The NDA group
Draft Strategy

Integrated Impact Assessment Report
Volume 3: Baseline Report and Policy and Legislative Context Review
July 2025

Summary

TÜV SÜD Nuclear Technologies (NT) has been commissioned by the Nuclear Decommissioning Authority (NDA) to support the NDA in reviewing and updating the Integrated Impact Assessment (IIA) accompanying NDA's Strategy. The monitoring forms part of NDA's requirement, under the Energy Act 2004 [1], to publish a Strategy setting out its strategic direction for activities across its estate. The NDA is undertaking its fifth five-year review of its Strategy.

The Strategy reviews the NDA's strategic position, establishing and maintaining its strategic direction over activities across its sites. The version currently under development is the NDA Strategy (2026) (the 'Strategy'). The NDA is required to ensure that the development of its Strategy is in accordance with the requirements of the European Union's (EU) Strategic Environmental Assessment (SEA) Directive and transposing UK SEA Regulations [2].

The NDA Strategy IIA Report is split into three volumes. Volume 3 consists of a baseline report and review of relevant policy and legislation to inform the scope of the IIA by identifying environmental matters which must be considered for possible relevance to the Strategy in accordance with legislation and international / national policy. The IIA volume 3 takes into account legislation, policies, plans and strategies relevant to the environmental, health and socio-economic issues that apply to the NDA's sites, issued on international, European, national, and local levels.

This report presents the baseline environmental, health and socio-economic conditions at each of the 17 sites that make up the Nuclear Decommissioning Authority (NDA) estate. The information contained within this report will be used to inform the Integrated Impact Assessment (IIA) of the NDA Strategy, which sets out the NDA's strategic approach to undertaking decommissioning activities across its sites.

Environmental baseline conditions have been established through desk-based research using Geographic Information System (GIS) applications such as DEFRA's Magic Map application and other online data sources. These sources cover a broad range of environmental aspects and indicators, including topics such as air quality, noise, biodiversity, flora and fauna and the water environment.

In line with the SEA Directive's requirement to consider the likely evolution of the baseline, future environmental baseline conditions have been established, where possible, using the Site-Specific Baseline Reports and local authority development plans and strategies.

Glossary

25YEP	25 Year Environmental Plan
AGR	Advanced Gas-Cooled Reactor
As	Arsenic
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Areas
AQS	Air Quality Standards
BAT	Best Available Technique
BaP	Benzopyrene
BEPO	British Experimental Pile Operation reactor
BGS	British Geological Survey
BPM	Best Practicable Means
Cd	Cadmium
C&M	Care & maintenance
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide equivalent
CO	Carbon Monoxide
Defra	Department for Environment Food & Rural Affairs
DsPH	Directors of Public Health
DSRL	Dounreay Site Restoration Ltd
EA	Environment Agency
EC	European Commission
EDF	EDF Nuclear Energy
EDI	Equality Diversity and Inclusion
EIP	Environmental Improvement Plan
EU	European Union
EURATOM	European Atomic Energy Community
FED	Fuel Element Debris
GDF	Geological Disposal Facility
GHG	Greenhouse Gas
GHQ-12	General Health Questionnaire 12
GIS	Geographical Information System
ha	Hectares
HAW	Higher Activity Waste
HCFC	Hydrochlorofluorocarbons
HFC	Hydrofluorocarbon
HLE	Healthy Life Expectancy
HLW	High Level Waste
HSE	Health and Safety Executive
IIA	Integrated Impact Assessment
ILW	Intermediate Level Waste
IUCN	International Union for Conservation of Nature

IWMP	Integrated Waste Management Programme
JNCC	The Joint Nature Conservation Committee
Kg	Kilogram
km	Kilometre
Pb	Lead
LA	Local Authority
LGBTQ+	Lesbian, Gay, Bisexual, Transgender, Queer and Questioning
LLW	Low Level Waste
LLWR	Low Level Waste Repository Ltd
LNR	Local Nature Reserve
MTRs	Material Test Reactors
Hg	Mercury
m	Metre
MCZ	Marine Conservation Zone
mSv	Millisievert
µg	Micrograms
µg m^{-3}	Micrograms per cubic metre
NDA	Nuclear Decommissioning Authority
NEAES	North-East Atlantic Environment Strategy
NHS	National Health Service
Ni	Nickel
NMVOCs	Non-methane Volatile Organic Compounds
NNR	National Nature Reserve
ng m^{-3}	Nanograms per cubic metre
NO	Nitric Oxide
NPPF	National Planning Policy Framework
NRS	Nuclear Restoration Services
NRW	Natural Resources Wales
NSET	National Strategy for Economic Transformation
NSIP	Nationally Significant Infrastructure Project
NTS	Nuclear Transport Solutions
NWS	Nuclear Waste Services
OD	Ordnance Datum
ONR	Office for Nuclear Regulation
OSPAR	Oslo and Paris Conventions
O_3	Ozone
PCM	Plutonium Contaminated Material
PM	Particulate matter
PM2.5	Particulate matter less than 2.5 micrometres in diameter
PM10	Particulate matter less than 10 micrometres in diameter
POCO	Post Operational Clean Out
REUL	Retained EU Law
RIFE	Radioactivity in Food and the Environment
RWM	Radioactive Waste Management

TCA	Trade and Cooperation Agreement
SAC	Special Area of Conservation
SDA	Strategic Development Areas
SDG	Sustainable Development Goal
SEA	Strategic Environmental Assessment
SEPA	Scottish Environmental Protection Agency
SGHWR	Steam-Generating Heavy Water Reactor
SIMD	Scottish Index of Multiple Deprivation
SLC	Site Licence Company
SO_2	Sulphur Dioxide
SPA	Special Protection Area
SoNaRR2020	Second State of Nature Resources Report
SSSI	Site of Special Scientific Interest
t	Tonnes
TMF	Tails Management Facility
UA	Unitary Authority
UF_6	Uranium Hexafluoride
UK	United Kingdom
UKAEA	UK Atomic Energy Authority
UKBF	United Kingdom Biodiversity Framework
UKCP18	UK Climate Projections 2018
U_{308}	Triuranium octoxide
VLLW	Very Low Level Waste
WEMWBS	Warwick-Edinburgh Mental Well-Being scale
WFD	Water Framework Directive

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1. Introduction

This Volume (Volume 3) of the Integrated Impact Assessment (IIA) contains the baseline information and legislative review to support the assessment of the Nuclear Decommissioning Authority's (NDA's) Strategy (2026). Environmental, socio-economic and health baseline information for regional, local and NDA sites, where available, are presented in this Volume as well as a review of international, national and local legislation, plans, policies and strategies relevant to the decommissioning of sites in the NDA's estate.

The assessment combines a Strategic Environmental Assessment (SEA), Health Impact Assessment (HIA) and Socio-Economic Impact Assessment (SeIA). An IIA should meet the requirements of the Strategic Environmental Assessment (SEA) Directive and transposing United Kingdom (UK) regulations. Health and socio-economic impacts are not statutory requirements, but a health impact assessment is recommended within the SEA Directive, and a socio-economic impact assessment demonstrates good practice.

The detailed assessment is presented in Volume 2 of the IIA Report and an overview of the process, summarising the NDA's Strategy (2026), the assessment results and baseline information as well as mitigation and a monitoring plan is presented in Volume 1.

2. NDA Estate

The NDA estate comprises 17 sites across England, Wales and Scotland. Ten sites have Magnox nuclear power stations that are either planned for or are undergoing decommissioning. The other seven sites have performed a variety of operations involved in the nuclear fuel cycle. This includes research, uranium enrichment, fuel fabrication, fuel reprocessing and waste storage. The current status of these sites is outlined below.

The NDA Group has changed since the previous Strategy (2021) [3]. In mid-2020, NDA adopted Dounreay Site Restoration Ltd (DSRL) and LLW Repository Ltd (LLWR) within its group structure. In early 2022 NDA announced the formation of Nuclear Waste Services (NWS), integrating LLWR, Radioactive Waste Management (RWM), and the NDA group's Integrated Waste Management Programme (IWMP). Then, in October 2023, Magnox Ltd rebranded to become Nuclear Restoration Services (NRS), also incorporating Dounreay as a separate division.

2.1 Sellafield (SLC – Sellafield Ltd)

The Sellafield site located 15 kilometres (km) south of Whitehaven, Cumbria, covers an area of approximately 265 hectares (ha). Ongoing operations centre upon a range of nuclear fuel cycle activities undertaken in various facilities across the site. The site also incorporates historical reactors; Calder Hall, a four reactor Magnox nuclear power station (formerly grid-supplying), Windscale Advanced Gas Reactor and the Windscale Piles reactors.

Works at Sellafield commenced in 1947, with Calder Hall becoming operational in 1956 and shutting down in 2003. Commercial reprocessing of spent fuel at Sellafield ceased in 2021, at which point the Magnox reprocessing plant was closed down. Sellafield is the UK's largest and most complex nuclear site. Its history dates back to the earliest days of the UK's defence and civil nuclear programmes and as such many of the decisions taken in the early days of the industry did not focus on the future consequences for clean-up. A prime example of this is the ponds used to store waste cladding and fuel in the 1970s which remain a top management priority for the NDA today.

The Calder Hall power station and Windscale Piles are currently undergoing decommissioning and the Windscale Advanced Gas Cooled Reactor is used as a decommissioning demonstration project (the reactor was decommissioned in 2011). Operations are expected to continue at many facilities in the short to medium-term.

The land surrounding the site is predominantly rural and agricultural, however the site dominates the landscape. Settlements within 10 km of the site are the town of Egremont to the north, the village of Gosforth to the east and the villages of Seascale, Holmrook and Drigg to the south. The larger town of Whitehaven lies 15 km to the north.

The site access roads join the A595 trunk road, which links to the A5092 and A590 before joining the national motorway network at Junction 36 of the M6. The Cumbrian Coast rail line runs along the western boundary of the site, with a passenger platform and a branch line into the site.

2.2 Magnox nuclear power stations (SLC – NRS)

Ten former grid-supplying nuclear power stations are currently undergoing decommissioning. The sites are managed by NRS which manages them on behalf of the NDA.

2.2.1 Berkeley

The Berkeley Site is a twin reactor Magnox station located close to the town of Berkeley in Gloucestershire. It is situated on the eastern bank of the River Severn and covers an area of 27 ha, 11 of which have been de-designated and include the Berkeley Centre (under NDA liability), which is planned for development.

The land surrounding the site is predominantly rural and used primarily for agriculture and recreation. The major settlements within 10 km of the site are Berkeley town to the east, Thornbury to the south, and Lydney to the west on the opposite bank of the Severn.

The site access road connects to the A38 trunk road via Berkeley village. This road links to the national motorway network at Junctions 13 and 14 of the M5. The nearest railhead to the site is located on the Sharpness Branch Line (which is operational but infrequently used). The nearest passenger rail station is Cam and Dursley station approximately 13 km to the northeast.

2.2.2 Bradwell

The Bradwell Site is a twin reactor Magnox station located close to the village of Bradwell-on-Sea on the Dengie Peninsula in Essex. It is situated on the southern bank of the Blackwater Estuary and covers an area of 20 ha.

The land surrounding the site is predominantly rural and of agricultural use. The town of West Mersea lies 4.5 km north of the site on the north bank of the Blackwater Estuary. The villages of Southminster, Steeple, St Lawrence, Tillingham and Bradwell-on-Sea all lie to the south and southeast.

The site access road connects to the B1021 via Bradwell-on-Sea. This road provides links to the unclassified C111 and B1018. The A414 and A12 provide the nearest trunk road links. The nearest railhead to the site is on the Crouch Valley Line that runs to Southminster, the nearest passenger rail station.

2.2.3 Chapelcross

Chapelcross is a four reactor Magnox station located close to the town of Annan in south west Scotland. It is situated in open countryside on the site of a former RAF airfield, approximately 6 km from the northern coast of the Solway Firth and close to the River Annan. The site incorporates the Chapelcross Processing Plant (a tritium production facility) which ceased operations soon after the station shut down in 2004 and is now being decommissioned. The licensed site covers an area of 96 ha and the land holding incorporates the extensive former airfield.

Settlements within 10 km of the site are Annan to the southwest, Gretna to the south east, Ecclefechan to the north west, as well as a number of smaller settlements including Eaglesfield, and the hamlet of Creca (to the immediate north east of the site).

The site connects to the A75 trunk road via the B722 (or other unnamed roads). The A75 links to the national motorway network at Junction 22 of the A74 motorway. Although an active railway line runs approximately 4 km to the south of the site through Annan, there is currently no railhead near Chapelcross. The nearest passenger rail stations are located at Annan and Lockerbie.

2.2.4 Dungeness A

Dungeness A is a twin reactor Magnox station located close to the town of Lydd in Kent. The site is located on the Dungeness Peninsula and covers an area of 20 ha immediately adjacent to the Dungeness B power station.

The rural land immediately surrounding the site lies on a bed of shingle and is therefore not used for agriculture, although it is an important ecological site. Settlements within 10 km of the site are the towns of Lydd to the northwest and New Romney to the north. The villages of Lydd-on-Sea and Greatstone also lie to the immediate north.

The site access road, Dungeness Road, connects to the A259 via the B2075. The A259 links to A2070 and joins the national motorway network at Junction 10 of the M20. The nearest railhead to the site is the Denge railhead, which is at the head of a dedicated stretch of track to the north of the site. The nearest passenger rail station is at Rye.

2.2.5 Trawsfynydd

Trawsfynydd is a twin reactor Magnox station located close to the village of Trawsfynydd, in Gwynedd, Wales in Eryri National Park (Snowdonia). It is situated on the northern shoreline of Llyn Trawsfynydd, an artificial lake/ reservoir, and covers an area of 15 ha.

The land surrounding the site is rural and is used primarily for agriculture and recreation. Settlements within 10 km of the site are the town of Blaenau Ffestiniog to the north and Trawsfynydd to the south east. There are also numerous villages close to the site including Penrhyndeudraeth and Llanfrothen to the west, and Llan Ffestiniog and Tanygrisiau to the north.

The site access road connects to the A470, the main north-south trunk road through Wales. It connects directly to the national motorway network at Junction 12 of the M53 and Junction 7 of the M54. The nearest railhead to the site is located on the Trawsfynydd and Blaenau Ffestiniog Branch Line. The nearest passenger rail station is Blaenau Ffestiniog.

2.2.6 Sizewell A

Sizewell A is a twin reactor Magnox station located close to the town of Leiston in Suffolk. It lies on the North Sea coast and is immediately adjacent to EDF Energy's operational Sizewell B Power Station. The site covers an area of 14 ha.

The area surrounding the site is rural in nature and primarily used for agriculture and recreation. Settlements within 10 km of the site are Leiston and Saxmundham to the west and Aldeburgh to the south.

The site access road connects to the B1122 via Lover's Land and the C228. This road links to the A12, which gives access to the national motorway network at Junction 28 of the M25 to the south, and at Junction 17 of the A1 via the A47 and A1139 to the north. The nearest railhead to the site is located on the Aldeburgh Branch Line (which is used almost exclusively by nuclear flask trains servicing the power station). The nearest passenger rail station is located at Saxmundham.

2.2.7 Oldbury

The Oldbury site is a twin reactor Magnox station located close to the town of Thornbury in Gloucestershire. It is situated on the eastern bank of the River Severn and covers an area of 47 ha, of which 32 have been de-designated.

The land surrounding the site is predominantly rural and is used primarily for agriculture and recreation. Settlements within 10 km of the site are Berkeley town to the northeast, Thornbury to the southeast, and on the opposite bank of the Severn, Lydney to the north and Bulwark to the west. There are numerous small villages and settlements in the area in addition to these larger towns.

The site access road connects to the national motorway network via a network of B class and C class rural roads. The nearest motorway access points are junction 1 of the M48 and junctions 14 and 15 of the M5. There is no railway in the vicinity of the site.

2.2.8 Hinkley Point A

Hinkley Point A is a twin reactor Magnox station located in Somerset. It is situated on the southern shore of the Bristol Channel, EDF Energy's Hinkley Point B and Point C power stations lie adjacent to the site to the east. Hinkley Point B finished generating electricity in August 2022. The Hinkley Point A site covers an area of approximately 20 ha.

The land surrounding the site is predominantly rural and used primarily for agriculture and recreation. The nearest settlement is Bridgewater 12.5 km southeast of the site. There are a number of small villages and settlements within a 10 km radius of the site.

The site access road connects to the national motorway network via a network of B class and C class rural roads. The nearest motorway access points are junctions 23 and 24 of the M5. The nearest railway station is in Bridgewater.

2.2.9 Hunterston A

The Hunterston site is a twin reactor Magnox station located close to the town of Largs and approximately 40 km southwest of the City of Glasgow. It is situated on the west coast of the Firth of Clyde and covers an area of 15 ha.

The land surrounding the site is predominantly rural and is used primarily for agriculture and forestry. Settlements within 10 km of the site are the town of Largs and village of Fairlie to the north, and the villages of West Kilbride, Seamill and Ardrossan to the south.

The site access road connects to the national motorway network at junction 29 of the M8 via the A78, A760 and A737 to the north, or to junction 8 of the M77 via the A78, A71 and A77 to the south. The nearest railhead to the site is located approximately 2.5 km north

east of the site adjacent to the Hunterston Ore Terminal. The line is operated for both freight and passenger services and the nearest passenger rail stations are located at either West Kilbride or Fairlie.

2.2.10 Wylfa

The Wylfa Site is a twin reactor Magnox station that ceased power generation in December 2015, with decommissioning commencing in 2016. Wylfa is located close to the village of Cemaes in Anglesey on the Irish Sea coast. The site covers an area of 21 ha.

The land surrounding the site is predominantly rural and used for agriculture and recreation. Settlements within 10 km are the town of Amlwch and the village of Cemaes, both to the east of the site. There are also numerous hamlets closer to the site.

The site access road connects to the national motorway at junction 12 of the M53 via the A5025 and A55 (North Wales Expressway) trunk roads. The nearest railhead is located on the North Wales Coast Line, near to Valley Railway Station. This is an operational line with freight and passenger services and the nearest passenger rail stations are Holyhead and Valley.

2.3 Nuclear research facilities (SLC – NRS)

The NDA has two sites in its estate that previously operated experimental reactors during the early stages of nuclear energy research. These are Harwell and Winfrith, both managed by NRS.

2.3.1 Harwell

Harwell is an Atomic Energy Research Establishment. Operations began in 1946, with a total of five research reactors and other nuclear facilities operational at the site at various times. The last reactor was shut down in 1990.

Harwell is located in Oxfordshire and covers approximately 108 ha, of which 86 ha comprise the licensed site. The site has begun decommissioning and waste management operations that will run through to 2028 and involve the retrieval and repackaging of legacy intermediate level waste (ILW) from a number of facilities.

The closest settlements are Chilton (0.5 km to the south east), Harwell (1.5 km to the north east) and East Hendred (1.5 km to the north west). The land surrounding the site is predominantly arable farmland.

The site is located adjacent to the A34 which provides links to the national motorway network via junction 13 of the M4. The nearest railway station is Didcot Parkway.

2.3.2 Winfrith

Winfrith is a nuclear facility that has hosted nine research and development reactors, two of which are still present on site. Construction of the site began in 1957, and the Steam-

Generating Heavy Water Reactor (SGHWR) supplied electricity to the grid from 1968 to 1990. Decommissioning was completed in early 2024. The remaining reactor, Dragon, was commissioned in 1960 and operated from 1965 until 1976. Decommissioning commenced in 2005.

Winfrith is located close to the village of Winfrith Newburgh in Dorset and covers an area of 95 ha, of which 10 have been de-designated.

Winfrith is near the south coast of Dorset in a flat lying, mainly rural area. The area surrounding the site is predominantly heathland and agricultural land, with the settlements of Blacknoll (1.1 km to the southwest), East Knighton (1.5 km to the south), East Burton and Braytown (1.3 km to the east), Wool (2.7 km to the east) and Winfrith Newburgh (2.3 km to the south) situated nearby.

The site is located to the northwest of the A352. Access to the site is via the A352 Burton Road Gatemore Road off the A352 to the south. Gatemore Road runs along the western side of the site. The main rail service between Weymouth and London runs immediately to the north of the site.

2.4 Dounreay (SLC – NRS)

Dounreay is a nuclear site situated in the Scottish Highlands, 14 km west of Thurso. The facility has operated three experimental test reactors, the first of which, the Materials Test Reactor was constructed in 1955 and operated until 1969. The Dounreay Fast Reactor was operated from 1962 to 1977, until it was eventually replaced by the Prototype Fast Reactor (PFR) in 1975. This was operated until 1994. Defueling is currently ongoing.

The Dounreay site is situated on the northern coast of Scotland and covers an area of 60 ha that housed three reactors during its operational period. A Fuel Cycling Area and experimental laboratories were also previously operational on the site. In addition, 12 ha are designated but not licensed for a Low Level Waste (LLW) facility that takes LLW from Dounreay decommissioning.

The land surrounding the site is rural and is in an area of 'Open, Intensive Farmland'. The only other settlement in close proximity to the site is Reay, a small hamlet immediately southeast. There are numerous farms and hamlets in the wider area.

The site access road connects to the A836, which is the main trunk road across the north coast of Caithness. The A836 joins the A9 at Thurso, which is the main north-south trunk road through Scotland, joining the national motorway network at Junction 12 of the M90 at Perth, more than 220 miles away. The nearest railway station is at Thurso.

2.5 Capenhurst uranium enrichment facility (via Capenhurst Nuclear Services)

Capenhurst is a nuclear site located 4 km to the southwest of Ellesmere Port in Cheshire. The site contains a former gas diffusion plant used for uranium enrichment built in the early 1950s. Commercial enrichment of uranium in the gas diffusion facility first began in 1961 and ceased in 1982. Enrichment at the Capenhurst site continues today under the ownership of Urenco UK Ltd using centrifuge technology. Capenhurst has also been identified for the UK's long-term uranium storage.

The Urenco Nuclear Stewardship (UNS) is responsible for management of uranium and carrying out remediation work on behalf of NDA. The site was home to a uranium gaseous diffusion enrichment plant and associated facilities. It currently stores the UK's inventory of depleted uranium and uranium hexafluoride. UNS have an agreement with NDA covering the processing of Government-owned by-product and legacy material. The site covers 31 ha of land, of which 17 ha has been de-designated.

The surrounding land is mixed-use, with the town of Ellesmere Port 4 km to northeast and agricultural land to the south west. Settlements within 10 km are Chester to the southeast, Deeside to the south and Bebington to the north west. There are numerous smaller towns and villages in the vicinity and the City of Liverpool is within 15 km to the north across the River Mersey.

The site access road connects via a series of minor roads, which in turn connect to either the A540 (west), A550 (north) and A41 (east), all of which connect to the M56 motorway. Capenhurst Railway station, on the Liverpool to Chester Line, is immediately adjacent to the site.

2.6 Springfields (via Springfields Fuels Limited)

Springfields is an NDA nuclear fuel manufacturing facility, situated 7 km west of Preston, and leased to Westinghouse Electric Company UK Ltd. The site manufactures fuel for all major designs of nuclear reactor and provides most of the UK's nuclear fuel. Springfields decommissioning and clean-up operations started in 1990 with the Post Operational Clean Out (POCO) of the old UK Atomic Energy Authority (UKAEA) Springfields Nuclear Fuels Laboratories.

The land surrounding the site is rural and is used primarily for agriculture and recreation. Settlements within 10 km of the site are the town of Clifton to the south, Newton with Scales to the southwest, Kirkham to the west and Preston to the east. There are also numerous small settlements within the surrounding area.

The site access road connects to the A582, which links directly to the national motorway network at Junction 2 of the M55. The site itself has direct access to the national railway

network on the northern extent of the site. The nearest passenger rail station is Salwick immediately adjacent to the site.

2.7Low Level Waste Repository (SLC – NWS)

The LLWR is a LLW disposal facility located adjacent to Drigg in Cumbria. Construction began in 1959 and initial LLW storage comprised seven lined trenches that are now monitored and have been covered with an interim cap to prevent water ingress. Modern LLW storage comprises two vaults where grouted containers of LLW are stored. This storage facility is part of the NDA's long-term LLW disposal plan. Site activities, including receipt, treatment and disposal of LLW, are due to end in 2050 with final site clearance expected to be between 2108 and 2123. The site covers 99 ha.

The land surrounding the site is predominantly rural and agricultural. The nearest settlement is Drigg, which lies immediately adjacent to the site boundary across the railway line. Larger settlements within 10 km of the site include Gosforth to the north and Seascale to the north-west.

The site access roads join the A595 trunk road, which links to the A5092 and A590 before joining the national motorway network at Junction 36 of the M6. The site itself has direct access to the national railway network on the southern extent of the site. The nearest passenger rail station is Drigg.

3. Environmental baseline

It is a requirement of the SEA Regulations [2] to consider the environmental impact of the NDA Strategy. In order to do this, an environmental baseline is required to be established. This section presents the current environmental baseline for each environmental topic, as set out in Volume 1 of the IIA. Where possible, the baseline is described for each NDA site, as well as at a local, regional and national level where applicable.

3.1 Air quality

The air quality environmental baseline encompasses air quality information for the UK as well as site specific data. Data reported in Air Pollution in the UK 2023 [4] by the Department for Environment, Food and Rural Affairs (Defra) is used to establish current concentration baselines of pollutants of concern. Gaseous radiological emissions for 2023 have been taken from the Radioactivity in Food and the Environment (RIFE) 29 report [5]. Radiological and non-radiological emissions data for several sites in England and Scotland has been sourced from the Environment Agency (EA) Pollution Inventory [6] and Scottish Environment Protection Agency (SEPA) Scottish Pollution Release Inventory [7].

3.1.1 United Kingdom

Air Pollution in the UK 2023 [4] provides the baseline data discussed in this section for air pollutants of concern and describes spatial and temporal variation across the country. This report also assesses compliance with limit values, target values and long-term objectives set out in The Air Quality Standards Regulations (2010) [8]. The baseline concentrations and comparison with the limit values for pollutants of concern are listed below.

The background concentrations of nitrogen dioxide (NO_2) across most of the UK, outside of major towns and cities, was modelled at an annual mean concentration of 10 µg m^{-3} or below. Urban areas of the UK were modelled and resulted in higher concentrations; however, all background locations were within the limit value of 40 µg m^{-3}. There is a decreasing trend in concentrations over time, ranging from -0.5 to -1.32 µg m^{-3} per year at differing sites.

The background concentrations of particulate matter (PM) less than 10 micrometres in diameter (PM10) across the UK were all modelled below the limit value of 40 µg m^{-3} with low variation spatially. There is a downward trend in PM10 throughout the period of monitoring however, these declines are not large in magnitude and are all between 0 and -1 µg m^{-3}.

The background concentrations of PM less than 2.5 micrometres in diameter (PM2.5) across the UK were all modelled below the limit value of 20 µg m^{-3}. There is some spatial

variation in concentrations with higher concentrations in southern and eastern parts than northern and western areas of the UK. All monitoring sites have found a statistically significant downward trend in PM2.5 concentrations across the UK.

The background ozone (O_3) distribution is determined by the average number of days per year with maximum daily running 8-hour mean ozone concentration that is > 120 µg m^{-3}, over the three years 2021 to 2023. There were six to ten of these days throughout most of England (south of Manchester) and Wales. There are some slightly lower values in urban areas such as London, Birmingham and Manchester due to the 'scavenging' effect of nitric oxide (NO), which reacts with ozone. There is no consistent pattern of change over time however there are upward trends present at the majority of the 12 monitoring sites [4]. There is evidence that 'hemispheric background' ozone concentrations have increased since the 1950s which would explain the current trends.

Background concentrations of sulphur dioxide (SO_2) across the UK were all below the limit value of 350 µg m^{-3}. The highest concentrations were in urban areas with concentrations between 26 and 50 µg m^{-3} . By comparison, outside of these urban areas, most of the UK had values below 25 µg m^{-3}. All monitoring stations have found a statistically significant downward trend in SO_2 however, these trends have not been linear. The steepest declines took place between the 1990s and early 2000s with a slower decline in recent years.

Background concentrations of carbon monoxide (CO) throughout the UK have been significantly within the limit value for many years. Since 2010 modelled maps of CO concentrations have no longer been routinely produced. The six remaining monitoring sites have found a highly significant downward trend between 1992 and 2023.

Background concentrations of benzene outside of major towns and cities were modelled at 0.5 µg m^{-3} or below, while urban areas were modelled at 1.0 µg m^{-3} or less. There were no locations within the UK that exceeded the annual limit value of 5.0 µg m^{-3}. The changes in concentrations in benzene are less clear with major declines in concentrations between 2004 and 2008, which was followed by a flatter decline. Concentrations in 2023 appear to have risen when compared to 2021 and 2022.

Background concentrations of 1,3-Butadiene met the UK Air Quality Strategy (AQS) objective deadline in 2003 for a maximum running annual mean of 2.25 µg m^{-3}. Modelled maps are therefore not routinely produced for this pollutant. The Automatic Hydrocarbon Network monitors 1,3-butadiene at several sites and found that values in 2023 were well within the AQS targets. The emissions of 1,3-butadiene have flattened off since 2014 with very little change in concentrations in recent years with all monitoring sites having concentrations below 0.1 µg m^{-3}.

Background concentrations of the metal pollutants: lead (Pb), cadmium (Cd), nickel (Ni), mercury (Hg) and the metalloid arsenic (As) were modelled for an annual background mean.

Pb Background Pb concentrations of were 0.01 µg m^{-3} or less across almost all of the UK. This is well within the limit value of 0.5 µg m^{-3} for Pb. Ambient concentrations of Pb have decreased substantially since 2004 however, this decline has not been consistent with a slight increase in 2020 observed followed by a slight decline in the following years.

Background Cd concentrations were less than 0.3 ng m^{-3} for most of the UK with higher concentrations recorded in urban areas, industrial sites and adjacent to major roads. The modelled concentrations of Cd across the UK were all well below the annual mean limit value of 5 ng m^{-3}.

Background Ni concentrations were typically 2 ng m^{-3} or less, with lower concentrations recorded in rural areas. Concentrations higher than background levels are attributed to industrial activity. The highest mean annual Ni concentration was recorded in 2023 and was within the target 20 ng m^{-3}. Ambient concentrations of Ni have decreased since 2004.

Background As concentrations of 1.2 ng m^{-3} were modelled for the UK, within the limit value of 6 ng m^{-3} t. There was some spatial variation in As with higher concentrations in north-eastern regions of England with a range of 1.9 to 2.4 ng m^{-3}.This variation is due to the natural sources present in these areas. Ambient concentrations decreased between the years 2004 and 2023. Slight increases were recorded in 2021, 2022 and 2023 although are not considered to be significant in the context of the background concentrations.

Airborne ambient concentrations of Hg are only measured at two sites in the UK; Westminster, London and Weston Point, Runcorn. The ranges for these elemental Hg concentrations are between 1.3 and 1.6 ng m^{-3}. Data capture for this pollutant has been sparse, so it is difficult to determine a clear trend, and no limit value was set in the Air Quality Standards Regulations (2010) [8] .

Concentrations of benzo[a]pyrene (BaP) were modelled at 0.1 ng m^{-3} or less in 2023 across all areas of the UK. This is less than the limit value of 1 ng m^{-3}. The ambient overall concentrations of BaP are on a downward trend with some seasonal variation noted.

3.1.2 Site-specific

Site-specific radiological gaseous emission data for 2023 has been sourced from the RIFE 29 report [5]. The RIFE 29 report [5] concludes that "exposure from all sources of naturally occurring and artificial radioactivity to members of the public was well below legal limits".

Non-radiological and radiological emission data has been sourced from the EA Pollution Inventory [6], updated in 2025, which includes data on releases between 2013 and 2023. The EA Pollution Inventory provides data on releases of specified substances to air. This includes data from Berkeley, Oldbury, Capenhurst, Dungeness A, Harwell, Sellafield and

Springfields. The SEPA Pollution Inventory [7] covers the three sites in Scotland and was updated in 2023. Air quality data has not been provided for other sites.

3.1.2.1 Berkeley and Oldbury

The RIFE 29 report [5] considers radioactive discharges and emissions from Berkeley and Oldbury together because any impacts are on the same area. The Berkeley and Oldbury sites are permitted to discharge gaseous emissions via separate stacks. Gaseous releases of radionuclides such as carbon-14 increased from the Berkeley site in 2023, which is linked to waste retrieval activity at the site. However, exposure from gaseous plume related pathways for both sites is still recorded well within the legal limit at <0.005mSv. Table 1 and Table 2 summarise the discharges to air from Berkeley and Oldbury in 2023 as reported in the EA Pollution Inventory [6].

Table 1 Berkeley discharges to air in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Carbon-14	1000	1,520,000,000

Table 2 Oldbury discharges to air in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Carbon-14	1000	1800

3.1.2.2 Bradwell

The Bradwell site is permitted to discharge gaseous emissions via stacks. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv. NO_x is no longer being emitted from fuel element debris treatment.

3.1.2.3 Capenhurst

The Capenhurst site is permitted to discharge gaseous emissions via stacks, the main constituent being uranium. Exposure from gaseous plume related pathways was recorded at <0.005mSv, below the statutory limit.

Table 3Table 3 summarises the discharges to air from Capenhurst in 2023 as reported in the EA Pollution Inventory [6].

Table 3 Capenhurst discharges to air in 2023

Operator Name	Parameter	Reporting Threshold (kg)	Quantity Released (kg)

Urenco	Hydrofluorocarbons (HFCs)	100	120.7
	Fluorine and inorganic fluorine compounds - as HF	1,000	Below Reporting Threshold
Urenco ChemPlants Ltd	Hydrofluorocarbons (HFCs)	100	115.8
	Carbon monoxide	100,000	Below Reporting Threshold
	Nitrogen oxides (NO and NO2) as NO2	100,000	Below Reporting Threshold
	Fluorine and inorganic fluorine compounds - as HF	1,000	Below Reporting Threshold

There is no publicly available data for the recorded discharges to air from Urenco UK Ltd, Urenco Nuclear Stewardship Limited, and URENCO ChemPlants Ltd of other alpha particulate, other beta/gamma particulate and uranium alpha as they have been deemed commercially confidential or have national security considerations [6].

3.1.2.4 Chapelcross

The Chapelcross site is permitted to discharge gaseous emissions via stacks. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

Table 4 summarises the radioactive discharges to air from Chapelcross in 2023 as reported in the SEPA Pollution Inventory [7].

Table 4 Chapelcross discharges to air in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Tritium	0	1,710,000
Other Non Alpha-emitting Radionuclides	0	1,450

3.1.2.5 Dounreay

Dounreay is permitted to discharge gaseous emissions via stacks. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

Table 5 summarises the radioactive discharges to air from Dounreay in 2023 as reported in the SEPA Pollution Inventory [7].

Table 5 Dounreay discharges to air in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Iodine-129	0	15

Krypton-85	0	2,860
Other Alpha-emitting Radionuclides	0	0.08
Other Non Alpha-emitting Radionuclides	0	0.96
Tritium	0	17,900

3.1.2.6 Dungeness A

The Dungeness site is permitted to discharge gaseous emissions via stacks. Discharges to the atmosphere have decreased significantly since power generation ceased. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

Table 6 summarises the discharges to air from Dungeness A in 2023 as reported in the EA Pollution Inventory [6].

Table 6 Dungeness A discharges to air in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Other Beta/Gamma Particulate	1	6,220,000

3.1.2.7 Harwell

The Harwell site is permitted to discharge emissions via stacks. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv. Table 7 summarises the discharges to air from Harwell in 2023 as reported in the EA Pollution Inventory [6]. Non-radioactive discharges to air are predominantly heating-related and include carbon dioxide at levels below those requiring permits.

Table 7 Harwell discharges to air in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released MBq)
Tritium	100,000	130,000
Radon 222	1000	250,000

3.1.2.8 Hinkley Point A

Gaseous waste is discharged via separate stacks from Hinkley Point A and B to the local environment. Discharges of radioactivity to the atmosphere have decreased significantly since power generation ceased. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

3.1.2.9 Hunterston A

Hunterston A is in the decommissioning phase and permitted gaseous emissions from the site are low. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

Table 8 summarises the radioactive discharges to air from Hunterston A in 2023 as reported in the SEPA Pollution Inventory [7].

Table 8 Hunterston A discharges to air in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Carbon-14	0	57.69
Group of Two or More Specified Radionuclides	0	0.239
Tritium	0	377.04

3.1.2.10 LLWR

Releases of gaseous waste from the LLWR site are negligible and so monitoring primarily focuses on migration of radionuclides through groundwater. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

3.1.2.11 Sellafield

Permitted discharges to atmosphere are made from a wide range of facilities at the site including fuel storage ponds, reprocessing plants and waste treatment plants, as well as from Calder Hall Power Station. Gaseous discharges for gross alpha and beta activities, and eight specified radionuclides are permitted from the site. Discharges of gaseous wastes were significantly less than permitted limits in 2023.

Table 9 summarises the non-radioactive and radioactive discharges to air from Sellafield in 2023 as reported in the EA Pollution Inventory [6].

Table 9 Sellafield discharges to air in 2023

Parameter	Reporting Threshold (kg)	Quantity Released (kg)
Non-radiological discharges		
Hydrochlorofluorocarbons (HCFCs)	1	9
Hydrofluorocarbons (HFCs)	100	313
Non-methane volatile organic compounds (NMVOCs)	10,000	22,300
Carbon dioxide	10,000,000	125,000,000

Parameter	Reporting Threshold (kg)	Quantity Released (kg)
Ammonia	1,000	Below Reporting Threshold
Particulate matter - PM10	1,000	Below Reporting Threshold
Particulate matter - PM2.5	1,000	Below Reporting Threshold
Particulate matter - total	10,000	Below Reporting Threshold
Sulphur oxides (SO2 and SO3) as SO2	100,000	Below Reporting Threshold
Carbon monoxide	100,000	Below Reporting Threshold
Nitrous oxide	10,000	Below Reporting Threshold
Methane	10,000	Below Reporting Threshold
Nitrogen oxides (NO and NO2) as NO2	100,000	Below Reporting Threshold
Sulphur hexafluoride	10	Below Reporting Threshold
Benzene	1,000	Below Reporting Threshold
Arsenic	1	Below Reporting Threshold
Cadmium	1	Below Reporting Threshold
Chromium	10	Below Reporting Threshold
Lead	100	Below Reporting Threshold
Mercury	1	Below Reporting Threshold
Nickel	10	Below Reporting Threshold
Selenium	100	Below Reporting Threshold
Chlorine and inorganic chlorine compounds - as HCl	10,000	Below Reporting Threshold
Chloroform (Trichloromethane)	100	Below Reporting Threshold

Parameter	Reporting Threshold (kg)	Quantity Released (kg)
Radiological discharges	**Annual Reporting Threshold (MBq)**	**Quantity Released (MBq)**
Tritium	100	130,000
Other Alpha Particulate	1	36
Other Beta/Gamma Particulate	1	490
Carbon-14	1000	60,000
Iodine 129	1	1,300
Americium 241	1	9.7
Krypton 85	1,000,000	7,300,000
Plutonium Alpha	1	7.3

There is no publicly available data for the recorded air releases of ruthenium-106, sulphur-35, caesium-137, uranium alpha, strontium-90, argon-41, technetium-99m and, xenon-133 records as they have been deemed commercially confidential or have national security considerations [6].

3.1.2.1 Sizewell A

Gaseous wastes are discharged via separate stacks from Sizewell A and B to the local environment. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

3.1.2.2 Springfields

Uranium is the main radioactive constituent of gaseous discharges from the Springfields site, with small amounts of other radionuclides present in discharges. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

Table 10 summarises the discharges to air from Springfields in 2023 as reported in the EA Pollution Inventory [6].

Table 10 Springfields discharges to air in 2023

Parameter	Reporting Threshold (kg)	Quantity Released (kg)
Carbon dioxide	10,000,000	35,219,000
Ammonia	1,000	Below Reporting Threshold
Asbestos	1	Below Reporting Threshold
Sulphur oxides (SO2 and SO3) as SO2	100,000	Below Reporting Threshold
Carbon monoxide	100,000	Below Reporting Threshold
Nitrogen oxides (NO and NO2) as NO2	100,000	Below Reporting Threshold

Parameter	Reporting Threshold (kg)	Quantity Released (kg)
Fluorine and inorganic fluorine compounds - as HF	1,000	Below Reporting Threshold
Dichloromethane (DCM) (Methylene chloride)	1,000	Below Reporting Threshold
Hydrofluorocarbons (HFCs)	100	Below Reporting Threshold

There is no publicly available data for the recorded air releases of tritium, carbon-14, other beta/gamma particulate, americium-241, plutonium alpha, plutonium-241, and krypton-85 as they have been deemed commercially confidential or have national security considerations [6].

3.1.2.3 Trawsfynydd

Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

3.1.2.4 Winfrith

Gaseous radioactive waste from the Winfrith site is discharged via various stacks to the local environment. The discharges in 2023 were very low and consistent with previous years. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

3.1.2.5 Wylfa

The RIFE 29 report [5] states that gaseous discharges from Wylfa in 2023 were consistent with those in 2022. Exposure from gaseous plume related pathways was recorded within the legal limit at <0.005mSv.

3.2 Biodiversity

3.2.1 United Kingdom

The UK Biodiversity Indicators [9] are made up of 55 individual measures that make up 29 indicators, of which 46 were assessed in 2024. Some examples of these indicators include habitat connectivity, plant genetic resources and pressures from invasive species. These indicators highlight the improvement or deterioration in both the short and long term and assign an overall percentage status for each across the UK. The short and long-term ranges vary depending upon the measure; however, the long term typically reflects previous decades while the short term reflects recent years.

The 2024 results demonstrated short-term improvement in 25% of indicators, little or no change in 31% of indicators and deterioration in 22%. Long term trends indicate improvement in 40%, little or no change in 7% and deterioration in 36% of indicators. It is noted that these indicators do not sum to 100% as there was insufficient data for some.

3.2.2 Devolved Administrations

3.2.2.1 England

The England Biodiversity Indicators [10] provide a baseline on short and long-term changes. There are 34 individual measures that make up 20 indicators and provide an overview on improvement or deterioration for each.

The 2024 results demonstrate short-term improvement in 21%, little or no change in 29% and deterioration in 38%. Long-term trends indicate 35%, little or no change in 18% and deterioration in 32%. It should be noted that these indicators do not sum to 100% as there was insufficient data for some indicators.

The conservation status of our native species indicator shows 12.04% of the 8,259 Red List Index taxa for England were threatened with extinction in 2022.

3.2.2.2 Scotland

The State of Nature Scotland [11] measures changes in species abundance, using 407 terrestrial and freshwater indicator species to determine trends The average decline in species abundance is approximately 15% between 1994 and 2021.

Approximately 11% of the 7,508 Scottish species recorded are threatened with extinction when assessed using the International Union for the Conservation of Nature (IUCN) Regional Red List criteria.

3.2.2.3 Wales

The Second Sate of Natural Resources Report Assessment of Biodiversity covers biodiversity data in Wales [12]. Wales is continuing to undergo biodiversity loss with 8% of the 6,500 species in Wales being threatened with extinction from Great Britain when assessed using the IUCN Regional Red List [12]. The average fall in biodiversity within Wales is approximately 10% since 1970 and is 6% lower than 2005.

3.2.3 Site-specific

Biodiversity is protected in the UK within statutory and non-statutory designated sites. These are areas of land or water of natural heritage and include National Landscapes (formerly known as Areas of Outstanding Natural Beauty [AONB]), Local Nature Reserves

(LNR), Marine Conservation Areas (MCZ), National Nature Reserves (NNRs), National Parks, Ramsar sites, Special Areas of Conservation (SAC), Special Protection Areas (SPAs), and Sites of Special Scientific Interest (SSSIs). For the purposes of the assessment, statutory designated sites have been identified within 5 km of the sites using data viewed through the Magic Map application [13] (for England and Scotland), and on the DataMapWales website [14] (for Wales).

3.2.3.1 Berkeley

There are four designated sites within 5 km of the Berkeley site. These are the River Severn Estuary SSSI, SPA, and SAC and the Lydney Cliff SSSI. These designations recognise the fact that the River Severn is an internationally important habitat for migratory fish and wintering birds, with the inter-tidal mudflats being of key importance to the migration of several internationally protected bird species.

Berkeley is approximately 6 km from the Cotswolds National Landscape, an important site for biodiversity because of its limestone grasslands [15].

3.2.3.2 Bradwell

There are ten designated sites within 5 km of the Bradwell site. These are the Blackwater, Crouch, Roach and Colne Estuaries MCZ, Blackwater Estuary Ramsar, SSSI, SPA, and NNR, the Sandbeach Meadows SSSI, the Dengie Ramsar, SSSI, and the Essex Estuaries SAC. These recognise the importance of the area for its estuarine habitats and the variety of wintering and breeding birds found locally.

3.2.3.3 Capenhurst

There are four designated sites within 5 km of the Capenhurst site. These designations are the River Mersey SSSI, Ramsar and SAC and the Hallwood Farm Marl Pit SSSI.

3.2.3.4 Chapelcross

There are eight designated sites within 5 km of the Chapelcross site. These are the Upper Solway Flats and Marshes SSSI, SPA and Ramsar, the Solway Firth SAC and SPA, the Raeburn Flow SSSI and SAC and the Royal Ordnance Powfoot SSSI.

3.2.3.5 Dounreay

There are six designated sites within 5 km of the Dounreay site. These include the Sandside Bay SSSI located within NDA-owned land, the East Halladale SSSI, Caithness and Sutherland Peatlands SPA and SAC, the North Caithness Cliff SPA.

The Flow Country UNESCO World Heritage Site, which lies 4 km to the southwest of Dounreay, was designated in August 2024 and is considered the most outstanding example of an actively accumulating blanket bog landscape in the world [16]. It is a peatland ecosystem and supports a diverse number of habitats and bird species.

3.2.3.6 Dungeness A

There are five designated sites within 5 km of the Dungeness A site. These are the Dungeness, Romney Marsh and Rye Bay SSSI and SPA, Dungeness SAC, Dungeness NNR and Dungeness to Pett Level SPA.

3.2.3.7 Harwell

Harwell is located within the North Wessex Downs National Landscape, recognised for its chalk grassland flora and fauna [17]. There are seven SACs and 66 SSSIs within this National Landscape, although none within 5 km of the Harwell site. There is one designated site outside of the National Landscape within 5km of the site, the Mowbray Fields LNR.

3.2.3.8 Hinkley Point A

There are five designated sites within 5km of the Hinkley Point A site. These are the Sommerset Wetlands NNR, the Severn Estuary Ramsar, SAC and SPA site, the Blue Anchor to Lilstock Coast SSSI, and the Bridgewater Bay SSSI.

The Quantock Hills National Landscape is situated within 7 km to the southwest of the site. There are three key habitats for biodiversity in this designated area, woodland, heathland and grassland [18].

3.2.3.9 Hunterston A

There are four designated sites within 5 km of the Hunterston A site. These are the Southannan Sands SSSI, Portencross Woods SSSI, Kames Bay SSSI, and Ballochmartin Bay

3.2.3.10 LLWR

There are six designated sites within 5 km of the LLWR site. These are the Drigg Dunes and Gullery Ravenglass LNR, Hallsenna Moor NNR and SSSI, Drigg Holme SSSI, Drigg Coast SSSI and SAC. In addition to these the Cumbria Coast MCZ encompasses the coast along the western boundary of the site.

3.2.3.11Oldbury

There are four designated sites within 5 km of the Oldbury site. These are the Severn Estuary SSSI, SAC, SPA, and Ramsar. These designations recognise the fact that the Severn is an important habitat for migratory fish and birds, with the inter-tidal mudflats being of key importance to the migration of several internationally-protected bird species.

3.2.3.12 Sellafield

There are seven designated sites within 5 km of the Sellafield site. These are the Hallsenna Moor NNR and SSSI, Silver Tarn, Hollas and Harnsey Mosses SSSI, Low Church Moss SSSI, Haile Great Wood SSSI, and the Drigg Coast SSSI and SAC. In addition to these the Cumbria Coast MCZ encompasses the coast along the western boundary of the site.

3.2.3.13 Sizewell A

Sizewell A is located within the Suffolk & Essex Coast & Heaths National Landscape. This landscape encompasses a wide variety of habitats and is home to several priority species [19].

In addition to this, there are five designated sites within 5 km of the site. These are the Minsmere-Walberswick Heaths and Marshes SSSI & SAC, Sizewell Marshes SSSI, Leiston-Aldeburgh SSSI, and the Minsmere-Walberswick Ramsar.

3.2.3.14 Springfields

There are six designated sites within 5 km of the Springfields site. These are the Haslam Park, Preston LNR, Fishwick bottoms LNR, Ribble and Alt Estuaries Ramsar and SPA, Newton Marsh SSSI and the Ribble Estuary SSSI. There is also several non-statutory wildlife sites located on or in close proximity of the Springfield site. This includes the Deepdale Wood, Springfields Ponds and the Lancaster Canal to north, all these sites are Biological Heritage Sites.

3.2.3.15 Trawsfynydd

There are 21 designated sites within 5 km of the Trawsfynydd site. They are the Coedyddd Maentwrog NNR, Coed y Rhygen NNR, SSSI, Coed Camlyn NNR, Cenunant Cynfal NNR, SSSI, Ceunant Llennyrch NNR, Afon Eden – Cors, Goch Trawsfynydd SSSI, SAC, Coedydd Dyffryn Ffestiniog SSSI, Coedydd De Dyffryn Maentwrog SSSI, Llafar River Section (Trychiad Afon Llafar) SSSI, Migneint-Arenig-Dduallt SSSI, SAC and SPA, Morfa Harlech SSSI, Rhinog SSSI, SAC , Coedydd Derw a Safleoedd Ystlumod Meirion / Meirionnydd Oakwoods and Bat Sites SAC, Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SPA, and the Snowdonia National Park.

3.2.3.16 Winfrith

The Dorset National Landscape lies 700m south of the Winfrith site and is home to 83% of all British mammal species, 48% of bird species and 70% of butterfly species [20].

As part of this important landscape, there are nine designated sites within 5 km of the site. These are the Oaker Bog SSSI, Turners Puddle Heath SSSI, Stokeford Heath SSSI, Winfrith Heath SSSI, River Frome SSSI, Oakers Wood SSSI, Dorset Heaths SAC, and Dorset Heathlands SPA and Ramsar.

3.2.3.17 Wylfa

Wylfa is located adjacent to the Anglesey National Landscape (Tirwedd Cenedlaethol Ynys Môn) which covers most of Anglesey's coast and features lowland heath, sea cliffs, sand dunes, and rocky shores [21].

As part of this landscape there are nine designated sites within 5 km of the Wylfa site. These are the Anglesey Terns / Morwenoliaid Ynys Môn SPA, North Anglesey Marine / Gogledd Môn Forol SAC, Bae Cemlyn / Cemlyn Bay SAC, Tre'r Gof SSSI, Llyn Llygeirian SSSI, Llanbadrig - Dinas Gynfor SSSI, Henborth SSSI, Cemlyn Bay SSSI and Cae Gwyn SSSI.

3.3 Climate change

3.3.1 UK

In 2022, net territorial greenhouse gas emissions in the UK decreased by 3.5% compared to 2021, and 9.3% compared to 2019 and were 50% lower than in 1990 [22]. This was largely due to a reduction in fuel use to heat buildings. The biggest percentage contribution was carbon dioxide at 80% of the total emissions.

3.3.2 Devolved Administrations

The devolved administrations greenhouse gas emissions for 2022 are as shown in Table 11, as reported in the 2022 UK Greenhouse Gas Emissions report [23]. Wales has the highest emissions per capita of tonnes (t) carbon dioxide equivalent (CO_{2e}) on average followed by Scotland and then England.

Table 11 Emissions per capita (average) for England, Scotland and Wales

Location	t CO_{2e} per capita (average)
England	5.3
Scotland	7.1
Wales	8.6

3.3.3 Site-specific

CO_{2e} data for 2023/2024 for the NDA Group has been provided by the NDA [24]. This is summarised in Table 12 below, with CO_{2e} data provided for 2019/2020 as this was the first year emissions were recorded by the NDA. The reduction shows the % reduction from 2019/2020 to 2023/2024. A minus reduction indicates an increase in CO_{2e} emissions.

Table 12 CO_{2e} emissions for NDA Operating Companies

Site	Scope 1		Scope 2		Scope 1+2		Reduction
	2019/2020	2023/2024	2019/2020	2023/2024	2019/2020	2023/2024	2023/2024
NRS Dounreay	8,387	7,585	6,656	5,114	15,043	12,699	15.6%
NWS	17	74	513	340	530	414	21.8%
Sellafield	260,318	141,532	19,992	26,208	280,310	167,740	40.2%
NDA Archive	17	29	972	17	989	46	95.3%
NDA	39	5	207	117	246	122	50.4%
Energus	113	113	129	103	241	215	10.7%
Nuclear Transport Solutions (NTS)	29,966	33,767	5,911	2,829	35,877	36,596	-2.0%
NRS Magnox	2,131	1,514	13,050	9,520	15,181	11,034	27.3%
Total	**300,986**	**184,619**	**47,430**	**44,248**	**348,417**	**228,866**	**34.3%**

3.4 Coastal change and flood risk

Data on flood risk at each of the sites has been collected from GOV.UK website [25] (England), SEPA Flood Maps [26] (Scotland) and Cyoeth Naturiol Cymru website [27].

As explained on GOV.UK [28], Flood zone 1 refers to locations with a low probability of flooding with less than 0.1% chance of flooding from rivers or sea any year. Flood zone 2 has a medium probability of flooding between 1% and 0.1% chance of flooding from rivers and between a 0.5% and 0.1% chance of flooding from the sea any year. Flood zone 3 has a high probability of flooding, meaning 1% or more chance of flooding from rivers and 0.5% chance or more of flooding from the sea any year.

A flood risk of very low is <0.1% chance each year, low is between 0.1% and 1%, medium is between 1% and 3.3% and high is greater than 3.3% chance each year for the sites in

England and Wales [25]. In Scotland, low is 0.1% chance each year, medium is 0.5% chance each year and high is 10% chance each year [26].

Future evolution of coasts is discussed in Section 6.1.4.1.

3.4.1 Site-specific

3.4.1.1 Berkeley

The Berkeley site is situated on the bank of the River Severn and is located in a flood zone 3 area with a high probability of flooding from rivers and the sea. However, the majority of the site has a low chance of flooding from rivers and the sea. For the majority of the site the chance of flooding from surface water is very low to low and the risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.2 Bradwell

Bradwell is located on the eastern coast of England and is likely to be affected by coastal change.

The majority of the Bradwell site is situated in flood zone 1, with a low probability and very low chance of flooding. A small coastal area of the site is classed as flood zone 3, with high probability of flooding. The chance of flooding from surface water ranges from very low to high and the risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.3 Capenhurst

Capenhurst is situated in flood zone 1 with a low probability of flooding from rivers and the sea. The chance of flooding from surface waters is generally low with some areas of high at the site. The risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.4 Chapelcross

Some areas of Chapelcross are at high to medium risk of flooding from surface water. The site is not at risk from flooding from rivers and the sea.

3.4.1.5 Dounreay

Dounreay is located on the northern coast of Scotland and may be affected by coastal change.

The majority of the Dounreay site has no risk of flooding. Very small areas have a medium to high chance of flooding from surface water. There is an area of high likelihood of flooding in the vicinity of the river that flows between Dounreay and Vulcan.

3.4.1.6 Dungeness A

Dungeness A is located on the southern coast of England and is likely to be affected by coastal change.

The majority of Dungeness A is situated in flood zone 1, however there are areas within flood zone 3 on the southern boundary along the coast. The chance of flooding from surface waters is low and the risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.7 Harwell

Harwell is situated in flood zone 1 with low probability of flooding from rivers and the sea. The chance of flooding from surface waters is generally very low, with some areas of low. The risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.8 Hinkley Point A

Hinkley Point A is located on the northern coast of Somerset, on the Bristol Channel. It is possible that it could be affected by coastal change.

The majority of the site is in flood zone 1, with small areas to the east of the site situated in flood zone 3. The chance of flooding from surface waters is generally very low to low, with some areas of medium and high. The risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.9 Hunterston A

Hunterston A is located on the western coast of Scotland and is likely to be affected by coastal change.

Hunterston A has a high risk of flooding from surface waters in the central area of the site. The site has no specific risk of flooding from rivers and the sea.

3.4.1.10LLWR (Low Level Waste Repository)

The LLWR is located on the western coast of England and may be affected by coastal change.

The LLWR is situated in flood zone 1. The chance of flooding from surface waters is generally low and the risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.11 Oldbury

Oldbury is situated in a flood zone 3 area with a high probability of flooding from rivers and the sea along the River Severn and the western half of the site. The chance of flooding from surface waters is high around the buildings and very low elsewhere. The risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.12 Sellafield

Sellafield is located on the western coast of England and is likely to be affected by coastal change.

Sellafield is generally within flood zone 1. The immediate area around the River Calder running through Sellafield is within flood zone 3 and an area between the coast and the River Calder is within flood zone 2. The chance of flooding from surface waters is generally low. There is a risk of flooding from groundwater and reservoirs through the centre of the site when there is also flooding from rivers.

3.4.1.13 Sizewell A

Sizewell A is located on the eastern coast of England and is likely to be affected by coastal change.

Sizewell A is situated in flood zone 1 with the far north of the site situated in flood zone 2 and 3. The chance of flooding from surface waters is low with a few areas along roads medium to high chance. The risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.14 Springfields

Springfields is situated in flood zone 1, although the central part of the site is in flood zone 3 in the vicinity of the Deepdale Brook. The chance of flooding from surface water ranges from very low to high and the risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.15 Trawsfynydd

Trawsfynydd is not at risk from flooding from rivers or the sea. In the southwest of the site there is a 3.3% risk of flooding from surface water and small watercourses.

3.4.1.16 Winfrith

Winfrith is situated in flood zone 1 with a low probability of flooding from rivers and the sea. The chance of flooding from surface waters is generally very low and the risk of flooding from groundwater and reservoirs is unlikely.

3.4.1.17 Wylfa

Wylfa is located on the northern coast of Anglesey, in the Irish Sea, and is likely to be affected by coastal change.

Wylfa is not at risk from flooding from rivers or the sea. The chance of flooding from surface waters and small watercourses is considered low in small areas of the site.

3.5 Cultural heritage

Cultural heritage information for England, Scotland and Wales has been taken from Magic Maps [13], Historic Environment Scotland [29] and Historic Wales [30], respectively. Information on non-designated heritage assets is only available for Maldon District [31] and Vale of White Horse [32].

3.5.1 Site-specific

3.5.1.1 Berkeley

There is a Grade II listed building immediately north of the site, as well as five Grade I, nine Grade II* and over 280 Grade II Listed Buildings located within 5 km. A scheduled ancient monument at Lydney Harbour lies on the western bank of the River Severn.

3.5.1.2 Bradwell

There are ten scheduled ancient monuments within 5 km of the site, the nearest being Pewet Island Coastal Fish Weir and a Saxon Shore Fort. There are two Grade I, six Grade II* and 125 Grade II Listed Buildings and 15 non-designated local heritage assets within 5 km.

3.5.1.3 Capenhurst

There are no archaeological or historical features identified within 2 km of the site. Within 5 km of the site there are four scheduled ancient monuments and 175 listed buildings. Of these, there is one Grade I listed building, 161 Grade II listed buildings and 13 Grade III listed buildings.

3.5.1.4 Chapelcross

The western extremity of Hadrian's Wall is 8 km to the south of the site. Hadrian's Wall forms part of the transnational Frontiers of the Roman Empire World Heritage Site.

There are six listed buildings within 2 km of the site, and a further 118 in the nearby town of Annan located to the southwest of the site. There are 17 scheduled ancient monuments within 5 km.

3.5.1.5 Dounreay

There are 21 listed buildings and 15 scheduled monuments within 5 km of the site. The ruin of Dounreay Castle lies within the site boundary.

3.5.1.6 Dungeness A

There are two scheduled monuments, a World War Two listening device and an 18th century coastal battery to the north of the site. There are also two Grade II* and five Grade II listed buildings within 5 km.

3.5.1.7 Harwell

There are 17 scheduled monuments within 5 km of the site. There are 269 listed buildings within 5 km of the site. The breakdown is four Grade I, 251 Grade II & 14 Grade II*. There are two non-designated local heritage assets within 5 km of the site.

3.5.1.8 Hinkley Point A

There is one scheduled ancient monument on site, the Pixies Mound, a Bronze Age tumulus to the south of the site substation. There are three scheduled monuments and 77 listed buildings within 5 km of the site of one Grade I, 69 Grade II & seven Grade II*.

3.5.1.9 Hunterston A

There are nine scheduled ancient monuments within 5 km of the site, including Portencross Castle, which is also a listed building. Hunterston House, a listed building, is located adjacent to the site. There are a further four listed buildings within 2 km of the site.

3.5.1.10 LLWR

Cultural heritage features in the wider surrounding area include Muncaster Castle grade I listed building and scheduled monument (to the southeast), and its Grade II listed registered historic parks and gardens, and Ravenglass conservation area. Within 5 km there are a further six scheduled ancient monuments and over 50 listed buildings. These are four Grade I listed buildings, 42 Grade II listed buildings and nine Grade III listed buildings.

3.5.1.11 Oldbury

There are seven scheduled ancient monuments within 5 km of the site, including an iron age fort at Oldbury-on-Severn, in addition to 210 listed buildings.

3.5.1.12 Sellafield

There is one scheduled monument to the southeast and three Grade II listed buildings to the east and north within 500 m of the site. There are five scheduled monuments within 5 km as well as 51 listed buildings. Four of these are Gade I, 40 Grade II and seven Grade III.

3.5.1.13 Sizewell A

There are five scheduled monuments and 86 listed buildings within 5 km of the site of two Grade I, 79 Grade II & five Grade II*.

3.5.1.14 Springfields

Within 1 km of the site there are eight Grade II listed buildings, two of which are located on Lea Lane, and four of which are bridges over the river to the north of the site. Within 5 km there are over 80 additional listed buildings of one Grade I, 85 Grade II & two Grade II*.

3.5.1.15 Trawsfynydd

There are three scheduled ancient monuments near to the site. This includes the Tomen y Mur located within 1.5 km. There are 131 listed buildings within 5 km of the site and one entry in the Register of Landscapes, Parks and Gardens of Special Historic Interest. Of the

listed buildings, 102 were Grades II and four are Grade III. Additionally, there are 18 scheduled monuments within approximately 5 km of the site.

3.5.1.16 Winfrith

There are 50 scheduled monuments within 5 km of the site, mostly consisting of bowl barrows. One of these sites is adjacent to Winfrith, comprising six bowl barrows upon a ridge known as Blacknoll Hill. The town of Winfrith Newburgh, about 1.6 km south of the site, is designated as a Conservation Area within which there are 40 Grade II listed buildings and three Grade II* listed buildings. There are 247 listed buildings within 5km of the site, of two Grade I, 232 Grade II & 13 Grade II*.

3.5.1.17 Wylfa

There is one scheduled ancient monument, Standing Stones, near to the site at Llanfechell. Within 5 km of the site there are six further scheduled ancient monuments. There are 38 listed buildings within approximately 5km of the site. Of these, 32 were Grade II, five were Grade III and one was Grade I.

3.6 Geology and soils

3.6.1 Soils

The dominant agricultural land classification and soil type at NDA sites is shown in Table 13. Agricultural land classification data has been taken from Defra's Magic Map application for sites in England [13], DataMapWales for sites in Wales [14], and Scotland's Soils for Scottish sites [33]. UK Soilscapes classifications have been used for England and Wales and Soils for Scotland classification has been used for Scottish sites. Soil type has been taken from the UK Soil Observatory [34].

Several sites have an 'urban' agricultural land classification or 'unclassified' soil type. The surrounding land's classification or type is provided in brackets for information.

Table 13 Agricultural land classification and soil type at NDA sites

Site	Agricultural Land Classification	Soil Type
Berkeley	Grade 3	Slightly acid loamy and clayey soils with impeded drainage
Bradwell	Grade 3	Loamy soils with naturally high groundwater
Capenhurst	Grade 3	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
Chapelcross	Grade 4.1	Noncalcareous gleys
Dounreay	Grade 3.2	Noncalcareous gleys
Dungeness A	Non Agricultural	Sand dune soils
Harwell	Urban (Grade 2/3)	Freely draining lime-rich loamy soils

Site	Agricultural Land Classification	Soil Type
Hinkley Point A	Grade 3	Lime-rich loamy and clayey soils with impeded drainage
Hunterston A	Grade 3.1	Brown earth
LLWR	Non Agricultural	Freely draining slightly acid loamy soils
Oldbury	Urban (Grade 3)	Loamy and clayey soils of coastal flats with naturally high groundwater
Sellafield	Urban (Grade 3)	Freely draining slightly acid loamy soils
Sizewell A	Non Agricultural	Freely draining slightly acid sandy soils
Springfields	Grade 3	Unclassified (Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils)
Trawsfynydd	Urban (Non Agricultural)	Slowly permeable seasonally wet acid loamy and clayey soils
Winfrith	Grade 3	Freely draining very acid sandy and loamy soils and naturally wet very acid sandy and loamy soils
Wylfa	Urban (Grade 3b)	Freely draining slightly acid loamy soils

3.6.2 Geology

Table 14 displays the bedrock and superficial geology at NDA sites. Data is sourced from the British Geological Survey Geology Viewer [35].

Table 14 Geology at NDA sites

Site	Bedrock	Superficial
Berkeley	Mercia Mudstone Group	Intertidal deposits
Bradwell	Thames Group	Intertidal deposits
Capenhurst	Sherwood Sandstone Group	Till and mass movement deposits
Chapelcross	Sherwood Sandstone Group	Till
Dounreay	Caithness Flagstone Group	Till
Dungeness A	The Wealden Group	Supratidal deposits
Harwell	Grey Chalk Subgroup	Mass movement deposits
Hinkley Point A	Lilstock Formation	Intertidal deposits
Hunterston A	Stratheden Group	Raised marine and glaciofluvial deposits
LLWR	Sherwood Sandstone Group	Till
Oldbury	Mercia Mudstone Group	Intertidal deposits
Sellafield	Sherwood Sandstone Group	Fluvial and glaciofluvial deposits and till
Sizewell A	Crag Group	Intertidal deposits
Springfields	Sherwood Sandstone Group	Till
Trawsfynydd	Harlech Grits Group	Till
Winfrith	Bracklesham Group	Fluvial and mass movement deposits
Wylfa	Holy Island Group	Till

3.6.3 Geological Designations

Geological designations within 5 km of NDA sites are shown in Table 15. Data has been taken from DEFRA's Magic Map application [13].

Table 15 Geological designations at NDA sites

Site	Designation	Reason for designation
Berkeley	Lydney Cliff SSSI	Marine Devonian and Silurian - Devonian Chordata features
Bradwell	Dengie SSSI	Saltmarsh Geomorphology
Chapelcross	Upper Solway Flats and Marshes SSSI	Coastal geomorphology
Dounreay	Red Point Coast SSSI	Quaternary geology and geomorphology
Dungeness A	Dungeness, Romney Marsh and Rye Bay SSSI	Coastal geomorphology
Hinkley Point A	Blue Anchor to Lilstock Coast SSSI	Coastal geomorphology
Winfrith	Oakers Bog SSSI	Quaternary of South-Central England geology and geomorphology
Wylfa	Llanbadrig - Dinas Gynfor SSSI	Stratigraphic features
	Henborth SSSI	Geological and geomorphological features

3.6.4 Remediation

The current status of land remediation at NDA sites is shown in Table 16. Data has been provided by the NDA as part of their mission progress reporting.

Table 16 Land remediation at NDA sites (in ha)

Site	Total Land	Awaiting and In Process of Remediation	In Site End State	Land suitable for reuse
Capenhurst	30.45	13.55	0	16.90
Dounreay	59.68	41.33	18.35	0
LLWR	100	100	0	0
NRS Sites	483.34	69.51	337.68	76.15
Sellafield	275.66	0	0	275.66
Springfields	81.31	0	0	81.31

3.7 Landscape and visual impacts

3.7.1 Site-specific

Data presented on Magic Maps [13] has been used to inform the landscape and visual impacts baseline for England, Scotland and Wales.

3.7.1.1 Berkeley

The landscape immediately surrounding the site is on the floodplain of the River Severn. The land is flat and open and consists of arable fields and wet alluvial pastures. Due to the industrial nature of this site, which includes the reactor and ancillary buildings, it is a prominent feature of the landscape and is highly visible from many locations in the surrounding area. The site is approximately 6 km from the Cotswolds National Landscape.

3.7.1.2 Bradwell

The immediate surrounding landscape is the Dengie Peninsula, characterised by openness and expansive views. A large proportion of the land adjoining the River Blackwater estuary lies 5 m below sea level. The opposite bank of the estuary is similar topographically. Weather envelopes cover the reactor buildings, which are the most visually dominant structures at Bradwell and in the surrounding area. Other remaining buildings have similar weather envelopes, all designed to be sympathetic to the surrounding environment.

3.7.1.3 Capenhurst

To the south and west of the site lies predominantly mixed agricultural land, with areas of improved pasture, arable farming and market gardens interspersed with residential development. Due to the low heights of facilities at this site, it is not as visually obtrusive as other sites in the NDA estate.

3.7.1.4 Chapelcross

The area surrounding the site is rural in nature and used primarily for agriculture and recreation. Chapelcross is located at approximately 70 to 80 metres (m) Above Ordnance Datum (AOD), at the head of a small valley. Due to the industrial nature of the site, it is a prominent feature of the landscape and is highly visible from many surrounding locations.

Public consultation is taking until February 2025 place for a proposed new national park in the Dumfries and Galloway area of Scotland, with the potential boundaries approximately 64km to the west of the Chapelcross site.

3.7.1.5 Dounreay

The Dounreay site divides a strip of 'Open, Intensive Farmland' along the northern Scottish coast. The landscape surrounding the site is largely flat and open, with rolling hills to the

south and west. The Flow Country blanket bog system stretches across Caithness and Sutherland, its north eastern boundary is approximately 5km south west of the site. Due to the industrial nature of this site, including the reactor and ancillary buildings, it is a prominent feature of the landscape and is highly visible from many nearby locations.

3.7.1.6 Dungeness A

The landscape immediately surrounding the site is low-lying shingle foreland, part of the Dungeness Peninsula that extends 10 km into the English Channel. Romney Marsh, a Local Nature Reserve and SSSI, is situated to the north. Due to the industrial nature of this site, including the reactor and ancillary buildings, it is a prominent feature of the landscape and is highly visible from many nearby locations. The site is adjacent to Dungeness 'B' nuclear power station which creates a greater combined impact on the local landscape.

3.7.1.7 Harwell

The Harwell site occupies 96 ha of rural Chalk down land in Oxfordshire and is located within the North Wessex National Landscape. The site is surrounded by agricultural land and the nearest watercourse to the site is the Lydebank Brook, located to the north. As many of the buildings on the site are low in height, visual impacts of the site upon the surrounding landscape are minimal.

3.7.1.8 Hinkley Point A

The site is located on the north Somerset coast, facing Bridgwater Bay in the Bristol Channel. The main features in the immediate surrounding area are marshlands to the south and east, a double ridge and valley structure running along the coast to a shallow sea cliff, and the extensive mudflats and rocky outcrops of Bridgwater Bay. The Quantock Hills National Landscape is situated within 7 km to the southwest of the site. Combined with the Hinkley Point B site and Hinkley Point C construction site, the site is a prominent feature in the local landscape.

3.7.1.9 Hunterston A

The landscape surrounding the site is part of the Ayrshire coast. This is characterised by raised beaches and long cliffs set back from the present-day coastline. The islands of Great Cumbrae and Little Cumbrae to the east are visible from the shoreline, and the site is visible from multiple locations in the area to the north and south, and also further west from the Isle of Bute. The site is adjacent to the Hunterston B nuclear power station which adds to the visual impact of the site on the landscape.

3.7.1.10 LLWR

The landscape to the south and west of the site is part of the West Cumbria Coastal Plain, identified as an area of varied open coastline with mudflats, shingle and pebble beaches with localised sections of dunes and sandy beaches. To the north and east of the site is predominantly mixed agricultural land, with areas of improved pasture, arable farming and market gardens interspersed with residential development. Due to the low heights of all facilities at the LLWR, the visual impact of the site on the landscape is minimal.

3.7.1.11 Oldbury

The landscape immediately surrounding the site lies on the floodplain of the River Severn and is characterised as a semi-open and flat estuarine flood plain environment. Higher ground is found to the east (Severn Ridges Character Area) and to the west on the opposite bank of the River Severn. The site is a prominent feature in the local landscape and is highly visible from many locations including nearby villages and from the Severn Bridge.

3.7.1.12 Sellafield

The landscape surrounding the site is the West Cumbria Coastal Plain is identified as an area of varied open coastline with mudflats, shingle and pebble beaches with localised sections of dunes, sandy beaches and sandstone cliffs. The Sellafield site is approximately 1 km from the Lake District National Park. Due to the industrial nature of this site, its footprint and the range of facilities on-site it is a prominent feature of the landscape and is highly visible from many surrounding locations

3.7.1.13 Sizewell A

The site is located on the coastal plain of the Suffolk North Sea coast, on a low plateau several metres above sea level. The surrounding landscape is open and very gently undulating, with several small estuaries interspersed along with coastal plain. Sizewell A and B are screened from all but the closest inland viewpoints in most directions by the landscape and existing trees and hedgerows. The Suffolk & Essex Coast & Heaths National Landscape, in which Sizewell A is located, is a landscape designation of national importance.

3.7.1.14 Springfields

The area surrounding the site is predominantly mixed agricultural land, with areas of improved pasture and arable farming interspersed with residential development. Due to the low heights of buildings across the site, impacts on view of the landscape from the surrounding area are minimal.

3.7.1.15 Trawsfynydd

The landscape immediately surrounding the site is within the Snowdonia National Park, is largely rural and mountainous, and described as a high sensitivity landscape [36]. Due to the landscape sensitivity, the height of the reactor buildings is set to be reduced prior to the care & maintenance (C&M) phase. Due to the industrial nature of the site, it is a prominent feature of the landscape and is highly visible from many surrounding locations.

3.7.1.16 Winfrith

The Winfrith site falls within the Dorset Heaths landscape character area, described as a generally exposed, open, broad scale landscape comprising undulating lowland heath with tracts of heather, stunted pines and gorse scrub. The chalk ridges and downs south of the site are within the designated Dorset National Landscape. The low height of many of the facilities at the site and the presence of vegetation that screens some of the taller buildings makes the visual impact of the site on the landscape minimal.

3.7.1.17 Wylfa

The landscape surrounding the site forms the north coastline of the Isle of Anglesey and is characterised as generally undulating or flat and semi-open with areas of woodland and small flat agricultural fields. The shoreline to the east and west of the site is comprised of rocky outcrops forming small cliffs up to 15 m above sea level. Much of the coastline is included in the Isle of Anglesey National Landscape.

3.8 Noise and vibration

There is no baseline information available for this topic, but it has been included as a topic in the assessment.

3.9 Materials and waste

3.9.1 Non-radiological waste

Data for non-radioactive/controlled waste has been provided by NDA from 2024, as part of their mission progress reporting. Table 17 displays non-radiological waste arisings for each division of the NDA between April 2023 and March 2024, broken down by waste route.

Table 17 Non-radiological waste by NDA division April 2023 - March 2024

Waste Producer	Waste Arisings (te)				
	Total Waste Weight	Recycled	Reused	Incinerated	Disposed
Sellafield Ltd	28,995	N/A	28,203	N/A	792
Nuclear Restoration Services Ltd	19,323	16,634	102	5.86	1,021
Nuclear Restoration Services Dounreay Ltd	2,720	0.90	1,998	0.59	335
Nuclear Waste Services	1,081	865	28.30	0.52	N/A

3.9.2 Site-specific

Data on waste in England, Scotland and Wales has been collected from UK Radioactive Waste Inventory [37], the NDA's Business Plan 2023 to 2026 [38] and 2022 UK Radioactive Waste Detailed Data [39].

3.9.2.1 Berkeley

A combination of radioactive and conventional waste is produced at the site. The LLW is packaged and sent to the LLWR for disposal. Intermediate Level Waste (ILW) is and has been generated from both operational and decommissioning activities and has accumulated over time at several locations on the site. Volume reduction of non-

radioactive and Very Low Level Waste (VLLW) can be achieved through incineration at licensed commercial incinerators. Disposal of this waste is also possible at licensed commercial landfill sites.

The values in Table 18 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 18 Berkeley volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	3,870
LLW	5
VLLW	0

3.9.2.2 Bradwell

Although the site has entered C&M, some residual wastes will be processed. There is an ILW store on site that will be accepting waste from Sizewell A and Dungeness sites, avoiding construction of stores at those sites.

The values in Table 19 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 19 Bradwell volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	661
LLW	205
VLLW	0

3.9.2.3 Capenhurst

A combination of radioactive and conventional waste is produced at the site. Capenhurst also receives and safely stores Magnox Depleted Uranium from Sellafield. It is the UK's primary safe and secure storage facility for depleted uranium and uranium hexafluoride (UF_6). A new Tails Management Facility (TMF) is being commissioned at Capenhurst that will de-convert UF_6 into triuranium octoxide (U_{308}) for safer long-term storage.

The values in Table 20 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 20 Capenhurst volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	1,090
LLW	90
VLLW	0

3.9.2.4 Chapelcross

LLW is generated at the site from a range of routine operational and decommissioning activities and is transferred to a waste permitted person for further treatment or disposal. ILW has accumulated at several locations at the site, the majority of which will be retrieved when an ILW store becomes available. Non-radioactive hazardous wastes and asbestos are also generated and are disposed of in accordance with relevant regulations.

The values in Table 21 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 21 Chapelcross volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	1,090
LLW	90
VLLW	0

3.9.2.5 Dounreay

A combination of radioactive and conventional waste has and continues to be produced at the site. The LLW is currently stored on-site, however this is planned to be retrieved and moved to a new off-site facility. ILW is also stored on-site and will continue indefinitely until other facilities become available.

The values in Table 22 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 22 Dounreay volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	6,090
LLW	16,400
VLLW	0

3.9.2.6 Dungeness A

A combination of radioactive and conventional waste is produced at the site. LLW is packaged and sent to the LLWR for disposal or diverted to other routes such as VLLW disposal facilities. Some waste may be sent to other treatment and disposal sites for melt and incineration. ILW is and has been generated from both operational and decommissioning activities and is stored on-site in numerous locations.

The values in Table 23 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 23 Dungeness A volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	516
LLW	440
VLLW	0

3.9.2.7 Harwell

The site produces LLW and inert waste, both of which are likely to increase during decommissioning. Legacy ILW may be interim stored on-site until such a time that a national repository is available for permanent off-site disposal, although transfer of

waste to suitable off-site locations may occur before then. Large volumes of LLW will be disposed of to a licensed landfill. Decommissioning at Harwell is well underway; two of the reactors have been completely removed, and the fuel has been removed from the remaining three which are now in decommissioning [40].

The values in Table 24 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 24 Harwell volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	1,280
LLW	864
VLLW	539

3.9.2.8 Hinkley Point A

A combination of radioactive and conventional waste is produced at the site. LLW is packaged and sent to the LLWR for disposal or via alternative routes where possible. ILW is and has been generated from both operational and decommissioning activities and will be stored in purpose-built stores on site or at the Bradwell site.

The values in Table 25 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 25 Hinkley Point A volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	2,750
LLW	45
VLLW	261

3.9.2.9 Hunterston A

A combination of radioactive and conventional waste is produced at the site. The LLW is packaged and sent to the LLWR for disposal. ILW is and has been generated from both operational and decommissioning activities, and this will be retrieved during C&M (with the exception of some miscellaneous activated components that will be retrieved during final site clearance). There are also several waste streams that are unique to the site, including graphite fuel element debris currently stored in the Solid Active Waste Building.

The values in Table 26 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 26 Hunterston A volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	4,640
LLW	71
VLLW	0

3.9.2.10 LLWR

There is currently a substantial amount of LLW disposal capacity at the site. Waste accepted at the site covers a broad spectrum of activity levels and materials including concrete, rubble, soils, plastics, ferrous and nonferrous metals, and cellulosic materials. The project to dispose of LLWR drums from the Treated Radwaste Store at Winfrith is complete and capping operations to seal the site are ongoing. Operations at LLWR are expected to continue up until 2135.

The values in Table 27 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 27 LLWR volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	214
LLW	139
VLLW	56

3.9.2.11Oldbury

A combination of radioactive and conventional waste is produced at the site, including hazardous non-radioactive waste and asbestos. LLW is packaged and sent to LLWR for disposal or diverted where possible, for example via metal recycling. ILW is generated from both operational and decommissioning activities, and it is stored on site or at the Berkeley site.

The values in Table 28 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 28 Oldbury volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0

ILW	935
LLW	292
VLLW	0

3.9.2.12 Sellafield

All of the UK's high level waste (HLW) is stored at Sellafield as a result of historic reprocessing of nuclear fuel at the site. Approximately 74% of the estimated total radioactive waste inventory, by volume, comes from Sellafield. Much of this inventory will be retrieved and interim stored until an off-site repository is established or until LLW is disposed of at the LLWR.

Vitrified HLW from reprocessing overseas spent fuel will continue to be repatriated to the country of origin; the programme is expected to be completed by in 2026.

The site will continue to focus on high hazard reduction and environmental remediation, including waste retrieval and treatment, POCO and the decommissioning of redundant facilities. Sellafield is exploring options for optimising these processes therefore the current waste volume estimates will be subject to future revision as plans are developed.

The main group of legacy plants at Sellafield, known as Legacy Ponds & Silos (LP&S), represent the highest hazard and the highest decommissioning priority across the NDA estate. They comprise:

- Pile Fuel Storage Pond – an open-air pond used for underwater storage of a range of early reactor development fuels.
- First Generation Magnox Storage Pond – an open-air pond used to store Magnox fuel before reprocessing.
- Magnox Swarf Storage Silo – a series of covered compartments used mainly to store Magnox fuel cladding removed from the spent fuel rods before reprocessing.
- Pile Fuel Cladding Silo – covered compartments used to store Pile reactor fuel cladding removed from the spent fuel before reprocessing.)

The values in Table 29 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 29 Sellafield volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	1,460
ILW	132,000
LLW	908
VLLW	0

3.9.2.13 Sizewell A

LLW is packaged and sent to the LLWR or disposed via alternative routes where possible. ILW is generated from both operational and decommissioning activities and has accumulated over time at several locations on the site. ILW will either be treated to enable disposal as LLW or packaged for interim storage at Bradwell or Hinkley Point A sites. Some hazardous non-radioactive waste and asbestos will also arise during decommissioning.

The values in Table 30 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 30 Sizewell A volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	770
LLW	659
VLLW	0

3.9.2.14 Springfields

The bulk of UK uranium is stored on the Springfields and Capenhurst sites as a nil value asset. The Magnox and Residue Recovery plant has moved into the POCO phase. Decommissioning of the Hex Plant and Oxide Fuels Complex has a provisional date of 2045. Final site clean-up and remediation has a provisional date of 2100.

The values in Table 31 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 31 Springfields volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	0
LLW	1,220
VLLW	0

3.9.2.15 Trawsfynydd

Trawsfynydd has been defueled and in 2020 the NDA identified it to be the lead and learn site for its accelerated decommissioning programme. All land is expected to be in end state by the 2050s. Continuation and completion of activities to retrieve, treat and store ILW is occurring from 2025. Activities from 2025-2027 will include reactor building height

reduction, deplanting, decommissioning and demolition of the pond's complex facility, and progress preparations for reactor dismantling.

The values in Table 32 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 32 Trawsfynydd volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	7,420
LLW	197
VLLW	0

3.9.2.16 Winfrith

A combination of LLW and inert waste is generated at the site. Crushed concrete from decommissioning is temporarily stored on site and used to fill voids, whilst reusable soil from site remediation is used for landscaping. Decommissioning activities on the site will generate large volumes of waste, including LLW and ILW.

The values in Table 33 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 33 Winfrith volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	61
LLW	2,080
VLLW	0

3.9.2.17 Wylfa

Wylfa has been defueled and the retrieval, treatment and storage of ILW is to be completed by 2027.

The values in Table 34 represent the packaged volume, the total volume taken of the waste including the immobilising medium and the waste container.

Table 34 Wylfa volume of waste by category

Waste Category	Reported April 2022 (m^3)
HLW	0
ILW	1,060
LLW	332

VLLW	0

3.10 Radiological emissions and discharges

Information on radiological emissions has been combined into other sections of this report. Radioactive emissions related to gaseous discharge are presented in Section 3.1 (Air Quality) and liquid discharge are presented in Section 3.11 (Water Resources and Quality). Total exposures (doses) for each of the sites are presented in Section 4.4 (Health: Radioactivity).

3.11 Water resources and quality

Surface water body ecological and chemical status and groundwater overall status is sourced from the EA Catchment Data Explorer for sites in England [41], SEPA's Water Classification Hub for sites in Scotland [42] and Data Map Wales for sites in Wales [14].

Information on radiological discharges and localised concentrations for each of the sites across the UK has been sourced from the RIFE 29 report [5], the EA Pollution Inventory [6] and SEPA Pollution Release Inventory data (for Chapelcross, Dounreay and Hunterston A) [7].

3.11.1 Site-specific

3.11.1.1 Berkeley

The main water body located within 5 km of the Berkeley site is the River Severn which is located less than 20 m northwest of the site. This part of the River Severn is the 'Severn Middle transitional water body' and was classified as having moderate ecological status in 2022 and failed its chemical status in 2019 [41].

There is also a minor river called the Little Avon (Berkeley Pill) that flows 200 m east of the site. This part of the Little Avon is the 'Confluence Tortworth Brook to Mouth water body' which was classified as having moderate ecological status in 2022 and failed its chemical status in 2019.

The Berkeley site is located on the 'Avonmouth Mercia Mudstone groundwater body' which was classified as having poor overall status in 2019.

Effluent from the site is discharged into the Severn Estuary. Analysis of seafood and marine indicator materials as well as measurements of external radiation in the muddy intertidal areas of the Severn transitional water body have found that concentrations of radionuclides such as Caesium-137 in sediment have been generally decreasing over the period between 2012 to 2023 [5].

Table 35 summarises discharges to water at Berkeley in 2023 as reported in the EA Pollution Inventory [6].

Table 35 Berkeley discharges to water in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Caesium 137	100	108
Total Alpha	1	2
Total Beta/Gamma (excluding Tritium)	1	86
Other Beta/Gamma Particulate	1	90

3.11.1.2 Bradwell

The main water body located within 5 km of the Bradwell site is the Blackwater Estuary which is located less than 20 m north of the site. The Blackwater Estuary was classified as having moderate ecological status in 2022 and failed its chemical status in 2019 [41].

The Bradwell site is located on the 'Essex Gravels groundwater body' which was classified as having poor overall status in 2019.

Effluent from the site is permitted to be discharged into the Blackwater estuary transitional waters under the terms of an environmental permit [5]. No effluent was discharged from the site in 2023 with the last discharge taking place in 2017. Concentrations of artificial radionuclides have been detected in marine samples of fish, seaweeds and shellfish in the Blackwater estuary.

3.11.1.3 Capenhurst

The River Mersey Estuary is located 5 km northeast of the site. The River Mersey was classified as having moderate ecological status in 2022 and failed its chemical status in 2019 [41].

There is also a minor river called the Rivacre Brook that originates southeast of the site and flows northwards. The Rivacre Brook was classified as having moderate ecological status in 2022 and failed its chemical status in 2019.

The Capenhurst site is located on the 'Wirral and West Cheshire Permo-Triassic Sandstone Aquifers groundwater body' which was classified as being in poor overall status in 2019.

Under the terms of an environmental permit the Capenhurst site discharges treated effluent to Rivacre Brook [5].

Table 36 summarises the non-radioactive and radioactive discharges to water from Capenhurst in 2023 as reported in the EA Pollution Inventory [6].

Table 36 Capenhurst discharges to water in 2023

Operator Name	Parameter	Reporting Threshold (kg)	Quantity Released (kg)
Non-radiological			
Urenco UK Ltd	Copper	20	Below Reporting Threshold
	Lead	20	Below Reporting Threshold
	Nickel	20	Below Reporting Threshold
	Zinc	100	Below Reporting Threshold
	Arsenic	5	Below Reporting Threshold
	Cadmium	1	Below Reporting Threshold

Operator Name	Parameter	Reporting Threshold (kg)	Quantity Released (kg)
	Chromium	20	Below Reporting Threshold
	Fluorides - as F	2000	Below Reporting Threshold
Urenco ChemPlants Ltd	Copper	20	Below Reporting Threshold
	Lead	20	Below Reporting Threshold
	Nickel	20	Below Reporting Threshold
	Zinc	100	Below Reporting Threshold
	Arsenic	5	Below Reporting Threshold
	Cadmium	1	Below Reporting Threshold
	Chromium	20	Below Reporting Threshold
	Fluorides - as F	2000	Below Reporting Threshold
Radiological		**Reporting Threshold (MBq)**	**Quantity Released (MBq)**
Urenco UK Ltd	Total Alpha	7	1
	Total Beta/Gamma (Excl Tritium)	6	1
	Other Beta/Gamma Particulate	4	1

There is no publicly available data for the recorded controlled water releases of Technetium 99, Neptunium 237, and Uranium Alpha as they have been deemed commercially confidential or have national security considerations.

3.11.1.4 Chapelcross

The main water body within a 5 km of the Chapelcross site is the Solway Estuary located 4.7 km southeast of the site. The Solway Estuary was classified as having moderate overall ecological condition and passable overall chemistry.

The River Annan is a minor water body located 1.85 km west of the site. This is part of the catchment is the 'Threewaterfoot to Annan River water body' which was classified as having moderate overall, ecological and water quality condition in 2023. This flows into

the Annan Estuary located 4 km southwest of the site. This was classified as having good overall and ecological condition in 2023.

Kirtle Water is a minor water body located 3.7 km northeast of the site which was classified as having poor overall and ecological condition and moderate water quality in 2023.

Dornock Burn is a minor water body located 3 km east of the site which was classified as having moderate overall and water quality and bad ecological condition in 2023.

Gullielands Burn is a minor water body flows from the southeast of the site. There is no status data for this water body, however, radionuclides such as tritium were positively detected in nearby surface water samples collected at Gullielands Burn. These samples were well below investigation level for drinking water [5].

The Chapelcross site is located on the 'Annan groundwater body' which was classified as having good overall condition in 2023.

Effluent is permitted to discharge to the Solway Firth from the Chapelcross site under the terms of an environmental permit [5]. In 2023 there were no liquid discharges from the site as Chapelcross has reached the phase of decommissioning in which aqueous wastes are no longer generated.

3.11.1.5 Dounreay

Dounreay is located on the Atlantic coast, less than 100 m to the southeast of the Strathy Point to Dunnet Head coastal water body. This water body was classified as having good overall, ecological and water quality condition in 2023.

The Dounreay Burn is a minor water body that flows northwest through the south of the site and is classified as moderate overall and ecological and good water quality condition in 2023.

The Dounreay site is located on the 'Dounreay groundwater body' which was classified as good overall condition in 2023.

Effluent discharges from the site are routed via a low-level liquid effluent treatment plant. The effluent is discharged to the sea via a pipeline terminating 600 m offshore at a depth of about 24 m [5]. The discharges include groundwater pumped from the Dounreay shaft, surface water runoff, leachate from the on-site low level solid waste disposal facility (which operated from 1958 to 2005), and a minor contribution from the adjoining reactor site (Vulcan Naval Reactor Test Establishment). Marine sampling found that radionuclide concentrations were generally low in 2023 with data indicating a decline.

Table 37 summarises the discharges to water from Dounreay in 2023 as reported in the SEPA Pollution Release Inventory [7].

Table 37 Dounreay discharges to water in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Caesium-137	0	2,970
Other Alpha-emitting Radionuclides	0	230
Other Non Alpha-emitting Radionuclides	0	7,230
Strontium-90	0	45,500
Tritium	0	14,300

3.11.1.6 Dungeness A

Dungeness A is located on the south coast of England, adjacent to the English Channel. Sussex East coastal water body was classified as having moderate ecological status and failed its chemical status in 2019.

The Dengemarsh Sewer is located 1.7 km west of the site and its catchment encompasses the site. This water body was classified as having moderate ecological status in 2022 and failed its chemical status in 2019.

Long Pit Lake is located 800 m northeast of the site and was classified as having moderate ecological status and failed its chemical status in 2019.

Burrows Pit Lake is located 1.2 km northwest of the site and was classified as having good ecological status and failed its chemical status in 2019.

Dungeness A is located on the 'Kent Romney Marsh groundwater body' which was classified as having poor overall status in 2019.

There are permitted discharges of liquid effluent from the station into the English Channel [5]. The draining of fuel ponds at Dungeness A was completed in 2019 and this removed the main source of aqueous waste on site Table 38 summarises the discharges to water from Dungeness A in 2023 as reported in the EA pollution inventory [6].

Table 38 Dungeness A discharges to water in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Caesium 137	100	4,630
Total Alpha	1	3

Total Beta/Gamma (excluding Tritium)	1	15,900
Strontium 90	100	5,470
Yttrium 90	1,000	5,470
Other Beta/Gamma Particulate	1	196

3.11.1.7 Harwell

The main water bodies located within 5 km of the Harwell site are Mill Brook located 400 m north of the site and Ginge Brook located 2.4 km northwest. These rivers are part of the 'Ginge Brook and Mill Brook river waterbody' catchment that encompasses the northern side of the site. This water body was classified as having moderate ecological status in 2022 and failed its chemical status in 2019.

The southern side of the site is within the catchment of the 'Mill Brook and Bradfords Brook system Wallingford river water body' located 4.8 km southeast of the site. This water body was classified as having moderate ecological status in 2022 and failed its chemical status in 2019.

The Harwell site is located on the 'Vale of White Horse Chalk groundwater body' which was classified as having poor overall status in 2019.

Permitted discharges from Harwell are discharged to sewers serving nearby Didcot [5]. The treated effluent subsequently enters the River Thames at Long Wittenham. There are permitted discharges of surface water drainage from the Harwell site that are made via the Lydebank Brook, on the north of the site. Discharges from the site are decreasing.

3.11.1.8 Hinkley Point A

The Bristol Channel is located less than 100 m north of the site. This section of the Bristol Channel is the 'Bridgewater Bay coastal water body' which was classified as having moderate ecological status in 2022 and failed chemical status in 2019.

The site is not located above any groundwater catchments.

Liquid effluent from the site is discharged into the Bristol Channel under the terms of an environmental permit [5]. Table 39 summarises the discharges to water from Dungeness A in 2023 as reported in the EA pollution inventory [6].

Table 39 Hinkley Point A discharges to water in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Cobalt 60	10	69
Caesium 134	10	78
Carbon-14	100	2,000
Caesium 137	100	1,000
Total Alpha	1	660
Total Beta/Gamma (excluding Tritium)	1	24
Strontium 90	100	6,600

Yttrium 90	1000	6,600,
Niobium 95	100	640
Americium 241	100	440
Other Alpha Particulate	1	7
Other Beta/Gamma Particulate	1	3,700
Plutonium Alpha	100	220

3.11.1.9 Hunterston A

Hunterston A is located on the west coast of Scotland on the Firth of Clyde. The Largs Channel coastal water body located 300 m northeast of the site was classified as good for overall, ecological and water quality condition in 2023 [42].

The Hunterston A site is located on the 'North Ayrshire Coastal groundwater body' which was classified as good for overall condition in 2023.

Permitted effluent discharges from both Hunterston stations are made to the Firth of Clyde via the Hunterston B station's cooling water outfall [5]. The main source of effluent discharges from Hunterston A originate from the cartridge cooling pond. Marine environmental indicators suggest that concentrations of artificial radionuclides in the marine environment in the Largs Channel are predominantly due to Sellafield discharges.

Table 40 summarises the discharges to water from Hunterston A in 2023 as reported in the SEPA Pollution Release Inventory [7].

Table 40 Hunterston A discharges to water in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Caesium-137	0	43
Other Alpha-emitting Radionuclides	0	1
Other Non-Alpha emitting Radionuclides	0	38
Tritium	0	6
Plutonium-241	0	0

3.11.1.10 LLWR

The main water body located within 5 km of the LLWR site is the Irish Sea located 430 m west of the site. The relevant component of the Irish Sea is the 'Cumbria coastal water body' which was classified as having good ecological status in 2022 and failed its chemical status in 2019.

The River Irt is located 700 m southeast of the site and was classified as having good ecological status and failed its chemical status in 2019. The River Mite is located 3 km southeast of the site and was classified as having good ecological status and failed its chemical status in 2019. The River Esk is located 4.9 km southeast of the site and was classified as having good ecological status in 2022 and failed its chemical status in 2019.

The LLWR site is located on the 'West Cumbria Permo-Triassic sandstone aquifers groundwater body' and was classified as having good overall status in 2019.

An environmental permit allows for the discharge of leachate from the LLWR site through a marine pipeline into the Irish Sea. These discharges are insignificant in comparison to the nearby Sellafield site which mean the marine monitoring of LLWR is subsumed by the Sellafield programme.

3.11.1.11 Oldbury

The River Severn is located less than 30 m northwest of the site. This part of the River Severn is the 'Severn Middle transitional water body' which was classified as having moderate ecological status in 2022 and failed its chemical status in 2019.

The Oldbury Naite Rhine River is located 1.85km south of the site and was classified as having moderate ecological status in 2022 and failed its chemical status in 2019.

The Oldbury site is located on the 'Avonmouth Mercia Mudstone groundwater body' which was classified as having poor overall status in 2019.

Permitted effluent from Oldbury is discharged to the Severn Estuary alongside the Berkeley site and they therefore share the same environmental indicator results [5]. Table 41 summarises the discharges to water from Oldbury in 2023 as reported in the EA pollution inventory [6].

Table 41 Oldbury discharges to water in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Carbon-14	100	180
Caesium 137	100	240
Total Beta/Gamma (excluding Tritium)	1	830
Strontium 90	100	180
Other Beta/Gamma Particulate	1	40

3.11.1.12 Sellafield

The main water body within 5 km of the Sellafield site is the Irish Sea located 300 m southwest of the site [41]. The relevant component of the Irish sea is the 'Cumbria coastal water body' which was classified as having good ecological status in 2022 and failed its chemical status in 2019.

The River Calder flows through the site. The Calder (Lower) river water body was classified as having moderate ecological status in 2022 and failed its chemical status in 2019.

The River Ehen is located 100 m southwest of the site. The Ehen (lower) river water body was classified as having good ecological status and failed its chemical status in 2019.

Newmill Beck is located 160 m southeast of the site. Newmill Beck river water was classified as having moderate ecological status and failed its chemical status in 2019.

The Sellafield site is located on the West Cumbria Permo-Triassic sandstone aquifers groundwater body which was classified as having good overall status in 2019.

Permitted effluent discharges are derived from a variety of sources at the site, including the fuel storage ponds. Effluent is treated and discharged to the Irish Sea via sea pipelines that terminate 2.1 km beyond the low water mark [5]. Effluent is also discharged to the Ehen and the Calder. All discharges of effluent from Sellafield in 2023 were within permitted limits.

Table 42 summarises non-radioactive and radioactive discharges to water from Sellafield in 2023 as reported in the EA pollution inventory [6].

Table 42 Sellafield discharges to water in 2023

Parameter	Reporting Threshold (kg)	Quantity Released (kg)
Non-radiological		
Copper	20	23.7
Chromium	20	26.3
Zinc	100	159
Nitrogen - as total N	50000	246000
Lead	20	Below Reporting Threshold
Mercury	0.1	Below Reporting Threshold
Nickel	20	Below Reporting Threshold
Arsenic	5	Below Reporting Threshold
Cadmium	1	Below Reporting Threshold
Chlorides - as Cl	2000000	Below Reporting Threshold
Halogenated organic compounds - as AOX	1000	Below Reporting Threshold
Phosphorus - as total P	5000	Below Reporting Threshold
Total organic carbon (TOC)	50000	Below Reporting Threshold
Radiological	**Reporting Threshold (MBq)**	**Quantity Released (MBq)**
Plutonium 241	10,000	630,000
Cobalt 60	10	14,000
Uranium Alpha	100	3700
Plutonium Alpha	100	66,000
Antimony 125	10,000	43,000
Tritium	1,000,000	9,700,000
Carbon-14	1	100,000
Ruthenium 106	1,000	170,000
Iodine 129	100	16,000
Caesium 137	100	1,100,000

Total Alpha	1	82,000
Total Beta/Gamma (Excl Tritium)	1	5,200,000
Strontium 90	100	1,300,000
Yttrium 90	1,000	1,300,000
Technetium 99	1,000	68,000
Americium 241	100NBq	9100
Other Alpha Particulate	1	2600
Other Beta/Gamma Particulate	1	1,400,000

There is no publicly available data for the recorded controlled water releases of Technetium 99, Neptunium 237, and Uranium Alpha as they have been deemed commercially confidential or have national security considerations.

3.11.1.13 Sizewell A

The main water body within 5 km of Sizewell A is the North Sea. The Suffolk coastal water body which was classified as having moderate ecological status and failed its chemical status in 2019.

Leiston Beck is located 1.5 km northeast of the site and is part of the 'Leiston Beck river water body' that encompasses the site within its catchment. This water body was classified as having moderate ecological status in 2022 and failed its chemical status in 2019.

The Sizewell A site is located on the 'Waveney and East Suffolk Chalk & Crag groundwater body' which was classified as having poor overall status in 2019.

Permitted discharges of effluent are made via outfalls to the North Sea [5]. The project to drain the fuel storage pond at Sizewell A was completed in 2019 and has therefore significantly reduced liquid waste generation. Small volumes of effluent are discharged by foul sewer route via sewage treatment works [5]. Marine monitoring in the area found that concentrations of artificial radionuclides were low and mainly due to the distant effects of Sellafield. Table 43 summarises the discharges to water from Sizewell A in 2023 as reported in the EA pollution inventory [6].

Table 43 Sizewell A discharges to water in 2023

Parameter	Reporting Threshold (MBq)	Quantity Released (MBq)
Caesium 137	100	1530
Total Beta/Gamma (excluding Tritium)	1	4990
Strontium 90	100	1690
Yttrium 90	1	1690
Other Beta/Gamma Particulate	1	29

3.11.1.14 Springfields

The main water body within 5 km of the Springfields site is the Ribble Estuary located 2.8 km south of the site and was classified as having bad ecological status in 2022 and failed its chemical status in 2019.

The Deepdale Brook flows through the site and is part of the 'Deepdale Brook river water body' and was classified as having moderate ecological status and failed its chemical status in 2019.

The Dow Brook is located 2.7 km west of the site and was classified as having moderate ecological status and failed its chemical status in 2019.

The Savick Brook is located 1 km southeast of the site and which encompasses part of the northeast of the site in its catchment. This water body was classified as having moderate ecological status and failed its chemical status in 2019.

The Springfield site is located on the 'Fylde Permo-Triassic Sandstone Aquifers groundwater body' which was classified as having poor overall status in 2019.

Permitted discharges of effluent to the Ribble Estuary are made via two pipelines [5]. Discharges from the site decreased in 2022 and 2023 due to improvement in the hexafluoride production plant and reduced uranic residue processing. Environmental monitoring has found radionuclides due discharges from both Springfields and Sellafield sediments and biota in the Ribble Estuary; however, there has been a long-term declining trend in radionuclides.

Table 44 summarises the non-radioactive and radioactive discharges to water from Springfields in 2023 as reported in the EA Pollution Inventory [6].

Table 44 Springfields discharges to water in 2023

Parameter	Reporting Threshold (kg)	Quantity Released (kg)
Non-radiological		
Mercury	0.1	0.2
Zinc	100	217.3
Fluorides - as F	2000	6080
Chlorides - as Cl	2000000	Below Reporting Threshold
Nitrogen - as total N	50000	Below Reporting Threshold
Phosphorus - as total P	5000	Below Reporting Threshold
Total organic carbon (TOC)	50000	Below Reporting Threshold
Copper	20	Below Reporting Threshold
Lead	20	Below Reporting Threshold

Parameter	Reporting Threshold (kg)	Quantity Released (kg)
Nickel	20	Below Reporting Threshold
Asbestos	0.1	Below Reporting Threshold
Arsenic	5	Below Reporting Threshold
Cadmium	1	Below Reporting Threshold
Chromium	20	Below Reporting Threshold
Radiological	**Reporting Threshold (MBq)**	**Quantity Released (MBq)**
Thorium 230	10	20
Total Alpha	1	5930
Total Beta/Gamma (Excl Tritium)	1	4330
Uranium Alpha	100	550

There is no publicly available data for the recorded controlled water releases of Plutonium 241, Americium 241, and Plutonium Alpha as they have been deemed commercially confidential or have national security considerations.

3.11.1.15 Trawsfynydd

The main water body within 5 km of the Trawsfynydd site is Llyn Trawsfynydd (Trawsfynydd Lake) located 180 m southeast of the site. This lake was classified as having moderate ecological status and high chemical status in Cycle 3 of the Water Framework Directive (WFD).

The River Prysor downstream of Trawsfynydd is located 1.7 km west of the site and was classified as having moderate ecological status and high chemical status during Cycle 3 of the WFD.

The lower River Dwyryd is located 3.2 km north of the site and converges with the River Prysor and was classified as having moderate ecological status and high chemical status during Cycle 3 of the WFD.

The Trawsfynydd site is located on the 'Llyn and Eryri groundwater body' which was classified as poor overall during Cycle 3 of the WFD [14].

Permitted discharges of effluent from Trawsfynydd are made to Llyn Trawsfynydd [5]. Freshwater environmental indicators suggest that the majority of the radionuclide concentrations in fish and sediments result from historical discharges, due to inefficient dispersion and binding to sediments. Evidence of the effect of effluent discharges from Trawsfynydd can be seen, however concentrations have generally decreased over the period 2000-2023, with fluctuations due to environmental variability.

3.11.1.16 Winfrith

The River Frome is part of two catchments. Frome Dorset (Lower) downstream Louds Mill Dorchester river water body was classified as having a moderate ecological status in 2022 and failed chemical status in 2019 [41]. The Frome Dorset Tributary (River Winfrith) river water body was classified as having good ecological status in 2022 and a failed chemical status in 2019.

The Tadnoll Brook is located 320 m north of the site and converges with the River Frome. This river is part of the 'Tadnoll Brook (including Empool Bottom) river water body' which was classified as having good ecological status in 2022 and failed chemical status in 2019.

The Winfrith site is located on the 'Lower Frome and Piddle groundwater body' which was classified as having poor overall status in 2019 [41].

Permitted effluent is discharged via a pipeline in Weymouth Bay. This area of the English Channel was classified as having moderate ecological status in 2022 and failed chemical status in 2019. Discharges continued at very low rates in 2023 (all reported as <1% of the annual limit). Marine indicators showed concentrations of radionuclides in the marine environment were low and consistent with historical values.

3.11.1.17 Wylfa

The Irish Sea is located 70 m west of the site. The relevant component of the Irish sea is the 'Skerries coastal water body' which was classified as having high chemical and ecological status during Cycle 3 of the WFD [14].

The River Wygyr is located 1.8 km southeast of the site and was classified as having moderate ecological and high chemical status during Cycle 3 of the WFD.

The Wylfa site is located on the 'Ynys Mon Secondary groundwater body' which was classified overall as having poor status during Cycle 3 of the WFD.

Artificial radionuclides related to the coastal waters around the Wylfa site continue to reflect the distant effects of Sellafield discharges [5].

4. Health baseline

4.1 General health

General health data from self-assessment was collected during the 2021 Census in England and Wales [43]. For Scotland data was collected during the Scottish Health Survey 2023 [44]. Respondents were asked to assess their general health on a five-point scale: "Very good", "Good", "Fair", "Bad", or "Very bad".

Summaries of the results are shown in Table 45 for the devolved administrations and for Local Authorities that NDA sites are situated in. The 2021 Census reports that health and age are closely related, with older people being more likely to be in poorer health.

Table 45 Self-assessed general health data for devolved administrations and NDA sites

Site	Local Authority	% population				
		Very good	Good	Fair	Bad	Very bad
England	-	45.1	32.3	15.8	5.2	1.6
Scotland	-	30	42	19	7	2
Wales	-	44.5	30.6	16.8	6.2	2.0
Berkeley	Stroud	50.4	34.2	11.6	3	0.8
Bradwell	Maldon	49.3	34.6	11.8	3.3	0.9
Capenhurst	Cheshire West and Chester	49.6	33.1	12.2	3.9	1.1
Chapelcross	Dumfries and Galloway	43.8	32.2	16.4	5.8	1.8
Dounreay	Highland	48.5	31.3	14.2	4.7	1.4
Dungeness A	Folkestone & Hythe	45.6	34.6	14	4.6	1.3
Harwell	Vale of White Horse	52.1	34	10.7	2.6	0.6
Hinkley Point A	Somerset West and Taunton	48.4	34.5	12.5	3.7	0.9
Hunterston A	North Ayrshire	43.2	30.9	16.8	7	2.1
LLWR	Copeland	46.8	32.6	14.3	4.9	1.4
Oldbury	South Gloucestershire	48.9	34.6	12.1	3.3	0.9
Sellafield	Copeland	46.8	32.6	14.3	4.9	1.4
Sizewell A	East Suffolk	46.8	35.2	13.1	4.0	1
Springfields	Fylde	50.4	32.4	12.3	3.8	1.1
Trawsfynydd	Gwynedd	51.5	31.2	12.4	3.7	1
Winfrith	Dorset	49.2	34.5	12	3.3	0.9

Wylfa	Isle of Anglesey	50.7	31.2	13.1	3.9	1.1

4.2 Heart and circulatory disease

4.2.1 United Kingdom

In the UK in 2024 7.6 million people are living with heart and circulatory diseases as reported in the British Heart Foundation Circulatory Disease Statistics 2024 report [45].

Table 46 demonstrates that the death rates per 100,000 from all heart and circulatory diseases including all ages from year 2001 to 2022 have dropped in England by 48%, by 42% in Scotland and by 48% in Wales. The heart and circulatory diseases include diseases of the circulatory system, malignant neoplasm, heart vascular dementia, transient cerebral ischaemic attacks and related syndromes, cardiovascular disorders originating in the perinatal period and congenital malformations of the circulatory system.

Table 46 Deaths from heart and circulatory diseases in England, Scotland and Wales

	England			Scotland			Wales		
Year	Men	Women	Both	Men	Women	Both	Men	Women	Both
2001	616	408	496	709	493	584	669	456	547
2022	319	205	257	396	282	334	351	225	282

4.3 Cancer

Baseline information on cancer incidences for 2022 on a national and site-specific level for England [46], for Wales [47] and for Scotland [48] is displayed in Table 47.

Table 47 Cancer Incidences in 2022

Site	Local Authority	Incidences in 2022
England	-	486,847
Scotland	-	31,021
Wales	-	17,805
Berkeley	Gloucestershire	3,045
Bradwell	Bradwell-on-sea, Essex	1,795
Capenhurst	Cheshire West and Chester	3,702
Chapelcross	Dumfries and Galloway	1,034
Dounreay	Highland	2,003
Dungeness A	Kent	8,721
Harwell	Oxfordshire	3,025
Hinkley Point A	Somerset	3,029
Hunterston A	North Ayrshire	2,398
LLWR	West Cumbria	1,824
Oldbury	South Gloucestershire	4,174
Sellafield	Cumbria	1,824
Sizewell A	Suffolk	2,015
Springfields	Preston	1,120
Trawsfynydd	Gwynedd	702
Winfrith	Dorset	4,375
Wylfa	Isle of Anglesey	478

4.4 Radioactivity

4.4.1 Devolved Administrations

The RIFE 29 report [5] states that 'exposure to the public from all sources of artificial radioactivity in food and the environment was low and well within the legal limit of 1 millisievert (mSv) per year, demonstrating that radioactivity in food and the environment is safe. The report states that between 2022 and 2023 there were no significant changes to the radioactivity measured in food and the environment.

4.4.1.1 England

The RIFE 29 report [5] states that 'in 2023, people living around the Cumbrian coast (near Sellafield), Capenhurst and Amersham were the most exposed from sources of artificial radioactivity. The highest exposure was 23% of the legal limit in 2023 due to people eating locally produced seafood (fish and crustacea) around the Cumbrian coast. This is down from 24% of the legal limit in 2022'.

4.4.1.2 Scotland

The RIFE 29 report [5] states 'in 2023 in Scotland, people eating food collected from areas along the Dumfries and Galloway coastline were the most exposed from releases of radioactivity. The exposure in 2023 was approximately 2% of the legal limit, and as in previous years, this was mostly due to the effects of past discharges from the Sellafield site'.

4.4.1.3 Wales

The RIFE 29 report [5] states that 'the highest exposure in Wales was for those people living near the Trawsfynydd nuclear power station, which is being decommissioned. This was due to them consuming locally produced food (milk), containing radioactivity released from, mainly historical, permitted discharges from the station. The exposure was approximately 3% of the legal limit'.

4.4.2 Site-specific

All radiation doses received from various sources such as gaseous and liquid discharges, and direct radiation to members of the public have been combined and reported in the RIFE 29 report [5]. Total radiological doses at all sites were below the statutory limit of 1mSv and are displayed in Table 48.

Table 48 Total radiological dose for a representative person in 2023 for each site

Site name	Total dose for a representative person in 2023 (mSv)
Berkeley	<0.005
Bradwell	<0.005
Capenhurst	0.15
Chapelcross	0.010
Dounreay	0.028
Dungeness A	0.005
Harwell	<0.005
Hinkley Point A	0.032
Hunterston A	0.013
LLWR	0.038
Oldbury	<0.005
Sellafield	0.23
Sizewell A	<0.010
Springfields	0.040
Trawsfynydd	0.007
Winfrith	0.054
Wylfa	<0.005

The total dose for the LLWR site only includes the gaseous and direct radiation from the specific site and excludes the legacy radiological contributions from the nearby Sellafield site.

4.5 Life expectancy at birth

4.5.1 Devolved Administrations

Life expectancy and healthy life expectancy has been analysed from Census data and is shown in Table 49. Life expectancy at birth by sex is for 2021 to 2023 [49]. Healthy life expectancy is the number of years people are expected to spend in "good" general health and is for 2021 to 2023 (England and Wales) [50] and 2019 to 2021 (Scotland) [51].

Table 49 Life expectancy and healthy life expectancy at birth by sex for devolved administrations

Country	Males		Females	
	Life expectancy	Healthy life expectancy	Life expectancy	Healthy life expectancy
England	79.11	61.5	83.05	61.9
Scotland	76.79	60.4	80.77	61.1
Wales	78.04	60.3	81.98	59.6

4.5.2 Site-specific

Healthy life expectancy across local areas encompassing NDA sites for 2021 to 2023 (England and Wales) [50] and 2019 to 2021 (Scotland) [51] is shown in Table 50.

Table 50 Healthy life expectancy at birth by sex for local areas encompassing NDA sites from 2021-2023

Site	Area	Males	Females
Berkeley	Gloucestershire	63.67	63.56
Bradwell	Essex	63.01	63.27
Capenhurst	Cheshire West and Chester	61.95	62.98
Chapelcross	Dumfries and Galloway	62.3	59.2
Dounreay	Highland	63.5	65.8
Dungeness A	Kent	62.31	63.23
Harwell	Oxfordshire	67.10	68.25
Hinkley Point A	Somerset	63.20	63.22
Hunterston A	North Ayrshire	56.5	52.1
LLWR	Cumberland	58.38	59.13

Site	Area	Males	Females
Oldbury	South Gloucestershire	63.46	62.88
Sellafield	Cumberland	58.38	59.13
Sizewell A	Suffolk	63.28	63.58
Springfields	Lancashire	60.47	61.45
Trawsfynydd	Gwynedd	63.62	63.41
Winfrith	Dorset	63.91	63.75
Wylfa	Isle of Anglesey	62.67	62.67

4.6 Mental health

4.6.1 Devolved Administrations

Mental health baseline information has been sourced from the Mental Health Bulletin, 2022 – 23 Annual report [52] for England, the Mental well-being (National Survey for Wales): April 2022 to March 2023 [53] for Wales and the Scottish Health Survey 2023 Volume 1 [44] for Scotland.

4.6.1.1 England

An estimated 3.58 million individuals interacted with NHS-funded secondary mental health, learning disability and autism services at some point in 2022–2023. This represents slightly more than 6% of the population, with the percentages ranging from 3.2% for those aged 65 to 69 to 16.7% for those aged 11 to 15 and 14.6% for those aged 16 to 19.

4.6.1.2 Scotland

The Warwick-Edinburgh Mental Well-Being scale (WEMWBS) and the General Health Questionnaire 12 (GHQ-12) were used in the Scottish Health Survey 2023 to measure the well-being of adults in Scotland. The WEMWBS scores range from 14 to 70 with higher scores indicating greater well-being. Following two years of decline, mean WEMWBS scores for all adults increased to 48.9 in 2023 from 47.0 in 2022 and 48.6 in 2021. The GHQ-12 scores range from 0 to 12 with scores higher than 4 indicating a possible psychiatric disorder. The percentage of adults with a GHQ-12 score of 4 or higher in 2023 was 21%.

4.6.1.3 Wales

The WEMWBS scale was used to measure people's mental health in the National Survey for Wales in 2022–2023. The survey concluded that the average mental well-being score for both males and females, of all ages was 48.2.

4.6.2 Site-specific

Table 51 summarises information on the number of people who have been in contact with NHS funded secondary mental health, learning disabilities and autism services for the 2023 – 2024 period. To be in contact with services, a person must have had a referral that was open at any point in the year, and they do not necessarily have to have had contact as part of their treatment. This information has been obtained from the Mental Health Bulletin, 2022-23 Annual report [52].

Table 51 Individuals interacted with mental health, learning disabilities and autism services in England

Site	NHS Area	Individuals interacted
Berkeley	Gloucestershire	41,515
Bradwell	Bradwell-on-sea	15,330
Capenhurst	Cheshire West and Chester	38,905
Dungeness A	Kent	143,060
Harwell	Oxfordshire	38,460
Hinkley Point A	Somerset	37,785
LLWR	Cumbria	23,505
Oldbury	South Gloucestershire	44,740
Sellafield	Cumbria	23,505
Sizewell A	Suffolk	22,170
Springfields	Preston	10,035
Winfrith	Dorset	40,930

Table 52 summarises information on the scores of people who have undertaken the Scottish Health Survey 2023 [44] using the GHQ-12 and WEMWBS questionnaires for 2019-2023. This information has been obtained from the Scottish Health Survey dashboard [54].

Table 52 Scottish Health Survey results by local authority

Site	Local Authority	GHQ – 12			WEMWBS
		Score 0	Score 1-3	Score 4+	
Chapelcross	Dumfries and Galloway	60%	22%	18%	48.9
Dounreay	Highland	57%	26%	18%	49.6
Hunterston A	North Ayrshire	58%	19%	23%	48.6

Wellbeing in Wales is measured through the National Survey for Wales [53] where respondents are asked to rate their anxiety, happiness and life satisfaction from poor to very good. Results for poor life satisfaction, happiness and anxiety for local authorities in Wales with NDA sites are shown in Table 53.

Table 53 Poor welling being by local authority in Wales

Site	Local authority	Poor life satisfaction	Poor happiness	Poor anxiety
Trawsfynydd	Gwynedd	6.3%	6.3%	29.5%
Wylfa	Isle of Anglesey	7.8%	10.6%	27.8%

5. Socio-economic baseline

5.1 Population

Baseline information on population summarises estimated populations for each of the devolved administrations and the local authorities in which the sites are based.

5.1.1 Devolved Administrations

Estimated populations for the devolved administrations are shown in Table 54 sourced from the Office for National Statistics mid-2023 estimate [55].

Table 54 Estimated populations for each devolved administration in 2023

Nation	Estimated population
England	57,690,323
Scotland	5,490,100
Wales	3,164,404

5.1.2 Site-specific

Local authority population data for England and Wales from the 2021 Census data on population and household estimates [56] and mid-2020 population estimates for Scotland [57] are shown in Table 55. It should be noted that the local authority names and associated populations reflect the layout of 2021 Census.

Table 55 Population by Local Authority

Site name	Local authority	Population (all persons)
Berkeley	Stroud	121,100
Bradwell	Maldon	66,200
Capenhurst	Cheshire West and Chester	357,200
Chapelcross	Dumfries and Galloway	148,290
Dounreay	Highland	235,430
Dungeness A	Folkestone & Hythe	109,800
Harwell	Vale of White Horse	138,900
Hinkley Point A	Somerset West and Taunton	157,400
Hunterston A	North Ayrshire	134,250
LLWR	Copeland	67,100
Oldbury	South Gloucestershire	290,400
Sellafield	Copeland	67,100
Sizewell A	East Suffolk	245,900
Springfields	Fylde	81,400
Trawsfynydd	Gwynedd	117,400

Site name	Local authority	Population (all persons)
Winfrith	Dorset	379,600
Wylfa	Isle of Anglesey	68,900

5.2 Dominant occupation

5.2.1 Site-specific

Dominant occupation data was collected in the 2021/2022 Census and is categorised into nine classifications for England and Wales [58] and into 26 classifications for Scottland [59]. The 26 dominant occupations for Scotland have been further categorised into the nine categories to allow for comparison with data for England and Wales. These are shown in Table 56, with each of the dominant occupations assigned a number in the table:

1. Managers, directors and senior officials
2. Professional occupations
3. Associate professional and technical occupations
4. Administrative and secretarial occupations
5. Skilled trade occupations
6. Caring, leisure and other service occupations
7. Sales and customer service occupations
8. Process, plant and machine operatives
9. Elementary occupations

Table 56 Dominant occupations by local authority

Site name	Local authority	Dominant occupations (1-9)								
		1	2	3	4	5	6	7	8	9
		Percentage of the population (%)								
Berkeley	Stroud	15	21	13.7	9	12.3	8.7	6.2	6	8.2
Bradwell	Maldon	16.6	15.9	13.2	11.3	13.5	7.7	7	6.3	8.4
Capenhurst	Cheshire West and Chester	14	20.5	13.2	8.9	9.3	8.8	8.2	6.9	10.2
Chapelcross	Dumfries and Galloway	7.4	17.6	9.3	9.6	14.1	10.8	8.5	10.2	14.6
Dounreay	Highland	8.3	17.5	11.2	9.8	13.7	10	8.2	8.1	13.1
Dungeness A	Folkestone & Hythe	12.9	15.9	14.5	9	11.7	11.9	8.3	6.5	9.2
Harwell	Vale of White Horse	15.1	26.8	15	8.9	9.6	7.3	5.4	4.7	7.1
Hinkley Point A	Somerset West and Taunton	12.4	18.3	11.9	8.7	12.6	12.3	7.2	6.5	10.1
Hunterston A	North Ayrshire	6.5	15.4	11.2	9.9	12.1	12	9.6	9.4	13.8
LLWR	Copeland	9.2	16.9	13.5	8	14.2	9.6	6.6	9.71	12.3
Oldbury	South Gloucestershire	12.1	21.2	13.2	11.8	10.9	8.4	7.2	6	9.2
Sellafield	Copeland	9.2	16.9	13.5	8	14.2	9.6	6.6	9.71	12.3
Sizewell A	East Suffolk	13	15.9	12.5	9.5	12.5	10.6	8	7.7	10.3
Springfields	Fylde	14.6	21.5	13.7	10.1	9.8	9.6	6.9	5.5	8.2
Trawsfynydd	Gwynedd	10.3	17.5	10.2	7.5	16	12.8	7.9	6.9	10.9
Winfrith	Dorset	14.4	17.3	12.6	9.3	13.8	10.3	7.1	5.7	9.5
Wylfa	Isle of Anglesey	10.8	16.1	10.9	8.5	15.6	12.5	8.6	7.1	9.9

5.3 Residents aged 16 and above in employment

Data on employment rate for residents aged 16 and over for the sites in England and Wales has been sourced from the Office for National Statistics [60]. This data includes the number of people (aged 16 and above) who did paid work as an employee or self-employee on the Census Day in 2021. This data also includes those who had a job who were temporarily away. The data on employment rate for residents aged 16 to 64 for sites in Scotland are taken from the Scottish Annual Population Survey 2020/21 [61]. This data is summarised in Table 57.

Table 57 Residents aged 16 and above in employment

Site name	Local authority	Percentage of usual residents aged 16 years and over who were economically active and in employment (%)
Berkeley	Stroud	59.8
Bradwell	Maldon	56.4
Capenhurst	Cheshire West and Chester	57.2
Chapelcross	Dumfries and Galloway	67.1
Dounreay	Highland	77.6
Dungeness A	Folkestone & Hythe	52.2
Harwell	Vale of White Horse	63
Hinkley Point A	Somerset West and Taunton	55.8
Hunterston A	North Ayrshire	66.4
LLWR	Copeland	54.6
Oldbury	South Gloucestershire	62.2
Sellafield	Copeland	54.6
Sizewell A	East Suffolk	51.5
Springfields	Fylde	51.6
Trawsfynydd	Gwynedd	52.9
Winfrith	Dorset	52.1
Wylfa	Isle of Anglesey	51.1

5.4 Indices of multiple deprivation

5.4.1 Site-specific

5.4.1.1 England and Wales

Baseline data on deprivation for England and Wales was sourced from the Office for National Statistics census maps [58] which shows the percentages of households

deprived by no, one, two, three or four dimensions of deprivation across local authorities. The four dimensions are education, employment, health and housing. The data is summarised in Table 58.

Table 58 Household deprivation for England and Wales from 2021

Site name	Local authority	Percentage of households not deprived in any of the four dimensions (%)	Percentage of households deprived in one dimension (%)	Percentage of households deprived in two dimensions (%)	Percentage of households deprived in three dimensions (%)	Percentage of households deprived in four dimensions (%)
Berkeley	Stroud	55.2	32.3	10.4	2.1	0.1
Bradwell	Maldon	49.6	34.7	12.9	2.7	0.1
Capenhurst	Cheshire West and Chester	52	32.1	12.6	3	0.2
Dungeness A	Folkestone & Hythe	44.4	35.5	15.8	4	0.3
Harwell	Vale of White Horse	58.1	31	9.1	1.7	0.1
Hinkley Point A	Somerset West and Taunton	50.4	34.1	12.7	2.7	0.1
LLWR	Copeland	47	33.2	15.2	4.4	0.2
Oldbury	South Gloucestershire	53.9	32.7	11.1	2.1	0.1
Sellafield	Copeland	47	33.2	15.2	4.4	0.2
Sizewell A	East Suffolk	46.9	35.5	14.2	3.2	0.2
Springfields	Fylde	50.8	33.9	12.4	2.7	0.2
Trawsfynydd	Gwynedd	49.6	33.3	13.8	3.1	0.1
Winfrith	Dorset	49.9	35	12.5	2.4	0.2
Wylfa	Isle of Anglesey	47.6	34.1	14.7	3.4	0.1

5.4.1.2 Scotland

Baseline data on deprivation for Scotland was sourced from the Scottish Government's Scottish Index of Multiple Deprivation (SIMD) [62] which assesses the extent to which an area is deprived across seven domains: income, employment, education, health, access to services, crime and housing. Table 59 displays the most deprived data zones across Scottish local authorities and assigns a local and national share of the most severely deprived 20%. The 20% most deprived data zone in the SIMD refers to the share of areas ranked in the bottom fifth from a deprivation perspective.

Table 59 Scottish Index of Multiple Deprivation 2020 Local Authority Analysis

Site name	Local authority	Local share of 20% most deprived (%)	National Share of 20% most deprived (%)
Chapelcross	Dumfries and Galloway Council	9.45	1.36
Dounreay	The Highland Council	9.62	2.15
Hunterston A	North Ayrshire Council	39.78	5.3

5.5 Current workforce in nuclear

In 2024 there were 86,908 people employed in the nuclear industry in the UK [63], up from 77,413 in 2023 [64], an increase of 11%.

Table 60 displays the number of people employed in the nuclear industry in 2023 and 2024 by region of the UK.

Table 60 People employed in nuclear Industry in 2023 & 2024 by UK region

Region	2023	2024
East Midlands	4,548	5,560
East of England	1,523	2,376
London	2,635	2,933
North East	1,872	1,493
North West	27,024	29,204
Northern Ireland	8	10
Scotland	3,676	5,145
South East	8,697	9,231
South West	23,938	27,249
Wales	825	827
West Midlands	991	808
Yorkshire and the Humber	1,200	1,605
Various site and home-based workers	476	467
Total	**77,413**	**86,908**

5.5.1 NDA Workforce

As of December 2024, the NDA employed 20,635 people across its sites in the UK. Table 61 provides a breakdown of the NDA workforce by NDA Operating Company.

Table 61 NDA Operating Company employees

NDA Group division	Number of employees
NDA	431

NRS Sites	3,168
NRS Dounreay	1,646
NTS	751
NWS	1,208
Sellafield	13,431
Total	**20,635**

5.6 Business demography

Business demography features data on the birth, death and survival of businesses in differing geographical regions across the UK [65]. The business birth and death data reflect the rate at which new businesses are created and the rate at which businesses cease to operate. The data for all locations and sites was sourced from the Office for National Statistics using information from the year 2023.

5.6.1 Site Specific

Table 62 shows local business demography data from 2023 for the Local Authorities where NDA sites are situated [65].

Table 62 Business demography 2023

Site	Local Authority	Active Enterprises	Number of Births	Birth Rate (%)	Number of Deaths	Death Rate (%)
Berkeley	Stroud	5,845	505	8.6	560	9.6
Hinkley Point A	Somerset West and Taunton	6,050	540	8.9	620	10.3
Oldbury	South Gloucestershire	10,730	1140	10.6	1,095	10.2
Winfrith	Dorset	17,380	1580	9.1	1,540	8.9
Capenhurst	Cheshire West and Chester	13,920	1,435	10.3	1,405	10.1
LLWR	Copeland	1,625	185	11.4	185	11.3
Sellafield	Copeland	1,625	185	11.4	185	11.3
Springfields	Fylde	3,525	390	11.1	330	9.4
Dungeness A	Folkestone and Hythe	3,960	425	10.7	425	10.7
Harwell	Vale of White Horse	6,175	545	8.8	580	9.4
Bradwell	Maldon	3,530	330	9.4	305	8.6
Sizewell A	East Suffolk	9,385	790	8.4	920	9.8
Chapelcross	Dumfries and Galloway	4,600	365	7.9	325	7.1
Dounreay	Highland	9,370	910	9.7	770	8.2
Hunterston A	North Ayrshire	3,145	335	10.7	325	10.3
Trawsfynydd	Gwynedd	4,440	350	7.9	320	7.2
Wylfa	Isle of Anglesey	2,200	195	8.9	175	8

5.7 Diversity

The NDA workforce diversity encompasses four groups for representation, these are females, ethnic minorities, disabilities and Lesbian, Gay, Bisexual, Transgender and Queer/ Questioning (LGBTQ+) people. The current 2021 baseline diversity data is sourced from the NDA group inclusion strategy 2021-25, which was based upon a mix of data taken from the NDAs HR system and a disclosed and anonymous Equality, Diversity and Inclusion (EDI) employee survey [66]. The data is presented in Table 63.

Table 63 NDA Workforce Diversity Targets

Group	2021 representation
Female representation	28%
Ethnic minority representation	1%
Disability representation	4%
LGBTQ+ representation	2%

6. Baseline evolution

In line with the SEA Regulations requirement to consider the likely evolution of the baseline; future environmental, health and socio-economic baseline conditions have been established, where possible.

Where applicable, the baseline evolution information obtained covers the timescale over which the NDA Strategy applies - i.e. from today until the final site in the NDA estate achieves its end state in 2135.

6.1Environment

This section presents the future environmental baseline where information is available. Where possible, the baseline is described for each NDA site, as well as at a local, regional and national level where applicable.

6.1.1 Air Quality

6.1.1.1 National

UK emissions of air pollutants are anticipated to reduce steadily over time, as reported in the Air Pollution in the UK 2023 report [4] and summarised in Table 64Table 64 Total UK air emission projections. This trend is attributed to several factors which include but are not limited to:

- legislation specifically aimed at reducing the emissions of certain pollutants (Environmental Permitting Regulations 2016 [67], Clean Air Strategy 2019 [68], see Section 7.5 for more details);
- technology developments, increased efficiency and abatement measures;
- changes in activity, e.g. the increased use of natural gas and renewables instead of coal for power generation and the switch from diesel to petrol in the transport sector; and
- fiscal measures that encourage positive behaviours.

Table 64 Total UK air emission projections

Pollutant	Current emissions (2022)(kt)	Emission reduction commitment (ERC) 2020-2029 target (kt)	Emissions ceiling 2020-2029 (kt)
Oxides of Nitrogen (NO_x)	619.2	776.2	769
Sulphur Dioxide ($SO_{2)}$	120.2	320.5	322

Non-methane Volatile Organic Compounds	755.6	842.7	763
Particulate Matter ($PM_{2.5}$)	64.9	76.6	81
Ammonia (NH_3)	259.3	258	257

6.1.1.2 Local

At a local level, vehicles and diesel generators are used at all NDA sites which can generate pollutant emissions. Such emissions are likely to remain steady throughout each site's care & maintenance preparation phase and will decline substantially following decommissioning. Dust will be generated by various construction and demolition activities undertaken as part of care & maintenance preparation and final site clearance.

Currently none of the sites in the NDA estate are located in designated Air Quality Management Areas (AQMA), and this is expected to remain the case due to the remote locations of the sites and the reduction in emissions anticipated as sites progress through their respective decommissioning programmes.

6.1.2 Biodiversity

Generally, impacts upon biodiversity, flora and fauna will reduce over time as the sites move through the decommissioning process and are eventually delicenced following final site clearance. The NDA is producing a nature recovery plan to identify opportunities to support nature alongside the mission [69] and any new developments will comply with Biodiversity Net Gain requirements.

6.1.3 Climate change

The UK Climate Projections 2018 (UKCP18) provides the most up-to-date assessment of how the climate of the UK may change in the future. It contains information to help with climate change risk assessments and adaptation plans. The EA, Office for Nuclear Regulation (ONR) and Natural Resources Wales (NRW) expect operators of nuclear licensed sites and disposal sites for radioactive waste to use UKCP18 projections when assessing the impacts of climate change.

6.1.3.1 Mean Temperature and Rainfall

The UK is moving beyond the range of historical weather observations, with 2024 being 4th the warmest year on record after 2022, 2023 and 2014 [70]. The anticipated general trend in UK climate is towards drier summers and wetter winters [71]. Higher summer temperatures are expected to result in a rise in energy demand for cooling, although this may be balanced by a lower demand for energy if temperatures are higher during winter months. It is too early to assess impacts of drought and subsidence on NDA Strategy, but it may be considered in future IIAs for future NDA strategies.

Table 65 shows climate change projections for mean temperatures and rainfall changes at NDA sites. Information has been sourced from Met Office climate change projections based on UKCP18 data [71]. Projections are for 2020 – 2039 compared to 1981 – 2000 climate data.

Table 65 Climate change projections at NDA sites

Site	Summer Temperature °C	Winter Temperature °C	Summer Rainfall %	Winter Rainfall %
Berkeley	1 - 2	0 - 1	-10 - 0	0 - 10
Bradwell	1 - 2	0 - 1	-10 - 0	10 - 20
Capenhurst	0 - 1	0 - 1	-10 - 0	0 - 10
Chapelcross	0 - 1	0 - 1	-10 – 0	0 - 10
Dounreay	1 - 2	0 - 1	0 - 10	10 - 20
Dungeness A	1 - 2	0 - 1	-10 – 0	0 - 10
Harwell	1 - 2	0 - 1	-10 – 0	0 - 10
Hinkley Point A	0 - 1	0 - 1	-10 - 0	0 - 10
Hunterston A	0 - 1	0 - 1	-10 – 0	0 - 10
LLWR	0 - 1	0 - 1	-10 - 0	0 - 10
Oldbury	0 - 1	0 - 1	-10 - 0	0 - 10
Sellafield	0 - 1	0 - 1	-10 - 0	0 - 10
Sizewell A	0 - 1	0 - 1	-10 - 0	10 – 20
Springfields	0 - 1	0 - 1	-10 - 0	0 - 10
Trawsfynydd	0 - 1	0 - 1	-10 - 0	0 - 10
Winfrith	1 - 2	0 - 1	-10 - 0	0 - 10
Wylfa	0 - 1	0 - 1	-10 - 0	0 - 10

6.1.3.2 Groundwater Recharge Projections

All of the sites, except Hinkley Point A, are located on a groundwater body. It is predicted that climate change will impact recharge of groundwater bodies. Changes to these groundwater body recharges have been assessed seasonally (summer and winter) for each site between the years of 2020 and 2049 [72]. Projected groundwater recharge changes are summarised in Table 66 below.

Table 66 Groundwater recharge change projections at NDA sites

Site Name	Groundwater Body Name	Groundwater Body Recharge % Change in Winter	Groundwater Body Recharge % Change in Summer
Berkeley	Avonmouth Mercia Mudstone	-5 < 5 (4.5)	-40 < -30 (-30.3)
Bradwell	Essex Gravels	-5 < 5 (1.2)	-5 < 5 (1.9)

Site Name	Groundwater Body Name	Groundwater Body Recharge % Change in Winter	Groundwater Body Recharge % Change in Summer
Capenhurst	Wirral and West Cheshire Permo-Triassic Sandstone Aquifers	-5 < 5 (3.7)	-50 < -40 (-44.4)
Chapelcross	Annan	5 < 10 (5.6)	-30 < -20 (-21.4)
Dounreay	Dounreay	-5 < 5 (4.5)	-5 < 5 (4.3)
Dungeness A	Kent Romney Marsh	5 < 10 (5.6)	5 < 10 (9.8)
Harwell	Vale of White Horse Chalk	-5 < 5 (2.9)	-50 < -40 (-47.8)
Hinkley Point A	Tone and North Somerset Streams (nearest)	--5 < 5 (1.0)	-30 < -20 (-25.7)
Hunterston A	West Kilbride	5 < 10 (9.7)	-10 < – 5 (-6.1)
LLWR	West Cumbria Permo-Triassic sandstone aquifers	5 < 10 (7.6)	-20 < -10 (-10.6)
Oldbury	Avonmouth Mercia Mudstone	-5 < 5 (4.5)	-40 < -30 (-30.3)
Sellafield	West Cumbria Permo-Triassic sandstone aquifers	5 < 10 (7.6)	-20 < -10 (-10.6)
Sizewell A	Waveney and East Suffolk Chalk & Crag	-5 < 5 (-1.4)	-5 < 5 (3.6)
Springfields	Fylde Permo-Triassic Sandstone Aquifers	5 < 10 (5.2)	-40 < -30 (-37.4)
Trawsfynydd	Llyn and Eryri	5 < 10 (5.4)	-20 < -10 (-16.9)
Winfrith	Lower Frome and Piddle	5 < 10 (5.4)	-40 < -30 (-31.9)
Wylfa	Ynys Mon Secondary	-5 < 5 (4.7)	-30 < -20 (-20.4)

6.1.3.3 Links to air quality

Variations in energy use can have a direct impact on air quality at the sites, especially after nuclear reactors are shut down and sites switch to using fossil fuels. Diesel generators and fossil fuel-powered vehicles can lead to emissions of air pollutants and particulate matter.

6.1.3.4 Links to flood risk and coastal erosion

One anticipated impact of climate change is its influence upon surface water, fluvial and coastal flooding, and coastal erosion. Changes may result from increased precipitation, flash floods as a result of drier ground conditions and higher sea levels with associated changes in extreme wave and tidal events.

6.1.3.5 Links to biodiversity, flora and fauna

Impacts to biodiversity, flora and fauna are expected to increase as the magnitude of climate change increases. There are regional differences in the impact of climate change on biodiversity. The impact on flora and fauna also varies depending on species. Some habitats are recognised as being particularly vulnerable to climate change, e.g. montane habitats (from increased temperatures), wetlands (from changes in water availability) and coastal habitats (from sea-level rise).

6.1.3.6 Link to geology and soils

Hotter drier summers and warmer wetter winters, coupled with increased frequency of extreme weather occurrences such as heat waves, dry spells, heavy rain and flooding, has the potential to substantially affect soils and increase the risk of their degradation. Risk of soil erosion will increase if trends for wetter winters and heavier rainfall continue, whilst drier soils in the summer could accelerate runoff.

6.1.3.7 Links to water resources and quality

Climate change may have long-term effects on water quality for a variety of reasons. Increases in mean air temperature will result in increased water temperatures as heat is transferred between them. This may lead to a decline in water quality due to deoxygenation (warmer water holds less oxygen) and increased rates of pollutant dissolution. Increased precipitation and flooding can also result in deterioration in water quality due to increased diffuse pollution from runoff derived from agriculture and industry.

6.1.4 Coastal change and flood risk

The future baseline for climate change is intrinsically linked to flood risk and coastal erosion. Changes to mean temperature, precipitation and sea level associated with climate change are predicted to exacerbate existing risks posed by flooding and coastal erosion.

Regional changes in flood risk are likely to be linked to regional changes in mean temperature and precipitation, whereas the impact of sea level rise will have a more localised effect. Therefore, future trends in coastal erosion can be considered largely site-specific. Changes in erosion would be dependent on a combination of factors, including the extent of sea level rise, changes in surges and wave strength and the geology of coastal rock formations.

As impacts from flooding are likely to increase as a result of climate change, it is broadly assumed that sites currently at risk of flooding will remain at risk throughout the Strategy period in the absence of intervention.

Anticipated future changes in coastal flooding, erosion and sea level rise at the NDA sites are outlined in Table 67, along with a description of current coastal defences, site elevation from previous site specific reports and any erosion predictions provided for sites in Scotland from Dynamic Coast [73].

6.1.4.1 Site-specific

Table 67 Coastal erosion and sea level rise risk at NDA sites

Site Name	Risk from sea-level rise	Coastal flooding and erosion risk
Berkeley [74] [75]	Yes	The site is situated on the low-lying floodplain of the River Severn, which is highly tidal, and has historical instances of storm surge flooding (e.g., Bristol Channel Flood 1607). Located by the coast at approximately 10 m above Ordnance Datum (OD), it is considered at risk of flooding from sea level rise or frequent storm surges associated with climate change. Waves from Atlantic storms move up the estuary, increasing wave energy and water levels during storm events, which raises the risk of coastal flooding. The flood defences consist of a continuous embankment

Site Name	Risk from sea-level rise	Coastal flooding and erosion risk
		along the shoreline, curving inland around Berkeley Pill, and extending to the north and south of the site.
Bradwell [76]	Yes	The site is situated on low-lying land at sea level on the coast of the Blackwater Estuary, which is tidal, and has historical instances of storm surge flooding (e.g., North Sea Flood 1953), making it potentially vulnerable. Located by the coast at approximately 5.5 m above OD, it is considered at risk of flooding from sea level rise or frequent storm surges associated with climate change. However, the site is currently protected by a 4.8 – 5 m high sea wall and gully, which provide defence against current high sea levels and surges.
Capenhurst	No	The site is located inland and is therefore not considered at risk of flooding from sea level rise or frequent storm surges associated with climate change.
Chapelcross	No	The site is located inland and is therefore not considered at risk of flooding from sea level rise or frequent storm surges associated with climate change.
Dounreay [77] [73]	No	The site is located approximately 20 m above OD, on the northern coast of Scotland, and is therefore not considered at risk of flooding from sea level rise or frequent storm surges associated with climate change. Geographical Information System (GIS) data provided by Dynamic Coast indicates that the sea level is predicted to rise by 1.0 m in the area around Dounreay by 2100. Changes in sea level are unlikely to be significant at Dounreay for several hundred years.
Dungeness A [78]	Yes	The site is located on the Kent coast, approximately 5.8 m above OD, and is therefore considered at risk of flooding from sea level rise or frequent storm surges associated with climate change.

Site Name	Risk from sea-level rise	Coastal flooding and erosion risk
		Coastal defences were reinforced in the wake of the Fukushima incident in 2011.
Harwell	No	The site is located inland and is therefore not considered at risk of flooding from sea level rise or frequent storm surges associated with climate change.
Hinkley Point A [79] [75]	Yes	The site is located on the Bristol Channel, which is highly tidal, and has historic instances of storm surge flooding (e.g., Bristol Channel Flood 1607). Situated by the coast at approximately 11 m above OD, it is considered at risk of flooding from sea level rise and frequent storm surges associated with climate change. It is also subject to waves from Atlantic storms, which increase wave energy and water levels during storm events, further raising the risk of coastal flooding. However, the site is protected from flooding and erosion by a concrete sea wall founded on the shoreline rock platform (crest height 8.5 m) and a secondary gabion wall (crest height 12 m) behind the main sea wall.
Hunterston A [80] [73]	Yes	The site is located on the Ayrshire coastline, approximately 4.5 m above OD, and is therefore considered at risk of flooding from sea level rise or frequent storm surges associated with climate change. However, it is protected from coastal erosion by engineered rock and crushed concrete bunds, which were built during the construction phase. GIS data provided by Dynamic Coast indicates that the sea level is predicted to rise by 0.9 m in the area around Hunterston A by 2100, and the data suggests that coastal recession and erosion are unlikely to affect the site at that time.
LLWR [81]	Yes	The site is located on the West Cumbrian coast near Drigg, with a minimum elevation of <5 m above OD.

Site Name	Risk from sea-level rise	Coastal flooding and erosion risk
		This puts the site at risk of flooding from sea level rise and frequent storm surges associated with climate change. Its north-western corner is approximately 400 m from the high-water mark, making it vulnerable to sea-level rise and coastal erosion. However, the site is protected by natural coastal defences and is not anticipated to be subject to erosion for a few hundred to a few thousand years.
Oldbury [82] [75]	Yes	The site is located on the Severn Estuary, at an elevation of approximately 10 m above OD. This area is highly tidal and has experienced historic instances of storm surge flooding, such as the Bristol Channel Flood of 1607. Due to its proximity to the coast, the site is considered at risk of flooding from sea level rise and frequent storm surges associated with climate change. During storm events, waves from Atlantic storms move up the estuary, increasing wave energy and water levels, which in turn raises the risk of coastal flooding. The flood defences at Oldbury consist of a grass-covered embankment that rises to 2 m above the adjacent natural ground level. Additionally, stone pitching has been implemented between the site and the foreshore to provide protection against erosion.
Sellafield [83] [84] [85]	Yes	The site is located on the Cumbrian coast, with a minimum elevation of 5 m above OD, and is therefore considered at risk of flooding from sea level rise or frequent storm surges associated with climate change. There are already coastal defence structures in place near the nominated site, designed to protect both the site and the adjacent railway. These defences are maintained by Network Rail. However, in response to the long-term

Site Name	Risk from sea-level rise	Coastal flooding and erosion risk
		effects of climate change, these defences may need to be reinforced or extended to ensure continued protection.
Sizewell A [86]	Yes	The site is located on the Suffolk coast at an elevation of 9 m above OD and is therefore considered at risk of flooding from sea level rise or frequent storm surges associated with climate change. While the site is elevated above the current sea level, the risk of flooding could be exacerbated by the susceptibility of this stretch of Suffolk coast to erosion from wave action. Historical instances of storm surge flooding, such as the North Sea Flood of 1953, highlight the site's potential vulnerability. The site is protected from flooding and erosion by soft defences, consisting of a line of relict, vegetated sand dunes that have been remodelled into a two-layered defence. This includes a 10 m AOD inner ridge and a 5 m AOD outer ridge.
Springfields	No	The site is located inland and is therefore not considered at risk of flooding from sea level rise or frequent storm surges associated with climate change.
Trawsfynydd	No	The site is located inland and is therefore not considered at risk of flooding from sea level rise or frequent storm surges associated with climate change.
Winfrith	No	The site is located inland and is therefore not considered at risk of flooding from sea level rise or frequent storm surges associated with climate change.
Wylfa [87]	Yes	The site is located on the north Anglesey coast, with a minimum elevation of 6 m above Ordnance Datum (OD) and is therefore considered at risk of flooding from sea level rise or frequent storm surges associated with climate change. The site is situated at three different

Site Name	Risk from sea-level rise	Coastal flooding and erosion risk
		levels, two of which are significantly above sea level: the switch houses are at 16-20 m AOD, the reactor block and turbine hall at 10-14 m AOD, and the cooling water pump house slopes from 10-6 m AOD. As such, the areas of the site containing radioactive materials are well situated above sea level. The flood defences at the site consist of a shallow gradient rock foreshore, which is topped off by a sea wall in localised areas. Additionally, the high integrity of the cliffs at Wylfa Head generally negates the need for further coastal defences.

6.1.5 Cultural Heritage

The historic environment can be considered a finite resource. It cannot be replaced and is susceptible to decline over time as historic features experience degradation and decay. However, cultural heritage as a whole can evolve and change, and features which are not currently considered a valued part of the historic environment may become so in the future, either due to their uniqueness, past use or historic or cultural significance.

6.1.6 Geology and Soils

Soil is a finite natural resource. It regenerates only over extremely long geological timescales and provides many essential services on which humans rely, including food production, water management and support for valuable biodiversity and ecosystems. As a large store of carbon, it also plays a vital role in preventing adverse climate change. The UK Agriculture Act (2020) [88] contains provisions regarding the improvement of soil quality.

The Government's 25 Year Environment Plan [89] aims to improve our approach to soil management; and by 2030 all of England's soils will be managed sustainably, using natural capital thinking to develop appropriate soil metric and management approaches. The emphasis is on improving the health of soils and the wider environment, by addressing factors in soil degradation such as erosion, compaction and decline in organic matter. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations. The EA also seeks to protect water, air and soil from pollution by promoting good soil management.

Soils in England have degraded over the last 200 years due to intensive agricultural production and industrial pollution. Soils continue to face three main threats:

- Soil erosion by wind and rain - erosion affects both the productivity of soils but also water quality and aquatic ecosystems.
- Compaction of soil reduces agricultural productivity and water infiltration and increases flood risk through higher levels of run off.
- Organic matter decline - the loss of organic matter reduces soil quality, affects the supply of nutrients and makes it more difficult for plants to grow, as well as increasing emissions to the atmosphere.

The gradual build-up of pollutants in soil over many decades is a serious threat to soil function. The presence of pollutants can adversely affect soil biota that is needed for healthy functioning soil, as well as to support plants and other animals. Soil pollutants also have the potential to adversely affect human health if they enter the food chain or drinking water sources.

Scotland's soils are generally in good health due largely to the sustainable management employed by land managers over a prolonged period [90].

A draft policy statement regarding sustainable soil management is currently in draft [91]. This will set out the vision for sustainable use and management of agricultural soils for future generations.

6.1.7 Landscape and Visual Impacts

Landscape consists of an overall pattern of elements which together determine the landscape character and local or regional distinctiveness. It can be impacted by alterations to designated landscapes, conservation sites and cultural associations and is sensitive to changes in perceived characteristics. Impacts will involve two receptor groups: people seeking to enjoy the landscape and the physical fabric of the landscape itself.

Many sites within the NDA estate are located in a rural setting and as such tranquillity and remoteness are valued in these areas. Many changing trends can influence the landscape, which also includes townscape and seascape. Population growth and increasing demand for development heightens pressure on undeveloped land and can lead to changes in the way that the built environment interacts with the natural. Climate change is also likely to have an influence on the future of landscapes via changes in agriculture and development.

Landscape is best defined at a regional to local scale. Future regional and local scale changes in landscape are set out in the short to medium-term in local authority strategic

plans and local development plans. These documents have been used to inform the assessment.

6.1.8 Materials and Waste

A combination of radioactive and conventional waste is produced at all sites. LLW is disposed of according to the waste hierarchy, being reused or recycled where possible, treated, disposed of to a licenced landfill site if appropriate or packaged and sent to the LLWR if there is no suitable alternative and LLWR Waste Acceptance Criteria are met. NRS Dounreay also has an LLW disposal facility similar to the LLWR for LLW from Dounreay. ILW is and has been generated from both operational and decommissioning activities. Decommissioning activities do not generate HLW, which is produced from the reprocessing of spent nuclear fuels.

The NDA are working towards zero controlled conventional and non-radioactive waste to landfill by 2035 [69].

Table 68 displays data for projected waste still to be produced at NDA sites. Data has been provided by the NDA from 2024 as part of their mission progress reporting. LLW includes waste suitable for permitted landfill disposal.

Table 68 Waste volumes still to be produced at NDA sites

Site	Waste volumes (m^3)			
	HLW	ILW	LLW	Total
LLWR	0	0	563	563
NRS Dounreay	0	1,083	69,808	70,891
NRS Sites	0	43,293	501,002	544,295
Sellafield	1,718	67,278	3,231,634	3,300,630

6.1.9 Water Resources and Quality

It is expected that pressures on water resources will become more evident and increase with a growing population, changing climate and changes to how we use land. The EA's review of England's revised water resources management plans state that the government is seeking a 9% reduction in business water consumption by 2037-38 from 2019-20 levels as part of delivery of the water demand targets of the Environment Act (2021). Up to now a reduction of 6.1% has been achieved [92].

Water quality is influenced by a wide range of internal and external factors, including climate change, geology and soils, human consumption (including population change) and pollution from human activities such as industry and agriculture. Uses of water and water environments, if not managed sustainably, can have significant impacts on both their quality and their potential for use. Industrial activities that use water cause pollution

or degrade water habitats may have long-term impacts on water environments, either directly or indirectly, as a result of these activities taking place in the water catchment.

Table 69, Table 70 and Table 71 display expected changes in the conditions of water bodies in the river basin districts of NDA sites. Information has been taken from River Basin District plans for each NDA site.

Table 69 Anticipated future changes in waterbody status for river basin districts in England [93]

River Basin District	Good or high status 2019 (%) – Ecological	Good or high status by 2027 (%) – Ecological	Good or high status by 2063 % – Chemical
Northwest (Sellafield, LLWR, Springfields, Capenhurst)	Ecological 21.9	Ecological 88.5	Chemical 0
Severn (Oldbury, Berkeley)	Ecological 9.5	Ecological 83.8	Chemical 100
Southwest (Hinkley Point A)	Ecological 21.1	Ecological 86.7	Chemical 100
Anglian (Bradwell, Sizewell A)	Ecological 7.8	Ecological 58.8	Chemical 100
Southeast (Dungeness A)	Ecological 16	Ecological 79.8	Chemical 100

Table 70 Anticipated future changes in waterbody status for river basin districts in Wales [94]

River Basin District	Good or high condition 2021 (%)	Good or high by 2027 (%)
Western Wales (Trawsfynydd, Wylfa)	Overall 42	Overall 85

Table 71 Anticipated future changes in waterbody condition for river basin districts in Scotland [95]

River Basin District	Good or better condition 2020 (%)	Good or better by 2027 (%)	Good or better beyond 2027 %
Scotland (Dounreay, Hunterston A)	Water quality 87 Water resource 90	Water quality 92 Water resource 96	Water quality 98 Water resource 96
Solway Tweed (Chapelcross)	Overall 45	Overall 76	Overall 89

6.2 Future health and socio-economic baseline

This section presents the future health and socio-economic baseline where information is available. Where possible, the baseline is described for each NDA site, as well as at a local, regional and national level where applicable.

6.2.1 Population

Population is a key factor which determines the future health and socio-economic characteristics of communities. The general anticipated trend up until 2033 is for an increase in population across England, Scotland and Wales of 14%, 7%, and 6% respectively, and for a total UK population of 69.1 million by 2033 [96].

The Office for National Statistics has produced population projections for local authorities in England [96]. The 2031 estimates are based on the latest projection and are presented in Table 72 for the local authorities in England and Wales where NDA sites are located up to the end of timespan covered by the NDA Strategy (2026). Table 73 displays population projections for local authorities in Scotland which are estimated by Public Health Information for Scotland up to 2043 only [97].

Table 72 Population projections for local authorities in England and Wales

Site	Local Authority	2018 Population	2031 Projection	% change
Berkeley	Stroud	119,019	128,890	8
Bradwell	Maldon	64,425	69,763	8
Capenhurst	Cheshire West & Chester	340,502	371,113	9
Dungeness A	Folkestone & Hythe	112,578	122,369	9
Harwell	Vale of White Horse	133,732	154,398	15
Hinkley Point A	West Somerset	34,887	37,992	9
LLWR/Sellafield	Copeland	68,424	64,967	-5
Oldbury	South Gloucestershire	282,644	322,665	14
Sizewell A	Suffolk Coastal	129,938	140,943	8
Springfields	Fylde	79,770	87,877	10
Trawsfynydd	Gwynedd	120,197	124,510	4
Winfrith	Purbeck	47,135	50,668	7
Wylfa	Isle of Anglesey	69,102	68,565	-1

Table 73 Population projections for local authorities in Scotland

Site	Local Authority	2018 Population	2043 Projection	% Change
Chapelcross	Dumfries & Galloway	149,000	136,000	-8.8
Dounreay	Highland	236,000	233,000	-1.3

Hunterston A	North Ayrshire	135,000	122,000	-9.7

6.2.2 Development and Economic Growth

There are difficulties involved in projecting future changes in development and economic growth at a national scale, as they are dependent on a wide range of factors. However, large-scale investment in Nationally Significant Infrastructure Projects (NSIP) such as Crossrail, HS2, and new nuclear build will continue throughout the short to medium-term.

The UK came under new government in July 2024 and as such a major review of socio-economic policies is currently underway. The new Government has stated that it is committed to ensuring the economy can provide the stability and certainty needed to allow investment to create growth and new jobs [98].

At a local scale, future investment can be better projected, as strategic local development plans are produced for every local and unitary authority in the UK.

In terms of future development at the sites themselves, the NDA has considered some potential land use opportunities following site closure and possible delicensing. These include:

- Business parks
- Centres of education
- New nuclear power stations
- Science and Technology centres

Table 74 displays planned future developments within the local authorities where NDA sites are located.

Table 74 Planned future developments

Site (Local/Unitary Authority	Relevant future development in Local Authority
Berkeley (Stroud) [99]	▪ Housing supply target of at least 4,200 new homes by 2031. ▪ Strategic objectives to prioritise developing homes and communities, economy and infrastructure, and the environment and surroundings.
Bradwell (Maldon) [100]	▪ Housing supply target of 2,811 houses by 2029 in two garden suburb developments. ▪ Completion of Maldon & Heybridge and Burnham-on-Crouch 682 Strategic Allocation houses by 2029.

Site (Local/Unitary Authority	Relevant future development in Local Authority
	▪ 94.21 ha existing employment space reserved for employment development and approximately 11.4 ha allocated for new employment development.
Capenhurst (Cheshire & West Chester) [101]	▪ Housing completion trajectory of 22,000 dwellings between 2010-2030. ▪ Regeneration projects such as the Chester Renaissance Programme and Ellesmere Port Development. ▪ New developments in Northwich, Winsford and Middlewich.
Chapelcross (Dumfries & Galloway) [102]	▪ Housing supply target increase of 5,282 between 2017 and 2029 with 554 located in the Annan housing market area. ▪ Regeneration projects on brownfield sites are underway in Dumfries and the Gretna-Lockerbie-Annan corridor. ▪ Stranraer waterfront extension on Loch Ryan mixed used development.
Dounreay (Highland) [103]	▪ Housing supply target increase of 1140 between 2016 and 2035 with 530 planned for Caithness with developments such as the Thurso West mixed use development that will have an indicative housing capacity of 200 within proximity of the site. ▪ Energy Hub - Area for Co-ordinated Action in the Pentland Firth and Orkney Waters. ▪ High Voltage Energy Transmission Network. ▪ Reusing vacant land in town centres such as Brora, Dornoch, Golspie, Thurso and Wick. ▪ Supported growth in marine renewable energy generation particularly in the east plan area.
Dungeness A (Folkestone & Hythe) [104]	▪ Housing supply target of 738 new homes a year on average over the period 2019/20 to 2036/37 (18 years); or 13,284 additional homes in total by 2037. ▪ Plan for approximately 19,000sqm of office space. ▪ No requirement for further industrial space.
Harwell (Vale of White Horse) [105]	▪ Housing supply target of 20,560 dwellings between 2011-2031 with 3,065 completions between 2011-2016.

Site (Local/Unitary Authority	Relevant future development in Local Authority
	▪ Botley Central Area shopping centre development at Grove airfield site. ▪ Science Vale Area including the Harwell Campus, Milton Park, Culham Science Centre, Dicot, Wantage and Grove. ▪ New homes will be developed in existing built areas of market towns, local service centres and larger villages. ▪ Mixed use redevelopment of Didcot A Power Station site. ▪ Mixed use developments at Monks Farm, Grove and South of Park Road Faringdon.
Hinkley Point A (West Somerset) [106]	▪ Housing supply target of 2,900 new dwellings by 2032, with 1,450 of these being provided on key strategic sites at Minehead/Alcombe, Watchet and Williton.
Hunterston A (North Ayrshire) [107]	▪ Housing supply target increase of 4,071 homes between 2019-2029. ▪ Development of the i3 business and innovation location in Irvine. ▪ Development of 'Maritime Mile' at Irvine Harbourside. ▪ Redevelopment of the North Shore site at Ardrossan harbour. ▪ The Montgomerie Park development. ▪ Kilbirnie mixed use redevelopment of Lochshore. ▪ Supporting development at the Brodick Gateway/ Market Road. ▪ Supporting the Cumbrae Millport Conservation Area Regeneration Scheme. ▪ Possible new power station adjacent to existing site.
LLWR, Sellafield (Cumberland) [108]	▪ 30 sites outlined for housing over the course of the Copeland Local Plan 2021-2039. ▪ Baseline housing requirement 2,624 dwellings to be delivered between 2021 and 2039. ▪ Aspirational growth target of 3,600 dwellings minimum to be delivered between 2021 and 2039. ▪ 70% of this baseline requirement is distributed between Whitehaven, Cleator Moor, Egremont and Millom.

Site (Local/Unitary Authority	Relevant future development in Local Authority
Oldbury (South Gloucestershire) [109]	▪ Housing supply delivery target of 4,180 new homes between 2023-2027. ▪ Completion of developments at Patchway/ Cribbs Causeway, Harry Stoke, Emersons Green, North Yates, Thornbury and Severnside. ▪ The University of the west of England further development of the Frenchay Campus. ▪ Large-scale development in Charfield, Thornbury, Yate, Coalpit Heath and Buckover. ▪ There is a declining brownfield supply for redevelopment as they have been utilised previously for developments.
Sizewell A (East Suffolk) [110]	▪ Housing supply target increase of 9,756 over the lifetime of the plan between 2018-2036. ▪ Expansion and development of the Port of Felixstowe. ▪ Garden neighbourhoods at Felixstowe and Saxmundham. ▪ Proposed Sizewell C nuclear power station.
Springfields (Fylde) [111]	▪ Housing supply target provision increase of 7, 891 between 2011 and 2032. ▪ Strategic locations for development identified in Lytham and St Annes, the Blackpool Periphery, Warton and Kirkham and Wesham. ▪ Fylde Coast Energy Hub and new energy HQ training facilities at Blackpool and Fylde Collages.
Trawsfynydd (Gwynedd) [112]	▪ 7,184 total cumulative housing development completions by the year 2026 for both in the Isle of Anglesey and Gwynedd. ▪ Employment site at Y For. ▪ Snowdonia Enterprise Zone at Trawsfynydd site.
Winfrith (Dorset) [113]	▪ Housing and land supply increase of 3,150 dwellings and 130 extra care units between 2018 and 3034. ▪ Growth and development of Holton Heath Trading Park and Enterprise Zone. ▪ Designated neighbourhood areas for housing developments in Arne, Bere Regis, Lytchett Matravers, Wareham, West Lulworth and Wool.

Site (Local/Unitary Authority	Relevant future development in Local Authority
Wylfa (Isle of Anglesey) [112]	▪ 7,184 total cumulative housing development completions by the year 2026 for both in the Isle of Anglesey and Gwynedd. ▪ The Anglesey Energy Island Programme. ▪ Further investment into the Grwp Llandrillo Menai campus in Llangefni. ▪ Bangor University Science Park at Gaerwen.

6.2.3 Diversity

The NDA recognise the necessity of improving the diversity of the NDA workforce in order to become representative of modern Britain, while aspiring to meet external commitments to improve gender balance in the sector.

Table 75 shows NDA group-wide 2025 targets for each diversity strand against the baseline of 31st March 2021 [66].

Table 75 NDA Workforce Diversity targets

Representation	2021 Baseline	2025 Target All Roles	2025 Target All Graduates
Female representation	28%	30%	50%
Ethnic minority representation	1%	5%	15%
Disability representation	4%	6%	6%
LGBTQ+ representation	2&	3%	3%

7. Legislation and policy

A review of relevant policy and legislation has been carried out to inform the assessment by identifying environmental, health and socio-economic matters which must be considered for possible relevance to the NDA Strategy (2026) in accordance with legislation and international/national policy. These include:

- development and environmental, health and socio-economic matters objectives which are relevant to the Strategy, such that the IIA seeks to avoid hindering the achievement of those objectives, and to maximise contribution towards achievement;
- sources of baseline information/information developed in support of plans and strategies (e.g. landscape characterisation or water resource management / resource availability assessments); and
- proposed levels of development, schemes, interventions, and other actions which may alter the future baseline.

The assessment considers legislation, policies, plans and strategies relevant to the environmental, health and socio-economic issues that apply to the NDA's sites, issued on international, European, national, and local levels.

7.1 SEA Directive

SEA became a statutory requirement following the adoption of European Directive 2001/42/EC (the SEA Directive) on the assessment of the effects of certain plans and programmes on the environment [114]. The SEA Directive was transposed into UK legislation on the 20 July 2004 as Statutory Instrument No. 1633 – The Environmental Assessment of Plans and Programmes Regulations 2004 ("the SEA Regulations") [2].

The objective of SEA as set out in the Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development.

According to the SEA Regulations [2], where an environmental assessment is required, an environmental report must be prepared which:
Identifies, describes, and evaluates the likely significant effects on the environment of-
a) Implementing the plan or programme; and
b) Reasonable alternatives considering the objectives and the geographical scope of the plan or programme is made available for the purpose of consultation.

The SEA Directive aims are consistent with a range of Government policies on the environment and sustainable development. Though usually referred to as the SEA

Directive, it does not use the term "strategic environmental assessment" or SEA; rather, it requires an "environmental assessment" of certain plans and programmes. The Directive defines environmental assessment as a procedure comprising:

- preparing an Environmental Report on the likely significant effects of the draft plan or programme;
- carrying out consultation on the draft plan or programme and the accompanying Environmental Report;
- taking into account the Environmental Report and the results of consultation in decision making;
- providing information when the plan or programme is adopted and showing how the results of the environmental assessment have been taken into account.

The selection of environmental topics to be included in the 2021 IIA [115] was informed by guidance on undertaking strategic environmental assessments and will be taken forward in this IIA.

The Levelling Up and Regeneration Act 2023 [116] introduced broad powers allowing new regulations and guidance to come forward in the UK and was used to implement a new system of environmental assessment known as Environmental Outcomes Reports. This would allow the government to replace the EU-derived Strategic Environmental Assessment process. The intention was that Environmental Outcome Reports will replace the existing system of Sustainability Appraisals, Strategic Environmental Assessments and Environmental Impact Assessments. The Department of Levelling Up, Housing & Communities (now Ministry of Housing, Communities and Local Government) consulted on Environmental Outcome Reports and the proposed approach in 2023. The outcome of the consultation has not been published and as of September 2024, the requirements of the SEA Regulations [2] still stand.

7.2Brexit

The UK ceased to be a member of the European Union (EU) on 31st January 2020. The EU requested that the UK keep in step with EU environmental standards post-Brexit. This idea was rejected by the UK and replaced with provisions to maintain a level playing field.

The level playing field is dealt with in the UK/EU Trade and Cooperation Agreement (TCA) [117]. This covers areas of law, including environment and climate, applying to industrial emissions, air, nature and biodiversity, waste management, and the aquatic and marine environments.

The TCA requires non regression in the level of environmental protection by the UK following its exit from the EU, meaning that the UK should not try to undo, either by legislation or by lack of enforcement, the levels environmental protection that were in

place on 31 December 2020 before it left the EU. Where EU environmental laws contain targets, they continue to be binding on the UK.

With respect to energy, there is to be regulatory and technical cooperation, as well as a reconfirmation of the Paris Agreement [118] climate goals. But the UK is no longer part of the EU energy market and emissions trading scheme. The UK has concluded a separate agreement with Euratom on peaceful cooperation on nuclear technology.

The Retained EU Law (Revocation and Reform) Act [119] was passed in the UK in June 2023. This Act made significant changes to the domestic body of law currently known as Retained EU Law (REUL), a type of UK domestic law. It was created by the EU (Withdrawal) Act 2018 [120] and came into effect at the end of the UK's post-Brexit transition period.

The primary objective of REUL was to provide legal continuity and certainty and minimise any substantive changes in UK domestic law at the point the transition period and alignment with EU law ended. This was achieved by preserving domestic legislation that implemented EU obligations and by converting parts of EU law into a domestic equivalent.

The Retained EU Law Act [119] made significant changes to the framework of REUL. At the end of 2023 all or part of 587 legislative instruments of EU-related origin, all retained directly effective EU law, the modified principle of supremacy of EU law and the retained general principles of EU law were revoked and retained EU law was renamed to assimilated law.

The network of European protected sites previously known as Natura 2000 sites, are now known as the National Site Network within the United Kingdom, and Northern Ireland [121].

7.3 The Environment Act 2021

The Environment Act 2021 [122] sets out how UK government will protect and enhance the environment for future generations. The majority of the bill applies to England and Wales only, however provisions on waste including producer responsibility, resource efficiency and exporting waste apply to the whole of the UK.

The Environment Act 2021 acts as the UK's new framework of environmental protection and replaces previous UK legislation which were repealed when the UK left the EU in 2020. When the UK left the EU, laws on nature protection, water quality, clean air and other environmental protection that originally came from EU directives no longer applied and the Act was enacted to fill the gap.

The Act introduces a mandatory requirement for biodiversity net gain in the planning system, to ensure that new developments enhance biodiversity and create new green spaces for local communities. The Act includes a new legally binding target on species

abundance for 2030 and provides a framework of measures to support nature's recovery in line with the ambition set out in the UK government's 25 Year Environment Plan 2023 [89] , which aims to halt the decline in our biodiversity in order to achieve thriving plants and wildlife. The Act not currently address net gain provision within NSIP, this is expected later in the year.

The Act requires the creation of Environmental Improvement Plans (EIPs) by the government. The 25 Year Environment Plan (25YEP) [89] was considered the first such plan and was refreshed in 2023 to form the first follow up Environmental Improvement Plan (2023) [123] The Environmental Improvement Plan 2023 uses the 10 goals set out in the 25YEP:

- thriving plants and wildlife,
- clean air, clean and plentiful water,
- managing exposure to chemicals and pesticides,
- maximise resources,
- minimise waste,
- using resources from nature sustainably,
- mitigating and adapting to climate change,
- reduced risk of harm from environmental hazards,
- enhancing biosecurity,
- enhanced beauty, heritage,
- engagement with the natural environment as the basis for achieving its apex goal of improving nature.

The Environment Act 2021 aims to tackle the major sources of pollution in UK rivers and improve water quality. For England, this means achieving Good Ecological Status for 75% of water bodies by 2027. Additionally, the Act has set requirements for targets designed to recover nature in England across four priority areas: air quality, biodiversity, water and waste. Those legally binding environmental targets were set in 2022 and include:

- Halting the decline in species populations by 2030 and then increase populations by at least 10% to exceed current levels by 2042.
- Restoring precious water bodies to their natural state by cracking down on harmful pollution.
- Assisting with the delivery of net-zero ambitions and boosting nature recovery by increasing tree and woodland cover to 16.5% of total land area in England by 2050.
- Cutting exposure to the most harmful air pollutant to human health.
- Restoring 70% of designated features in our Marine Protected Areas to a favourable condition by 2042, with the rest in a recovering condition.

7.4 The NDA Strategy

The Energy Act (2004) [1] requires the NDA to develop and publish a strategy which must be reviewed at least every five years. Specifically, it commits the NDA to:

- include the NDA's strategy for decommissioning and cleaning up the UK's civil nuclear legacy;
- set out the priorities the NDA has adopted to discharge its responsibilities;
- set out how it proposes to promote effective competition for contracts;
- set out its proposals for ensuring the adoption of what it considers to be good practice;
- outline how it proposes to support activities which benefit the social or economic life of communities living near its sites or that produce other environmental benefits; and
- explain how and why it arrived at the decisions and proposals which are set out in the strategy.

7.5 Air quality

Action to manage and improve air quality is largely driven by European legislation. The Ambient Air Quality Directive (2008/50/EC) [124] sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health, such as particulate matter and nitrogen dioxide (N2O). The Fourth Daughter Directive (2004/107/EC) [125] sets limits for arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air. The directive became law in the UK through the Air Quality Standards Regulations 2010 [126], and equivalent regulations in Scotland and Wales.

Separate legislation exists for emissions of air pollutants, with the main legislation being the UNECE Gothenburg Protocol [127] which sets national emission limits (ceilings) for sulphur dioxide (SO2), oxides of nitrogen (NOx), ammonia and volatile organic compounds (VOCs). The revised Gothenburg Protocol (2012) [128] sets out new emission reduction commitments for sulphur dioxide, nitrogen oxides, non-methane volatile organic compounds, ammonia and fine particulate matter, taking the year 2005 as a base year. Similar ceilings have also been set in European law under the National Emission Ceilings Directive (2016/2284) [129], which was subsequently transposed into UK law as the National Emission Ceilings Regulations 2018.

Persistent Organic Pollutants (POPs) are chemical substances which stay in the environment, migrate into, and accumulate in the food chain and threaten human health and the environment. Regulation (EU) 2019/1021 [130] on persistent organic pollutants protects the environment and human health from POPs by prohibiting, phasing out, or restricting the manufacturing, placing on the market, and use of specified substances.

The Air Quality Strategy for England 2023 aims to provide a framework to enable local authorities to make the best use of their powers and make improvements for their

communities. This strategy sets out the actions that Defra expects local authorities to take in support of long-term air quality goals, including new PM2.5 targets.

Part IV of the Environment Act 1995 [131] requires local authorities in the UK to review air quality in their area and designate Air Quality Management Areas (AQMAs) if targeted improvements are necessary.

In 2017 Defra published a new air quality plan for nitrogen dioxide (NO2) [132]. This is the UK air quality plan for bringing NO2 air pollution within statutory limits in the shortest possible time. Among the measures in the plan is promotion of the use of electric vehicles, cycling and walking, updating the government procurement standards for vehicles, and issuing Directions to specified city councils that have not met the legal limits.

7.6 Biodiversity

The EU has agreed to an ambitious conservation plan to protect global biodiversity. The EU vision for biodiversity centres upon protecting biodiversity and the ecosystem services it provides, valuing them appropriately and restoring biodiversity's intrinsic value for human well-being and economic prosperity.

The European Commission adopted a new EU Biodiversity Strategy for 2030 [133] to help meet this goal. The aims to put Europe's biodiversity on the path to recovery by 2030 for the benefit of people, climate and the planet. The strategy contains specific commitments and actions to be delivered by 2030:

- Establishing a larger EU-wide network of protected areas on land and at sea,
- Launching an EU nature restoration plan,
- Introducing measures to enable the necessary transformative change,
- Introducing measures to tackle the global biodiversity challenge.

Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services [134] provides a comprehensive picture of how England is implementing the international and EU commitments. The mission for this strategy over the next decade is:
"to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people."

The 2022 Scottish Biodiversity strategy to 2045: tackling the nature emergency [135] sets out how Scotland is implementing international and EU commitments. The strategy aims for Scotland to be Nature Positive by 2030, and to have restored and regenerated biodiversity across the country by 2045.

One of the key challenges set out in the Environment Strategy for Wales is the identification of pressures on biodiversity and halting its decline. This is supported by the 2016 Environment Act [136].

Individual national strategies for biodiversity and the environment in England, Scotland, Wales and Northern Ireland underpin the new UK Biodiversity Framework [137]. The strategies set out priorities, measures and indicators that reflect the countries' different responsibilities, needs and views. Consistent themes across the strategies include:

- halting the loss of biodiversity and continuing to reverse previous losses;
- increasing awareness, understanding and enjoyment of biodiversity, and engaging more people in conservation and enhancement; and
- restoring and enhancing biodiversity in urban, rural and marine environments through better planning, design and management.

The updated UK Biodiversity Framework (UKBF) 2024 is due to be published in late 2024 and will be overseen by the Environment Departments of all four governments in the UK working together through the Four Countries' Biodiversity Group. The UKBF will demonstrate how the four countries work together for nature.

The Environment Act 2021 [122] sets out how UK government will protect and enhance the environment for future generations. It introduces a mandatory requirement for biodiversity net gain in the planning system, to ensure that new developments enhance biodiversity and create new green spaces for local communities to enjoy. The Act includes a new legally binding target on species abundance for 2030 and provides a framework of measures to support nature's recovery in line with the ambition set out in the UK government's 25 Year Environment Plan 2023 [89], which aims to halt the decline in our biodiversity in order to can achieve thriving plants and wildlife

A number of designated nature sites are provided protection at an international level, including:

- Ramsar Sites – wetlands of international importance.
- Protection Areas (SPAs) – a network of sites protected for rare and vulnerable birds as well as regularly occurring migratory species.
- Special Areas of Conservation (SACs) – high quality conservation sites.

In addition to these habitats, a number of species are also protected by international legislation.
In the UK, Sites of Special Scientific Interest (SSSIs) designations protect a range of habitats for fauna and flora.

7.7Climate change

Under the Kyoto Protocol (1997) [138] many of the world's developed countries agreed to reduce collective emissions of greenhouse gases (GHG) by 5.2% from 1990 levels by 2012. The Doha amendment adds a second commitment period, in which parties must reduce emissions by at least 18% below 1990 levels between 2013 and 2020.

The Paris agreement (2015) [139] adopted at the 21st Conference of the Parties to the UN Framework Convention (1992) is a legally binding global climate change agreement that strengthens the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty. The EU formally ratified the agreement on 5 October 2016. This agreement follows recommendations from the UN Intergovernmental Panel on Climate Change (IPCC).

The emissions reductions are designed, specifically, to hold the increase in the global average temperature to well below 2°C above pre-industrial levels with the aspiration of pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. It applies to all greenhouse gases not controlled by the Montreal Protocol [140]: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3). At least 40% domestic reduction in greenhouse gas emissions is required by 2030, compared to 1990 levels.

To meet the EU's energy and climate targets for 2030 [141], EU Member States need to establish a 10-year integrated national energy and climate plan (NECP) for the period from 2021 to 2030 (Regulation on the governance of the energy union and climate action EU/2018/1999 [142]). The UK submitted a draft NECP in 2018 and a final version will be published in 2020.
Other international objectives include:

- eliminating or reducing the release of Persistent Organic Pollutants (POPs) into the environment;
- setting ceilings for emissions of ammonia, oxides of nitrogen, sulphur dioxide and volatile organic compounds for EU member states; and
- setting a target of 6% reduction in the lifecycle of GHG emissions from fuels by 2020.

Increasing the amount of energy produced from low-carbon technologies such as renewable and nuclear will help the UK to:

- secure domestic energy supply;
- reduce GHG emissions to slow down climate change; and
- stimulate investment in new jobs and businesses.

The Climate Change Act (2008) [143] as amended 2019 and Climate Change (Scotland) Act (2009) [144] as amended by 2019 emissions act outline the UK's legally binding

climate change target. The latest UK policy [145] aims to reduce the UK's GHG emissions to 'net zero' (i.e. by 100%, from the 1990 baseline) by 2050 through moving to a more energy efficient, low-carbon economy. This will help the UK become less reliant on imported fossil fuels.

The UK Climate Risk Assessment (2022) [146] sets out 8 priority risk areas requiring further action in the UK over the next 5 years and endorses the findings of the Climate Change Committee in its third Independent Assessment of Climate Change Risk which identified 61 areas of risk or opportunity [147]. The priority areas are: risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards; risks to soil health from increased flooding and drought; risks to natural carbon stores and sequestration from multiple hazards, leading to increased emissions; risks to crops, livestock and commercial trees from multiple climate hazards; risks to supply of food, goods and vital services due to climate related collapse of supply chains and distribution networks; risks to people and the economy from climate related failure of the power system; risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings; multiple risks to the UK from climate change impacts overseas.

In 2019, Scotland committed to reduce its emissions of all greenhouse gases to net-zero by 2045 at the latest, with interim targets for reductions of at least 56% by 2020, 75% by 2030, 90% by 2040 [144]. In Wales, the Welsh government accepts the Committee on Climate Change (CCC) recommendation for a 95% reduction in greenhouse gas emissions by 2050 and aims to go further with an ambition to reach net-zero The current legislation (Environment (Wales) Act 2016) [136] includes at least an 80% reduction in emissions by 2050.

7.8 Coastal change and flood risk

All EU Member States are required to assess the risk of flooding from water courses and around coastlines, to map flood extent, assets and humans at risk from flooding in these areas, and to take measures to reduce flood risk.

In England and Wales, The Flood & Water Management Act 2010 [148] aims to provide better, more sustainable management of flood risk for people, homes and businesses, help safeguard community groups from unaffordable rises in surface water drainage charges and protect water supplies to the consumer.

In Scotland, the Flood Risk Management (Scotland) Act 2009 [26] introduced a more sustainable approach to flood risk management in order to consider all sources of flooding including river, coastal and ground waters.

Specific policy on how to take flood risk into account in development schemes can be found in the NPPF (England),TAN15 (Wales), Scottish Planning Policy. The environment agencies specify use of the Met Office UKCP climate predictions when flood risk planning.

In 2010/11, councils published Shoreline Management Plans (SMPs) covering the entire coast of England and Wales and set the 'direction of travel' for future coastal management. Four potential policies were identified for each stretch of coast, 'hold the line', 'advance the line', 'managed retreat' and 'no active intervention'. The management policies have since been collated and included in the EA's online mapping services.

In 2014 in response to widespread flooding the UK government published the environmental management policy paper Programme of flood and coastal erosion risk management schemes [149]. This was subsequently updated in 2021. UKCP climate predictions were used to determine flooding risk.

7.9 Cultural Heritage

At the international level, protection is provided for cultural and natural heritage of outstanding interest by the European Convention on the Protection of Archaeological Heritage [150] and the Convention Concerning the Protection of the World Cultural and Natural Heritage [151].

In the UK, the historic environment should be protected and sustained, and provision made for investigation, preservation and recording of matters of archaeological or historic value. This is reflected in Acts on historic buildings, ancient monuments, listed buildings and conservation areas, the planning policies of England, Scotland, and Wales and local development plans. In England, the advice on Sustainability Appraisal and Strategic Environmental Assessment (2016) [152] sets out the approach for considering the historic environment in Strategic Environmental Assessment (SEA) and Sustainability Appraisal at each stage of the assessment process.

7.10 Geology and soils

The Environmental Liability Directive (2004/35/CE) [153] focuses on prevention and remediation of environmental damage, including land contamination, which presents a threat to human health. The Directive is based on the polluter pays principle, where polluters are responsible for remediating damage they cause to the environment.

The Directive provides specific criteria to determine when damage is significant, although damage from nuclear and maritime accidents falls outside the scope of the regime. Annex I of the Directive includes criteria for determining whether effects are significant, and this can be used to inform the SEA process.

Specifically relating to landfill waste, the Landfill Directive (99/31/EC) [154] is also intended to reduce and prevent the adverse effects of waste on the environment, including soil.

The EC's Thematic Strategy for Soil Protection [155] identifies eight main threats to soil, including erosion, contamination, compaction and salinization. The Strategy advocates higher levels of protection to the soil resource than is currently in place.
Little statutory protection exists specifically for soils in the UK, although they are indirectly protected by other legislation such as that covering the prevention of pollution and contamination, and for land use planning. In England, the Department for Environment, Food and Rural Affairs (DEFRA) aims for all England's soils to be managed sustainably, and degradation threats tackled successfully by 2030 [156].

The UK Agriculture Act (2020) [88] contains provisions for protecting and improving the quality of soil through Environmental Land Management Schemes. The Act also grants powers to the Secretary of State to collect data for improving soil health and quality.

7.11 Landscape and visual impacts

Public authorities are encouraged to adopt policies and measures at appropriate levels to protect, manage and plan landscapes throughout Europe under the European Landscape Convention [157].

In England and Wales, nationally important landscapes are protected by the National Parks and Access to the Countryside Act 1949 [158]. This Act sets out to conserve and enhance certain areas for their natural beauty, with areas designated either as National Parks or National Landscapes (formerly known as Areas of Outstanding Natural Beauty [AONBs]). The National Parks and Access to the Countryside Act (provision also inserted in the Environment Act 1995) and the Countryside and Rights of Way Act 2000 [159] gives public bodies such as NDA a duty to 'have regard' to the statutory purposes of National Parks and National Landscapes.

The statutory purpose shared by both designations is to 'conserve and enhance the area's natural beauty, wildlife and cultural heritage'. The National Parks have a second statutory purpose to promote opportunities for understanding and enjoying the special qualities of National Parks by the public (generally referred to as their 'recreation' purpose). The duty of regard applies also to activities outside but within the 'setting' of a National Park or National Landscape which may nonetheless impact on the designated area itself.

In England, the National Planning Policy Framework [160] states that the planning system should contribute to and enhance the natural environment by protecting and enhancing valued landscapes.

In Scotland, National Parks are designated under the National Parks (Scotland) Act 2000 [161] with the aim of conserving and enhancing the natural and cultural heritage of the area. The character and appearance of National Scenic Areas are also safeguarded under the Planning (Scotland) Act 2006 [162].

Scotland's Landscape Policy Framework, which is under review, also seeks to safeguard and enhance the distinct identity, the diverse character and the special qualities of Scotland's landscapes as a whole, so as to ensure tomorrow's landscapes contribute positively to the human environment and are at least as attractive and valued as they are today.

7.12 Noise and vibration

Harmful effects from noise, including annoyance, should be avoided, prevented and reduced. Following Brexit the UK is still committed to determining exposure to environmental noise through noise mapping, ensuring that information on environmental noise and its effects is made available to the public, and to adopting action plans based on noise mapping results with a view to preventing and reducing environmental noise where necessary (particularly where exposure effects could induce harmful effects on human health). Noise maps are available for England, Wales and Scotland [163].

The Noise Policy Statement for England (2010) [164] clarifies current policies and practices relating to noise management and provides guidance for practitioner

7.13 Materials and waste

The EU Waste Framework Directive 2008/98/EC [165] as amended requires all member states to take necessary measures to ensure waste is recovered or disposed of without endangering human health or causing harm to the environment and includes permitting, registration and inspection requirements.

The directive also requires member states to take appropriate measures to encourage firstly the prevention or reduction of waste production and its harmfulness and secondly the recovery of waste by means of recycling, reuse or reclamation or any other process with a view to extracting secondary raw materials; or the use of waste as a source of energy. This system is known as the 'waste hierarchy'.

Other directives address specific wastes. The 2024 UK policy framework for managing radioactive substances and nuclear decommissioning [166] states that UK policy on the management of radioactive substances and nuclear decommissioning takes into account internationally recognised best practice in sustainability and support many internationally agreed sustainability goals, for example the United Nations Sustainable Development Goals [167].

Separate regulations exist transposing the Waste Framework Directive into law in England and Wales, and Scotland, and the principle of the waste hierarchy is reflected in each nation's policies.

The Welsh government's overarching waste strategy [168] aims to reduce the impact of waste to within their environmental limits (which is defined as roughly 65% less waste than was being produced in 2010), aiming to phase out residual waste through enhanced actions on waste prevention and sustainable consumption and production and ensuring that all waste that is produced is reused or recycled by 2050.The Scottish government published a Circular Economy Strategy for Scotland [169] in 2016 and aims for 70% of all waste to be recycled by 2025. The Circular economy and waste route map to 2030 is currently out for consultation. The 2021 Waste Management Plan for England [170] states that Waste management plans must include measures to be taken so that, by 2035 the preparing for re-use and the recycling of municipal waste is increased to a minimum of 65% by weight and the amount of municipal waste landfilled is reduced to 10% or less of the total amount of municipal waste generated (by weight).

In England, the resources and waste strategy [171] sets out the government's vision for the UK's approach to waste through the revaluing of limited resources, and steps to take the UK towards a more circular economy where things are reused, recycled and repaired, instead of thrown away. The government's strategy is to transfer the full costs of recycling and waste management away from councils and, onto those who produce, and profit from, the production of packaging.

The waste hierarchy [172] is at the heart of the regulation of radioactive waste. Operators are expected to reduce quantities of waste and its impact on the environment by careful planning and design and re-using or recycling the materials they use. The energy and materials within waste that cannot be reused or recycled should be recovered, for instance by generating energy.

Environment agencies' Management of radioactive waste from the decommissioning of nuclear sites: guidance on the requirements for release from radioactive substances regulation (GRR) [173] was published in 2018. The guidance requires operators to:

- produce a waste management plan (WMP);
- produce a site-wide environmental safety case (SWESC);
- make sure the condition of their site meets standards for protection of people and the environment, now and into the future.

WMPs must be optimised to each site's individual circumstances. This means that at different nuclear sites it might be optimal to use one of these approaches or a mix of both:

- remove all radioactive waste and contamination from that site and transport it for disposal at some other suitable site(s)
- dispose of all radioactive waste and leave all radioactive contamination on that site (disposal in-situ or disposal for a purpose)

The regulator will only authorise disposal of radioactive waste on a site when they are satisfied the operator has developed an optimal WMP.

The regulator will only release a site from regulation when they are satisfied that the operator has:

- completed all work involving radioactive substances;
- met all safety standards and can demonstrate this in their SWESC.

Environmental regulators are issuing revised site permits specifying the preparation of waste management plans and SWESCs. All nuclear sites have to prepare these over the next few years.

The implications of leaving contaminated structures (containing hazardous substances) in contact with groundwater with respect to the protection of groundwater are still being worked out. The environment agencies are developing their position.

In January 2025 the UK Government made a policy decision to immobilise the UK's inventory of civil separated plutonium at Sellafield. This decision puts the material beyond reach, further mitigating the long-term safety and security risks associated with it more efficiently [174].

7.14 Radioactive emissions and discharges

UK radioactive substances regulation and policy is influenced by a number of international agreements and is underpinned by the 1957 Euratom Treaty [175] and subsequent European Union (EU) Directives. The treaty and directives require the putting in place national policies which:

- protect workers and the public from ionising radiation;
- keep the generation of radioactive waste to the minimum practicable;
- ensure the interdependence of the different steps in spent fuel and radioactive waste generation and management;
- safely manage spent fuel and radioactive waste, including in the long-term;
- implement appropriate measures following a graded approach; and
- govern all stages of the management of spent fuel and radioactive waste.

States are required to dispose of waste within their own territory unless they have agreements with other Member States for the use of their disposal facilities.

The UK government's vision for nuclear energy [176] is to have a nuclear sector that:

- has safety and security as its highest priorities;
- continues to contribute to a low carbon and secure energy future, with nuclear energy competing successfully with other low carbon technologies;
- leads the way in successfully decommissioning redundant nuclear facilities;
- contributes to employment and prosperity in the UK;
- continues to command public confidence, by operating safely, securely, sustainably and transparently; and
- continues to operate post Brexit.

The Nuclear Sector Deal [177] sets out a vision for a UK nuclear sector that generates reliable, secure, low-carbon power, but that also targets significant cost reduction to ensure it remains cost competitive with other sources of low-carbon technology.

The Nuclear Installations (Liability for Damage) Order 2016 [178] UK Statutory Instruments 2016 No. 562 amends the Nuclear Installations Act 1965 [179] in order to implement changes to the Paris Convention [118] on nuclear third party liability and the Brussels Supplementary Convention [180] agreed in 2004. These Conventions establish an international regime governing liability to pay compensation for damage following a nuclear incident. The changes to the Paris Convention bring nuclear waste disposal facilities into the liability regime. The amendments to the Act create a new class of operator – those who operate a disposal site but do not require a nuclear site licence – to whom the 1965 Act liability regime (but not the licensing regime) is applied. A revision to both the protocol and the UK Order which took effect on 1 January 2022 substantially increasing the value of claims that can be made in the aftermath of nuclear accidents to €700 million in damages, up from £140 million previously.

The Energy Act 2023 [181] introduces legislative amendments to the Nuclear Installations Act 1965 [179] that will result in a major change in the nuclear regulatory regime in relation to ending the Period of Responsibility (PoR) under the Nuclear Installations Act and revocation of the nuclear site licence, either in whole or in part ('delicensing').

The legislative intent of these amendments is to enable a more proportionate approach to regulation of nuclear installations in the final stages of decommissioning that reflects the nature of the reduced nuclear risks and making sure the right regulator is in place to regulate the remaining radiological and environmental hazards. One outcome will be to enable earlier delicensing than the current regulatory regime.

The government considers that the unnecessary introduction of radioactivity into the environment is undesirable, even at levels where the doses to both human and non-human species are low and, on the basis of current knowledge, unlikely to cause harm.

Activities involving ionising radiation are subject to the following controls:

- justification of practices by the government to ensure that the environmental, social and economic benefits they provide to society exceed the potential detriment resulting from them;
- optimisation of protection on the basis that radiological doses and risks to workers and members of the public from a source of exposure should be kept as low as reasonably achievable (ALARA), considering social and economic factors; and
- application of limits and conditions to control discharges from justified activities to ensure that individuals (workers and members of the public) and sensitive environmental receptors are not exposed to unacceptable radiation risks from these practices.

REPPIR 2019 [182] is part of the Government's implementation of the emergency planning requirements of the Basic Safety Standards Directive 2013 [183] made under the Euratom Treaty. Duty holders have until 22 May 2020 to comply with the new regulations.

The UK Strategy for Radioactive Discharges [184] is based on the principles of sustainable development and the use of Best Available Techniques (BAT) in England and Wales, and Best Practicable Means (BPM) and Best Practicable Environmental Option (BPEO) in Scotland, to prevent and, where that is not practicable, minimise waste generation and discharges to the environment.

The UK policy for Low Level Radioactive Waste [185] is to apply the waste hierarchy, which includes reduce, recycle and disposal in existing near surface disposal facilities.

The UK government's policy for the long-term, safe and secure management of Higher Activity Radioactive Waste (HAW) (which includes some Low Level Waste (LLW) that is not suitable for near surface disposal in current facilities) is to place it deep underground in a geological disposal facility (GDF) [186], sited and developed in partnership with a willing UK community. The two key requirements in the disposal programme are a willing host community and suitable geology. The UK policy on the long-term management of HAW (e.g. graphite) recognises that it is appropriate to investigate alternative options to a GDF [187] for some of the inventory where there could be the potential to improve the overall management of HAW.
The Welsh Government has adopted the UK's policy for geological disposal.

In Scotland, the preference is for long-term management of HAW in near-surface facilities [188]. These facilities should also be as near to the waste generating sites as possible.

7.15 Water resources and quality

The OSPAR Convention [189] aims to prevent pollution of the marine environment by discharges from land based activities and the OSPAR Radioactive Substances Strategy [190] specifically sets the objective of preventing pollution of the maritime area from ionising radiation through the reduction of discharges, emissions and losses of radioactive substances.

Strategy of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic 2030 (NEAES 2030) [191] was adopted in October 2021 with the aim of ensuring a healthy and biologically diverse North-East Atlantic Ocean, which is productive, used sustainably and resilient to climate change and ocean acidification.

A strategic objective of NEAES 2030 is to Prevent pollution by radioactive substances in order to safeguard human health and to protect the marine environment with the ultimate aim of achieving and maintaining concentrations in the marine environment at near background values for naturally occurring radioactive substances and close to zero for human made radioactive substances.

Targets include that by 2025 OSPAR will identify the different types of loss of radioactive substances that may contribute to pollution of the marine environment. By 2027 OSPAR will determine if any additional measures are required to prevent such pollution, to the extent that such pollution is not already the subject of effective measures agreed by other international organisations or prescribed by other international conventions.

The EC 2011 Industrial Emissions Directive [192] is a European Union directive which commits European Union member states to control and reduce the impact of industrial emissions on the environment. The directive aims to lower emissions from industrial production through an integrated approach.

The Environment Act (2021) [122] acts as the UK's new framework of environmental protection and replaces previous UK legislation which were repealed when the UK left the EU in 2020. When the UK left the EU, laws on nature protection, water quality, clean air and other environmental protection that originally came from EU directives no longer applied and the Act was enacted to fill the gap.

The Water Framework Directive (WFD) Regulations [193] originate from the EU Water Framework Directive [194], but still forms part of UK law post-Brexit. WFD was translated into UK legislation through the Water framework regulations and the Environmental Permitting Regulations (Schedule 22) [67] and the Scottish equivalent [195]. The WFD applies to all surface freshwater bodies (including lakes, streams and rivers), ground waters and associated ecosystems, estuaries and coastal waters out to one mile from low-water. It aims to:

- prevent further deterioration and protect and enhance the status of aquatic ecosystems;
- promote sustainable water use based on a long-term projection of available water resources; and
- enhance protection and improve the aquatic environment through specific measures for the progressive reduction of discharges, emissions and losses of priority substances.

The Groundwater Directive (GWD) [196]complements the WFD by setting groundwater quality standards and introducing measures to prevent or limit inputs of pollutants into groundwater. The presumption in relation to groundwater is broadly that it should not be polluted at all.

The WFD's approach to water management is consistently reflected in UK-wide and regional strategies and plans.

The Environment Act (2021) [122] aims to tackle the major sources of pollution in UK rivers and improve water quality. For England, this means achieving Good Ecological Status for 75% of water bodies by 2027. Additionally, the Act set requirements for targets designed to recover nature in England across four priority areas: air quality, biodiversity, water and waste. Those legally binding environmental targets were set in 2022 and include:

- Halting the decline in species populations by 2030, and then increase populations by at least 10% to exceed current levels by 2042.
- Restoring precious water bodies to their natural state by cracking down on harmful pollution.
- Assisting with the delivery of net-zero ambitions and boosting nature recovery by increasing tree and woodland cover to 16.5% of total land area in England by 2050.
- Cutting exposure to the most harmful air pollutant to human health.
- Restoring 70% of designated features in our Marine Protected Areas to a favourable condition by 2042, with the rest in a recovering condition.

7.16 Health

The 1994 International Atomic Energy Agency (IAEA) Convention on Nuclear Safety [197] aims to legally commit participating states operating land-based nuclear power stations to maintain a high level of safety by setting international benchmarks. The convention is an incentive instrument designed to achieve higher levels of safety. The IAEA Basic Safety Standards set standards for protection of human health from ionising radiation.

Health 2020 is a European health policy framework [198]. It aims to support action across government and society to "significantly improve the health and well-being of populations, reduce health inequalities, strengthen public health and ensure people-centred health systems that are universal, equitable, sustainable and of high quality".

In the UK Protecting people and places the Health and Safety Executive (HSE) strategy 2022 to 2032 [199] commits to achieving five objectives over the next 10 years:

- Reduce work-related ill health, with a specific focus on mental health and stress.
- Increase and maintain trust to ensure people feel safe where they live, where they work and, in their environment.
- Enable industry to innovate safely to prevent major incidents, supporting the move towards net zero.
- Maintain Great Britain's record as one of the safest countries to work in.

The Health and Social Care Act 2012 [200] creates a duty on the Secretary of State, NHS England and Directors of Public Health (DsPH) to secure continuous improvement in the quality of services provided to individuals for or in connection with 'protection or improvement of public health'. The Act sets out the statutory responsibilities which local authorities have for public health services.

Local authorities have a new duty to take such steps as they consider appropriate for improving the health of the people in their areas. The DsPH are responsible for the local authority's contribution to health protection matters, including the local authority's roles in planning for, and responding to, incidents that present a threat to the public's health. These local Health and Wellbeing Strategies are outlined in the Local Policy section of this review under the relevant site sections. The Health and Care Act 2022 requires the Care Quality Commission to review how local authorities regulate care [201].

The National Planning Policy Framework (NPPF) [160] supports the role of planning to create healthy, inclusive communities by supporting local strategies to improve health, social and cultural well-being for all and by working with public health leads and health organisations.

Healthy Lives, Healthy People: Our Strategy for Public Health in England (2010) [202] sets out the government's long-term vision for the future of public health in England. It aims to create a "wellness" service (Public Health England) and to strengthen both national and local leadership.

In Scotland, there are a number of strategies to address inequalities in health, specifically Equally Well: Report of the Ministerial Task Force on Health Inequalities (2008) [203], which was reviewed in 2010.

Public Health Wales' vision for a healthier future was published in a new long term strategy in 2023 [204]. It aims to increase healthy life expectancy, improve health and wellbeing, and reduce inequalities for everyone in Wales, now and for future generations.

7.17 Socio-economics

The 2002 World Summit on Sustainable Development reaffirmed the international commitment to sustainable development. The 2030 Agenda for Sustainable Development [205], including its 17 Sustainable Development Goals (SDGs) and 169 targets, were adopted on 25 September 2015 by Heads of State and Government at a special UN summit. The Agenda is a commitment to eradicate poverty and achieve sustainable development by 2030 world-wide, ensuring that no one is left behind. The UK has reviewed its progress towards the Sustainable Development Goals and prepared a voluntary report in 2019.

The UK came under new government in July 2024 and as such a major review of socio-economic policies is currently underway. The new Government has stated that it is committed to ensuring the economy can provide the stability and certainty needed to allow investment to create growth and new jobs. The new government published Invest 2035 in October 2024 with the aim of putting growth as the number one mission for the government [98].

In Scotland, the 2022 National Strategy for Economic Transformation (NSET) [206] sets actions to transform the Scottish economy by focussing on five themes:

- Entrepreneurial People and Culture,
- New Market Opportunities,
- Productive Businesses and Regions,
- Skilled Workforce,
- A Fairer and More Equal Society

Other relevant policies include the 2005 People and Place – Regeneration Policy Statement [207] and Scottish Planning Policy [162], which encourages better transport and connectivity, and sustainable social and economic development of communities.

In Wales, Economic Renewal: A new direction [208] sets out priorities for delivering the vision of the Welsh economy.
Sustainability appraisal and strategic environmental assessment are tools used at the planning stage to assess the likely effects of a plan when judged against reasonable alternatives. Environmental Impact Assessments are applied to individual projects which are adjudged likely to have significant environmental effects.

The new UK Government has announced it intends to take action on its central growth mission by announcing its plan to identify sites stalled at the planning stage and make the economic benefit of development a central consideration when intervening in the planning system [209].

The Environment Act 2021 [122] introduced legislation to protect and improve the natural environment in the UK. It introduces a mandatory requirement for biodiversity net gain in the planning system, to ensure that habitats for wildlife are left in a measurably better state than they were before any development.

7.18 Site-specific local policy and development strategies

Structural changes to local government in England took place between 2019 and 2023. Some of these changes saw new unitary authorities being created from other types of local government districts. Table 76 details local government changes effecting NDA group sites.

Table 76 Changes to local authorities of NDA sites since Strategy (2021)

Site	2021 Local Authority	2025 Local/Unitary Authority
Sellafield Ltd – Sellafield Site	Copeland	Cumberland
NWS - LLWR	Copeland	Cumberland
NRS – Dungeness A Site	Shepway	Folkestone and Hythe District
NRS – Hinkley Point A Site	West Somerset LA	Somerset UA

7.18.1 Berkeley

Local Unitary Authority: Stroud District Council

7.18.1.1 Strout District Submission Draft Local Plan 2021

The Stroud District Draft Local Plan 2021 is currently under examination and is subject to change. The plan has a variety of core policies that relate to key topics such as homes and communities, the economy and infrastructure, and the environment and surroundings. The development of the Berkeley site into Gloucestershire Science and Technology Park is considered to be an economic boost to the local authority [210].

7.18.1.2 Health & Wellbeing Plan 2022- 2025 Stroud District Council

There are five key priorities within the health and wellbeing plan, these are community resilience & wellbeing, healthy, affordable housing, supporting better mental health, encouraging physical activity, and healthy ageing [211].

7.18.1.3 Strategy for Leisure and Wellbeing in Stroud District 2021 – 2040

The purpose of the strategy is to provide a plan for delivering and facilitating community leisure and wellbeing [212]. The four key themes and outcomes of focus are community resilience and wellbeing, housing and homelessness, environment and climate change along and economy, market towns and rural vitality.

7.18.1.4 Physical Activity Action Plan 2022-2025

The action plan provides information on the interventions and partnership working Stroud District Council will undertake to increase physical activity levels in the district [99]. The key principles of this plan include increasing participation in children and young people, providing opportunity for adults to build physical activity into their everyday life, and encouraging older adults to maintain and continue to lead active lives.

7.18.2 Bradwell

Local Unitary Authority: Maldon District Council

7.18.2.1Local Development Plan 2014 – 2029

The local development plan sets out the planning strategy for growth and provides a variety of policies that relate to key topics relevant to the IIA. The plan includes policies that relate to spatial vision and development, design and climate change, economic prosperity, the environment and green infrastructure, and transport access [100]. The Bradwell site is referred to in various policies such as Policy D4 Renewable and Low Carbon Energy Generation in which the area is considered a potential site to accommodate new nuclear power generation.

7.18.2.2 Maldon District Council Corporate Plan 2023-2027

The corporate plan outlines the vison for the local authority, the priorities and how they will be delivered. The plan specifically refers to health and wellbeing within the Maldon District and outlines the three key priorities of obesity, mental health and social isolation as areas of focus [213].

7.18.3 Chapelcross

Local Unitary Authority: Dumfries and Galloway

7.18.3.1Dumfries and Galloway (2019) Local Development Plan 2

The plan features the spatial strategy for the local authority with sub strategies such as economic, waste management and transport strategies. The document also outlines various policies related to the IIA. There are 15 economic development policies, eight historic environment policies, 15 natural environment policies, four community services and facilities policies, 11 infrastructure policies, and five transport policies included in this plan [102]. There is specific policy related to the Chapelcross site (Policy ED4: Chapelcross) that states that the council will encourage business, industrial and energy generating development proposals on the site. There will also be the development of a simplified planning zone to inform developments in the area.

7.18.3.2 Local Outcomes Improvement Plan 2023 – 2033

The plan features key local issues that are relevant to the IIA on topics such as population, life expectancy and health inequalities, work and the economy, and health and social care [214].

7.18.4 Dounreay

Local Unitary Authority: The Highland Council

7.18.4.1 The Highland Council (2018) Caithness and Sutherland Local Development Plan

The local development plan features policy on relevant IIA topic areas such as growing communities, employment, connectivity and transport, in addition to the environment and heritage. Concerns regarding employment at the Dounreay site are mentioned in the plan as the site reaches its Interim End State in 2030 to 2033. Dounreay is also identified within the plan as an economic development area with potential to become an important economic centre for the local authority [103].

7.18.4.2 The Highlands and Islands Enterprise Strategy (2023-2028)

The enterprise strategy features strategic objectives, actions and outcomes relating to relevant IIA topic under the titles of people, place, planet and prosperity [215].

7.18.5 Dungeness A

Local Unitary Authority: Folkestone & Hythe Council

7.18.5.1 Folkestone & Hythe Places and Policies Local Plan

The local plan outlines the local authority's development policies on topics such as the economy, transport, natural environment, climate change, health and wellbeing, and the historic environment. The importance of the Dungeness site to the local economy is mentioned, with an estimated £50 million contribution to the local economy annually. The site decommissioning and remediation phase of Dungeness A and its local economic impact is outlined for 2025/26 [216].

7.18.5.2 Corporate Plan – Folkestone & Hythe District Council

The local authority corporate plan covers a range of relevant topics areas such as improving people's health, growing the economy, and addressing climate change. [104].

7.18.6 Harwell

Local Unitary Authority: Vale of Horse District Council

7.18.6.1Local Plan 2031 Part 1: Strategic Sites and Policies

The local plan outlines the spatial vision and strategic objectives, with district wide core policies that relate to relevant topics such as health, the economy, transport and the environment outlined. The Harwell campus is referred to as a significant site for science-based research, business and employment and is referred to numerous times in the economic prosperity challenges and opportunities section [105].

7.18.6.2 Local Plan 2031 Part 2: Detailed Policies and Additional Sites

Part 2 of the local plan is composed of additional sites and management policies. These policies relate to IIA topics such as health, the economy, transport and the environment within the area. The importance of the Harwell campus for economic prosperity is noted in the plan [217].

7.18.7 Hinkley Point A

Local Unitary Authority: Sommerset Council

7.18.7.1West Somerset Council (2013) The West Somerset Local Plan to 2032:

The local plan was published by West Somerset Council. West Somerset has now merged into the single unitary authority of Somerset Council, which has adopted the plan. The plan outlines the spatial vision and strategic objectives for Somerset's future and outlines policies relating to topics such as sustainability, the economy, transport, community health, climate change, and the environment [106].

7.18.7.2Improving Lives in Somerset Strategy. Somerset Health and Wellbeing Board 2019- 2028

The strategy has taken a long-term view of key priorities that relate to topics covered in the IIA. These priorities focus on infrastructure, economic prosperity, the natural environment, opportunity for local people and improved health and wellbeing [218].

7.18.7.3 Integrated Health and Care Strategy for Somerset

The strategy outlines a vison for health in Somerset and provides three principles for achieving this vison. These are prevention health declines, reducing inequalities in access to experience and integration of factors influencing health [219]. It has also formulated a

Somerset 'Model of Care' that shows the actions that will be taken to support health and care needs within the area.

7.18.8 Hunterston A

Local Unitary Authority: North Ayrshire Council

7.18.8.1 Local Development Plan. Your Plan Your Future November 2019

The local development plan outlines four strategic policies within the council, including Strategic Policy 3: Strategic Development Areas (SDA), which refers to Hunterston as a nationally important energy hub. The plan discusses the ongoing decommissioning of Hunterston A and the future decommissioning at Hunterston B. Emphasis within the local plan is placed on the importance of retaining high value energy industry jobs. The document outlines the importance of any future development within this SDA taking into account environmental and safety constraints. The local plan also has a list of 35 detailed policies that relate to topics relevant to the IIA, including listed buildings, flood risk management, and the landscape. Policy 35: Hazardous Installations and Substances outlines the requirements for the management of radioactive waste, with storage of LLW and ILW radioactive waste arisings from other nuclear installations not being supported [107].

7.18.8.2 Participation and Engagement Strategy 2022-2025

The health and wellbeing strategy document outlines the strategic principles in the area including the provision of early and effective support, the improvement of mental health and wellbeing, and tackling inequalities. The aim of the strategy is to increase engagement and participation in local stakeholders to assist with these principles [220].

7.18.9 LLWR & Sellafield

Local Unitary Authority: Cumberland Council

7.18.9.1Copeland Local Plan 2021-2039

The local authority of Copeland Council has been abolished. The incumbent Cumberland Council adopted this plan in 2024. The local plan lists a variety of policies related to topics relevant to the IIA including the natural environment and historic environment, the economy, and nuclear development. These policies have associated monitoring indicators and targets to be assessed. The significance of Sellafield and LLWR within the local area is emphasised by specific policies referencing the activity ongoing at the sites, such as Strategic Policy NU2: Maximising opportunities from Nuclear Decommissioning [108].

7.18.9.2 Cumberland Joint Local Health and Wellbeing Strategy 2023 – 2028

The strategy outlines key strategic priorities and provides a framework for service planning across health and social care. Four key themes for consideration are health and wellbeing, the encouragement of healthy behaviours, the integration of health, care and prevention services, and health protection, early intervention and detection. The document also outlines how strategy success will be measured with indicators such as life expectancy [221].

7.18.10 Springfields

Local Unitary Authority: Fylde Council

7.18.10.1 Fylde Council (2018) Fylde Local Plan to 2032:

The local plan outlines five strategic objectives which relate to topics discussed in the IIA, including the environment., economy and the health of the community. These objectives form the basis of accessing the success of the local plan. There are a variety of policies related to these relevant topics with specific reference to the Springfields site. An example is GD5 Large Developed Sites in the Countryside, which states the site must meet certain criteria for complete or partial redevelopment [111].

7.18.10.2 Lancashire County Council Environment and Climate Strategy Environment and climate strategy 2023-2025

The strategy document outlines three key strategic objectives for 2025; pollution reduction, climate change and the conservation of the natural and historic environment [222]. These objectives inform the planning process and are monitored through key performance indicators.

7.18.11 Capenhurst

Local Unitary Authority: Cheshire West and Chester Council

7.18.11.1 Cheshire West and Chester Council (2013) Cheshire West and Chester Council Local Plan: Part One Strategic Policies

The local plan provides the vision, strategic objectives, spatial strategy and strategic planning policies for the local area. The polices in this document cover topics relevant to the IIA, such as flood risk and management, the historic environment, and biodiversity. The Capenhurst site is mentioned under the Policy ENV 8 Managing waste [101].

7.18.11.2 Cheshire West and Chester Council (2013) Cheshire West and Chester Council Local Plan: Part Two Land Allocations and Detailed Policies

The purpose of the local plan is to provide detailed policies required to deliver the overall strategy for Cheshire West and Chester for the period up to 2030. These policies expand upon the policies laid out in Part One and cover relevant considerations in the IIA such as listed buildings and air quality [223].

7.18.11.3 Health Improvement Strategy

The strategy includes six strategic areas including sexual and reproductive health, tobacco control, falls prevention, dementia, substance misuse and eat well be active [224].

7.18.12 Wylfa

Local Unitary Authority: Isle of Anglesey (Ynys Môn) Council

7.18.12.1 Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026

The joint working agreement between Gwynedd Council and the Isle of Anglesey County Council ceased in March 2023. A new Local Development Plan is being prepared by the local authority that will cover 2024 to 2039. In the meantime, the Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026 is still valid until the new plan is adopted by both the Isle of Anglesey and Gwynedd Council's [225].

The local plan provides strategic development guidelines for the areas of Gwynedd and Anglesey outside of the Eryri National Park. The plan of outlines five key themes that link to relevant IIA topics, including the natural environment and built environment, the economy, and health. These themes have associated policies that inform development such as Policy AMG 4: Coastal Protection [112].

7.18.12.2 Gwynedd & Anglesey Well-Being Plan 2023-2028

The plan outlines a variety of socio-economic and environmental priorities, including workforce planning and the local economy, the improvements of mental and physical health and the movement towards net zero targets [226]. These priorities are summarised into three key wellbeing objectives. These objectives outline ideas and methods for achievement, including encouragement of well-paid jobs and carrying out a Local Climate Change Risk Assessment.

7.18.13 Winfrith

Local Unitary Authority: Dorset Council

7.18.13.1 Purbeck Local Plan (2018-2034)

Purbeck Council was abolished in 2019; however, the Purbeck Local Plan was adopted by the current local authority, Dorset Council in 2024. The local plan sets out a variety of strategic and non-strategic policies to inform development within the local authority. Policies relate to key IIA topic areas such as the landscape, historic environment and the economy. The Winfrith site is mentioned under Policy EE1: Employment land supply as a strategic employment site and Dorset's only Enterprise Zone. This site is highlighted as a key focus for investment and activity for the improvement of quality employment in the area [113].

7.18.13.2 Dorset Joint Strategic Needs Assessment

The strategic needs assessment is being used to develop the joint Health and Wellbeing Strategies between Dorset, Bournemouth, Christchurch and Poole Councils. There are a variety of insights into strategic health issues, trends and priories in the local area. There is a focus on topics such as alcohol misuse, food insecurity and physical activity [227].

7.18.13.3 Dorset Natural Environment, Climate and Ecology Strategy 2023 to 25

The strategy [228] focuses on tackling climate change and supporting the natural environment within the local authority. It sets out targets for a carbon neutral council by 2040 and a carbon neutral county by 2050. The document outlines key achievements within the local authority, as well as nine missions to work towards between 2023 and 2025. An example of one of these missions is Mission 8: Natural assets and Nature-based Solutions, which places emphasis on the protection and restoration of land, coast, freshwater and sea habitats.

7.18.14 Trawsfynydd

Local Unitary Authority: Gwynedd Council

7.18.14.1 Eryri Local Development Plan (2016- 2031)

The local development plan provides a strategic framework for development within the Eryri National Park. The document includes a variety of strategic and development policies that relate to key considerations in the IIA, including Strategic Policy D: Natural Environment and Strategic Policy F: Historic Environment. Trawsfynydd is mentioned throughout the document in relation to specific policies, such as Development Policy 27: Snowdonia Enterprise Zone, in which future accepted uses for the site are outlined. These include decommissioning, low carbon energy businesses, and employment, training or educational purposes [229].

7.18.15 Sizewell A

Local Unitary Authority: East Suffolk District Council

7.18.15.1 East Suffolk Council – Suffolk Coastal Local Plan 2020 Strategy and Development Management Policies

The document sets out a variety of strategies and policies that inform development within the former Suffolk Coastal District that is now part of the East Suffolk District Council local authority. These policies relate to topics such as the environment, the economy and transport. The Sizewell site is mentioned in this document as a key economic driver within the local authority and is referred to in several policies, such as Policy SCLP3.4: Proposal for Major Energy Infrastructure Project, which relates to the future development of Sizewell C [110].

7.18.15.2 Joint Local Health and Wellbeing Strategy 2022 – 2027

The strategy outlines the health and wellbeing priorities for the local authority, including public mental health, good work and health, engagement of local people and the wellbeing of children and young people. Key challenges within the local authority including a stalled life expectancy and the impact of the Covid-19 pandemic on employment and income [230].

7.18.16 Oldbury

7.18.16.1 South Gloucestershire Local Plan: Core Strategy 2006 -2027

The local plan informs future development within South Gloucestershire, with objectives and policies relevant to the IIA, including managing the environment and infrastructure. The Oldbury site is mentioned in this document under a variety of policies, such as Policy CS37 – Nuclear Related Development in which 12 compliance statements are outlined for future development on the Oldbury site [109].

7.18.16.2 South Gloucestershire Biodiversity Action Plan (2016-2026)

The action plan outlines key strategies for enhancing and protecting biodiversity across the local authority. There is a focus on seven local priority habitats such as arable farmland and broadleaf woodland. The establishment of ecological networks around South Gloucestershire and landscape-scale conservation projects are outlined [231].

7.18.16.3 South Gloucestershire Joint Health and Wellbeing Strategy 2017-2021

The wellbeing strategy outlines the local authority's key strategic objectives that relate to health and wellbeing, such as promoting and enabling good nutrition, physical activity and a healthy weight for all . Strategic principles of delivery as well as additional relevant strategies are also listed [232].

7.18.16.4 South Gloucestershire Partnership (2016) South Gloucestershire's Sustainable Community Strategy 2016

The community strategy focuses on social, economic, and environmental wellbeing, and is centred around four core priorities of creating a well-connected and sustainable environment; promoting a healthy and vibrant community; encouraging economic prosperity; and improving educational opportunities [233].

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