

# Appendix 1G: Population & Human Health

## A1g.1 Introduction

Information is drawn from a variety of resources produced by the Office for National Statistics (<http://www.ons.gov.uk/ons/index.html>), the National Records of Scotland (<http://www.gro-scotland.gov.uk/>) and the Northern Ireland Statistics and Research Agency (<http://www.nisra.gov.uk/>). Where available, information is presented at a Local Authority District and Unitary Authority scale. For each Regional Sea with coastal borders, summary information is presented for those administrative areas adjacent to the coast. The most recently available population data at such a scale are estimates for mid-2014, while statistics on the employment structure and health of the population are provided by the 2011 Census. The next UK-wide census will be carried out in 2021.

## A1g.2 UK context

### A1g.2.1 Population

Table A1g.1 shows the mid-2014 population estimates and corresponding densities for the UK and its constituent countries and how the population has changed since 2009 (data used for OESEA2). Population density is highest in England; over 80% of the UK population reside there and the English population has also shown the greatest increase over the last 5 years. The population densities in Wales and Northern Ireland were comparably lower than that of the UK as a whole; the density in Scotland was the lowest by a considerable margin.

**Table A1g.1: Mid-2014 population estimates and comparison with 2009**

Area	Population (000s)	% change from 2009	Area (km <sup>2</sup> )	Density (persons.km <sup>-2</sup> )
England	54,316.6	+4.8%	130,306	417
Wales	3,092	+3.1%	20,736	149
Scotland	5,347.6	+3.0%	77,910	69
Northern Ireland	1,840.5	+2.9%	13,562	136
<b>United Kingdom</b>	<b>64,596.8</b>	<b>+4.5%</b>	<b>242,514</b>	<b>266</b>

Source: Office for National Statistics Annual mid-year population estimates, 2014, ONS website - UK population density 2014

Figure A1g.1 shows the population density of UK administrative areas. General trends observed are lower densities in coastal areas around much of the south-west of England, west and north Wales, the far north of England, and much of Scotland excluding the central belt. The highest densities in coastal areas are around much of south-east England, part of north-east England, the Firths of Forth and Clyde, part of north-west England, south Wales and around the Severn Estuary. These areas are typically where conurbations are largest and most numerous, although more isolated areas of higher densities are dotted around much of the coast, most notably where conurbations are within smaller administrative boundaries. Higher densities are also observed in several coastal areas of Northern Ireland.

Figure A1g1: Population density in the UK 2014

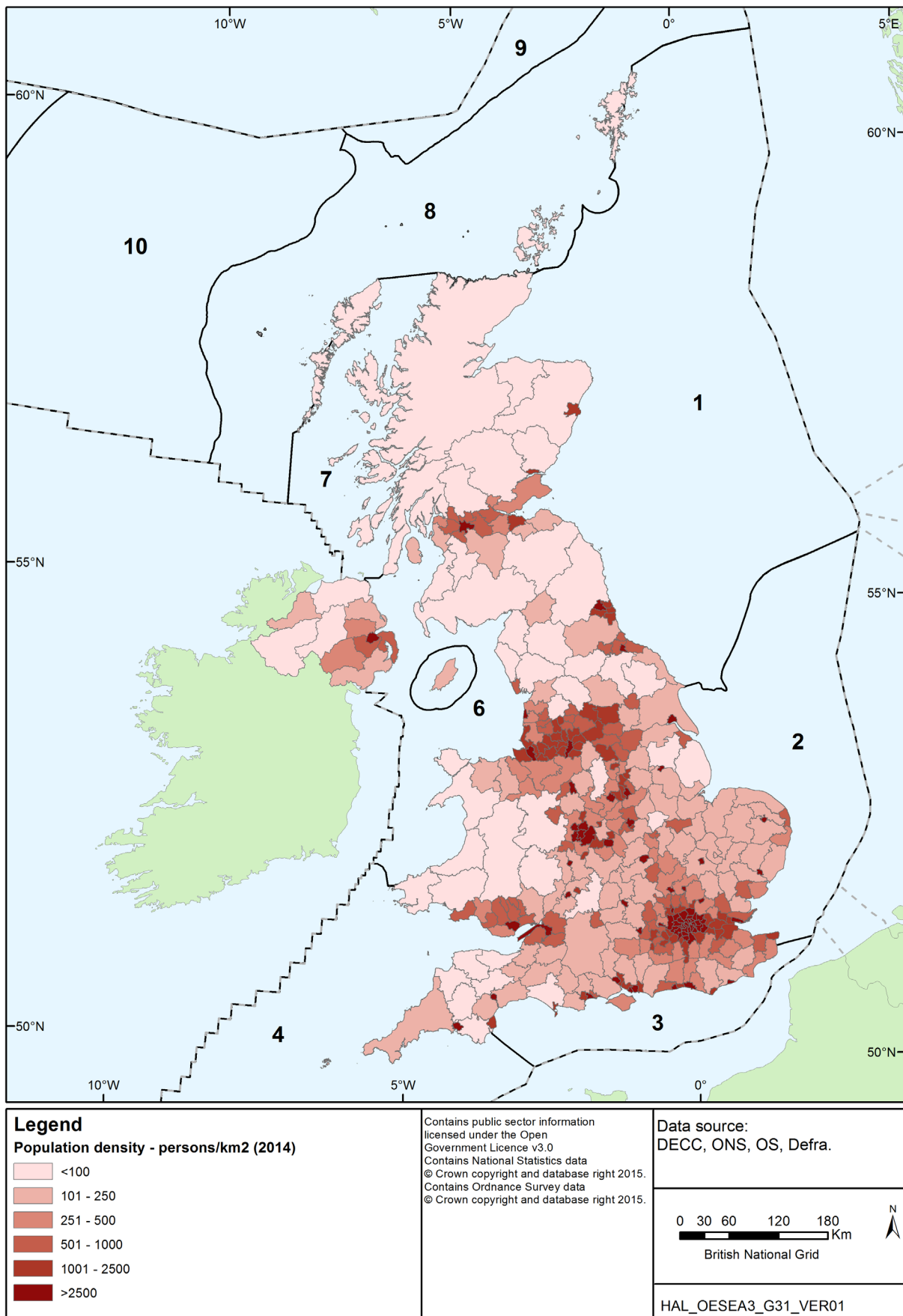


Table A1g.2 provides summary details of population estimates for the coastal administrative areas included in each Regional Sea. In general those Regional Seas in more southern parts of the UK (Regional Seas 2, 3 and 4) support higher population densities, with Regional Seas 2 and 3 above the UK average of 266 persons/km<sup>2</sup>.

**Table A1g.2: Population estimates and densities for coastal administrative areas, 2014**

RS	Local Authorities <sup>1</sup>	Area (km <sup>2</sup> )	Population (000's)	Density (persons/km <sup>2</sup> ) <sup>2</sup>
1	Shetland, Orkney, Highland, Moray, Aberdeenshire, Aberdeen, Angus, Dundee, Perth & Kinross, Fife, Falkirk, West Lothian, Edinburgh, East Lothian, Scottish Borders, Northumberland, North Tyneside, South Tyneside, Sunderland, County Durham, Hartlepool, Redcar & Cleveland, Scarborough, East Riding of Yorkshire	63,186	4,822	76
2	East Riding of Yorkshire, Kingston-upon- Hull, North Lincolnshire, North-East Lincolnshire, East Lindsey, Boston, South Holland, King's Lynn & West Norfolk, North Norfolk, Great Yarmouth, Waveney, Suffolk Coastal, Babergh, Tendring, Colchester, Maldon, Rochford, Southend-on-Sea, Castle Point, Thurrock, Medway, Swale, Canterbury, Thanet, Dover	13,565	4,235	312
3	Dover, Shepway, Hastings, Rother, Eastbourne, Wealden, Lewes, Brighton & Hove, Adur, Worthing, Arun, Chichester, Havant, Portsmouth, Gosport, Fareham, Eastleigh, Southampton, Isle of Wight, New Forest, Christchurch, Bournemouth, Poole, Purbeck, West Dorset, Weymouth & Portland, East Devon, Exeter, Teignbridge, Torbay, South Hams	9,173	3,912	426
4	South Hams, Plymouth, Isles of Scilly, Cornwall, Torridge, North Devon, West Somerset, Sedgemoor, North Somerset, Bristol, South Gloucestershire, Monmouthshire, Newport, Cardiff, Vale of Glamorgan, Bridgend, Neath Port Talbot, Swansea, Carmarthenshire, Pembrokeshire	15,440	3,681	238
6	Pembrokeshire, Ceredigion, Anglesey, Gwynedd, Conwy, Denbighshire, Flintshire, Wirral, Cheshire West and Chester, Halton, Liverpool, Sefton, West Lancashire, Fylde, Blackpool, Wyre, Lancaster, Barrow-in-Furness, South Lakeland, Copeland, Allerdale, Carlisle, Newry, Mourne and Down, North Down and Ards, Belfast, Antrim and Newtonabbey, Mid and East Antrim, Causeway Coast and Glens, Dumfries & Galloway, South Ayrshire, North Ayrshire, Inverclyde, Renfrewshire, West Dumbartonshire, Argyll & Bute	38,331	5,227	136
7	Causeway Coast and Glens, Argyll & Bute, Highland, Eilian Siar	37,606	490	13
8	Eilian Siar, Highland, Orkney, Shetland	31,173	305	10

Notes:

1. Local Authorities and Areas are adapted from those in the UK Marine Policy Statement Appraisal of Sustainability (UK Government 2010).
2. Density calculated using rounded population figures.

RS=Regional Sea

Source: Office for National Statistics website - MYE2: Population estimates by single year of age and sex for local authorities in the UK, mid-2014. UK population density 2014.

## A1g.2.2 Employment

Throughout the UK, the service sector dominates employment, followed by industry, then a small contribution from agriculture (Table A1g.3). Compared to England and the UK as a whole, Scotland, Wales and Northern Ireland show slightly higher proportions of employment in the agriculture and industrial sectors and lower proportions in the service sector. The number of people in employment has shown the greatest relative increase in Wales (15%) and Northern Ireland (15.7%) for the period between the 2001 and 2011 census. Over this period, decreased employment primarily in the industrial sector coincided with increased employment in the service sector.

**Table A1g.3: Employment structure in 2011 and comparison with 2001**

Area	People in employment <sup>1</sup> (000s)	Agriculture, forestry & fishing (%)	Industry <sup>2</sup> (%)	Services <sup>3</sup> (%)
England	25,163 (22,441)	0.8 (1.5)	18 (22.5)	81.2 (76)
Wales	1,364 (1,186)	1.7 (2.5)	20.7 (25.8)	77.6 (71.7)
Scotland	2,517 (2,261)	1.7 (2.4)	18.9 (23)	79.4 (74.6)
Northern Ireland	795 (687)	2.3 (3.0)	19.2 (24.2)	78.5 (72.7)
<b>United Kingdom</b>	<b>29,838 (26,576)</b>	<b>1.0 (1.6)</b>	<b>18.2 (22.8)</b>	<b>80.8 (75.6)</b>

Notes: Figures for 2001 shown in brackets.

1. Aged 16-74.
2. Includes mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply; water supply; sewerage, waste management and remediation activities; construction.
3. Includes wholesale and retail trade; repair of motor vehicles and motor cycles; transport and storage; accommodation and food service activities; information and communication; financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service activities; public administration and defence; compulsory social security; education; human health and social work activities, and other.

Source: Table KS605UK - 2011 Census: Industry, local authorities in the United Kingdom. Office for National Statistics website - <http://www.ons.gov.uk/ons/guide-method/census/2011/index.html>

Table A1g.4 provides summary details of the employment structure for the coastal administrative areas included in each Regional Sea for 2011. For most of the Regional Seas, the split of employment sectors is broadly similar to the UK with only Regional Seas 7 and 8 supporting higher levels of employment in the agriculture, forestry and fishing sector.

**Table A1g.4: Employment structure for coastal administrative areas, 2011**

RS	Local Authorities <sup>1</sup>	People in employment (000s)	Agriculture, forestry & fishing (%)	Industry (%)	Services (%)
1	Shetland, Orkney, Highland, Moray, Aberdeenshire, Aberdeen, Angus, Dundee, Perth & Kinross, Fife, Falkirk, West Lothian, Edinburgh, East Lothian, Scottish Borders, Northumberland, North Tyneside, South Tyneside, Sunderland, County Durham, Hartlepool, Redcar & Cleveland, Scarborough, East Riding of Yorkshire	2,259	1.7	20.3	78

RS	Local Authorities <sup>1</sup>	People in employment (000s)	Agriculture, forestry & fishing (%)	Industry (%)	Services (%)
2	East Riding of Yorkshire, Kingston-upon-Hull, North Lincolnshire, North-East Lincolnshire, East Lindsey, Boston, South Holland, King's Lynn & West Norfolk, North Norfolk, Great Yarmouth, Waveney, Suffolk Coastal, Babergh, Tendring, Colchester, Maldon, Rochford, Southend-on-Sea, Castle Point, Thurrock, Medway, Swale, Canterbury, Thanet, Dover	1,621	1.6	20.9	77.5
3	Dover, Shepway, Hastings, Rother, Eastbourne, Wealden, Lewes, Brighton & Hove, Adur, Worthing, Arun, Chichester, Havant, Portsmouth, Gosport, Fareham, Eastleigh, Southampton, Isle of Wight, New Forest, Christchurch, Bournemouth, Poole, Purbeck, West Dorset, Weymouth & Portland, East Devon, Exeter, Teignbridge, Torbay, South Hams	1,799	0.9	17.5	81.6
4	South Hams, Plymouth, Isles of Scilly, Cornwall, Torridge, North Devon, West Somerset, Sedgemoor, North Somerset, Bristol, South Gloucestershire, Monmouthshire, Newport, Cardiff, Vale of Glamorgan, Bridgend, Neath Port Talbot, Swansea, Carmarthenshire, Pembrokeshire	1,675	1.6	18.1	80.3
6	Pembrokeshire, Ceredigion, Anglesey, Gwynedd, Conwy, Denbighshire, Flintshire, Wirral, Cheshire West and Chester, Halton, Liverpool, Sefton, West Lancashire, Fylde, Blackpool, Wyre, Lancaster, Barrow-in-Furness, South Lakeland, Copeland, Allerdale, Carlisle, Newry, Mourne and Down, North Down and Ards, Belfast, Antrim and Newtonabbey, Mid and East Antrim, Causeway Coast and Glens, Dumfries & Galloway, South Ayrshire, North Ayrshire, Inverclyde, Renfrewshire, West Dumbartonshire, Argyll & Bute	2,275	1.7	18.7	79.6
7	Causeway Coast and Glens, Argyll & Bute, Highland, Eilian Siar	216	4.2	18.5	77.3
8	Eilian Siar, Highland, Orkney, Shetland	153	4.6	19.6	75.8

Note: RS=Regional Sea. Employment categories included within each of the sectors are the same as those described in Table A1g.3 above. Where relevant, 2011 Census data for Northern Ireland districts has been combined to reflect recent boundary changes to the districts.

Source: Table KS605UK - 2011 Census: Industry, local authorities in the United Kingdom. Office for National Statistics website - <http://www.ons.gov.uk/ons/guide-method/census/2011/index.html>

### A1g.2.3 Health

Information on the general health and well-being of the population is drawn from several Community Health Indicators obtained in the 2011 Census. One of these indicators uses the percentage of household residents who reported their health over the previous 12 months as having been "not good". Evidence suggests that this self-reported measure of health has good predictive validity of mortality and health care utilisation. Another indicator presented is the % of the household residents with a limiting long-term illness, based on answers to the question: "Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?" Life expectancy over the period 2009-2011 is also included.

Table A1g.5 shows selected health indicators for the UK and its constituent countries. For the UK as a whole, 18.8% of people described their health for the 12 months prior to Census day (27 March 2011) as “not good”. Values for Scotland and England were below the UK average at 17.8% and 18.5% respectively, with Wales the highest at 22.2%. The proportion of people with a limiting long term illness showed a similar trend, with the lowest proportion in England and highest in Wales. Life expectancy was slightly above the UK average in England and typically slightly below in Wales and Northern Ireland. Scotland showed a notably lower life expectancy some 2.2 and 1.8 years below the UK average for men and women respectively. Life expectancies of both sexes have increased across all countries since 1999-2001 with males showing a slightly larger increase than females.

**Table A1g.5: Health indicators in 2011 and changes in life expectancy since 2001**

Area	Health “not good” (%) <sup>1</sup>	Limiting long-term illness (%) <sup>2</sup>	Life expectancy at birth <sup>3</sup> (years)	
			Male	Female
England	18.5	17.6	78.9 (75.5)	82.9 (80.3)
Wales	22.2	22.7	78.0 (74.8)	82.2 (79.7)
Scotland	17.8	19.6	76.3 (72.9)	80.7 (78.2)
Northern Ireland	20.5	20.7	77.6 (74.5)	82.0 (79.6)
<b>United Kingdom</b>	<b>18.8</b>	<b>18.1</b>	<b>78.6 (75.2)</b>	<b>82.6 (80.1)</b>

Notes: Figures for 2001 shown in brackets.

1. Includes the categories: fair health, bad health and very bad health (ONS 2013a). General health refers to health over the 12 months prior to census day (27 March 2011). Data not directly comparable with the 2001 Census due to a response option change.
2. Includes any health problem or disability (including problems related to old age) which has lasted or is expected to last for at least 12 months and limits day-to-day activities a little or a lot.
3. Life expectancy for the period 2009-2011. Percentage change in life expectancy since 1999-2001 shown in brackets.

Source: ONS (2013a). Local authority variations in self-assessed general health for males and females, England and Wales, 2011. Table QS302UK - 2011 Census: General health, local authorities in the United Kingdom. Table QS303UK - 2011 Census: Long-term health problem or disability, local authorities in the United Kingdom. Office for National Statistics website - <http://www.ons.gov.uk/ons/guide-method/census/2011/index.html>

Figure A1g.2 shows the distribution of self assessed general health as “not good” around the UK. General trends observed are low percentages in much of inland southern England, northern Scotland (particularly the north-east), Orkney and Shetland. Throughout much of England, percentages are higher in coastal areas compared to inland. It should be noted that these figures are likely to reflect other patterns in demographics, for example, age structure. Coastal areas with a percentage health “not good” above the UK average (18.8%) are most notable in the far south-west of England, much of Wales (particularly the south and north coasts), north-west England, south-west Scotland (particularly around the Clyde), parts of north-east England where population density is highest, much of east England from the Humber to north-east Norfolk, and also the far south-east of England. Above UK average percentages are also observed in several coastal areas of Northern Ireland.

Figure A1g.2: Self assessed general health “not good”, 2011

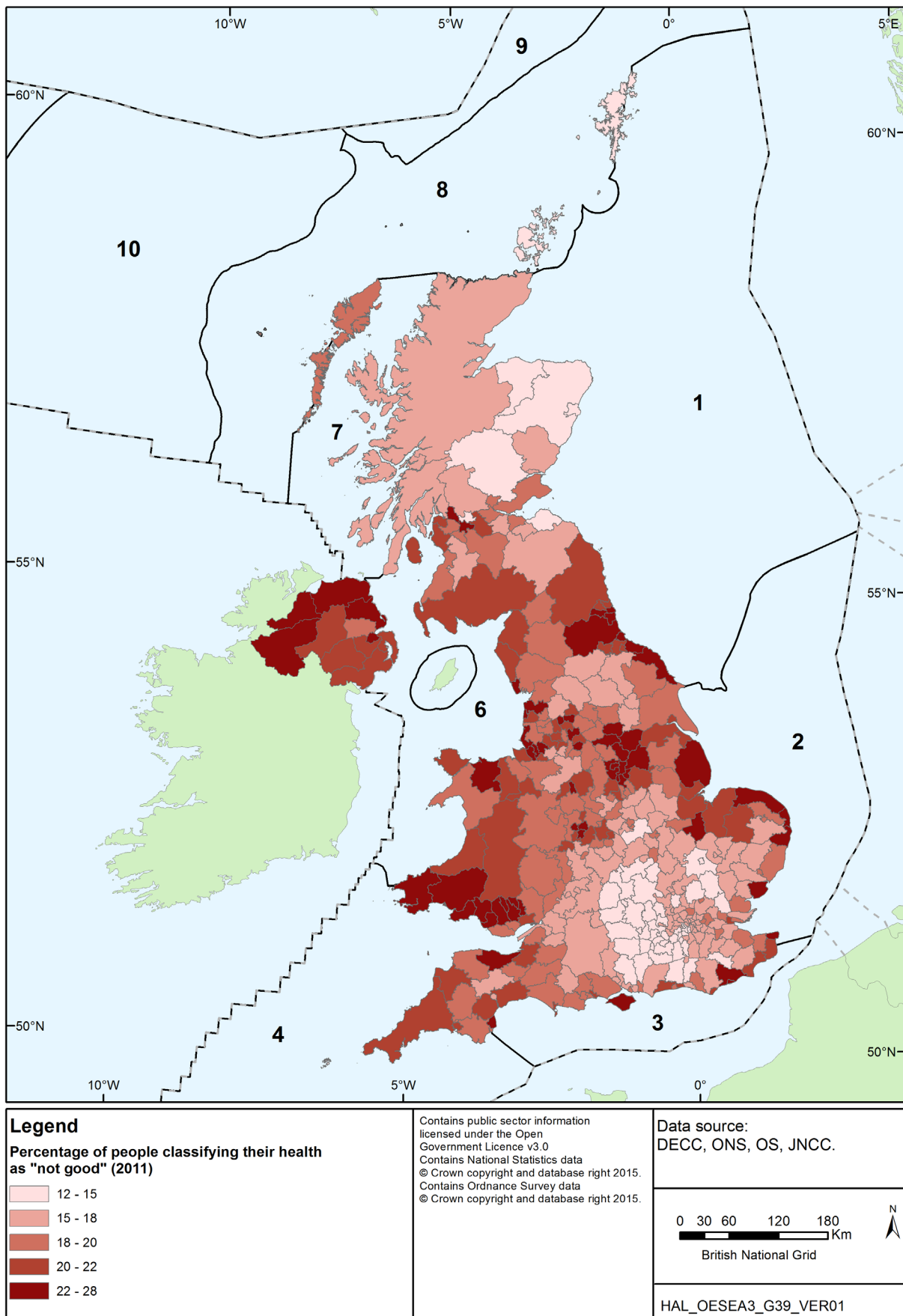


Table A1g.6 provides summary details of the health indicators for the coastal administrative areas included in each Regional Sea for 2009-2011. In general the general health and limiting long term illness indicators are above the UK average reported for 2011 in most of the Regional Sea areas with life expectancy for both males and females above the UK average in Regional Seas 2, 3 and 4.

**Table A1g.6: Health indicators and life expectancy for coastal administrative areas, 2009-2011**

RS	Local Authorities <sup>1</sup>	Health "not good" (%)	Limiting long-term illness (%)	Life expectancy at birth (years)	
				Male	Female
1	Shetland, Orkney, Highland, Moray, Aberdeenshire, Aberdeen, Angus, Dundee, Perth & Kinross, Fife, Falkirk, West Lothian, Edinburgh, East Lothian, Scottish Borders, Northumberland, North Tyneside, South Tyneside, Sunderland, County Durham, Hartlepool, Redcar & Cleveland, Scarborough, East Riding of Yorkshire	17.7	19.7	77.6	81.4
2	East Riding of Yorkshire, Kingston-upon-Hull, North Lincolnshire, North-East Lincolnshire, East Lindsey, Boston, South Holland, King's Lynn & West Norfolk, North Norfolk, Great Yarmouth, Waveney, Suffolk Coastal, Babergh, Tendring, Colchester, Maldon, Rochford, Southend-on-Sea, Castle Point, Thurrock, Medway, Swale, Canterbury, Thanet, Dover	20.7	19.8	78.9	82.8
3	Dover, Shepway, Hastings, Rother, Eastbourne, Wealden, Lewes, Brighton & Hove, Adur, Worthing, Arun, Chichester, Havant, Portsmouth, Gosport, Fareham, Eastleigh, Southampton, Isle of Wight, New Forest, Christchurch, Bournemouth, Poole, Purbeck, West Dorset, Weymouth & Portland, East Devon, Exeter, Teignbridge, Torbay, South Hams	19.7	19.5	79.7	83.7
4	South Hams, Plymouth, Isles of Scilly, Cornwall, Torridge, North Devon, West Somerset, Sedgemoor, North Somerset, Bristol, South Gloucestershire, Monmouthshire, Newport, Cardiff, Vale of Glamorgan, Bridgend, Neath Port Talbot, Swansea, Carmarthenshire, Pembrokeshire	20.6	20.7	78.9	83
6	Pembrokeshire, Ceredigion, Anglesey, Gwynedd, Conwy, Denbighshire, Flintshire, Wirral, Cheshire West and Chester, Halton, Liverpool, Sefton, West Lancashire, Fylde, Blackpool, Wyre, Lancaster, Barrow-in-Furness, South Lakeland, Copeland, Allerdale, Carlisle, Newry, Mourne and Down, North Down and Ards, Belfast, Antrim and Newtonabbey, Mid and East Antrim, Causeway Coast and Glens, Dumfries & Galloway, South Ayrshire, North Ayrshire, Inverclyde, Renfrewshire, West Dumbartonshire, Argyll & Bute	20.7	21.4	77.2	81.5
7	Causeway Coast and Glens, Argyll & Bute, Highland, Eilian Siar	18.8	20.2	77.3	81.8
8	Eilian Siar, Highland, Orkney, Shetland	15.6	18.9	77.5	81.3

Notes: RS = Regional Sea. Details of the different health indicators are the same as those described in Table A1g.5 above. Where relevant, 2011 Census data for Northern Ireland districts has been combined to reflect recent boundary changes to the districts.

Sources: Life expectancy at birth and at age 65, 1991-93 to 2010-12 for England, Wales, Scotland, Northern Ireland and local authorities. ONS website - <http://www.ons.gov.uk/ons/index.html>



## A1g.3 Features of Regional Sea areas

### A1g.3.1 Regional Sea 1

#### A1g.3.1.1 Population

Regional Sea 1 incorporates the entire mainland east coast of Scotland, the east coast of Shetland and in the south, the English east coast to Flamborough Head. The total population of Local Authorities and Unitary Authorities along the coast of Regional Sea 1 is 4,822,000 with an overall density of 76 persons/km<sup>2</sup> (see Table A1g.4). Population density is typically very low in the north-east of Scotland (41 persons/km<sup>2</sup> in Aberdeenshire), and also low in north-east England between the border and the Blyth area (63 persons/km<sup>2</sup> in Northumberland). Areas of high population density in Scotland are focused around the cities of Aberdeen (1,231 persons/km<sup>2</sup>), Dundee (2,471 persons/km<sup>2</sup>) and Edinburgh (1,873 persons/km<sup>2</sup>). In north-east England, the more developed coastline of north and south Tyneside and Sunderland is the most densely populated (over 2,000 persons/km<sup>2</sup>, see Figure A1g.1).

#### A1g.3.1.2 Employment

The employment structure shows a slightly smaller contribution from the service sector balanced by slightly larger contributions from the agriculture and industrial sectors in comparison to the UK as a whole (Table A1g.4). Considerable variation is observed between individual areas, typically with larger contributions from agriculture in more rural areas such as northern Scotland (4.7% in Aberdeenshire), the Scottish Borders (8.4%) and Northumberland (2.5%). The service sector is generally more important in urban areas such as Dundee (83.6%) and Edinburgh (90.1%). Industry accounts for ca. 20% of employment with important centres in Aberdeenshire (27.2%), areas around the inner Firth of Forth (23% in Falkirk) and in the more densely populated region in north-east England (e.g. 23.1% in Redcar and Cleveland).

#### A1g.3.1.3 Health

Overall in Regional Sea 1, 17.7% of people described their health for the 12 months prior to Census day as “not good” (Table A1g.6) – slightly lower than for the UK as a whole (Table A1g.5). Generally, the lowest proportion of people assessed their health as “not good” in Scotland, particularly the far north (e.g. 13.1% in Aberdeenshire), with higher proportions in north-east England (e.g. 24.2% in County Durham). The proportion with a limiting long-term illness was slightly above the UK average and showed a similar spatial trend with higher values in north-east England (e.g. 23.7% in County Durham) and lowest in Aberdeenshire at 15.5%.

Life expectancy was slightly below the UK average in Regional Sea 1 by approximately 1 year for both men and women. Values were typically lower around the more urban areas in north-east England, although the lowest life expectancies were in some Scottish areas such as Dundee City and West Lothian.

### A1g.3.2 Regional Sea 2

#### A1g.3.2.1 Population

Regional Sea 2 incorporates stretches of coastline in England from East Riding of Yorkshire in the north to Dover, Kent, in the south. The total population of Local Authority Districts and Unitary Authorities along the English coast in Regional Sea 2 is 4,235,000 with an overall density of 266 persons/km<sup>2</sup> (Table A1g.2). Population density is typically lower in the north of the region (e.g. 140 persons/km<sup>2</sup> in East Riding of Yorkshire) than in the south (e.g. 359 persons/km<sup>2</sup> in Dover). Exceptions are the urban areas associated with Hull and Grimsby in the north (e.g. 3,630 persons/km<sup>2</sup> in Kingston-upon-Hull). The highest densities are generally in the administrative areas adjacent to the Thames estuary (e.g. 1,412 persons/km<sup>2</sup> in Medway); the

lowest densities occur between East Lindsey in Lincolnshire (78 persons/km<sup>2</sup>) and North Norfolk (107 persons/km<sup>2</sup>), including areas adjacent to The Wash.

### **A1g.3.2.2 Employment**

In the areas adjacent to Regional Sea 2 agriculture and industry are slightly more important and the service sector slightly less important than in the UK as a whole (Table A1g.4). Considerable variation is observed between individual areas. An approximate north-south split is observed, with typically larger contributions from agriculture (including forestry and fishing) from East Riding of Yorkshire (2.9%) south to the north Essex coast (e.g. 1.2% for Tendring); in contrast, the service sector is more important in south-east England (e.g. 83.5% for Colchester in Essex). Industry is of varying importance throughout the region, with hotspots of industrial employment around the Humber (e.g. 29.2% for North Lincolnshire), Waveney in Suffolk and Maldon in Essex (both ca. 24%).

### **A1g.3.2.3 Health**

Overall in Regional Sea 2, 20.7% of people described their health for the 12 months prior to Census day as “not good” (Table A1g.6) – slightly higher than for the UK as a whole (Table A1g.5). The proportion of people who classified their health as “not good” was notably higher in Kingston-upon-Hull (22%), East Lindsey (26.6%), Great Yarmouth (23.7%), Tendring (25.7%) and Thanet (24.2%). The lowest proportions were generally in the Suffolk area (e.g. 18.3% for Suffolk Coastal) and around the Thames (e.g. 18% for Medway). The proportion with a limiting long-term illness shows a similar spatial trend as is seen for % health “not good”, although the average for Regional Sea 2 is slightly higher than that for the UK or England as a whole. Life expectancy is typically slightly lower in the north (e.g. 79.4 and 83 years for males and females in East Riding of Yorkshire) and highest in the Suffolk (e.g. 80.6 and 83.7 years for males and females in Suffolk Coastal) and Thames (e.g. 81 and 84 years for males and females in Rochford, Essex) areas, and in general slightly above the UK average.

## **A1g.3.3 Regional Sea 3**

### **A1g.3.3.1 Population**

Regional Sea 3 incorporates stretches of coastline in England from Dover in the east to South Hams, Devon in the west. The total population of Local Authority Districts and Unitary Authorities along the coast in Regional Sea 3 is 3,912,000 with an average density of 426 persons/km<sup>2</sup> (Table A1g.2). Population density in the region is high, above that of both England and the UK as a whole (see Table A1g.1). Population density ranges between high in urban areas and moderate to low in more rural areas. The highest densities occur along the south coast including Portsmouth (5,227 persons/km<sup>2</sup>), Southampton (4,906 persons/km<sup>2</sup>) and Bournemouth (4,161 persons/km<sup>2</sup>). The least densely populated areas include West Dorset (93 persons/km<sup>2</sup>) and South Hams (95 persons/km<sup>2</sup>).

### **A1g.3.3.2 Employment**

In the areas adjacent to Regional Sea 3 the employment sector split (Table A1g.4) is very similar to the UK as whole (Table A1g.3). Higher contributions to agriculture (including forestry and fishing) are observed in West Dorset (4.1%), East Devon (3.1%) and South Hams (3.5%). Havant (24.7%) in Hampshire shows the greatest contribution to the industrial sector. More densely populated areas such as Brighton and Hove (88.5%), Exeter (85.4%), Eastbourne (85.2%) and Bournemouth (85.1%), show the greatest contribution to the service sector.

### **A1g.3.3.3 Health**

Overall in Regional Sea 3, 19.7% of people described their health for the 12 months prior to Census day as “not good” (Table A1g.6) – slightly above than for England and the UK as a whole (Table A1g.5). No spatial trend was particularly apparent. In general proportions were lowest in Hampshire including Eastleigh (15.5%) and Fareham (16.2%), and highest in Torbay (23.8%), Hastings (23.2%) and Rother (22.8%). The proportions with a limiting long-term illness were similarly distributed, peaking in Torbay (24%) and lowest in Eastleigh (15.3%). Overall, the proportion with a limiting long-term illness was slightly higher than that for England and for the UK as a whole.

Life expectancy was slightly above the UK average in Regional Sea 3 by approximately one and a half years for both men and women. Values were typically lower around more urban areas (e.g. 76.7 and 81 years for males and females in Hastings), than more rural areas (e.g. 81.2 and 84.2 for South Hams).

## **A1g.3.4 Regional Sea 4**

### **A1g.3.4.1 Population**

Regional Sea 4 incorporates a long length of coastline from South Hams, Devon on the south coast of England to Pembrokeshire in south-west Wales. The total population of Local Authority Districts and Unitary Authorities along the English and Welsh coasts in Regional Sea 4 is 3,681,000 with an overall density of 238 persons/km<sup>2</sup> (Table A1g.2). Population density in the region is generally low, below that of both England and the UK as a whole, although above that of Wales. South-west England is characterised by very low population densities (e.g. 67 persons/km<sup>2</sup> in Torridge, Devon), with Plymouth the highest density conurbation (3,269 persons/km<sup>2</sup>) on the south coast. The inner Bristol Channel area sees higher population densities around Bristol and Cardiff (4,022 and 2,531 persons/km<sup>2</sup>, respectively), with slightly higher densities along much of the south Wales coast as far as Swansea (635 persons/km<sup>2</sup>).

### **A1g.3.4.2 Employment**

Employment structure (see Table A1g.4) is very similar to the UK as a whole (Table A1g.3), although considerable variation is observed between individual areas. Many areas show a higher contribution to agriculture than the UK average; particularly Torridge, Devon (7.4%), Isles of Scilly (5.7%), West Somerset (5.6%) and Pembrokeshire (4.7%). Contributions to the industrial sector are greatest in the south Wales areas of Neath Port Talbot (25.4%) and Bridgend (23.7%), while the service sector is most dominant in urban areas such as Cardiff (86.6%) and Bristol (85.7%).

### **A1g.3.4.3 Health**

Overall in Regional Sea 4, 20.6% of people described their health for the 12 months prior to Census day as “not good” (Table A1g.6) – higher than that for England and the UK as a whole, although lower than that for Wales (Table A1g.5). A spatial trend was apparent, with the highest proportions of people assessing their health as “not good” in south Wales, peaking at 26.7% in Neath Port Talbot. Values were typically lowest in south-west England (e.g. 16% for South Gloucestershire), although there were pockets of reported poorer health (e.g. 23.1% for West Somerset). At 14.3%, the Isles of Scilly had one of the lowest levels of reported poor health in the UK. The proportions with a limiting long-term illness were similarly distributed for % health “not good”, being highest in south Wales and lowest in south-west England. Overall for Regional Sea 4 the proportion with a limiting long-term illness was above that for England and the UK, although below that for Wales.

Life expectancy was slightly above the UK average in Regional Sea 4 by approximately half a year for both men and women.

## **A1g.3.5 Regional Sea 6**

### **A1g.3.5.1 Population**

Regional Sea 6 incorporates a long length of coastline from Pembrokeshire in south-west Wales to Argyll and Bute in south-west Scotland and much of the coast of Northern Ireland. While the majority of the coastline is rural in nature, there are also extensive urban areas present, most notably in north-west England.

The total population of Local Authority Districts and Unitary Authorities along the coast in Regional Sea 6 is 5,227,000 with an overall density of 136 persons/km<sup>2</sup>. This is comparable to the overall population densities of Wales and Northern Ireland, but considerably lower than that for either England or the UK as a whole (Table A1g.1). Over large parts of the coastline the population density is generally low, particularly in Wales (e.g. 42 persons/km<sup>2</sup> in Ceredigion), the far north-west of England (e.g. 78 persons/km<sup>2</sup> in Allerdale), the north coast of Northern Ireland (72 persons/km<sup>2</sup> for Causeway Coast and Glens) and much of south-west Scotland (e.g. 23 persons/km<sup>2</sup> in Dumfries and Galloway). In contrast, the stretch of coast between Liverpool Bay and the Solway Firth is one of the most intensively developed in the UK, reflected by the high population densities over the majority of the coast from Blackpool (4,104 persons/km<sup>2</sup>) south to Liverpool (4,224 persons/km<sup>2</sup>). Densities are also elevated in areas adjacent to the Clyde in south-west Scotland (e.g. 668 persons/km<sup>2</sup> in Renfrewshire). In Northern Ireland, Belfast supports the highest population densities (2,514 persons/km<sup>2</sup>).

### **A1g.3.5.2 Employment**

In the areas adjacent to Regional Sea 6, employment structure (Table A1g.4) differs only slightly to that of the UK as a whole (Table A1g.3); slightly larger contributions from the agriculture (including forestry and fishing) and industrial sectors are compensated for by a slightly lower contribution from the service sector.

Rural areas of south-west Scotland and the northern coast of Northern Ireland show much larger contributions to the agriculture sector (e.g. 8.7% and 4.2% for Dumfries and Galloway and Causeway Coast and Glens, respectively). Much of the Cumbrian coast shows a similar trend (e.g. 3.4% for Allerdale), as do the north and west coasts of Wales (e.g. 3.5% for Gwynedd). Industry is very important along parts of the Cumbrian coast with some of the largest contributions to this sector in the UK, e.g. 36.5% and 31.3% in Copeland and Barrow-in-Furness respectively. The industrial sector is also of particular importance in Flintshire (28.5%) on the north Wales coast. Areas with high dominance by the service sector include population centres such as Belfast (88.8%), Liverpool (86.4%), Sefton (84.5%), Blackpool (83.9%), North Down and Ards (83.7%) and Conwy (83.3%).

### **A1g.3.5.3 Health**

Overall in Regional Sea 6, 20.7% of people described their health for the 12 months prior to Census day as “not good” (Table Ag1.6) – lower than the average for Wales but higher than for England and Scotland (Table A1g.5). Areas with notably poor reported health were Blackpool (26.4%), Belfast, Barrow-in-Furness (both 24.2%), Wyre (23.2%), Liverpool (22.8%), Conwy (22.5%) and West Dunbartonshire (22.2%). Only a few areas had proportions below the UK average, including Argyll and Bute (17.6%), South Lakeland (18.2%) and Cheshire West and Chester (18.4%).

Overall for Regional Sea 6, the proportion of people with a limiting long-term illness was above that for all other countries within the UK with the exception of Wales (Table A1g.5). The distribution of people with a limiting long-term illness was similar to those describing their health as “not good”, with highest values in Blackpool (25.5%), Barrow-in-Furness (24.7%), Conwy (24.3%), Belfast, Inverclyde (both 23.8%) and Wyre (23.7%).

Life expectancy in Regional Sea 6 was below the UK average by approximately one year for both men and women, and below the averages for all of the countries within the UK with the exception of Scotland. Values were particularly low in south-west Scotland (e.g. 73.3 and 79.6 years for males and females in Inverclyde), Blackpool (73.8 and 80 years for males and females), Belfast (75.2 and 80.5 years for males and females), and Liverpool (75.7 and 80.1 years for males and females); life expectancy in the Inverclyde area is one of the lowest in the UK.

## **A1g.3.6 Regional Sea 7**

### **A1g.3.6.1 Population**

Regional Sea 7 features a highly indented and correspondingly long coastline from the north coast of Northern Ireland to Cape Wrath on the north-west mainland of Scotland. The total population of Local Authority Districts and Unitary Authorities along the coast in Regional Sea 7 is 490,000. These areas are some of the most sparsely populated in the UK, with an overall density of 13 persons/km<sup>2</sup> – considerably less than that of any of the countries within the UK (Table A1g.1). The highest densities occur on the north coast of Northern Ireland (e.g. 72 persons/km<sup>2</sup> for Causeway Coast and Glens); densities in Scotland are considerably lower (e.g. 13 persons/km<sup>2</sup> for Argyll and Bute).

### **A1g.3.6.2 Employment**

In the areas adjacent to Regional Sea 7, the employment structure differs to that of Northern Ireland, Scotland or the UK as a whole (see Table A1g.3), through an elevated contribution (4.2%) to the agriculture sector (including forestry, and fishing) (Table A1g.4). The industrial and service sectors are both slightly below the averages for Scotland and Northern Ireland, particularly so for industry in Argyll and Bute (15.5%), and services in the Causeway Coast and Glens (75.2%) of Northern Ireland.

### **A1g.3.6.3 Health**

Overall in Regional Sea 7, 18.8% of people described their health for the 12 months prior to Census day as “not good” (Table A1g.6) – the same as the UK as a whole but approximately 1% lower than the Scotland average. With the exception of the Causeway Coast and Glens (20.3%), all areas showed lower values than the UK overall, with the Highland area having the lowest at 16%. The overall proportion with a limiting long-term illness in Regional Sea 7 was above that of Scotland and the UK as a whole but below the average for Northern Ireland. The Highland area had the lowest proportion with a limiting long-term illness at 18.6%.

Life expectancy in Regional Sea 7 was slightly below the Northern Ireland and UK averages but above the average for Scotland. Life expectancy was lower in areas in Scotland (e.g. 75.7 and 80.3 years for males and females in Eilean Siar (Western Isles)) in comparison to those in Northern Ireland (e.g. 78 and 82.4 years for males and females in Causeway Coast and Glens).

## A1g.3.7 Regional Sea 8

### A1g.3.7.1 Population

Regional Sea 8 incorporates the coastline to the west of the Outer Hebrides, the north coast of the Scottish mainland, Orkney and the west coast of Shetland. The total population of Local Authority Districts and Unitary Authorities along this coast is 305,000, although this figure is dominated by the Highland region (233,100) of which only a small amount lies within Regional Sea 8. The Regional Sea 8 area is one of the most sparsely populated in the UK, with an overall density of 10 persons/km<sup>2</sup> (Table A1g.2) – considerably less than that of Scotland or the UK as a whole (Table A1g.1). Population densities are slightly higher on Orkney and Shetland (22 and 16 persons/km<sup>2</sup> respectively) than the Highland or Eilean Siar (both 9 persons/km<sup>2</sup>).

### A1g.3.7.2 Employment

In the areas adjacent to Regional Sea 8, the employment structure primarily differs to that of Scotland and the UK as a whole through elevated contributions primarily from the agriculture (4.6%) sector and a lower service (75.8%) sector contribution. This trend is most apparent in the Orkney Islands, where 10.2% of employment is in the agriculture sector (including forestry and fishing) - the highest in the UK.

### A1g.3.7.3 Health

Overall in Regional Sea 8, only 15.6% (the lowest of the Regional Sea areas, Table A1g.6) of people described their health for the 12 months prior to Census day as “not good” – 2.2% lower than that of Scotland and 3.2% lower than the UK average. The lowest proportions were in Shetland and Orkney at 13.6 and 14.3% respectively (amongst the lowest in the UK). The proportion with a limiting long-term illness in Regional Sea 8 overall was below that of Scotland as a whole but above the UK average. Life expectancy was above the average for Scotland but below the UK average.

## A1g.4 Evolution of the baseline

Table A1g.7 provides details of how the population of the UK and constituent countries may change over the next 15 years based on the latest 2012 population projections (ONS 2013b). Based on the latest population estimates for 2014 (see Section A1g.2.1), the UK population is projected to increase by more than 6.4 million by 2030. Population growth to 2030 is predicted to be smallest in Wales (5.9%), Scotland (6.2%), and Northern Ireland (7.3%), with growth in England (10.7%) similar to the UK as a whole (10%).

**Table A1g.7: Estimated and projected populations of the UK and constituent countries, 2014-2030**

Area	Mid-2014 estimate (000s)	Projected population (000s)			
		2015	2020	2025	2030
England	54,316.6	54,613	56,582	58,430	60,107
Wales	3,092	3,107	3,169	3,227	3,275
Scotland	5,347.6	5,365	5,474	5,585	5,681
Northern Ireland	1,840.5	1,852	1,900	1,943	1,975
<b>United Kingdom</b>	<b>64,596.8</b>	<b>64,938</b>	<b>67,126</b>	<b>69,186</b>	<b>71,037</b>

Source: Office for National Statistics (2013b), Office for National Statistics Annual mid-year population estimates, 2014

## A1g.5 Environmental issues

### A1g.5.1 Deprivation

Indices of deprivation identify areas of multiple deprivation at the small area level (see Table A1g.8 for average population sizes of the respective small areas used by each country). Separate indices have been constructed for England, Northern Ireland, Scotland and Wales and although not directly comparable, each index is based on the concept that distinct dimensions of deprivation such as income, employment, education and health can be identified and measured separately. These dimensions, sometimes referred to as 'domains' are made up of a series of summary statistics or indicators which are then aggregated and weighted<sup>1</sup> to provide an overall measure of multiple deprivation with each individual area allocated a deprivation rank and score. Table A1g.8 provides details of the key components and differences between the most recent indices.

In each index, the areas which have the highest rank of 1 are those areas which are considered most deprived. Figure A1g.3 highlights the patterns of deprivation according to each index.

From Figure A1g.3, each country supports relevant coastal areas which are amongst the 20% most deprived. For example, in Scotland small isolated areas are present on the east coast and around the Firth of Forth. In England, some of the most deprived areas are clustered in the north-east and north-west with more isolated areas located along the rest of coast. The most deprived areas are clustered along eastern parts of the south and north coasts of Wales and in and around Belfast in Northern Ireland.

**Table A1g.8: Key components and differences between the four current indices of deprivation (as at November 2014)**

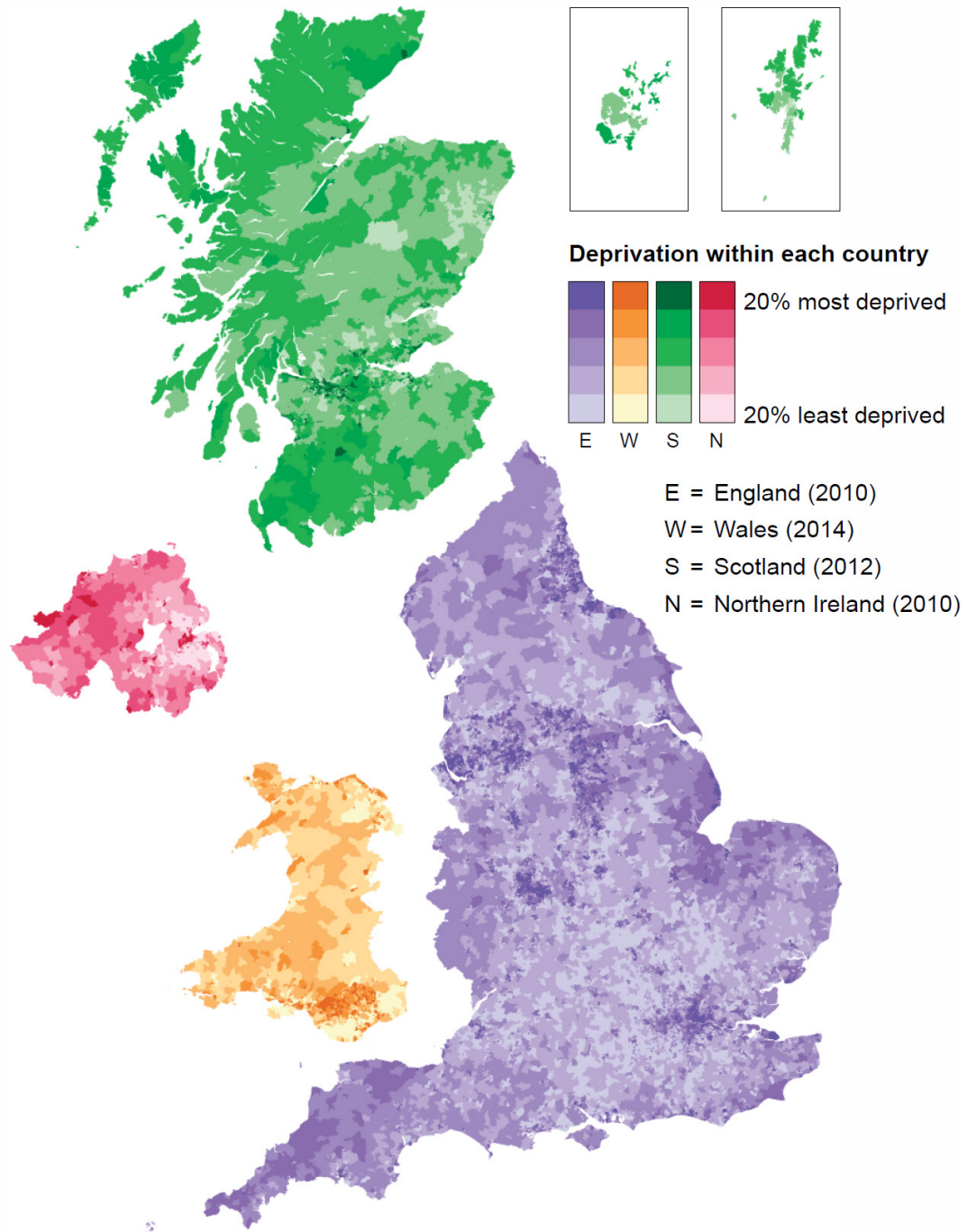
Most recent Index of Deprivation	Year on which data based	No. of domains	No. of indicators	Small area geography	Average population size mid-2013	Rank of Deprivation (1 = most deprived)
England (2010) <sup>1</sup>	2008/09	7	38	Lower layer super output areas	1,700	1 to 32,482
Wales (2014)	2012-14	8	35	Lower layer super output areas	1,600	1 to 1,909
Scotland (2012)	2010/11	7	38	Data zones	800	1 to 6,505
N Ireland (2010)	2008/09	7	52	Super output areas	2,100	1 to 890

Note: <sup>1</sup> The indices of deprivation of England are currently being updated and were due for publication in September 2015.

Source: ONS Neighbourhood Statistics website –  
<http://www.neighbourhood.statistics.gov.uk/dissemination/Info.do;jessionid=2LDrRlnTWQFkdNYVV2y6wJGyZYQYZqp1HNlxxJjX1zg4vzn7VQ5W!1410672126!1365601811651?m=0&s=1365601874807&enc=1&page=analysisandguidance/analysisarticles/indices-of-deprivation.htm&nsjs=tru>

<sup>1</sup> The weights are selected according to a number of criteria which are used to assess the level of importance attached to each domain theme in the overall measurement of deprivation. As each index uses different indicators and domains, the weights applied to aggregate domain scores are different although there are similarities. For example, for each of the countries income and employment are domains which are given the highest weighting of between 22.5% (England) and 28% (Scotland).

Figure A1g.3: Indices of multiple deprivation (rank) for constituent countries of the UK



Source:

[http://www.neighbourhood.statistics.gov.uk/HTMLDocs/images/UK\\_IMD\\_with%20Welsh%20update%202014\\_A5\\_with%20title\\_rast150dpi\\_tcm97-148911.pdf](http://www.neighbourhood.statistics.gov.uk/HTMLDocs/images/UK_IMD_with%20Welsh%20update%202014_A5_with%20title_rast150dpi_tcm97-148911.pdf)



## A1g.5.2 Air pollution

In their 2015 statement<sup>2</sup> on the evidence for differential health effects of particulate matter, the Committee on the Medical Effects of Air Pollutants (COMEAP) indicated that “*Particulate air pollution is a complex mixture of many chemical components. Although it might be expected that some components are more harmful to health than others, the evidence available from population-based studies does not give a consistent view of their relative toxicity. Both particles emitted directly from a range of pollution sources, such as traffic and solid fuel combustion, and those formed by chemical reactions in the atmosphere are associated with adverse effects on health and the current consensus is that these associations are, at least in part, causal. Hence, reductions in concentrations of both types of particles are likely to benefit public health.*”

Gowers *et al.* (2014) presented estimates of the increase in mortality risk associated with long-term exposure to particulate air pollution in local authority areas in the UK, building upon the attributable fractions reported as an indicator in the public health outcomes framework for England (<http://www.phoutcomes.info/search/air%20pollution>). The estimates of mortality burden were based on modelled annual average concentrations of fine particulate matter (PM<sub>2.5</sub>) in each local authority area originating from human activities. Local data on the adult population and adult mortality rates were also used. Central estimates of the fraction of mortality attributable to long-term exposure to current levels of anthropogenic particulate air pollution ranged from around 2.5% in some local authorities in rural areas of Scotland (e.g. Eilean Siar, Argyll and Bute) and Northern Ireland (e.g. Causeway Coast and Glens), between 3% (e.g. Gwynedd) and 5% (e.g. Cardiff) in Wales to over 6% in some local authorities in the east and south east of England<sup>3</sup>. National estimates are indicated in Table Ag1.9. The report thus concludes that current levels of particulate air pollution have a considerable impact on public health. Further information is presented in Appendix 1e Air Quality.

**Table Ag1.9: National estimates: baseline population, modelled population-weighted mean concentrations and estimated effects on annual mortality in 2010 of anthropogenic PM<sub>2.5</sub> air pollution**

Area	Population age 25+ (000s)	Deaths age 25+	Mean PM <sub>2.5</sub> (µg m <sup>-3</sup> ) <sup>1</sup>	Attributable fraction <sup>2</sup> (%)
England	35,878.0	458,743	9.9	5.3
Wales	2,075.4	31,041	7.5	4.3
Scotland	3,660.5	53,800	6.8	3.9
Northern Ireland	1,174.6	14,243	6.6	3.8
<b>United Kingdom</b>	<b>42,788.6</b>	<b>557,828</b>	<b>9.4</b>	<b>5.3</b>

Notes:

1. Modelled population-weighted annual mean concentrations of PM<sub>2.5</sub> arising from human activities. The pollution climate mapping model used dispersion modelling based on emissions data from the national atmospheric emissions inventory (NAEI), chemical transport modelling and measurement data for specific PM components to estimate the concentration of PM<sub>2.5</sub> at background concentrations in each 1x1km grid square. The modelled concentrations were calibrated against monitoring data. Population statistics were applied to the modelled concentrations to calculate the population-weighted annual average modelled anthropogenic PM<sub>2.5</sub> concentrations for each local authority area.

<sup>2</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/411762/COMEAP\\_The\\_evidence\\_for\\_differential\\_health\\_effects\\_of\\_particulate\\_matter\\_according\\_to\\_source\\_or\\_components.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/411762/COMEAP_The_evidence_for_differential_health_effects_of_particulate_matter_according_to_source_or_components.pdf)

<sup>3</sup> Because of uncertainty in the increase in mortality risk associated with ambient PM<sub>2.5</sub>, the actual burdens associated with modelled concentrations could range from approximately one-sixth to about double these figures (Gowers *et al.* 2014).

2. *Attributable fraction – the proportion of deaths estimated as due to long-term exposure to anthropogenic particulate air pollution.*

Source: Gowers et al. (2014)

### A1g.5.3 Water quality

The microbiological quality of bathing waters can be affected by pollution from agricultural and urban sources, discharges of sewage effluent, storm water overflows and river borne pathogens all of which could have a significant impact on human health. The EC Bathing Water Directive sets mandatory and more stringent guideline standards with tighter limit values (DEFRA 2014).

The UK is currently in a transition period as it moves from the original to the revised Directive. Bathing water quality is now monitored using the new parameters of *E.coli* and intestinal enterococci and the data is used to assess compliance with the standards set by Directive 76/160/EEC. At the same time, it will be used in the four year dataset that will provide the first set of classifications under Directive 2006/7/EC in 2015. There is now a single guideline standard which is comparable to the previous UK Guideline standard (DEFRA 2014).

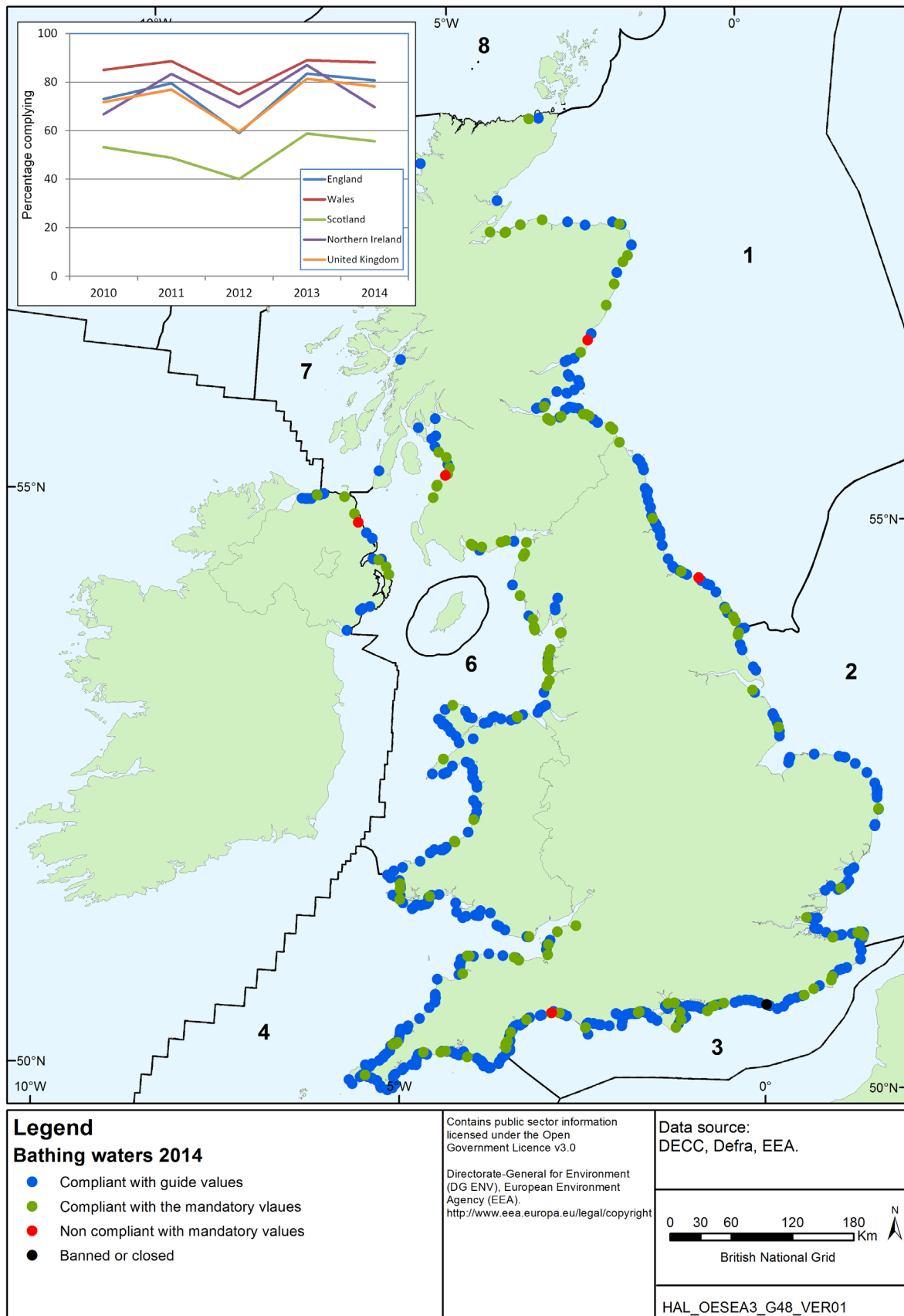
During the transition period the *E.coli* is used to assess mandatory standard, with a limit value of 2,000 per 100ml. At least 95 percent of samples must meet the limit value. Guideline standard is assessed on monitoring for intestinal enterococci, with a limit value of 100 per 100ml in at least 80 percent of samples. The location of coastal bathing waters around the UK and their compliance with the UK Guideline standards in 2014 is indicted in Figure Ag1.4, in addition to overall compliance by UK constituent country during the bathing season since 2010.

Variations from year to year tend to be related to weather conditions, as combined sewer overflows operate more frequently during wet weather, diffuse pollution from urban and agricultural sources is increased, and in poor summers there is less sunlight to kill off bacteria in water. The results in 2014 and 2013 show a reversal of the dip in 2012, which reflected the extreme wet weather conditions during that summer (DEFRA 2014). Further information is presented in Appendix 1d Water Environment.

### A1g.5.4 Coastal erosion and flooding

A large proportion of the UK coastline is suffering from erosion (ca. 17% in the UK) with England (ca. 30%) and Wales (ca. 23%) having the greatest proportion of eroding coast. The coastline of England is also the most protected with ca. 46% of its length lined with coastal defence works (seawalls, groins) or fronted by artificial beaches. In England, the proportion of eroding coast was greatest in the Yorkshire and Humber region (56% with 43% of the coast protected), with the south-east (31% with 54% protected), south-west (32% with 22% protected) and east (30% with 69% protected) of England regions also having large proportions of eroding coastline (Masselink & Russell 2013), with management of erosion and flood risk being delivered through Shoreline Management Plans (SMPs) and Flood Risk Management Strategies. Further information is provided in Appendix 1b Geology, Substrates & Coastal Processes.

Figure Ag1.4: Percentage of coastal bathing waters complying with Guideline standards



Source: <https://www.gov.uk/government/publications/bathing-water-quality-statistics>

In their 2014 update of the number of properties located in areas at risk from flooding and/or coastal erosion in England for the Adaptation Sub-Committee of the Committee on Climate Change, HR Wallingford (2015) indicated that between 2,647 and 2,858 dwellings were at risk in the short-term (2010-2025) if there was no active intervention. Implementation of the respective SMP would reduce this number to about 170. Similarly, the number of residential dwellings with a high likelihood of experiencing coastal or river flooding was estimated at between 155,566 and 162,480 for 2014 (HR Wallingford 2015). Appendix 3b Geology, Substrates and Coastal Geomorphology provides further details of SMPs and information on the evolution of the baseline and environmental problems in the context of, for example, coastal defences, sand extraction for beach nourishment, and the potential influence of sea-level rise and changes to metocean conditions (e.g. storminess).

### A1g.5.5 References

COMEAP (2015). Statement on the evidence for differential health effects of particulate matter according to source or components. Committee on the Medical Effects of Air Pollutants, 12pp.

DEFRA (2014). Statistics on UK coastal bathing waters – A five year summary of compliance with mandatory and UK guidelines. Statistical Release 6 September 2014, 5pp.

Gowers AM, Miller BG & Stedman JR (2014). Estimating local mortality burdens associated with particulate air pollution. Public Health England, 46pp.

HR Wallingford (2015). Updated analysis on the number of properties located in areas at risk from flooding and/or coastal erosion in England. Final report for the Committee on Climate Change, 22pp.

Masselink G & Russell P (2013). Impacts of climate change on coastal erosion. *MCCIP Science Review 2013*, pp. 71-86.

ONS (2013a). Local authority variations in self-assessed general health for males and females, England and Wales, 2011. Office for National Statistics.

ONS (2013b). National population projections, 2012-based statistical bulletin. Office for National Statistics.

UK Government (2010). UK Marine Policy Statement Appraisal of Sustainability.