHID 2023a).

16.6.18 The MSOA Vale of White Horse 006 – Abingdon Town and West has the lowest life expectancy in the study area, at 79.3 years for males and 83.3 years for females (OHID 2020).

### General (self-rated) health

16.6.19 On average, 85.8% of the population in the local study area LSOAs have better than fair self-rated health (good and very good health) as compared to Oxfordshire with 86% and the national average of 82.2% (ONS 2021g).

16.6.20 On average, 3.3% of the population in the study area has less than fair health (bad and very bad health), compared with the Oxfordshire and national averages of 3.4% and 5.2% respectively. There is a high degree of variation in the study area; for example, the LSOA South Oxfordshire 014C in Didcot has the highest rate of less than fair health with 7.1%.

### Disability

16.6.21 On average, 14.6% of the population in the LSOAs in the study area are disabled under the Equality Act, which is similar to the Oxfordshire average of 14.5% and less than the national average of 17.3% (ONS 2021h). The LSOA South Oxfordshire 014C in Didcot with the highest proportion of people with less than fair health in the study area (see above) also has the highest proportion of people classed as disabled under the Equality Act, with 21.5%, which is 6.9% more than the study area average.

### Health deprivation

16.6.22 The area has low levels of health deprivation, according to the English Indices of Multiple Deprivation (IMD)[5] (MHCLG 2019b). On average, The LSOAs in the local study area are ranked in the 10% least deprived areas of England for health deprivation. There is some variation; for example, Vale of White Horse 008C in Abingdon (south of the River Thames) also has the highest level of health deprivation in the study area, falling within the 40% most deprived areas nationally.

### Physical activity

16.6.23 According to OHID data (2022/23) (OHID 2023b), the regional study area of Oxfordshire has a higher percentage of physically active adults, with 71.4%, than the national average of 67.1%. However, OHID data (2023/24) (OHID 2024a) also shows that Oxfordshire has

[5] Note that some LSOA boundaries have changed and are different from the ones reflected in the IMD LSOA boundaries, this has been accounted for when looking at the IMD scores for the study area.

a lower percentage of physically active children (43.5%) than the national average of 47.8%.

### Obesity

16.6.24 According to OHID data (2023/2024) (OHID 2024b), the regional study area of Oxfordshire has lower rates of obesity in ages 4-5 (7.7%) and ages 10-11 (18.6%) than England as a whole (9.6% and 22.1% respectively).

16.6.25 With regards to obesity prevalence in adults, OHID 2022/2023 (OHID 2023c) shows that 21.3% of adults in Oxfordshire are obese, which is less than England with 26.2%.

#### *Vulnerable groups*

16.6.26 Vulnerable groups identified within the study area are described in Table 16.7.

Table 16.7 Vulnerable groups and description of vulnerabilities

| Vulnerable group | Social receptors in the study area (examples of types of receptors) | Description of vulnerabilities |
|---|---|---|
| Children and adolescents | Schools, nurseries, parks, recreational grounds | Children and adolescents are more likely to be pedestrians and require freedom to move between their home, school, and recreational activities. They lack the experience and judgement of adults whilst interacting with traffic and public spaces. They are therefore more at risk from the dangers of motorised transport.<br>Children are more sensitive than adults to air pollution, noise, odour, and other environmental factors, with their bodies less able to deal with them or inform them when something is wrong.<br>Children living in deprived areas are particularly susceptible due to other disadvantages. |
| Older people | Community resources like parks, local neighbourhood centres, places of worship, PRoW, bus services, care homes, healthcare facilities. | As people age, movement and reactions generally become slower and hearing loss becomes more likely. Older people can be more at risk from injury and may also fear falls and be anxious about crossing the road safely or about navigating the neighbourhood setting in general. This can lead to barriers to older people participating in outdoor activities, especially walking, which can adversely affect their health.<br>Older people are generally more reliant on health and social care services and other social infrastructure. They are less likely to drive and therefore more likely to be pedestrians or to use public transport. Therefore, this group is vulnerable to effects on transport and access. |
| Low-income groups and people who | Public transport routes, PRoW, community | People on a low income generally experience poorer health because they have higher exposure to risk factors such as stress and poor nutrition and have fewer resources available to stay healthy. This group |

| Vulnerable group | Social receptors in the study area (examples of types of receptors) | Description of vulnerabilities |
|---|---|---|
| are unemployed | facilities, health and social care facilities. | are more likely to use shops and community facilities in their local area and are less likely to have resources to adapt to change. People on low incomes are less likely to own a vehicle and may be more vulnerable to impacts on social isolation, e.g. from impacts on local bus services. |
| Rural communities | Rural roads and bus routes. | People in rural areas are more reliant on transport connections, making it difficult for them to access basic facilities such as education, employment opportunities, healthcare facilities and social opportunities when transport is disrupted. This makes them more vulnerable to social isolation. |
| People with poor health status or who are disabled | Health and social care facilities, open space and parks, footpaths, PRoW, community facilities, public transport | Disabled people and those with poor health status are likely to be less resilient to changes in health determinants. For example, impacts on noise and air quality are more likely to adversely affect those with existing hearing or respiratory issues. This group is generally more reliant on social care services and other social infrastructure. They are less likely to drive and therefore more likely to be pedestrians or to use public transport services. Therefore, this group is vulnerable to effects on transport and access. |
| Pregnant women | Health and social care facilities, open space and parks, footpaths and PRoW | Pregnant women and fetuses are more vulnerable to environmental stressors such as air pollution. Pregnant women may be more likely to experience stress from issues such as traffic and noise, due to higher baseline anxiety and greater sensitivity. |
| People from ethnic minority backgrounds | Health and social care facilities, open space and parks, footpaths and PRoW, community facilities, places of worship, public transport | Ethnic minority groups are more likely to be socially disadvantaged (see low income groups above) and are more likely to live in areas where they are exposed to environmental stressors (such as poor air quality or lack of green space) and physical hazards (such as heavy traffic). |
| LGBTQ+ community | Health and social care facilities, public transport, community facilities | LGBTQ+ individuals often face heightened vulnerability in urban environments. They may be disproportionately affected by construction impacts in areas where they already feel unsafe or marginalised. |

### Oxfordshire JSNA Inclusion Health Groups

16.6.27 The Oxfordshire JSNA identifies a number of inclusion health groups, who are defined as experiencing multiple risk factors for poor health, including but not limited to certain immigration groups, households owed a homelessness prevention duty and children and young people in the youth justice system. These are groups who are at high risk for multiple risk factors for poor health (Oxfordshire County Council, 2025). The Oxfordshire JSNA inclusion health group indicators show that the rates of inclusion health groups in

South Oxfordshire and Vale of White Horse are lower than or comparable to Oxfordshire as a whole.

### Summary

16.6.28 Overall, the regional (Oxfordshire) and local study areas have relatively low levels of social deprivation and good health, compared with England as a whole. The levels of qualification and rate of employment are significantly above the national average, as is the proportion of people in the highest social grade (AB). Life expectancy and self-rated health are higher than average, and rates of disability are lower. However, the local study area contains pockets of higher deprivation, which is associated with poorer health outcomes.

## Future baseline

16.6.29 As set out in Chapter 4: Approach to the environmental assessment, the preliminary assessment of effects considers the likely evolution of the baseline without the implementation of the Project. Where climate change may alter future human health baseline conditions and therefore likely significant effects, this is discussed as part of the In-combination Climate Change Impact (ICCI) assessment which brings together all climate related impacts on aspect assessments and is presented in Appendix 18.3: In-combination Climate Change Impact Assessment.

16.6.30 The regional study area of Oxfordshire's population is set to grow from 737,795 in 2022 to 894,873 in 2047. This is a 21.3% increase in the overall population of the area, which is higher than the national population increase of 14.5% (ONS 2025a, ONS 2025b). A growing population and rising temperatures are predicted to place pressure on the water systems (ScienceDirect, 2024).

16.6.31 The proportion of older people (65+) is projected to increase by 38.6% nationally between 2022 and 2047. The projected increase is higher for Oxfordshire, with an increase of 55.8% in the same timeframe (ONS 2025b). Lifelong learning provision will be increasingly important for an aging population and increasing retirement age (National Library of Medicine, 2016). An aging population will require more age-friendly community interventions such as wellbeing centres (National Library of Medicine, 2023).

16.6.32 The proportion of children and young people (under the age of 16) is projected to increase by 10.3% nationally between 2018 and 2043. The projected increase is lower for Oxfordshire, with 9.2%, but higher for the local authority of Vale of White Horse, with a projected increase of 23.1% in the same timeframe (ONS 2025b). An increased focus on re-designing surroundings, incorporating safety and wellbeing for children, is predicted (National Library of Medicine, 2010), along with embedding play into the built environment (Hartt et al., 2023). (National Library of Medicine, 2010), along with embedding play into the built environment (Hartt et al., 2023).

16.6.33 With regards to employment, between 74,590 and 102,835 additional jobs were projected in Oxfordshire between 2020-2040. In comparison to historical job trends for the area, the business-as-usual scenario suggests slower growth over the next two decades. However, this still exceeds the planning assumptions and projected growth highlighted in the 2014 Oxfordshire Strategic Housing Market Assessment (SHMA) (OxLEP 2025).

16.6.34 The UK is likely to see a continued increase in physical activity levels, with 63.4% of adults participating in at least 150 minutes of moderate-intensity physical activity per week as of November 2023. The Active Lives Adult Survey report indicates a positive trend in activity

levels, with an increase of two million active adults compared to 2016, despite the impacts of the Covid-19 pandemic and increased cost of living pressures (ukactive, 2025). This aligns with research focusing on empowered, preventative and well-being focused healthcare (UK Government, 2018), changing attitudes towards the scope of health services, with social prescribing of non-medical interventions increasing (BMC, 2023) and changing perceptions on the value of physical movement, moving away from the focus on obesity and weight control (The Lancet, 2023).

16.6.35 Access to green space has been linked with health inequalities, and is increasingly accepted as a right (National Library of Medicine, 2021). However, according to the Green Space Index (GSI) (2024), based on the current provision of parks and green spaces, the provision of green space per person is expected to decrease nationally from 30 sqm to 28sqm by 2043. Access is expected to reduce further and faster in areas where most population growth is expected.

16.6.36 The following developments have provisionally been identified as part of the future baseline and are of relevance to the Human health assessment:

- Dalton Barracks Garden Village will add approximately 2,750 new residential receptors, with an additional 180 units for older people requiring care and 6-10 pitches for gypsies and travellers, along with community facilities including for healthcare and education. The development is located in LSOA Vale of White Horse 003A and 003E.
- Land Adjacent to Culham Science Centre will add approximately 3,500 new residential receptors, with an additional 60 units for older people requiring care and 6-10 pitches for gypsies and travellers, along with community facilities including for healthcare and education. The development is located in LSOA South Oxfordshire 006F.
- Valley Park, Didcot will add approximately 2,550 new residential receptors, along with community facilities including for education. The development is located in LSOA Vale of White Horse 015H and 015G.
- Grove Airfield will add approximately 2,500 new residential receptors, along with community facilities including for education, and open and green spaces. The development is located in LSOA Vale of White Horse 011E.
- Monks Farm, North Grove will add approximately 885 new residential receptors. The development is located in LSOA Vale of White Horse 011C.
- North-west of Grove will add approximately 600 new residential receptors, with an additional 60 units for older people requiring care, along with community facilities including active travel infrastructure, open and green spaces, and an extension to the existing cemetery. The development is located in LSOA Vale of White Horse 011E, 011A and 011C.
- Crab Hill (North East Wantage) will add approximately 1,500 new residential receptors, along with community facilities including for education, and open and green spaces. The development is located in LSOA Vale of White Horse 014C, 011B and 014A.
- Land East of Kingston Bagpuize will add approximately 660 new residential receptors, with an additional 60 residential care units, along with community facilities including for education, and open and green space. The development is located in LSOA Vale of White Horse 007A and 007D.
- Didcot Garden Town Housing Infrastructure Fund (HIF1) is a road upgrade development that will add new active travel infrastructure. The development is located in LSOA Vale of White Horse 015G, 015H, 010D and 010E and LSOA South Oxfordshire 009A and 006F.

- Land for Grove Railway Station will add a new railway station at Grove. The development is located in LSOA Vale of White Horse 0011C.
- South-east of Marcham will add approximately 90 new residential receptors. The development is located in LSOA Vale of White Horse 003B.

16.6.37 Many of these developments are partially complete, and therefore some of the receptors identified have already been considered as part of the existing baseline.

16.6.38 Human health receptors considered in the Preliminary Assessment Table 16.8 shows the Human health receptors in the study area that have been considered in the preliminary assessment for the PEI Report. In some cases, individual receptors have been grouped where anticipated effects and mitigation are likely to be very similar. The sensitivity of each receptor is defined in the table with commentary justifying the sensitivity category assigned. The table also identifies the area ID and effect ID(s) relevant to each receptor. The effect IDs are unique identifiers of each effect assessed (discussed further in Appendix 16.2: Preliminary assessment of effects for Human health), whilst the area ID relates to the spatial extent of the receptor assessed. Figure 16.2: Human health receptors shows the locations of the receptors that have been spatially defined for the preliminary assessment for the PEI Report, with relevant Area IDs noted (the receptor 'Residents at Drayton and Marcham Mill (in relation to exposure to radiation' has not been mapped on Figure 16.2: Human health receptors). Further data gathering to inform the ES will inform any revisions to the defined spatial extents of receptors.

Table 16.8 Receptors assessed in the preliminary assessment

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Community (in relation to food availability) | Low | Whilst the community in the local study area may procure some of their food from within the area, food availability from regional, national and international sources limit sensitivity to any changes in supply. | HH-64 | EIA-37 |
| Community in Caldecott | Moderate | These are predominantly residential communities with low levels of social deprivation and better than average health. There are some vulnerabilities including pockets of higher deprivation and poorer health, a slightly older age profile and below average levels of physical activity in children.<br>The area is characterised by villages and suburban areas with established communities and a strong sense of place.<br><br>This sensitivity rating is in relation to environmental amenity effects. | HH-46 | EIA-912 |
| Community in Challow | Moderate | | HH-54 | EIA-597 |
| Community in Culham, Sutton Courtenay and south-east Abingdon | Moderate | | HH-47, HH-88 | EIA-913 |
| Community in Drayton | Moderate | | HH-48, HH-92 | EIA-233 |
| Community in East Hanney | Moderate | | HH-55 | EIA-225 |
| Community in Frilford | Moderate | | HH-57, HH-86 | EIA-229 |
| Community in Garford | Moderate | | HH-87 | EIA-228 |
| Community in Grove | Moderate | | HH-53 | EIA-295 |
| Community in Harwell | Moderate | | HH-49 | EIA-239 |
| Community in Marcham | Moderate | | HH-58, HH-85 | EIA-230 |
| Community in Milton and Milton Heights | Moderate | | HH-50 | EIA-914 |
| Community in Rowstock, East Hendred, West Hendred and Wantage | Moderate | | HH-52 | EIA-915 |
| Community in Steventon | Moderate | | HH-51, HH-91 | EIA-234 |
| Community in West Hanney | Moderate | | HH-56 | EIA-287 |
| Community in West Hanney, East Hanney and Grove | Moderate | | HH-93 | EIA-917 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Community in West Abingdon | Moderate | | HH-45 | EIA-916 |
| Community within the Local Study Area (vulnerable groups) | High | Vulnerable groups may be more sensitive to the effects of the Project for a range of reasons. For example, groups more sensitive to environmental stressors (e.g. noise and air pollution) include people with existing health conditions, older people and children. These groups are also more vulnerable to increases in traffic, along with people with impaired sight or mobility. Those more vulnerable to community severance include older people, people on low incomes and rural communities. Young people, LGBTQ+ people, women and people from ethnic minorities are more likely to experience crime. People who are socially disadvantaged or have mental or physical health conditions face multiple vulnerabilities. Many of the above groups have limited capacity and resources to manage change and may experience higher levels of anxiety associated with adverse changes or uncertainty. | HH-9, HH-32, HH-34, HH-82 | EIA-37 |
| Community within the local study area (in relation to general environmental, access, social and lifestyle issues, and perceived effects) | Moderate | The local study area comprises a range of communities including small towns, villages, and rural residences, for whom the level of development and change proposed by the Project will be unfamiliar. The local study area has generally low levels of deprivation, and good provision of community services. However, the rural community in the study area is dependent on travelling to nearby towns to access services and facilities, and is therefore vulnerable to impacts on the road network. All communities are sensitive to disruption of services in their communities. Many communities in the local study area, particularly in villages, are small and well-established and may have low resilience to a high turnover in new community members. Individual responses to fears around general environmental change will vary across the community depending on perception and understanding of risk and individual characteristics. | HH-6, HH-31, HH-33, HH-66, HH-67, HH-76, HH-79, HH-101 | EIA-37 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Community within the local study area (in relation to personal safety and environmental hazards) | High | All members of the community are considered to have high sensitivity with regard to the following health determinants:<br>Community safety<br>- access to emergency services<br>- road safety, in particular certain groups such as children, older people, people with impaired sight or mobility and rural communities who are highly dependent on the local road network.<br>- exposure to crime and the fear of crime- exposure to major accidents and disasters. Environmental amenity<br>- changes in water quality above safe levels<br>- exposure to contamination above safe levels. | HH-27, HH-28, HH-29, HH-30, HH-62, HH-63, HH-77, HH-78, HH-80, HH-81, HH-97, HH-99 | EIA-37 |
| Community within the regional study area (in relation to employment and economic effects) | Moderate | Socio-economic conditions within the regional study area are varied, with pockets of higher deprivation. However, the area has generally very low levels of unemployment and high skill levels. | HH-40, HH-41, HH-84 | EIA-38 |
| Construction and operational workforce (in relation to climate change and extreme weather) | Moderate | When present on the Site, workers and visitors will be away from home amenities and services and reliant on Site measures provided for safety and comfort. | HH-61, HH-96 | EIA-2 |
| Residents (in relation to risk of flooding) | High | All members of the community would be sensitive to the physical, mental and financial impacts of flooding. | HH-26, HH-75 | EIA-37 |
| Residents at Drayton and Marcham Mill (in relation to exposure to radiation) | High | All members of the community would be sensitive to exposure to radiation above safe levels. | HH-65, HH-100 | Not spatially mapped |
| Residents living within the regional study area (in relation to housing) | Moderate | The population of Oxfordshire is expected to grow 21.3% by 2047 compared to 2022. Oxfordshire is one of the least affordable areas for housing in the UK, based on the first-time buyer house price to earnings ratio. | HH-24, HH-74 | EIA-38 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Residents living within the draft Order limits (in relation to involuntary relocation) | Moderate | The vulnerability of this small group of individual households is unknown and will vary between the individuals affected. For example, older people and those with mental or physical health conditions or disabilities may find it more difficult to adapt. Parents / carers and children may be more vulnerable if the relocation requires a change of school. | HH-25 | EIA-2 |
| School communities (vulnerable groups) | High | Children are a vulnerable group as effects on learning and development can affect long-term health outcomes. | HH-35, HH-36, HH-38, HH-39 | EIA-37 |
| School community at the Unicorn School (vulnerable group) | High | The Unicorn School is a specialist school for children with learning differences. This will include children who particularly vulnerable to changes in environmental conditions and routines. | HH-37 | EIA-37 |
| Users and operators of the reservoir and recreational lakes (in relation to water quality) | High | All members of the community would be sensitive to changes in water quality above safe levels. | HH-98 | EIA-2 |
| Users of Drayton Road allotments | Moderate | Users of the allotments are likely to be representative of the general population in the local area, although there may be a higher-than-average proportion of older people. The allotments are located on the edge of Abingdon, which contains some of the more deprived LSOAs within the local study area. | HH-20, HH-89 | EIA-899 |
| Users of Drayton Road allotments (vulnerable groups) | High | Users of the allotments are likely to be representative of the general population in the local area, although there may be a higher-than-average proportion of older people. The allotments are located on the edge of Abingdon, which contains some of the more deprived LSOAs within the local study area. Drayton Road Allotments includes an Ease of Use plot maintained by Yellow Submarine, an Oxfordshire charity for people with learning disabilities and autism. | HH-21, HH-90 | EIA-899 |
| Users of PRoW | Moderate | Communities in the study area generally have good access to PRoW. Oxfordshire has a higher percentage of physically active adults than the national average, but a lower percentage of physically active children. | HH-10, HH-69 | EIA-37 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Users of South Oxfordshire Crematorium and Memorial Park | High | Whilst accessing the services provided at the site people are likely to be undergoing difficult experiences which may make them more vulnerable. Environmental amenity, particularly tranquillity is of high value for users of this facility. | HH-59, HH-94 | EIA-265 |
| Users of South Oxfordshire Crematorium and Memorial Park (vulnerable groups) | High | Whilst accessing the services provided at the site people are likely to be undergoing difficult experiences which may make them more vulnerable. Environmental amenity, particularly tranquillity is of high value for users of this facility. In particular, the facility offers low-cost cremations and Asian funeral and cremation services and therefore groups including people on low income/unemployed people and people from ethnic or religious minority backgrounds may be particularly impacted by effects at this facility. | HH-60, HH-95 | EIA-265 |
| Users of Steventon allotments | Moderate | Users of the allotments are likely to be representative of the general population in the local area, although there may be a higher-than-average proportion of older people. | HH-22 | EIA-898 |
| Users of West End allotments | Moderate | Users of the allotments are likely to be representative of the general population in the local area, although there may be a higher-than-average proportion of older people. The allotments are located on the edge of Abingdon, which contains some of the more deprived LSOAs within the local study area. | HH-23, HH-105 | EIA-833 |
| Users of active travel routes | Moderate | Communities in the study area generally have moderate access to active travel routes. Oxfordshire has a higher percentage of physically active adults than the national average, but a lower percentage of physically active children. | HH-12, HH-68, HH-103 | EIA-37 |
| Users of active travel routes (vulnerable groups) | High | Vulnerable groups, including children and older people, are more likely to be more susceptible to, or have greater concerns about, safety and amenity changes. Oxfordshire has low levels of physical activity in children. The local study area has a higher percentage of children then the regional and national averages. | HH-13 | EIA-37 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Users of community resources | Low | The local study area has generally low levels of deprivation and poor health and good access to community services. | HH-42, HH-44 | EIA-37 |
| Users of community resources (vulnerable groups) | High | Whilst the local study area has generally low levels of deprivation and poor health and good access to community services, people with existing mental or physical health conditions or disabilities within the community will have a greater need to access services. | HH-43 | EIA-37 |
| Users of golf club | Moderate | Users may expect a peaceful setting as a key part of their experience of the facility. Typically, users of private sports facilities such as this will be less deprived and of reasonable physical ability. Currently there is not enough information available to confirm whether any vulnerable groups are users of these facilities. | HH-19 | EIA-901 |
| Users of marina and river | Low | There is generally good access to open space, including blue space, within the local study area and any displacement would not be expected to cause an onwards effect in terms of availability of the resource. Typically, users of private sports facilities such as these will be less deprived and of reasonable physical ability. Currently there is not enough information available to confirm whether any vulnerable groups are users of these facilities. | HH-18 | EIA-37 |
| Users of open spaces | Low | There is generally good access to open space within the local study area and any displacement would not be expected to cause an onwards effect in terms of availability of the resource. Oxfordshire has a higher percentage of physically active adults than the national average, but a lower percentage of physically active children. | HH-14 | EIA-37 |
| Visitors to on-site open space, including the local and wider community | Low | There is generally good access to open space within the local study area. Oxfordshire has a higher percentage of physically active adults than the national average, but a lower percentage of physically active children. | HH-73 | EIA-2 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Visitors to the Nature Education Centre (vulnerable groups) | High | Children are considered a vulnerable group, particularly in relation to impacts to their education as this determines future health outcomes. | HH-83 | EIA-2 |
| Visitors to the on-site recreational routes, including the local and wider community | Moderate | There is generally good access to recreational walking, cycling and equestrian routes within the local study area. Oxfordshire has a higher percentage of physically active adults than the national average, but a lower percentage of physically active children. | HH-70 | EIA-2 |
| Visitors to the recreational lakes, including the local and wider community | Moderate | There is generally good access to open space, including blue space, within the local study area. Oxfordshire has a higher percentage of physically active adults than the national average, but a lower percentage of physically active children. | HH-71 | EIA-2 |
| Visitors to the Water Sports Centre, including the local and wider community | Low | There is generally good access to open space within the local study area. Oxfordshire has a higher percentage of physically active adults than the national average, but a lower percentage of physically active children. Sailing is a sport that has barriers to entry including physical ability and cost and therefore users of this facility are likely to be in general from less vulnerable groups. | HH-72 | EIA-2 |

## 16.7 Project parameters, assumptions and limitations

16.7.1 Chapter 2: Project description relies on the use of relevant parameters and assumptions to allow flexibility in the final design of the Project, in accordance with the Rochdale envelope approach (Planning Inspectorate, 2018). This preliminary assessment for the Human health aspect uses the parameters and assumption outline in Chapter 2: Project description as well as additional parameters and assumptions specific to this aspect to ensure that the reasonable worst-case scenario is considered within this assessment.

### Project parameters and assumptions specific to this aspect

16.7.2 Table 16.9 identifies the Project parameters, components and activities relevant to this assessment where assumptions specific to the preliminary Human health assessment have been generated.

Table 16.9 Project parameters and assumptions forming the basis of assessment

| Project parameter / component / activity | Assumption (basis of assessment) |
|---|---|
| Off-site traffic movements | Up to 40 HGV movements per hour are assumed during peak construction, with the A34 as the primary arrival and departure route, 60% from the north and 40% from the south. Generally, construction traffic will be directed not to pass through local villages unless this is necessary to reach a specific access location.<br><br>There will be 705 trains each way per year, or 58 each way per month on average. This includes deliveries of materials and transport of spoil and equipment. |
| Construction routes and access | Construction routes within the local study area have been assumed in line with traffic modelling assumptions |
| Existing 132kV overhead line diversion | Design and positioning of overhead cables will comply with all relevant guidelines and standards to limit exposure to electromagnetic radiation to levels not harmful to human health (e.g. International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines). |
| Construction workforce | The CDM Regulations are assumed to protect the public and construction workers from some potential harms arising from construction activities within the assessment |
| Construction working hours | Some construction activities are expected to require different working hours outside the typical working hours, including periods of 24-hour working throughout the construction phase. |
| Workforce accommodation | No on-site workforce accommodation will be provided. |
| Construction workforce (transport) | The construction trip generation assumes that all workers will travel to and from the site every day in private vehicles. As such the construction trip generation exercise accounts for the worst-case scenario. |

| Project parameter / component / activity | Assumption (basis of assessment) |
|---|---|
| Site personnel influx / job creation | There will be a peak construction workforce of 1,800. The construction activities may include (but not be limited to) deliveries, movement to/from place of work, unloading, maintenance and general preparation work, operation of plant or machinery, or materials being delivered to site. |
| General construction activities | Temporary closures and diversions of PRoW are assumed for the duration of construction where routes intersect with worksites or haul routes. |
| Demolition of existing properties | Compensation is expected to be provided in accordance with the Compensation Code |
| Tunnels | Above ground land uses will not be impacted during the construction of the River Tunnel. |
| Workforce and visitor vehicle movements | It is assumed that 70% of visitors would travel by private vehicle. The remaining 30% of visitors are assumed to travel by public transport, by cycle or on foot. The Site is expected to be served by bus routes. |
| Abstraction and discharge to and from the River Thames | The abstraction from /and discharge to the River Thames will be subject to the conditions of an environmental permit from the Environment Agency. Monitoring of water quality will limit risks to human health to an acceptable level. |
| Recreational Lakes Centre, Water Sports Centre, Nature Education Centre and other recreational buildings | Public WCs and drinking water will be available to all those visiting the site. |
| Water quality of the reservoir and recreational lakes | The water quality of the reservoir and recreational lakes will be suitable for their intended recreational uses. |
| Maintenance | Planned maintenance would not significantly interfere with the usual running of and access to the Water Sports Centre. |
| Active travel routes, additional footpaths and non-motorised vehicles (NMU) provision | To replace lost PRoW, some of the new pathways within the site will be designated as PRoW. Other pathways are likely to be permissive paths. |
| Site access | Access to the main site, including recreational routes, will be free; however, there may be charges for parking and access to facilities. |
| Car parks | Car parks will include disabled parking provision in line with Sports England guidance on Accessible and Inclusive Sports Facilities, and BS8300. |

### Assessment assumptions and limitations

16.7.3 This section identifies the aspect-specific assumptions and limitations made for the preliminary Human health assessment including those related to the availability of data to inform the assessment and assumptions used in the methodology. The assessment of effects in this chapter is preliminary and will be revisited in the ES in light of data available at that time and the design taken forward for submission. Assessments reported within this

PEI Report chapter are considered a reasonable 'worst case' as a precautionary approach has been taken where design, construction or baseline information is incomplete. Nevertheless, the preliminary assessment is considered sufficiently robust to enable consultees to understand the likely significant environmental effects of the Project, based on current design information and understanding of the baseline environment. Gaps in information identified within the PEI Report will be considered and addressed as part of the assessment during the production of the ES, as noted in Section 16.10: Next steps. Assumptions and limitations identified in relation to the preliminary Human health assessment include:

- The assessment has been informed by other aspect assessments (set out in paragraph 16.1.47). Therefore, the assumptions and limitations relevant to those aspects may also apply to this chapter.
- Where an effect from another aspect assessment has informed an effect within this assessment, embedded design mitigation (such as noise barriers) and standard good practice measures (such as Employment and Skills Strategy) relevant to the informing effect are not repeated, unless they have a separate further mitigating effect for human health at a population level.
- Baseline data has been limited to publicly available sources.
- Data from the 2021 Census has been used to compile the baseline for this assessment. This census was conducted during a Covid-19 lockdown period, and therefore data from this period may not be an accurate representation of the current demographic profile.
- The latest IMD data, used in this assessment, was published in 2019 and based on the 2011 Census LSOAs. LSOAs have since been updated in line with the 2021 Census. Within the study areas there are some LSOAs where boundaries have changed, however these differences are minor, and it is considered that the data still highlights accurate spatial patterns and therefore remains of value.

## 16.8 Embedded design mitigation and standard good practice

16.8.1 As described within Chapter 4: Approach to the environmental assessment, identified embedded design (primary) mitigation and standard good practice (tertiary) measures are assumed to be applied within this preliminary assessment, to reduce the potential for environmental effects.

16.8.2 Embedded design mitigation identified for the Project at this stage are noted in Chapter 2: Project description. These, and standard good practice measures to be applied, are described in greater detail within Appendix 2.2: Draft commitments register.

16.8.3 Table 16.10 and Table 16.11 list the embedded design mitigation and standard good practice measures applicable to the preliminary Human health assessment during construction and operation respectively, including the unique commitment IDs that relate to the Draft commitments register (where further detail on each can be referred to). The tables also state the purpose of each mitigation and the applicable securing mechanisms.

Table 16.10 Construction: Relevant embedded design mitigation and standard good practice measures, their purpose and the securing mechanisms

| Embedded design mitigation | Purpose of the mitigation measure | Indicative securing mechanism |
|---|---|---|
| Manage water quality at the SESRO intake (ED-02) | Management measures associated with water quality at the intake/outfall structure will be determined by an Environment Agency permit, which will include conditions related to water quality in the River Thames. Measures will therefore support management of water quality in the River Thames. | Under the terms of the DCO |
| Reduce transport disruption between Steventon and East Hanney (ED-19) | Measures will reduce severance and access impacts for local communities. | CoCP<br>Under the terms of the DCO |
| Draft Order Limits to avoid rugby pitches north of Abingdon STW (ED-39) | Avoiding these resources will help to limit the overall impact of loss of open space throughout the study area. | Design Principles |
| Road safety audits (SGP-01) | The RSA should consider safety for all road users including active travel users and pedestrians. | CoCP |
| Standard good practice measures for works within or adjacent to waterbodies (SGP-03) | Measures will help to reduce impacts to water quality during construction. | CoCP |
| Standard good practice measures to reduce impact of construction traffic on communities and the environment (SGP-19) | Measures will reduce severance, access and disturbance impacts for local communities. | CoCP |
| Liaison with communities prior to and during construction (SGP-27) | May include measures to provide communities with information about construction works and understand key concerns. | CoCP |
| Measures to prevent antisocial behaviour and crime (SGP-47) | Physical measures including CCTV and lighting will discourage antisocial behaviour and crime, and also reduce community and anxiety about these issues. | CoCP<br>Design Principles |
| Temporary mitigation for Public Rights of Way and active travel route diversions (SGP-49) | Mitigation could include signage, communication with the community to understand needs and usage and to provide information, and provision of diversions. These measures would help to limit effects on users of the PRoW and active travel routes. | CoCP |

Table 16.11 Operation: Relevant embedded design mitigation and standard good practice measures, their purpose and the securing mechanisms

| Embedded design mitigation | Purpose of the mitigation measure | Indicative securing mechanism |
|---|---|---|
| Measures to prevent antisocial behaviour and crime (SGP-47) | Physical measures including CCTV and lighting will discourage antisocial behaviour and crime, and also reduce community and anxiety about these issues. | CoCP<br>Design Principles |
| Monitoring and management of safety in waterbodies in recreational lakes (SGP-48) | Measures will include confirmation that water quality is suitable for recreational activities. | Under the terms of the DCO |

## 16.9 Preliminary assessment of likely significant effects

### Introduction

16.9.1 This section summarises the findings of the preliminary assessment of effects for Human health, focusing on key effects that are initially anticipated to be 'significant', be they adverse, beneficial or neutral. The judgement of significance has been made assuming that embedded design mitigation and standard good practice mitigation relevant to Human health is applied (these are noted in Table 16.10 and 16.11 and provided in detail in Appendix 2.2: Draft commitments register). The assessment assumes that additional mitigation is not yet applied, as the precise nature and extent of any additional mitigation measures is not confirmed at this stage in the EIA process. As a result, consideration of residual effects (those that remain after the implementation of all mitigation, including additional mitigation) has not been completed for the PEI report.

16.9.2 As noted in paragraphs 16.1.6 and 16.1.7, assessments reported within this PEI Report chapter are considered a reasonable 'worst case' in line with the precautionary approach that has been taken. Where initial likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed, and the design and mitigation are further developed. The next steps for the Human health assessment, including further exploration of relevant additional mitigation, are set out in Section 16.10: Next steps.

16.9.3 Appendix 16.2: Preliminary assessment of effects for Human health, sets out the preliminary assessment of effects, receptor by receptor, for construction and operation phases respectively. The appendix is split into tables that list effects that are initially anticipated to be significant, and tables that list effects that are not anticipated to be significant. The tables identify the following for each effect:

- Receptor name, the Effect ID (a unique identifier for each effect), and sensitivity category
- Project components and activities giving rise to the effect
- Relevant embedded design mitigation and standard good practice mitigation (with unique Commitment ID, which relates to Appendix 2.2: Draft commitments register)
- Magnitude of impact category and narrative

- Initial category of effect significance, including whether it is adverse, beneficial or neutral (taking account of embedded design mitigation and standard good practice mitigation)
- Description and duration of the effect and
- Any additional mitigation and monitoring identified at this stage (with unique Additional Mitigation ID to enable cross reference to the measures noted in Section 16.10: Next steps).

## Summary of likely significant construction effects

16.9.4 This section summarises the construction effects that are initially anticipated to be 'significant' through the preliminary assessment of effects for Human health. It pulls out the key potential causes and receptors affected.

### *Key potential causes of effects*

16.9.5 Chapter 2: Project description explains the construction components and activities for the Project. Key effects on Human health may result from the following:

- General construction activities, including off-site traffic movements, causing changes to environmental amenity including air quality and the noise and visual environment. Noise and air quality effects can directly influence physical health. Environmental amenity can also affect people's experience of, and feelings about, their local environment including the perceived quality and character of a neighbourhood, tranquility and 'sense of place'. This can influence mental wellbeing and affect the way the public realm is used.
- General construction activities, including off-site traffic movements, leading to changes to community movement and access.
- General construction activities within the draft Order limits, leading to the expected loss of 20 residential properties and nine farms or smallholdings (some including residential properties), and the loss of a portion of the West End Allotments.
- General construction activities leading to an influx of site personnel and job creation.

### *Key likely significant construction effects*

16.9.6 There are no major (significant) construction effects on Human health. The likely moderate (significant) construction effects on Human health receptors are summarised below and provided in full in Appendix 16.2: Preliminary assessment of effects for Human health.

#### Moderate (significant) construction effects

16.9.7 The majority of the likely 'moderate' construction effects that have been identified affect communities or users of specific resources that are in direct proximity to construction activities, including off-site traffic movements; these tend to be adjacent either to the draft Order limits or to construction traffic routes.

16.9.8 There are also effects to people living or working within the draft Order limits as a result of demolition of properties and businesses, and to the wider community within the local or regional study areas as a result of uncertainty, in-migration, and economic changes.

16.9.9 Human health receptors that would likely experience 'moderate' construction effects are listed below, grouped by the heath determinant via which they are affected.

- Pre-construction uncertainty and anxiety
  - Vulnerable groups within the study area may experience a temporary adverse effect on mental wellbeing due to concern relating to potential or unknown construction effects, following the publication of information about the proposed development and prior to the commencement of construction.
- Healthy lifestyles
  - Vulnerable users of active travel routes, in particular children and older people, who are more likely to be affected by changes to safety and amenity, may experience a temporary adverse effect from decreased participation in active travel due to construction traffic, road works and diversions.
  - Users of the West End Allotments, some of whom will permanently lose plots and others who will experience reduced environmental amenity, may experience a permanent adverse effect due to the loss, or reduction, of the mental and physical health benefits gained from using the allotments.
- Housing
  - Residents may be affected by a decrease in housing availability due to in-migration of the construction workforce, leading to temporary adverse health effects associated with access to housing.
  - Residents within the draft Order limits will be permanently and adversely affected by involuntary relocation due to potential stress and uncertainty in advance of relocation, and practical, work, or social difficulties associated with the move itself.
- Community identity and cohesion
  - Vulnerable groups in the community, including rural populations, may experience a temporary adverse effect on mental wellbeing from decreased connectivity to community assets and an increase in social isolation, due to traffic delays and diversions.
- Socio-economic conditions
  - School or education communities at the Unicorn School and at education facilities in Steventon may experience a temporary adverse effect on the quality and accessibility of educational facilities, from changes to access and amenity from construction traffic and road works. Children are considered a vulnerable group as impacts on education can affect long-term health outcomes.
  - Communities may experience a temporary beneficial effect on health and wellbeing outcomes associated with employment, income and skills, due to construction employment opportunities and wider economic effects.
- Health and social care
  - Vulnerable groups in the community, including rural populations, may experience decreased connectivity to health and social care services due to traffic delays and diversions. This could affect mental wellbeing and may, in some cases, discourage people from accessing services.
- Environmental amenity

- Communities in Drayton and Steventon will experience a temporary adverse effect on environmental amenity, affecting quality of life, sense of place and mental wellbeing.
- Users of the South Oxfordshire Crematorium and Memorial Park may experience a temporary adverse effect on mental wellbeing due to changes to environmental amenity and to the peaceful setting of the facility.

### Summary of likely non-significant construction effects

16.9.10 This section summarises the justification for construction effects that are initially anticipated to be 'non-significant' through the preliminary assessment of effects for Human health. In particular, it pulls out the key embedded design mitigation and standard good practice mitigation that will be applied and are anticipated to reduce adverse effects to be non-significant.

- Pre-construction uncertainty and anxiety
  - For the general population, this effect is expected to be of small magnitude and mitigated by standard good practice measures, including the timely provision of information about proposed construction activities and mitigation.
- Healthy lifestyles
  - Effects from access and amenity changes to PRoW, active travel routes, open space, allotments and golf clubs are of a negligible or small magnitude, in part due to the limited scale of amenity impacts and in part due to the availability of alternative resources in the area. Mitigation measures include diversions to active travel routes and PRoW, measures to reduce impact of construction traffic on communities and liaising with communities prior to and during construction.
- Community safety, and Community identity and cohesion
  - The risk of transport related accidents and injuries and increased emergency response timings is mitigated through measures such as road safety audits and community engagement.
  - The local community may be sensitive to changes in actual and perceived anti-social behaviour and crime. However, these effects are considered to be of negligible magnitude as they are mitigated by community liaison and security measures, including detailed design that avoids the creation of dark/hidden spaces, CCTV, lighting and access control in car parks and, where required, traffic regulation orders.
  - The temporary in-migration of a construction workforce can decrease the sense of cohesion and perceived safety for local communities. However, this effect is expected to be lessened by the likely location of workforce accommodation in larger towns within the study area which are better able to absorb new residents. There is some uncertainty about the provision and location of workforce accommodation, and this effect will be assessed in greater detail in the ES.
  - Some communities, particularly in rural areas, may experience decreased connectivity to community assets and services due to construction traffic delays and diversions. However, with standard good practice measures to reduce impact

of construction traffic, any effects on access to and use of these facilities are expected to be small.

- Socio-economic conditions, education and health and social care
  - There may be minor access changes to healthcare facilities located along A415 and some disruption to travel networks across the study area due to construction traffic delays and diversions, which may affect access to health and social care, especially for those in more rural areas. However, these changes are expected to be small and temporary and with standard good practice measures to reduce impact of construction traffic, any effects on access to and use of these facilities are expected to be small.
  - Some educational facilities in the local study area, particularly along the A415 in West Abingdon or along the A34, may experience minor access disruption from construction traffic and road works. However, these changes are unlikely to prevent access or alter education experiences.
  - The construction of the Project is likely to create skills and training opportunities for the local communities. These opportunities will be beneficial to individuals but are not likely to affect health and wellbeing at the population level.
- Environmental amenity
  - Changes in environmental amenity, in particular from increased traffic, are expected to be of a small or negligible magnitude for most communities and mitigated by liaison with communities and standard good practice measures to reduce impact of construction traffic. Communities within the local study area where amenity effects are expected to be non-significant are West Abingdon, Caldecott, Culham, Sutton Courtenay, and south-east Abingdon, Harwell, Milton and Milton Heights, Grove, Challow, Rowstock, East Hendred, West Hendred and Wantage, East Hanney, West Hanney, Frilford and Marcham.
  - Changes to agricultural land availability may reduce local food production but are unlikely to affect access to healthy food as they will not impact on regional, national and international sources.
- Other environmental risks
  - Housing: Increased flood risk to residential properties – the Project has been designed to ensure that flood risk to residential properties and other sensitive receptors does not increase.
  - Environmental amenity: Risks from contamination and changing water quality in River Thames – no likely significant effects have been identified as these risks are managed in line with Project's legislation compliance and Code of Construction Practice (CoCP).
  - Community safety: Actual and perceived risk from radiation from electro-magnetic fields – no altered risk to human health has been identified.
  - Community safety: Risks from major accidents and disasters – following the application of embedded design and standard good practice mitigation all risks have been assessed to be non-significant.

- Climate change: Risks from extreme weather events – no likely significant effects have been identified as these risks are managed by standard construction practices in line with legislative and regulatory requirements.
- Whilst these risks have been managed in accordance with the measures described above, they may still cause concern within the local community, which should be mitigated through the provision of clear information and ongoing engagement and consultation.

### Summary of likely significant operation effects

16.9.11 This section summarises the operation effects that are initially anticipated to be 'significant' through the preliminary assessment of effects for Human health. It pulls out the key potential causes and receptors affected.

#### *Key potential causes of effects:*

16.9.12 Chapter 2: Project description explains the operation components and activities for the Project. Key effects on Human health may result from the following:

- The facilities provided by the Reservoir site, including active travel routes, additional footpaths and non-motorized vehicles (NMU) provision, the recreational lakes, the Water Sports Centre, and the Nature Education Centre, all of which provide new resources for visitors, including from the local community.
- The physical and visual presence of the Reservoir site, and the presence of visitors to the site, which may cause disturbance to local communities and users of local resources.

#### *Key likely significant operational effects*

16.9.13 There are no major (significant) operational effects on Human health. The likely moderate (significant) operational effects on Human health receptors are summarised below and provided in full in Appendix 16.2: Preliminary assessment of effects for Human health.

#### Moderate (significant) operational effects

16.9.14 The majority of the likely 'moderate' operational effects that have been identified affect local and wider communities, visitors to the recreational lakes and on-site recreational routes. .

16.9.15 Impacts associated with visitors to the site's recreational routes and lakes lie within the draft Order limits, whereas the other impacts are general to the study area.

16.9.16 Human health receptors that would likely experience 'moderate' operational effects are listed below, grouped by the heath determinant via which they are affected.

- Healthy lifestyles:
  - The population of regular visitors to the site may experience a permanent, beneficial effect from increased active travel and physical activity, due to the provision of new on-site recreational routes and the Recreational Lakes Centre.
- Community identity and cohesion:
  - The community in the local study area, particularly people living in rural areas, may experience a permanent, adverse effect from changes in access to other

communities, community assets and services, due to additional traffic and overspill from car parks associated with on-site visitors.

- Community safety
  - The local community may experience a permanent, adverse effect from an increase in actual and/or perceived crime and anti-social behaviour due to increased visitors in the local area during busy periods. This may include anti-social use of local facilities.
- Socio-economic conditions
  - Children and young people visiting the Nature Education Centre are likely to experience a permanent, beneficial effect from the provision of on-site outdoor education opportunities.

### Summary of likely non-significant operation effects

16.9.17 This section summarises the justification for operational effects that are initially anticipated to be 'non-significant' through the preliminary assessment of effects for Human health. In particular, it pulls out the key embedded design mitigation and standard good practice mitigation that will be applied and are anticipated to reduce adverse effects to be non-significant.

- Healthy lifestyles
  - There are beneficial effects for users of active travel routes and PRoW. The magnitudes of impact, however, are small/negligible as the changes to the overall network are limited and mainly relate to amenity improvements.
  - Provision of the new Water Sports Centre is likely to provide a beneficial effect for the local and wider community. However, the magnitude of impact on health and wellbeing for the general population is small, as sports such as sailing have barriers to entry due to factors such as unfamiliarity, physical ability and cost.
  - Access to on-site open space for leisure and play is a beneficial effect for visitors and the local and wider community. The magnitude of impact, however, is small as there is already good access to open space in the local study area.
  - There are likely to be negative access and amenity effects on active travel routes on the road network due to operational traffic. The magnitude of impact is, however, considered to be negligible based on the Traffic and transport assessment.
- Housing
  - There may be a decrease in housing availability due to in-migration of the operational workforce. However, this is not expected to impact on housing costs and availability at a scale that would impact on population health and wellbeing.
- Community identity and cohesion
  - There is a beneficial effect for the community in the local study area from the provision of community assets, including the Visitor Centre and Café. The magnitude of impact, however, is small as the local study area is already well-served by community resources and amenities.
- Community safety

  - There may be an increase in emergency response times due to operation associated additional road traffic. The magnitude of impact, however, is considered to be negligible.
- Socio-economic conditions
  - There are likely to be beneficial employment and wider economic effects associated with the operation of the Project. However, the socio-economic and communities assessment does not consider the effects significant and therefore the scale of effect is not likely to have any effect on health and wellbeing at the population level.
- Environmental amenity
  - Changes in environmental amenity, including landscape and visual, noise, lighting and air quality impacts associated with operational workforce and visitor traffic may be experienced by communities in Marcham, Frilford, Garford, Culham and Sutton Courtenay and south-east Abingdon, Drayton Road Allotments, Stevenson, Drayton, West Hanney, East Hanney and Grove. The magnitude of the impact on amenity is small/negligible and mitigation measures around highways improvements to reduce effects on the wider transport network have been included.
  - There are likely to be changes in environmental amenity for users of West End Allotments. However, the magnitude of impact is considered to be small and is not likely to affect the health and wellbeing benefits gained from using this resource.
  - Users of the South Oxfordshire Crematorium and Memorial Park may experience an adverse effect on mental wellbeing from permanent amenity changes, including impacts associated with the reservoir and associated operational and recreational activities.
- Other environmental risks
  - Environmental amenity: Risks from contamination, water quality in the reservoir and recreational lakes, and changing water quality in River Thames – no likely significant effects have been identified as these risks are managed in line with Project's legislation compliance and CoCP.
  - Community safety: Actual and perceived risk from electro-magnetic radiation – no altered risk to human health has been identified, may cause concern to some individuals. However, the magnitude of impact on mental wellbeing is considered to be negligible.
  - Community safety: Risks from major accidents and disasters - all risks have been mitigated to be 'as low as reasonably practicable' (ALARP)
  - Community safety: An increase in operational road traffic has potential to increase risk of transport-related accidents and injuries. However, the Traffic and transport assessment has identified no likely significant effects to road safety due to changes in traffic flows.
  - Housing: The Project has been designed to ensure that the flood risk to residential properties does not increase.

- Climate change: Risks from extreme weather events – no likely significant effects have been identified as these risks are managed by standard construction practices in line with legislative and regulatory requirements.
- Whilst these risks have been managed in accordance with the measures described above, they may still cause concern within the local community, which should be mitigated through the provision of clear information and ongoing engagement and consultation.

## 16.10 Next steps

16.10.1 As part of next steps, the Project is proactively developing the design, refining the construction approach and continuing to define the environmental baseline, in conjunction with ongoing consultation and engagement. These activities will inform the EIA process and provide a robust evidence base for the ES. The aim is that where initial likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed, and the design and mitigation proposals are further developed. Effects that remain after the implementation of all mitigation are referred to as 'residual effects'. These effects are not reported in the PEI Report as additional mitigation is not assumed to be implemented at this stage of the assessment. The assessment of the significance of residual effects after all mitigation is applied is a key outcome of the EIA process and will be reported within the ES, which will be submitted with the DCO application.

16.10.2 The next steps anticipated to be undertaken in relation to the Human health assessment prior to completion of the ES and submission of the DCO application are explained below.

### Further exploration of additional mitigation

16.10.3 A key aspect of the next steps is to further explore additional mitigation that may reduce adverse effects that the preliminary assessment has initially identified as likely to be significant. Additional mitigation that has been identified for the Human health assessment is noted against relevant likely significant effects in Appendix 16.2: Preliminary assessment of effects for Human health. All additional mitigation that has been identified in relation to the Human health assessment to date is listed below in Table 16.12 along with a description of what each measure entails. Each measure has a unique Additional Mitigation ID to enable cross reference between Appendix 16.2: Preliminary assessment of effects for Human health and Table 16.12. As noted previously above, the preliminary assessment presented in the PEI Report assumes that additional mitigation is not yet applied, as the precise nature and extent of any additional mitigation measures is not confirmed at this stage in the EIA process.

Table 16.12 Additional mitigation identified to date in relation to the Human health assessment

| Additional mitigation ID | Additional mitigation name | Description of additional mitigation measure |
|---|---|---|
| AM-08 | Highways improvements to reduce effects on the | These highway improvements may include the provision of improved NMU crossing facilities on the A415 to provide safer crossing opportunities, plus mitigate severance |

| Additional mitigation ID | Additional mitigation name | Description of additional mitigation measure |
|---|---|---|
| | wider transport network. | effects and improvements to the A415/A34 Marcham Interchange to ensure the network continues to function satisfactorily during construction. Other examples under consideration include potentially improving or widening junctions or carriageways, other provision of/improvements to pedestrian crossings, pedestrian and cycleway enhancements, parking/loading restrictions, traffic calming features, speed limit alterations, transport improvements, highway lighting improvements or signing and road marking improvements. |
| AM-11 | Measures to reduce effects to navigation on the River Thames | Additional measures may be applied to ensure minimal disruption to the River Thames and vessels that use the waterway. Example measures could include:<br>- Undertaking a Navigational Risk Assessment to cover construction, operation and emergency scenarios;<br>- Providing notice to mariners for construction works;<br>- Providing appropriate signage (during construction and operation);<br>- Engaging with the Environment Agency and other relevant stakeholders to reduce disturbance; or<br>- Obtaining relevant consents for river works |
| AM-13 | Measures to maximise economic benefits during construction | Measures to maximise economic benefits during construction will be guided by the principles set out in the CoCP. This may include, for example:<br>- Engagement with local colleges and training providers to help the local community obtain relevant skills to access construction employment opportunities.<br>- Engagement with local colleges and job centres to advertise and encourage uptake of employment opportunities by the local community.<br>- Provision of construction apprenticeships. - Initiatives to recruit local people, in particular residents from the Vale of White Horse District and from across Oxfordshire where practicable.<br>- Actions to support access to training and apprenticeships for all socio-economic groups including under-represented groups<br>- Opportunities for work placements, work experience and apprenticeships on the Project.<br>- Work with relevant partners to ensure that employment opportunities on the Project contribute as effectively as possible to local economic growth. |
| AM-14 | Measures to reduce the effects of a large | Measures to reduce the effects of the large construction workforce on nearby communities may include for example: |

| Additional mitigation ID | Additional mitigation name | Description of additional mitigation measure |
|---|---|---|
| | construction workforce on nearby communities | - Engagement with the local authorities regarding the temporary housing market and availability of accommodation for the construction workforce;<br>- Provision of occupational healthcare and emergency care for the construction workforce to reduce the additional demand on local health services; or<br>- Provision of recreational facilities on site for construction workforce. |
| AM-45 | Provision of alternative land for West End Allotments | If any part of West End Allotments are removed, alternative land would be identified and offered to the user group on mutually agreeable terms that allows the group to transfer with as limited disruption as possible and continue activities sustainably. |
| AM-46 | Measures to support the community prior to and during the construction | Additional measures to support the community prior to and during the construction period will be further explored and will be informed by an increased understanding of community receptors resulting from proposed surveys. |

### Other next steps

16.10.4 Other steps that are continuing or are planned to be undertaken to support the Human health assessment prior to completion of the ES and submission of the DCO application are noted below with an explanation of how these will inform the EIA process:

- Further development of the baseline to include information bespoke to the developing design of the Project and to committed or additional mitigation, to support increased targeting of assessment and mitigation.
- Update of effects based on additional or updated modelling and surveys undertaken by other aspects, in particular those related to Chapter 13: Air quality, Chapter 14: Noise and vibration, and Chapter 12: Traffic and transport, so that the assessment reflects the latest available information.
- Update of economic, employment and on-site education effects where it is noted that additional analysis will be available for the ES, so that the assessment reflects the latest available information.
- Update of effects as informed by ongoing engagement and consultation, including via the Technical Liaison Group, to understand local needs and priorities and support increased targeting of the assessment and mitigation.
- Development of a health strategy to minimise disbenefits and maximise opportunities through the design and operation of the Project.

# References

It should be noted that the Institute of Environmental Management and Assessment (IEMA) has recently rebranded as the Institute of Sustainability and Environmental Professionals (ISEP). Guidance that was historically published by IEMA is still referenced under that institute name.


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