

HEALTH IMPACT ANALYSIS APPENDICES

SHORTLISTED SCHEMES FOR DRAFT AIRPORTS
NATIONAL POLICY STATEMENT

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SHORTLISTED SCHEMES FOR DRAFT AIRPORTS NATIONAL POLICY STATEMENT

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1 INTRODUCTION

1.1 CONTEXT

1.1.1 The Department for Transport (DfT) is responsible for setting national aviation policy, working with airlines, airports, the Civil Aviation Authority (CAA) and the UK's National Air Traffic Service (NATS). Supporting the development of aviation and improving passenger experience is one of the DfT's priorities.

1.1.2 The Airports Commission (AC), chaired by Sir Howard Davies, was set up in November 2012 to undertake an independent examination of the scale and timing of any necessary steps to maintain the UK's status as Europe's most important aviation hub. The AC's Report was published on 1 July 2015.¹ Three schemes for expanding UK aviation capacity were shortlisted by the AC. In December 2015, the Government accepted the AC's case for expanding UK airport capacity in the South East by 2030 and the AC's shortlist of three schemes for expansion.

1.2 SPECIFICATION FOR SUITE OF ASSESSMENTS

1.2.1 The DfT is preparing an Appraisal of Sustainability (AoS) to inform Government of the economic, social and environmental effects of the three schemes to expand UK aviation capacity.

1.2.2 The AoS will provide an impact analysis of three alternatives for the draft Airports National Policy Statement (NPS). The AoS will include an assessment of the potential impacts of increasing aviation capacity on quality of life for the communities surrounding the airports involved in the three alternatives.

1.2.3 The three alternatives under consideration for the draft Airports NPS will also be subject to a health impact analysis, scheduled to be published alongside the draft Airports NPS as a stand-alone document.

1.2.4 The scope for the health impact analysis has been produced by WSP | Parsons Brinckerhoff based on a template provided by Public Health England (PHE), and under guidance from the DfT HIA Steering Group, following several HIA Steering Group meetings.

1.3 SCOPE OF NATIONAL POLICY STATEMENT

1.3.1 The draft Airports NPS sets out:

- The Government's policy on the need for new capacity; and
- The Government's preferred scheme to deliver this.

¹ Airports Commission, 2015. Final report. [\[online\]](#) Accessed 01/08/2015.

1.4 AMENDMENTS TO SPECIFICATION FOR THE ASSESSMENT

1.4.1

As part of the discussion at the HIA Steering Group about the scope, the study was amended from a health impact assessment (HIA) to a health impact analysis². The reasons for this change are as follows:

- **Policy-making:** A package of mitigation measures for each scheme is being developed in discussion between DfT and each of the scheme promoters, however, a health impact assessment has the potential to cut across this process and make suggestions that are outside the negotiated mitigation packages;
- **Methodological:** Methods of appraisal – in the AoS, the scheme promoter's proposed mitigation measures are included during appraisal whereas in health impact assessment one of the objectives is to develop mitigations only once potential impacts have been appraised;
- **Methodological:** Interpretation of results – the difference between what is appraised during the AoS and that during health impact assessment (i.e. scheme with mitigation and scheme without mitigation, respectively) could lead to apparent inconsistencies between the outputs of the AoS and those of a health impact assessment. A health impact analysis reduces the potential for confusion in terms of interpreting the results and identifying which mitigation measures are agreed and assessed as part of the scheme;
- **Decision-taking:** Health is only one of several domains that decision-makers need to consider when weighing potential trade-offs to achieve policy objectives. A health impact analysis presents the potential adverse and beneficial impacts of each scheme so that they can be aligned with the outputs from other appraisals allowing decision-makers to take decisions about the schemes and any packages for mitigation based on an overall balance of benefits and harms.

1.4.2

This health impact analysis will include any mitigation included by the three scheme promoters as part of each scheme's design, and they will not be treated as separate mitigation measures. This health impact analysis will not assess any mitigation still subject to discussion and agreement (e.g. through the NPS process).

AIMS OF THE HEALTH IMPACT ANALYSIS

- To identify the aspects of each scheme for increasing aviation capacity which have the potential to affect people's health and well-being, both directly and indirectly.

OBJECTIVES FOR THE HEALTH IMPACT ANALYSIS

- To assess the potential health impacts, both positive and negative, of each of the proposed schemes for increasing aviation capacity.
- To assess the direct/indirect³ and cumulative⁴ health impacts including health inequalities associated with each of the schemes for increasing aviation capacity.

² In a health impact analysis, the potential impacts of a proposal (or set of options for a proposal) on health and well-being are identified; in health impact assessment, once the potential impacts have been identified, suggestions to change or modify the proposal are made with a view to reducing or avoiding any harmful effects and enhancing any beneficial effects.

³ Direct / Indirect Distinguishes between effects that are a direct result of the policy (e.g. land loss) or are secondary, they occur away from the original effect or as a result of a complex pathway.

⁴ Cumulative effects arise, for instance, where several developments each have insignificant effects but together have a significant effect; or where several individual effects of the plan (e.g. noise, dust and visual) have a combined effect. Includes synergistic effects where interactions produce a total effect greater than the sum of the individual effects.

2

PARALLEL/COMPLEMENTARY ASSESSMENTS

2.1.1

The health impact analysis is not undertaken in isolation and there are a number of other statutory and non-statutory processes which assess sustainability aspects. These are summarised in Table 2-1.

Table 2-1 Relationship between the health impact analysis and other processes

ASSESSMENT AND LEGISLATION	DESCRIPTION	RELATIONSHIP TO HEALTH IMPACT ANALYSIS
Habitats Regulations Assessment (HRA), Habitats Regulations 2010 Habitats Directive 92/43/EEC	There is a requirement under the Habitats Directive to consider effects on sites of European importance for Nature Conservation. HRAs start with a screening stage, which determines whether more detailed study is required through an 'Appropriate Assessment'.	HRA is a separate process to health impact analysis. HRA looks at European designations and their conservation objectives, rather than any human benefits which could be related to health.
Environmental Impact Assessment (EIA) EIA Regulations (as amended) 2011 EIA Directive 2014/52/EU	The EIA Directive requires that the likely significant environmental effects of a project are assessed and taken into account prior to consent for development.	This health impact analysis is undertaken prior to EIA to inform policy decisions. However, additional HIA can be undertaken in parallel with EIA as a tool to address health effects which are required to be assessed by the Directive.
Equalities Impact Assessment (EqIA) Equality Act 2010	Public bodies have a duty to assess the impact of their policies on different population groups to ensure that discrimination does not take place and, where possible, to promote equality of opportunity.	EqIA is a separate process and can provide information on vulnerable groups for the health impact analysis.

Cumulative effects are also taken to mean 'in-combination effects' under the Habitats Directive, where other plans or projects in combination with the Project might affect European sites.

ASSESSMENT AND LEGISLATION	DESCRIPTION	RELATIONSHIP TO HEALTH IMPACT ANALYSIS
<p>Web-based Transport Analysis Guidance (WebTAG)</p> <p>Non-statutory process.</p>	<p>WebTAG is the DfT's transport appraisal guidance and toolkit. It consists of software tools and guidance on transport modelling and appraisal methods that are applicable for highways and public transport interventions. These facilitate the appraisal and development of transport interventions, enabling analysts to build evidence to support business case development, to inform investment funding decisions⁵.</p>	<p>Evidence used from the AoS, which may also apply to the health impact analysis, will also be used for related impacts in the WebTAG appraisal, including noise and air quality,</p>
<p>Ecosystem Services Assessment (ESA)</p> <p>Non-statutory process</p>	<p>The ecosystem services approach considers the environment in terms of the benefits it brings to people. It identifies different ecosystems such as farmland and woodland, and then identifies the different services that these provide such as food production, regulation of flood risk, amenity value and pollution control.</p>	<p>An ESA was undertaken by the AC⁶. Further work on the ESA is not being undertaken at the strategic level.</p> <p>However, services such as recreation have an influence on health.</p>

3 ELEMENTS OR ASPECTS OF EACH POLICY ALTERNATIVE

3.1.1 The three alternatives for expanding UK aviation capacity are:

- Gatwick Airport Second Runway (LGW-2R);
- Heathrow Extended Northern Runway (LHR-ENR);
- Heathrow Northwest Runway (LHR-NWR).

3.2 LGW-2R

DESCRIPTION

3.2.1 The AC's Final Report⁷ describes LGW-2R as a new full-length runway to the south of and running

⁵ Department for Transport, 2014, Transport Analysis Guidance [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427073/webtag-tag-overview.pdf. Accessed 19/04/2016

⁶ Jacobs, 2014, 7. *Biodiversity, Ecosystem Services*. [online] Accessed 05/01/2016.

⁷ Airports Commission, 2015. *Final report*, p. 97. [online] Accessed 05/01/2016.

parallel to the existing runway. The space between the runways would be set at 1,045m, which would provide room for the required supporting airport infrastructure; a new terminal building, main pier and satellite. It would also be needed to permit simultaneous independent, mixed mode operations on each runway, as proposed by the scheme promoter, which would enable the proposed operating capacity of 560,000 air transport movements per annum.

3.2.2 The capacity of the new terminal building would be approximately 50 million passengers per annum (mppa), slightly higher than the combined capacity of the two existing terminal buildings (which is around 45 mppa).

3.2.3 The airport's footprint would extend to the south to encompass the space for the new runway; and to the east, broadly to the M23, to provide space for ancillary airport services and parking. In total, 624ha is estimated to be required for airport development, subject to more detailed design work, and up to an additional 78ha for surface access improvements. These land-take requirements could change following detailed construction and surface access route design, and any potential mitigation. No additional land-take for flood storage schemes is identified in the proposal.

HOUSING, COMMUNITY FACILITIES AND RECREATION

3.2.4 An additional runway at Gatwick would result in the following changes to housing and community facilities⁸:

- 168 residential properties likely to be demolished for airport expansion;
- Up to 37 additional residential properties could be demolished for surface access, since they fall within the 100m buffer zone for construction works;
- Loss of Trent House care home;
- Loss of two places of worship (a church used by 7th Day Adventists, and a Hindu temple);
- Loss of one charity facility - Outreach 3 Way, which helps people with learning difficulties;
- Loss of four pre-schools/ nurseries;
- Loss of Crawley Rugby club, with its sporting and social facilities;
- Loss of the northern part of Rowley Wood;
- Loss of other formal and informal recreation sites;
- Loss of public rights of way;
- Loss of cycle routes.

3.2.5 Measures proposed by the scheme promoter will be included in the health impact analysis. These include financial compensation and relocation, provision of new or alternative community services to meet additional demand, provision of new links to maintain connectivity between the communities, provision of new cycle routes once the scheme is operational and realignment of roads and traffic management measures and improved public transport access.

LANDSCAPE AND CULTURAL HERITAGE

- No direct changes to the Surrey Hills AONB, High Weald AONB, Kent Downs AONB and the locally designated landscape (Area of Great landscape Value); potential for views from the AONBs towards construction activities and/ or operational airport to be changed.

⁸ AC, 2014. *Community: Impact Assessment*. pp. 9-10. [\[online\]](#) Accessed 24/12/2015.

- The majority of construction works will take place in the West Sussex landscape character area (LCA) LW8 Northern Vales⁹; a permanent loss of landscape will occur during both construction and the operation of the airport.
- It is unlikely that the Ifield and Langley Green townscape character area (TCA) would be changed physically although construction works might be visually noticeable.
- The Manor Royal Industrial Estate is a predominately commercial and industrial area considered an ordinary quality landscape of low value. Several buildings to the north of the site will be removed to accommodate the runway and diversion of the A23.
- Views from the Horley TCA are unlikely to be changed.
- Buchan and Tilgate Country Parks are situated within the study area, but are screened by the existing built-up area and unlikely to experience changes.
- It is likely that an area of Ancient Woodland on Bonnetts Lane will be permanently lost and cannot be replaced.

3.2.6 Landscape impacts would be reduced through both onsite mitigation and offsite enhancement measures, which are included in the health impact analysis, including the development of a linear park and habitat management. The scheme promoter will develop a Landscape Strategy to take into account the existing landscape and townscape resource based on consultation with local communities and stakeholders though the specifics of what this will include are not known at this time.

HABITAT AND PROTECTED SPECIES

3.2.7 Table 3-1 is reproduced from AC¹⁰ and provides an outline summary of areas/receptors affected by this scheme, with corresponding compensatory habitat mitigation extents, as assessed by the AC and the scheme promoter. Proposed mitigation measures for habitat and protected species will be included in the health impact analysis.

Table 3-1 LGW-2R Impact and Mitigation Summary

FEATURE	IMPACT			MITIGATION	
	Area (ha) or Lengths (km)			Area (ha) or Lengths (km)	
	GAL	Jacobs	Surface Access	GAL	Jacobs
Designated Sites					
Willoughby Fields LNR/SNCI	20ha	25.8ha		Not quantified	(Covered through Priority habitat compensation – see below) ¹
Rowley Wood SNCI	Not specified	3.7ha		Not quantified	
Total Designated Sites	20ha	29.5ha			
Priority Habitats					
Deciduous woodland	62.1ha	62.1ha	13.4ha	2:1 ratio proposed	151 ha
Ancient woodland (taken from within deciduous woodland)	14.2ha	14.2ha		3:1 ratio proposed	71ha (5:1 ratio)
Traditional orchard	Not specified	0.28ha		Not specified	0.5ha
Hedgerow	49.7km (inc. 25.3km of ancient hedgerow)	Not calculated		Not quantified	124.7km

⁹ West Sussex County Council, 2005. *Landscape Character Assessment of West Sussex* [online] Accessed 24/12/2015

¹⁰ Jacobs, 2014. 7. *Biodiversity: Assessment*. [online] Accessed 06/01/2016. Table 2.3 Page 15

FEATURE	IMPACT			MITIGATION	
	Area (ha) or Lengths (km)			Area (ha) or Lengths (km)	
	GAL	Jacobs	Surface Access	GAL	Jacobs
Rivers and Brooks	3.5km	7.2km		Not quantified	14.3km
Protected Species					
Protected species outwith designated sites and PHs	Not specified	38.2ha ⁽⁴⁾		Not specified	38.2ha
Indirect Impacts	Not specified	11.5		Not specified	23.0ha
Total Habitat and Protected Species	62.1ha	92.09ha	13.4ha	124.2ha	283.7ha
Total KM	3.5km	7.2km			139km

LAND-TAKE AND GREENSPACE

- 3.2.8 This scheme entails land-take of 624ha, with up to further 78ha potentially affected by surface access improvements. These land-take requirements, however, could change following detailed construction and surface access route design, and any potential mitigation.
- 3.2.9 The site area of the airport¹¹ incorporates approximately 421 ha of agricultural land, a significant proportion of which is likely to be Best and Most Versatile agricultural land. Compensation will be provided to land owners, and will be included in the health impact analysis.
- 3.2.10 The extent to which Greenfield land will be used is not known.

EMPLOYMENT

- 3.2.11 Airport expansion will support employment in the local areas surrounding the airport. By 2030, the AC estimated that 1.25% of the working age population of 523,000 estimated to be in the 7 local authorities surrounding Gatwick would be employed at the airport ¹². The quantity and distribution of high skilled jobs has not been determined at this stage of the assessment.

SURFACE ACCESS

- 3.2.12 Additional works which have been assessed by the AC specifically to support expansion comprising of junction enhancements on the strategic road network as well as the rerouting of roads around the edge of the expanded airfield site are shown in Table 3-2. These measures will be included in the health impact analysis. There are no additional rail options.

Table 3-2 LGW-2R Related Surface Access Enhancements

CATEGORY	LOCATION	REQUIREMENT
Local road enhancement	M23 J9	Slip road widening
		Grade-separated flyover for southbound slip
	M23 J9 to J9a road widening	Widening of existing section to four and five lanes as appropriate
	Airport Way	Widening of existing section of four lanes in each direction
	A23 re-alignment	Provision of new section of A23

¹¹ Jacobs, 2014, 10. *Airports Commission Place Assessment*: for Gatwick 2R: the airport footprint is based on the promoter's expansion area provided and includes related ancillary development and flood storage areas and balancing ponds within the outline area.

¹² Airports Commission, 2015. *Local Economy: Impacts Assessment Post Consultation Updates*. P. 17 [online] Accessed 17.02.2016

CATEGORY	LOCATION	REQUIREMENT
		Grade-separated section of A23 re-alignment
	Long-term parking	New high capacity roundabout and approaches
	Industrial zone	New roundabout and approaches
	North Terminal access	New high capacity roundabout and approaches
		A23 to Airport Way grade-separated flyover
	New Terminal access	Provision of new section connecting M23 to new terminal
		Grade-separated section of new access to new terminal
	South Terminal access	New high capacity roundabout and approaches
	Longbridge Roundabout	Capacity enhancements
	Gatwick Road	New roundabout and approaches
	Balcombe Road	Re-provision of existing road (standard 7.5m width one lane in either direction)

3.3 LHR-ENR

DESCRIPTION

3.3.1 This policy alternative involves an extension of the existing northern runway at Heathrow to the west. This will effectively create two separate runways, each 3,000m in length with a 650m safety area in between, enabling them to be operated independently.¹³

3.3.2 The extension to the northern runway will allow it to be used for departures and arrivals at the same time, essentially providing the same capacity as two independent runways; or at less busy times of day to facilitate 'deep' or 'shallow' landings on the westerly and easterly sections of the runway, with the aim of reducing noise impacts for local communities by enabling aircraft to remain at a higher altitude as they approach the airport boundary. This scheme will provide an operating capacity of 700,000 air transport movements per year. However, it will not be possible to maintain runway alternation throughout the operating day.

3.3.3 The northern runway extension is supported by a new terminal building to the west of the existing central terminal area, with capacity to accommodate 35mppa. There will also be space for hotels, parking and ancillary services to the south of the airport (on the north side of the perimeter road). With the extended northern runway, the airport's footprint will expand to the north, south and west with a total direct land-take of 336ha. Additional land-take for surface access improvements and flood storage of up to 330ha and 57ha respectively may also be required. Approximately 278ha of the proposed land-take would lie within the Green Belt. These land-take requirements could change following detailed construction and surface access route design, and any potential mitigation¹⁴.

HOUSING, COMMUNITY FACILITIES AND RECREATION

3.3.4 An extended northern runway at Heathrow will result in the following changes to housing and community facilities¹⁵:

- 242 residential properties likely to demolished for airport expansion;
- loss of up to 165 additional residential properties for surface access as they fall within the potential 100m buffer zone for construction works;
- loss of industrial/employment land;

¹³ Airports Commission, 2015. *Final report*, p. 97. [\[online\]](#) Accessed 05/01/2016.

¹⁴ Airports Commission, 2015. *Final Report*

¹⁵ AC, 2014. *Community: Impact Assessment*. pp. 9-10. [\[online\]](#) Accessed 24/12/2015.

- loss of Punch Bowl pub during construction (informally used as a community meeting facility);
- noise implications for Pippins Primary school;
- loss of part of the Colne Valley regional park;
- loss of other formal and informal recreation sites;
- severance of a section of the Colne Valley Way running from Colnbrook to Horton;
- severance of Poyle Road, which currently links Poyle and Colnbrook with Wraysbury and Horton;
- severance of the route to Poyle from the west along Bath Road.

3.3.5

Measures proposed by the scheme promoter will be included in the health impact analysis. These include financial compensation and relocation assistance.^{16, 17, 18, 19} Provision of community services during construction and operation to meet additional demand, in addition to transport diversions and provision of alternative routes.

LANDSCAPE AND CULTURAL HERITAGE

- The Chilterns AONB is over 15km from the airport and impacts on views during construction and operation are likely to be negligible.
- This scheme is likely to be visible during both construction and operation from the nearby Area of Landscape Importance; however, views from here are over long distances and are already affected by the existing configuration at Heathrow. The changes to these views are likely to be negligible.
- The majority of land-take and construction works will take place in the Hillingdon Lower Colne Floodplain character area which will experience the greatest changes to landscape character. The loss of landscape features will be permanent.
- New airport infrastructure will change the Hillingdon Open Gravel Terrace character area, Slough Road Infrastructure character area and the Hillingdon Historic Core character area and will also change visual amenity.
- The loss of landscape and townscape features will be permanent for the Hillingdon Historic Core, the loss of Longford village and part of Harmondsworth.
- The Colne Valley Regional Park is within and immediately to the west of the site boundary. Some of the park will be lost to accommodate the new runway. In addition, views from the park at Colnbrook and Poyle will be changed by the construction works.

3.3.6

The scheme promoter for Heathrow Extended Northern Runway proposes to minimise impacts on existing landscape character and heritage assets. Higher quality more accessible open space will be provided and will include ecological compensation habitat areas and river flood alleviation. Measures would include enhancement of meadow areas, a diversion of the Colne Brook and access and green link improvements within Colne Valley Regional Park. Works will also be done to improve the quality of views within Harmondsworth Moor Park and screen views towards the new runway.

HABITAT AND PROTECTED SPECIES

¹⁶ Airports Commission, 2015. Final Report

¹⁷ Jacobs, 2014. 10. Place: Baseline

¹⁸ Jacobs, 2014. 10. Place Assessment

¹⁹ Airports Commission, 2014. Airports Commission: Heathrow Airport Extended Northern Runway: Business Case and Sustainability Assessment

3.3.7

Table 3-3 is reproduced from AC²⁰ and provides an outline summary of areas/receptors affected, with corresponding compensatory habitat mitigation extents, as assessed by the AC and the scheme promoter. Proposed mitigation measures for habitat and protected species will be included in the health impact analysis

Table 3-3 LHR-ENR Impact and Mitigation Summary

FEATURE	IMPACT			MITIGATION	
	Area (ha) or Lengths (km)			Area (ha) or Lengths (km)	
	Hub	Jacobs	Surface Access	Hub	Jacobs
Designated Sites					
East Poyle Meadows SNCI (SSSI component)	2.9ha	2.9ha		4ha swamp	(Covered through Priority habitat compensation – see below)
Arthur Jacob LNR (SSSI component)	4.1ha	4.1ha		8.2ha wet woodland	
Greenham's Fishing Pond SINC	Not specified	0.45ha		26ha pond	
Management Unit 1 (Poyle Meadow) of Staines Moor SSSI	8.7ha	8.0ha		18ha species-rich neutral grassland	
Lower Colne SMINC	Not specified	10-15ha		40ha	
River Colne (From County boundary to Staines Moor) Stanwell Moor SNCI	Not specified	1.25ha		Not specified	
Total Designated Sites*	15.7ha	31.7ha		Not specified	
Priority Habitats					
Deciduous woodland	16.2ha	26.2ha	30.1ha	32.4ha	122.4ha
Traditional orchard	0.5ha	0.5ha		1ha	1ha
Lowland meadows	8.6ha	6.5ha	32.4ha	17.2ha	77.8ha
Hedgerow	49.7km (inc. 25.3km of ancient hedgerow)	Not calculated		Not quantified	124.7km
Reedbeds	Not specified	0.3ha	8.0ha	Not specified	16.6ha
Rivers and Brooks ⁽⁵⁾	6.8km	10.4km		6.8km	20.8km
Protected Species					
Protected species outwith designated sites and PHs ⁽²⁾	Not specified	16.8ha		Not specified	16.8ha
Indirect Impacts ⁽³⁾		7.1ha			14.2ha
Total Habitat and Protected Species	25.3ha	57.4ha	70.5ha	146.8ha	248.8ha
Total KM	6.8km	10.4km		6.8km	20.8km

LAND-TAKE AND GREENSPACE

3.3.8

This scheme entails land-take of 336ha, with a further 330ha potentially affected by surface access and 57ha identified for flood storage.

3.3.9

The site area of the airport²¹ incorporates approximately 370ha of agricultural land, a major proportion of which is likely to be Best and Most Versatile agricultural land. Compensation will be provided to

²⁰ Jacobs, 2014. 7. *Biodiversity: Assessment*. [online] Accessed 06/01/2016. Table 2.9 Page 41

²¹ Jacobs, 2014, 10. Airports Commission Place Assessment: ENR: the airport footprint includes the expansion areas for the proposed runway extension as provided by the promoter, with the addition of a possible location for balancing ponds to the south of the airport footprint. Flood storage areas are indicated separately in the ENR submission, and have also been included in the land take assessment.

land owners and will be included in the health impact analysis.

3.3.10 The extent to which Greenfield land will be used is not known.

EMPLOYMENT

3.3.11 Airport expansion will support employment in the local areas surrounding the airport. The AC estimated that by 2030, 3.90% of the working age population estimated to be in the 14 Local Authorities surrounding Heathrow will be employed at the airport²². The quantity and distribution of high skilled jobs has not been determined at this stage of the assessment.

SURFACE ACCESS

3.3.12 In relation to surface transport, the AC has carried out its assessment of LHR-ENR on the basis of the same 'on-site' surface access strategy as for the Northwest Runway proposal. For the rail network, this means that an identical package of measures is required, but the road interventions vary slightly between the two schemes as the design of LHR-ENR requires a number of different works on the local road network. The measures listed below in Table 3-4 will be included in the health impact analysis.

Table 3-4 LHR-ENR Related Surface Access Enhancements

CATEGORY	LOCATION	REQUIREMENT
Strategic road	M4 J3 to J4	Road widening
	M4 Airport Spur	Road widening
	M4 J2 to J3	Road widening
	M4 J4 and J4B	Road widening
	M4	Large M4 Junction 4b replacement
	M4	Higher capacity @ M4 J4a
	M4	Capacity improvements to existing main airport tunnel
	M25	M25 tunnelling costs (south of junction 15)
Local road network	M25 J13 (A13) D2	Grade-separated junction and flyover/bridge structures
	Tunnel From A4 to T5	
	A4 Access	Tunnel running parallel to M25 – expected to have light traffic
	New roundabouts on access roads	Southern Road Tunnel/Southern Perimeter Road Interchange
	Airport Roads	New link from junction 13
	Heathrow Road Tunnel	Providing new spur access
Rail	Airport One Way	One way system for western campus
	Southern Rail Access to Staines	[requirement not identified in source report]

3.4 LHR-NWR

DESCRIPTION

3.4.1 LHR-NWR involves a new full-length runway (3,500m) to the north west of the current northern runway at Heathrow.²³

3.4.2 The horizontal separation between the new runway and the current northern runway is 1,045m,

²² Airports Commission, 2015. *Local Economy: Impacts Assessment Post Consultation Updates*. P. 21 [online] Accessed 17.02.2016

²³ Airports Commission, 2015. *Final report*, p. 97. [online] Accessed 05/01/2016.

allowing the new runway to operate independently of the existing runways. When the scheme promoter's proposed alternation pattern is factored in this would allow a forecast operating capacity of 740,000 air transport movements per year and is intended to offer a level of continuing respite for local communities while enhancing the airport's resilience. The health impact analysis includes this proposed alternation pattern in its assessment.

3.4.3 A new terminal building will be built to the west of the current central terminal area, with the majority of the airport's terminal space, satellites and the transport spine of the airport continuing to run between the two existing runways in what is often referred to as a 'toast rack' configuration. This new terminal will be built with similar dimensions to Terminal 5, and constructed in stages. When complete it will have a capacity of 35mppa, similar to that of Terminal 5 (currently 30 mppa).

3.4.4 In total, 569ha of land will be required for the airport development, with up to an additional 43ha for flood storage and 294ha for related surface access improvements. Approximately 431ha of this land is within designated Green Belt. These land-take requirements, however, could change following detailed construction and surface access route design, and any potential mitigation.

HOUSING, COMMUNITY FACILITIES AND RECREATION

3.4.5 A new full-length runway to the north west of the current northern runway at Heathrow will result in the following changes to housing and community facilities²⁴:

- 783 residential properties likely to be demolished for airport expansion²⁵;
- loss of up to 289 additional residential properties for surface access as they fall within the potential buffer zone for construction works;
- loss of Harmondsworth Primary School;
- loss of Harmondsworth Community Hall (including the Wonderland day nursery);
- loss of Sipson Community Centre;
- loss of Heathrow special needs centre in Longford;
- loss of nursery schools in Longford and Sipson;
- loss of White Horse pub at Longford;
- loss of Sipson recreation ground and facilities;
- loss of other formal and informal recreation sites;
- loss of part of the Colne Valley Regional Park;

3.4.6 Measures proposed by the scheme promoter will be included in the health impact analysis. These include financial compensation and relocation assistance, and re-provision of Harmondsworth primary school and community hall. Compensation for lost homes is being offered at 25% above unblighted market value. Traffic management measures will be implemented during construction including realignment of roads to segregate local from airport and other through traffic, and improved public transport. These measures will be included in the health impact analysis.

LANDSCAPE AND CULTURAL HERITAGE

- The Chilterns AONB is over 15km from the airport and changes to views during construction and

²⁴ AC, 2014. *Community: Impact Assessment*. pp. 9-10. [\[online\]](#) Accessed 24/12/2015.

²⁵ Jacobs, 2014. 10. Place Assessment

operation are likely to be negligible due to the intervening distance.

- This scheme is likely to be visible during both construction and operation phases from the nearby Area of Landscape Importance particularly from areas of higher ground close to the war memorial at Cooper's Hill. Views from here are over long distances and are already affected by the existing configuration at Heathrow. The changes to these views are likely to be negligible.
- The main changes associated with land-take and construction will take place on the Hillingdon Lower Colne Floodplain character area. The loss of landscape features will be permanent continuing into the operation phase of the airport.
- Construction of airport infrastructure will take place in the Windsor and Maidenhead Settled Developed Floodplain character area and the Hillingdon Historic Core character area; visual amenity will change.
- Part of the Colne Valley Regional Park will be lost to accommodate the new runway. There will be changes to views from the park at Colnbrook and Poyle during the construction works.

3.4.7 The health impact analysis will include mitigation that is proposed within and around the Colne Valley Regional Park to offset adverse effects from construction of the new runway. These measures will provide new green spaces within an expanded park by utilising the diverted water course and new flood storage proposals. They include habitat creation areas, a diversion of the Colne Valley Way and improvements to recreational areas. Mitigation works within Harmondsworth Moor Park, will improve the quality of views within the park, and screen views towards the new runway. Mitigation measures within farmland to the south of the M4 around the remaining villages will improve habitats and green linkages. Habitat and Protected Species

3.4.8 Table 3-5 is reproduced from AC²⁶ and provides an outline summary of areas/receptors affected, with corresponding compensatory habitat mitigation extents, as assessed by the AC and the scheme promoter. Proposed mitigation measures for habitat and protected species will be included in the health impact analysis

Table 3-5 LHR-NWR Impact and Mitigation Summary

FEATURE	IMPACT			MITIGATION	
	AREA (HA) OR LENGTHS (KM)			AREA (HA) OR LENGTHS (KM)	
	HAL	JACOBS	SURFACE ACCESS	HAL	JACOBS
Designated Sites					
Lower Colne SMINC	51ha	51ha		Not quantified	(Covered through Priority habitat compensation – see below)
Old Slade Lakes LWS	8ha	8ha		Not quantified	
Stanwell II SNCI	6ha	6ha		Not quantified	
Total Designated Sites*	65ha	65ha			
Priority Habitats					
Deciduous woodland	34ha	37.3ha	20 ha	Not quantified	114.6ha
Traditional orchard	1.5ha	1.5ha	1.35ha	Not quantified	5.7ha
Lowland meadows			9.2ha		18.4ha
Reedbeds			0.3ha		0.6ha
Rivers and Brooks ⁽⁵⁾	13km	12.3km		Not quantified	24.6km
Protected Species					

²⁶ Jacobs, 2014. 7. *Biodiversity: Assessment*. [online] Accessed 06/01/2016. Table 2.9 Page 41

FEATURE	IMPACT			MITIGATION	
	AREA (HA) OR LENGTHS (KM)			AREA (HA) OR LENGTHS (KM)	
	HAL	JACOBS	SURFACE ACCESS	HAL	JACOBS
Protected species outwith designated sites and PHs ⁽²⁾		23.5ha		Not specified	23.4
Indirect Impacts ⁽³⁾		8.68		Not quantified	17.36
Total Habitat and Protected Species	35.5ha	70.88ha	30.85ha	331ha (from 400ha)	180.06ha
Total KM	13km	12.3km			24.6km

LAND-TAKE AND GREENSPACE

3.4.9 This scheme entails land-take of 569ha, with up to further 294ha potentially affected by surface access and 43ha identified for flood storage.

3.4.10 The site area of the airport²⁷ incorporates approximately 430ha of agricultural land, a significant proportion of which is likely to be Best and Most Versatile agricultural land. Compensation will be provided to land owners and will be included in the health impact analysis.

EMPLOYMENT

3.4.11 Airport expansion will support employment in the local areas surrounding the airport. The AC estimated that by 2030, 3.90% of the working age population estimated to be in the 14 Local Authorities surrounding Heathrow will be employed at the airport²⁸. The quantity and distribution of high skilled jobs has not been determined at this stage of the assessment.

SURFACE ACCESS

3.4.12 The surface access strategy for LHR-NWR is based on a combination of existing infrastructure, options with firm funding commitments, options likely to be required by 2030 in order to meet background demand and options required to support expansion, either through accommodating the expanded airport site or providing new links and capacity to improve public transport modal share.

3.4.13 Several road options were also included in the surface access strategy for the LHR-NWR scheme, including tunnelling a section of the M25 to the west of the airport. The measures listed below in Table 3-6 will be included in the health impact analysis.

Table 3-6 LHR-NWR Related Surface Access Enhancements

CATEGORY	LOCATION	REQUIREMENT
Strategic road	M4 J3 to J4	Road widening
	M4 Airport Spur	Road widening
	M4 J2 to J3	Road widening
	M4 J4 and J4B	Road widening
	M4	Large M4 Junction 4b replacement
	M4	Higher capacity @ M4 J4a

²⁷ Jacobs, 2014, 10. Airports Commission Place Assessment: the airport footprint is based on the outline provided for the expansion area for the proposed runway development but also includes the additional areas of land take around the existing airport which the promoter has indicated as being required for the scheme development and the areas of land take indicated for flood storage use located within the compensation land area.

²⁸ Airports Commission, 2015. *Local Economy: Impacts Assessment Post Consultation Updates*. P. 21 [online] Accessed 17.02.2016

CATEGORY	LOCATION	REQUIREMENT
	M4	Capacity improvements to existing main airport tunnel
	M25	M25 tunnelling costs (south of junction 15)
Local road network	A4	Diversion of A4 road alignment, dual carriageway
	A3044	Diversion of A3044 road alignment, dual carriageway
	Airport Roads	Airport Way/Southern Perimeter Road Interchange, grade-separated junction and flyover/bridge structures
	Heathrow Road Tunnel	Southern Road Tunnel/Southern Perimeter Road Interchange
	Airport One Way	One way system for western campus
Rail	Southern Rail Access to Staines	<i>[requirement not identified in source report]</i>

3.5 FLIGHTPATHS: UNCERTAINTIES ABOUT THE PROPOSED SCHEMES

3.5.1 To inform the assessments, indicative flightpath designs for each scheme were developed by the CAA, drawing on inputs from NATS, the scheme promoters and the AC Secretariat. Creating and agreeing airspace plans requires a process of detailed design and public consultation and the careful consideration of options for mitigating any negative impacts.

3.5.2 The indicative flightpath designs are not a fixed design for the location of future flightpaths, but are referred to as the means for assessing the potential noise impacts at this stage of policy development²⁹. For LHR-NWR, three flightpath designs were proposed for assessment. Only one flightpath design is proposed for assessment for the LGW-2R and LHR-ENR.

3.5.3 At the time of health impact analysis scope development, several assumptions will have to be made for the assessment of impacts and these were set out in the work by the AC and are used in the AoS³⁰. The available flight paths designs will be used in the health impact analysis.

²⁹ Airports Commission, 2015. Final Report, Section 9.13

³⁰ See AoS Main Report Section 5 for assumptions on scope, including scenarios used, taken from the AC. See Appendix A.1-A.12 for assumptions on topic based assessments, including sub-section 7 (Scheme Design Included in the Assessment), sub-section 8 (Approach to Assessment) and 11 (Assumptions and Limitations).

4

DOCUMENTATION USED AS BASIS FOR APPRAISAL

4.1.1 For the purpose of the health impact analysis, the AC's Final Report (01 July 2015) has been used to provide the description and details of the indicative schemes as shortlisted by the AC. ³¹

4.1.2 Quality of life assessments use social determinants of 'Well-Being' which contribute to quality of life, whereas HIAs use health determinants which contribute to health inequalities resulting in health outcomes. As part of the scheme promoters' submissions to the AC, various quality of life assessments were undertaken on the three schemes, which have been described in several AC reports including:

PROMOTERS' QUALITY OF LIFE REPORTS

- Gatwick Second Runway - Appendix A14 Quality of Life A second Runway for Gatwick;
- Heathrow Northwest Runway - Quality of Life Chapter Volume 1 - Technical Submission Heathrow Airport Limited; and
- Heathrow Extended Northern Runway - Submission to Airports Commission – Long Term Options, Chapter 7: People. Heathrow Hub Ltd.

4.1.3 Of the three promoters reports only Gatwick assessed health as one of the domains within the QoL assessment. Health was discussed within the LHR-NWR Technical Submission, though not assessed.

QUALITY OF LIFE REPORTS

- Quality of Life: Equalities Impacts Report, Airports Commission;
- Quality of Life: Leisure impacts, Airports Commission;
- Quality of Life Health and Equalities Assessment Review, Prepared for the Airports Commission; and
- Quality of Life: Assessment Airports Commission, Airports Commission, Part 2 Evidence Report.

Additional Reports supplementing Quality of Life Assessments

- Aircraft noise effects on health, Prepared for the Airports Commission, Queen Mary University of London, 2015; and
- Community: Impact Assessment, Airports Commission.

³¹ <https://www.gov.uk/Government/organisations/airports-Airports Commission>

5

GEOGRAPHICAL AREA COVERED FOR THE HEALTH IMPACT ANALYSIS

5.1.1 The AC was asked to examine the scale and timing of any requirement for additional aviation capacity to maintain the UK's position as Europe's most important aviation hub. Therefore whilst health impacts are likely to accrue in and around the scheme locations, impacts will also be felt UK wide i.e. economic growth and jobs. Additional economic effects will be introduced into the analysis at the national level.

5.1.2 This is a desk-based assessment of the direct and indirect³² effects which are likely to be experienced by those communities (wards and districts) closest to each airport, (i.e. into which, and close to which, the extended airports would physically impact). Specific technical assessments, for example; noise or air quality, have their own study areas (as determined by each AoS topic specialist), and are assessed in their respective appendices of the AoS and the health impact analysis will be consistent with this approach.

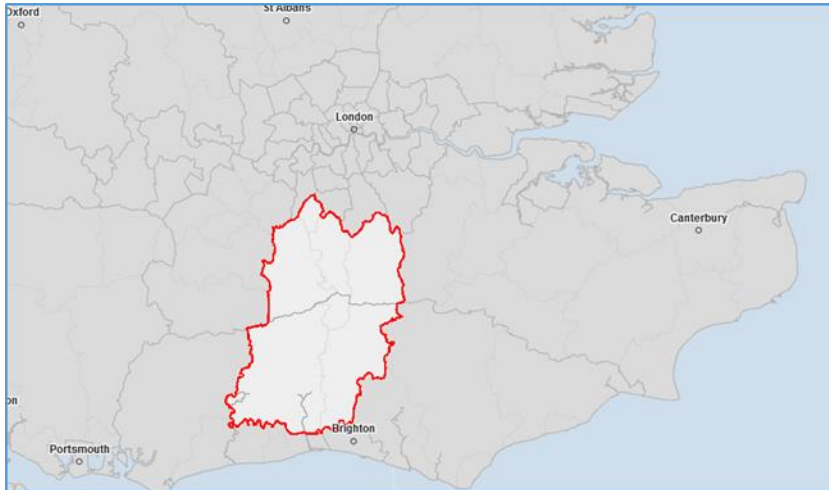
5.1.3 Two study areas are considered within this health impact analysis, and were determined by identifying areas where indirect and direct effects may be experienced as a result of each scheme. One study area is relevant to LGW-2R, while the other is relevant to both LHR-NWR and LHR-ENR. The study areas includes the following locations:

GATWICK

- Crawley Borough Council Local Authority Area;
- District of Horsham Local Authority Area;
- Reigate and Banstead Borough Council Local Authority Area;
- Mole Valley District Local Authority Area;
- Tandridge District Local Authority Area;
- Mid Sussex District Local Authority Area;
- Epsom and Ewell District Local Authority Area.

³² Direct / Indirect Distinguishes between effects that are a direct result of the policy (e.g. land loss) or are secondary, they occur away from the original effect or as a result of a complex pathway.

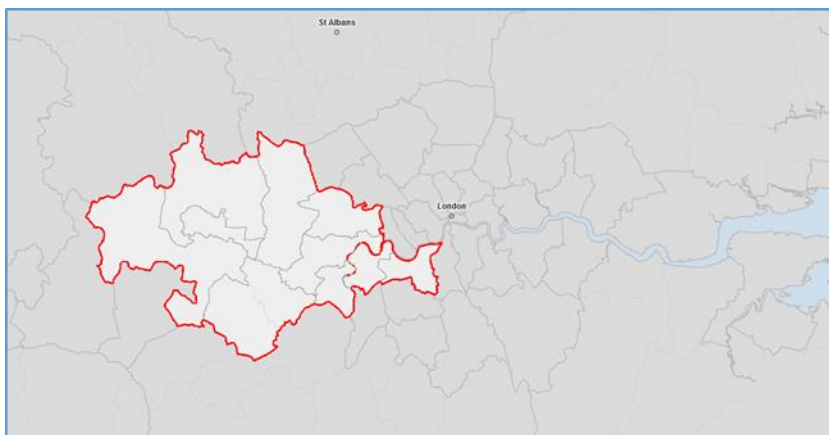
Figure 5.1: Gatwick Study Area



HEATHROW

- London Borough of Hillingdon Local Authority Area;
- London Borough of Hounslow Local Authority Area;
- London Borough of Ealing Local Authority Area;
- London Borough of Richmond upon Thames Local Authority Area;
- London Borough of Wandsworth Local Authority Area;
- Slough Borough Council Local Authority Area;
- The Royal Borough of Windsor and Maidenhead Local Authority Area;
- South Bucks District Council Local Authority Area;
- Runnymede Borough Council Local Authority Area;
- Spelthorne Borough Council Local Authority Area;

Figure 5.2: Heathrow Study Area



5.2 PHASES DURING WHICH POTENTIAL IMPACTS WILL BE ANALYSED

5.2.1 The following phases will be included in the health impact analysis for each of the schemes:

- Construction
- Operation

5.2.2 Decommissioning will not be considered in this health impact analysis: there is no set date for airport decommissioning, and therefore the likelihood of airport decommissioning is unknown.

5.3 TIMESCALE COVERED BY THE STUDY

5.3.1 The temporal scope of the health impact analysis is based on the following key dates:

- 2014/2015 – Current baseline unless otherwise referenced.
- 2020- 2025 – Infrastructure construction.
- 2025/2026 – Opening year.

6 COMMUNITIES OR POPULATIONS AFFECTED BY THE POLICY ALTERNATIVES

6.1.1 For the LGW-2R, people living in:

- Crawley Borough Local Authority Area
- Horsham District Local Authority Area;
- Reigate and Banstead Borough Local Authority Area;
- Mole Valley District Local Authority Area;
- Tandridge District Local Authority Area;
- Mid Sussex District Local Authority Area;
- Epsom and Ewell District Local Authority Area;

6.1.2 For both Heathrow schemes, people living in:

- London Borough of Hillingdon Local Authority Area
- London Borough of Hounslow Local Authority Area
- London Borough of Ealing Local Authority Area
- London Borough of Richmond upon Thames Local Authority Area
- London Borough of Wandsworth Local Authority Area
- Slough Borough Council Local Authority Area
- Royal Borough of Windsor and Maidenhead Local Authority Area
- South Bucks District Council Local Authority Area

- Runnymede Borough Council
- Spelthorne Borough Council

6.2 VULNERABLE GROUPS AFFECTED BY THE SCHEMES FOR INCREASED AVIATION CAPACITY

6.2.1 The priority groups identified within the EqlA are detailed below and will be used in the health impact analysis. The groups in the EqlA were determined through the AC’s screening process, where potential impacts were also identified.

Equality Strand	Equality Priority Group
Gender, pregnancy and maternity	Women
Religion or Belief	People belonging to different faith and belief groups
Ethnicity and Race	Black, Asian and Minority Ethnic people (BAME)
Age	Children (0-16 years)
	Young People (17-25 years)
	Working age people (15-64 years)
	Elderly people (≥60 years)
Disability	Disabled people with a physical or mental impairment which has a long term effect on their ability to undertake day to day activities
Low Income Groups	Most deprived local authorities using Indices of Deprivation – Income Domain

6.2.2 There are commonalities between the vulnerable groups identified in the AoS Equalities report and those proposed for assessment in the health impact analysis.

6.2.3 Additional vulnerable group identified and to be included in the health impact analysis are;

- People who are economically inactive/ unemployed
- People living in areas with poor health status
- People living in geographical and or social isolation, including elderly,
- Non-motorised users
- People with poor access to services, facilities and amenities
- People with poor access to green-space
- Shift workers

NB: Vulnerable groups specific to each scheme will be identified following analysis of the Community Profile and the literature review by WSP|PB.

7 HEALTH IMPACTS OF CONCERN WITHIN THE HEALTH IMPACT ANALYSIS

7.1.1 As part of this scoping process, an initial set of health impacts were drawn from the AC’s Interim

Report³³. This report stated that air travel makes a significant contribution to global greenhouse gas emissions. It outlined the more local impacts such as aircraft noise causing annoyance to communities and affecting their health, as well as infrastructure developments altering landscapes, cultural heritage and wildlife. The AC's Interim Report also emphasised the stress placed on surface transport networks, often leading to congestion and poor air quality.

7.1.2 Health impacts were also identified during the stakeholder consultation exercise conducted by the AC. These impacts have been drawn from the Analysis Report produced by Systra³⁴ and include noise, air quality, local employment and job security, impacts on local services and infrastructure including housing, road and rail, climate, biodiversity, cultural heritage and safety.

7.1.3 Additional health impacts have been included as a result of the advisory process with the HIA Steering Group (See Section 13), including public and community safety, emergency response, resilience to climate change and social cohesion.

7.1.4 The initial health impacts of concern were extended as part of a desk-based study of existing health information, which included a review of health impact assessments (HIAs) of three airport expansions^{35 36 37}. Impacts identified from HIAs of airport expansion include social isolation, surface access, local and national employment.

7.1.5 The sources from which the health impacts of concern were identified are shown in Table 7-1; the final determinants selected for the health impact analysis are presented in Section 9 below. It is acknowledged there are additional sources of information, which have not been included here, such as professional judgement from the HIA specialists and health impacts assessed in previous large scale HIAs.

³³ Airports Commission, 2013. *Interim Report*. [\[online\]](#) Accessed 01/08/2015.

³⁴ Systra, 2015. *Analysis of the Airports Commission's Consultation Responses*, [\[online\]](#) Accessed 29/02/2016

³⁵ Barrowcliffe, R and C Phillips, 2008. *The Stansted Generation 2 Project: A Health Impact Assessment*. Environmental Resources Management Ltd.

³⁶ Abrahams, D, Haigh, F, Pennington, A and H Dreaves, 2008. *A Rapid Health Impact Assessment of Birmingham International Airport's Proposed Runway Extension*. University of Liverpool.

³⁷ Abdel Aziz, M, Radford, J and J McCabe, 2000. *Health Impact Assessment, Finningley Airport*. Doncaster Health Authority.

Table 7-1 Health Impacts of Concern and the Origin of their Proposition

<i>Health impact of concern</i>	<i>Health Impacts Identified by Airport Commission³⁸</i>	<i>Health Impacts Identified via Stakeholder Consultation Responses³⁹</i>	<i>Health Impacts Identified by HIA Steering Group members</i>	<i>Health Impacts used in Other Airport Expansion HIAs</i>
Air quality				
Noise				
Collisions				
Social isolation				
Climate change				
Surface access				
Local and national jobs				
Apprenticeships				
Business Activity				
Job Creation/ Availability of employment opportunities / Quality of employment opportunities				
Exercise and physical activity				
Illicit Drug Use				
Smoking habit				
Landscape and Townscape				
Access to Nature				
Water Quality				
Land Use				
Natural Habitats				
Soil/ Land Contamination				
Hazards				
Public Transport				
Wealth Distribution				
Community Participation				
Crime/ Antisocial behaviour				
Housing				
Personal safety				
Income				
Access to Services, facilities, and amenities				
Access to Greenspace/ Bluespace				
Access to Health care				
Childhood Development				
Level of Income				

³⁸ Airports Commission, 2013. *Interim Report*, [\[online\]](#) Accessed 01/08/2015

³⁹ Systra, 2015. *Analysis of the Airports Commission's Consultation Responses*, [\[online\]](#) Accessed 29/02/2016

8

POTENTIAL FOR CUMULATIVE EFFECTS

8.1.1 Cumulative effects arise, for instance, where several developments each have insignificant effects but together have a significant effect, or where several individual effects of the plan (e.g. noise, dust and visual) have a combined effect⁴⁰. In the context of the AoS, this is also taken to include policies, plans and programmes (PPPs). This can also be applied to the health impact analysis.

8.1.2 PPPs which will be reviewed for cumulative effects with the AoS include:

- Other NPSs which may give rise to cumulative effects, either through transport related effects or location, particularly in the South East.
- Other major projects, not already taken into account in surface access proposals, which may give rise to cumulative effects during construction or operation.
- Local land-use plans and policies for proposed development in the local authorities relating to schemes considered.

8.1.3 Any identified cumulative impacts will be included in the health impact analysis.

9

METHODS FOR THE APPRAISAL OF POTENTIAL IMPACTS

9.1.1 One of the purposes of scoping is to define the geographical area of study for the health impact analysis, and to identify the communities which might be affected, the key health issues and the strategy for data collection.

9.1.2 Specific tasks to be undertaken include:

- Open dialogue with the HIA Steering Group to identify health determinants for the assessment,
- Policy-level desk-top studies of existing health information,
- Community Profiling, and
- Literature review.

⁴⁰ ODPM, 2005, A Practical Guide to the Strategic Environmental Assessment Directive, the 'Practical Guide', Appendix 8.

9.1.3 The assessment step of the health impact analysis will include collating available baseline data for each option and making an assessment based on the available evidence.

9.2 METHOD FOR THE APPRAISAL OF IMPACTS

9.2.1 A seven point assessment scale that classifies the significance of the identified impacts (Table 9-1) will be used to categorise the effects for the assessment. This approach has been adapted from that used by the Institute of Occupational Medicine (IOM), for the North Staffordshire 'Streetcar' Bus Rapid Transport Scheme Health Impact Assessment, IOM, 2009. Significance incorporates the intensity of the impact and its potential duration, shown in Table 9-1.

Table 9-1 Assessment Scale and Definition of Significance

Significance of Impact	Definition	Intensity [+/-]	Duration (SML) (TIP)
Major negative	Health effects are categorised as a major negative if they could lead directly to deaths, acute or chronic diseases or mental ill health. They can affect either or both physical and mental health either directly or through the wider determinants of health and wellbeing. These effects can be important local, district, regional and national considerations. Mitigation measures and detailed design work can reduce the level of negative effect though residual effects are likely to remain.	The exposures tend to be of high intensity. Over a large geographical area or affect a large number of people or impact vulnerable groups. (- - - / + + +)	Long term duration (L) Intermittent (I) Temporary (T) or Permanent (P) in nature
Major positive	Health effects are categorised as a major positive if they prevent deaths/prolong lives, reduce/prevent the occurrence of acute or chronic diseases or significantly enhance mental wellbeing would be a major positive.		
Moderate negative	Health effects are categorised as a moderate negative if the effects are long term nuisance impacts, e.g. odours and noise, or may lead to exacerbations of existing illness. The negative impacts may be nuisance/quality of life impacts which may affect physical and mental health either directly or through the wider determinants of health. The cumulative effect of a set of moderate effects can lead to a major effect. These effects can be important local, district and regional considerations. Mitigation measures and detailed design work can reduce and in some/many cases remove the negative and enhance the positive effects though residual effects are likely to remain	The exposures tend to be of moderate intensity and/or over a relatively localised area and/or likely to affect a moderate-large number of people e.g. between 100-500 and/or sensitive groups (- - / + +)	Medium term duration (M) Intermittent (I) Temporary (T) or permanent (P) in nature.
Moderate positive	Health effects are categorised as a moderate positive if they enhance mental wellbeing significantly and/or reduce exacerbations to existing illness and reduce the occurrence of acute or chronic diseases.		
Minor negative	Health effects are categorised as minor positive or negative, if they are generally lower level quality of life or wellbeing impacts. Increases or reductions in noise, odour, visual amenity, etc. are examples of such effects. These effects can be important local considerations. Mitigation measures and detailed	The exposures tend to be of low intensity and/or over a small area and/or affect a	Short term duration (S) Intermittent (I) Temporary (T) or
Minor positive			

Significance of Impact	Definition	Intensity [+/-]	Duration (SML) (TIP)
	design work can reduce the negative and enhance the positive effects such that there are only some residual effects remaining.	small number of people e.g. less than 100 (- / +)	permanent (P) in nature.
Neutral/No	No health effect or effects within the bounds of normal/accepted variation.	N/A	N/A

9.3 AIRPORT EXPANSION COMPONENTS THAT COULD INFLUENCE HEALTH

9.3.1 The identification of links between Airport expansion and health, covering key issues, impact source and potential health effects are presented in Table 7-1. This analysis has informed the identification of potential health impacts and the key issues upon which to focus this HIA during construction and operation of the proposed schemes.

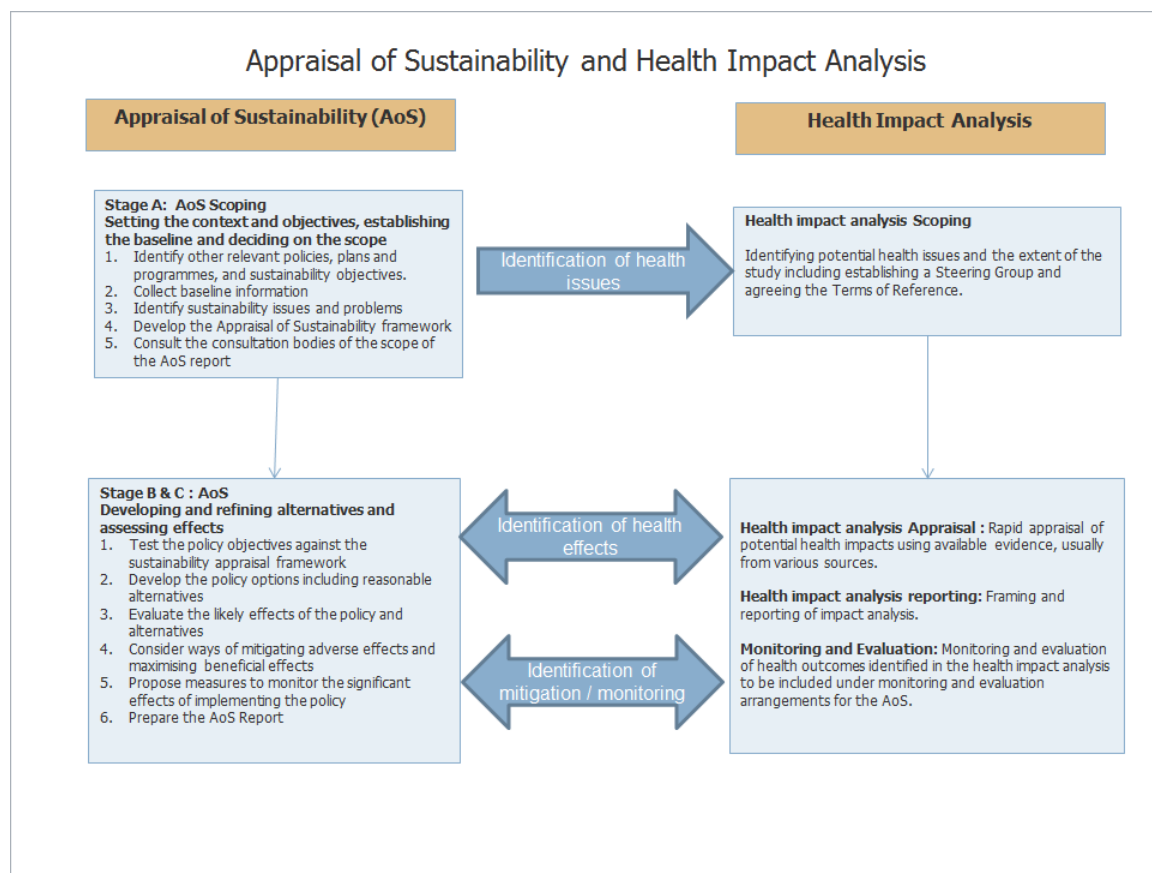
9.4 AOS FRAMEWORK

9.4.1 The AoS assesses several topics according to an appraisal framework comprising Sustainability Objectives and associated Appraisal Questions (the proposed AoS Framework can be found in full in the AoS Main Report). The AoS is based on detailed assessments carried out as part of the Sustainability Appraisal conducted for the AC. Topics covered include:

- Community
- Quality of Life
- Economy
- Noise
- Biodiversity
- Soil
- Water
- Air Quality
- Carbon
- Resources and Waste
- Historic Environment
- Landscape

9.4.2 Information and data will be drawn directly from the AoS Appendices to assist in the HIA process. Topics which are directly or indirectly associated with the health determinants form an important source of the wider airport schemes health related effects (see Figure 9.1).

Figure 9.1: Links between AoS and health impact analysis outputs



9.5 DESK-TOP APPRAISAL: SCHEDULE OF HEALTH DETERMINANTS

9.5.1 The following health determinants are proposed to be assessed as part of the desk top appraisal. These were selected as a result of health impacts identified in the Airport Commission report, identified in stakeholder consultation responses, included in previous airport expansion HIAs and raised by steering group members (see Section 13) of this health impact analysis.

Table 9-2 Proposed Schedule of Health Determinants

Lifestyle	Personal circumstances	Access to services, facilities and amenities
<ul style="list-style-type: none"> Exercise and physical activity Smoking habit 	<ul style="list-style-type: none"> Childhood development Personal safety Employment status Working conditions Level of income, Housing tenure Housing conditions Educational attainment 	<ul style="list-style-type: none"> Access to housing, employment, services, public transport, facilities and amenities Access to healthcare Access to greenspace/bluespace Access to leisure and recreation services and facilities to utilities
Social Factors	Economic Factors	Environmental Factors
<ul style="list-style-type: none"> Participation in the community, social inclusion/ exclusion, social contact / support 	<ul style="list-style-type: none"> Creation of wealth Distribution of wealth Retention of wealth in the 	<ul style="list-style-type: none"> Air quality Water quality Soil quality, including agricultural

<ul style="list-style-type: none"> • Level of crime and disorder/fear of crime and disorder • Level of antisocial behaviour/fear of antisocial behaviour • Community severance • Public safety and Emergency planning 	<p>local economy</p> <ul style="list-style-type: none"> • Business activity • Job creation • Availability of employment opportunities • Quality of employment opportunities • Training and skills development • Amount of traffic congestion • Technological development 	<p>soil/level of contamination</p> <ul style="list-style-type: none"> • Noise • Hazards/ aircraft collisions/ road vehicle collisions • Land use • Natural habitats • Landscape, including green and open spaces • Townscape, including civic areas and public realm • Public transport infrastructure • Tranquillity • Flood risk • Waste management • Resilience to global climate change
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10 LITERATURE REVIEW

WSP| PARSONS BRINCKERHOFF LITERATURE REVIEW

- 10.1.1 It is acknowledged that the literature review will not be able to capture all health effects arising from project development due to the level of plan detail currently available. However, it is anticipated that the information will be sufficient to identify broad health effects to support decision making.
- 10.1.2 In order to identify health evidence for health impact analysis, a literature review of health and inequality evidence using a number of relevant databases from published literature and publically available reports, will be undertaken.
- 10.1.3 As part of this review it is proposed that the following databases, information sources and HIA information will be searched :
- Aviation Safety Network,
 - Civil Aviation Authority Publications and Information Database
 - Centre for Reviews and Dissemination, York
 - Coalition for Evidence Based Policy (formerly Evidence Based Public Policy)
 - Health & Safety Executive
 - NICE Healthcare Databases
 - World Health Organization
 - Public Health England HIA, MWIA and SEA Bibliography (updated 2014) - formerly Association of Public Health Organisations, HIA Gateway

10.1.4 A search of the Public Health England HIA information by WSP | PB will be limited to health and inequality evidence presented within recent HIA's relating to aviation schemes. The keywords used will include: airport, aircraft, airplane, aviation, accidents, collisions, safety, risk, noise, air quality, monitoring, road traffic, transport, travel, employment, economy, climate change, health, effects, impacts, well-being, housing, accessibility, pollution, physical activity.

10.1.5 These keywords will be used for the reviews of previous HIAs as described above. Evidence will be employed used where either a direct or indirect (or both) health effect has been indicated within the publication. No threshold or defined inclusion / exclusion criteria will be used for evidence at this stage.

PHE LITERATURE SEARCH

10.1.6 Public Health England (PHE), represented on the HIA Steering Group, will resource and provide a systematic literature search to complement and supplement the literature review undertaken by WSP | PB.

10.1.7 The results of this literature search will be used to form an evidence base against which the health determinants will be assessed and underpin any causation resulting in health outcomes.

10.1.8 The following databases will be searched:

- Medline
- Embase
- Global Health
- Google scholar
- TRIP database
- TRID/TRB online
- NHS Evidence
- Related citation feature on PubMed and Google scholar

10.1.9 The dates for the literature search will be from January 2005 to May 2016.

10.1.10 Search terms used in the search strategy will be based on:

- Aviation and airport search terms;
- Determinants of health search terms;
- Health outcomes (intermediate and final) search terms;
- Airports of a similar size;
- Other airports in London.

10.1.11 At the time of writing, criteria for filtering the preliminary results of the supplementary literature search need to be defined by personnel at PHE.

11 COMMUNITY/POPULATION PROFILING

- 11.1.1 Community profiles will be drawn from populations living within the local authorities specified in the geographical area section above, due to their relative close proximity (within 8km) of both airports. These will be described using publically available Office of National Statistics data at the local authority level.
- 11.1.2 Community profiles will be retrospective using ONS 2013/ 2014 data and will be assumed only to be indicative of the community profile in 2030.
- 11.1.3 No population projections will be made for the health impact analysis; though changes in population density, population distribution and the economically active population within the study areas will be incorporated into the health impact analysis. This aligns with the approach taken within the AC assessment and the associated AC datasets⁴¹ will be used in the health impact analysis.

12 INFORMATION REQUIREMENTS

- 12.1.1 Information in a health impact analysis is needed for several purposes, and will be obtained from several different sources:
- Literature search (see section 10 above);
 - Routine and non-routine data (see section 11 above);
 - Grey or unpublished literature, usually but not always case-studies of other similar or related HIAs (see section 10 above); and
 - Stakeholder consultation (See section 12.2 below).

12.2 STAKEHOLDER CONSULTATIONS

- 12.2.1 There are several constraints limiting the scope of this health impact analysis, including the confidentiality and sensitivities surrounding the shortlisted schemes for increasing airport capacity. Requirements for confidentiality will extend beyond the timeframe for the health impact analysis and be relevant until the public consultation period for the NPS.
- 12.2.2 Owing to restrictions on information disclosure and programme constraints, for this health impact analysis stakeholder consultation is internal to Government Departments and relevant arms-length bodies (ALBs) on the AoS Steering Group.

⁴¹ Airports Commission, 2015. *Local Economy: Impact Assessment Post Consultation Updates*. [[online](#)]

13 HIA STEERING GROUP

- 13.1.1 The role of the HIA Steering Group is to ensure that the health impact analysis process is transparent, ethical and robust within the constraints outlines in 13.2.
- 13.1.2 The HIA Steering Group will seek to work collaboratively with DfT throughout the health impact analysis process. However HIA Steering Group members will remain impartial and independent as in light of their respective remits and statutory roles, and will be able to comment as relevant on the appropriateness of the health impact analysis process and its documentation.
- 13.1.3 Membership of the HIA Steering Group will include representatives from Government departments and ALBs with relevant expertise in impact assessment and/or specialist topics as well as primary decision-makers or their representatives.
- 13.1.4 The suggested steering group membership for this health impact analysis is:
- Project Management, DfT
 - Project Management, WSP|PB
 - HIA Lead, WSP | Parsons Brinckerhoff Limited
 - Representative from Public Health England
 - Representative from Department for Communities and Local Government
 - Representative from Environment Agency and/or Defra
 - Project Lead for the Aviation Capacity Appraisal of Sustainability, Department for Transport
 - Project Lead for Aviation Capacity Environmental Impact, Department for Transport
 - Project Lead for Aviation Capacity Blight and Compensation, Department for Transport
 - Project Lead for Aviation Capacity Economic Impacts, Department for Transport

RESOURCES NEEDED TO CONDUCT THE HIA

- Expertise in HIA, supplied by PHE and WSP|PB
- Expertise in specialist subjects, particularly Air Quality and Noise

SOURCE OF FUNDING

- DfT

14 OUTPUTS

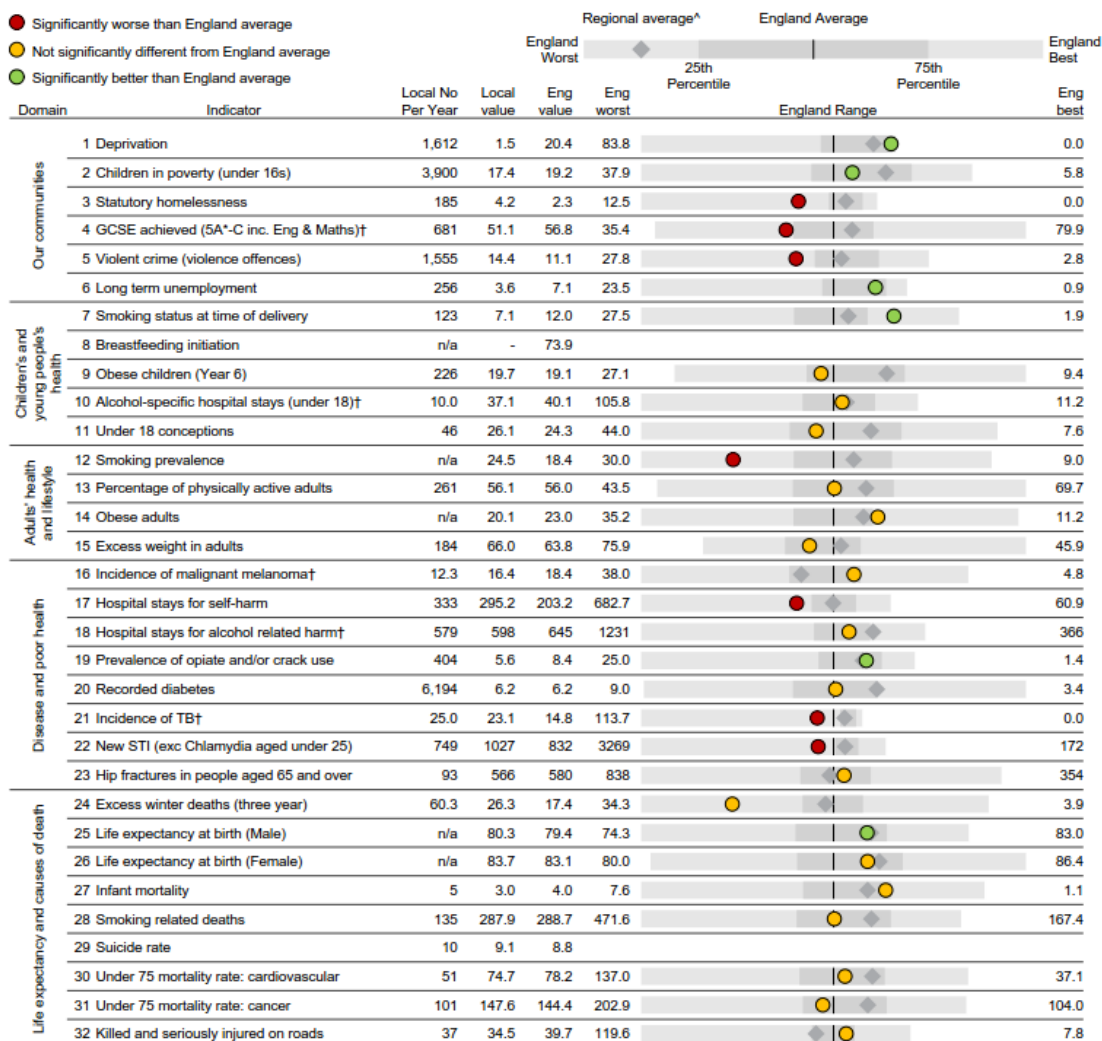
- 14.1.1 The proposed output is a health impact analysis report including an Executive Summary. Findings from the health impact analysis which are related to AoS Topics will be outlined in Appendices to the AoS report under the respective topic, for example, Quality of Life, Noise and Air Quality (see Figure 9-1 above).
- 14.1.2 The Health Impact Analysis will be published alongside the NPS and AoS on the GOV.UK website.

Appendix B

LOCAL AUTHORITY HEALTH PROFILES

Health summary for Crawley

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.



Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 **2** % children (under 16) in families receiving means-tested benefits & low income, 2012
3 Crude rate per 1,000 households, 2013/14 **4** % key stage 4, 2013/14 **5** Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
6 Crude rate per 1,000 population aged 16-64, 2014 **7** % of women who smoke at time of delivery, 2013/14 **8** % of all mothers who breastfed their babies in the first 48hrs after delivery, 2013/14 **9** % school children in Year 6 (age 10-11), 2013/14 **10** Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2011/12 to 2013/14 (pooled) **11** Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2013 **12** % adults aged 18 and over who smoke, 2013
13 % adults achieving at least 150 mins physical activity per week, 2013 **14** % adults classified as obese, Active People Survey 2012 **15** % adults classified as overweight or obese, Active People Survey 2012 **16** Directly age standardised rate per 100,000 population, aged under 75, 2010-12 **17** Directly age sex standardised rate per 100,000 population, 2013/14 **18** The number of admissions involving an alcohol-related primary diagnosis or an alcohol-related external cause, directly age standardised rate per 100,000 population, 2013/14 **19** Estimated users of opiate and/or crack cocaine aged 15-64, crude rate per 1,000 population, 2011/12 **20** % people on GP registers with a recorded diagnosis of diabetes 2013/14 **21** Crude rate per 100,000 population, 2011-13, local number per year figure is the average count **22** All new STI diagnoses (excluding Chlamydia under age 25), crude rate per 100,000 population, 2013 **23** Directly age and sex standardised rate of emergency admissions, per 100,000 population aged 65 and over, 2013/14 **24** Ratio of excess winter deaths (observed winter deaths minus expected deaths based on non-winter deaths) to average non-winter deaths 01.08.10-31.07.13 **25**, **26** At birth, 2011-13 **27** Rate per 1,000 live births, 2011-13 **28** Directly age standardised rate per 100,000 population aged 35 and over, 2011-13 **29** Directly age standardised mortality rate from suicide and injury of undetermined intent per 100,000 population, 2011-13 **30** Directly age standardised rate per 100,000 population aged under 75, 2011-13 **31** Directly age standardised rate per 100,000 population aged under 75, 2011-13 **32** Rate per 100,000 population, 2011-13

† Indicator has had methodological changes so is not directly comparable with previously released values. ^a "Regional" refers to the former government regions.

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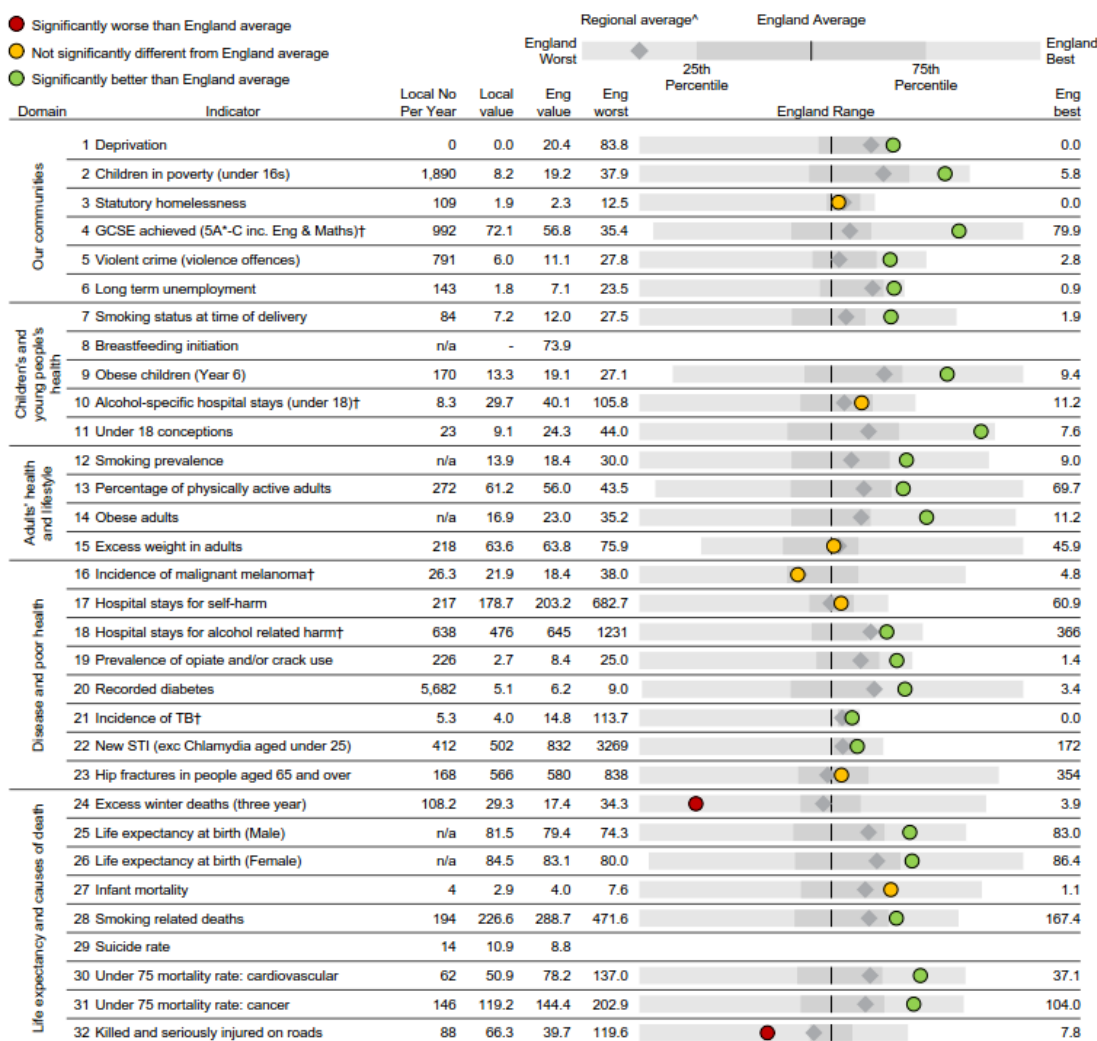
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Health summary for Horsham

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average



Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 2 % children (under 16) in families receiving means-tested benefits & low income, 2012
 3 Crude rate per 1,000 households, 2013/14 4 % key stage 4, 2013/14 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
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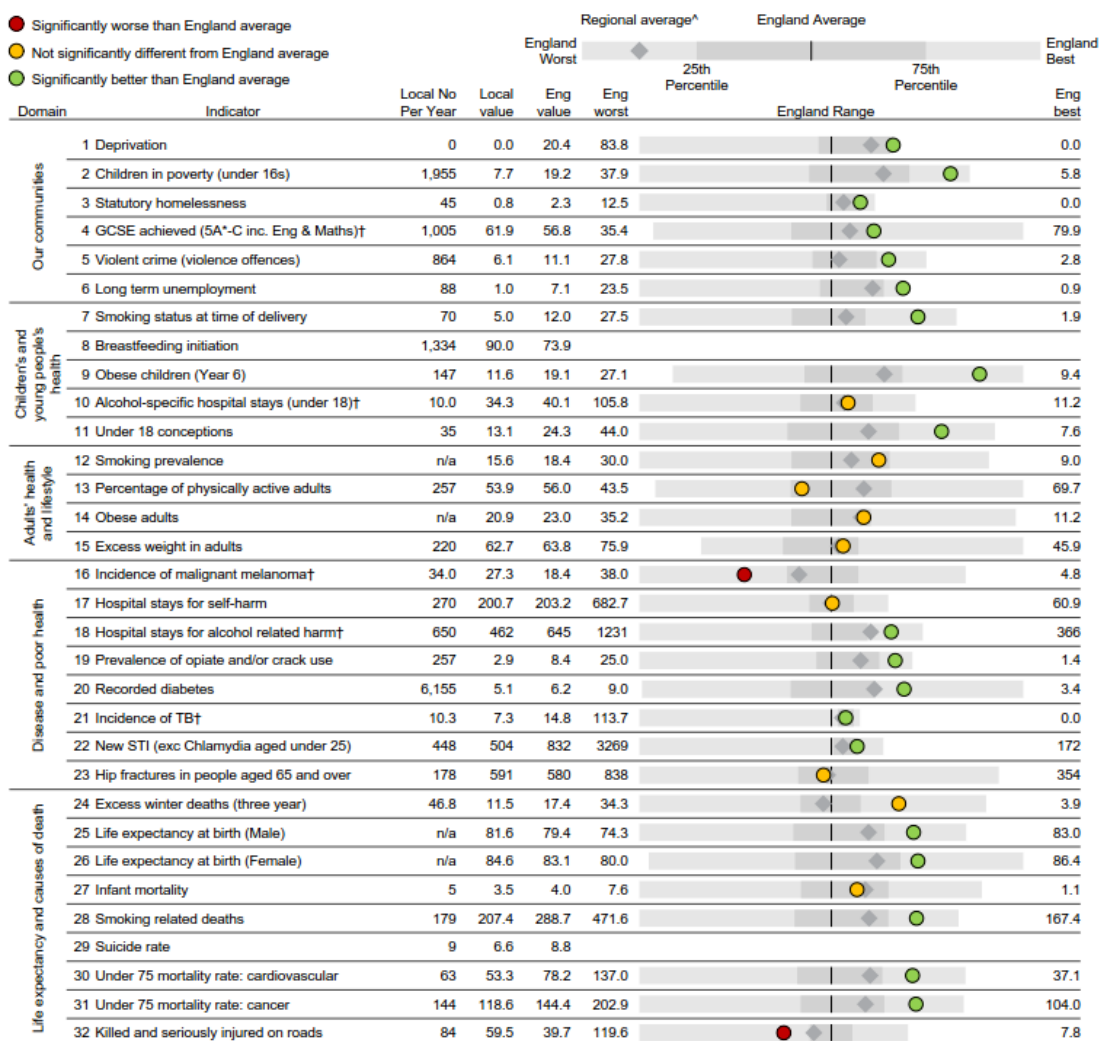
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Health summary for Mid Sussex

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average



Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 2 % children (under 16) in families receiving means-tested benefits & low income, 2012
 3 Crude rate per 1,000 households, 2013/14 4 % key stage 4, 2013/14 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
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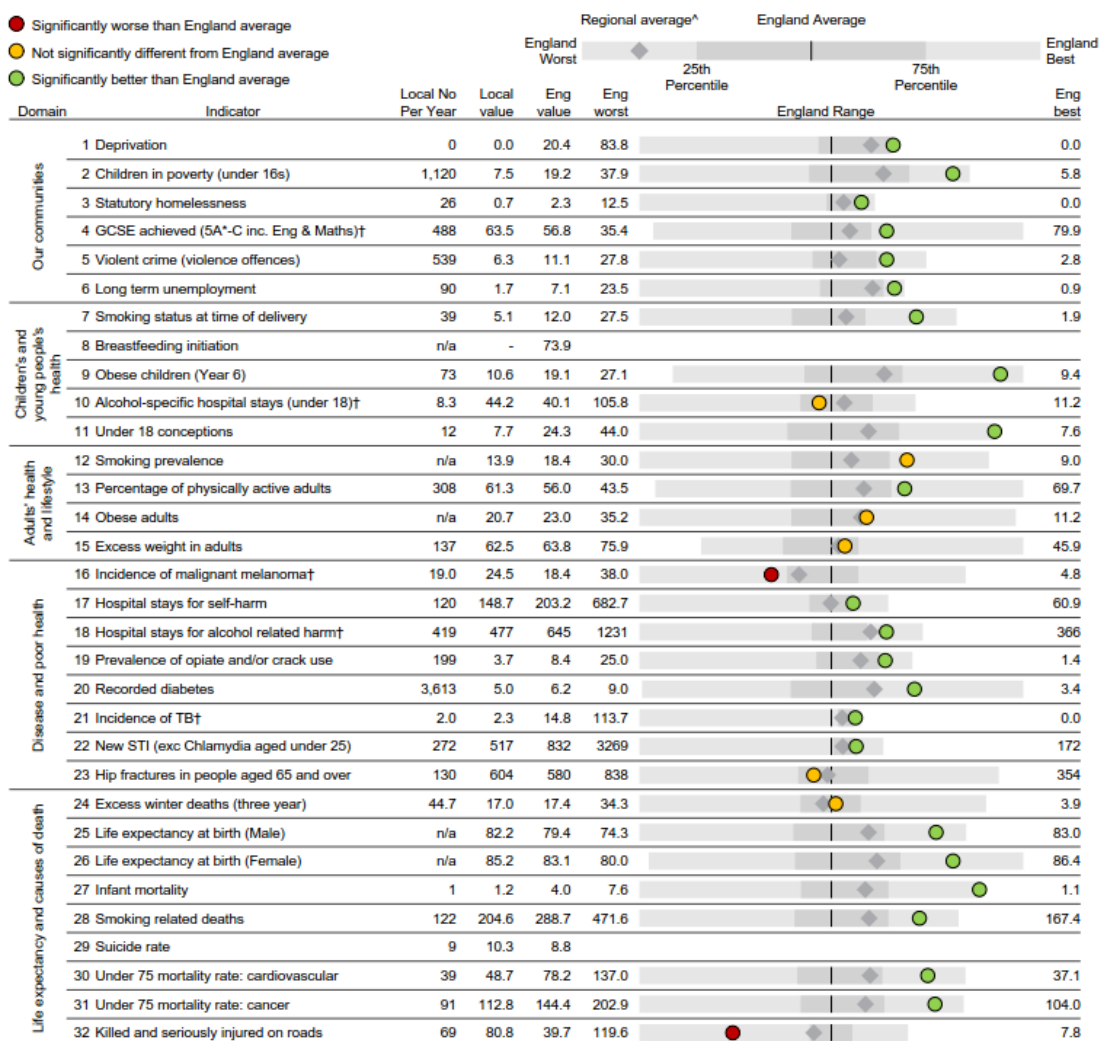
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Health summary for Mole Valley

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- Significantly worse than England average
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Indicator notes

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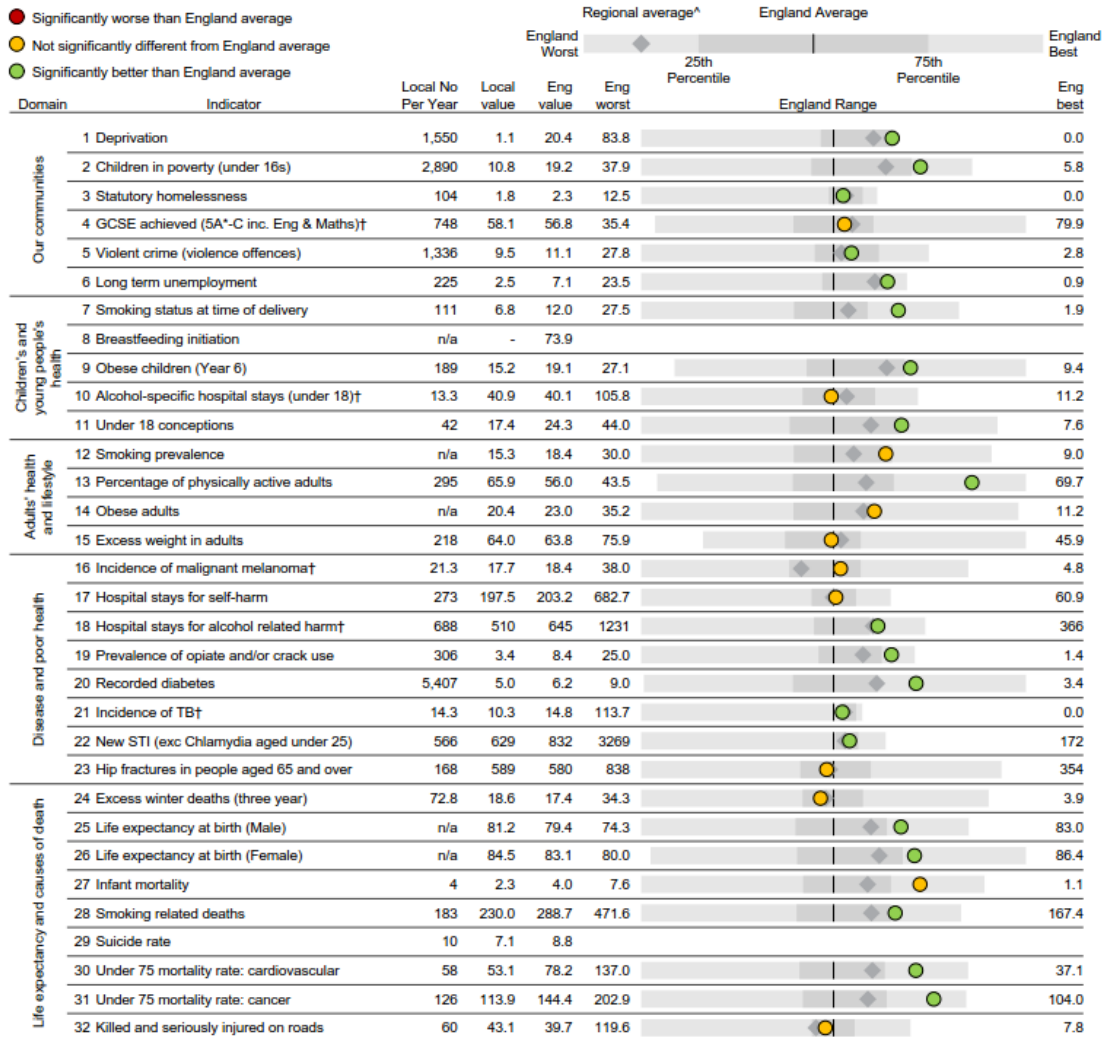
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Health summary for Reigate and Banstead

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Indicator notes

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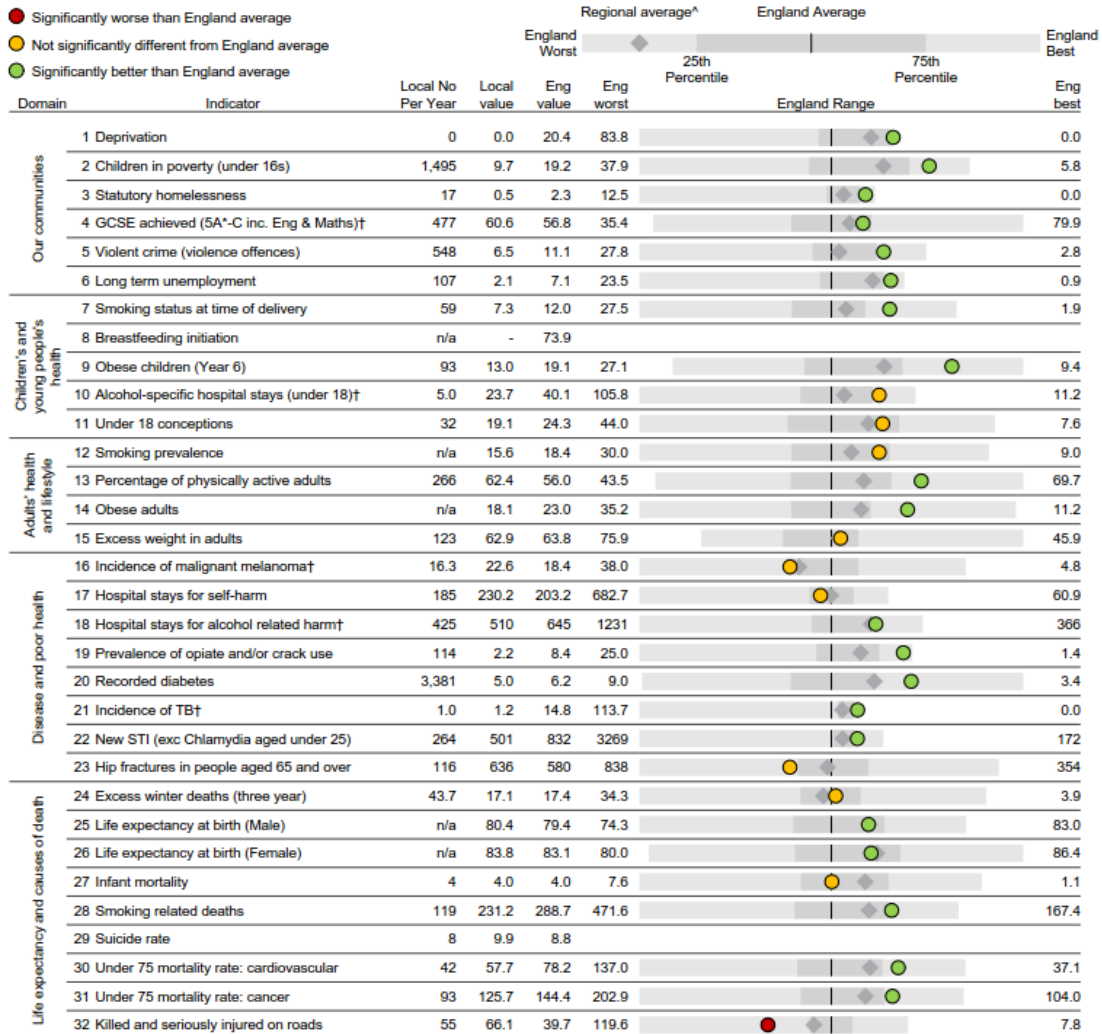
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Health summary for Tandridge

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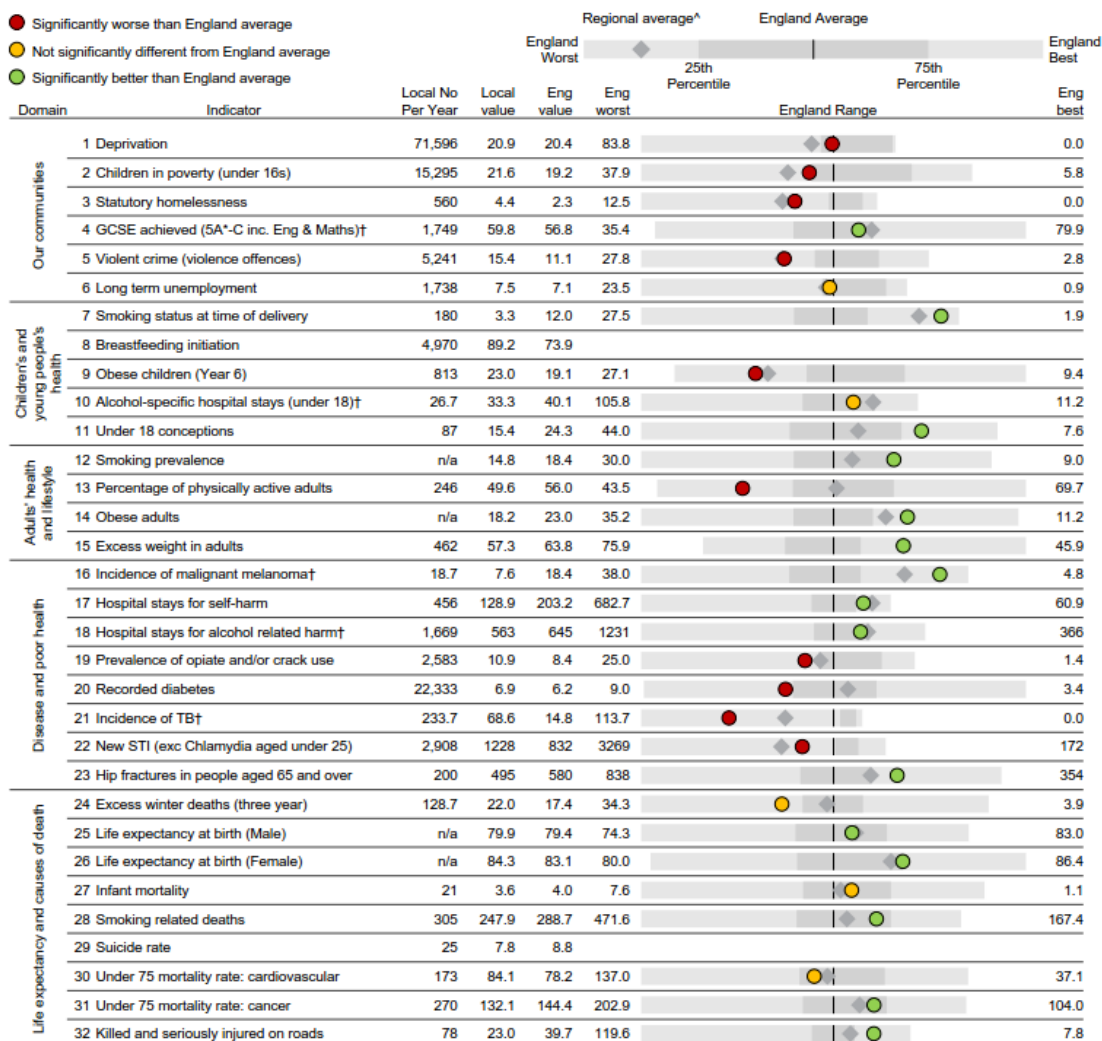
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Health summary for Ealing

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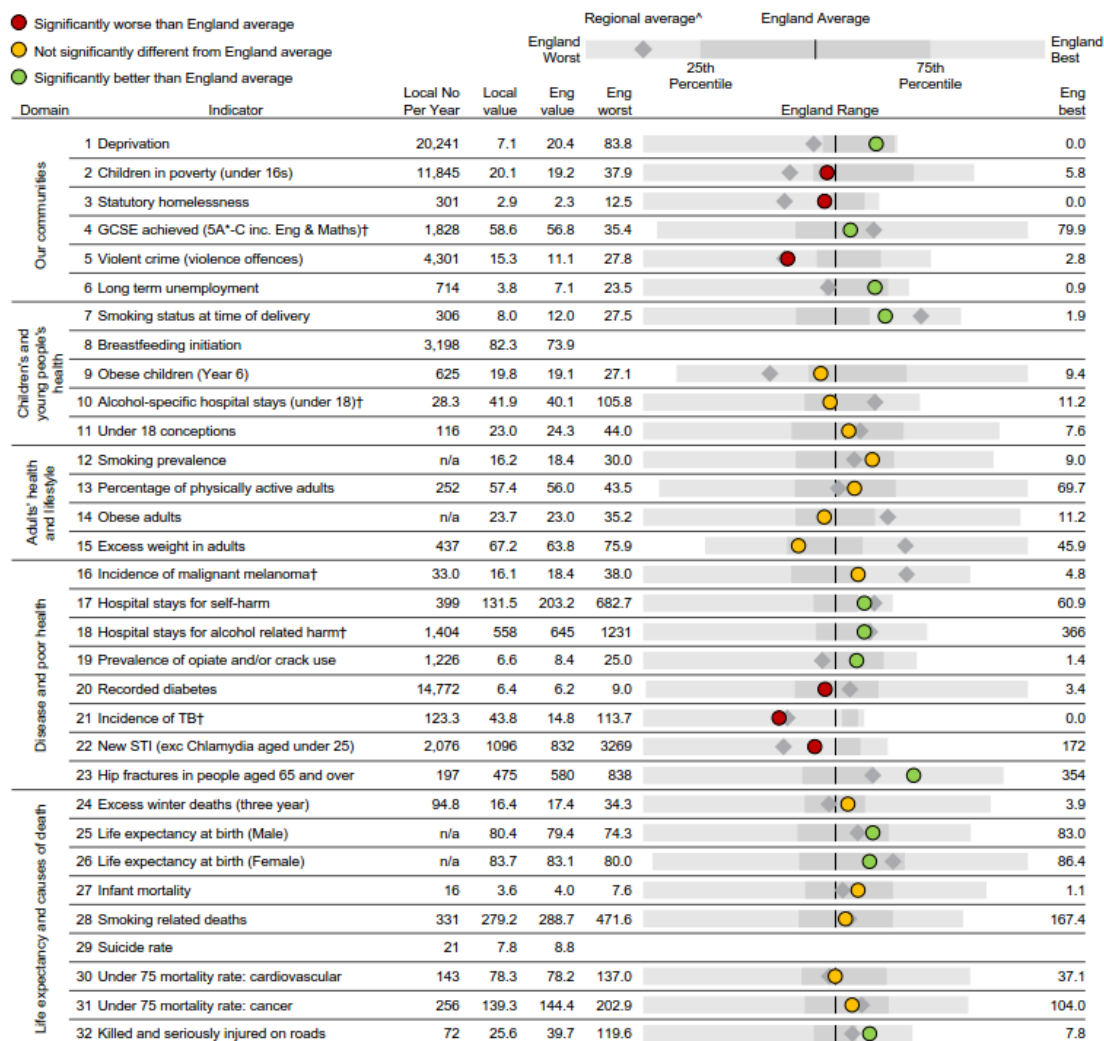
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Health summary for Hillingdon

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Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 2 % children (under 16) in families receiving means-tested benefits & low income, 2012
 3 Crude rate per 1,000 households, 2013/14 4 % key stage 4, 2013/14 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
 6 Crude rate per 1,000 population aged 16-64, 2014 7 % of women who smoke at time of delivery, 2013/14 8 % of all mothers who breastfed their babies in the first 48hrs after delivery, 2013/14 9 % school children in Year 6 (age 10-11), 2013/14 10 Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2011/12 to 2013/14 (pooled) 11 Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2013 12 % adults aged 18 and over who smoke, 2013
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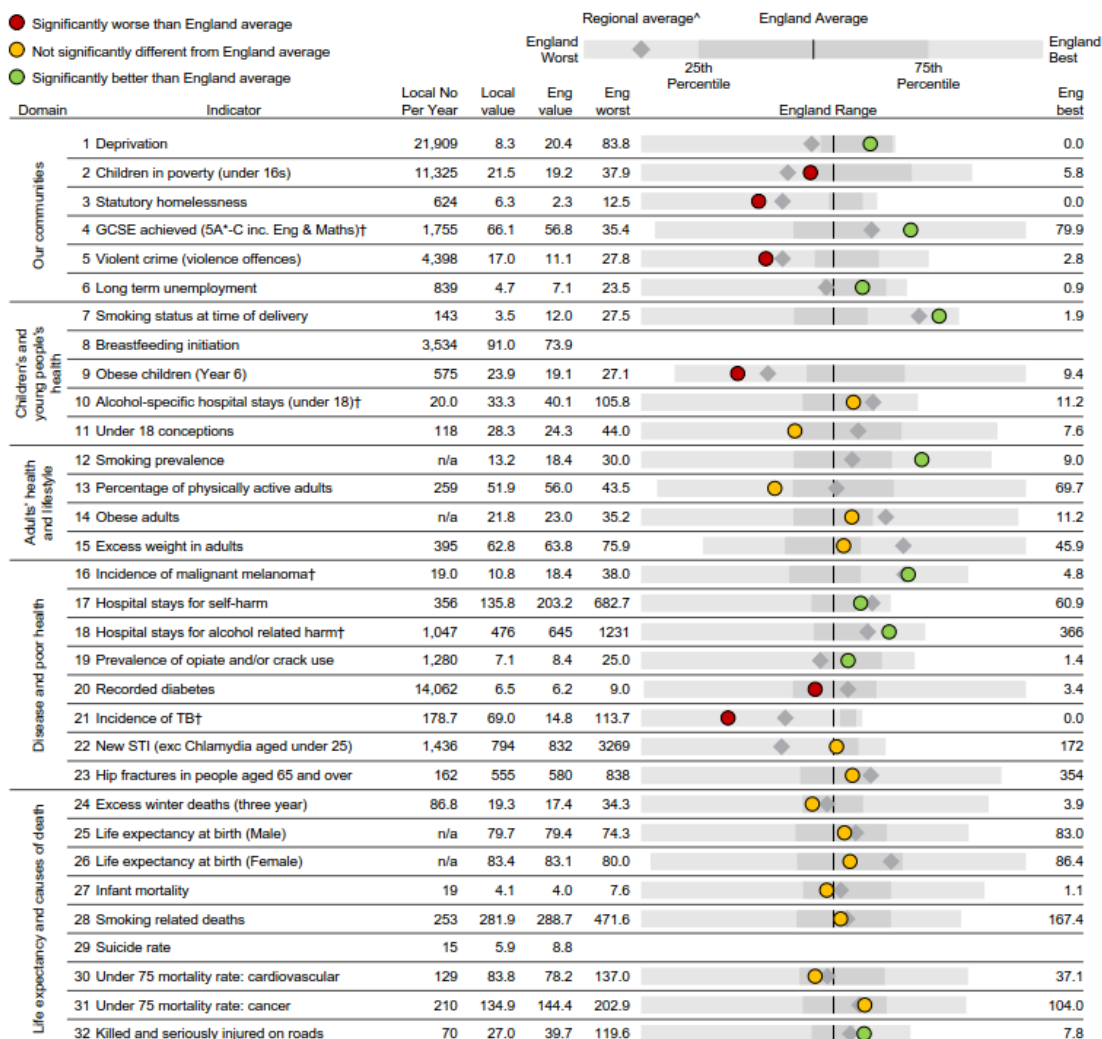
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Health summary for Hounslow

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Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 **2** % children (under 16) in families receiving means-tested benefits & low income, 2012
3 Crude rate per 1,000 households, 2013/14 **4** % key stage 4, 2013/14 **5** Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
6 Crude rate per 1,000 population aged 16-64, 2014 **7** % of women who smoke at time of delivery, 2013/14 **8** % of all mothers who breastfed their babies in the first 48hrs after delivery, 2013/14 **9** % school children in Year 6 (age 10-11), 2013/14 **10** Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2011/12 to 2013/14 (pooled) **11** Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2013 **12** % adults aged 18 and over who smoke, 2013
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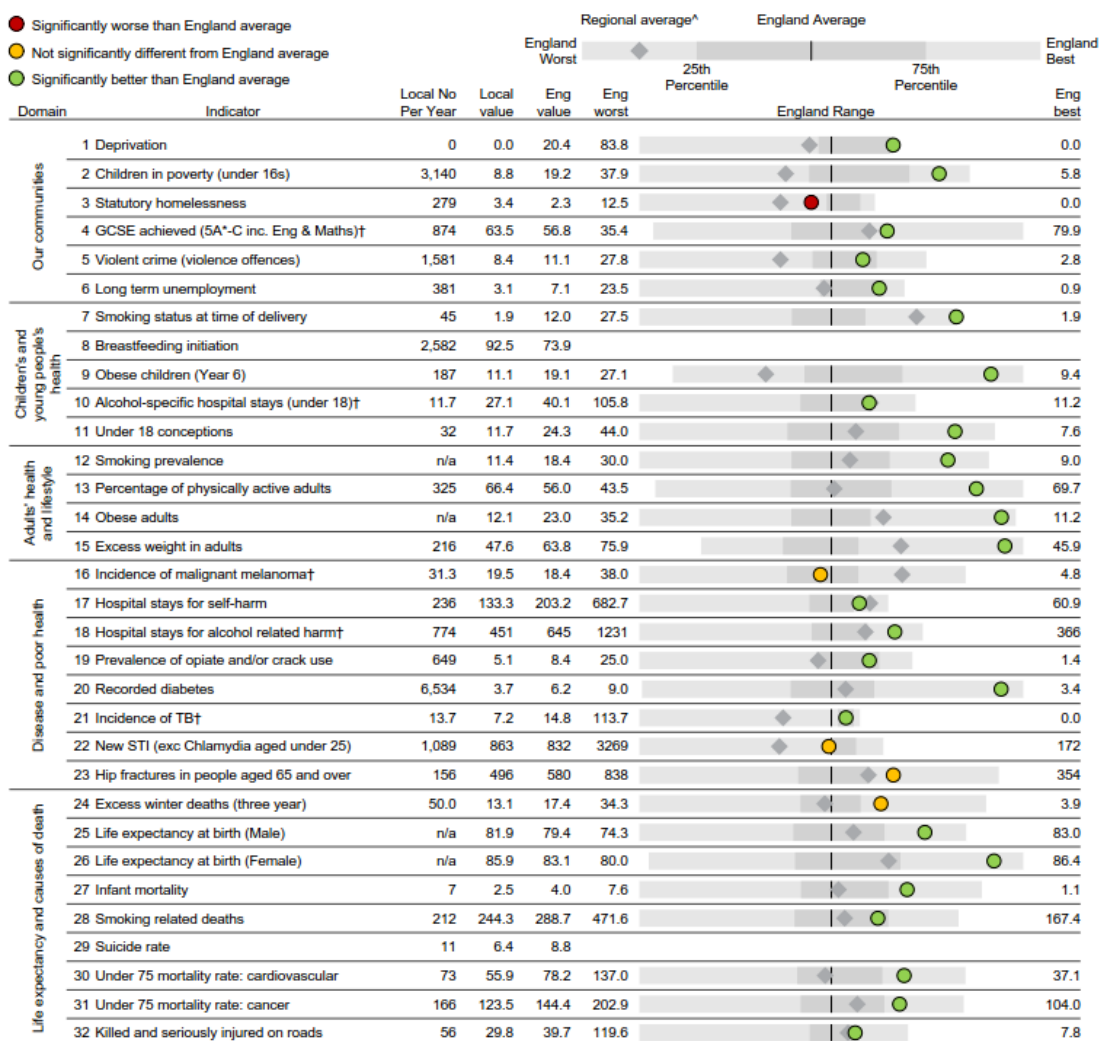
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Health summary for Richmond upon Thames

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average



Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 2 % children (under 16) in families receiving means-tested benefits & low income, 2012
 3 Crude rate per 1,000 households, 2013/14 4 % key stage 4, 2013/14 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
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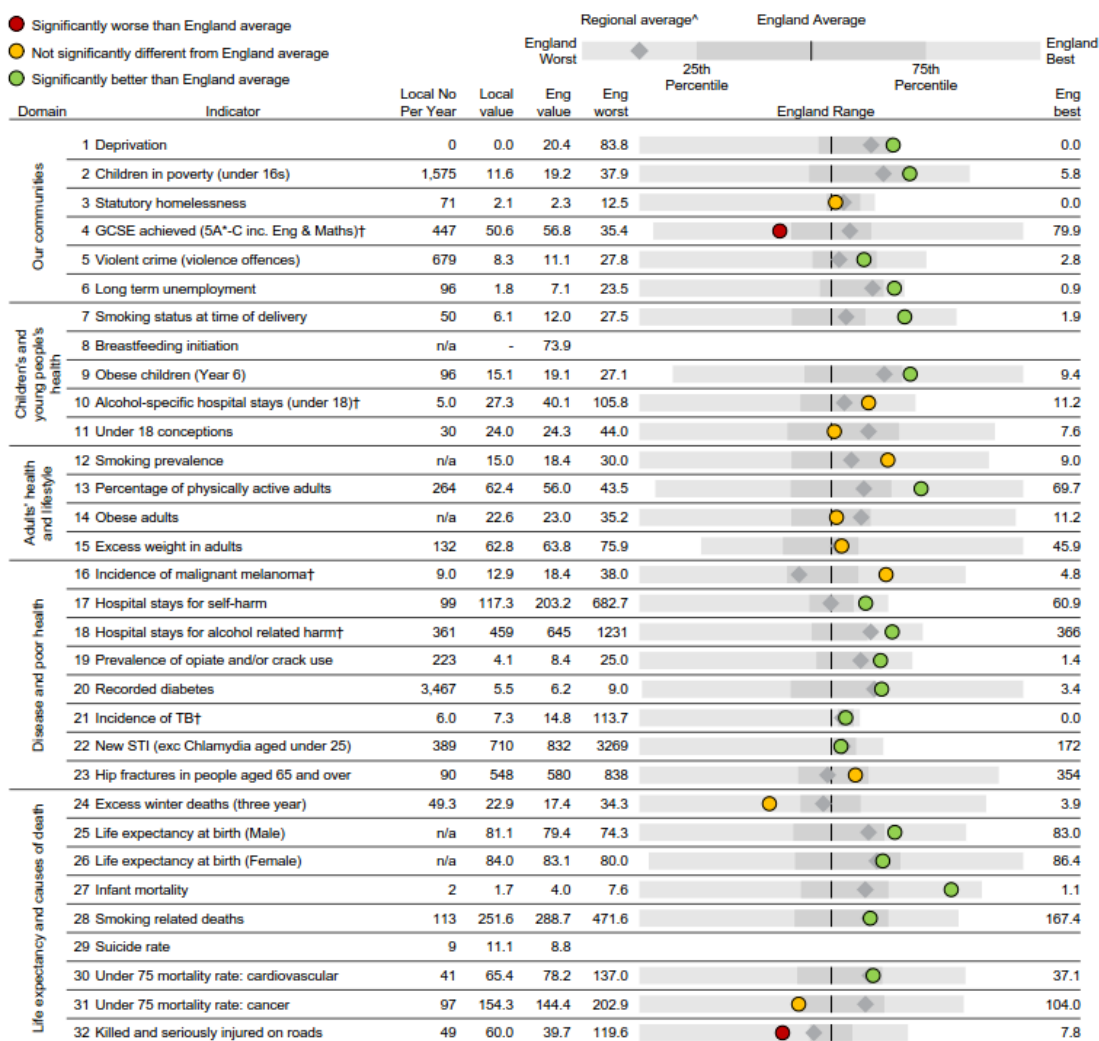
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Health summary for Runnymede

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- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average



Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 2 % children (under 16) in families receiving means-tested benefits & low income, 2012
 3 Crude rate per 1,000 households, 2013/14 4 % key stage 4, 2013/14 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
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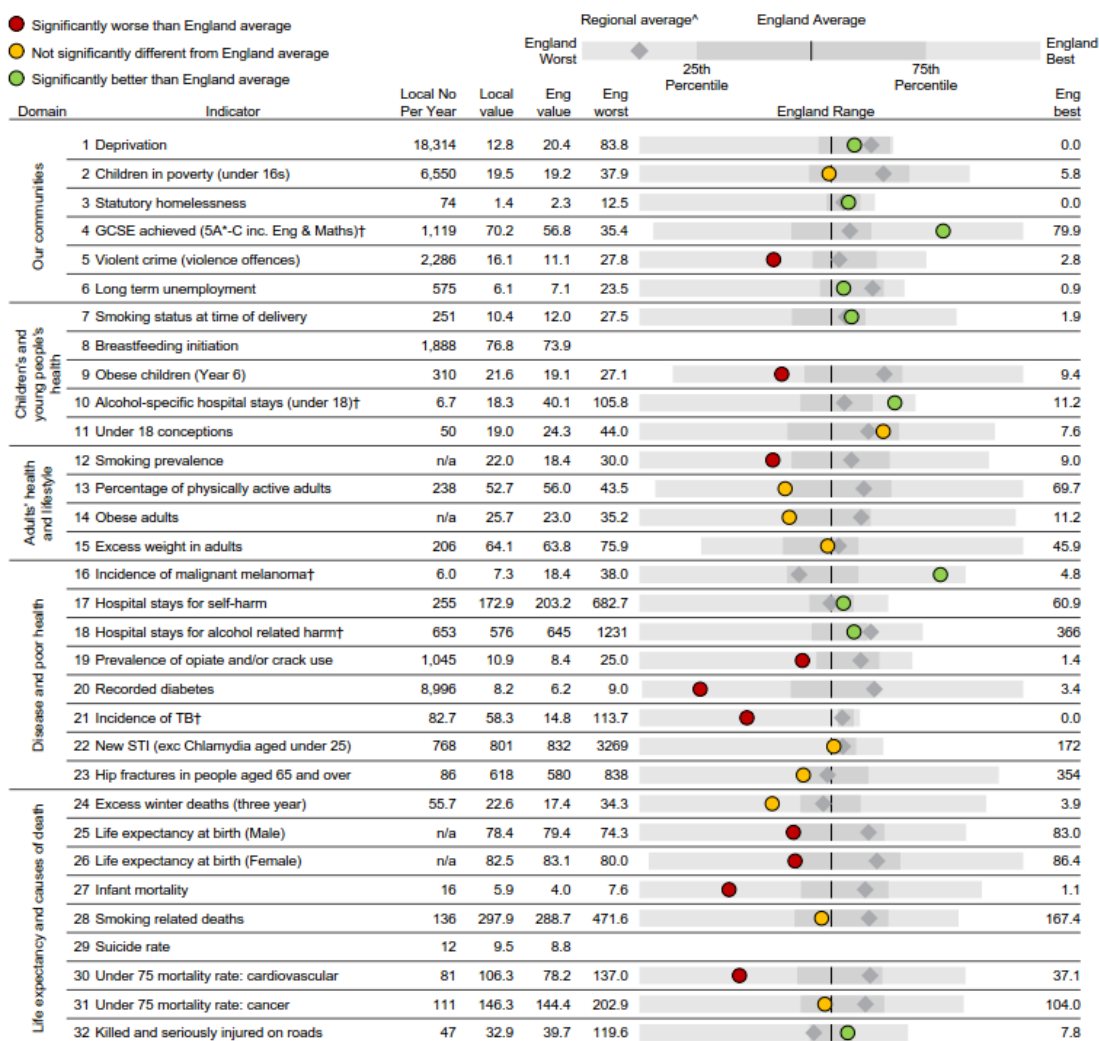
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Health summary for Slough

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- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average



Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 2 % children (under 16) in families receiving means-tested benefits & low income, 2012
 3 Crude rate per 1,000 households, 2013/14 4 % key stage 4, 2013/14 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
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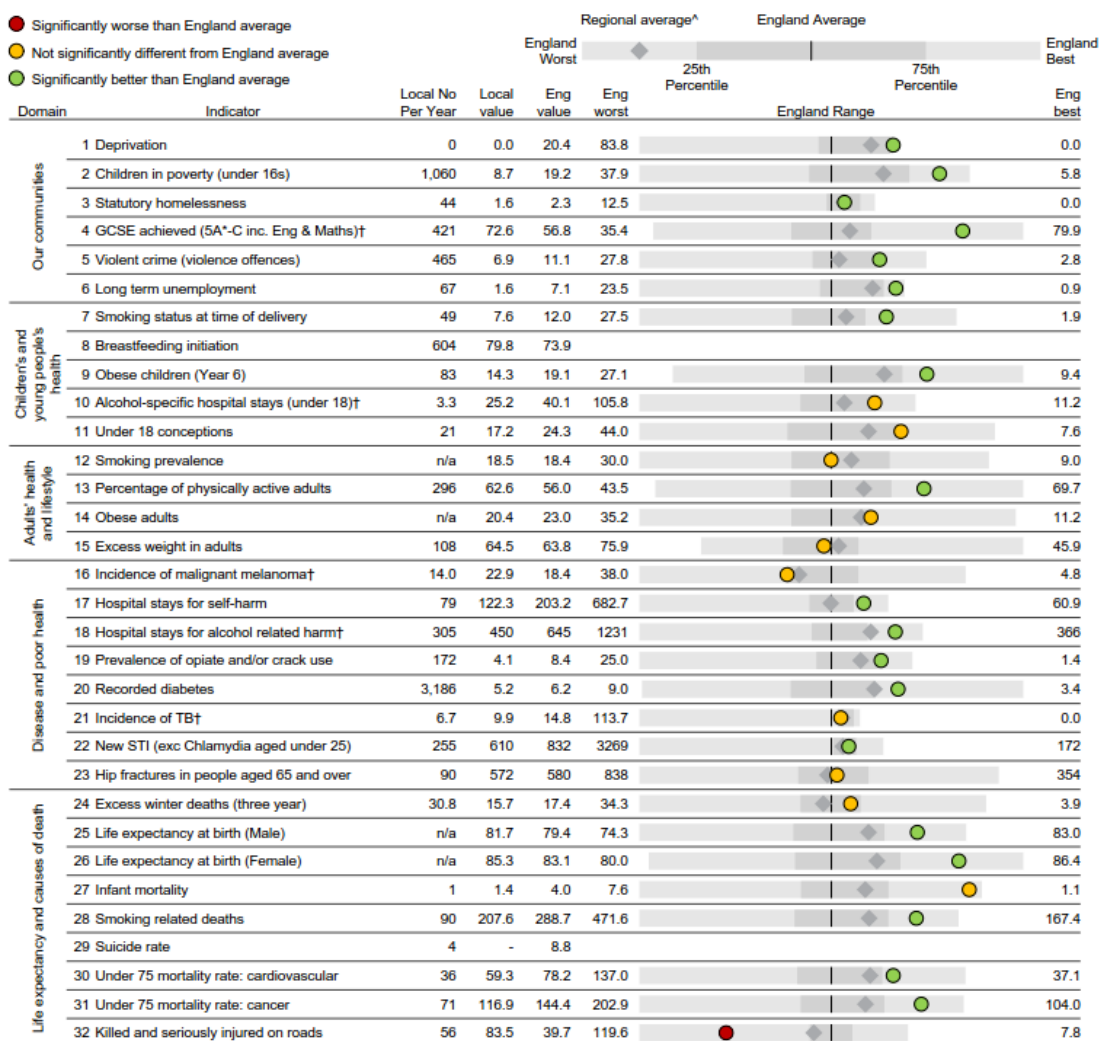
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Health summary for South Bucks

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- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average



Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 2 % children (under 16) in families receiving means-tested benefits & low income, 2012
 3 Crude rate per 1,000 households, 2013/14 4 % key stage 4, 2013/14 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
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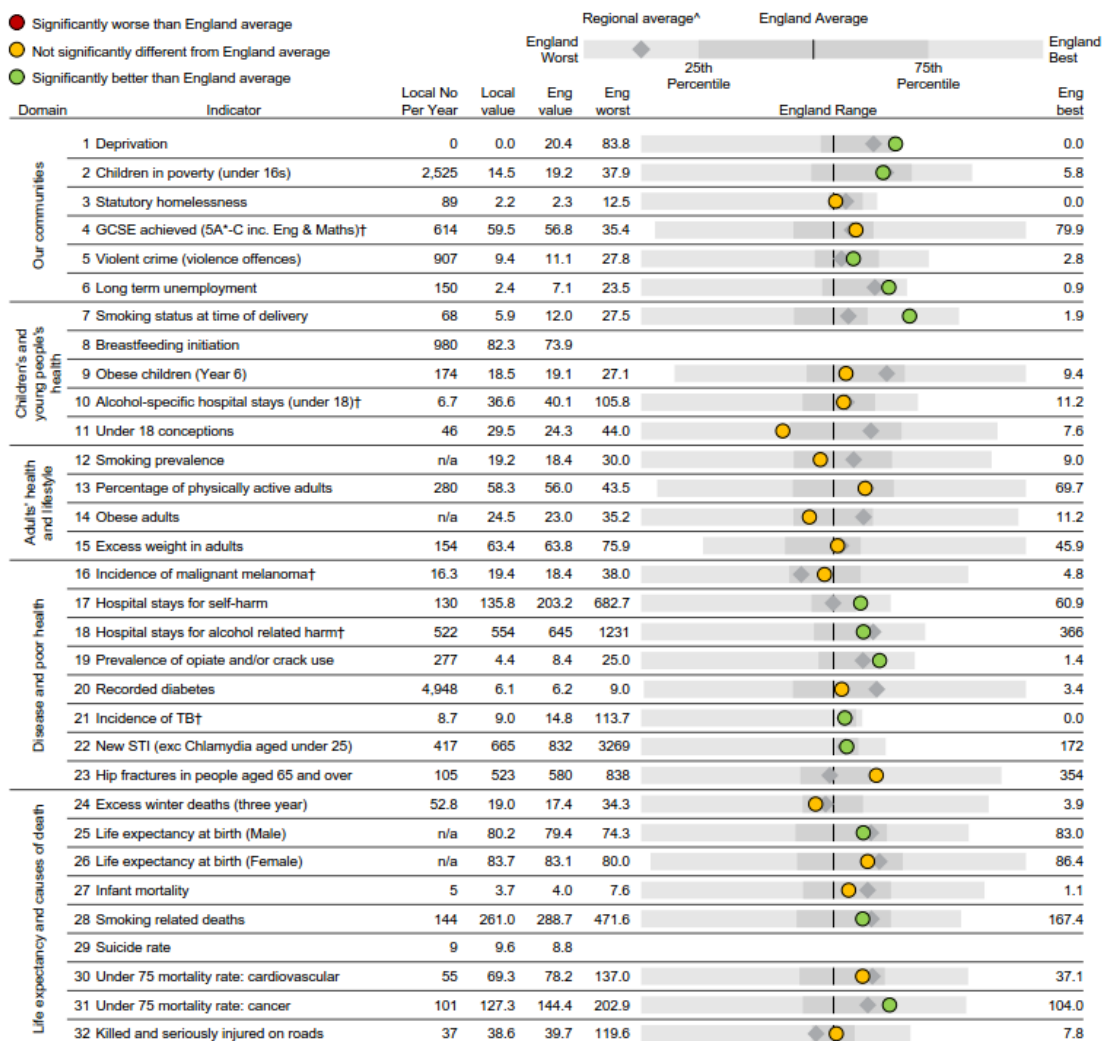
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Health summary for Spelthorne

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Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 2 % children (under 16) in families receiving means-tested benefits & low income, 2012
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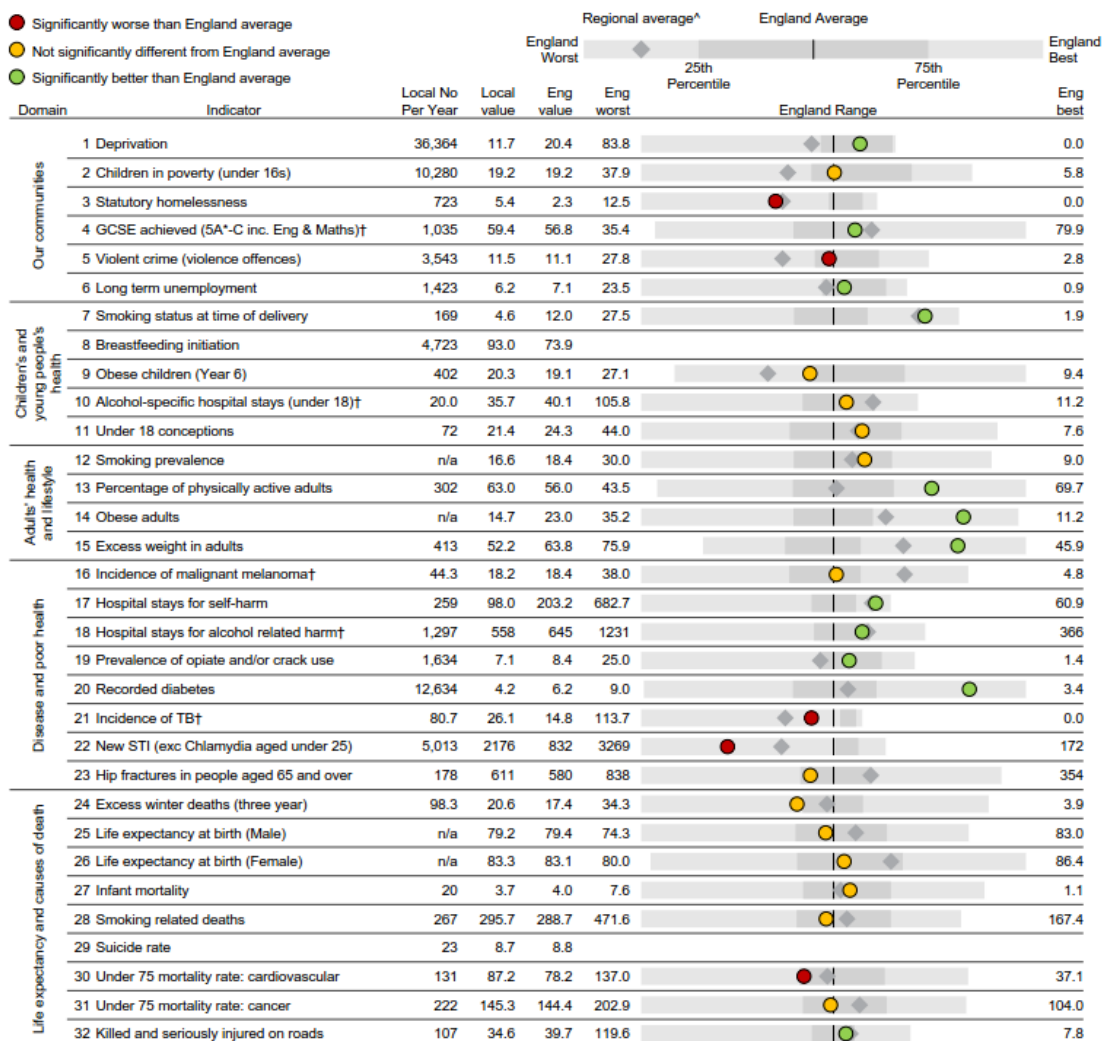
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Health summary for Wandsworth

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Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 **2** % children (under 16) in families receiving means-tested benefits & low income, 2012
3 Crude rate per 1,000 households, 2013/14 **4** % key stage 4, 2013/14 **5** Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
6 Crude rate per 1,000 population aged 16-64, 2014 **7** % of women who smoke at time of delivery, 2013/14 **8** % of all mothers who breastfed their babies in the first 48hrs after delivery, 2013/14 **9** % school children in Year 6 (age 10-11), 2013/14 **10** Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2011/12 to 2013/14 (pooled) **11** Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2013 **12** % adults aged 18 and over who smoke, 2013
13 % adults achieving at least 150 mins physical activity per week, 2013 **14** % adults classified as obese, Active People Survey 2012 **15** % adults classified as overweight or obese, Active People Survey 2012 **16** Directly age standardised rate per 100,000 population, aged under 75, 2010-12 **17** Directly age sex standardised rate per 100,000 population, 2013/14 **18** The number of admissions involving an alcohol-related primary diagnosis or an alcohol-related external cause, directly age standardised rate per 100,000 population, 2013/14 **19** Estimated users of opiate and/or crack cocaine aged 15-64, crude rate per 1,000 population, 2011/12 **20** % people on GP registers with a recorded diagnosis of diabetes 2013/14 **21** Crude rate per 100,000 population, 2011-13, local number per year figure is the average count **22** All new STI diagnoses (excluding Chlamydia under age 25), crude rate per 100,000 population, 2013 **23** Directly age and sex standardised rate of emergency admissions, per 100,000 population aged 65 and over, 2013/14 **24** Ratio of excess winter deaths (observed winter deaths minus expected deaths based on non-winter deaths) to average non-winter deaths 01.08.10-31.07.13 **25**, **26** At birth, 2011-13 **27** Rate per 1,000 live births, 2011-13 **28** Directly age standardised rate per 100,000 population aged 35 and over, 2011-13 **29** Directly age standardised mortality rate from suicide and injury of undetermined intent per 100,000 population, 2011-13 **30** Directly age standardised rate per 100,000 population aged under 75, 2011-13 **31** Directly age standardised rate per 100,000 population aged under 75, 2011-13 **32** Rate per 100,000 population, 2011-13

† Indicator has had methodological changes so is not directly comparable with previously released values. ^a "Regional" refers to the former government regions.

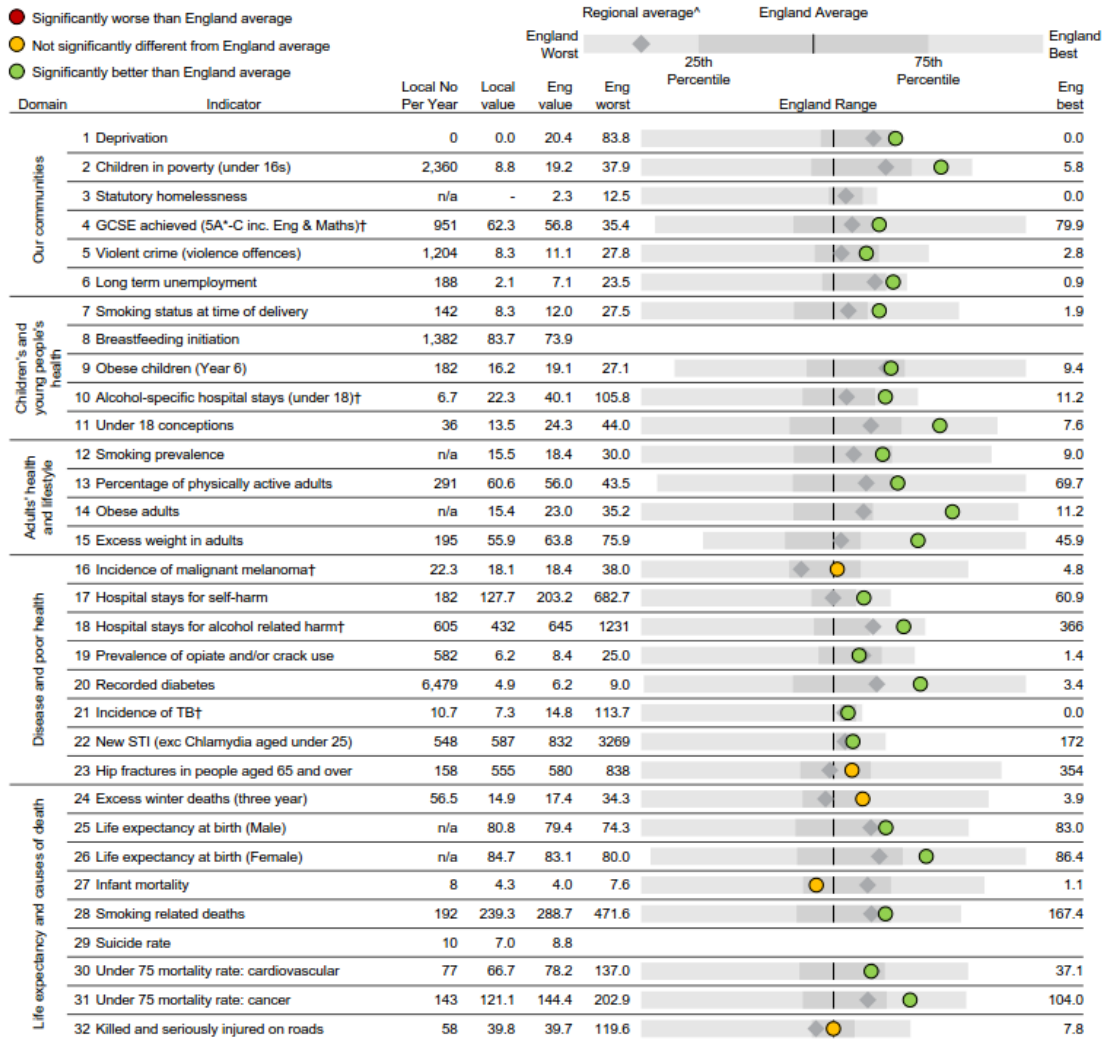
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Health summary for Windsor and Maidenhead

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.



Indicator notes

1 % people in this area living in 20% most deprived areas in England, 2013 **2** % children (under 16) in families receiving means-tested benefits & low income, 2012
3 Crude rate per 1,000 households, 2013/14 **4** % key stage 4, 2013/14 **5** Recorded violence against the person crimes, crude rate per 1,000 population, 2013/14
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