



**SCOTTISHPOWER  
RENEWABLES**

# **East Anglia ONE North and East Anglia TWO Offshore Windfarms**

## **Written Summary of Oral Case**

### **Issue Specific Hearing 10 on 9 March 2021: Health and Social Well Being**

Applicants: East Anglia TWO Limited and East Anglia ONE North Limited

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**Applicable to East Anglia ONE North and East Anglia TWO**



**Revision Summary**

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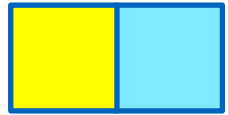
## Glossary of Acronyms

AONB	Area of Outstanding Natural Beauty
CfD	Contracts for Difference
CLO	Community Liaison Officer
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ExA	Examining Authority
HIA	Health Impact Assessment
IEMA	Institute of Environmental Management & Assessment
ISH	Issue Specific Hearing
NGV	National Grid Ventures
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
PHE	Public Health England
SoCG	Statement of Common Ground
WHO	World Health Organisation



## Glossary of Terminology

Applicants	East Anglia ONE North Limited and East Anglia TWO Limited
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia TWO project Development Consent Order but will be National Grid owned assets.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia TWO / East Anglia ONE North project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia TWO project Development Consent Order.
Projects	The East Anglia ONE North project and the East Anglia TWO project.



# 1 Introduction

1. This document is applicable to both the East Anglia ONE North and East Anglia TWO Development Consent Order (DCO) applications (the Applications), and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's (ExA) procedural decisions on document management of 23 December 2019. Whilst for completeness of the record this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it again.
2. The Issue Specific Hearing 10 for the Applications were run jointly and took place virtually on 9<sup>th</sup> March 2021 at 10:00am (Hearings).
3. The Hearings ran through the items listed in the agendas published by the ExA on 2<sup>nd</sup> March 2021. The Applicants gave substantive oral submissions the Hearings and these submissions are set out within this note.
4. Speaking on behalf of the Applicants were:
  - Mr Colin Innes, partner at Shepherd and Wedderburn LLP;
  - Mr Paolo Pizzolla, project director for EIA and consenting at Royal HaskoningDHV;
  - Mr Daniel Smith, environmental professions with 10 years' experience focussed on interaction between engineering projects and human society at Royal HaskoningDHV;
  - Ms Joanna Young, stakeholder manager at ScottishPower Renewables; and
  - Ms Charlotte Goodman, senior air quality consultant at Royal HaskoningDHV.



## 2 Agenda Item 2: Policy Discussion

### 2.1 Energy White Paper

5. In terms of the wider policy issues, the Applicants consider there are three wider policy objectives which engage matters of health and social well-being. Each of the matters also engages parts of NPS EN-1<sup>1</sup>.

#### 2.1.1 Climate Change

6. The Energy White Paper<sup>2</sup> aligns Energy policy with the need for a rapid response to the challenges of climate change. It acknowledges the failure to respond will have very serious consequences for human health. Extreme weather events result in death and damage to property and business and will have long term adverse effects on health and well-being. The response to climate change needs a transformation of our energy system over a very short period of time. This decade is critical and that is represented in Government's policy drive for the deployment of offshore wind projects.

7. This is also reflected in the EN-1 paragraph 2.2.7:

*“Continuation of global emissions, including greenhouse gases like carbon dioxide, at current levels could lead average global temperatures to rise by up to 6°C by the end of this century. This would make extreme weather events like floods and droughts more frequent and increase global instability, conflict, public health-related deaths and migration of people to levels beyond any recent experience. Heat waves, droughts, and floods would affect the UK.”*

#### 2.1.2 Consumer Interest

8. At the heart of energy regulation has been the importance of keeping energy prices as low as possible. Fuel poverty is a critical issue and has implications for health and wellbeing. This is recognised in EN-1 paragraph 1.7.6. There have been concerns that the response to climate change could increase energy prices. The Government at page 7 of the Energy White Paper confirms that:

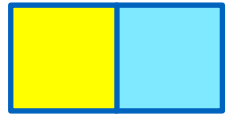
*“As we tackle climate change, we will have the interests of consumers at the front of our mind, now and for future generations.”*

9. Section 2 of the Energy White Paper is devoted to consumer interests. This looks to support positive measures to reduce energy need. At the same time the Energy

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<sup>1</sup> Overarching National Policy Statement for Energy (EN-1) (2011), available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/47854/1938-overarching-nps-for-energy-en1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf)

<sup>2</sup> Energy White Paper: Powering Our Net Zero Future (2020), available at <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future/energy-white-paper-powering-our-net-zero-future-accessible-html-version>



White Paper acknowledges the residual need to keep energy costs down as well. On page 45, the Government highlights the massive strides that the offshore wind industry have to make to lower costs through the Contracts for Difference (CfD) auction process. It goes to say that:

*“it is vital that CfDs offer value for money to consumers and continue to deliver low prices.”*

10. Page 45 confirms the importance of new projects coming through the planning process to deliver competitive pressure to deliver competition to future auctions. The Projects have undertaken an extensive engagement with the supply chain to ensure that these projects will be competitive. This will contribute to a policy objective which has a material influence on wider human health and well-being.

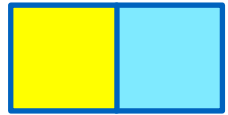
### 2.1.3 Economic Benefits

11. The socio-economic benefits of the project also support the wider Government objectives of developing the East of England and local supply chains. The Energy White Paper outlines the policy ambition on page 56. It has recognised the key opportunity of building the offshore wind sector as a key industrial sector which can lead the regeneration of many coastal communities in the East of England. This is part of the Government’s levelling up agenda. Many of these communities have faced economic challenges over many decades and this has resulted in many of them including areas which rank as being amongst the most deprived parts of England as set out in the Index of Multiple Deprivation<sup>3</sup>. EN-1 also recognises the importance socio economic benefits at the national, regional and local level at paragraph 4.1.3 and section 5.12.
12. At Deadline 6 in the **Applicants’ Response to Written Questions 2 – Volume 7 – 2.17 Socio-Economic Effects** (REP6-064), the Applicants provided socio-economic evidence to the ExA in respect of number local coastal communities. This evidence demonstrates that the deprivation has also lead to material health inequalities as well. Investment and the creation of long term employment opportunities is even more important in such areas. The Projects can play a part in providing new opportunity and confidence for these coastal communities. The Applicants are working with the local Authorities, other agencies and the education sector to maximise the opportunities that can be created.
13. The Energy White Paper emphasises the importance of the encouragement of early investment in that this will support the green recovery in respect of COVID-19.

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<sup>3</sup> Index of Multiple Deprivation (2019), available at <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>





#### 2.1.4 Conclusion

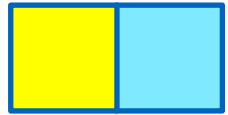
14. In respect of all these matters, the Projects will make meaningful contributions. The Applicants have already taken steps to stimulate the supply chain and the Projects have been developed to facilitate early delivery. This is important when considering the wider policy objectives.

#### 2.2 Health Assessments in Planning

15. The planning system has a fundamental role to play in managing and enhancing the spaces and places within which we live, however, the consideration of health within planning has to date been, at best, variable. Nevertheless, there is now an increased support at a national and local level, for increased consideration of health and wellbeing within the planning system. Largely this was driven by changes to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
16. Latest guidance from Public Health England (PHE)<sup>4</sup> discusses the potential for integrating HIA into EIA, although it recognises that this is a developing area of practice and there is limited experience of this kind of assessment. Most of the examples for “true” HIA are from spatial planning (urban development, housing schemes) or relate to heavy industries and are less common in the offshore wind context.
17. Traditionally health was a subset of the air, noise, and contaminated land assessments only (this was the model used, for example, in the Hornsea Project Three Offshore Wind Farm which did not prepare a standalone health assessment). So, for offshore wind, the Projects are some of the first to attempt to undertake this type of integrated assessment.
18. The Applicants have submitted some of the latest thoughts and guidance on industry best practice from PHE (Health Impact Assessment in spatial planning: A guide for local authority public health and planning teams) (**Appendix 1** of this Document) and Institute of Environmental Management and Assessment (IEMA) (Health Impact Assessment in Planning Thought pieces from UK practice (**Appendix 2** of this Document)) at Deadline 8. The Applicants have also submitted at Deadline 8 **Sizewell C's Environmental Statement Chapter 28 Health and Wellbeing (Appendix 3** of this document) to allow the ExA to compare the content and approach to the Projects for a relevant local comparison (if not relevant to the scale of works).

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<sup>4</sup> Health Impact Assessment in spatial planning (2020), available at <https://www.gov.uk/government/publications/health-impact-assessment-in-spatial-planning>



## 3 Agenda Item 3: Health and Social Well-Being - Applicants

### 3.1 Assessment

#### 3.1.1 Purpose of the Assessment

19. The Health Chapter of an Environmental Impact Assessment (EIA) is intended to review the health implications of the project by drawing on the assessments undertaken in other chapters and comparing these to relevant data at an appropriate scale. If a significant risk is identified during assessment, this could trigger a full Health Impact Assessment (HIA) following PHE and World Health Organisation (WHO) guidance. The Applicants' assessment set out in **Chapter 27 – Human Health** (APP-075) demonstrated that these thresholds were not met and therefore a full HIA was not required for the Projects.
20. The assessment raises issues which can be looked at from a health perspective, the assessment itself flags the potential concerns which are dealt with on an ongoing basis through the refinement of the design (and mitigation) and then carried through in construction to communications from the Applicants and feedback from Interested Parties and stakeholders to them.

#### 3.1.2 Methodology

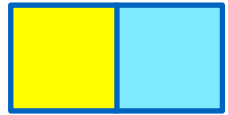
21. The assessment followed the best practice guidance available at the time including that of Ben Cave Associates (see **section 27.4** of **Chapter 27 – Human Health**). The Applicants believed that the level of guidance publicly available was insufficient; therefore, the Applicants' consulted further with Ben Cave Associates to develop a proportionate methodology for assessment.
22. The methodology focusses on the determinants of health that can be influenced by the Projects. Both the WHO and PHE consider that health and wellbeing are influenced by a range of factors, termed the 'wider determinants of health'. Determinants include the social and economic environment, the physical environment, and individual characteristics or behaviours. These determinants align with the parameters covered by EN-1 as noted above at Agenda Item 2.
23. The Applicants consulted PHE on the methodology and made the following limited comment:  
  
*"We are pleased to see that the comments we provided during the scoping consultation have been considered within the Human Health Method Statement. We have considered the submitted documentation and can confirm that we are satisfied with the methodology proposed for this chapter and look forward to reviewing the full assessment at a further consultation stage."*



24. The assessment was based on community level public health data drawn from PHE and Office for National Statistics. Residual impacts assessed in supporting chapters were geospatially located with regards to receptors and an assessment of severity undertaken following best practice.
25. The Applicants then consulted PHE on the assessment and they had no comments. This was reflected in their Relevant Representation (RR-064).

### 3.1.3 The Assessment Process

26. The Applicants adopted the same process as was used for Norfolk Vanguard and Norfolk Boreas and has subsequently used on Sizewell C.
27. The Applicants also took account of the Suffolk Joint Health and Wellbeing Strategy Refresh 2019-2022 in the assessment.
28. The assessment required a systematic consideration of the receptor topic assessments which cover the determinants:
  - Ground Conditions and Contamination;
  - Air Quality;
  - Water Resources and Flood Risk;
  - Land Use and Agriculture;
  - Noise and Vibration;
  - Traffic and Transport;
  - Landscape and Visual Impact Assessment
  - Tourism, Recreation and Socio-Economics
29. The fundamental underpinning of the assessment is that the impacts on the determinants (air quality, noise etc) will need to be adequately mitigated (and to a standard acceptable for consenting purposes). The assessment does not attempt to reassess each of the constituent assessments, but build upon these in the health context. Nor does the assessment go down to the scale of the individual, as with any part of the EIA, it needs to focus at meaningful scales.
30. The Applicants submit that the construction phase of the Projects will be largely episodic and short term and the effects would cease upon completion of construction. This is illustrated in **Onshore Cable Route Works Programme Clarification Note** (REP3-056).



### 3.1.4 Cumulative Assessments

31. The cumulative assessment covered, as far as possible, consideration of Sizewell C. However, the Environmental Statement, including Chapter 27, pre-dated the final detailed assessment from Sizewell C being made available. Sizewell C used a similar approach to assessment and conclude no significant adverse effects. Their conclusions are based upon the comprehensive package of mitigation measures and commitments required given the scale of the project. These include a healthcare contribution, community fund and measures to offset accommodation issues such as their Accommodation Strategy and Housing Fund (see **Sizewell C's Environmental Statement Chapter 28 Health and Wellbeing (Appendix 3** of this document)). The details of their proposals do not materially change the Applicants' assessment or proposals.
32. The Applicants have considered the judgment of the Honourable Mr Justice Holgate. Mr Justice Holgate's decision to quash the decision to grant the Norfolk Vanguard Offshore Windfarm Order was based on a failure of the Secretary of State (and the ExA) to take account of certain environmental information before them. In particular the Secretary of State (and the ExA) considered that, despite information on the cumulative visual effect with the "linked" Boreas project having been put to them (within the Applicant's Environmental Statement), the information was limited and consideration of the cumulative effects should instead be deferred to consideration of the Boreas Development Consent Order.
33. In the particular circumstances Mr Justice Holgate held that the decision to give no consideration to environmental information before them was a breach of the relevant Environmental Impact Assessment Regulations (in this case the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009) and was irrational.
34. As set out above Mr Justice Holgate concluded, on the evidence provided to him, that there was sufficient information on the cumulative impact of Vanguard and Boreas in front of the ExA and Secretary of State (or at least that the applicant clearly thought this was the case and that this had not, during examination and deliberation, been challenged by the ExA or Secretary of State via a request for additional information or otherwise). Mr Justice Holgate did not therefore provide a detailed analysis on the law of cumulative impact assessment generally. He did, however, summarise some prior judicial consideration of environmental impact assessment issues including the practical limitations to cumulative impact assessment where sufficient information is not available on future proposals:

*"117. However, in some cases these principles may allow a decision-maker properly to defer the assessment of cumulative impacts arising from the subsequent development of a separate site not forming part of the same project. In R (Littlewood) v Bassetlaw District Council [2009] Env. L.R. 407 the court held*

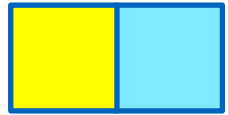


*that it had not been irrational for the local authority to grant consent for a freestanding project, without assessing cumulative impacts arising from future development of the remaining part of the site, where that development was inchoate, no proposals had been formulated and there was not any, or any adequate, information available on which a cumulative assessment could have been based (pp. 413-5 in particular [32]).”*

35. The Applicants have no connection to National Grid Ventures (NGV) or its projects. The Applicants had no knowledge of NGV’s projects at the point of its site selection (and still have very limited information on NGV’s projects). The Applicants site selection and the delivery of their projects more generally are not reliant on or affected by whether or not NGV’s projects come forward and where they may be located.
36. A key part of case interpretation is that you should not just take an outcome which is based on very specific facts and consider that it has wider application. The decision in this instance is very fact driven and is distinguished from these applications as neither the ExA nor the Secretary of State have failed to take into account any information in the Applicants’ Environmental Statement.
37. In the circumstance of the East Anglia ONE North and East Anglia TWO Project Applications, the Applicants have, to the extent possible on the basis of information currently available, provided a cumulative assessment of all foreseeable developments.

### 3.2 Mitigation

38. The assessment is predicated on the assumption that the impacts on the determinants (air quality, noise etc.) will need to be adequately mitigated (and to a standard acceptable for consenting purposes (i.e. not significant)). Conditions and requirements in the **draft DCO** (an update version has been submitted at deadline 8, document reference 3.1), as well as certified documents provide limits or the agreed mitigation. These are mostly controlled through the **Outline Code of Construction Practice** (an updated version has been submitted at Deadline 8, document reference 8.1) and associated documents. The Applicants updated the Outline Code of Construction Practice at Deadline 7 to incorporate further measures for sensitive locations including:
  - The offer to provide for alternate water supplies for the Wardens Trust and properties at Ness House; and
  - The provision of temporary acoustic barriers and screening for sensitive residential receptors at landfall and along the onshore cable route where these are within 100m of a property. This would achieve a noise reduction of between 5-10dB at these locations, dependent on the positioning and



specification of the screening in relation to the noise source and / or noise sensitive receptor.

39. The process is the same for all these certified documents. The outline plans provided with the application or during Examination form the basis of the final plan structure. The plans are worked up on the basis of detailed design and programme and pre-construction surveys also feeds in. Each plan is thus tailored to the Projects and will reflect any updated guidance or policy at that time. Therefore, the Applicants consider that the final plans are both relevant and fit for purpose. This process is undertaken in consultation with relevant stakeholders and approved by the named stakeholder. This is a standard process.
40. In addition, during the Examination, the Applicants have made further commitments with respect to both construction methodologies and operational footprints to reduce residual impacts further. These include:
- The commitment at Deadline 1 (**Project Update Note** (REP2-007)) that when the first project goes into construction, the ducting for the second project will be installed along the whole of the onshore cable route in parallel with the installation of the onshore cables for the first project. This means that there will be reductions in duration & footprint and that works for the second project would be on a reduced scale. This has obvious benefits such as traffic movements and use of noisy plant but this also provides benefit in terms of restoring and reinstating the landscape.
  - The Applicants' preferred method for crossing the Sandlings SPA (via open trenching) would also reduce the duration of works, amount of plant, footprint of works etc.
  - The reduction in the footprint and heights of the substations (**Project Update Note** (REP2-007)) allows for better outcomes from the landscaping mitigation and reduction in residual effects of operation.

### 3.3 Community Engagement

#### 3.3.1 Pre-Application Events

41. Throughout the pre-application phase, the Applicants held 59 events. These included 20 Parish Council and organisational meetings and 39 Consultation Public Information Events, the latter of which were attended by 2,435 people.
42. The Applicants also extended consultation periods, ensured that holiday periods were covered to include those with holiday homes in the local area and held an extra phase of consultation.
43. The Projects, consultation phases and events were publicised through a variety of on and offline media, acknowledging that this rural area and the communities

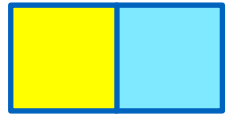


within it would benefit from as much information and notice as possible throughout.

44. The Applicants' stakeholder and project teams made themselves available to attend meetings, to provide further insight and answer questions directly. All questions were responded to, and there was direct access to the stakeholder manager and community liaison officer via phone and email.
45. Finally, just before submission of the applications, the Applicants also held a Planning Workshop which provided advice and information on the planning process, ensuring that everyone felt they had all of the tools to get involved in the Examination process.
46. Throughout all of these events, the Applicants listened and made changes to their proposals. These changes are clearly listed in a Developing Our Plans section on the ScottishPower Renewables website<sup>5</sup> and include:
  - A reduction in Saturday working hours from 7am to 7pm to 7am to 1pm.
  - A reduction in the construction programme at the landfall from 20 to 12 months.
  - Enhanced planting and screening proposals around the proposed substation site, including the creation of wildlife corridors.
  - Areas designated for early planting.
  - Changes in the Applicants' traffic routes to minimise impacts.
  - Reduction in the land take for construction compounds.
  - Adaption of the offshore development area for East Anglia TWO to create a gap between the Projects and break up the visual impact of turbines alongside each other and neighbouring developments.
47. The Applicants highlighted that the consultation during the pre-application process was undertaken at an early stage of the process whilst matters such as site selection are still being considered and assessed. This is deliberate otherwise the Projects would have been formulated without any consultation with the local communities. The early stages of the pre-application consultation process was focussed on the offshore stages of the development as these were more certain at the time. The consultation process was undertaken in stages as

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<sup>5</sup> Available at [https://www.scottishpowerrenewables.com/pages/developing\\_our\\_plans.aspx](https://www.scottishpowerrenewables.com/pages/developing_our_plans.aspx)



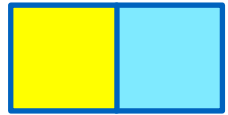
further information became available. The Consultation Report (APP -029 to 041) sets out the extent and nature of the consultation.

### 3.3.2 Planned Pre-Construction Events

#### 3.3.2.1 Pre-Construction Information Events

48. To ensure that people are fully informed and to allay any anxiety they might have, the Applicants will hold pre-construction information events which will commence about two months prior to construction. Similar events will also be held during construction. These will take place in parishes along the cable route. This same approach was undertaken for East Anglia ONE, where we held pre-construction roadshows along the whole cable route.
49. The events will provide information on what will happen at each location, including:
  - How the trenches will be dug
  - HDD activities and what is involved.
  - Traffic movements / Traffic management and traffic calming measures.
  - Mitigation and dust, water, light and noise management.
  - Landscape and ecology.
  - Public Rights of Way and how these will be managed during construction.
50. These events will provide an opportunity for communities to meet the construction team face-to-face. They aim to help people understand that they are not dealing with a faceless organisation – on the contrary, that they can voice their concerns / anxiety and issues to the people on the ground and be provided with answers and information on how these will be addressed.
51. Attendees at these events will include:
  - The lead Construction Manager.
  - Site Managers.
  - The Logistics Manager.
  - Environmental manager.
  - Stakeholder Team.
52. Following the example of East Anglia ONE, the same team will also be available to attend Parish Council meetings and even peoples' homes if there is a special





request. This was done on East Anglia ONE and helped to allay many peoples' concerns.

53. The contact details for the Stakeholder Team will be readily available, and there are already dedicated emails for each of the Projects. The team will continue to publish updates on the website and to send emails to registered subscribers and they will continue to produce The East Angle newsletter.
54. A key part of this process is to ensure that people understand who to contact if they have an issues with regard to the construction. This ensures that any issues can be identified and responded to effectively. This worked on East Anglia ONE and this was confirmed by the Council at the hearing.

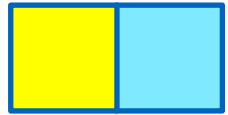
### 3.3.2.2 Substation Design Workshops

55. In addition, workshops will be held on the design of the substations. Again, this follows the example of East Anglia ONE, where independent advice was sought from The Design Council, followed by a site visit and a master planning exercise.
56. Members of the local community, Parish Councils and the Local Planning Authorities will be invited to participate in this exercise.

### 3.3.3 During Construction

#### 3.3.3.1 Community Liaison Officer (CLO)

57. A CLO will be appointed and there is likely to be a CLO for the East Anglia THREE works as well as for the Projects. The CLO will be based alongside the construction team and will, therefore, work closely with them and their sub-contractors. Any concerns will be managed by the CLO in the first instance, who will ensure that they are brought to the construction team's attention. Feedback confirmed that this worked very well for East Anglia ONE.
58. The Applicants have submitted at Deadline 8 a ***Community Engagement Activity undertaken for East Anglia ONE that would be replicated for the Projects*** which has been appended to the Code of Construction Practice as Appendix 3. This will set out how the Applicants will manage interaction with local communities. This will be published on the ScottishPower Renewables website, links to which will be emailed to Parish Councils.
59. It should be noted that East Anglia ONE has a 37km cable route through rural Suffolk, and directly affects some 22 parishes. These parishes and some others along the route, did have major concerns but these have been managed and addressed as far as possible, with the result that the CLOs often received thanks for the help they provided.

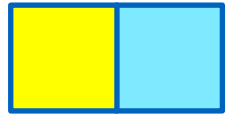


### 3.3.3.2 Roadshows

60. Throughout the construction of East Anglia ONE, the CLOs organised special information events on specific construction activities. HDD roadshows were held near the River Deben, at the landfall and in Martlesham, for example. These were attended by the HDD contractor, so attendees could hear directly how the HDD process worked. This helped to dispel many of the myths surrounding the HDD process and for many people, also proved to be quite interesting.
61. Again, the same activities will be undertaken for the Projects.

### 3.3.3.3 Outreach Programmes

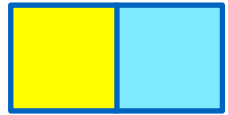
62. Other outreach programmes which took place on East Anglia ONE and will be considered for the Projects are:
- Landfall HDD site visits for residents, the Local Planning Authorities and other Interested Parties to present how the site is laid out and managed, the actual works, distance from the cliffs etc. On East Anglia ONE this helped to demonstrate how organised the works are, how noise and dust is minimised and how traffic is managed in and out of the site (including wheel washing). Three visits took place and ScottishPower Renewables received a lot of positive comments from each visit.
  - Archaeology Roadshows held in conjunction with ScottishPower Renewables' archaeology contractors to talk about the excavations that took place on East Anglia ONE and to explain some of the finds and their significance.
  - Construction Public information days were held in four different locations over four months during construction of East Anglia ONE. These allowed ScottishPower Renewables to talk to people about the project, the specific works taking place on the site; focused around HDD, as well as trenching, substation build, landfall etc. and traffic management, heritage works, community liaison support and contractor management. These were very positive events which were well attended, with genuine interest in the project and how ScottishPower Renewables were carrying out the works. Contractors also supported these events to provide insight, with supporting videos, examples and information.
  - Energy Skills Foundation student visit to the Construction Consolidation Compound B with a talk from the East Anglia ONE project manager and a site tour.
  - East of England Energy Group Skills for Energy event sponsorship and stand held at East Coast College. This event was designed to encourage young people in the area to pursue a career in renewable energy.



- Cambridge Science Centre Suffolk schools tour. This was an event day focused around renewable energy education, specifically wind energy.
- Suffolk Show stand to welcome visitors to find out more about ScottishPower Renewables' East Anglia projects. This included educational entertainment for children.

#### 3.3.3.4 Project Updates

63. Regular project updates will also be sent to registered subscribers on the ScottishPower Renewables website for the Projects to keep them informed. The Applicants will also send localised updates to residential and business properties around specific activity taking place along the cable route or at the substation. Additionally, the Applicants will provide email updates to Parish Councils in the relevant areas, as well as attend Parish Council meetings to provide updates as required.



## 4 Agenda Item 4: Health and Social Well-Being – Interested Parties

64. This agenda item was directed towards the Interested Parties present at the Hearings but the Applicants have responded below to some of the oral submissions made.

### 4.1 Terminology

65. Several IPs made reference to the terminology used by the Applicants, use of words such as ‘receptor’ and the levels ascribed to the significance of effect. With respect to EIA, a common language and framework is required to allow the assessors and the regulators and their advisors to understand one another and to be able to gauge impact. Words and terminology within the ES are strictly defined (and defined on a topic by topic basis) in order to be as precise as possible in the assessment. When everyday words like ‘temporary’ are used these are accompanied by definitions. It is understood that what is defined as a temporary and non-significant impact within the ES, may be considered highly significant and long term to an affected individual. The language used is not intended to devalue or denigrate, it is simply a common framework for decision making.
66. The use of the word episodic for example is used to differentiate the works along the onshore cable route from the substations or the landfall where work will be of greater duration and for longer continuous periods. As shown in Onshore Cable Route Works Programme Clarification Note Plate 1 (REP3-056) the construction works are divided not only spatially (in different cable route sections) but also temporally (enabling works, ducting, cable pulls etc). This highlights that although the overall duration of works along the route may be 30 months, work in any one section would last weeks or months at a time, there would then be a pause before construction continues on the next phase several months later.
67. The Applicants understand that the ES is a difficult document to engage with. Whilst it is written to be as accessible as possible it is a technical document and is intended for the regulators and their advisors as a decision-making tool. The Applicants engagement with the public with Public Information Days and presentations using a variety of other media (such as the 3D, georeferenced model of the substation, video fly-throughs and videos of construction) and through the presence of a variety of technical experts at events was intended to help bridge this gap.
68. Although the Applicants have provided other documentation which is more ‘user friendly’ than the ES chapters for public engagement, there is always a tension



between how much change can be made to assessment text to aid general understanding without changing the meaning or giving the impression that different documents say different things.

69. Royal HaskoningDHV is involved in many industry-wide initiatives which aim to address these issues with communication. Royal HaskoningDHV is part of IEMA's Digital Working group<sup>6</sup> and is at the forefront of proportionate EIA<sup>7</sup>. These initiatives aim to make EIA more accessible for all parties (not just specialists) to help reduce the barriers to public understanding. Royal HaskoningDHV have been working alongside SPR for several years helping them to develop their ideas for future EIA as a direct result of SPR's recognition of these types of issues and wanting to better communicate with communities.

## 4.2 Perception

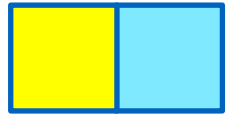
70. Several IPs made reference to the Applicants equating all anxiety to 'perceived issues' the implication being that the Applicants did not consider anxiety to be justified or valid.
71. This is not the case. The Applicants recognise that some individuals will be affected by the Projects more than others and that it is not simply a matter of explaining the details of construction to make these issues recede.
72. As discussed in the hearing, the Applicants process for dealing with health issues is to minimise or avoid potential sources of physical harm. This requires the use of appropriate equipment, vehicles (such as Euro VI standard HGVs) at-source attenuation (acoustic barriers), HGV routeing, work hours scheduling etc to minimise the potential impacts to levels which are acceptable and agreed with the relevant authorities. These are all managed through the DCO requirements and the certified documents (i.e. management plans) which have been developed pre-Application and refined throughout the examination.
73. The area that cannot be managed in a standard way is anxiety, the Applicants recognise that communication can play a big part in reducing anxiety but does not fully alleviate this. The Councils recognised that the process undertaken on East Anglia ONE was successful in terms of helping communities affected.
74. The Applicants maintain that communication is vital to reduce anxiety especially where it **relates to continued statements from IPs on topics such as Air Quality (which has now been fully agreed with the Councils), noise measures (i.e. for control of construction noise as described in the latest *Outline Code of Construction Practice* (REP8-XXX)), traffic (HOLD)** where inaccurate and emotive language continues to be used in spite of agreement having been

<sup>6</sup> <https://www.iema.net/resources/news/2020/03/25/iema-launch-new-digital-impact-assessment-primer/>

<sup>7</sup> <https://www.iema.net/resources/reading-room/2017/07/18/delivering-proportionate-eia>



reached on the assessment conclusions and mitigation with the bodies which represent the public in these matters.



# Appendix 1: Public Health England Health Impact Assessment in spatial planning: A guide for local authority public health and planning teams



Public Health  
England

Protecting and improving the nation's health

# Health Impact Assessment in spatial planning

A guide for local authority public health and planning teams

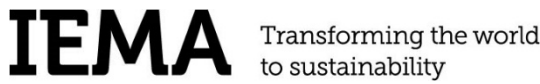
October 2020



# Organisations who have contributed to and support this guide



London Healthy Urban  
Development Unit



## About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-leading science, research, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

Public Health England

Wellington House

133-155 Waterloo Road

London SE1 8UG

Tel: 020 7654 8000

[www.gov.uk/phe](http://www.gov.uk/phe)

Twitter: [@PHE\\_uk](https://twitter.com/PHE_uk)

Facebook: [www.facebook.com/PublicHealthEngland](https://www.facebook.com/PublicHealthEngland)

Prepared by: Michael Chang, Carolyn Sharpe, Aimee Stimpson, Carl Petrokofsky and Andy Netherton (Public Health England) with contributions from Professor Thomas Fischer and Dr Tara Muthoora (University of Liverpool), and Laura Taylor-Green (Essex County Council). See Annex 1 for acknowledgements and full list of contributors.

For queries relating to this document, please contact: [HealthyPlaces@phe.gov.uk](mailto:HealthyPlaces@phe.gov.uk)



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## Foreword

The COVID-19 global pandemic has changed the way individuals, families and society value our relationship with the spaces and places in which we live, work and play.


Public Health England's **disparities in the risk and outcomes of COVID-19** report has confirmed those who live in more deprived urban and rural areas are more susceptible to the effects of COVID-19. The pandemic has replicated existing underlying health inequalities and, in some cases, has widened them.

As we look past the initial peak of the pandemic, evidence indicates that many want to embrace the positive changes seen in our environments during the social lockdown such as increased opportunities for walking and cycling, more spaces for social interaction, and a greater value placed on our green and blue spaces. As the nation shifts towards economic renewal, for example, by building more and better homes, strengthening the use of health impact assessments (HIA) in spatial planning offers local authorities a powerful lever to improve public health and wellbeing, and ultimately reduce inequalities.

HIA is a tool used to identify the health impacts of a plan or project and to develop recommendations to maximise the positive impacts and minimise the negative impacts, while maintaining a focus on addressing health inequalities. By bringing such health considerations to the fore, HIAs add value to the planning process.

When used in the planning system, HIAs can also identify opportunities to deliver co-benefits across a range of policy areas: better quality housing, particularly in areas where they are most needed, will in the long term improve health outcomes; more and better active travel infrastructure in areas of poor air quality will lead to improved cardiovascular health; safer and more inclusive spaces for older people as well as those with a mental or physical health problem will deliver benefits to individual quality of life. Each of the above opportunities will also contribute to reductions in health inequalities.

This guide was created in collaboration with national, regional and local experts in planning, public and environmental health, and impact assessment. This collaboration demonstrates a strong commitment from many who believe HIAs to be an essential tool to 'health-proof' spatial plans and project designs for future generations. The guide aims to provide local authority teams with the practical information they need to embed HIA in the local planning system and, in doing so, create safer and healthier places.



Professor John Newton  
Public Health England

## Executive summary

This guide focuses on the use of Health Impact Assessment (HIA) in the planning system. An HIA is a process that identifies the health and wellbeing impacts (benefits and harms) of any plan or development project. A properly conducted HIA recommends measures to maximise positive impacts; minimise negative impacts; and reduce health inequalities.

HIAs puts people and their health at the heart of the planning process. An HIA supports the planning system to address local health and wellbeing needs and tackle inequalities through influencing the wider determinants of health.

As health inequalities continue to widen in England (1), there is a need to better identify and address the health impact of planning decisions. To help achieve this, Public Health England (PHE) has developed this guide on HIAs for planning in England.

This guide describes the health and wellbeing outcomes that are influenced through planning and how these outcomes can be optimised through the process of plan-making (when developing policies in local plans) and planning applications (designing proposals for development projects). It also describes how these health outcomes can be considered in other impact assessments (such as strategic and environmental impact assessments).

The guide is targeted towards local authority public health and planning teams, planning applicants, impact assessment practitioners, and others involved in the planning process.

It provides information to support:

- the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG) on promoting healthy and safe communities
- local adoption of planning policies and guidance on the use of HIAs
- consideration of how the planning process impacts population health, wellbeing and inequalities through the wider determinants of health
- consideration of whether an HIA is required; what the trigger points should be; the type of HIA needed; and alignment with other planning assessments
- consideration of the range of health and wellbeing issues to be included in an assessment
- engagement of relevant practitioners when considering health in impact assessments, including environmental health officers and impact assessment practitioners operating in the private sector

This guide is applicable to the English policy context.

# Glossary

These definitions describe various terms used in this publication.

<b>Authority Monitoring Report (AMR)</b>	A statutory annual performance update on the Local Planning Authority such as on local plan policy implementation.
<b>Design and Access Statement (DAS)</b>	A statement submitted with a planning application that explains the design thinking behind the proposal and shows how everyone will be able to use the places they want to build.
<b>Environmental Impact Assessment (EIA)</b>	A statutory assessment to evaluate the likely significant impacts of a proposed project as defined in Regulation 4 of the Town and Country Planning (EIA) Regulations 2017.
<b>Health inequalities</b>	Avoidable and unfair differences in health status between groups of people or communities.
<b>Integrated Impact Assessment (IIA)</b>	An integrated assessment to appraise the environmental, social and economic sustainability impacts, and the equalities, health, crime and disorder effects of the policies.
<b>Joint health and wellbeing strategy</b>	A strategy to inform commissioning decisions across local services to ensure they are focused on the health needs of service users and communities based on the JSNA.
<b>Joint Strategic Needs Assessment (JSNA)</b>	A statutory assessment of the current and future needs and assets of an area to improve health and wellbeing outcomes and impact on the wider determinants of health.
<b>Local information requirements list</b>	A list of the information a local area requires to be submitted in support of a planning application.
<b>Local Planning Authority (LPA)</b>	A public authority whose duty it is to carry out specific planning functions for a particular geographic area.
<b>National Planning Policy Framework (NPPF)</b>	The government's planning policies for England and how these should be applied in plan-making and making planning decisions. It was last updated in February 2019.
<b>Plan-making</b>	Refers to the process of creating local plans and policies, and other development plan documents by the LPA.
<b>Planning Practice Guidance (PPG)</b>	Web-based resource which brings together planning guidance on various topics to support the National Planning Policy Framework.
<b>Public Health Outcomes Framework (PHOF)</b>	A high-level overview of public health outcomes, supported by a broad set of indicators, that allows local authorities to assess progress in comparison to national averages and other local areas.
<b>Section 106</b>	Planning obligations that are legal agreements to mitigate the impacts of a development proposal.
<b>Sensitive receptors</b>	Population groups or areas which are more susceptible to the adverse effects of impacts from a proposed policy or project.
<b>Strategic Environmental Assessment (SEA)</b>	A statutory assessment which allows local authorities to assess, consult on, and monitor the likely impacts their plans, programmes and strategies will have on the environment.
<b>Supplementary planning document (SPD)</b>	Produced by Local Planning Authorities to build upon and provide more detailed advice on the policies contained in a local plan.
<b>Sustainability Appraisal (SA)</b>	A statutory planning assessment which requires a LPA to carry out a SA during plan preparation to achieve relevant environmental, economic and social objectives.
<b>Wider determinants of health</b>	A diverse range of social, economic and environmental factors which impact on people's health.

# 1. About the guide

## Introduction

1.1 The factors that influence our health are multiple and complex. Most of these factors lie outside the health and social care system. It has been estimated that socio-economic and physical environments determine 60% of health outcomes (2). Focusing on these determinants of health is essential for improving population health and wellbeing and reducing inequalities.

1.2 HIA is a valuable process that enables local action on the wider determinants of health. It can help maximise the health benefits of a plan or development and minimise the potential harms, while maintaining a focus on reducing inequalities. There is an economic as well as a moral case for tackling health inequalities. Poor health and health inequalities in England are estimated to cost the NHS an extra £4.8 billion a year from the greater use of hospitals by people in deprived areas (3) and cost the UK £31-33 billion a year in lost productivity (4).

1.3 The NPPF sets out the government's planning policies and how they should be applied. It requires planning policies and decisions to "enable and support healthy lifestyles, especially where this would address identified local health and wellbeing needs" (5). It also emphasises that the level of detailed supporting information provided to local planning authorities (LPAs) should be relevant, necessary and material, and that having the right information is crucial to good decision-making. The supporting PPG, healthy and safe communities, suggests the use of HIA can be beneficial "where there are expected to be significant impacts" (6).

1.4 The development of this guide has been informed by research from the Universities of the West of England (7) and Liverpool (8), and the York Health Economics Consortium (9). Their recommendations called for better integration of local health and wellbeing needs and priorities into the local plan and decision-making process. To achieve this, they recommended further guidance on how and when to undertake an HIA and on the screening and scoping stages, improved integration and alignment of HIAs with other assessments, and strengthened local HIA capacity and skills. This guide responds to these recommendations.

## Purpose of the guide for England

1.5 This guide aims to increase the coverage of HIAs in the planning process<sup>1</sup>. It forms part of PHE's strategic commitment to local systems to support preventative action on the wider determinants of health (10), and helps clarify the process of establishing HIA policies and requirements to users of the planning system.

1.6 It has been developed with input from stakeholders and expert practitioners. See [Annex 1](#) for acknowledgements.

1.7 Target audience groups are:

- local authority public health teams and wider health and social care partners (including: primary care, Clinical Commissioning Groups (CCGs), Sustainability and Transformation Partnership (STP) / Integrated Care Systems (ICS), local NHS Trusts) to
  - make the case for the positive and proactive role of HIAs to help local authorities and health organisations deliver their duty to improve population health and reduce health inequalities under the Health and Social Care Act 2012
  - support planning teams to create planning policy and development management guidance such as supplementary planning documents (SPDs) input into the development of strategic, local or neighbourhood plans, inform pre-application discussion on health impacts, and inform recommendations on preventative and mitigation measures to address these impacts
- local authority planning teams and those responsible for plan-making and decision-making on planning applications to
  - meet the requirements set out in the NPPF and PPG on healthy and safe communities
  - adopt planning policy and guidance requiring the proportionate use of HIAs
  - help consider how best to employ HIAs in relation to other statutory assessments
  - develop proportionate and justified HIA requirements in strategic and local plans
  - inform whether an HIA is required and the scope of the assessment
  - create development management guidance such as SPDs on the use of HIA
- planning applicants, consultants and others involved in the planning process to
  - consider a wide range of health and wellbeing impacts within the design processes for development projects prior to submission of planning applications to the local authority

---

<sup>1</sup> Town and Country Planning Association found 30% of LPAs have an HIA requirement in local plans (11)



- inform the content and structure of commissioned HIAs either as a standalone assessment or as part of other assessments, promoting the use of existing tools and resources in [Table 1](#)

## Alignment with existing HIA guidance

1.8 This guide supplements existing HIA guidance for the UK. It focuses on the earlier stages of the planning process to help support the local policy case for the use of HIAs. Technical guidance for carrying out HIAs already exists as well as guidance on quality assurance and the consideration of health in other impact assessments such as EIA ([Table 1](#)).

**Table 1. Existing HIA guidance in the UK**

<b>General HIA</b>	<ul style="list-style-type: none"> <li>• <a href="#">Health impact assessment of government policy</a> by the Department of Health (12)</li> </ul>
<b>Carrying out of an HIA</b>	<ul style="list-style-type: none"> <li>• <a href="#">Health Impact Assessments – a practical guide</a> by the Wales Health Impact Assessment Support Unit (WHIASU) (13)</li> <li>• <a href="#">Rapid Health Impact Assessment Tool</a> by NHS London Healthy Urban Development Unit and other HIA guidance (14)</li> <li>• <a href="#">Health Impact Assessment (HIA) and Local Development Plans (LDPs): A toolkit for practice</a> by WHIASU (15)</li> <li>• Local authorities have developed local HIA guidance (See <a href="#">Annex 4</a>)</li> </ul>
<b>Quality assurance methods</b>	<ul style="list-style-type: none"> <li>• <a href="#">Quality Assurance Review Framework for Health Impact Assessment</a> by WHIASU (16)</li> <li>• <a href="#">Review Package for Health Impact Assessment Reports of Development Projects</a> by Ben Cave Associates (17)</li> </ul>
<b>Health in other impact assessments</b>	<ul style="list-style-type: none"> <li>• <a href="#">Health in Environmental Impact Assessment. A briefing for public health teams in England</a> by PHE (18)</li> <li>• <a href="#">Health in Environmental Impact Assessment. A Primer for a Proportionate Approach</a> by Institute for Environmental Management and Assessment (IEMA) (19)</li> <li>• <a href="#">Addressing human health in Environmental Impact Assessment</a> by International Association for Impact Assessment (IAIA) and European Public Health Association (EPHA) (20)</li> <li>• <a href="#">Health Equity Assessment Tool</a> by PHE (21)</li> </ul>

1.9 A separate PHE guide helps planning applicants understand the health issues that PHE expects to see addressed by applicants when preparing an Environmental Statement for Nationally-Significant Infrastructure Projects (NSIPs) under the Planning Act 2008. PHE, NHS England and CCGs are statutory consultees for such NSIP applications. For further information, see [Advice on the content of Environmental Statements accompanying an application under the Nationally Significant Infrastructure Planning Regime](#) (22).

1.10 An HIA is one mechanism to integrate health throughout the planning process. There are other methods local authorities may wish to consider as part of a health in all policies approach described in PHE's other resources and supporting information on good planning for health (23).

1.11 Please note at the time of publication of this Guide, the government published the Planning for the Future White Paper for England (24). The White Paper sets out reforms to the planning system that aim to make it simpler, faster and more predictable in creating local plans and making decisions on development projects. Its' proposals will have implications for how and whether the use of HIAs can be justified, and this Guide may be updated as these proposals are implemented.

## 2. HIA in planning policy and practice

### What is an HIA?

2.1 The **World Health Organization** defines an HIA as a combination of process and methods used by those planning, deciding and shaping changes to the environment to evaluate the significance of health effects of a plan or project (25). An HIA helps decision-makers in local authorities and other stakeholders make choices about actions to best prevent ill-health, promote good health and reduce health inequalities.

2.2 When applied in the planning system, an HIA puts people at the heart of the process. It is an objective assessment tool for addressing the barriers and enablers for creating healthy places. An HIA can help identify a set of evidence-based practical recommendations to promote and protect the health of local communities.

### HIA process

2.3 An HIA process follows 5 stages (13):

1. Screening: Determine whether an HIA is needed and justified subject to anticipation of health impacts on population groups.
2. Scoping: Identify the potential health impacts and target population groups to assess.
3. Assessing: Assess the significance of health impacts, qualify and quantify potential costs and benefits, how health varies in different circumstances, across different populations and any alternatives.
4. Reporting: Engage all relevant stakeholders and recommend preventative and mitigation actions to deliver the greatest possible health gain.
5. Monitoring and evaluating: Include indicators and mechanisms, and set out processes and resources for the local authority and/or with the planning applicant to undertake and act on results of regular monitoring.

2.4 The HIA process can also include a stage for quality assurance. This is a recommended additional stage whereby those responsible for agreeing the recommendations of an HIA (the local planning and/or public health team), review the quality of the final HIA submitted as part of the planning application. The quality assurance stage ensures HIAs are carried out objectively, address local health and planning priorities, and are based on quality evidence base. The quality assurance findings can then be used to inform how recommendations are taken forward in plans or development projects.

**Practice example: Hertfordshire County Council Public Health review of HIAs**

Hertfordshire County Council requires developers to undertake HIAs in line with its **HIA Position Statement**. Public health seeks engagement during early masterplanning of strategic sites to ensure HIAs are undertaken and scoped effectively; submitted HIAs are reviewed using the WHIASU Quality Assurance Framework (16).

## Types of HIA

2.5 There are 3 types of HIA (13) which are:

- comprehensive HIAs are more in-depth and so are the most resource intensive, requiring extensive literature searches and data collection, and stakeholder and public engagement - this type of HIA is most suited to more complex proposals
- rapid HIAs involve a brief assessment of health impacts, including a literature review of quantitative and qualitative evidence, and the gathering of knowledge and further evidence from local stakeholders - rapid HIAs usually include the establishment of a small steering group and carrying out a stakeholder workshop
- desktop HIAs can encompass engaging a small number of participants using existing knowledge and evidence to undertake the assessment of health impacts

2.6 In practice adopting the appropriate type of HIA depends on the focus, scale and scope of the plan or development project, the stage at which the HIA will seek to influence, and the time and resources available to commission, undertake or review the HIA. When setting out requirements during earlier stages in the decision-making process, it is best to specify the type of HIA expected to be undertaken. Refer to **Figure 2**.

## Health and wellbeing outcomes

2.7 **Table 2** summarises a list of factors that an HIA can seek to address; ranging from health improvement to health protection issues. It reflects how health outcomes relate to the wider determinants of health and wellbeing such as access to services and amenities, traffic and transport, social and economic factors, and land use factors. There may be further health determinants and outcomes that are relevant to local areas and their consideration within an HIA should be based on local health needs and priorities. See **Annex 2** for more details on health outcomes.

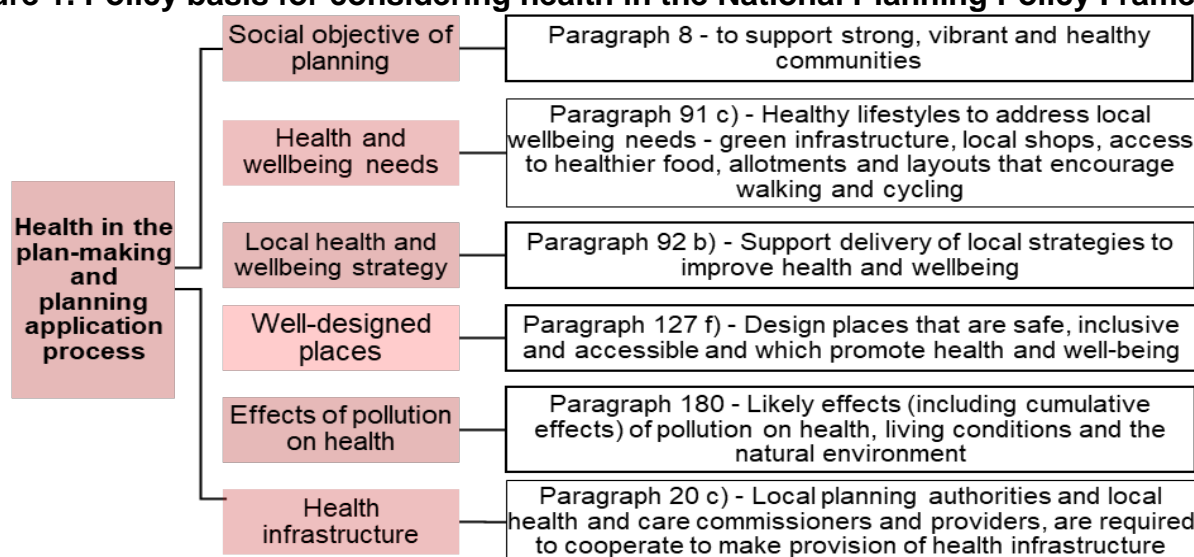
**Table 2. Wider determinants of health and wellbeing outcomes**

HIA health considerations (Annex 2)	Wider determinants of health and wellbeing			
	Access	Traffic and Transport	Socio-economic	Land Use
Reduce Health inequalities	<ul style="list-style-type: none"> <li>Local public key services and facilities</li> <li>Good quality affordable housing</li> <li>Healthy and affordable food</li> <li>Natural environment</li> <li>Green spaces and public realm</li> <li>Leisure, sport, recreation, play and physical activities within the environments</li> </ul>	<ul style="list-style-type: none"> <li>Accessibility</li> <li>Access to public transport</li> <li>Opportunities for active travel (cycling and walking)</li> <li>Links between communities</li> <li>Community severance</li> <li>Connections to jobs</li> <li>Connections to services, facilities and leisure</li> </ul>	<ul style="list-style-type: none"> <li>Employment, including skills development and training opportunities</li> <li>Local business activity</li> <li>Regeneration</li> <li>Tourism and leisure industries</li> <li>Community/ social cohesions and access to social networks</li> <li>Community engagement</li> </ul>	<ul style="list-style-type: none"> <li>Sustainable and efficient land use in urban and/or /rural settings</li> <li>Quality of Urban and natural environments, such as air and noise pollution</li> <li>Climate change impacts</li> </ul>
Improve mental health and wellbeing				
Improve diets and weight				
Improve musculoskeletal health				
Improve respiratory health				
Improve cardiovascular health				
Protect environmental health				
Provide access to health and care infrastructure				

### Planning policy context for HIAs

2.8 The PPG on promoting healthy and safe communities is explicit about when the use of HIAs can be justified in planning applications for development projects through the Director of Public Health (DPH). It states that “it is helpful if the Director of Public Health is consulted on any planning applications (including at the pre-application stage) that are likely to have a significant impact on the health and wellbeing of the local population or particular groups within it. A health impact assessment is a useful tool to use where there are expected to be significant impacts.” (6)

**Figure 1. Policy basis for considering health in the National Planning Policy Framework**



2.9 The PPG guidance on HIAs is set in the context of meeting NPPF requirements for the consideration of health and wellbeing (Figure 1). HIAs can support local authorities to discharge their legal duty to take appropriate actions to improve the health of local people under the Health and Social Care Act 2012.

2.10 When developing policies either as part of joint plans or spatial development strategies, local authorities are required to consider requirements set out in relevant regulations. These policies relate to issues of a strategic nature and relevant cross-boundary issues, including enhancing the natural environment, healthcare facilities and housing as set out in the NPPF (5).

**Practice example: Liverpool City Region Spatial Development Strategy and health**

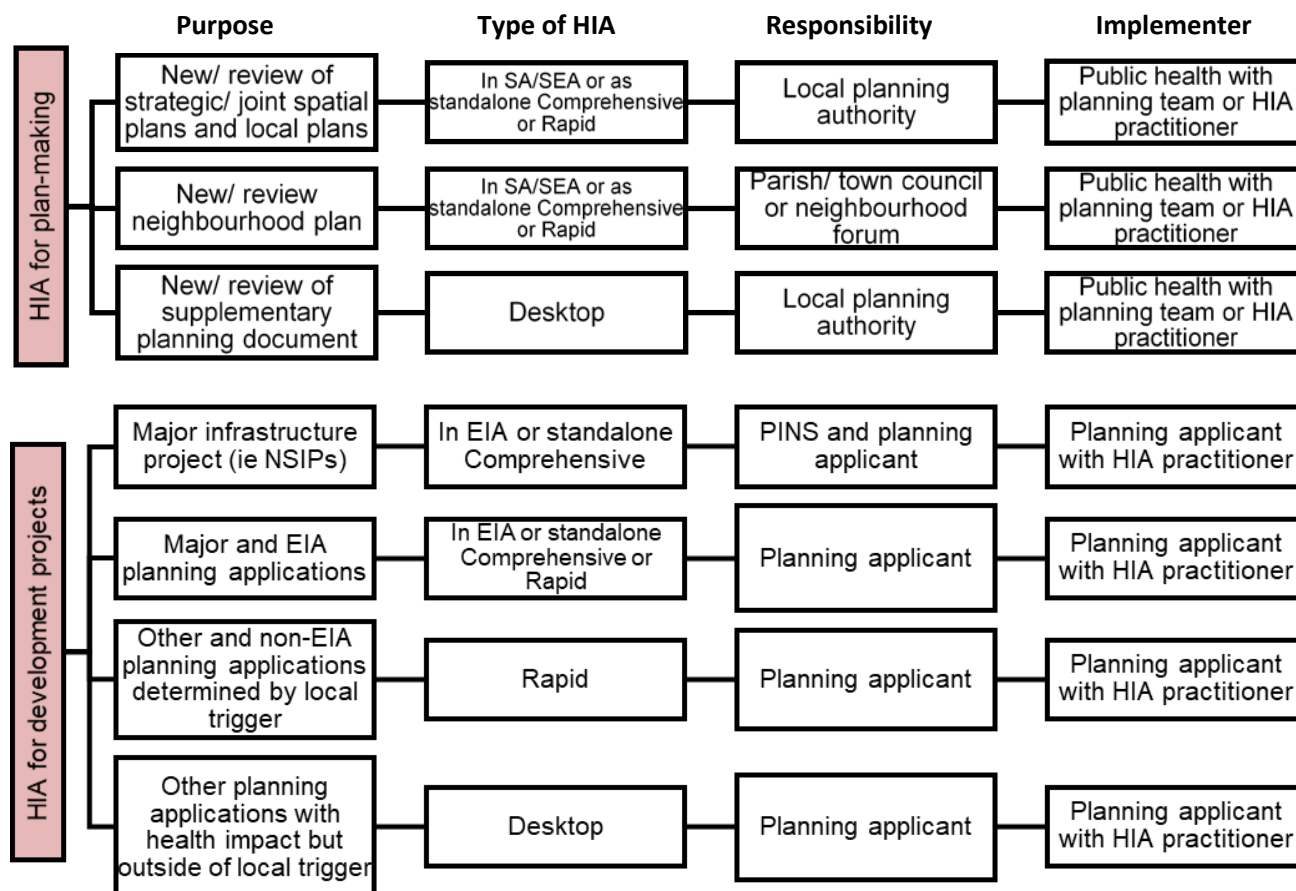
The **Liverpool City Region Combined Authority** is creating a strategic Spatial Development Strategy covering the 6 constituent local authorities in the north west of England. The Spatial Development Strategy will have policies to ensure developments have regard to their effect on the health and health inequalities of and between people living in the Liverpool City Region.

## When to use HIAs

2.11 An HIA is most effective when it is undertaken prospectively and concurrently to inform and shape a plan, policy or development project during options appraisal and design (that is before decisions are made and submitted as part of a planning application) (8). The intention to use an HIA should be determined early in the planning process. Depending on the scale of the plan or project, it may be appropriate to integrate or align an HIA with a sustainability appraisal (SA) / strategic environmental assessment (SEA) for plan-making or EIA and other assessments required as part of local information requirements for planning applications.

2.12 Figure 2 indicates the type of HIA that may be appropriate for different applications. The type and purpose of an HIA and responsibilities should be agreed from the outset. When agreeing the type of HIA, factors including the anticipated scale of impact, significance, proportionality to the plan or development project and local health needs and priorities should be considered. Sections 4 to 6 of this guide provide information on this process.

**Figure 2. Indicative type of HIA appropriate for plans and development projects**



2.13 To improve the quality of an HIA and help secure consensus on meeting local needs and priorities, stakeholder or community engagement can be scoped into the process. Stakeholder and community engagement will be proportionate and dependent on the type of HIA. Those implementing and carrying out the HIA should make sufficient time and resources available for this stage of the process.

**Practice example: Barton Park Healthy New Town HIA 2017**  
 The HIA qualitatively assessed the potential health impacts of the proposed Barton Park development and the Underhill Circus redevelopment. While the Barton Park HIA was carried out retrospectively, it fed back recommendations into the design process of the Underhill Circus redevelopment to help support physical and mental health and wellbeing.

### Improving the use and implementation of HIA requirements

2.14 Local authority public health and planning teams need to agree how HIAs will be enforced, funded and resourced. Considerations such as the existence of policy requirements, proportionality, and role and capacity of public health involvement may be useful. Local arrangements should have agreement from the DPH, head of planning and elected members, and in consultation with relevant stakeholders and developers. There are different options available for implementing HIAs in the plan-making and the planning process.

2.15 When preparing plans and policies, the available options to include an HIA are:

- resourced as part of existing assessment procedures for SEA/SA or IIA, to be undertaken by commissioned HIA practitioners or done in-house between the planning and public health teams
- implemented as a standalone assessment, to be undertaken by commissioned HIA practitioners or done in-house by the planning and public health teams
- undertaken for those planning documents that do not require a SEA/ SA such as neighbourhood plans and SPDs, by commissioning HIA practitioners or done in-house between the planning and public health teams

**Practice example: London Borough of Croydon local plan HIA 2015-16**

The HIA on the draft local plan was undertaken by spatial planning and public health departments. It involved a scoping report, policy screening and an HIA workshop, and the assessment was based on the NHS London Healthy Urban Development Unit (HUDU) rapid HIA tool. Other stakeholders will include housing, transport, environmental health and pollution departments, and NHS partners including the CCG and Croydon Health Services NHS Trust.

2.16 For planning applications, the available options to improve the use of an HIA are:

- adopt an HIA policy with triggers in the strategic or local plan
- where appropriate, inclusion in the local information requirements list for applying for planning permission or a prior approval application for change of use
- provide detailed guidance on how to carry out an HIA, for example as a SPD
- discuss with planning applicants during the pre-application stage
- use of planning conditions to implement HIA recommendations
- use of Section 106 planning obligations to implement HIA recommendations, including requiring developers to cover monitoring costs for some years after construction
- allocate local authority resource to advise on and review HIAs. This can be funded as part of planning performance agreements<sup>2</sup> for major projects

2.17 To make HIAs more effective and meaningful, those involved throughout the HIA process can be supported by undertaking continuing professional development (CPD) training in order to build capacity for this activity. Training can clarify the local process and can enhance the understanding of health and wellbeing, the impact and effects on the population, and the identification of recommendations.

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<sup>2</sup> A project management tool for the LPA and applicants to agree actions and resources for handling applications.



**Practice example: London Borough of Tower Hamlets HIA capacity building programme**

Tower Hamlets has formalised the partnership between public health and planning and has appointed an HIA Officer to lead on the delivery of its HIA policy, including an HIA capacity building programme. This includes developing guidance for developers and planners, a best practice community engagement guide, briefings for HIA stakeholders and workshops/webinars for planners focusing on HIA in development management and the process of HIA itself.

**Monitoring of HIA use and health impacts**

2.18 Where possible, local authorities should evaluate the effectiveness of HIAs/HIA policies against a range of health outcomes outlined in [Annex 2](#). The indicators in the Public Health Outcomes Framework (PHOF) (at local authority level) and the Local Health Fingertips tool (at ward level) (26) can support local authorities to benchmark and monitor health and wellbeing metrics. The indicators are grouped into 4 domains (see [Table 3](#) for relevant indicators), many of which are directly or indirectly influenced by the planning system.

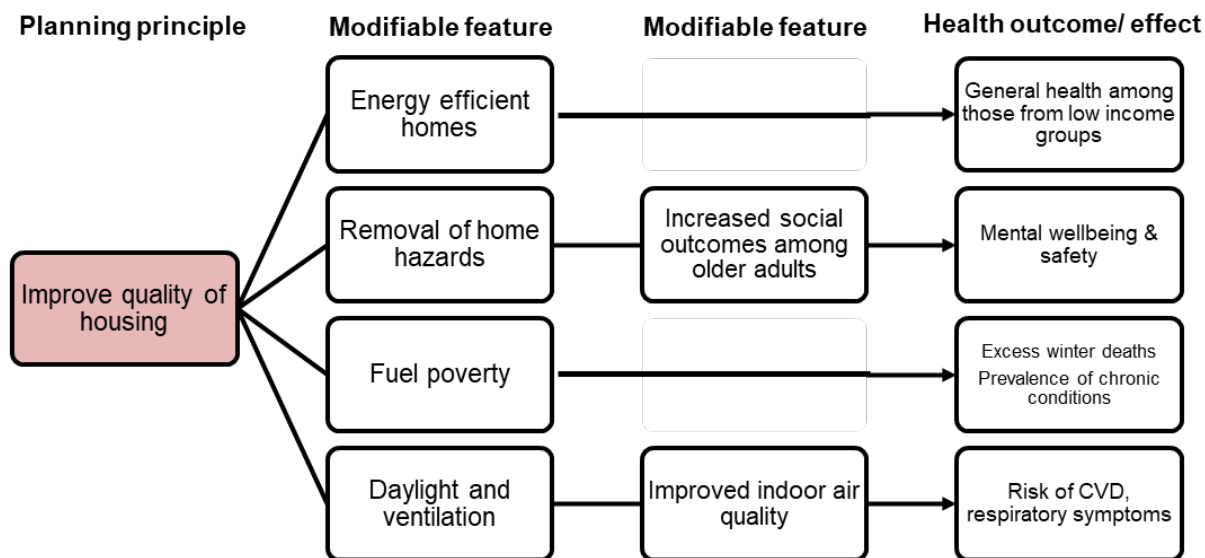
2.19 Changes to the number of HIAs undertaken and the way in which HIAs are undertaken, as well as progress towards improving public health outcomes can also be monitored through the statutory monitoring requirements of the LPA Authority Monitoring Report (AMR) and the Director of Public Health Annual Report. These should be aligned, as required by the NPPF, to local health and wellbeing needs and priorities.

**Table 3. Public Health Outcomes Framework indicators relevant to planning**

Domain	Indicators relevant to planning
Wider determinants of health	B05 - 16-17 year olds not in education, employment or training (NEET) or whose activity is not known B14c - The percentage of the population exposed to road, rail and air transport noise of 55 dB(A) or more during the night-time B16 - Utilisation of outdoor space for exercise/health reasons B17 - Fuel poverty B18 - Social isolation
Health improvement	C09a - Reception: Prevalence of overweight (including obesity) C10 - Percentage of physically active children and young people C16 - Percentage of adults (aged 18+) classified as overweight or obese C17a - Percentage of physically active adults C27 - Percentage reporting a long term Musculoskeletal (MSK) problem C28a - Self-reported wellbeing - people with a low satisfaction score C29 - Emergency hospital admissions due to falls in people aged 65 and over
Health protection	D01 - Fraction of mortality attributable to particulate air pollution
Healthcare public health and premature mortality	E03 - Mortality rate from causes considered preventable Under 75 mortality rate from respiratory disease considered preventable E14 - Excess winter deaths index E15 - Estimated dementia diagnosis rate (aged 65 and over)

2.20 PHE’s Spatial Planning and Health evidence resource (27) describes how health outcomes are shaped by actions taken across the wider determinants of health such as neighbourhood design, housing, transport, food environment and the natural environment. For example, **Figure 3** highlights housing and health outcomes.

**Figure 3. Health outcomes in planning pathway example: healthy housing**



See full pathways and diagrams in PHE (2017), Spatial planning and health: evidence review (27)

### How health organisations can contribute to the HIA process

2.21 The PPG on promoting healthy and safe communities provides details regarding the health organisations that need to be involved in planning for health (6). Local authority DPHs; at the unitary authority or county council (for 2-tier areas) level; should be the first point of contact when seeking input on public health and inequalities. The DPH and the public health team can support the HIA process by:

- helping to determine the type of HIA needed
- supporting the scoping stages to identify the likely significance of impacts and effects on population health, and health inequalities of implementing the plan or project
- signposting to public health data and supporting with their interpretation
- supporting with the collection of health information to monitor the progress of the plan or project implementation

2.22 CCGs and NHS England are statutory consultees on local plans and have a duty to cooperate with LPAs. CCGs and NHS England, through STPs and ICSs, can also be consultees for development projects and can help identify potential health impacts and mitigating actions in relation to the demands on local health infrastructure and services. CCGs and STPs/ICSs can work in partnership with public health teams to produce a collective health response.

**Practice Example: Essex approach to HIAs with NHS Estates Partners**

The Essex County Council Public Health Team and NHS estates forums work closely with local authority partners to ensure that the impacts of new development and upstream prevention through primary, GP and community, acute and specialist services can be considered. NHS estates teams, County and local public health teams promote the use of HIAs and health in EIAs to highlight potential impacts from proposals.

## 3. Developing HIA policy and guidance

3.1 Local authorities are encouraged to adopt policies that require an HIA to be carried out for certain types of developments in their local plan or spatial development processes. Such a requirement may support local health and wellbeing priorities ([Annex 2](#)) as well as the local health and wellbeing policy. An HIA policy requirement may also support other health-promoting policies such as those relating to sustainable transport, sport and play, housing, access to healthy and affordable food and green infrastructure.

3.2 To ensure a robust policy (within strategic or local plans) the policy must meet the soundness tests as defined in the NPPF (5) which are:

- positively prepared – providing a strategy which, as a minimum, seeks to meet the area’s objectively assessed needs
- justified – an appropriate strategy, taking into account the reasonable alternatives, and based on proportionate evidence
- effective – deliverable over the plan period
- consistent with national policy – enabling the delivery of sustainable development in accordance with NPPF policies

[Annex 3](#) provides examples of adopted strategic and local planning policies on HIAs.

3.3 The local authority can adopt necessary guidance, such as an SPD, which provides more details regarding when and how to carry out HIAs and the range of health and wellbeing considerations to include in the HIA scope. The SPD should be developed collaboratively by planning and public health teams and involve stakeholder and public consultation in line with planning regulations.

[Annex 4](#) provides local HIA guidance examples. [Annex 5](#) provides a SPD template structure.

3.4 Planning policies and SPDs can introduce triggers that require an HIA to be submitted as part of a planning application where evidence demonstrates the development impacts can be expected to be significant on sensitive receptors. The process of determining local triggers should be evidence-based and follow the steps below (and summarised in [Figure 4](#)).

## Identify local health needs and priorities

3.5 Local health needs and priorities can be identified from:

- local health strategic documents, such as the Health and Wellbeing Strategy
- the local Joint and Strategic Needs Assessment (JSNA) which informs the Health and Wellbeing Strategy and is approved by the Health and Wellbeing Board
- local data sets and intelligence sources, including indicators published in the PHOF and local health profiles
- engagement with wider health and social care partners including: primary care, CCGs, STPs/ICSs and NHS trusts

3.6 A number of tools and databases are available at a national and local level to support the identification of local health and wellbeing needs and priorities, including for health impact monitoring and review purposes. Examples are set out in [Table 4](#). Local authorities can make greater use of data and digital technology to make it easier to access and use this information to inform the HIA process.

**Table 4. Examples of national and local tools and data sources**

<b>Tools and data</b>	<b>Source</b>
Measures of National Wellbeing Dashboard (28)	Office for National Statistics
PHOF and health profiles (25)	PHE
Strategic Health Assets Planning and Evaluation (SHAPE) (29)	PHE
Indices of deprivation (30)	MHCLG
Active Lives, Active People, Active Places data (31)	Sport England
People and Nature survey (32)	Natural England
Food Environmental Accessibility Tool (FEAT) (33)	Cambridge Centre for Diet and Activity Research
UK Implementation of Sustainable Development Goals (34)	UK Government

## Identify population characteristics

3.7 Preventing the negative impacts and maximising positive impacts of a plan, policy or planning application on population groups is key to an HIA. It is important to identify how sensitive and susceptible population groups or areas are to the impacts of a development project, whether positive or negative, for example on Black, Asian and Minority Ethnic (BAME) groups (35).

3.8 From the PHE Health Equity Assessment Tool, different characteristics to consider are (21):

- protected characteristics as defined by the Equality Act 2010: age, sex, race, religion or belief, disability, sexual orientation, gender reassignment, marriage and civil partnership, and pregnancy and maternity (36)

- individual’s socio-economic position, as defined by their education, employment status, income, household composition
- area variations by factors such as deprivation level, service provision, urban/rural
- vulnerable and inclusion health groups for example homeless people, people in prison, or young people leaving care

3.9 The sensitivity of population groups to the impacts of a development project will depend on:

- location and context of the development project
- population needs set out in health needs assessments or other evidence sources
- their importance as identified in local health strategies
- influence and impact from external factors (for example major incidents)

**Practice example: Wakefield Council HIA guidance priority themes by wards**  
 Wakefield Council created guidance and tools to assist planning applicants with the process of carrying out a comprehensive or rapid HIA for planning applications. Its guidance identifies key themes in each of the 21 wards on which HIAs should initially focus.

### Identify health impacts and their potential significance

3.10 Significance is not absolute and can only be identified in relation to the project and its location. Through the identification of major adverse impacts, local authorities can justify the adoption of an HIA policy or guidance. Significance can be determined by the expected magnitude of the health and wellbeing impact on specific population characteristics (Table 5). These may be positive (beneficial), neutral (no discernible change), or negative (adverse), direct or indirect, cumulative, permanent or temporary (short, medium or long term).

**Table 5. Significant impact**

Major adverse	Major benefit	<b>Significant</b> based on: high exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality; majority of population affected; permanent change; and substantial service quality implications. Prevention measures will be required.
Moderate adverse	Moderate benefit	<b>Potentially significant</b> based on: low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity; large minority of population affected; gradual reversal; and small service quality implications. Prevention or mitigation measures will be required.
Slight adverse	Slight benefit	<b>Not significant</b> based on: very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity; small minority of population affected; rapid reversal; and slight service quality implications. Mitigation measures will be required.
Neutral		<b>Not significant</b> based on: negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; and no service quality implication.

## Identify likelihood of impacts

3.10 Identify the likelihood of the impact occurring within specific population groups and its significance (Table 6).

**Table 6. Likelihood of impact**

Definite	Strong direct evidence (for example from a range of qualitative and quantitative sources) or direct evidence from official statistics.
Probable	Good direct evidence (for example from a range of qualitative and quantitative sources) to support the impact.
Possible	Direct evidence to support the impact but drawn from limited source(s) (for example grey literature, news articles, blogs or commentaries).
Unlikely	No direct evidence but issue highlighted as a potential impact.

## Determine local HIA triggers

3.11 Understanding the significance of health impacts on population groups or sensitive receptors will allow each local authority to determine whether an HIA will be needed. This allows a range of local triggers or thresholds to be set. These triggers or thresholds provide clarity to planning applicants as to what development projects require an HIA, including suggestions of potential mitigation measures such as planning conditions or planning obligations.

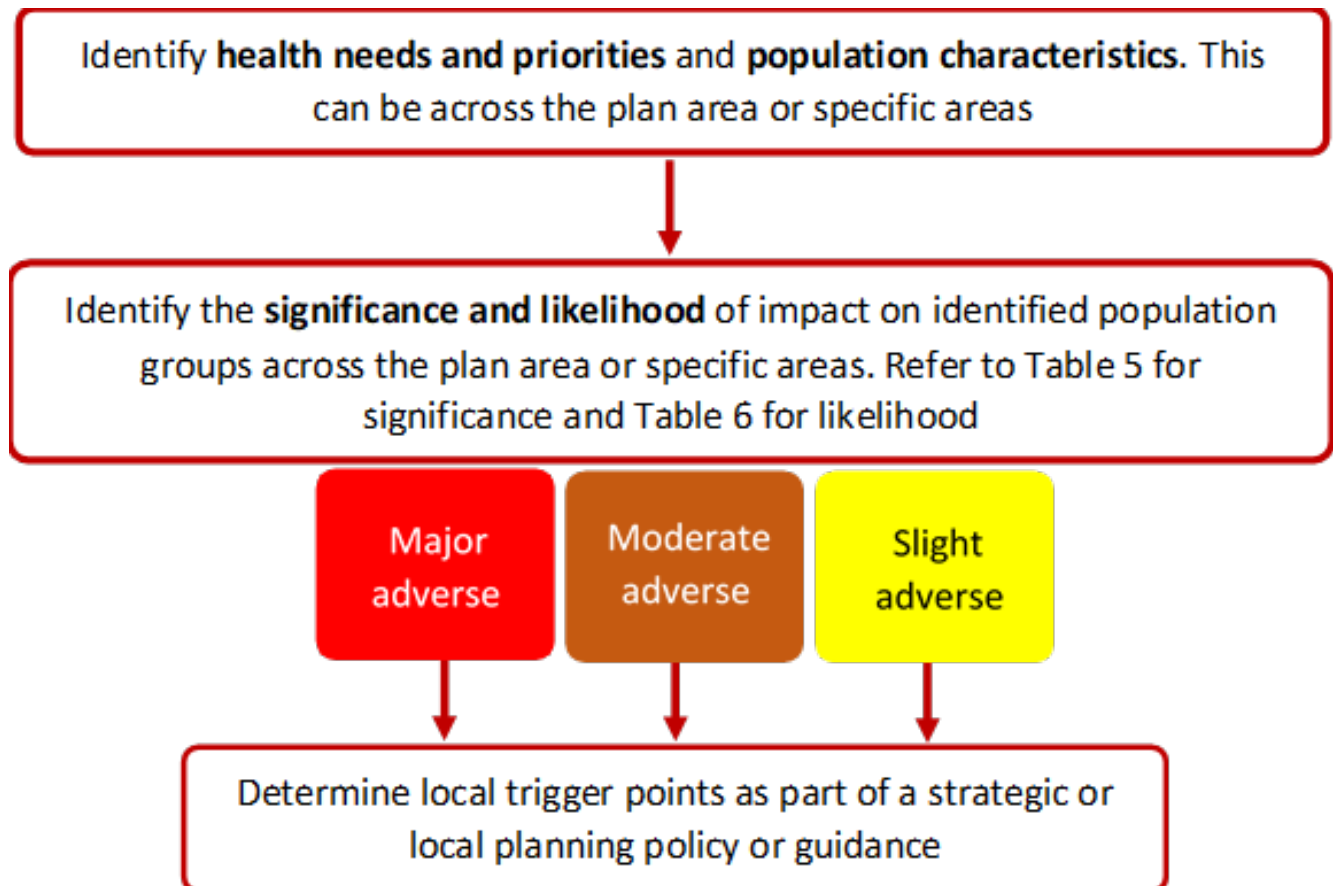
3.12 When developing strategic and local planning policies and guidance, LPAs can have regard to:

- specific locations with poor physical and mental health outcomes
- opportunities to maximise health impact on the wider determinants such as, but not limited to, socio-economic indicators, physical activity, housing, access to healthy food, access to green spaces, access to health and care services and social infrastructure
- proximity to locations where there is a higher risk of impact on the physical and mental wellbeing of vulnerable population groups such as children and young people, disabled people and older people
- proximity to locations where there is and will be potential to increase people's exposure to hazards such as air and noise pollution, land and water contamination
- being aware of triggers set in other assessments such as for EIA developments (37) or major developments for design and access statements (38)
- further information requirements to support decision-making as part of a prior approval application, such as office to residential development, where there may be impacts on matters identified in regulations for example transport and traffic impact, noise, access to natural daylight and other amenity issues (39)

3.13 Many local authorities have already defined local triggers as part of an HIA policy in their local plan (see examples highlighted in [Annex 3](#)). Example triggers are:

- size – ‘major’ developments defined as 10+ dwellings / area over 0.5 hectares or a floorspace of over 1,000sqm / area of 1 hectare, and major infrastructure
- use – developments which include uses for education, health and social care, leisure or community, A5 hot-food-takeaways or other food retail, and betting shops
- location – sites in areas of high deprivation, fuel poverty, poor health, elderly or vulnerable groups, levels of childhood obesity using the PHE Wider Determinants tool

**Figure 4. Process of determining the need for an HIA**





## 4. Is an HIA required?

4.1 This section describes how to carry out an initial screening stage to determine whether an HIA is required, within the parameters of the PPG and any adopted HIA policy. This section will be useful for those without an HIA policy in strategic or local plans, or for those who are in the process of developing their local triggers or thresholds. For local authorities with established HIA policy and triggers, this stage may not be required. If an application triggers the need for an HIA then those local authorities can move onto the scoping stage in [Section 5](#).

4.2 The objectives of this process are firstly to identify the expected health impacts and effects on population groups and their significance, and secondly to conclude whether a standalone HIA is justified in planning terms (see [Figure 5](#)).

4.3 The screening stage can also be carried out to determine whether a development project requires an EIA in accordance with the EIA Regulations (37). The EIA Regulations require consideration of significant impacts on, amongst others, population and human health. Most development projects will not be subject to an EIA.

### Identify policy requirement for HIA

4.4 This step establishes whether a development project triggers the requirement for an HIA to be carried out, based on a policy and trigger in strategic or local plan or a SPD. If an HIA is required, then proceed to scoping ([Section 5](#)). If there is no policy requirement for an HIA currently in place, it may still be justified to progress screening to determine if an HIA should be required based on significant impacts. An alternative option would be to seek to align an HIA with existing assessment requirements, such as design and access statements.

### Identify health considerations and population characteristics

4.5 Determine the potential health impacts and effects of the proposed development using the information provided in the health and wellbeing outcomes table ([Annex 2](#)). A range of population groups should be considered (as outlined in [paragraph 3.8](#)). Local authority planning, and/or public health teams are best placed to carry out this step.

### Identify significance and likelihood of these impacts

4.6 Once the range of anticipated health impacts and effects, and their relevance to different population groups, have been identified, it is necessary to determine their potential significance. Significance is not absolute and can only be identified in relation to individual development projects and their unique location and context. The potential

significance of impacts will allow each local authority to determine, subject to their own needs, whether an HIA is justified.

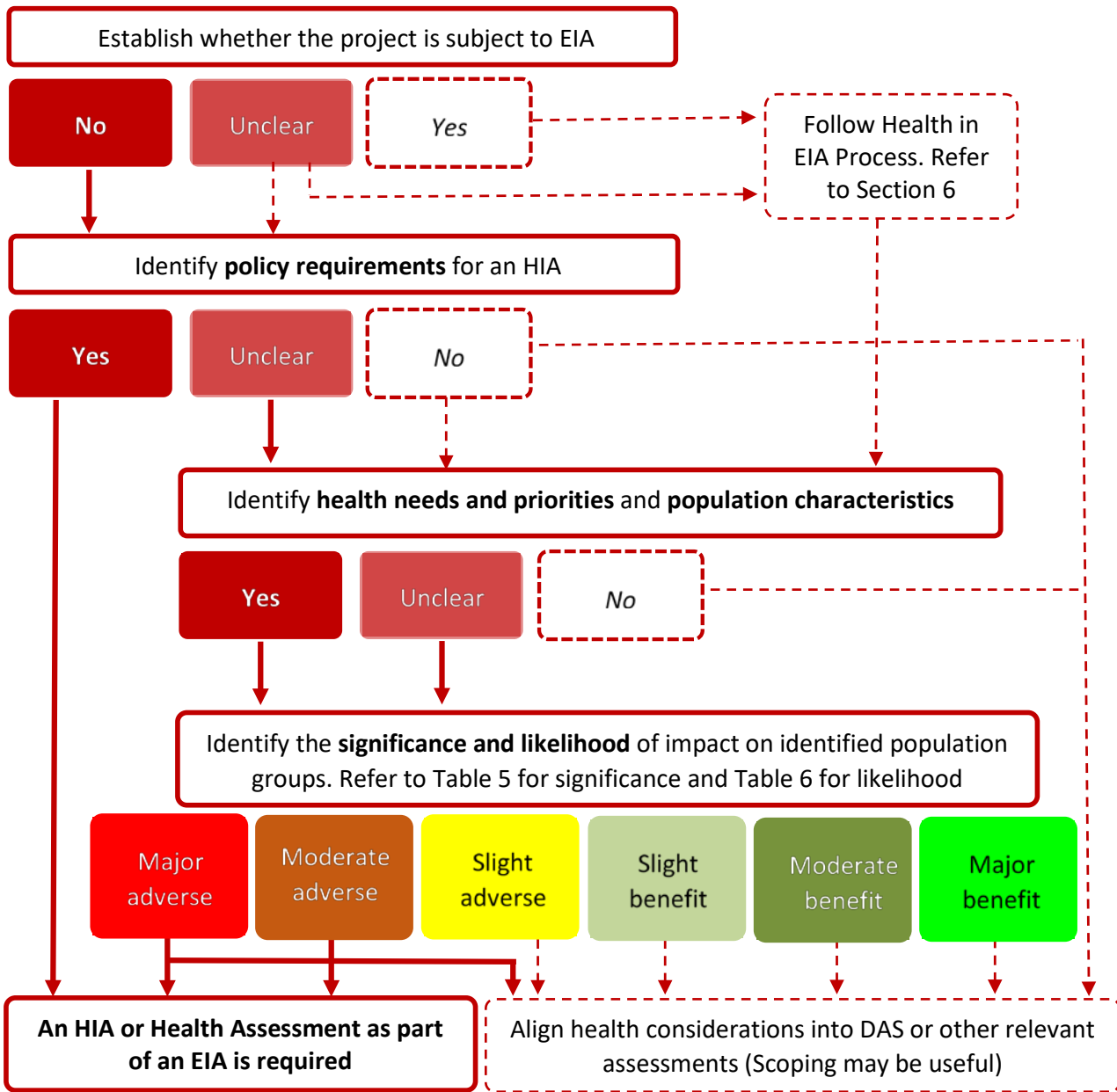
4.7 Local JSNAs and other supporting intelligence sources, such as the wider determinants and health inequalities PHE Fingertips tools, can inform this stage. Using [Table 5](#) and [Table 6](#) can help local authority public health and/ or planning teams establish whether a potential impact would be considered significant for each health and wellbeing consideration individually or collectively, and their likelihood of occurring.

### Determine whether an HIA is justified

4.8 Discussions between the local authority public health team, planning policy team, and the development management team, during pre-application, can then take place to determine whether an HIA is justified. Discussions can be framed according to:

- policy compliance – consider whether an HIA can help meet local policy requirements such as on green spaces, transport or housing
- proportionality – consider whether undertaking an HIA would be fair and reasonable to the local threshold set in the previous task, and that it is feasible to conduct an HIA prior to submission with a planning application and for LPAs to review it for decision-making
- alternatives – consider whether it may be appropriate to integrate an HIA into, or draw on relevant health and wellbeing elements from, existing and alternative assessments such as EIA or design and access statements, following the scoping advice
- the role of the public health teams – such as providing HIA guidance to planning applicants or quality assurance of the submitted HIA

**Figure 5. Process of screening for planning applications**



This figure is a process diagram setting out steps to screen health impacts.

First, establish whether the project is subject to EIA. If yes, follow health in EIA process. If no and unclear, secondly identify HIA policy requirements. If no, align health into existing relevant assessments. If yes, go to undertake an HIA, or unclear go to thirdly, identify health needs and priorities and population characteristics. If no, go to align health into existing assessments. If yes or unclear, go to fourthly identify impact significance and likelihood.

## 5. Establishing the scope of an HIA

5.1 Local authority public health and planning teams can assist planning applicants to outline an HIA approach in detail, in terms of its objectives, scope of health and wellbeing considerations and timescales for completion. Planning applicants may undertake engagement activities, such as meetings or workshops with other wider health and social care partners, or with other experts and the public to better understand their needs in relation to the plan or development project.

5.2 Local authority public health and planning teams will not usually carry out an HIA assessment. However, they can provide advice, for example during pre-application, to planning applicants on the best ways to consider the health impacts of the plan or development project.

### Determine the scope of health and wellbeing considerations

5.3 Identify health and wellbeing considerations to be included in the HIA. Refer to the evidence set out in national and local data sources (see [Table 4](#) and [Annex 2](#) to inform this process):

- for plan-making, this task informs the issues and options, and preferred option, and helps to identify the focus of health monitoring in the Authority Monitoring Report (AMR)
- for planning applications for developments, if impacts have already been identified in the screening process or as part of an HIA trigger policy (and as part of screening of an EIA project), this task finalises the scope of issues to act upon

### Determine type of HIA needed

5.4 The Screening stage has already established that an HIA is needed. The appropriate type of HIA (comprehensive, rapid or desktop) is determined during the Scoping stage.

### Identify planning interventions

5.5 The following resources provide evidence on how the built and natural environment influences health, as well as identify the planning interventions (relevant both to planning policy and development projects) that support action on the wider determinants of health and wellbeing: [PHE's Spatial Planning for health evidence review](#) (26), [Building for a Healthy Life development benchmark](#) (40), [NHS London HUDU Rapid HIA Tool](#) (14), [Sport England Active Design guidance](#) (41) and the [Livewell Development](#)

**Accreditation** (42). The interventions cited in these resources can be required as prevention and mitigation measures when recommended by an HIA.

### **Use the HIA Scoping Framework in Annex 6**

5.6 The framework in **Annex 6** serves as a roadmap for HIA preparation and can be locally-adapted to plan-making or planning applications according to local needs and priorities. This scoping framework may be made available for public and wider stakeholder review during consultation and engagement.

## 6. Integrating an HIA with other assessments

6.1 In certain circumstances, local authorities may prefer to integrate an HIA with other assessments. This integrated approach can be an alternative option (to a standalone HIA) for considering the health and wellbeing impacts of a plan or planning application. The health scoping framework in [Annex 6](#) is intended to support local public health and planning teams to explore how health and wellbeing considerations can be integrated into the processes of other assessment requirements.

6.2 There are a range of statutory and policy requirements for assessments to be carried out when a new plan or planning application is proposed. These provide an opportunity to consider health, without the need for a separate and standalone HIA. In seeking to integrate an HIA with other assessments, certain considerations (in addition to the information set out earlier in this guide) may be useful to ensure the quality of the health component of the assessment. These are:

- understanding the local population's physical and mental health needs
- promotion of health equity by identifying and protecting population groups at risk of the negative impacts of development
- meeting local health and wellbeing priorities
- proportionate assessment of the anticipated impacts (positive and negative)
- engagement with wider health and social care partners (for example; primary care, CCGs, STP/ICS, local NHS Trust)
- development of SMART (Specific, Measurable, Achievable, Relevant, Time bound) recommendations for impact prevention, reduction, mitigation and enhancement
- identification of measures to assist the monitoring and evaluation of impacts

### Opportunities to integrate health in a SA/SEA for plan-making

6.3 Local authorities are required to undertake a SEA to assess the effects of the plan on population and human health (43). A SA is also required for local plans and spatial development strategies to ensure they contribute towards sustainable development and incorporate SEA requirements. In practice, local authorities usually adopt an approach of integrated SA and SEA in line with legislative and NPPF requirements.

6.4 When developing local plans and policies (plan-making), local authorities determine the health impacts to be considered. It is a judgement call as to whether a standalone HIA is needed and would add value to the SA/SEA assessments, or an integrated assessment would be a more appropriate approach. Plan documents such as the joint spatial plan between local authorities and the local plan for individual local authorities, are required by law to carry out a SA/SEA during their development.

6.5 **Annex 7** describes where and how an HIA can be integrated into the SA/SEA process as well as the specific opportunities that exist for public health input. This integrated assessment can offer a proportionate and sometimes favourable approach to consider the social, economic, environmental and health factors of a plan or policy.

**Practice example: Health in a sustainability appraisal in East Yorkshire**

A sustainability appraisal (SA) of a city council's local plan in East Yorkshire was carried out with an integrated HIA as it was considered more efficient. The human health chapter considered the likely significant health effects arising from impacts on human health during construction and from the completed development.

### Opportunities to integrate health in an EIA for planning applications

6.6 In May 2017, changes in the UK regulations on EIA clarify that 'population and human health' factors should be considered by EIA. EIAs apply to some development projects, such as housing and commercial developments, but not all developments will meet the threshold of EIA regulations (37). If a development does not require an EIA, previous sections of this guide can help determine if a standalone HIA is required. For projects that require an EIA, there is an opportunity for local authority public health teams to shape the way population and human health are assessed in an EIA through integration with an HIA.

6.7 **Annex 8** describes where and how an HIA can be integrated into the EIA process. Further guidance on how health should be meaningfully addressed in an EIA is provided in PHE's briefing on health in EIA (18), IEMA's health in EIA (19) and addressing health in EIA by IAIA and EPHA (20).

**Practice example: Human health as part of an Environmental Statement in Yorkshire**

An Environmental Statement accompanied a detailed planning application for a major commercial development. The human health chapter considered the likely significant effects with reference to human health during construction and from the completed development. It set out relevant health outcomes and population groups as part of the assessment.

### Integration opportunities in other assessments or requirements for planning applications

6.8 When submitting a planning application, applicants need to undertake and submit a range of assessments. These are set out in local information requirements by the local authority and include; design and access statements, transport, air quality, noise and flood risk assessments. Many of these assessments will need to comply with NPPF and PPG requirements in which the material consideration of health needs and priorities are already explicitly set out.

6.9 Although these assessments may or may not place health and wellbeing as central to their objectives, they can help deliver health and wellbeing benefits. It may be useful to adopt the HIA advice in this guide so that health and wellbeing factors can be adequately assessed.

**Practice example: Essex Livewell Development Accreditation for Developers**

The Livewell Scheme, developed by Chelmsford City Council with Active Essex LDP, Sport England and Essex County Council Public Health, is available to developers for contribution to health and wellbeing. Initially submitted at pre-app as part of an HIA, the awards are a 2-stage design and implementation wellbeing assessment against specially developed criteria.



## 7. Summary

7.1 It is now widely accepted that the health and wellbeing of a population is largely determined by the environments in which people are born, grow, live, work and age. Embedding health within the planning system provides an important opportunity to address the wider determinants of health and improve population health outcomes.

7.2 HIA has been recognised by national planning policy and guidance as an appropriate tool to identify the health impacts of spatial plans and development projects and to develop recommendations to maximise the benefits and minimise harm. When based on evidence of local health needs and with the involvement of local public health teams, an HIA can help address health inequalities by protecting those who are vulnerable to the negative effects of development.

7.3 This guide provides a framework for embedding HIA in the planning process; both in terms of the development of local plans and policies (plan-making), and for informing development projects for housing or other non-residential activities (planning applications). It promotes an approach which is consistent with the rigorous soundness tests applied by planners throughout the planning process. In summary an HIA should:

- maximise positive health impact, minimise negative health impact and enable an overall reduction in health inequalities
- be based on evidence and align with local health and wellbeing needs and priorities
- be delivered within the existing parameters and mechanisms of the planning process
- be proportionate to the significance of impact of the local plan or project proposal on population groups and based on locally determined triggers
- be shaped by opportunities for early and ongoing engagement and involvement by public health teams and wider health and social care partners

7.4 This guide provides local authority public health teams with the necessary information to start formalising the consideration of health and wellbeing outcomes through HIA. It provides local authority planning teams with options to support health and wellbeing, either through a standalone HIA or through an HIA which is aligned and integrated with other statutory assessments. It also supports HIA practitioners to consider a wide range of health and wellbeing impacts within the scope of a standalone or integrated HIA.

7.5 The actions set out need to be considered locally. It will take time and many conversations to establish what works best according to local circumstances. There is already wide recognition and commitment that supporting strong, vibrant and healthy communities is central to the purpose of planning. HIA provides a mechanism to achieve these aims and can support local areas to meet the health and wellbeing needs of current and future generations and promote health equity.

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## Annex 2. Health and wellbeing outcomes in planning

HIA health consideration	Description	Examples of planning principles and policy areas to assess relevant to local context *
<p><b>Reduce health inequalities</b></p>	<p>Health inequalities exist across a range of dimensions or characteristics, including but not exclusive to the Equality Act protected characteristics, socio-economic position, life course stages and geography. These can be affected by different experiences of wider determinants of health, such as housing, environments, and access to health and other services. There are further wellbeing indicators in the national wellbeing dashboard for the different areas of life that describe “how we are doing” as individuals and as communities.</p> <p>Addressing impact on this outcome (that is each of the affected population characteristics) is useful to understand the effect on population and spatial inequalities to target where actions can be beneficial and help monitor effects on people’s general health and wellbeing over time.</p> <p>References:</p> <ul style="list-style-type: none"> <li>• PHE, (2020), Health Equity Assessment Tool (HEAT) (21)</li> <li>• PHE, (2019), Health matters: Prevention - a life course approach (44)</li> <li>• ONS, (2019), <i>National Well-being Dashboard</i> (28)</li> </ul>	<ol style="list-style-type: none"> <li>1. Housing design and affordability</li> <li>2. Access to health and social care services and other social infrastructure</li> <li>3. Access to open space and nature</li> <li>4. Air quality, noise and neighbourhood amenity</li> <li>5. Accessibility and active travel</li> <li>6. Crime reduction and community safety</li> <li>7. Access to healthy food</li> <li>8. Access to work and training</li> <li>9. Social cohesion and inclusive design</li> <li>11. Climate change</li> </ol>
<p><b>Improve mental health and wellbeing</b></p>	<p>The mental health of individuals is influenced by social and environmental factors, such as having the ability to earn enough money, feeling part of a community, access to local services, housing and quality of places. Considerations for those with mental disabilities, such as dementia and autism also require changes in the way places and spaces are designed.</p>	<ol style="list-style-type: none"> <li>1. Housing design and affordability</li> <li>3. Access to open space and nature</li> <li>4. Air quality, noise and neighbourhood amenity</li> <li>6. Crime reduction and community safety</li> </ol>

	<p>Addressing impact on this outcome through, for example the Mental Wellbeing Impact Assessment, can ensure design and management of spaces give parity to mental and physical health needs.</p>	<p>9. Social cohesion and inclusive design</p>
	<p><i>References:</i></p> <ul style="list-style-type: none"> <li>• National MWIA Collaborative, (2011), <i>Mental Well-being Impact Assessment: a toolkit for wellbeing</i> (45)</li> <li>• PHE, (2019), <i>Wellbeing and mental health: Applying All Our Health</i> (46)</li> <li>• PHE, (2018), <i>Dementia: Applying All Our Health</i> (47)</li> <li>• RTPi, (2020), <i>Dementia and Town Planning</i> (48)</li> <li>• APA, (2018), <i>Autism Planning and Design Guidelines 1.0</i> (49)</li> </ul>	
<p><b>Improve diet and weight</b></p>	<p>Obesity affects people across the lifecourse. Children and young people living with excess weight are more at risk of being overweight or obese as adults. Obesity and overweight also affects those in the over 75 age group. Issues should be considered within a whole systems approach tackling both food and active environments. Supporting this outcome can help encourage people to have healthier diets, increase active travel and physical activity in community settings.</p>	<ol style="list-style-type: none"> <li>1. Housing design and affordability</li> <li>2. Access to health and social care services and other social infrastructure</li> <li>3. Access to open space and nature</li> <li>5. Accessibility and active travel</li> <li>7. Access to healthy food</li> <li>8. Access to work and training</li> </ol>
	<p><i>References: PHE, (2020), Using planning to promote healthy weight environments</i> (50)</p>	
<p><b>Improve musculoskeletal health</b></p>	<p>Musculoskeletal (MSK) conditions describe conditions affecting the bones, joints, and muscles, as well as rarer autoimmune conditions such as lupus. Common symptoms include pain, stiffness and a loss of mobility and dexterity, often interfering with people’s ability to carry out their normal daily activities and are the greatest cause of disability in England Global Burden of Disease 2017. With an ageing population, more people will be living with MSK conditions, increasing the burden on the health and social care sector and an impact on the economy. Supporting this outcome in the environment means promoting physical activity in everyday life while minimising causes of physical disabilities.</p>	<ol style="list-style-type: none"> <li>1. Housing design and affordability</li> <li>2. Access to health and social care services and other social infrastructure</li> <li>3. Access to open space and nature</li> <li>5. Accessibility and active travel</li> <li>9. Social cohesion and inclusive design</li> </ol>
	<p><i>References: PHE, (2019), Musculoskeletal Health: A 5 year strategic framework for prevention across the lifecourse</i> (51)</p>	

<p><b>Improve respiratory health</b></p>	<p>Respiratory disease (those affecting the airways and lungs) is a major contributor to the overall life expectancy gap is the third leading cause of death in the UK. They are also a major driver of health inequalities, and much of this disease is largely preventable. This inequality is related to a multitude of factors, such as greater exposure to risk factors (air pollution, poor housing) and variation in healthcare quality and access.</p> <p>Supporting this outcome means understanding factors that increase risk of respiratory illness, and influencing wider policies that affect respiratory health, such as air pollution, housing, and transport.</p> <p><i>References:</i></p> <ul style="list-style-type: none"> <li>• PHE, (2020), <i>Review of interventions to improve outdoor air quality and public health</i> (52)</li> <li>• PHE, (2019), <i>Respiratory disease: applying All Our Health</i> (53)</li> </ul>	<ol style="list-style-type: none"> <li>1. Housing design and affordability</li> <li>2. Access to health and social care services and other social infrastructure</li> <li>3. Access to open space and nature</li> <li>4. Air quality, noise and neighbourhood amenity</li> <li>5. Accessibility and active travel</li> </ol>
<p><b>Improve cardiovascular health</b></p>	<p>Cardiovascular disease (CVD) remains a significant cause of disability, death and health inequalities. Heart attacks and strokes are highly preventable through population level measures, and support for individual behaviour change. Environmental and social factors include employment, housing and air pollution.</p> <p>Supporting this outcome can help you harness the benefits of behaviour change in reducing CVD risk - this includes lifestyle factors such as physical activity and obesity.</p> <p><i>References: PHE, (2019), <i>Cardiovascular disease prevention: applying All Our Health</i> (54)</i></p>	<ol style="list-style-type: none"> <li>2. Access to health and social care services and other social infrastructure</li> <li>3. Access to open space and nature</li> <li>4. Air quality, noise and neighbourhood amenity</li> <li>5. Accessibility and active travel</li> </ol>
<p><b>Protect environmental health</b></p>	<p>Protection of the public's health through the environment on issues such as road accidents, air, noise and light pollution, land and water heavy metal and chemical poisoning from areas such as contaminated brownfield sites, extreme hot and cold weather, and community safety, are determinants that require consideration.</p>	<ol style="list-style-type: none"> <li>1. Housing design and affordability</li> <li>4. Air quality, noise and neighbourhood amenity</li> <li>6. Crime reduction and community safety</li> <li>10. Minimising the use of resources</li> <li>11. Climate change</li> </ol>

	<p>Addressing impacts on this outcome can help identify, assess and control factors in the environment that protects the public's health from radiation, chemicals, and other natural and human-made hazards.</p>	
	<p><i>References:</i></p> <ul style="list-style-type: none"> <li>• PHE, (2019), Environmental public health strategy. A PHE environmental public health service fit for the challenges of 2020 and beyond (55)</li> <li>• CIEH, (2017), <i>Planning &amp; Noise Professional Practice Guidance. Planning &amp; Noise New Residential Development</i> (56)</li> </ul>	
<p><b>Provide access to health and care infrastructure and services</b></p>	<p>Considering the future demands on capital and revenue requirements for the full range of health and care services (from GPs to other specialist services), particularly large-scale housing growth is critical to supporting current activities by local healthcare commissioners and providers. Supporting this outcome can also help them set out strategic overview of NHS services that may change in the future.</p>	<ul style="list-style-type: none"> <li>2. Access to health and social care services and other social infrastructure</li> <li>5. Accessibility and active travel</li> <li>8. Access to work and training</li> </ul>
	<p><i>References:</i></p> <ul style="list-style-type: none"> <li>• NHS England, (2019), <i>Putting Health into Place: Principles 9 – 10 Develop and Provide Health Care Services</i> (57)</li> <li>• NHSI, (2018), <i>Securing section 106 and community infrastructure levy funds</i> (58)</li> </ul>	

\* Based on NHS London HUDU Rapid HIA Tool (14) as it provides a useful starting point for more details and guidance



## Annex 3. Strategic and local HIA policies and triggers

Some local authorities have adopted HIA local plan policies on the use of HIAs. See examples below.

<b>Coventry</b>	<p><b>Local Plan Policy HW1: Health Impact Assessments</b></p> <ul style="list-style-type: none"> <li>▪ The use of land for mineral-working deposits</li> <li>▪ Waste development</li> <li>▪ All forms of residential development where:               <ul style="list-style-type: none"> <li>(i) Number of homes to be provided is 150 or more</li> <li>(ii) Site area is 5 ha or more</li> </ul> </li> <li>▪ All forms of urban development (not involving housing) where:               <ul style="list-style-type: none"> <li>(iii) The area of development exceeds one hectare</li> <li>(iv) In the case of industrial estate development exceeds 5 ha</li> </ul> </li> </ul>	<p>Coventry City Council Local Plan (2017), with further detail included in the Health Impact Assessment SPD</p>
<b>Greater Norwich</b>	<p><b>Joint Core Strategy Policy 7: Supporting Communities</b></p> <ul style="list-style-type: none"> <li>▪ In areas providing over 500 dwellings</li> <li>▪ In areas of complexity that will be masterplanned</li> <li>▪ Over 100 dwellings in areas not identified in the Joint Core Strategy</li> </ul>	<p>Local Plan: Joint Core Strategy for Broadland, Norwich and South Norfolk (2014) with more detail available in the Health Impact Assessment Advice Note (2012)</p>
<b>London</b>	<p><b>GG3 Creating a healthy city (D)</b></p> <p>Assess the potential impacts of development proposals and Development Plans on the mental and physical health and wellbeing of communities, to mitigate any potential negative impacts, maximise potential positive impacts, and help reduce health inequalities, for example using HIAs</p>	<p>The London Plan. Intend to Publish Spatial Development Strategy for Greater London (December 2019)</p>
<b>Plymouth and South West Devon</b>	<p><b>Policy DEV1 Protecting health and amenity</b></p> <p>Requiring a Health Impact Assessment to be submitted as part of any Environmental Statement submitted in relation to planning applications with a likely significant health impact.</p>	<p>Plymouth and South West Devon Joint Local Plan (March 2019)</p>
<b>South Cambridgeshire</b>	<p><b>Local Plan Policy SC2: Health Impact Assessment</b></p> <ul style="list-style-type: none"> <li>▪ Development of 20 or more dwellings</li> <li>▪ Applications for 1,000 sqm or more floorspace</li> </ul> <p>*For developments over 100 dwellings or 5,000 sqm a full HIA is required. For developments between 20 and 100 dwellings or 1,000 to 5,000 sqm of floorspace an extended screening or rapid HIA can be undertaken</p>	<p>South Cambridgeshire Local Plan (2018) with more detail available in the South Cambridgeshire District Council, Local Development Framework HIA SPD (2011)</p>
<b>Tower Hamlets</b>	<p><b>Local Plan Policy D.SG3. Health impact assessments</b></p> <p>Developments required to complete and submit a rapid health impact assessment:</p> <ol style="list-style-type: none"> <li>a. Major development within an area of sub-standard air quality</li> <li>b. Developments which contain any of the following uses:</li> <li>c. Developments of a scale referable to the Greater London Authority</li> </ol>	<p>Tower Hamlets Local Plan 2031: Managing Growth and Sharing Benefits (January 2020)</p>

## Annex 4. Local HIA guidance and SPDs

Some local authorities with HIA triggers in place provide guidance as to how an HIA should be carried out. See examples below.

<b>Camden</b>	When developments trigger a rapid HIA, applicants are advised to use the NHS London Healthy Urban Development Unit Rapid HIA Tool. For larger scale developments that trigger a comprehensive HIA, developers should contact Camden and Islington Public Health through their Development Management team for guidance and advice on the HIA and impacts on which to focus.	<a href="#">Camden Health impact assessments in planning applications webpages (accessed June 2020)</a>
<b>Coventry</b>	Coventry City Council's HIA SPD provides information and guidance on completing the health toolkit and HIA. It also identifies sources of data for applicants to consider and provides examples of health impacts of the built environment to be considered as well as examples of recommendations for mitigating negative impacts and enhancing positive ones.	<a href="#">Coventry City Council HIA - Technical Guidance SPD (accessed June 2020)</a>
<b>East Devon</b>	East Devon District Council's (EDDC) Environmental Health Officers have tailored a local HIA tool and guidance document which they request developers use for completing an HIA. All submitted HIAs will be evaluated by EDDC staff against local priorities and health issues, as identified in the local JSNA.	<a href="#">EDDC Health Impact Assessment Webpages (last updated March 2020)</a> <ul style="list-style-type: none"> <li>• Health Impact Assessment Tool (2017)</li> <li>• Guidance for applicants (2017)</li> <li>• Summary of local health considerations (2017)</li> </ul>
<b>Essex</b>	The 2008 Essex Planning Officers' Association Health Impact Assessment guide has been up-dated and now includes the wider Essex Healthier Places guidance.	<a href="#">The Essex Design Guide. Health impact assessments (2020)</a>
<b>Halton</b>	Two options for applicants who need to submit an HIA. The preferred option is to contact local public health staff who are trained in conducting desktop or rapid HIAs, alternatively an independent HIA can be commissioned.	<a href="#">Halton Borough Council, Local guidance for developers and their agents wanting to conduct a HIA (2014).</a>
<b>Sunderland</b>	Sunderland City Council has produced HIA developer guidance (2020) to provide applicants with the detail that is expected to be included with an HIA that is submitted to the council in support of a planning application. The guidance includes an HIA Assessment Matrix.	<a href="#">Sunderland City Council Health Impact Assessment Developer Guidance (2020) an HIA Assessment Matrix</a>
<b>Wakefield</b>	Wakefield's Public Health Team have created an HIA for planning toolkit to assist planning applicants in the process of carrying out an HIA for a development project. The toolkit contains a tool and guidance for undertaking a rapid or a comprehensive HIA. Additional advice can be sought from Wakefield's Health Improvement Team.	<a href="#">Wakefield Council's Health Impact Assessment and Spatial Planning Webpages</a> <ul style="list-style-type: none"> <li>• Rapid HIA tool and tool guidance, (no date)</li> <li>• Comprehensive HIA tool and tool guidance, (2019)</li> </ul>
<b>Worcestershire</b>	Worcestershire County Council Public Health Team has developed a HIA in planning toolkit for planning professionals, developers and neighbourhood groups which includes a guide to the HIA process, useful data sources, practice examples and an HIA matrix for planning.	<a href="#">Worcestershire County Council Health Impact Assessment Planning Toolkit (2016)</a>

## Annex 5. Local HIA guidance template

The structure below is intended as a brief guide for local teams to develop their own HIA guidance and toolkits.

Indicative sections	What should be included?	Useful resources
<b>Introduction</b>	<ul style="list-style-type: none"> <li>• What is an HIA and why is it an important tool?</li> <li>• Describe the national, strategic and local policy context for healthy planning and use of HIAs</li> <li>• Make the case for HIA as a key lever for action on the wider determinants of health</li> </ul>	<ul style="list-style-type: none"> <li>• NPPF and PPG</li> <li>• Joint Health and Wellbeing Strategy</li> <li>• PHE Spatial planning for health</li> <li>• Resources from the TCPA, the Institute of Health Equity; including “the Marmot Reviews”</li> </ul>
<b>Local HIA requirements</b>	Describe when an HIA will be required locally, determined by: <ul style="list-style-type: none"> <li>• Local HIA triggers</li> <li>• HIA screening stage (state whose responsibility it is to complete the screening stage)</li> </ul>	<ul style="list-style-type: none"> <li>• See examples provided in <a href="#">Annex 3</a> and <a href="#">Annex 4</a></li> </ul>
<b>HIA process and assessment guidance</b>	<ul style="list-style-type: none"> <li>• Describe the types of HIA &amp; when these are required</li> <li>• Describe the 5 stages of an HIA and include who is responsible for each stage</li> <li>• Include / reference an assessment guide / toolkit to support its completion</li> </ul>	<ul style="list-style-type: none"> <li>• Use <a href="#">Annex 6</a></li> <li>• NHS London HUDU Rapid HIA Tool</li> <li>• WHIASU practical guide</li> </ul>
<b>Local population health context</b>	<ul style="list-style-type: none"> <li>• Include a list of planning and health priorities that the HIA should address</li> <li>• It may be possible to consider different priorities for different wards (see Wakefield example)</li> </ul>	<ul style="list-style-type: none"> <li>• Use <a href="#">Annex 2</a></li> <li>• Local Plan / Spatial Plan; other strategic documents relating to air quality, transport, food environment, green infrastructure.</li> <li>• Relevant local JSNA chapters</li> </ul>
<b>Quality assurance</b>	Ideally an additional quality assurance stage should be included between the ‘Assessment’ and ‘Reporting’ stages	<ul style="list-style-type: none"> <li>• WHIASU quality assurance framework</li> </ul>
<b>Implementation</b>	Include how HIA recommendations will be implemented and any monitoring & evaluation expectations of the developer / planning applicant	-
<b>Sources of health evidence</b>	Include useful sources of health evidence to support the assessment	<ul style="list-style-type: none"> <li>• See <a href="#">Table 4</a></li> <li>• Relevant JSNA chapters</li> </ul>
<b>Further information</b>	<ul style="list-style-type: none"> <li>• Provide examples of quality HIAs</li> <li>• Indicate how further support can be accessed</li> </ul>	<ul style="list-style-type: none"> <li>• HIA gateway (currently archived)</li> <li>• WHIASU</li> </ul>

## Annex 6. HIA scoping framework for plan or development project

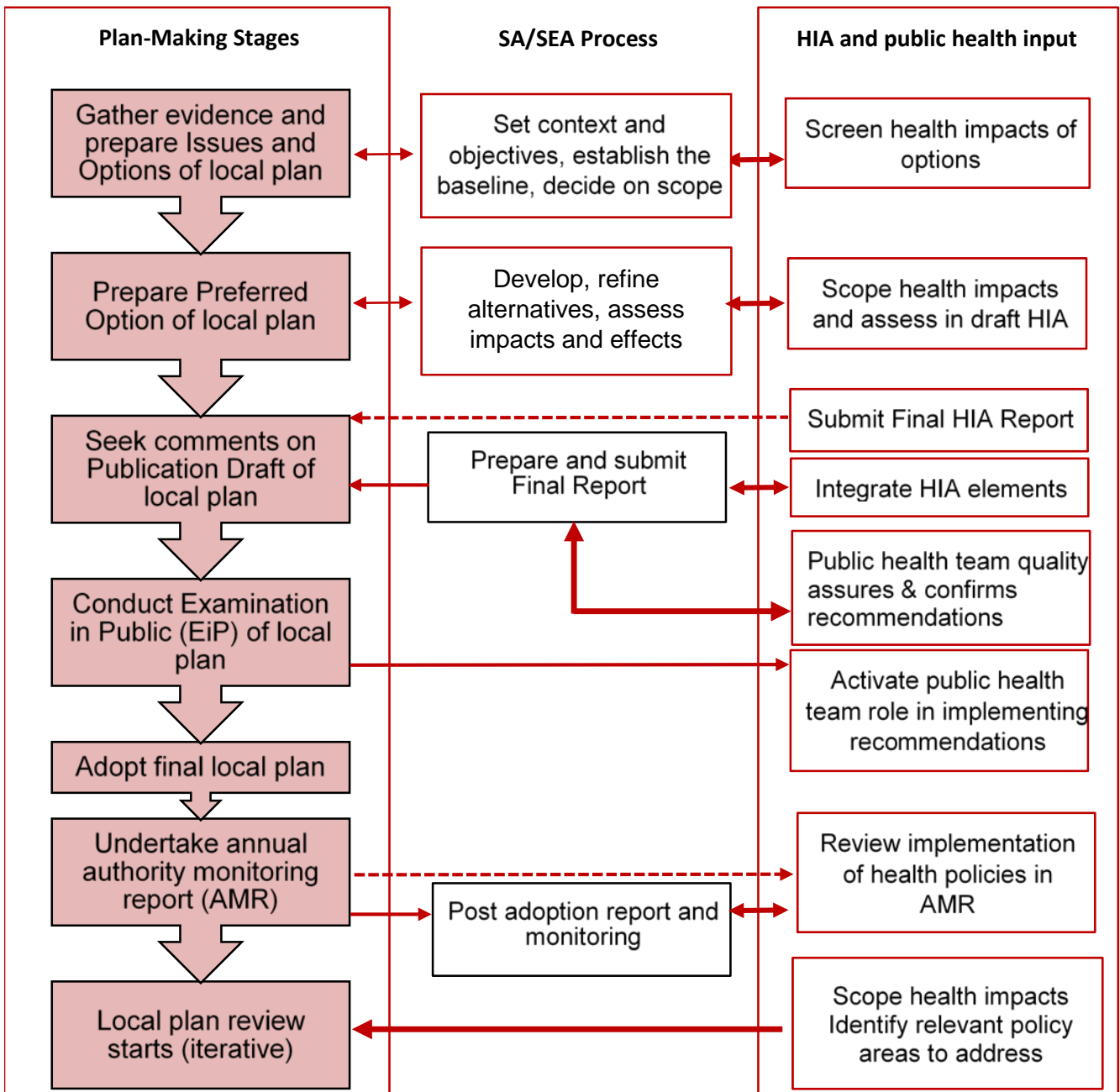
This framework can be adapted to meet local policy requirements, the type of HIA to be used and the type of plan/ development project. This will help to identify and prioritise those impacts on health and wellbeing outcomes to focus on during the assessment and reporting stages of an HIA or integrated assessment.

Scoping questions (Adapt the scope and scale of the questions to the plan or project)	Assessment response		
<p><b>1. Describe the baseline of the plan or development project</b></p> <ul style="list-style-type: none"> <li>• How does the JHWS informed by the JSNA or any other plans and policies that are/may be relevant and influence / determine what health issues should be considered?</li> <li>• Are there any health issues that are addressed in another assessment and do not need to be covered again but integrated or aligned during the Assessment stage?</li> <li>• Is data on the state of physical &amp; mental health &amp; wellbeing available to inform the process?</li> <li>• What different development options or alternatives have been/ should be considered?</li> </ul>	Descriptions		
<p><b>2. Identify national, regional and local planning and health policy compliance</b></p> <ul style="list-style-type: none"> <li>• Are there issues relating to policy compliance with the national policy, strategic/ local plan and health strategies?</li> </ul>	List		
<p><b>3. Identify HIA health outcomes (refer Annex 2)</b></p> <ul style="list-style-type: none"> <li>• How relevant are each of the health and wellbeing outcomes set out in Annex 2?</li> <li>• Are there other issues that should be identified and considered?</li> </ul>	Description and outcomes		
<p><b>4. Identify impact on people or places</b></p> <ul style="list-style-type: none"> <li>• How significant are the population groups to the impacts arising from the plan or development project?</li> <li>• What is the likelihood?</li> <li>• What is the extent of impact and duration (short, medium and long-term permanent and temporary) etc?</li> </ul>	<i>Significance of impact (Table 5)</i>	<i>Likelihood of impact (Table 6)</i>	<i>Duration</i>

<p><b>5. Identify wider determinants of health to be considered in planning policy or projects</b></p> <ul style="list-style-type: none"> <li>• What are the relevant planning issues, policy areas and design elements to assess?</li> <li>• If impacts can be not avoided, what mitigation measures may be required?</li> </ul>	<p><i>Description and outcomes</i></p>
<p><b>6. Undertake stakeholder and public participation</b></p> <ul style="list-style-type: none"> <li>• How will the HIA process align with consultation requirements proportionate to the type of HIA?</li> <li>• How should the report be made available to other agencies and the public likely to be affected?</li> </ul>	<p><i>Description and outcomes</i></p>
<p><b>7. Recommend preferred option and identify monitoring</b></p> <ul style="list-style-type: none"> <li>• How has the Assessment informed decisions on the plan or project proposal, its options and preferred option?</li> <li>• Will the reasons be provided for selecting the proposal options and the preferred option dealt with?</li> </ul>	<p><i>List and description</i></p>
<p><b>8. Identify monitoring and implementation</b></p> <ul style="list-style-type: none"> <li>• Will the assessment provide recommendations that are S.M.A.R.T., and linked to the impacts identified?</li> <li>• How monitoring and follow-up will be done, resourced, and specify what will be monitored, how, and by whom?</li> <li>• What are the proposed mechanism for quality assurance of the assessment results?</li> </ul>	<p><i>List and action plan</i></p>

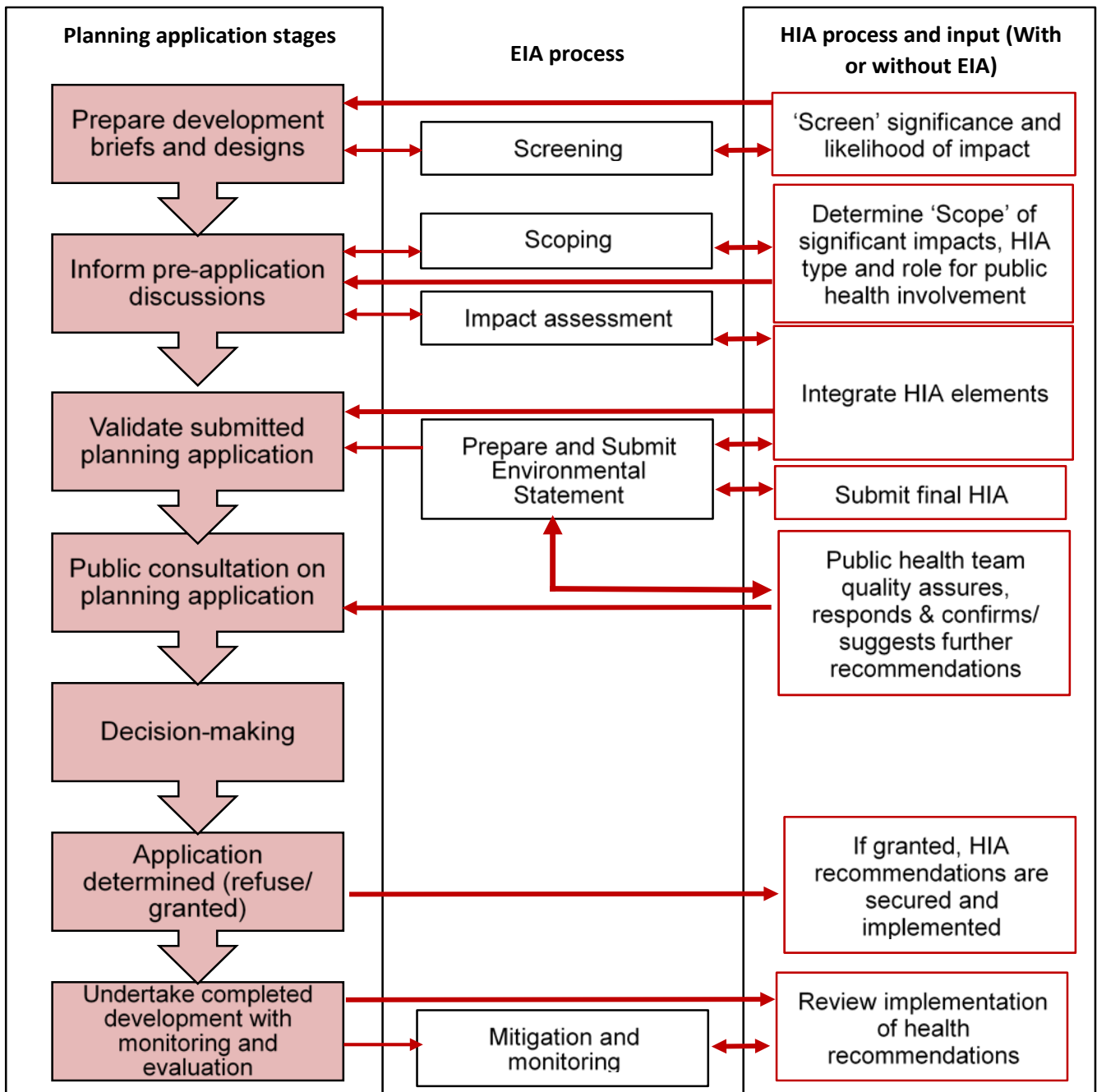
## Annex 7. HIA integration in SA/SEA process

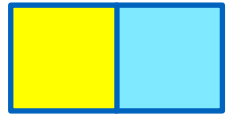
This figure illustrates where and how an HIA can be integrated into the SA/SEA process, as well as being undertaken as a standalone assessment as part of the statutory plan-making stages. For example, during stage 1 of plan-making which involves gathering evidence and preparing issues and options of the local plan, HIA and public health input can help screen the possible health impact of the options.



## Annex 8. HIA integration in EIA process

This figure illustrates where and how an HIA can be integrated into the EIA process, as well as being undertaken as a standalone assessment if it meets a certain local trigger and not subject to an EIA. If an HIA is integrated into an EIA, it should be undertaken to the same quality, scope and scale as a standalone HIA. For example, when preparing development briefs and designs (the first planning application stage), the HIA process and public health input can help screen significance and likelihood of impact.





# Appendix 2: IEMA Health Impact Assessment in Planning Thought pieces from UK practice



Impact Assessment Outlook Journal  
Volume 8: October 2020

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# Health Impact Assessment in Planning

Thought pieces from UK practice



Guest Editor  
Joanna Bagley

Joanna Bagley

Senior Associate Director

Waterman Infrastructure  
& Environment Ltd



# Health Impact Assessment in Planning

Welcome to Volume 8 of the Institute of Environmental Management & Assessment (IEMA) Impact Assessment Outlook Journal which brings together a selection of articles on health impact assessment in planning. With the world still in the midst of the Covid-19 global pandemic, a focus on health has never been more relevant. This edition explores mechanisms by which health may be better integrated into the planning system through the implementation of standalone Health Impact Assessment (HIA) or as an integral part of EIA.

Our living environments and lifestyles have long been known to impact our health and wellbeing and this has been brought into sharp focus by the Covid-19 pandemic and the associated restrictions. Issues such as provision of sufficient indoor and outdoor space, availability of natural lighting and access to greenspace and nature have been more widely recognised as essential to our continued wellbeing whilst our lifestyles and the environmental conditions within which we live have been shown to have a marked impact on our relative vulnerability to the virus.

The planning system has a fundamental role to play in managing and enhancing the spaces and places within which we live and yet, the consideration of health within planning has to date been, at best, variable. Nevertheless, there is now a ground swell of support at a national and local level, for increased consideration of health and wellbeing within the planning system. Now is the time to capitalise on this support to promote

consideration of health in planning and enhance practice.

The first group of articles within this journal explore the use of HIA in planning. In the first article, **David Horrocks** provides an overview of HIA and the associated benefits whilst the second article, from **Michael Chang** and **Carolyn Sharpe** goes on to provide a summary of the new Public Health England document entitled *'Health impact assessment in spatial planning: A guide for local authority public health and planning teams'*<sup>1</sup>. This guide aims to support a variety of stakeholders to improve the coverage and consideration of health in planning. The third article of this journal prepared by **Laurence Carmichael** and **Clare Richmond**, describes why and how the London Borough of Tower Hamlets (LBTH) has implemented a planning policy in relation to HIA and the value of the policy to LBTH.

<sup>1</sup> Public Health England (October 2020) Health impact assessment in spatial planning: A guide for local authority public health and planning teams

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The second group of articles within this journal consider how health can be integrated into EIA. Whilst human health and the environment have always been linked, a specific requirement to consider 'population and human health' was introduced into the most recent EIA Directive. This was transposed into UK law in 2017. Nevertheless, some three years on, the assessment of health impacts in EIA remains variable. Providing health is scoped and assessed well, consideration of these impacts should be able to be successfully incorporated into EIA without the need for a separate standalone HIA. Mechanisms to integrate health into EIA are discussed in the articles prepared by **Rebecca Raby-Smith** and **Tara Barratt** and include expanding the scope of technical topics already typically included in EIA, such as air quality, noise and land quality to consider the wider determinants of health rather than relying solely on standards, to assess impacts.

Whilst a more rigorous approach to assessment of health in EIA is considered to be required, it is nevertheless important to remember that the assessments should remain proportionate to the significance of the effects. In her article, **Ursula Stevenson** considers how a proportionate approach can be achieved, such as through training of both practitioners and stakeholders, effective scoping and the adoption of a digital approach. The final article, prepared by **Rufus Howard**, explores a potentially more radical change to the approach to EIA and structure of the resulting Environmental Statement in order to successfully integrate consideration of health, particularly given the inter-relationships between nearly all topics covered in an EIA and health.

I'd like to thank all the contributors to this Outlook Journal – both those who have agreed to use of previously submitted Quality Mark articles and those who have prepared new articles specifically for this publication. I hope that this edition of the Outlook Journal will stimulate discussion and ultimately lead to enhanced consideration of health and wellbeing within EIA and more holistically through the wider planning process.





# Health Impact Assessment: An Overview

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As a relatively new topic of focus, there is some uncertainty relating to what a Health Impact Assessment (HIA) is and what it can do. This article aims to give an overview of HIAs and the possible health benefits that may ensue.

## What do we mean by 'health'?

When undertaking a HIA, the World Health Organization (WHO) definition of 'health' is generally used as the basis of the assessment;

*"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".*

An important point of note here is that this definition includes physical health, mental health and well being as three connected central elements of health. Therefore due consideration should be given to all three elements together, not just one or two of them in isolation.

## So that's sorted, what is a Health Impact Assessment?

An HIA assesses the potential health impacts that a project or proposal might have on the local population. Whilst other technical assessments might consider potential impacts to health, for example an air quality assessment might consider the impact of more traffic emissions on the respiratory health of local people, an HIA specifically looks to the impacts on

health of the whole proposal. It brings together the health impacts from all technical areas whilst going further to consider the impacts cumulatively.

## A look at the background

One of the key phases of an HIA is understanding the health background to the proposal. In understanding the current health situation for an area, a proposal can be better placed in helping to determine what impacts will occur and how to remove/mitigate them or where possible enhance positive elements.

## You may not know...

A HIA looks at all health impacts - both negative and positive. A lot of proposals can have upsides for the health of local people. An HIA can help identify positive impacts and help to maximise the potential benefits. For example, ensuring that developments promote access to green space might encourage someone to go for a walk thus potentially improving their physical health. If this area is then managed to include some trees or help to establish some wildlife it may bring a more natural feeling to the walk which can help improve mental health and well being at the same time.

## References

[www.who.int/hia/about/why/en/](http://www.who.int/hia/about/why/en/)  
[www.who.int/hia/about/why/en/index1.html](http://www.who.int/hia/about/why/en/index1.html)

### A decision making tool?

In focusing on the possible health impacts of a project or policy, an HIA can be used as a decision making tool for the Local Planning Authority (LPA) to determine a planning application. The process can also be used to inform the development of a policy or strategy. No other assessment mechanism looks to consider the health impacts in such a way therefore it is important that the HIA is undertaken where there is potential for significant negative impacts to health. This will ensure that the potential health impacts are understood before any action is taken.

### The view from the WHO

For the WHO, there are several reasons why HIA should be used. One of the key reasons is that the best available evidence should be provided to decision makers at an appropriate time in the proposal. As with other assessments, if negative health impacts are identified in the early design stages, then designs can be modified to remove or mitigate the severity of the impact. If the HIA is undertaken too late, it can then be difficult to implement changes that make a clear difference for the better.

### Promoting sustainable development

Linked to timely reporting of information, a further key part of HIA is its link to promoting sustainable development. If health impacts are identified early on in a proposal, health can be considered at the same stage as objectives in other areas such as social and economic impacts. This parity can then be used as a basis of moving forward with development that is sustainable across a range of objectives including health rather than health being an afterthought.

### Stand alone assessment or included in the EIA?

This depends on the potential significance of the impacts, the wishes of the LPA and the judgement of the assessor. RSK has projects that have included Health as a chapter within the Environmental Statement whilst others have been undertaken as stand alone health impact assessments.

### Overall benefits for the health of the surrounding area?

Going beyond references to what health impacts occur under each technical banner to instead considering all impacts cumulatively is a great way to further understand how a proposal will impact on health. This more direct focus on health allows further consideration of what impacts might occur and therefore how to remove or mitigate them.

*"An HIA assesses the potential health impacts that a project or proposal might have on the local population."*



Michael Chang

MRTPI, HonMFPH

Programme Manager – Planning and Health

Public Health England

Carolyn Sharpe

MSci, MPH

Specialty Registrar in Public Health

Public Health England



Public Health  
England

# Improving the use of health impact assessments in planning

The coronavirus (COVID-19) pandemic has fundamentally changed the way individuals, families, and society value and interact with the spaces and places in which we live, work and socialise. But it has also exposed the entrenched existing inequalities that exist within and between regions and, in some cases, has increased them further<sup>1</sup>. Those people from lower socio-economic environments are both more likely to have been exposed to the virus and are at greater risk of poorer outcomes if they do become infected. Improving access, experiences and outcomes of NHS and local government in particular for Black, Asian and Minority Ethnic (BAME) communities can be achieved by the use of health impact assessments (HIA)<sup>2</sup>.

An HIA is a tool that can be employed to systematically identify and take account of these environmental changes. An HIA puts people and their health at the heart of the planning process. Its use supports the systematic identification of the anticipated impacts (both benefits and harm) of a new development and informs spatial planning decision making by developing recommendations to address health outcomes including improving mental health and wellbeing, protecting environmental health and providing access to healthcare.

A key aim of HIAs is to reduce health inequalities through action on the wider determinants of health. These determinants are the social, economic, and environmental factors that shape the conditions in which we live. In the ten years since his report on health inequalities was published in 2010<sup>3</sup>, Sir Michael Marmot has confirmed that we are going in the wrong direction; life expectancy has stalled and inequalities are widening<sup>4</sup>. Tackling inequalities is a core priority of those working in public health and therefore employing HIAs to shape the environments in which people live, through engagement with the spatial and environmental planning processes, is a key mechanism for achieving this priority.

HIA is not a new tool and has been applied in a wide range of settings and policy agendas. HIAs have an established international evidence base and its completion reflects a widely accepted 5-stage process; similar to that of SEA and EIA. Research on the use of HIAs in the UK suggested that HIA can be a cost-effective tool with findings on barriers and benefits in terms of process, impact and outcome evaluations<sup>5</sup>. Despite this, HIA is not widely employed in the spatial planning process. For England, there is no legislative or policy requirement for the use of HIAs in planning and the coverage of HIA policy in local plans (produced and adopted

<sup>1</sup> Public Health England, 2020. Disparities in the risk and outcomes of COVID-19

<sup>2</sup> PHE, 2020. Beyond the data: Understanding the impact of COVID-19 on BAME groups

<sup>3</sup> Marmot M, Goldblatt P, Allen J, 2010. Fair society, healthy lives. Institute of Health Equity.

<sup>4</sup> Michael Marmot, Jessica Allen, Tammy Boyce, Peter Goldblatt, Joana Morrison, 2020. Health Equity in England: The Marmot Review ten years on. London: Institute of Health Equity, [www.instituteofhealthequity.org/resources-reports/marmot-review-10-years-on](http://www.instituteofhealthequity.org/resources-reports/marmot-review-10-years-on)

<sup>5</sup> York Health Economics Consortium, 2006. Cost Benefit Analysis of Health Impact Assessment

by local planning authorities) that require planning applications to include an HIA is approximately 30% <sup>6</sup>.

It is through the consideration of the above factors that Public Health England (PHE) is endeavoring to improve the coverage and consistency in the use of HIAs across the English planning system. It seeks to do so within the parameters of national planning policy and guidance which specify the use of an HIA *“where there are expected to be significant impacts”* <sup>7</sup>, and in the spirit of supporting the Planning for the Future White Paper’s proposal for a streamlined planning system and environmental assessment process<sup>8</sup>.

By Winter 2020, PHE intends to publish an HIA in planning guide for England. This has been developed in collaboration with national and local stakeholders, including IEMA. The guide will provide a useful framework to support individual local authority public health and planning teams, planning applicants, impact assessment practitioners, and others involved in the planning process to:

- develop and adopt local planning policies and guidance on the use of HIAs
- consider how the planning process impacts population health, wellbeing and inequalities through the wider determinants of health
- support the consideration of: whether an HIA is required; what the local triggers for their requirement should be; the type of HIA needed; and their alignment with other planning assessments

- support the consideration of the range of health and wellbeing issues to be included in an assessment in line with existing good practice guidance such as from the Wales Health Impact Assessment Support Unit (WHIASU)<sup>9</sup>
- help engage relevant impact assessment practitioners when considering health in impact assessments in line with exiting guidance such as from IEMA<sup>10</sup>.

The overarching message is that agreeing the right HIA process in local policy and guidance will take time and many conversations to establish what works best according to local circumstances. There is already wide recognition and commitment that supporting strong, vibrant and healthy communities is central to the purpose of planning. The use of an HIA in planning can ensure communities’ current and future health and wellbeing needs are met, and local authority public health teams are ready to support planners and impact assessment practitioners in this endeavour.

*“... Public Health England (PHE) is endeavoring to improve the coverage and consistency in the use of HIAs across the English planning system”*

<sup>6</sup> TCPA, 2019, The State of the Union: Reuniting Health with Planning in Promoting Healthy Communities, [www.tcpa.org.uk/the-state-of-the-union-reuniting-health-with-planning-1](http://www.tcpa.org.uk/the-state-of-the-union-reuniting-health-with-planning-1)

<sup>7</sup> MHCLG, 2019, Planning Practice Guidance – Healthy and Safe Communities, [www.gov.uk/guidance/health-and-wellbeing](http://www.gov.uk/guidance/health-and-wellbeing)

<sup>8</sup> MHCLG, 2020, Planning for the Future White Paper

<sup>9</sup> WHIASU, 2012, Health impact assessment: a practical guide

<sup>10</sup> IEMA, 2017, Health in Environmental Impact Assessment A Primer for a Proportionate Approach

Laurence Carmichael

LLB, LLM, PhD PhD

Health Impact Assessment Officer

London Borough of Tower Hamlets

Clare Richmond

BSc (Hons), MSc, PIEMA

Environmental Impact Assessment Officer

London Borough of Tower Hamlets



# Health Impact Assessment Policy in the London Borough of Tower Hamlets

## The basics on Health Impact Assessment

The World Health Organisation (WHO) was the first body to develop the Health Impact Assessment (HIA) process and continues to support HIA as a policy tool. WHO defines HIA as a *"combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population"*. (WHO, 1999)<sup>1</sup>.

The WHO has identified a set of principles for the HIA process adapted to the development management process, as follows:

- **Robust evidence:** Altogether HIA brings a robust evidence base to support the planning decision-making process and more broadly the delivery of Tower Hamlets local plan's healthy place agenda. This is critical as the borough is set for a significant increase in densification with associated environmental, social and economic consequences.
- **Participatory approach:** HIA contributes to a more participatory approach to planning new developments. Tower Hamlets requires detailed HIAs for developments over 150 housing units (and all other developments referable to the Greater London Authority (GLA)) that include community engagement to identify potential health impact and support the improved design of place.
- **Reducing health inequities:** HIA places health and equity at the heart of the place agenda by requiring developers to identify population groups more likely to be affected by their proposed development and promoting housing or neighbourhood solutions for the life course.
- **Promoting sustainable development:** The consideration of environmental health issues in HIAs provides a link between resource management and human health in construction and housing, two sectors which consume a majority of all energy consumed in the economy.

<sup>1</sup> European Centre for Health Policy. Health impact assessment: main concepts and suggested approach: Gothenburg consensus paper. Copenhagen: WHO Regional Office for Europe; 1999.



## HIA policy development in Tower Hamlets

The HIA policy in Tower Hamlets emerged from a shared perspective and development of partnership working between Tower Hamlet's public health and planning teams. The process started with public health identifying place-based health determinants in the Spatial Planning and Health Joint Strategic Needs Assessment<sup>2</sup>, in particular highlighting characteristics of the built and natural environment that impact on inequalities. The assessment showed that while residents have a strong sense of community cohesion and the Borough's demographics and economics make it a diverse and dynamic place to live, there are a number of challenges, such as:

- limited green space compared to the national average;
- high levels of noise compared to London average;
- poor air quality (e.g. the whole Borough is an air quality management area);
- over 19,000 households on the housing waiting list, of which 7,078 (37%) were overcrowded and 52.3% of households on the housing waiting list are families of Bangladeshi ethnic origin;
- the second highest density of junk food outlets near schools in London; and
- 76 betting shops concentrated in areas of high deprivation.

Spatial planning has long been identified as a key policy to tackling environmental health issues in housing, as well as sanitation and access to fresh food. Britain led the way in the 19th century for modern planning to support healthy living (Barton, 2017)<sup>3</sup>. More recently a wealth of evidence has emerged to demonstrate how the place where we live, work and play influences our physical and mental health and well-being (PHE, 2017)<sup>4</sup> and can also influence equality in health (Marmot, 2010)<sup>5</sup>.

The evolution of 'Tower Hamlets Local Plan 2031: Managing Growth and Sharing Benefits'<sup>6</sup> enabled the public health and planning teams to deliver against the recommendation in the spatial planning and health needs assessment to develop the Health Impact Assessment Local Plan Policy D.SG3.

### Policy D.SG3

#### Health impact assessments

1. The following developments are required to complete and submit a rapid health impact assessment as part of the planning application:

- a. Major development within an area of sub-standard air quality (as designated and shown on the Policies Map).
- b. Developments which contain any of the following uses:
  - i. Education facilities
  - ii. Health facilities
  - iii. Leisure or community facilities
  - iv. A5 uses (hot-food-takeaways)
  - v. Betting shops
  - vi. Publicly accessible open space.

2. Developments of a scale referable to the Greater London Authority (as set out in legislation) are required to complete and submit a detailed health impact assessment as part of the planning application.

<sup>2</sup> London Borough of Tower Hamlets. Spatial Planning and Health Joint Strategic Needs Assessment (2016). Available at [https://www.towerhamlets.gov.uk/Documents/Public-Health/JSNA/JSNA\\_Spatial\\_Planning\\_and\\_Health.pdf](https://www.towerhamlets.gov.uk/Documents/Public-Health/JSNA/JSNA_Spatial_Planning_and_Health.pdf)

<sup>3</sup> Barton, H. (2017). City of Wellbeing – A radical guide to planning, Routledge: London.

<sup>4</sup> Public Health England (2017). Spatial Planning for Health An evidence resource for planning and designing healthier places, PHE: London. Available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/729727/spatial\\_planning\\_for\\_health.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729727/spatial_planning_for_health.pdf).

<sup>5</sup> Marmot, Sir M., Allen, J., Goldblatt, P. et al. (2010). Fair Society, Healthy Lives: the Strategic Review of Health Inequalities in England Post-2010 (The Marmot Review). Department of Health: London.

<sup>6</sup> Tower Hamlets Local Plan 2031: Managing Growth and Sharing the Benefits (2020).

To ensure an effective implementation of the new policy, a cross sector programme of work was established, led by Public Health and Development Management, with support from the newly appointed HIA Officer, funded initially for two years. External consultants were also appointed to initiate cross sector dialogue and lead a capacity building programme, through training and development and building a suite of guidance documents for developers, council officers/members and residents to enable greater engagement in the implementation of the Policy. A partnership agreement formalised planning and public health cross sector working. In addition, University College London has started to develop a methodology to evaluate the policy within the next five years.

### Value of HIA in Tower Hamlets

The recent adoption of an HIA policy comes at a time when the significance of the living environment as a determinant of health is increasing through the new context of COVID-19, and the forecast of Tower Hamlets having to accommodate an additional 35,110 homes (or 3,511 per annum) by 2029, the second highest housing target in London. These bring to the fore issues such as room size, noise and housing design as well as access to green infrastructure and promotion of safe active travel which HIA can help consider in the planning process.

For Tower Hamlets, HIA needs to shape the development for its specific locality and the population surrounding it, getting into the detail of design using local residents' experience of the area. This includes, for instance, designing homes to have enough space for dining tables, creating distinctive meeting places, and establishing if there is a local need for textured pavements to provide way finding for those with poor eyesight.

HIAs should work to give greater weight to health in the planning process, to reduce health inequalities and improve health for all, and that means all scales of development covered by our HIA policy due to the specific context of Tower Hamlets.

*“For Tower Hamlets, HIA needs to shape the development for its specific locality and the population surrounding it, getting into the detail of design using local residents’ experience of the area.”*



## Health in EIA

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The EIA Directive (2014/52/EU) was transposed into UK law in 2017, introducing population and human health into the roster of environmental topics to assess in EIAs, presenting us with the challenge of: 'how can we improve consideration of human health in EIA to satisfy the new requirements?' Currently, health is often 'scoped out' of EIA, deferring consideration of health to aspects of other technical assessments, or as a stand-alone HIA. This article looks at how human health is currently dealt with in EIA using examples from two technical topics, Air Quality (AQ) and Land Contamination (LC), and how it could be considered more robustly.

In AQ, standards and objectives are fundamentally set for the protection of human health. For fine particulates with a diameter below 10 microns (PM10), two EU standards<sup>1</sup> have been set in relation to the impact that the length of exposure will have on human health: a short-term, 24-hour limit capped at 50 µg/m<sup>3</sup>, and a long-term, annual average at 40 µg/m<sup>3</sup>.

Importantly, a report<sup>2</sup> suggests a 1 µg/m<sup>3</sup> reduction in fine particulate air pollution in England over the next 18 years could prevent c.50,900 coronary heart disease cases, 16,500 strokes, 9,300 asthma cases and 4,200 lung cancer cases. However, if 28,000-36,000 deaths annually are attributed to long-term exposure to man-made air pollution, should the assessment of AQ-related human health go even further, such as looking more closely at site-suitability, especially for residential schemes?

LC assessments also considered human health before it became a requirement. Indeed, the 'Source-Pathway-Receptor' (SPR) model used is highly valued due to the receptor (human, fauna/flora or environment) being the direct focus. The SPR approach relies on understanding of the pathway(s) along which contaminants travel to arrive at the receptor(s), as well as the impact of different contaminants on receptors. The types and vulnerability of the receptors can therefore be determined, strongly influencing the assessment and driving the stringency of the screening process. For instance, if there is potential for contaminants to come into contact with children's playgrounds, this will require a more rigorous assessment than if the same contaminants were to be present within landscaping around industrial estates.

While AQ does not differentiate between receptors, it does take a 'worst-case' approach, using the thresholds of the most vulnerable population as representatives. For example, the annual average standards<sup>3</sup> applicable to hospitals, schools and care homes also apply to all residential locations. Whilst the impact to human health is embedded in AQ and LC assessments, the effect of these health determinants is not transparent but only implied through the standards set (a proxy), driven by public health evidence. By identifying specific receptors, LC presents a more focused platform from which effects can be more accurately derived. However, all technical assessments need to address this gap.

<sup>1</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0050>

<sup>2</sup> <https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution>

<sup>3</sup> <https://www.gov.uk/government/publications/local-air-quality-management-technical-guidance-laqm-tg-09>

The study of impacts on human health within these two technical assessments is currently taken from a physical stance. There is an opportunity for technical specialists to expand their scope to include the effect they will have on mental health and wellbeing. AQ assessments could explore for example, the effect of dust on anxiety. A gap in the consideration of mental health and wellbeing also lies above the level of technical assessments; learning from HIAs, there is an opportunity to assess the potential impact from a proposed development as a whole, i.e. how will it impact on community cohesion, social justice, indices for mental health etc. HIAs also consider the cumulative effect(s) on health from other technical topics.

In conclusion, there are three key areas in which the assessment of human health in EIA needs to be developed:

1. Translate the impact of health determinants into the effect this will have on health; there is an opportunity for technical specialists to take on this role for their respective topics.
2. Bring together impacts from the technical topics in combination for an overall health and wellbeing perspective.
3. Include other holistic health impacts, such as those concerning mental health and wellbeing and community cohesion.

The latter two deliverables could be addressed in a separate 'Health and Wellbeing' EIA Report chapter.

Human health is already considered to a large extent in EIAs and the specific requirement to include it should not be viewed as challenging but seen as an opportunity to improve EIA practice and the extent that EIA can positively influence proposed developments through effective design, building in appropriate mitigation, responding to health concerns raised in consultation, and supporting broader policy aspirations towards improved environmental quality.

*“There is an opportunity for technical specialists to expand their scope to include the effect they will have on mental health and wellbeing.”*



# Assessing health in EIA – added value and the benefits of quantification

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## Introduction

Nearly three years on from the 2017 EIA regulation update, “population and health” remains a poorly understood topic in the EIA world.

It is clear that assessing health in an environmental context is a niche area of expertise, but a now necessary one. The lack of clarity on how to assess population and health effects can leave practitioners unsure on how best to tackle the topic. Unfortunately, this leaves the population and health topic at risk of failing to effectively mitigate adverse effects on local community health.

While population and health explicitly became part of the EIA regulations in 2017, many inter-related technical disciplines, such as air quality and noise, integrate the protection of human health into their assessments to some degree. After all, the protection of the environment is inherently conducive to protecting human health.

However, we can go further. This is where the inclusion of population and health in the updated EIA regulations adds value. While potential population and health effects are influenced by a wide range of environmental, social and economic health determinants which are scoped on a project-by-project basis, the remainder of this article uses air quality and noise health determinants specifically to demonstrate how an assessment of population and health adds value, including discussion of how and why quantification of health effects is beneficial.

## Air quality

Air quality assessment levels (AQALs) form an important part of air quality assessments, whereby effects on human health receptors are judged on whether AQALs are predicted to be exceeded, how close air quality concentrations are to the AQAL, and the change in concentration as a percentage of the AQAL. While AQALs are set to protect the environment and health, health effects may be experienced for concentrations below these limits, meaning that, based on available evidence there may not be a concentration threshold below which no adverse health effects occur.

The relationship between exposure to air pollution and specific health outcomes is well understood and the evidence base is robust. As such, the application of quantitative assessment methods in these circumstances is particularly beneficial to further communicate the significance of effect on human health.

One approach to assessing health effects associated with changes to air quality is by drawing from and building upon the absolute change in air quality concentrations to calculate predicted changes in specific health outcomes (such as emergency hospital admissions) for the local population.

Specifically, the application of concentration response functions (CRFs) detailed in various consensus assessments, such as the World Health Organisation (WHO) Health Risks of Air Pollution in Europe (HRAPIE) exercise, UK advisory group Committee on the Medical Effects of Air Pollutants (COMEAP) and/or Kings College London's Environmental Research Group.

With the weight of globally recognised concentration response functions and assessment methods, a quantitative population and health assessment can refine the health assessment, better inform the application, and more effectively respond to and address community concerns and risk perceptions.

### Noise

The noise health evidence base is more complex than for air quality as there are both toxicological and subjective parameters which can influence population and health outcomes. Unlike the air quality evidence base, there is an absence of consensus on the effects of noise exposure on health outcomes, which makes the sourcing of information to apply in quantitative assessments far more complex and diverse. Furthermore, RPS choose not to use the well-known WebTAG noise appraisal method of quantifying the health impacts of noise exposure, which assigns a monetary value to each Disability Adjusted Life Year (DALY) lost or gained, as it we do not consider it necessary to monetise health outcomes – which should have substantial weight on their own.

While factors such as absolute change in noise exposure and number of people affected may be taken into consideration by the noise assessment, thresholds for the Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL) generally form the basis to the noise assessment.

Where considered proportionate, quantitative assessment methods can be applied to assessing health effects associated with changes in noise exposure (within RPS this is generally applied to aviation projects only). A quantitative approach provides further context and added value to noise assessment outputs by using the absolute change noise exposure, above a defined LOAEL, to calculate predicted changes in specific health outcomes (such as stroke incidence and mortality) for the local population.

As changes in noise exposure are complex and their impact on health can be influenced by a range of factors (not just being above or below the LOAEL), the application of quantitative assessment methods to assess population and health effects from changes in noise exposure is particularly beneficial to further communicate the significance of effect on human health.

### Conclusion

While there is still a lack of clarity on how to assess population and health effects, overall, the assessment of population and health can provide added value to inter-related topics and help strengthen conclusions using quantitative exposure response calculations to better address community concerns and risk perceptions.

*“While population and health explicitly became part of the EIA regulations in 2017, many inter-related technical disciplines, such as air quality and noise, integrate the protection of human health into their assessments to some degree.”*



# Proportionate Health Assessment in EIA

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In 2017 IEMA produced a strategy for delivering proportionate EIA. The Strategy sets out four strategic themes for action: Enhancing People, Sharing Responsibility, Improving Scoping and Embracing Innovation and Digital. This approach equally applies to health assessment in EIA as discussed below.

**People** – Disproportionate EIA can be a response to a perceived risk of missing key issues or impacts. Investing in professionals involved in all aspects of health in EIA can help avoid a broad assessment. Use of technical leads with professional accreditation, such as membership to the Faculty of Public Health, equally applies to health as it does to other topics. Working in multi-disciplinary teams, it is also useful to have the back-up from other EIA specialists that can advise on health determinants such as noise, air quality and contamination as well as social aspects, to avoid duplication.

Building capacity of EIA stakeholders is equally important. More Local Authorities are now employing officers with a remit covering public health, planning and environment, e.g. Tower Hamlets Council, Cambridgeshire County Council, and Torbay Council, but in other cases, often Environmental Health Officers may not have the breadth of experience to cover aspects beyond their role, such as impacts on mental health. More training is needed in health assessment in EIA to increase confidence of both practitioners and stakeholders.

**Improving Scoping** – Health is no different to other EIA topics in that better scoping involves continual engagement with stakeholders and the project team. This can ensure that the project evolves to reduce impacts on health, for example by incorporating more greenspace or active travel into urban design. Health is one area in particular, where perception of a significant effect, even though on paper there is no impact, is well worth some attention during scoping. Early public engagement can identify concerns and in turn communicate key messages to allay fears, such as those associated with risks from electromagnetic fields.

Health Impact Assessment (HIA) practitioners are able to draw on professional experience and understanding of health evidence from literature reviews to inform the scoping process. Publicly available checklists from bodies such as NHS London and the Wales Health Impact Assessments Support Unit can also inform health scoping exercises. However, a clear definition of determining the significance of effects in health assessments, is needed to ensure that evidence supports scoping out as well as scoping in.

**Sharing responsibility** – A coordinated response from across the EIA community includes health practitioners, whether they are engaged in undertaking an EIA or are a key stakeholder for consultation. This is where UK Guidance for Health Assessment in EIA could contribute to a shared understanding and lead to greater proportionality. The lack of familiarity with health assessment, including stakeholders, lawyers and developers can lead to very different approaches, ranging from ‘no comment’ to ‘do we need to cover everything?’.

**Embracing innovation and digital** – For me, innovation in EIA can help to answer many of the challenges to proportionality and this equally applies to health assessment. An increase in the use of online content means that virtual reality, visualisations, infographics and interactive maps in a web-based format can effectively communicate aspects relating to health. Examples include mapping of existing health inequalities to illustrate sensitive communities, visualising the diversion of a popular footway, or hearing the noise levels of a passing train at a point ‘X’.

Better data management can deliver links to large bodies of health evidence; having relevant data more accessible and ready to interrogate can allow greater focus on the key health issues and save time. Use of receptor-based data and visualisation of a development provides a better understanding of physical effects throughout a project’s life-cycle. This better demonstrates where there are perceived health impacts, rather than predicted impacts, and can help reduce public anxiety.

As a relatively new addition to the EIA Regulations, it is understandable how the tendency to de-risk a health assessment can lead to a disproportionate approach throughout the process. It’s therefore important to remember that all of IEMA’s action points outlined above can be applied to health assessment to provide a more efficient and effective EIA.

*“...innovation in EIA can help to answer many of the challenges to proportionality and this equally applies to health assessment.”*





## The Past and Future of Health and EIA

Environmental Impact Assessment (EIA) and human health impacts have always been closely entwined and this was clear from the introductory text in the original 1985 version of the EIA Directive<sup>1</sup>. However, this clarity was lost when originally transposed into UK legislation. Nevertheless, it would be disingenuous for anyone to suggest that health was not included in EIA prior to the explicit requirement to consider human health in the 2014 version of the Directive<sup>2</sup>, especially when considering the long standing EIA requirement to consider the interaction between human beings and impacts on soil, water, air, climate, landscape, flora and fauna.

Policy makers, having seen health not being appropriately assessed in EIA practice, replaced the original wording 'human beings' with the more explicit words 'population and human health' in the 2014 update of the EIA Directive. This change entered UK law in 2017<sup>3</sup> and the new wording initially caused a stir, with many considering health to be a new topic, whilst others took the view that it was simply a clarification of an existing and long standing requirement.

Nevertheless, the clarification has had a material effect by removing any doubts that impacts on human health should be considered in the assessment of a project. Furthermore, it is also true to say that in the intervening years between 1985 and 2020 our understanding of impacts on human health from development projects has evolved from a more narrow focus on health and safety to a broader concern with the wider determinants of health.

The 2017 EIA Regulations therefore provided a welcome opportunity to revisit existing practice and consider how effective current assessments are at assessing the effects on human health. The consensus within the impact assessment community was that whilst certain physical health elements such as air quality, noise and contamination have been routinely considered, other elements of health, such as mental and social wellbeing, have historically been either absent or inadequately assessed.

The recognition that health assessment in EIA needed to improve, created two obvious pathways, which can be summarised as an integrated or standalone approach to health in EIA. The problem with the second option, of undertaking a standalone Health Impact Assessment (HIA), is twofold. Firstly, the HIA findings still need to be incorporated back into the EIA, leading to a duplication of effort. This duplication also adds additional costs and reporting which is counter-productive to the goal of proportionate assessment, considered a key area for EIA improvement by practitioners and IEMA<sup>4</sup>. The second problem arising from a standalone HIA alongside the EIA is that the HIA is carried out in a siloed approach which does not factor in the other constraints and impacts arising from the other EIA topics and receptors, thereby removing the main benefit of EIA as a holistic and integrated assessment. On this basis, as set out in IEMA's 2017 Primer on Health in EIA<sup>5</sup>, it is the IEMA's view that human health assessment should be an integral part of EIA. However, it is also clear that coverage of potential health effects in current EIA practice is often inadequate and therefore it is imperative to improve practice.

1 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31985L0337&from=EN>

2 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052&from=EN>

3 <https://www.legislation.gov.uk/uksi/2017/571/contents/made>

4 Proportionate EIA – A Collaborate Strategy For Enhancing UK Environmental Impact Assessment Practice, IEMA 2017

5 Health in Environmental Impact Assessment: A Primer for a Proportionate Approach (2017). IEMA, Ben Cave Associates Ltd and the Faculty of Public Health, Lincoln, England. Available at [www.iema.net](http://www.iema.net)



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One of the barriers to the assessment of health in traditional EIA practice is that health is affected by nearly all of the topic-based assessment chapters, not just the obvious topics of noise, vibration and air quality. When considering the broader scope of physical, mental and social wellbeing, it is clear that all topics have potential impacts. For example, loss of locally valued ecological habitat or locally valued heritage could cause or aggravate depression and deterioration of mental health of nearby residents. The value of these assets to residents' mental wellbeing is unlikely to be assessed in the heritage or ecological chapters, which are designed to assess the impact against international and national species and habitats of concern, and/or listed or designated assets. The same could be said for links between landscape and health, flooding and health, economics and health, traffic and health etc., etc. Following on from this, if a wider and more comprehensive approach to health is considered, there is the practical issue of how and where to report the findings in the environmental statement, given the intrinsic overlap with multiple topic-based chapters.

A potential practical solution to this conundrum could be both simple and radical. The Environmental Statement/Report, and EIA process, could be refocused to be receptor led rather than impact led. Currently the reporting and assessment normally begins from a position of impacts, i.e. the impacts from noise, the impacts on air quality, the impacts on traffic, the impacts on landscape, the impacts on heritage. The receptors within these assessments are often humans, but can equally be habitats, or built assets. However, if the structure of the EIA was shifted to focus on the collective impacts on a community, or segment of a community, such as; the impacts on businesses, the impacts on residents, the impacts on recreational users, these chapters would then need to integrate the impact

from noise, air quality, contamination, landscape etc on each receptor, i.e. you would not have a standalone 'noise' chapter.

There are a number of advantages and disadvantages to this approach. The disadvantages are that you would cease to have a single compiled chapter on each impact topic, which will make it harder for a single specialist to develop and 'own' a chapter, similarly a consultee only interested in a single topic could not turn to a single "technical" chapter to read about an issue in isolation. Additionally, where would the lengthy topic specific baseline, policy and technical assessments sections sit under a receptor led reporting structure? These potential disadvantages can be largely mitigated through the use of technical appendices rather than overly long chapters, retaining the bulk of the technical materials in a separate report and removing the need to follow the ES reporting format which is ill-suited to long technical reports and baseline information.

The advantages of changing to a receptor led structure would be that stakeholders, residents and the public with a broader interest in the impacts of a project can more easily access a holistic view of the impacts on a receptor, such as their community or home. Furthermore, single technical issue stakeholders would be more likely to see their topic in the context of the other impacts and considerations by having to read across all the receptors to see the various impacts from their areas of focus. This would promote a greater understanding of the interrelated nature of development impacts and the inherent trade-offs required within a design process.

The suggested approach above is made more viable and more easily achievable by the advent and adoption of digital ways of working as set out in the recent **IEMA Primer on Digital Impact Assessment**. Digital techniques will allow the detailed baseline, policy and methodological data to be nested within the digital report interface, available to access to those seeking this information, but not getting in the way of non-specialists seeking a concise reportage on the significant effects and the proposed mitigation measures, i.e. digital offers the potential for the combination and dual benefits from both conciseness and comprehensiveness.

Whatever the methods deployed, it is imperative that a necessary improvement and focus on human health adds to, rather than eclipses, the equally important consideration of non-human species and pan-species issues such as catastrophic climate change and biodiversity loss. In summary, this article has sought to explore the history and potential future of health assessment in EIA, and to this end, three key issues have emerged.

1. The consideration of human health has always been a fundamental requirement of EIA.
2. The historic consideration of human health in EIA has often been too narrow in scope. New techniques are now being implemented to improve and widen the scope of human health assessment in EIA practice to better capture potentially significant health effects.

3. The integration of human health assessment, and interaction with other EIA factors, could be better facilitated by adopting a receptor led, rather than impact led, reporting structure.

This article was drafted for this Health edition of the Impact Assessment Outlook Journal by Dr. Rufus A. Howard, a registered Principle Impact Assessment Practitioner and the Impact Assessment Policy Lead at IEMA. Special thanks to Joanna Bagley, Andy Ricketts and Josh Fothergill for peer review of this original article on health and EIA.

*"A potential practical solution to this conundrum could be both simple and radical. The Environmental Statement/Report, and EIA process, could be refocused to be receptor led rather than impact led."*



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# Do you make effective use of ALL of IEMA's IA member resources?

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- Recordings of past webinars, with over 24 hours' worth of IA content.
- IA Guidance & advice: such as recent EIA guides on climate change adaptation and major accidents & disasters.
- The Proportionate EIA Strategy.
- Over 400 EIA articles and 200 case studies related to EIA, developed by Q Mark registrants in recent years.
- Individual and organisational recognition specific to EIA, through the EIA Register and EIA Quality Mark schemes respectively.
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  - IA Network.
  - GESA Group (Global Environmental & Social Assessment).
  - Geographic/Regional Groups.

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# Summary

## Joanna Bagley - Guest Editor

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What is clear from this series of articles is that, whilst HIA is not a new concept, health and wellbeing needs to have much greater prominence in the planning process than has historically been the case. There is a growing body of support for much wider implementation of HIAs either through adoption of planning policies or through assessment of health in EIAs. Key to the successful and continued implementation of HIA to ultimately achieve meaningful outcomes to enhance a population's health and wellbeing, is the adoption of a proportionate approach to ensure that mitigation and enhancement measures are focussed on the areas of greatest impact. A receptor based approach to assessment, as advocated in Rufus Howard's article, may resolve a number of the issues that currently arise in using a topic based approach to EIA. Whilst this is a fairly radical departure from much of current EIA practice, given the many changes being considered to the English planning system, perhaps now is a perfect time to make such a change.

Although HIA has been undertaken for many years, further guidance on the assessment of health in EIAs is needed for both practitioners and stakeholders, and as a result, the Impact Assessment Network health working group has been tasked to develop guidance in the coming year. If you are interested in being involved in the IA Network health working group, details of how to get involved are available on IEMA's website.

# Acknowledgements

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**Joanna Bagley**, a Senior Associate Director at Waterman Infrastructure & Environment Ltd has acted as the guest editor for this edition of the new IA Outlook Journal. We recognise and appreciate her contribution.

We also offer thanks to the editors and reviewers of this edition: **Rufus Howard** and **Charlotte Lodge** (IEMA). We would like to thank the authors of the articles in this eighth edition of the Impact Assessment Outlook Journal:

**David Horrocks, Michael Chang & Carolyn Sharpe, Laurence Carmichael & Clare Richmond, Rebecca Raby-Smith, Tara Barratt, Ursula Stevenson and Rufus Howard.**

Alongside the authors we would also like to thank the EIA Quality Mark registrant organisations, who both gave the authors time and encouragement to write the articles, and allowed their publication in this IEMA IA Network publication, they are Waterman Infrastructure & Environment Ltd, RSK, Public Health England, the London Borough of Tower Hamlets, Ramboll, RPS and WSP.

**IEMA's EIA Quality Mark** - a scheme operated by the Institute allowing organisations (both developers and consultancies) that lead the co-ordination of statutory EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed. The EIA Quality Mark is a voluntary scheme, with organisations free to choose whether they are ready to operate to its seven EIA Commitments: EIA Management; EIA Team Capabilities; EIA Regulatory Compliance; EIA Context & Influence; EIA Content; EIA Presentation; and Improving EIA practice.

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## Perspectives on Health in EIA

This eighth edition of the Impact Assessment Outlook Journal provides a series of thought pieces on the consideration of Health Impact Assessment in Planning. In this edition, the Guest Editor (Joanna Bagley) has selected seven articles produced by IEMA and Public Health professionals. The result is a valuable yet quick read across some of the different aspects of UK practice exploring Health Impact assessment in planning.

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### About the Guest Editor: Joanna Bagley

*Senior Associate Director at Waterman Infrastructure and Environment Ltd*

Joanna has over 20 years of experience within private sector consultancy and has project managed and directed Environmental Impact Assessments of a range of high profile urban regeneration schemes including Victoria Gate in Leeds, Hungate in York, Station Hill in Reading and the Quadrant Arcade on Regent Street. She has also led Strategic Environmental Assessments/Sustainability Appraisals (SEA/SA) of Local Plan documents and provides SEA / SA and environmental advice to strategic land holders. Joanna often retains involvement in schemes throughout the construction phase to manage the environmental requirements arising from planning conditions, client commitments and best practice.

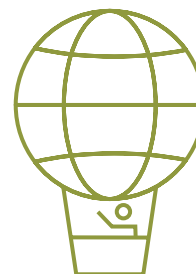


## About IEMA

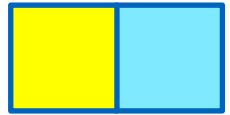
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# Appendix 3: Sizewell C's Environmental Statement Chapter 28 Health and Wellbeing



# The Sizewell C Project

## 6.3 Volume 2 Main Development Site Chapter 28 Health and Wellbeing

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Revision: 1.0  
Applicable Regulation: Regulation 5(2)(a)  
PINS Reference Number: EN010012

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May 2020

Planning Act 2008  
Infrastructure Planning (Applications: Prescribed  
Forms and Procedure) Regulations 2009





## Volume 2 Chapter 28 Health and Wellbeing

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## Figures

None provided.

## **Appendices**

Appendix 28A: Health Technical Note 1: Sizewell Occupational Health Care Service Description

Appendix 28B: Health Technical Note 2: Residual Health Care Forecast

Appendix 28C: Health Baseline

## 28. Health and Wellbeing

### 28.1 Introduction

28.1.1 This chapter of **Volume 2** of the **Environmental Statement (ES)** presents an assessment of construction, operational and removal and reinstatement (where relevant) activities which have the potential to impact on health and wellbeing. The assessment is project-wide in nature – it considers the overall health and wellbeing effect of the Sizewell C Project on sensitive receptors.

28.1.2 Descriptions of the existing site and proposals for the main development site are provided in **Chapters 1 to 4** of this volume of the **ES**. Descriptions of the existing sites and proposals for associated developments are provided in **Chapters 1 to 2** of **Volumes 3 to 9** of the **ES**. A description of the anticipated activities for the decommissioning phase, including a summary of the types of environmental effects likely to occur is provided in **Chapter 5** of this volume of the **ES**. A glossary of terms and list of abbreviations used in this chapter is provided in **Appendix 1A** of **Volume 1** of the **ES**.

28.1.3 Due to the multidisciplinary factors that could affect health, and the overlap with other technical disciplines, the assessment of health and wellbeing draws from and builds upon data and outputs from a wide range of supporting assessments contained in **Volumes 2 to 9** of the **ES**, most notably:

- Socio-economics.
- Transport.
- Noise and Vibration.
- Air Quality.
- Radiological Assessment.

28.1.4 The health and wellbeing assessment does not seek to repeat the assumptions, baselines or outputs of the above assessments, but instead signposts to the relevant chapters and builds upon their assessment outputs to establish the potential magnitude, distribution and significance of impacts upon health and wellbeing.

28.1.5 The health and wellbeing assessment includes an assessment of potential impacts, the significance of effects, the requirements for mitigation and the residual effects. The assessment has been informed by data presented in the following technical appendices:

- **Appendix 28A** of this volume: Health Technical Note 1: Sizewell Occupational Health Care Service Description.
- **Appendix 28B** of this volume: Health Technical Note 2: Residual Health Care Forecast.
- **Appendix 28C** of this volume: Health Baseline.

**28.1.6** A standalone **ES** was prepared for the Sizewell B relocated facilities works for submission with the hybrid planning application under the Town and Country Planning Act 1990 (East Suffolk Council application ref. DC/19/1637/FUL). The Sizewell B relocated facilities **ES**, as included in **Appendix 2A** of **Volume 1** of the **ES**, did not include a health and wellbeing chapter, as the **ES** was prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, which did not require for a standalone health and wellbeing assessment to be prepared as part of the Environmental Impact Assessment (EIA). The assessment presented within this chapter also accounts for the effects of the Sizewell B relocated facilities works as they form part of the Sizewell C Project.

## **28.2** Legislation, policy and guidance

**28.2.1** **Appendix 6Y** of **Volume 1** of the **ES** identifies and describes legislation, policy and guidance of relevance to the health and wellbeing assessment of the Sizewell C Project.

**28.2.2** This section provides a summary of the specific legislation, policy and guidance of relevance to health and wellbeing assessment, which is further described in **Appendix 6Y** of **Volume 1** of the **ES**.

### a) International

**28.2.3** As detailed in **Appendix 6Y** of **Volume 1** of the **ES**, there is a reinforced requirement for the consideration of population and health within Directive 2014/52/EU amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment ('EIA Directive') (Ref 28.1), that has been transposed into the UK legislation by the EIA Regulations (defined below).

### b) National

#### i. Legislation

**28.2.4** The assessment has been prepared pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 28.2) and the Marine Works (Environmental Impact Assessment) Regulations 2007 (Ref

28.3) (collectively referred to as the ‘EIA Regulations’), which require that the EIA must describe and assess the direct and indirect effects of the Sizewell C Project on population and human health.

ii. Policy

28.2.5 Human health is an embedded theme within the overarching National Policy Statement (NPS) for Energy (EN-1) (Ref 28.4) and the National Policy Statement for Nuclear Power Generation (EN-6) (Ref 28.5). A summary of the relevant planning policy, together with consideration of how the requirements have been taken into account in this assessment is provided in **Appendix 6Y of Volume 1 of the ES**.

28.2.6 The Marine Policy Statement (MPS) (Ref 28.6) sets the framework for preparing Marine Plans and taking decisions affecting the marine environment. A summary of MPS considerations relevant to the health and wellbeing assessment, and how these have been addressed is provided in **Appendix 6Y of Volume 1 of the ES**.

28.2.7 **Appendix 6Y of Volume 1 of the ES** also describes relevant requirements and considerations from several other national policies and supporting guidance, namely:

- National Planning Policy Framework (NPPF) (Ref 28.7).
- Planning Practice Guidance (Ref 28.8).
- Government’s 25 Year Environmental Plan (Ref 28.9).

c) Regional

28.2.8 No regional policy is deemed relevant to the health and wellbeing assessment for the Sizewell C Project.

d) Local

28.2.9 Local policies relevant to the health and wellbeing assessment for the Sizewell C Project are described in **Appendix 6Y of Volume 1 of the ES**, and include:

- Suffolk Coastal District Council Local Plan Core Strategy and Development Management Policies (Ref 28.10).
- Suffolk Coastal Final Draft Local Plan 2019 (Ref 28.11).
- Suffolk Joint Health and Wellbeing Board Strategy Refresh 2019–2022 (Ref 28.12).



### e) Guidance

28.2.10 The health and wellbeing assessment has been undertaken in accordance with the following Health Impact Assessment (HIA) guidance documents:

- West Midlands Public Health Observatory: A Critical Guide to HIA (Ref 28.13).
- Health Impact Assessment: A practical guide (Ref 28.14).
- Fair Society, Healthy Lives: The Marmot Review. Strategic review of health inequalities in England post-2010 (Ref 28.15).
- Healthy Lives, Healthy People: Our strategy for public health in England (Ref 28.16).
- Planning Policy Guidance: Healthy and safe communities (Ref 28.17).
- Reuniting Health with Planning - Healthier Homes, Healthier Communities (Ref 28.18).

## 28.3 Methodology

28.3.1 The generic EIA methodology is detailed in **Volume 1, Chapter 6** of the **ES**. The full method of assessment for health and wellbeing is included in **Appendix 6Y** of **Volume 1** of the **ES**.

28.3.2 This section provides a summary of the scope and approach to provide context to the health and wellbeing assessment that follows.

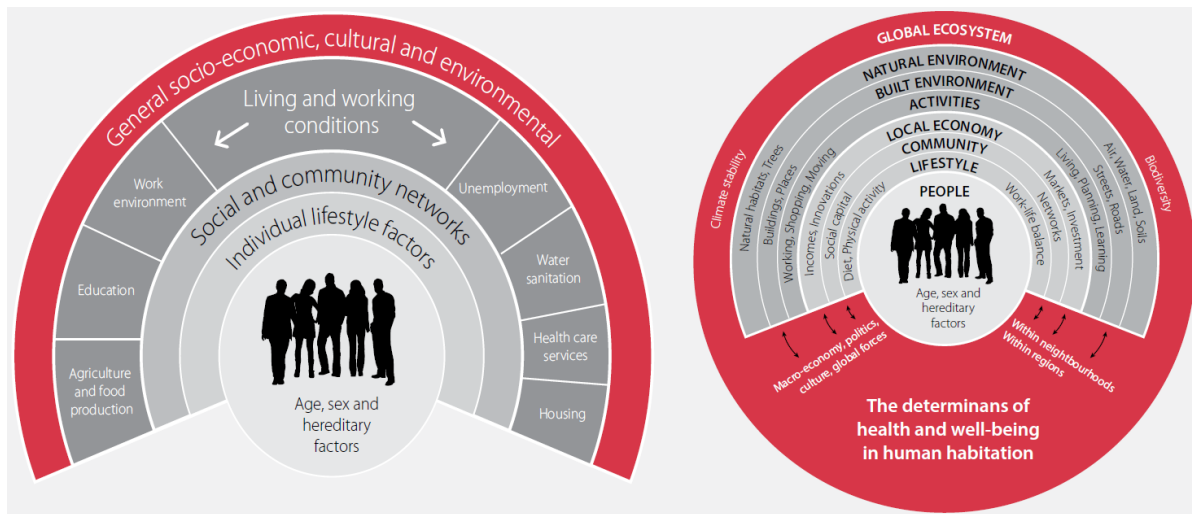
### a) Scope of the assessment

28.3.3 The scope of the health and wellbeing assessment considers the impacts (both adverse and beneficial) of the construction, operation and removal and reinstatement (where relevant) of the main development site and associated development sites (collectively referred to as the “proposed development”).

28.3.4 The scope of this assessment has been established through a formal EIA scoping process undertaken with the Planning Inspectorate. A request for an EIA scoping opinion was initially issued to the Planning Inspectorate in 2014, with an updated request issued in 2019, provided in **Appendix 6A** of **Volume 1** of the **ES**. Comments raised in the EIA scoping opinion received in 2014 and 2019 have been taken into account in the development of the assessment methodology. These are detailed in **Appendices 6A** and **6C** of **Volume 1** of the **ES**.

**28.3.5** The approach to this assessment applies a broad socio-economic model of health that encompasses conventional health impacts such as disease, accidents and risk, along with wider health determinants vital to achieving good health and wellbeing such as employment and local amenity. It considers both physical and mental health, and interfaces with the **Equality Statement** (Doc Ref. 5.14) to consider both population level effects and any disproportionate risk to sensitive community groups. The assessment is therefore based on both social and environmental determinants of health, as illustrated in **Plate 28.1**.

**Plate 28.1: Social and environmental determinants of health**



Source: Reproduced from Ref 28.19, citing Ref 28.20 and Ref 28.21

**28.3.6** The assessment follows a source-pathway-receptor approach to identify and assess health impacts that are plausible and attributable to the proposed development. As shown in **Table 28.1**, a hazard source in itself does not constitute a health risk: it is only when there is a hazard source, a receptor and a pathway of exposure between the two that there is any potential for risk to health. Where a source-pathway-receptor linkage exists, it is then the nature of the specific hazard source, the magnitude of impact via the pathway and the sensitivity of the receptor that will determine what level of health risk is predicted.

**Table 28.1: Example of source pathway-receptor model for health effects**

Hazard Source.	Pathway	Receptor	Plausible Health Impact.	Explanation
×	✓	✓	No	There is not a clear source from where a potential health impact could originate.

Hazard Source.	Pathway	Receptor	Plausible Health Impact.	Explanation
✓	×	✓	No	The source of a potential health impact lacks a means of transmission to a population.
✓	✓	×	No	Receptors that would be sensitive or vulnerable to the health impact are not present.
✓	✓	✓	Yes	Identifying a source, pathway and receptor does not mean a health impact is a likely significant effect; health impacts should be assessed (describing what effect will occur and its likelihood) and likely health effects are then evaluated for significance.

b) Consultation

28.3.7 The scope of the assessment has also been informed by ongoing consultation and engagement with statutory consultees throughout the design and assessment process.

28.3.8 As detailed in the EIA scoping opinion received in 2014, the methodology for assessing health and wellbeing “should be agreed with the relevant statutory consultees”. To facilitate this, and further address potential public health concerns, the Sizewell C Health Working Group (SHWG) was established. Membership currently includes Suffolk County Council (SCC), East Suffolk Council (ESC), Public Health Suffolk; Suffolk National Health Service (NHS); Suffolk, Ipswich, East Suffolk, and Great Yarmouth and Waveney Clinical Commissioning Groups (CCGs)). This has provided a collaborative platform to explore, discuss, and iteratively inform the health and wellbeing assessment undertaken, while informing the development of features and initiatives relevant to supporting local health needs, objectives and priorities.

28.3.9 While engagement with health stakeholders has run since the outset of the Sizewell C Project, **Appendix 6Y of Volume 1 of the ES** sets out a summary of the most recent comments raised during consultation with the SHWG. These have informed the scope and methodology of the health and wellbeing assessment and design features and mitigation to address any change in local public healthcare demand; and enabled the assessment to better align with the delivery of healthcare and promotion objectives and priorities.

28.3.10 The key findings of the engagement with health stakeholders have been that the scope and focus of the health and wellbeing assessment for changes in socio-economic and environmental circumstance during construction and operation remain appropriate. The core focus of ongoing engagement has thereby centred on managing the public health needs

from the introduction of the non-home-based workforce and their families / dependants to the area.

c) **Study area**

28.3.11 The study area for health and wellbeing baseline data collection comprises the local authority district of East Suffolk (previously Suffolk Coastal and Waveney) which immediately surrounds the proposed development. This geographic scope is considered appropriate on the basis that local authority districts are the smallest geographic level for which up-to-date publicly available baseline health statistics are available.

28.3.12 The study areas for the assessment of health determinants (i.e. aspects with the potential to influence health, both adversely and beneficially) vary, as their distribution can equally vary. As an example, changes in noise and air quality are localised, while transport and socio-economic outcomes can be further reaching. As such, the receptors considered in the health and wellbeing assessment remain consistent with the inter-related topic chapters from which it draws (e.g. air quality, noise).

d) **Assessment scenarios**

28.3.13 Assessment scenarios for health and wellbeing are consistent with the inter-related technical disciplines which inform the health and wellbeing assessment, including the construction, operation and removal and reinstatement phases (where relevant) of the proposed development.

e) **Assessment criteria**

28.3.14 As described in **Volume 1, Chapter 6** of the **ES**, the EIA methodology considers whether impacts of the proposed development would have an effect on any resources or receptors. Assessments broadly consider the magnitude of impacts and value/sensitivity of resources/receptors that could be affected in order to classify effects.

28.3.15 The criteria used in this assessment are presented in the following sub-sections.

i. **Value and sensitivity**

28.3.16 Within a defined population, individuals will range in level of sensitivity and this can further vary by individual health pathway. As such, it is not possible to allocate a fair or accurate sensitivity classification to a population uniformly for every health determinant. On this basis, while the health baseline provides context to inform the refinement of the Sizewell C Project and further inform mitigation and bespoke community and health support initiatives, a precautionary approach has been applied to the final

assessment of significance by assuming that the population within the study area are of uniformly high sensitivity to the particular health pathway being assessed. Equally, given the importance of healthcare services, coupled with existing capacity and revenue challenges they face, all healthcare services are considered high value and uniformly sensitive to change.

28.3.17 This precautionary approach thereby provides a means to account for pockets of inequality that exist within all communities, and further considers the sensitivity of healthcare systems within the study area.

ii. Magnitude

28.3.18 The criteria for defining magnitude in this assessment are outlined in **Table 28.2**, and are justified by the supporting assessment for each health pathway.

**Table 28.2: Assessment of magnitude of impact on health and wellbeing**

Magnitude	Criteria
High	Change in an environmental or socio-economic factor sufficient to result in a major change in baseline population health or socio-economic circumstance (adverse or beneficial).
Medium	Change in an environmental or socio-economic factor sufficient to result in a moderate change in baseline population health or socio-economic circumstance (adverse or beneficial).
Low	Change in an environmental or socio-economic factor sufficient to result in a minor change in baseline population health or socio-economic circumstance (adverse or beneficial).
Very Low.	Change in an environmental or socio-economic factor below that for which it is possible to result in any manifest health outcome at a population level but may impact at an individual level (adverse or beneficial).

iii. Effect definitions

28.3.19 The definitions of effect for health and wellbeing are shown in **Table 28.3**.

**Table 28.3: Classification of effects**

		Value / Sensitivity of receptors and resources.
		High
Magnitude	Very Low.	Negligible
	Low	Minor
	Medium	Moderate
	High	Major

**28.3.20** Following the classification of an effect as presented in **Table 28.3**, a clear statement is made as to whether the effect is 'significant' or 'not significant'. As a general rule, major and moderate effects are considered to be significant and minor and negligible effects are considered to be not significant. However, professional judgement is also applied where appropriate.

f) **Assessment methodology**

**28.3.21** The methodology for the health and wellbeing assessment is set out in detail within **Volume 1, Appendix 6Y**. The general approach is described below.

**28.3.22** Details on establishing the baseline conditions are set out in **section 28.4** and **Appendix 28C**.

**28.3.23** The assessment of the construction phase of the proposed development, considers:

- The main development site, including:
  - Construction of the main development site (including the introduction of the non-home-based workforce).
  - Road and rail traffic associated with the main development site construction.
  - Removal and reinstatement of the temporary construction area and Land East of Eastlands Industrial Estate (LEEIE).
- Construction, operation and removal/reinstatement of the temporary associated developments, including:
  - Northern park and ride at Darsham.
  - Southern park and ride at Wickham Market.
  - Green rail route.
  - Freight management facility.
- Construction of the permanent associated developments and their operation during the construction phase for the power station, including:
  - Two village bypass.

- Sizewell link road.
- Yoxford roundabout and other highway improvements.
- Rail improvement works.

28.3.24 Health determinants associated with the construction of the proposed development which are considered in this assessment include:

- potential health and wellbeing effects from changes in emissions to air;
- potential health and wellbeing effects from additional transport movements;
- potential health and wellbeing effects from changes in noise exposure;
- potential health and wellbeing effects associated with the introduction of a temporary non-home-based construction workforce (including social impacts and on healthcare capacity) including net additional dependants;
- potential health and wellbeing benefits associated with socio-economic factors (such as direct, indirect and induced employment); and
- general stress and anxiety impacting upon quality of life and wellbeing.

28.3.25 The assessment of the operational phase comprises:

- Commissioning and operation of the main development site (the power station). The operational life of the Sizewell C Project is assumed to be 60 years.
- Operation of the following permanent associated developments during the commissioning and operational phase of the power station:
  - Two village bypass.
  - Sizewell link road.
  - Yoxford roundabout and other highway improvements.

28.3.26 Health determinants associated with the operation phase considered in this assessment include:

- potential health and wellbeing effects from changes in radiological exposure;

- potential health and wellbeing effects from changes in electromagnetic field exposure;
- potential health and wellbeing effects from changes in emissions to air;
- potential health and wellbeing effects from additional transport movements;
- potential health and wellbeing effects from changes in noise exposure;
- potential health and wellbeing benefits associated with socio-economic factors (such as direct, indirect and induced employment); and
- general stress and anxiety impacting upon quality of life and wellbeing.

g) **Assumptions and limitations**

28.3.27 The health and wellbeing chapter draws from and builds upon the outputs of the supporting technical disciplines, and is therefore subject to the same limitations and assumptions affecting those assessments.

## 28.4 **Baseline environment**

28.4.1 Evidence suggests that different communities express varying sensitivities to health outcomes (both adverse and beneficial) as a result of relative socio-economic circumstance and existing burden of poor health.

28.4.2 While all residential receptors and health facilities have been classed as highly sensitive for the purposes of the assessment of significance, the health and wellbeing baseline sets into context local health and socio-economic circumstances, priorities and needs that can be applied to inform more health conscious planning and development, including bespoke mitigation and support initiatives.

28.4.3 Due to the multidisciplinary nature of health, and the necessity to set a baseline that covers the remit of all of the wider technical disciplines relevant to health, a broad geographic scope for the health and wellbeing baseline study area has been set (East Suffolk), using available county (Suffolk), regional (East of England) and national (England) statistics as comparators.

28.4.4 Where the evidence base permits, health and healthcare data can be further applied to predict changes in baseline population health, informing and supporting the assessment of significance. In addition, local healthcare



service provision has been profiled, setting into context the existing supply of services and demand.

**28.4.5** The baseline also aids in exploring bespoke mitigation and community support initiatives tailored to local circumstance and need. The remainder of this section presents a brief summary of the detailed health baseline provided in **Appendix 28C** of this volume. Further information on demographics, socio-economic circumstance, and community facilities may be found in **Chapter 9** of this volume of the **ES**.

a) **Current baseline**

i. **Local healthcare services**

**28.4.6** As shown in **Table 28.4**, there are 61 GP practices within the 60-minute area. This is the area non-home-based workers are expected to seek accommodation in, as set out in **Chapter 9** of this volume of the **ES**.

**28.4.7** The total number of practicing GPs across all practices within the 60-minute area is 323, and these practices have an average patient list size of 2,000 patients per GP. This is a high ratio, and would indicate limited spare capacity. The average however, masks some substantial variations and associated spatial sensitivity to changes in demand between the practices where list sizes range from 953 patients per GP at The Peninsula Practice in Woodbridge, to 5,144 patients per GP at Alexandra & Crestview Surgeries in Lowestoft.

**Table 28.4: List sizes and practitioner numbers in local GP practices (within the 60-minute area)**

Local Authority.	Total List Size (within the 60-minute area).	Number of GP Surgeries.	GPs	Patients per GP.
Babergh	33,509	3	19	1,764
Great Yarmouth.	50,481	3	15	3,365
Ipswich	178,478	13	75	2,380
Mid Suffolk.	82,684	9	49	1,687
South Norfolk.	56,993	7	34	1,676
East Suffolk.	243,975	26	131	1,862
<b>Total</b>	646,120	61	323	n/a
<b>Average</b>	n/a	n/a	n/a	2,000

Source: Ref 28.23

28.4.8 The closest accident and emergency facilities to the main development site are Ipswich Hospital and James Paget University Hospital which are approximately 26 and 32 miles by road from the site, respectively. In addition, there are 11 Community Hospitals within the 60-minute area which provide a range of wider services. These comprise:

- Aldeburgh Community Hospital: inpatient unit for management of long-term conditions, and specialist clinics, nurses, physiotherapists and occupational therapists.
- East Coast Community Healthcare: Beccles Hospital, community-based healthcare provision.
- Carlton Court: Dementia and Intensive Support Team.
- All Hallows Hospital: 30 inpatient beds, and physiotherapy services.
- Felixstowe Hospital: providing rehabilitation services.
- Airey Close, Lowestoft: inpatient services for young people with learning difficulties and mental health conditions.
- Walker Close, Ipswich: inpatient services for adults with learning difficulties and mental health services.
- St Clements Hospital, Ipswich: support for vulnerable people who are actively involved in the criminal justice system.
- Foxhall House, Ipswich: inpatient support in a low security setting for adults.
- Hartismere Hospital: Community Hospital providing geriatric and orthopaedic care.
- Bluebird Lodge Community Hospital: inpatient unit and a range of clinics for outpatients.

ii. [Average household size](#)

28.4.9 As shown in **Table 28.5**, average household size is projected to decrease between 2016 and 2036 in all local authority districts in proximity to the main development site. On the basis that construction is anticipated to commence in 2022 and be completed nine to twelve years later (2031-34), projections for average household size have been provided up to 2036.

**Table 28.5: Average household size**

Local Authority	Average Household Size				
	2016	2021	2026	2031	2036
Babergh	2.28	2.26	2.25	2.23	2.21
Great Yarmouth	2.31	2.29	2.28	2.26	2.24
Ipswich	2.26	2.22	2.19	2.17	2.15
Mid Suffolk	2.30	2.29	2.27	2.25	2.23
South Norfolk	2.32	2.27	2.23	2.20	2.18
East Suffolk	2.24	2.22	2.20	2.19	2.17
<b>Average</b>	<b>2.28</b>	<b>2.26</b>	<b>2.24</b>	<b>2.22</b>	<b>2.20</b>

Source: Ref 28.24

iii. Life expectancy and physical health

**28.4.10** Male life expectancy within the study area is consistently higher than the national average and has been increasing for five years up to 2017, showing a similar trend to the regional average (Ref 28.25). Female life expectancy in the study area has been consistently higher than both the regional and national averages during the same period, however, recent figures (2015-17) show a decrease from the previous year to a level more in line to the regional average (Ref 28.25).

**28.4.11** When considering healthy life expectancy (HLE), that is, the proportion of life spent in "good" health, male HLE has fluctuated over the years but has remained consistently above regional and national levels. In contrast, female HLE has been decreasing over the years, with most recent figures (2012-14) lower than the regional average, albeit above the national average (Ref 28.26; Ref 28.27).

**28.4.12** All-age all-cause mortality is lower in the study area compared to both the regional and national averages (Ref 28.28). Within the study area, mortality rates from cardiovascular disease (Ref 28.25), respiratory disease (Ref 28.29), and cancer (Ref 28.25) have all been following regional and national trends over the years up to 2017, whereby cardiovascular disease and cancer mortality rates have been decreasing, and respiratory disease mortality has been increasing. Emergency hospital admission rates for cardiovascular and respiratory disease within the study area are lower than the national average in most recent figures (2018-19) (Ref 28.30; Ref 28.31).

#### iv. Mental health and lifestyle

- 28.4.13** Depression recorded incidence within the study area remains lower than the national trend with most recent figures (2017-18) higher than the regional average (Ref 28.32). Hospital stays for self-harm in the study area are currently (2017-18) slightly lower than the national average and higher than the regional average (Ref 28.25). Suicide rate within the study area was increasing until 2014–2016, after which it decreased but remains higher than the regional and national average (Ref 28.25). Dementia recorded prevalence (age 65+) within the study area was equal to the regional average and lower than the national average in 2018 (Ref 28.33).
- 28.4.14** As detailed in **Appendix 28C** of this volume, childhood obesity within the study area has been relatively static over the last five years up to 2018, consistently below the national average but similar to the regional average (Ref 28.25). Excess weight in adults within the study area has shown a marked decrease since 2015, closing the gap between the national and regional average, yet remains higher than both regional and national averages in 2018 (Ref 28.25). The percentage of adults in the study area who engage in 150+ minutes of physical activity per week is also consistently below the regional and national averages in most recent figures (2017-18) (Ref 28.34).
- 28.4.15** Smoking prevalence within the study area has shown a general decrease over the years, however, most recent statistics (2018) show a higher smoking prevalence than the regional and national averages (Ref 28.25). Hospital stays for alcohol related harm have remained relatively static over the last five years up to 2018 and have remained consistently below the regional and national averages (Ref 28.25).

#### v. Conclusion

- 28.4.16** In most circumstances, health status is better than the national average and more comparable to the regional average. However, it should be noted that while this description applies to the whole population within the study area; this does not exclude the possibility that there will be some individuals or groups of people who do not conform to the overall profile, with pockets of inequality. On this basis, and as previously stated, for the purpose of the assessment of significance, a precautionary approach has been applied to each assessment protocol, where all residential receptors are considered highly sensitive to environmental and socio-economic change, and all healthcare facilities are considered high value and sensitive to any change in demand.

#### b) Future baseline

28.4.17 There are no committed development(s) or forecasted changes that would materially alter the health-specific baseline conditions during the construction, operation and removal and reinstatement (where relevant) phases of the proposed development.

28.4.18 In addition, where the inter-related technical disciplines that inform the health and wellbeing assessment identify committed development(s) or forecasted changes that influence future baseline conditions, the health and wellbeing topic has applied these outputs in any quantitative assessments undertaken, where appropriate.

### 28.5 Environmental design and mitigation

28.5.1 As detailed in **Volume 1, Chapter 6** of the **ES**, a number of primary mitigation measures have been identified through the iterative EIA process, and have been incorporated into the design and construction planning of the proposed development. Tertiary mitigation measures are legal requirements or are standard practices that would be implemented as part of the proposed development.

28.5.2 The assessment of likely significant effects of the proposed development assumes that primary and tertiary mitigation measures are in place. For health and wellbeing, these measures are identified below, with a summary provided on how the measures contribute to the mitigation and management of potentially significant environmental effects.

28.5.3 For health and wellbeing, the following primary and tertiary mitigation measures are embedded into the design and construction management of the proposed development.

#### a) Primary mitigation

##### i. Public Health

28.5.4 The embedded mitigation measures detailed within the socio-economics, transport, air quality, noise and vibration, and radiological considerations chapters are inherently in place to manage potential environmental and socio-economic hazards at a point that precludes and manages public health impacts. As an example, as detailed in **Volume 2, Chapter 11** of the **ES**, primary noise mitigation measures include site layout and landscape form, embedding acoustic barriers to prevent and reduce noise exposure to sensitive receptors, thereby managing potential health risk.

28.5.5 Additionally, once operational, any changes to site transmissions infrastructure will comply with the Department of Energy and Climate

Change (DECC) Code of Practice (Ref 28.35) to ensure compliance with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidance set to protect health. Further detail on this is provided in **Section 28.6** of this chapter.

ii. **Occupational health provision**

**28.5.6** SZC Co. will provide a comprehensive on-site occupational health service to the construction workforce. The provision of this service will form a planning commitment secured under the Section 106 agreement, as set out in the **draft Section 106 Heads of Terms** provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4), and constitutes embedded mitigation relevant to health and wellbeing. The service would manage and reduce the impact of the Sizewell C Project on local healthcare capacity.

**28.5.7** As detailed in **Appendix 28A** of this volume, the occupational health service will be structured around managing the health of the construction workforce by addressing three main aspects: the workplace; the worker; and wellbeing. The remainder of this section summarises the provision.

*The workplace*

**28.5.8** In terms of the workplace, the focus will be on preventing ill health. The construction sector presents a number of occupational hazards that vary by activity, setting and can further vary by weather condition, season and even time of day. Risk prevention will therefore be central to the occupational health provision in order to design out and reduce exposure to workplace health risks, while further providing interventions and/or advice on control measures, and providing education/training initiatives to improve awareness and consequently prevent incidence of accidents or ill health.

**28.5.9** As a minimum, a health and safety plan, project risk registers, and task risk assessments will be completed to improve workplace safety and ensure that there is a collective understanding of how each worker can protect and enhance their own health and wellbeing.

*The worker*

**28.5.10** Each worker will go through a pre-employment health screening process to determine whether they are fit to work – the process of which would be dependent on the type of work to be undertaken. In addition, certain groups of workers will be periodically assessed to ensure that they meet legal standards to undertake their job. The occupational health service will undertake periodic ongoing assessments regarding fitness for work, in keeping with legislative guidelines and policies.

**NOT PROTECTIVELY MARKED**

- 28.5.11 In addition, there will be a health surveillance programme which will cover three core areas: hand-arm-vibration syndrome; noise; and Control Of Substances Hazardous to Health (COSHH) – routinely this includes respiratory health and skin health surveillance. The occupational health service will maintain health records enabling them to supply statistical information from the health surveillance process. This data will be reported and discussed with the SHWG including Key Performance Indicators (KPIs) to measure the effectiveness of the provision (e.g. GP, Hospital referrals and ambulance call out).
- 28.5.12 A drugs and alcohol policy will be enforced which will include testing pre-placement on-site, for cause / reasonable suspicion and random testing.
- 28.5.13 Furthermore, the occupational health service will treat and advise any workers who have accidents or are taken ill at work. The provision of on-site treatment will enable earlier intervention which, in addition to reducing potential for health deterioration, will also reduce demand on local NHS healthcare and emergency response services.
- 28.5.14 As the workforce grows, there may be an opportunity to add additional services which will be determined by the relative need on the site as the project progresses. In addition, the occupational health service will have an emergency response vehicle to facilitate rapid response, stabilising and conveying workers to safe pick up areas. The occupational health service will also develop first response capabilities of workers on-site to reduce the number of unnecessary emergency ambulance call outs.

*Wellbeing*

- 28.5.15 The occupational health service will conduct and align health promotion campaigns with wider NHS initiatives which aim to maintain and improve the health and wellbeing of the workforce by: raising awareness of both work and non-work related health issues; and encouraging healthy behaviours within and outside of the workplace.
- 28.5.16 A range of health and wellbeing promotional activities will be undertaken by SZC Co. to ensure full coverage of the workforce, including both home-based and non-home-based workers. The promotional activities will fall under the following categories: occupational health promotion; general health campaigns; lifestyle screening and targeted health education. These activities will link with local services where appropriate, and will be offered to the entire workforce, thereby minimising the impact from non-home-based staff, and forming complimentary health promotion and care for home based staff.

## b) Tertiary mitigation

- 28.5.17 Where appropriate, tertiary mitigation is detailed in socio-economics, transport, air quality, noise and vibration, and radiological considerations chapters, in line with legislative requirements and topic specific practice. This tertiary mitigation is set to further manage potential environmental and socio-economic hazards at a point that precludes and prevents public health impacts. As an example, **Volume 2, Chapter 11** of the **ES**, includes the management of construction plant and equipment to prevent unnecessary noise generation, alongside training of workers to minimise off-site noise generation and community exposure, thereby further reducing hazard source and exposure to manage potential health risk. Further information may be found within the **Code of Construction Practice (CoCP)** (Doc Ref. 8.11).
- 28.5.18 Tertiary mitigation also includes employment and training activities and local business engagement to secure local recruitment set out in the **Employment, Skills and Education Strategy** (Doc Ref. 8.9, Appendix A) and the **Supply Chain Strategy** (Doc Ref. 8.9, Appendix B). These mitigation measures further support the uptake of socio-economic health benefits.
- 28.5.19 The implementation of the **Employment, Skills and Education Strategy** and the **Supply Chain Strategy** by SZC Co. will be secured by obligations in the Section 106 Agreement (see **draft Section 106 Heads of Terms**).

## 28.6 Assessment

### a) Introduction

- 28.6.1 This section presents the findings of the health and wellbeing assessment for the construction, operation, and removal/reinstatement (where relevant) phases of the main development site and associated developments. This chapter of the **ES** draws from and concludes on the residual effects post-mitigation reported by inter-related technical disciplines.

### b) Construction of Proposed Development

#### i. Potential health and wellbeing effects from changes in emissions to air

##### Construction dust and PM<sub>10</sub>

##### *Main Development Site*

- 28.6.2 As stated in **Volume 2, Chapter 12** of the **ES**, prior to mitigation, there is potential for dust emissions to be generated within the main development



site from general construction activities, earthworks, and on the internal site road network through dust-raising on haul roads or trackout of materials.

- 28.6.3 Following the application of effective primary and tertiary mitigation, dust emissions are anticipated to be controlled to a level which is not considered significant by air quality standards.
- 28.6.4 It is recognised within **Chapter 12** of this volume of the **ES** that due to the long construction activity period within the main development site and likelihood of concurrent dust generating activities, there is the potential for in-combination effects (in Zones A and C). In these circumstances, activity-specific secondary mitigation, as detailed in the ‘activity-specific measures’ of the outline Dust Management Plan (oDMP) in **Appendix 12A** of this volume, may be required to reduce residual impacts on receptors.
- 28.6.5 Assuming all air quality primary, secondary and tertiary mitigation measures are effectively implemented and monitored through an effective **CoCP** (Doc Ref. 8.11), at the level recommended by the dust risk assessment, any effects, including in-combination, would likely be negligible and would therefore not be significant for any of the proposed construction activities at the main development site.
- 28.6.6 As a result, the magnitude of impact on health and wellbeing from dust would be very low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

#### *Associated Development Sites*

- 28.6.7 As detailed in **Chapter 5** of **Volumes 3-9** of the **ES**, prior to mitigation, there is potential for dust emissions to be generated at all of the associated development sites from general construction activities, earthworks, and on the internal site road network through dust-raising on haul roads or trackout of materials. However, any construction dust risk would not be significant for any of the proposed construction activities at the site.
- 28.6.8 For the associated development sites which are temporary and will therefore require removal and reinstatement, the scale and nature of activities expected to be undertaken are similar to the scale and nature of these activities in the construction phase. As a result, dust effects associated with the removal and reinstatement phase are not expected to be worse than during the construction phase and would be **not significant**.
- 28.6.9 Assuming all air quality primary and tertiary mitigation measures are effectively implemented and monitored through an effective **CoCP** (Doc Ref. 8.11), at the level recommended by the dust risk assessment, any effects would likely be negligible and would therefore not be significant during any of the proposed construction (or removal and reinstatement,

where relevant) activities at any of the sites. As a result, the magnitude of impact on health and wellbeing from dust would be very low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

### Transport emissions

#### *Main Development Site*

28.6.10 Transport emissions represent a more transient source, extending beyond the main development site and associated development sites, with the potential for wider community exposure. The absolute changes in NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> concentrations at any receptor in all assessment scenarios explored by **Volume 2, Chapter 12** and **Appendix 12B** of the **ES** are considered ‘negligible’ and resultant effects are **not significant** (including the two exceptions with ‘medium’ and ‘high’ magnitudes of change resulting in beneficial effects), as the predicted background concentrations at all these receptors would remain well below air quality objectives set to protect the environment and health.

28.6.11 Overall, given that the predicted background concentrations for any pollutant in any scenario would remain well below air quality objectives, with a concentration exposure orders of magnitude lower than is required to quantify any measurable health outcome, the magnitude of impact on health and wellbeing would be very low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

#### *Associated Development Sites*

28.6.12 As detailed in **Chapter 5** of **Volumes 3-9** of the **ES**, changes in air quality from traffic-related pollutants (road and rail) (NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>) at nearby sensitive receptors associated with the construction and operation of all associated development sites are not considered significant by air quality standards. In addition, background air quality concentrations would remain within objective thresholds set to be protective of health.

28.6.13 For the associated development sites which are temporary and will therefore require removal and reinstatement, the scale and nature of works would generate a similar level of traffic to the construction phase. As a result, traffic emission effects associated with the removal and reinstatement phase are not expected to be worse than during the construction phase.

28.6.14 Overall, given that the predicted background concentrations for any pollutant during any of the proposed construction (or removal and reinstatement, where relevant) would remain well below air quality

objectives, with a concentration exposure orders of magnitude lower than is required to quantify any measurable health outcome, the magnitude of impact on health and wellbeing would be very low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

#### Combined heat and power (CHP) emissions

28.6.15 As detailed in **Volume 2, Chapter 12** of the **ES**, there would be an ‘imperceptible’ magnitude of change in annual mean NO<sub>2</sub> concentrations associated with the proposed CHP on the main development site at all receptors except LE48 (Recreational Kenton Hills Path, car park (Lover’s Lane)) and LE48p, where a ‘very low’ and ‘low’ magnitude of change is predicted, respectively. Concentrations at all receptors are predicted to be well below air quality objectives set to protect the environment and health, as provided in **Section 12.2** within **Volume 2, Chapter 12** of the **ES**.

28.6.16 Overall, given that the predicted background concentrations for NO<sub>2</sub> at all receptors are well below air quality objectives set to be protective of the environment and health, with a concentration exposure orders of magnitude lower than is required to quantify any measurable health outcome, the magnitude of impact on health and wellbeing would be very low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

#### ii. Potential health and wellbeing effects from additional transport movements

28.6.17 Relevant health determinants associated with changes in road traffic movements during construction comprise: accidents and road safety; access and accessibility; community severance; and pedestrian fear and intimidation. Health and wellbeing effects associated with changes in exposure to emissions to air and noise are set out in **Section 28.6b(i)** and **Section 28.6b(iii)** of this chapter respectively.

28.6.18 The assessment of health and wellbeing effects associated with severance, access and accessibility, and pedestrian fear and intimidation are all addressed within **Chapter 10** of this volume of the **ES**. The only relevant health and wellbeing determinant associated with changes in road traffic movements considered further in this chapter of the **ES** is accidents and road safety.

#### Accidents and road safety

28.6.19 The most direct health and wellbeing hazard resulting from changes in transport nature and flow rate is human injury resulting from road traffic accidents.

- 28.6.20 As detailed in **Chapter 10** of this volume of the **ES**, several off-site highway improvements are proposed to mitigate the impact of Sizewell C traffic at various junctions through design.
- 28.6.21 In addition, a number of non-design construction traffic management measures would be in place to mitigate adverse effects on accidents and road safety. These include best practice measures set out in the **Construction Traffic Management Plan** (Doc Ref. 8.7), the **Construction Worker Travel Plan** (Doc Ref. 8.8) and a Worker Code of Conduct to help manage worker behaviour. The implementation of the **Construction Traffic Management Plan** and the **Construction Worker Travel Plan** by SZC Co. will be secured through an obligation in the Section 106 Agreement (see **draft Section 106 Heads of Terms**).

#### *Main Development Site and Associated Developments*

- 28.6.22 The assessment of health and wellbeing effects associated with changes in transport nature and flow rate considers the combined impacts of the traffic generated by the construction of the main development site and associated developments. As a result, the two have been considered together.
- 28.6.23 During early construction of the main development site, the permanent associated developments which constitute off-site highway improvements, two village bypass, Sizewell link road, and Yoxford roundabout and other highway improvements would not yet be operational. As a result, an initial negligible to minor adverse road safety effect associated with change in transport nature and flow rate from construction of the main development site is anticipated.
- 28.6.24 During peak construction, the necessary highway infrastructure improvements would be in place, which would manage any potential adverse impacts on road safety. While some negligible to minor adverse road safety effects would remain on some road links, there would also be some beneficial effects on road safety associated with the operation of permanent associated developments.
- 28.6.25 As a result, the magnitude of impact on road traffic accidents and injury would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

#### *iii. Potential health and wellbeing effects from changes in noise exposure*

- 28.6.26 Noise has the potential to affect health in a variety of ways and can be grouped into auditory and non-auditory effects. Auditory effects are associated with damage to the hearing organelles of the ear as a result of intense and prolonged exposure. This is typically associated with occupational exposures.

- 28.6.27 Community level impacts are more typically non-auditory health effects and, depending on the nature of the sound, magnitude of change, timing, and duration, can result in health and wellbeing effects such as annoyance, sleep disturbance, reductions in academic performance, and hypertension.
- 28.6.28 The main emphasis of noise standards, regulations, and guidance is placed on annoyance and sleep disturbance, as these are the most immediate consequences of noise effects and applicable to everyone. The Noise Policy Statement for England (Ref 28.36) applies two concepts, drawn from impacts associated with noise exposure:
- the Lowest Observed Adverse Effect Level (LOAEL) – the level above which adverse effects on health and quality of life start to be detected; and
  - and the Significant Observed Adverse Effect Level (SOAEL) – the level above which significant adverse effects on health and quality of life occur.
- 28.6.29 These levels will differ depending on different noise sources, receptors, and timings, therefore specific LOAEL and SOAEL have been defined for each source. Further information on the methodology for the assessment of noise is available in **Appendix 6G** of **Volume 1** of the **ES**.
- 28.6.30 Depending upon the classifications of effect adopted for the **ES**, it is possible that likely significant negative or adverse effects may be declared, whilst noise levels remain below the SOAEL. This separation of SOAEL and EIA significance reflects the difference between the requirement set out in paragraph 7 of Schedule 4 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 28.2), where a description is required of measures to “*avoid, prevent, reduce or, if possible, offset any identified significant adverse effects*”, and the requirement in policy to “*avoid significant adverse impacts on health and quality of life from noise*” and “*mitigate and minimise other adverse impacts on health and quality of life from noise*”. Since the SOAEL is generally above all but the highest level of EIA significance, the effects referred to here are based on EIA significance, as that is a more precautionary approach.
- 28.6.31 Where predicted construction noise levels are significant and above the SOAEL, mitigation as detailed in the **CoCP** (Doc Ref. 8.11) would be implemented to reduce noise levels, and this would be further addressed, where necessary, through the **Noise Mitigation Scheme**<sup>1</sup> (see **Appendix**

<sup>1</sup> The Noise Mitigation Scheme is proposed as secondary mitigation by **Volume 2, Chapter 11**. The Noise Mitigation Scheme is relevant to the health and wellbeing assessment as it would prevent/manage noise exposure to below the SOAEL. Significance conclusions for health and wellbeing effects are based on the residual effects reported by **Volume 2, Chapter 11**, thereby factoring in the results of the Noise Mitigation Scheme.

**11H** of this volume for details and the **draft Section 106 Heads of Terms** provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4)). The **Noise Mitigation Scheme** provides for improving the sound insulation of properties, and where very high noise levels are reached, for the temporary rehousing of occupants, thereby managing noise, or exposure to prevent significant health outcomes.

#### Main Development Site

##### *Daytime construction noise*

- 28.6.32** As summarised in **Table 11.32** of **Chapter 11** of this volume of the **ES**, during the daytime period (07:00–23:00hrs) where noise is dictated by the main development site (including activities on LEEIE), no significant residual noise effects are predicted during Phase 3 and 4 and on an average day in Phase 5.
- 28.6.33** However, significant residual noise effects during the daytime period are identified during Phase 1a (at receptor group locations 1, 2, 3, 4, 11, 14, 15, 20, and 23); Phase 1b/2 (at receptor group location 4) and during the busiest period in Phase 5 (at receptor group locations 1, 2, 3, 4, 11, 14, 15, 20, and 23) (see **Figure 11.1** of **Chapter 11** of this volume for the list of receptors to which these numbers relate and their locations).
- 28.6.34** As stated in **Chapter 11** of this volume of the **ES**, Phase 1a represents a typical day in a busy month of activity early during Phase 1, when noise levels are predicted to be at their highest. On the basis that Phase 1a would be of relatively short duration compared to the overall construction programme, any significant residual noise effects with the potential to cause health and wellbeing effects from temporary and intermittent annoyance would be limited.
- 28.6.35** As construction continues, the phases would become longer but the noise effects are expected to reduce. Phase 1b/2 may span more than three years, where noise levels following additional mitigation are predicted to result in significant residual noise effects at one receptor group location (compared to nine in the previous phase).
- 28.6.36** During the busiest period in Phase 5 (approximately one month), noise levels are expected to be similar to those predicted during Phase 1a. However, as with Phase 1a, these noise levels would only be experienced for a relatively short duration compared to the overall construction programme and therefore, any potential adverse health and wellbeing effects from temporary and intermittent annoyance would be limited.
- 28.6.37** As summarised in **Table 11.32** of **Chapter 11**, during the daytime period (07:00–23:00hrs) where noise is dictated by the LEEIE, significant residual

noise effects are predicted at two receptor locations, 12 and 21, during a typical day in the busiest period of the initial stripping/levelling of the LEEIE, during its preparation phase. On the basis that these effects would persist for a relatively short duration, any significant residual noise effects with the potential to cause health and wellbeing effects from temporary and intermittent annoyance would be limited.

- 28.6.38** No significant residual noise effects are predicted during early years operations on the LEEIE; during later years operations on the LEEIE; and during an average day in the restoration and reinstatement phase.
- 28.6.39** During the busiest period in the restoration and reinstatement phase (approximately one month), significant residual noise effects are predicted at three receptor group locations. However, on the basis that these effects would persist for a relatively short duration, any significant residual noise effects with the potential to cause health and wellbeing effects from temporary and intermittent annoyance would be limited.
- 28.6.40** **Table 11.32** of **Chapter 11** also sets out that no significant effects are predicted as a result of Sizewell B relocated facilities, including in terms of construction and demolition noise, construction and demolition vibration, and traffic noise during construction.
- 28.6.41** Overall, significant residual noise effects would only occur for a limited period of time. While significant residual noise effects occurring during Phase 1b/2 may span more than three years, this would only occur at one receptor group location, thereby limiting the potential for associated health and wellbeing effects at the population level. As a result, the magnitude of impact on health and wellbeing would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

#### *Night-time construction noise*

- 28.6.42** As detailed in **Chapter 11** of this volume of the **ES**, there are two scenarios for night-time noise (23:00–07:00hrs) modelled in the noise assessment. These comprise: green rail route and associated activities only; and green rail route, excavation, and all associated activities.
- 28.6.43** As summarised in **Table 11.32** of **Chapter 11** of this volume, in both scenarios, the majority of receptor group locations would experience no significant residual average noise levels. However, significant residual average noise levels during the night-time period are currently identified at three receptor group locations in both scenarios (4, 15 and 20) (see **Figure 11.1** of **Chapter 11** of this volume for the list of receptors to which these numbers relate and their location).

28.6.44 Maximum night-time construction noise levels are associated with sleep disturbance. As summarised in **Table 11.32** of **Chapter 11**, significant residual maximum noise levels are only identified at one receptor group location (20). On this basis, the potential for sleep disturbance and associated health and wellbeing effects at the population level is limited.

28.6.45 Overall, the magnitude of impact on health and wellbeing would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

#### *Construction traffic noise*

28.6.46 As summarised in **Table 11.32** of **Chapter 11**, no significant residual noise effects associated with construction related traffic are predicted at the majority of receptors.

28.6.47 Where specified noise criteria are exceeded, the **Noise Mitigation Scheme** would be applied (refer to **Appendix 11H** of this volume and the **draft Section 106 Heads of Terms**).

28.6.48 As a result, the magnitude of impact on health and wellbeing would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

#### *Other sound sources*

28.6.49 Other sound sources assessed in **Chapter 11** of this volume of the **ES** comprise the proposed Combined Heat and Power unit (CHP) or air source heat pump network selected to serve the accommodation campus.

28.6.50 In the context of low background noise, it is considered appropriate to ensure that noise associated with these mechanical services does not exceed the LOAEL. As the final system selection and design is to be determined, system specific noise mitigation measures would ensure that sound levels from the final proposal would not exceed 35 dB  $L_{Ar,15\text{minute},\text{free-field}}$  outside the nearest residential receptor.

28.6.51 As a result, the magnitude of impact on health and wellbeing would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

#### *Associated development sites*

#### *Northern and southern park and ride facilities*

28.6.52 As stated in **Chapter 4** of **Volume 3** and **Volume 4** of the **ES**, construction of the northern and southern park and ride facilities would be during the day



time period only (Monday to Saturday 07:00-19:00 hours). Therefore, there is no potential for adverse health and wellbeing effects to occur during the night-time period, such as sleep disturbance and associated hypertension. Overall, no significant residual noise effects are identified at any receptor group location during construction of the northern and southern park and ride facilities.

- 28.6.53 During operation of both the northern and southern park and ride facilities (while the main development site is under construction), no significant residual noise effects are identified at any receptor group location.
- 28.6.54 Changes in noise exposure during the removal and reinstatement phase would remain similar to the construction phase for both the northern and southern park and ride facilities where no significant residual noise effects are identified at any receptor group location.
- 28.6.55 As a result, the magnitude of impact on health and wellbeing from daytime annoyance would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

#### *Rail proposals*

- 28.6.56 As stated in **Chapter 4 of Volume 9** of the **ES**, rail construction works would take place during the day time period only (Monday to Saturday 07:00-19:00 hours). Therefore, there is no potential for adverse health and wellbeing effects to occur during the night-time period, such as sleep disturbance and associated hypertension.
- 28.6.57 Overall, no significant residual noise effects are identified at any receptor group location during construction of the Abbey Road level crossing, Buckleswood Road level crossing, branch line level crossings, and branch line upgrade works.
- 28.6.58 During construction of the rail extension route, modelling indicates that there is the potential for significant residual noise effects at Pro Corda Music School at Leiston Abbey. However, bespoke assessment and further mitigation will be explored with the music school and should ultimately reduce this to a level which is not significant. This will be secured in the Section 106 Agreement (see **draft Section 106 Heads of Terms** provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4)).
- 28.6.59 During operation of the rail extension route and branch line between Saxmundham and Leiston (while the main development site is under construction), no significant residual noise effects are predicted during the daytime.

- 28.6.60 However, currently, significant residual noise effects are identified at a number of receptor group locations during the night-time period (Kelsale Covert, Westhouse Crossing Cottage, and Crossing East).
- 28.6.61 In addition, during operation of the rail, significant residual noise effects are predicted during the night-time period at between five and ten properties within the 77dB,  $L_{Amax}$  contour, and between 100 and 110 properties between the 70 and 77dB,  $L_{Amax}$  contours in proximity to the East Suffolk line. However, a Rail Noise Mitigation Strategy (including change arrangements at Saxmundham junction, to be developed in consultation with Network Rail), would be implemented. Any properties that remain affected by noise above the SOAEL would fall under the provisions of the **Noise Mitigation Scheme** (refer to **Appendix 11H** of this volume of the **ES**). No significant residual noise effects are predicted during the day.
- 28.6.62 Regarding groundborne noise, significant residual noise effects are predicted at receptors within 14 metres of the East Suffolk line where trains travel at 10mph, and within 20 metres of the East Suffolk line where trains travel at 20mph. Of these, only properties within 5 metres of the East Suffolk line where trains travel at 10mph, and within 10 metres of the East Suffolk line where trains travel at 20mph, are expected to be above the SOAEL.
- 28.6.63 Speed limits of 10mph are proposed in Woodbridge and Melton, Campsea Ashe, and Saxmundham, as shown in **Figures 4.2, 4.3 and 4.4** of **Chapter 4** of **Volume 9** of the **ES**.
- 28.6.64 SZC Co. would develop a Rail Noise Mitigation Strategy in consultation with Network Rail and the rail freight operator, informed by the further detailed assessments, to establish the package of measures to be implemented to mitigate noise impacts on the Saxmundham to Leiston branch line and the East Suffolk line.
- 28.6.65 During the removal and reinstatement of the rail extension route, no significant residual noise effects are identified at any receptor group location.
- 28.6.66 On the basis that the receptor groups currently identified to experience significant adverse noise effects and exceedances in specified noise criteria will fall under the provisions of the **Noise Mitigation Scheme** (see **Appendix 11H** of this volume) and further assessments would be undertaken to identify where additional mitigation is required to avoid and manage any receptor group exposure to noise exceeding the SOAEL, the magnitude of impact on health and wellbeing would be medium. In the context of a uniformly high sensitivity receptor, the resultant effect is considered moderate adverse, which is **significant**.

### *Freight Management Facility*

- 28.6.67 As stated in **Chapter 4** of **Volume 8** of the **ES**, construction of the freight management facility would be during the day time period only (Monday to Saturday 07:00-19:00 hours). Therefore, there is no potential for adverse health and wellbeing effects to occur during the night-time period, such as sleep disturbance and associated hypertension. Overall, no significant residual noise effects are identified at any receptor group location during construction of the freight management facility.
- 28.6.68 The freight management facility would be operational for a minimum of 7.5 hours a day for five days a week, to a maximum of 24 hours a day seven days a week during peak construction of the main development site. Activities associated with the operation of the freight management facility are limited to HGV movements. As stated in **Chapter 4** of **Volume 8** of the **ES**, no significant residual noise effects are identified at any receptor group location.
- 28.6.69 During the removal and reinstatement phase of the freight management facility, no significant residual noise effects are identified at any receptor group location.
- 28.6.70 As a result, the magnitude of impact on health and wellbeing would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

### *Two Village Bypass*

- 28.6.71 As stated in **Chapter 4** of **Volume 5** of the **ES**, construction of the two village bypass would take approximately 24 months and would be during the day time period only (Monday to Saturday 07:00-19:00 hours). Therefore, there is no potential for adverse health and wellbeing effects to occur during the night-time period, such as sleep disturbance and associated hypertension. Overall, no significant residual noise effects are identified at any receptor group location during construction of the two village bypass.
- 28.6.72 The two village bypass would be operational during construction of the main development site. Significant beneficial effects are anticipated during all relevant operational scenarios (2028 typical and 2028 busiest) at the majority of receptors along the A12 where it passes through the villages of Stratford St Andrew and Farnham. This is due to the reduction of traffic travelling through the villages along the existing section of the A12, with the majority of vehicles using the new bypass instead.
- 28.6.73 During a typical day of the peak construction year (2028) specifically, there would be significant beneficial noise effects at 15 receptor group locations.

However, significant residual adverse noise effects are also reported at 11 receptor group locations. All remaining receptors would not experience significant residual noise effects. (See **Table 4.23** of **Chapter 4** of **Volume 5** of the **ES**, along with **Figure 4.1** of **Volume 5** for the list of receptors to which the numbers in **Table 4.23** relate and their locations).

- 28.6.74 During the busiest day of the peak construction year (2028) specifically, there would be significant beneficial noise effects at 14 receptor group locations. However, significant residual adverse noise effects are also reported at a further 14 receptor group locations. All remaining receptors would not experience significant residual noise effects.
- 28.6.75 Further assessments would be undertaken under the **Noise Mitigation Scheme** (see **Appendix 11H** of this volume) and where receptors are confirmed to be exposed to noise exceeding the SOAEL, the provisions of that scheme will apply. Overall, the adverse and positive magnitude of impact on health and wellbeing would be medium. In the context of a uniformly high sensitivity receptor, the resultant effect is considered moderate adverse/beneficial, which is considered **significant** in EIA terms.

#### *Sizewell Link Road*

- 28.6.76 As stated in **Chapter 4** of **Volume 6** of the **ES**, construction of the Sizewell link road would take approximately 24 months and would be during the day time period only (Monday to Saturday 07:00-19:00 hours). Therefore, there is no potential for adverse health and wellbeing effects to occur during the night-time period, such as sleep disturbance and associated hypertension. Overall, no significant residual noise effects are identified at any receptor group location during construction of the Sizewell link road.
- 28.6.77 Significant beneficial effects are also anticipated at the majority of receptors or receptor groups along the section of the B1122 from Middleton Moor to Theberton during all relevant operational scenarios (2028 typical and 2028 busiest). This is due to the reduction of traffic within the villages, with the majority of vehicles using the new link road instead.
- 28.6.78 The Sizewell link road will be operational during construction of the main development site. During a typical day and on the busiest day of the peak construction year (2028) specifically, there would be significant beneficial noise effects at 8 receptor group locations. However, significant residual adverse noise effects are also reported at 19 receptor group locations. All remaining receptors would not experience significant residual noise effects. (See **Table 4.23** of **Chapter 4** of **Volume 6** of the **ES**, along with **Figure 4.1** of **Volume 6** for the list of receptors to which the numbers in **Table 4.23** relate and their locations).

28.6.79 Further assessments would be undertaken under the **Noise Mitigation Scheme** (see **Appendix 11H** of this volume) and where receptors are confirmed to be exposed to noise exceeding the SOAEL, the provisions of that scheme will apply. Overall, the adverse and positive magnitude of impact on health and wellbeing would be medium. In the context of a uniformly high sensitivity receptor, the resultant effect is considered moderate adverse/beneficial, which is considered **significant** in EIA terms.

*Yoxford roundabout and other highway improvements*

28.6.80 As stated in **Chapter 4** of **Volume 7** of the **ES**, construction of the Yoxford roundabout would take approximately six to nine months and would be during the day time period only (Monday to Saturday 07:00-19:00 hours). Therefore, there is no potential for adverse health and wellbeing effects to occur during the night-time period, such as sleep disturbance and associated hypertension. Overall, no significant residual noise effects are identified at any receptor group location during construction of the Yoxford roundabout and other highway improvements.

28.6.81 Yoxford roundabout and the other highway improvements will be operational during construction of the main development site. During a typical day and on the busiest day of the peak construction year (2028), no significant residual noise effects are identified at any receptor group location.

28.6.82 Although the small change in noise exposure would be imperceptible and not significant, the operation of the Yoxford roundabout and the other highway improvements results in four individual properties being identified as likely to exceed the SOAEL. Therefore, this change will be subject to further assessments under the **Noise Mitigation Scheme** (see **Appendix 11H** of this volume). Where receptors are confirmed to be exposed to noise exceeding the SOAEL, the provisions of that scheme will apply.

28.6.83 As a result, the magnitude of impact on health and wellbeing would be very low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

iv. *Potential health and wellbeing effects associated with the introduction of a temporary non-home-based construction workforce*

28.6.84 Prior to mitigation, the introduction of a large non-home-based construction workforce to a new area has the potential to impact upon critical community services, including public healthcare. The following section investigates the potential demand on public healthcare from non-home-based workers and their dependants that may choose to relocate to the area.

- 28.6.85 As detailed in **Appendix 28B** of this volume, a 24/7 comprehensive on-site occupational health service would be provided. The scope of this and the calculation of subsequent residual demand stems from experience on other major infrastructure projects, most notably, the construction of Hinkley Point C.
- 28.6.86 Hinkley Point C is uniquely comparable in this instance, not only by type and scale of project; or being a timely example with representative workforce profile and relative occupational and public health requirements; but also by proponent, and demonstrates the extent and effectiveness of the mitigation that would be brought to bear.
- 28.6.87 The provision of the occupational health service by SZC Co. would be secured through an obligation in the Section 106 Agreement (see **draft Section 106 Heads of Terms**).

#### Non-home-based workforce

- 28.6.88 **Volume 2, Chapter 9** of the **ES** uses a workforce profile peaking at 7,900 workers and presents the anticipated level of home-based and non-home-based recruitment, provided in **Appendix 9A** of this volume. At peak there are predicted to be 2,016 home-based workers and 5,884 non-home-based workers.
- 28.6.89 As shown in **Table 28.6**, once factoring in the occupational healthcare provision (including on-site pharmacy, nursing and GP services including health, drug and alcohol screening, treatment and physiotherapy), the demand for healthcare as a result of the Sizewell C Project is internalised and the residual impact on local services is anticipated to be minimal, with an annual average GP referral of four, peaking during year seven to eight residual GP referrals, and totalling to 47 GP referrals per non-home based worker over the entire construction phase. Such a low residual referral is only possible through the extensive occupational healthcare service provision, proven on Hinkley Point C. A proactive approach to sexual and mental health will form part of the occupational provision to address and further minimise potential impacts on local healthcare, and will remain aligned to and support local initiatives. The on-site pharmacy open to the entire workforce, internalises potential demand, and further manages any impact to local healthcare capacity and cost.
- 28.6.90 Ambulance call outs are anticipated to be minimal, with the potential for approximately 79 ambulance call outs during the peak construction year for the entire workforce (7,900 x 0.01), representing less than 1% of the East of England Ambulance Service Hazardous Area Response Teams call out from April 2018 to April 2019 (Ref 28.37). However, it is noted that this may increase pressure on local ambulance response centres in the region

disproportionately, as a result of the relative remoteness of the site and its access requirements for a nuclear construction site. As such, under certain conditions a minor adverse effect may arise before mitigation, and therefore SZC Co. will seek to develop a responsive mitigation strategy in this regard.

**28.6.91** When applying experience from Hinkley Point C, referral to minor injury units (MIU) for minor injuries is predicted to average out as ten a year, again peaking in year seven at 20 referrals, and totalling 124 over the entire construction phase. However, in the absence of any minor injury units locally, a worst case has been considered, where these referrals (largely for X-rays) would be added to non-ambulance hospital referrals.

**28.6.92** Non ambulance hospital referrals (for significant yet non-emergency medical issues) represent the largest change in local healthcare demand, with an annual average referral of 91 (7.5 a month), peaking in year seven at 177, and totalling at 1093 over the entire 12-year construction phase. This increases marginally when adding the minor injury referrals to an annual average referral of 101 (8 a month), peaking in year seven at 197, and totalling at 1,217 over the entire 12-year construction phase.

**Table 28.6: Non-home-based worker residual healthcare forecast**

Year	Month	Non-home-based workers.	Forecasted referral.		
			GP Referral (0.0013 per non-home-based worker).	Hospital Referrals.	
				Minor Injury Referral (0.003 per non-home-based worker).	Non-ambulance Hospital Referral (0.03 per non-home-based worker).
1	12	816	1	3	24
2	24	1,504	2	5	45
3	36	2,538	3	9	76
4	48	3,519	5	12	106
5	60	4,551	6	15	137
6	72	5,598	7	19	168
7	81	5,884	8	20	177
8	85	5,470	7	19	164
9	97	3,920	5	13	118
10	109	1,582	2	5	47
11	121	491	1	2	15

Year	Month	Non-home-based workers.	Forecasted referral.		
			GP Referral (0.0013 per non-home-based worker).	Hospital Referrals.	
				Minor Injury Referral (0.003 per non-home-based worker).	Non-ambulance Hospital Referral (0.03 per non-home-based worker).
12	133	560	1	2	17
<b>Sub Total.</b>			<b>47</b>	<b>124</b>	<b>1,093</b>
<b>Total</b>			<b>-</b>	<b>1,217</b>	
<b>Annual Peak.</b>			<b>8</b>	<b>197</b>	
<b>Annual Average.</b>			<b>4</b>	<b>101</b>	

28.6.93 There may also be a degree of offsetting the demand of home-based workers’ healthcare needs should they choose to use the occupational health service rather than their own GP (e.g. due to convenience of not having to take time off work) and through health promotion and screening services provided on site. However, a conservative approach has been taken and this offsetting has not been factored into the assessment.

28.6.94 As a result, the magnitude of impact on healthcare would be low. In the context of a highly valued and sensitive asset, the resultant effect is considered minor adverse, which is **not significant**.

**Non-home-based workers’ dependants**

28.6.95 As detailed in **Appendix 9B** of this volume, survey evidence from Hinkley Point C indicates that 13% of workers surveyed had brought dependants to live with them during the construction period.

28.6.96 When applied to Sizewell C (not discounting for those occupying accommodation where families are not allowed i.e. campus and caravan park), this would equate to around 765 ‘families’ (13% of 5,884 workers). This assessment assumes one non-dependant adult per family in addition to the worker (e.g. partners, friends and parents), while in reality some will have more than one additional non-dependant adult, and others will have none. When further discounting staff that will be taking up accommodation that precludes the possibility of bringing any dependants, the limitations outlined above are addressed through the precautionary approach.

28.6.97 Survey data from Hinkley Point C further identifies a likelihood for around 403 children within these family households at peak construction, including:



- 180 pre-school-aged children;
- 190 primary school-aged children; and
- 33 secondary school-aged children.

28.6.98 This is likely to be an over-estimate due to the substantial amount of project accommodation where workers' families would not be allowed to live (campus and caravan park). As such, it is predicted that of the few non-home-based staff that do bring dependants, this would equate to approximately 1,168 individuals (765 partners and 403 children) directly attributed to Sizewell C during the peak construction year, which would constitute an additional demand for approximately 1 GP spread over the entire study area.

28.6.99 Importantly, the non-home-based workers that choose to bring families, are likely to choose existing housing either in the owner-occupied or private rented sector, offsetting the previous occupants, and with them, their associated healthcare demand. This is because dependants would not be permitted to stay in the project accommodation campus and caravan park and tourist accommodation is unlikely to be utilised for long-term stays. On this basis, and for the purpose of the assessment, the potential effect of dependants occupying existing properties is not considered significant.

28.6.100 As a result, the magnitude of impact on healthcare would be low. In the context of a highly valued and sensitive asset, the resultant effect is considered minor adverse, which is **not significant**.

#### Conclusion

28.6.101 Following the implementation of the occupational health service, the change in healthcare demand directly attributable to the non-home-based workers would be negligible.

28.6.102 The potential change in healthcare demand attributable to any dependants or family members of non-home-based workers would be minor. It is anticipated that workers who bring families are most likely to be on long-term contracts and would buy properties or take private rented sector accommodation during this time. As such, they would not represent a net addition to the existing number of council tax paying households/population, and there would be little to no material change in net healthcare demand.

28.6.103 Overall, the magnitude of impact on health and wellbeing would be low. In the context of a uniformly high sensitivity receptor and highly valued asset, the resultant effect is considered minor adverse, which is **not significant**.

v. Potential health and wellbeing benefits associated with socio-economic factors

Employment

- 28.6.104 Employment and income are potentially the most significant determinants of long-term health, influencing a range of factors including the quality of housing, education, diet, lifestyle, coping skills, access to services, and social networks.
- 28.6.105 Poor economic circumstances can influence health throughout life, where communities subject to socio-economic deprivation are more likely to suffer from morbidity, injury, anxiety, and depression and tend to suffer from higher rates of premature death.
- 28.6.106 As set out in **Chapter 9** of this volume of the **ES**, the construction phase would take 9-12 years to complete. It is anticipated that around 40,000 roles (calculated as person years of construction) would be created over the entire construction phase, although workers would be redeployed within the Sizewell C Project where possible and therefore may take on a number of different roles.
- 28.6.107 Redeploying workers during the construction phase would increase job retention rates. On the basis that lifestyle changes need to be consistent to have a material impact on health and wellbeing, longer-term employment to a lower number of people is preferable to shorter-term employment to a higher number of people. Overall, whilst employment associated with construction of the Sizewell C Project is considered temporary, Sizewell C's construction phase is relatively long-term and notably longer than the average construction job tenure in the UK.
- 28.6.108 During construction, the activities and work packages being undertaken would affect the number and types of roles that the Sizewell C Project would need. In addition, the types of jobs required would influence the profile of home-based workers (i.e. individuals primarily recruited from within a 90-minute construction daily commuting zone - CDCZ) and non-home-based workers (i.e. individuals recruited from outside the CDCZ).
- 28.6.109 The Sizewell C Project represents a significant increase in opportunities for employment, skills and sustainable careers in a range of construction and non-construction sectors with different transferrable skills. A proportion of the workforce would be drawn from existing residents, including those currently unemployed or economically inactive. This would be enhanced by the Sizewell C Project's **Employment, Skills and Education Strategy** (Doc Ref. 8.9, Appendix A), the implementation of which will be secured through a Section 106 Agreement (see **draft Section 106 Heads of Terms**).

- 28.6.110 As set out in **Appendix 9A** of this volume, the percentage of the total construction workforce which would be home-based would vary over the period of the development, with a higher percentage at the beginning, which then reduces as the Sizewell C Project moves towards its peak, and then increases again towards completion.
- 28.6.111 It is predicted that across all job types, there would be an average of 959 home-based workers over the 9-12-year construction phase, peaking at 1,810 in year six.
- 28.6.112 In total, the number of home-based workers equates to approximately 7% of total construction jobs in the 90-minute area and is considered to be a moderate beneficial effect in socio-economic terms.
- 28.6.113 **Chapter 9** of this volume of the **ES** also sets out that the construction of Sizewell C would also generate indirect and induced economic benefits as a result of spending on the supply chain (by the Sizewell C Project) and on goods and services in the local economy (by the workforce).
- 28.6.114 It is anticipated that – if similar activities and local supply chain recruitment are achieved at Sizewell C as Hinkley Point C - there could be a “local” retention of in excess of £1.5bn over the construction period, equivalent to an average of £125m per year. This is a moderate beneficial effect and **significant** at the regional scale.
- 28.6.115 As set out in **Volume 2, Chapter 9** of the **ES**, wages and spending could contribute over £320 million during the construction phase. This is a moderate beneficial effect at the local and regional scale and would be **significant**.
- 28.6.116 **Chapter 9** of this volume of the **ES** provides evidence that depending on the point in the economic cycle, between 40% and 52% of new jobs are filled by people who were not previously working (i.e. unemployed or economically inactive). As a result, up to 60% of vacancies would be filled by people who change job (the normal operation of the labour market).

#### GVA

- 28.6.117 Gross value added (GVA) measures the contribution to an economy of an individual producer, industry, sector or region. As stated in **Chapter 9** of this volume of the **ES**, the construction industry accounts for over £1bn of output in Suffolk which equates to approximately 7% of total output in the county. On the basis that GVA per construction worker in Suffolk FTE is approximately £60,000, Sizewell C would contribute approximately £2.5bn GVA over the course of the construction phase, which is again considered to present a moderate beneficial socio-economic health effect which is **significant** at the regional level.

## Conclusion

28.6.118 Employment and income are key determinants of health, influencing a range of wider health determinants that influence social, mental and physical health. Overall, the construction phase represents significant direct, indirect and induced employment and income opportunities distributed locally, regionally and nationally. The magnitude of impact on health and wellbeing would be medium. In the context of a uniformly high sensitivity receptor, the resultant effect is considered moderate beneficial, which is **significant**.

### vi. General stress and anxiety impacting upon quality of life and wellbeing

28.6.119 Quality of Life (QoL) is defined by the WHO as *“an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”*.

28.6.120 There are a number of factors which influence an individual’s quality of life, which include emotions such as stress and anxiety. The tangible aspects associated with the proposed development which underlie local community risk perception have been investigated and addressed within this chapter which provides a robust assessment supported by an appropriate scientific evidence base for a range of health pathways. The assessment is therefore intended to help address local community concerns and perceived risk in addition to informing decision making.

28.6.121 The intangible and more subjective aspects which are often not possible to quantify, have been explored and addressed through meaningful consultation during the planning application process, to inform and refine the proposed development. In this instance, engagement with local communities will be maintained during construction and operation to investigate, address, and respond to concerns. Details of the Sizewell C Project’s approach to communication, community and stakeholder engagement are set out in the **Code of Construction Practice** (Doc Ref. 8.11).

28.6.122 On this basis, the magnitude of impact on quality of life and wellbeing would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

## c) Operation of Proposed Development

## i. Potential health and wellbeing effects from changes in radiological exposure

## Overview

**28.6.123** The legislation, policy, guidance and methodology relevant to the assessment of likely significant radiological effects of the Sizewell C Project and any potential cumulative impacts are contained within **Volume 2, Chapter 25** of the **ES**. This section provides a summary of the assessment undertaken and builds upon its conclusions to prescribe significance and further set potential health risk into context.

**28.6.124** Radiation describes any process in which energy travels through a medium or through space. There are two broad classes of radiation: ionising and non-ionising. Ionising radiation has enough energy to charge or 'ionise' an atom and non-ionising radiation (which includes electric and magnetic fields as well as infrared and microwaves) has insufficient energy to cause ionisation. This section concentrates on ionising radiation and the term 'radiation' is used to mean ionising radiation.

## Guideline Limits

**28.6.125** The principles of radiological protection are set by the International Commission on Radiation Protection and described in ICRP 103 (Ref 28.38). This includes the principle of dose limitation; that is, the limit is applied over and above any radiation dose which may arise naturally. In the UK an average naturally occurring radiation dose to an individual is around 2.7 mSv per year (Ref 28.39) although there is considerable variability around this average depending on the part of the country, the type of building material, and other factors such as ventilation.

**28.6.126** The dose limit for any additional radiation dose applied is the same irrespective of the actual natural background dose of type of activity.

**28.6.127** Prior to being allowed to operate a facility involving the discharge or disposal of radioactive waste, the operator must obtain an Environmental Permit issued by the relevant regulatory body. When applying for an Environmental Permit the future operator must conduct an assessment of the radiological impacts.

**28.6.128** The radiological impacts on the most exposed members of the public are assessed against UK dose limits and constraints derived from International and European regulations and guidance, as provided in **Volume 2, Chapter 25** of the **ES**. These are summarised below:

- a) the sum of doses arising from such exposures does not exceed the individual public dose limit of 1 mSv per year;
- b) the individual dose from any single site relative to the combined impact from Sizewell B and Sizewell C (referred to as the site constraint) does not exceed 0.5 mSv per year; and
- c) the individual dose received from any new discharge source relative to Sizewell C only, includes direct radiation (referred to as the source constraint) since 13 May 2000 does not exceed 0.3 mSv per year.

#### Determining radiological doses to members of the public

28.6.129 The potential routes by which people could be exposed to radiation, and hence receive a radiation dose, are:

- external radiation from certain types of radioactive materials, which could affect people in close proximity; and
- internal radiation from radioactive materials that, once released, are in a form that means they could be inhaled or could enter the food chain and be ingested.

28.6.130 For existing power stations or other nuclear licensed sites, the determination of potential doses to members of the public can either be modelled or based on a measurement of concentrations of radioactive materials in the environment; observation of habits such as time spent in specified areas or amounts and types of foods consumed; and internationally recognised dose coefficients. These doses are reported annually in the Radioactivity in Food and the Environment reports (Ref 28.40), to provide reassurance that the public's exposure to authorised discharges and direct radiation near nuclear and non-nuclear sites are low and within dose limits.

28.6.131 For assessments, such as that required for the Sizewell C Project, it is necessary to model potential discharges and environmental concentrations and to consider a hypothetical group of people whose habits would result in their being the most exposed to any radioactive discharges from the site. This is described further in **Volume 2, Chapter 25** of the **ES**.

#### Results

28.6.132 The radiological impact assessment for human and non-human species has been prepared to support the environmental permit application for radioactive substance regulations (RSR) and is summarised in **Volume 2, Chapter 25** of the **ES**.

28.6.133 The assessment shows that the individual doses calculated were significantly less than the corresponding source and site constraints and the public dose limit, and the collective dose has also been shown to be trivial.

#### Conclusion

28.6.134 The magnitude of impact on health and wellbeing would therefore be negligible, which in an area of high sensitivity would result in a negligible adverse effect, which is **not significant**.

#### ii. Potential health and wellbeing effects from changes in electromagnetic field exposure

#### Overview

28.6.135 Electromagnetic Fields (EMF) and the electromagnetic forces they represent are a fundamental part of the physical world. Electromagnetic forces are partly responsible for the cohesion of material substances and they mediate all the processes of chemistry, including those of life itself. EMF occur naturally within the human body (through nerve and muscle activity) and also arise from the magnetic field created by Earth and electric fields in the atmosphere.

28.6.136 The sources of EMF with which this chapter is concerned are power frequency EMF in the frequency range below 300 kilohertz (kHz), i.e. the electric and magnetic fields produced wherever electricity is generated, distributed, or used.

28.6.137 Unlike ionizing radiation found in the upper part of the electromagnetic spectrum, power-frequency electric and magnetic fields are much too weak to break the bonds that hold molecules in cells together and therefore, cannot directly produce ionization. This is why EMF are categorised as ‘non-ionizing radiation’.

#### Public Exposure Guidelines

28.6.138 The former Department of Energy and Climate Change published a voluntary Code of Practice document detailing the recommended approach for demonstrating compliance with EMF exposure limits (Ref 28.41). It implements the 1998 International Commission on Non-Ionizing Radiation Protection Guidelines under the terms of the 1999 EU Recommendation in the UK context.

28.6.139 **Table 28.7** shows the International Commission on Non-Ionizing Radiation Protection guideline limits for public exposure. The Basic Restriction level is for induced current in the central nervous system to protect health. The reference level for external fields indicates a threshold beyond which the

potential for induced current to exceed the Basic Restriction should be investigated. The external field strengths sufficient to induce current density at the Basic Restriction level are specified by the former Health Protection Agency, now Public Health England and form the basis of the Code of Practice assessment levels.

**Table 28.7: International Commission on Non-Ionizing Radiation Protection guidelines**

Description		AC fields – 1998 International Commission on Non-Ionizing Radiation Protection Guidelines, as Adopted in the UK in 2004 in the terms of the 1999 EC Recommendation and in the Department of Energy and Climate Change Code of Practice.
		Public exposure guideline
Basic Restriction (the quantity which must not be exceeded).	Induced current density in the central nervous system.	2 mA m <sup>-2</sup>
Reference Level (not a limit in itself but a guideline for when Basic Restriction investigation may be required).	Magnetic field.	100 µT
	Electric field.	5 kV m <sup>-1</sup>
Basic Restriction equivalent external field.	Magnetic field.	360 µT
	Electric field.	9 kV m <sup>-1</sup>

Source: (Ref 28.35; Ref 28.41; Ref 28.42)

**28.6.140** The Sizewell C Project grid connection would align with the existing infrastructure. Once operational, changes to site transmission infrastructure would comply with the Department of Energy and Climate Change Code of Practice, and as a consequence the exposure guidelines would be set to preclude any manifest health outcome for public exposure scenarios, regardless of any minor on-site change.

**Conclusion**

**28.6.141** In light of the current evidence base of EMF health effects, the fact that existing power distribution lines would be utilised and that the effect from the proposed development would fall well within the relevant EMF exposure guidelines protective of public health (as specified in the Department of Energy and Climate Change Code of Practice), it is concluded that the magnitude of impact on health and wellbeing will be very low, which in an area of high sensitivity would result in a negligible adverse effect, which is **not significant**.



iii. Potential health and wellbeing effects from changes in emissions to air

Transport emissions

*Main Development Site*

28.6.142 As detailed in **Volume 2, Chapter 12** of the **ES**, operational transport air quality dispersion modelling results for the operational phase of the Sizewell C main development site indicate a ‘negligible’ effect at most of the receptor group locations (with a limited number of receptors experiencing ‘minor’ or ‘moderate’ beneficial effects). The air quality effects for all sensitive receptors within the study area are considered to be not significant as a whole. Absolute concentrations will remain well below air quality standards set to be protective of the environment and health, and changes are not of a concentration or exposure sufficient to quantify any change in local health.

28.6.143 Based on these predictions, the magnitude of impact on health and wellbeing will be very low, and in the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

*Associated Developments*

28.6.144 As detailed in **Chapter 5** of **Volume 5, Volume 6** and **Volume 7** of the **ES**, operational transport air quality dispersion modelling results for the operational phase of the permanent associated development sites indicate that all modelled scenarios will have a ‘negligible’ effect at all receptor group locations, with the exception of some receptors relevant to the two village bypass, as detailed in **Volume 5, Chapter 5** of the **ES**, which would experience ‘minor’ or ‘moderate’ beneficial effects associated with a decrease in pollutant concentration.

28.6.145 Overall effects are not predicted to be significant by air quality standards, absolute concentrations will remain well below air quality standards set to be protective of the environment and health. As a result, the magnitude of impact on health and wellbeing will be very low, and in the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

*Combustion activities*

28.6.146 Once the Sizewell C main development site is operational, the primary on-site emission to air would arise from the engines of the backup diesel generators during routine testing and in the event of a loss of on-site power (LOOP).

28.6.147 The commissioning and routine testing scenarios have the potential to cause both long-term and short-term impacts on emissions to air, while the LOOP scenario only has the potential to cause short-term impacts (likely to be less than 48 hours if it ever took place).

*Long-term impacts*

28.6.148 As detailed in **Chapter 12** of this volume of the **ES**, the commissioning scenario modelling outputs indicate that annual average (long-term) NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations will remain well within air quality objectives set to protect the environment and health. The worst-case change in annual average concentrations at any receptor are predicted to be:

- 0.6 µg/m<sup>3</sup> for NO<sub>2</sub>;
- 0.02 µg/m<sup>3</sup> for PM<sub>10</sub>; and
- 0.02 µg/m<sup>3</sup> for PM<sub>2.5</sub>.

28.6.149 The results from the air quality assessment and baseline health data from all-cause mortality and emergency hospital admissions collected for East Suffolk, were applied using the relevant risk ratios to quantitatively assess the potential health effects associated with the operation of Sizewell C.

28.6.150 To set potential risk into context, the health and wellbeing assessment applies a worst-case hypothetical scenario where a quarter of the population within East Suffolk would reside at the location with the maximum change in emission concentration for an entire year.

28.6.151 As shown in **Table 28.8**, even in this worst-case hypothetical scenario which grossly overestimates population exposure, the worst-case change in concentration and exposure during the commissioning scenario are orders of a magnitude lower than is required to quantify any change in local population health outcomes per annum.

**Table 28.8: Health outcome effects associated with changes in air quality**

Health outcome	Worst-case scenario attributable fraction (PAF)	hypothetical population	Proportion of baseline rate
All-cause mortality	0.9		<0.01
Hospital admissions (respiratory and cardiovascular disease)	0.6		<0.01

28.6.152 For the routine testing scenario, changes in air quality for all emissions are expected to be a third of the predicted impact from the commissioning

scenario at any receptor. As a result, they remain well within the relevant air quality objectives set to protect the environment and health.

#### *Short-term impacts*

- 28.6.153** As detailed in **Volume 2, Chapter 12** of the **ES**, the commissioning scenario modelling outputs indicate that the predicted worst-case change (short-term) in NO<sub>2</sub> (hourly) and PM<sub>10</sub> (24-hour) concentrations at any receptor would all remain within the relevant short-term air quality objectives set to be protective of the environment and health, and are not considered significant in air quality terms.
- 28.6.154** For the routine testing scenario, changes in air quality for all pollutants are expected to be lower than the respective predicted impact from the commissioning scenario at any receptor. As a result, they remain well within the relevant air quality objectives set to protect the environment and health, and are not considered significant in air quality terms.
- 28.6.155** As detailed in **Chapter 12** of this volume of the **ES**, in the instance of a LOOP event (i.e. emergency shut down of the EPR's and use of backup generators), modelling outputs indicate that the predicted worst-case change (short-term) in PM<sub>10</sub> concentrations (24-hour) at any receptor would remain within the relevant short-term air quality objectives set to be protective of the environment and health, and are not considered significant in air quality terms.
- 28.6.156** There is the potential to breach the NO<sub>2</sub> short-term (hourly) air quality objective in the instance of a LOOP event. This however, is an extremely unlikely emergency scenario which is likely to last less than 48 hours. As a result, it is unlikely that NO<sub>2</sub> emissions associated with a LOOP event would be of a duration, concentration or exposure sufficient to quantify a measurable change in local health outcomes.

#### *CHP emissions*

- 28.6.157** The CHP is to be retained during the operational phase, however, concentrations associated with the CHP on the main development site would remain consistent with those during the construction phase detailed in this chapter. As such, all receptors would have an 'imperceptible' magnitude of change (with two exceptions that would have a 'low' and 'very low' magnitude of change), with concentrations predicted to be well below air quality objectives set to protect the environment and health.

#### *Conclusion*

- 28.6.158** Overall, given that even the worst-case predicted scenarios are still well below air quality objectives for standard operations and the quantitative

assessment concludes that there would be no measurable change in local population health outcomes per annum, the magnitude of impact on health and wellbeing will be very low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

iv. [Potential health and wellbeing effects from additional transport movements](#)

[Accidents and road safety](#)

28.6.159 During operation, the benefits associated with highway infrastructure improvements, detailed in **Section 28.6** of this chapter, completed during construction will remain. In addition, traffic volumes would be much lower than during construction.

28.6.160 As stated in **Chapter 10** of this volume of the **ES**, there is expected to be a minor adverse effect on accidents and road safety at the main site access, a minor beneficial effect at the two village bypass, Sizewell link road, Yoxford roundabout, the A1094/B1069 and A140/B1078 junctions and a negligible effect on road safety elsewhere on the road network during the operational phase.

28.6.161 On the basis that the only adverse effect would be at the main site access (not readily used by the public), permanent associated developments would all provide beneficial effects on the local road network, and all effects elsewhere on the road network would be negligible, the magnitude of impact on health and wellbeing from road safety would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor beneficial, which is **not significant**.

v. [Potential health and wellbeing effects from changes in noise exposure](#)

[Operation of Main Development Site](#)

[Operational noise from power station](#)

28.6.162 As summarised in **Table 11.32** of **Volume 2, Chapter 11**, no significant residual noise effects are predicted during the day and night-time periods at any receptor group location from the operation of the power station. This includes both internal (with windows partially open) and external noise levels during the day time period, and internal (with windows partially open) noise levels during the night time period.

28.6.163 As a result, the magnitude of impact on health and wellbeing would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

### *Operational traffic noise*

- 28.6.164 As stated in **Chapter 11** of this volume of the **ES**, the assessment of noise from road traffic during the operation of the power station (in 2034) was carried out for 134 road links. During both the day and night-time periods, no significant residual noise effects associated with operational related traffic are identified.
- 28.6.165 As a result, the magnitude of impact on health and wellbeing would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

### *Other sound sources*

- 28.6.166 If selected to serve the accommodation campus, the proposed CHP would be retained for back-up heat and power during the operational phase. The CHP, along with the proposed back-up generators and proposed electrical sub-station, constitutes a collection of mechanical services which are assessed as other sound sources in **Chapter 11** of this volume of the **ES**.
- 28.6.167 As per the construction phase, in the context of low background noise, it is considered appropriate to ensure that noise associated with these mechanical services do not exceed the LOAEL. As the final system selection and design is to be determined, system specific noise mitigation measures would ensure that sound levels from the final proposal would not exceed of 35 dB  $L_{Ar,15\text{minute},\text{free-field}}$  outside the nearest residential receptor.
- 28.6.168 As a result, the magnitude of impact on health and wellbeing would be low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered minor adverse, which is **not significant**.

### *Operation of Permanent Associated Developments*

#### *Two Village Bypass*

- 28.6.169 As a permanent aspect of the proposed development, the two village bypass would remain operational during the operation of the main development site.
- 28.6.170 As stated in **Chapter 4** of **Volume 5** of the **ES**, during this period, there would be significant beneficial noise effects at 14 receptor locations. However, significant residual adverse noise effects are also predicted at 5 receptor group locations. All remaining receptors would not experience significant residual noise effects.
- 28.6.171 As for the construction phase, further assessments would be undertaken under the **Noise Mitigation Scheme** (see **Appendix 11H** of this volume)

and where receptors are confirmed to be exposed to noise exceeding the SOAEL, the provisions of that scheme will apply.

- 28.6.172 Overall, the adverse and positive magnitude of impact on health and wellbeing would be medium. In the context of a uniformly high sensitivity receptor, the resultant effect is considered moderate adverse/beneficial, which is considered **significant** in EIA terms.

#### *Sizewell Link Road*

- 28.6.173 As a permanent aspect of the proposed development, Sizewell link road will remain operational during operation of the main development site. As stated in **Chapter 4 of Volume 6** of the **ES**, during the operational phase, there would be significant beneficial noise effects at 12 receptor group locations. However, significant residual adverse noise effects are also reported at 8 receptor group locations. All remaining receptors would not experience significant residual noise effects.

- 28.6.174 As for the construction phase, further assessments would be undertaken under the **Noise Mitigation Scheme** (see **Appendix 11H** of this volume) and where receptors are confirmed to be exposed to noise exceeding the SOAEL, the provisions of that scheme will apply.

- 28.6.175 Overall, the adverse and positive magnitude of impact on health and wellbeing would be medium. In the context of a uniformly high sensitivity receptor, the resultant effect is considered moderate adverse/beneficial, which is considered **significant** in EIA terms.

#### *Yoxford Roundabout and other highway improvements*

- 28.6.176 As a permanent aspect of the proposed development, Yoxford roundabout and other highway improvements will remain operational during operation of the main development site. As stated in **Chapter 4 of Volume 7** of the **ES**, during this period, no significant residual noise effects are identified at any receptor group location.

- 28.6.177 As a result, the magnitude of impact on health and wellbeing would be very low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

- vi. **Potential health and wellbeing benefits associated with socio-economic factors**

#### **Employment**

- 28.6.178 As stated in **Volume 2, Chapter 9** of the **ES**, the operational workforce would start to build up gradually from year five of the construction phase.

Full operation is estimated to begin following completion of all construction activity when there would be approximately 700 permanent staff working at Sizewell C. It is anticipated that around half of the permanent roles during operation at Sizewell C would be recruited locally, with the remainder moving to the area to work on the Sizewell C Project.

- 28.6.179 In addition to permanent roles, it is estimated that there would be up to 200 contract workers working on the operational station at any one time. These workers are more likely to be from outside the local area, and many may be non-home-based.
- 28.6.180 During the operational phase, there would be a number of planned maintenance and refuelling outages. These would occur every 18 months or so for each reactor (Sizewell C is a twin reactor) and last up to two months. Outages would require a short-term, temporary additional workforce of around 1,000 people at the Sizewell C site per outage. It is estimated that approximately 80% (equating to approximately 800 people) of the temporary outage workforce would be non-home-based.
- 28.6.181 Overall, the operational employment opportunities provided by the Sizewell C Project should provide a long-term continuation of a substantial number of skilled and secure jobs for local people. On this basis, the magnitude of impact on health and wellbeing would be medium. In the context of a uniformly high sensitivity receptor, the resultant effect is considered moderate beneficial, which is **significant**.

vii. **General stress and anxiety impacting upon quality of life and wellbeing**

- 28.6.182 Tangible and intangible aspects associated with the proposed development which underly local community risk perception and stress during construction have been investigated and addressed within this chapter and through consultation during the planning application process.
- 28.6.183 Once operational, tangible environmental and social changes diminish, and local communities are familiar with operational activities, and the comprehensive systems in place to protect the environment and health. On this basis, potential impacts from stress and anxiety during operation are likely to be negligible.
- 28.6.184 On this basis, the magnitude of impact on quality of life and wellbeing would be very low. In the context of a uniformly high sensitivity receptor, the resultant effect is considered negligible adverse, which is **not significant**.

d) **Inter-relationship effects**

- 28.6.185 This Health and Wellbeing chapter has reviewed, drawn from and built upon the inter relating technical disciplines within **Volume 2** of the **ES**

covering the main development site and **Volumes 3 to 9** of the **ES** covering the associated development sites, most notably, air quality, noise, transport, socio-economic, and radiological effects chapters. The health and wellbeing assessment of effects has therefore inherently considered these impacts. No further inter-relationship effects have been identified.

## 28.7 Mitigation and monitoring

### a) Introduction

28.7.1 Where possible, mitigation measures have been proposed where a significant effect is predicted to occur. Primary and tertiary mitigation measures which have already been incorporated within the design of the proposed development are detailed in **Section 28.5** of this chapter.

28.7.2 Where other mitigation is required to reduce or avoid a significant effect, this is referred to as secondary mitigation. This section describes the proposed secondary mitigation measures for the health and wellbeing assessment as well as the recommendation for monitoring to test, report and where appropriate refine the mitigation measure.

### b) Mitigation

#### i. Residual healthcare contribution

28.7.3 As set out above, following the implementation of the occupational health service, the change in healthcare demand directly attributable to the non-home-based workers would be minor. The potential change in healthcare demand attributable to any dependants or family members of non-home-based workers would be minor. In addition, it is anticipated that workers who bring families are most likely to be on long-term contracts and would buy properties or take private rented sector accommodation during this time. As such, they would not represent a net addition to the existing number of council tax paying households/population, and there would be little to no material change in net healthcare demand.

28.7.4 As detailed in **Appendix 28B** of this volume, occupational health provision has proven an effective means of maintaining a healthy workforce on comparable projects, and in managing the occupational health needs, such that there is a minor impact on local healthcare capacity.

28.7.5 The potential change in healthcare demand attributable to any dependants or family members of non-home-based workers would be minor, especially as this population would not represent a net addition to the existing number of council tax paying households/population, meaning there would be little to no material change in net healthcare demand.



28.7.6 While the potential residual effect is considered minor adverse, public health is considered a high value asset, and continues to work to significant austerity measures, while further addressing the challenges associated with a growing and ageing population. On this basis, SZC Co. will provide additional mitigation in the form of an appropriate healthcare planning contribution to address any minor residual effect from the non-home-based referrals forecasted. This would also include a planning contribution for forecasted net additional dependants, to address the delay in healthcare revenue allocation of 1 additional GP. The payment of this healthcare planning contribution would be secured through a Section 106 Agreement (see the **draft Section 106 Heads of Terms**).

28.7.7 Following secondary mitigation, and subject to ongoing engagement with the Sizewell C Health Working Group (SHWG) the magnitude of impact on health and wellbeing would be very low. In the context of a uniformly high sensitivity receptor and highly valued asset, the resultant effect is considered negligible, which is **not significant**.

ii. **Community Fund**

28.7.8 As set out in **Chapter 9** of this volume of the **ES**, SZC Co. would provide a Community Fund to ensure that residual in-combination effects of the Sizewell C Project may be addressed and to enable communities to maximise the opportunities offered by the Sizewell C Project.

28.7.9 The Community Fund would be administered on behalf of the community and would fund local schemes, measures, and projects which promote the economic, social, or environmental wellbeing of the communities affected by the Sizewell C Project, enhancing their quality of life.

28.7.10 The allocation of the Community Fund would recognise that some communities closer to the main development site are likely to experience more and greater effects across a wider range of social, economic and environmental areas. Such communities would be more likely to experience residual harm to local quality of life.

28.7.11 The provision of the Community Fund would be secured through an obligation in a Section 106 Agreement (see **draft Section 106 Heads of Terms**).

c) **Monitoring and Governance**

28.7.12 Where appropriate, and as detailed in the wider technical disciplines, monitoring of environmental health determinants (air quality, noise transport etc) will be provided and set at environmental thresholds that are protective of the environment and health, thereby facilitating intervention before these thresholds are exceeded.

**28.7.13** The occupational healthcare provision will be monitored, as will referral rates to test effectiveness, and iteratively refine and enhance the service where required.

**28.7.14** The Section 106 agreement will set the terms of reference for the Sizewell C Health Working Group through the construction phase. This will include maintaining engagement throughout the construction process; reviewing the effectiveness of and aiding in the refinement of the occupational health service provision where appropriate. Such engagement will also facilitate closer collaboration and coordination of aligning health campaigns during the construction phase.

## 28.8 Residual effects

**28.8.1** The following tables (**Table 28.9** and **Table 28.10**) present a summary of the health and wellbeing assessment. They identify the receptor/s likely to be impacted, the level of effect, and, where the effect is deemed to be significant, the tables include the mitigation proposed and the resulting residual effect.

**28.8.2** It should be reiterated that not all such effects will be adverse, and some will be beneficial.

**Table 28.9: Summary of effects for the construction phase**

Health Pathway.	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
<b>Main development site.</b>					
Health effects from changes in air quality (construction dust and PM <sub>10</sub> ).	Very low.	Detailed in <b>Volume 2 Chapter 12</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Negligible Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Negligible Adverse <b>(not significant)</b> .
Health effects from changes in air quality (transport emissions).	Very low.	Detailed in <b>Volume 2 Chapter 12</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Negligible Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Negligible Adverse <b>(not significant)</b> .
Health effects from changes in air quality (CHP emissions).	Very low.	Detailed in <b>Volume 2 Chapter 12</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Negligible Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Negligible Adverse <b>(not significant)</b> .
Health effects	Low.	Detailed in	Minor Adverse	No further	Negligible

**NOT PROTECTIVELY MARKED**

Health Pathway.	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
from changes in transport nature and flow rate (accidents and injury).		<b>Volume 2 Chapter 10</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	(not significant).	health-based mitigation required.	Adverse (not significant).
Health effects from changes in noise exposure (daytime construction noise).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Minor Adverse (not significant).	No further health-based mitigation required.	Minor Adverse (not significant).
Health effects from changes in noise exposure (night-time construction noise).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Minor Adverse (not significant).	No further health-based mitigation required.	Minor Adverse (not significant).
Health effects from changes in noise exposure (construction traffic).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Minor Adverse (not significant).	No further health-based mitigation required.	Minor Adverse (not significant).
Health effects from changes in noise exposure (other sound sources).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> .	Minor Adverse (not significant).	No further health-based mitigation required.	Minor Adverse (not significant).
Health effects from changes in healthcare demand from non-home-based workforce.	Low.	On-site occupational healthcare provision (Section 106 Agreement). <b>Employment, Skills and Education Strategy</b> and the <b>Supply Chain Strategy</b> (Doc Ref. 8.9) (Section 106) intended to	Minor Adverse (not significant).	Healthcare Planning Contribution (Section 106 Agreement) for residual referrals and net additional dependants; SHWG.	Negligible Adverse (not significant).

**NOT PROTECTIVELY MARKED**

Health Pathway.	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
		remove barriers to local employment, and increase home-based employment with no change in healthcare demand.			
Health effects from changes in healthcare demand from dependants of non-home-based workforce.	Low.	N/A	Minor Adverse <b>(not significant)</b> .	Healthcare Planning Contribution (Section 106) for residual referrals and net additional dependants; SHWG.	Negligible Adverse <b>(not significant)</b> .
Health effects from changes in socio-economic factors (employment and associated income generation).	Medium.	<b>Employment, Skills and Education Strategy</b> (Doc Ref. 8.9) and the <b>Supply Chain Strategy</b> (Doc Ref. 8.9) (Section 106) to address barriers and increase the uptake of socio-economic health benefits.	Moderate Beneficial <b>(significant)</b> .	N/A	Moderate Beneficial <b>(significant)</b> .
Quality of life and wellbeing	Low.	Addressed proactively through consultation and the planning process.	Minor Adverse <b>(not significant)</b> .	Community Fund (Section 106). No further health-based mitigation required.	Minor Adverse <b>(not significant)</b> .
<b>Associated development sites.</b>					
Health effects	Very low.	Detailed in	Negligible	No further	Negligible

**NOT PROTECTIVELY MARKED**

Health Pathway.	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
from changes in air quality (construction dust and PM <sub>10</sub> ).		<b>Chapter 5 of Volume 3-10</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Adverse ( <b>not significant</b> ).	health-based mitigation required.	Adverse ( <b>not significant</b> ).
Health effects from changes in air quality (transport emissions).	Very low.	Detailed in <b>Chapter 5 of Volume 3-10</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Negligible Adverse ( <b>not significant</b> ).	No further health-based mitigation required.	Negligible Adverse ( <b>not significant</b> ).
Health effects from changes in transport nature and flow rate (accidents and injury).	Low.	Detailed in <b>Volume 2 Chapter 10</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Minor Adverse ( <b>not significant</b> ).	No further health-based mitigation required.	Negligible Adverse ( <b>not significant</b> ).
Health effects from changes in noise exposure (construction of northern and southern park and ride).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Minor Adverse ( <b>not significant</b> ).	No further health-based mitigation required.	Minor Adverse ( <b>not significant</b> ).
Health effects from changes in noise exposure (construction of rail proposals).	Medium.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Moderate Adverse ( <b>significant</b> ).	No further health-based mitigation.	Moderate Adverse ( <b>significant</b> ).
Health effects from changes in noise exposure (construction of the Freight Management Facility).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Minor Adverse ( <b>not significant</b> ).	No further health-based mitigation required.	Minor Adverse ( <b>not significant</b> ).
Health effects from changes in noise exposure (construction of the two village	Medium.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Moderate Beneficial/ Adverse ( <b>significant</b> ).	No further health-based mitigation.	Moderate Beneficial/ Adverse ( <b>significant</b> ).

Health Pathway.	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
bypass).					
Health effects from changes in noise exposure (construction of the Sizewell link road).	Medium.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Moderate Beneficial/ Adverse <b>(significant)</b> .	No further health-based mitigation.	Moderate Beneficial/ Adverse <b>(significant)</b> .
Health effects from changes in noise exposure (construction of the Yoxford roundabout).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> and <b>CoCP</b> (Doc Ref. 8.11).	Minor Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Minor Adverse <b>(not significant)</b> .

**Table 28.10: Summary of effects for the operational phase**

Health Pathway.	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
<b>Main development site</b>					
Health effects from changes in radiation exposure.	Very low.	Addressed through regulation and design. Detailed in <b>Volume 2 Chapter 25</b> of the <b>ES</b> .	Negligible Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Negligible Adverse <b>(not significant)</b> .
Health effects from changes in EMF exposure.	Very low.	Compliant with Department of Energy and Climate Change Code of Practice.	Negligible Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Negligible Adverse <b>(not significant)</b> .
Health effects from changes in exposure to in air quality (transport emissions).	Very low.	Detailed in <b>Volume 2 Chapter 12</b> of the <b>ES</b> .	Negligible Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Negligible Adverse <b>(not significant)</b> .

**NOT PROTECTIVELY MARKED**

Health Pathway.	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
Health effects from changes in air quality (combustion activities).	Very low.	Detailed in <b>Volume 2 Chapter 12</b> of the <b>ES</b> .	Negligible Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Negligible Adverse <b>(not significant)</b> .
Health effects from changes in transport nature and flow rate (accidents and injury).	Low.	Detailed in <b>Volume 2 Chapter 10</b> of the <b>ES</b> .	Minor Beneficial <b>(not significant)</b> .	No further health-based mitigation required.	Minor Beneficial <b>(not significant)</b> .
Health effects from changes in noise exposure (power station).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> .	Minor Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Minor Adverse <b>(not significant)</b> .
Health effects from changes in noise exposure (operational traffic).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> .	Minor Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Minor Adverse <b>(not significant)</b> .
Health effects from changes in noise exposure (other sound sources).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES</b> .	Minor Adverse <b>(not significant)</b> .	No further health-based mitigation required.	Minor Adverse <b>(not significant)</b> .
Health effects from changes in socio-economic factors (employment and associated income generation).	Medium.	Detailed in <b>Volume 2 Chapter 9</b> of the <b>ES</b> .	Moderate Beneficial <b>(significant)</b> .	No further health-based mitigation.	Moderate Beneficial <b>(significant)</b> .
Quality of life and	Very low.	Addressed proactively	Negligible Adverse <b>(not significant)</b> .	No further health-based mitigation	Negligible Adverse

**NOT PROTECTIVELY MARKED**

Health Pathway.	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
wellbeing.		through consultation and the planning process.	<b>significant).</b>	required.	<b>(not significant).</b>
<b>Associated development sites</b>					
Health effects from changes in air quality (transport emissions).	Very low.	Detailed in <b>Chapter 5</b> of <b>Volume 3-10</b> of the <b>ES.</b>	Negligible Adverse <b>(not significant).</b>	No further health-based mitigation required.	Negligible Adverse <b>(not significant).</b>
Health effects from changes in transport nature and flow rate (accidents and injury).	Low	Detailed in <b>Volume 2 Chapter 10</b> of the <b>ES.</b>	Minor Beneficial <b>(not significant).</b>	No further health-based mitigation required.	Minor Beneficial <b>(not significant).</b>
Health effects from changes in noise exposure (operation of the two village bypass).	Medium.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES.</b>	Moderate Beneficial/ Adverse <b>(significant).</b>	No further health-based mitigation.	Moderate Beneficial/ Adverse <b>(significant).</b>
Health effects from changes in noise exposure (operation of the Sizewell link road).	Medium.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES.</b>	Moderate Beneficial/ Adverse <b>(significant).</b>	No further health-based mitigation.	Moderate Beneficial/ Adverse <b>(significant).</b>
Health effects from changes in noise exposure (operation of the Yoxford roundabout).	Low.	Detailed in <b>Volume 2 Chapter 11</b> of the <b>ES.</b>	Minor Adverse <b>(not significant).</b>	No further health-based mitigation required.	Minor Adverse <b>(not significant).</b>



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