



Ministry
of Defence

Deep Space Advanced Radar Capability (DARC)

Environmental Statement

Volume 2

Draft for Pre-application Consultation
Planning Application: 22/1136/SO
February 2026



Ministry
of Defence

Contents

1. Introduction.....	1
1.1. Background	1
1.2. The Application Site.....	4
1.3. Purpose of the ES	5
1.4. Structure of the ES	6
1.5. EIA Methodology	8
1.6. Preparation of the ES	8
1.7. Planning Context	9
1.8. MOD Policy.....	13
1.9. Pre-Application Consultation	14
1.10. Public Availability of the ES	14
1.11. Commenting on the Application	14
2. Methodology.....	16
2.1. Introduction	16
2.2. EIA Approach	16
2.3. ES Requirements	18
2.4. Consultation.....	23
2.5. Environmental Statement Structure	24
2.6. Topic Chapter Content	24
2.7. Surveys and Predictive Techniques and Methods	26
2.8. General Assessment Assumptions and Limitations	27
2.9. Assessment Methodology	28
3. Proposed Development.....	35
3.1. Introduction	35
3.2. Cawdor Barracks	35
3.3. Surrounding Area	36
3.4. The Proposed Development.....	36
3.5. Design Characteristics.....	41
3.6. Construction Characteristics.....	42
3.7. Operational Characteristics	46
3.8. National Grid Connection	48
4. Alternatives and Design Evolution	48
4.1. Introduction	48
4.2. Legislation, Policy and Guidance	49
4.3. Consideration of Strategic Alternatives	50
4.4. UK Site Selection Process.....	51



Ministry
of Defence

4.5.	Design Evolution.....	53
5.	Transport and Access	58
5.1.	Introduction	59
5.2.	Legislation and Policy.....	59
5.3.	Methodology	62
5.4.	Baseline Conditions	68
5.5.	Design Interventions and Controls	76
5.6.	Potential Significant Effects	79
5.7.	Mitigation and Enhancement.....	86
5.8.	Cumulative Effects.....	86
5.9.	Residual Significant Effects	87
5.10.	Monitoring	87
5.11.	Summary and Conclusions	87
6.	Air Quality.....	89
6.1.	Introduction	91
6.2.	Legislation and Policy.....	92
6.3.	Methodology	94
6.4.	Baseline Conditions	98
6.5.	Design Interventions and Controls	100
6.6.	Potential Significant Effects	101
6.7.	Mitigation and Enhancement.....	103
6.8.	Cumulative Effects.....	103
6.9.	Residual Significant Effects	104
6.10.	Monitoring	104
6.11.	Summary and Conclusions	104
7.	Noise and Vibration.....	106
7.1.	Introduction	108
7.2.	Legislation and Policy.....	108
7.3.	Methodology	111
7.4.	Baseline Conditions	128
7.5.	Design Interventions and Controls	132
7.6.	Potential Significant Effects	134
7.7.	Mitigation & Enhancement.....	146
7.8.	Cumulative Effects.....	148
7.9.	Residual Significant Effects	149
7.10.	Monitoring	149
7.11.	Summary and Conclusions	150
8.	Biodiversity	151



Ministry
of Defence

8.1.	Introduction	153
8.2.	Legislation and Policy	154
8.3.	Methodology	156
8.4.	Baseline Conditions	165
8.5.	Design Interventions and Controls	175
8.6.	Potential Significant Effects	178
8.7.	Mitigation and Enhancement	205
8.8.	Residual Significant Effects	212
8.9.	Monitoring	212
8.10.	Summary and Conclusions	212
9.	Landscape and Visual Impact Assessment	215
9.1.	Introduction	216
9.2.	Legislation and Policy	217
9.3.	Methodology	221
9.4.	Baseline Conditions	227
9.5.	Design Interventions and Controls	246
9.6.	Potential Significant Effects	248
9.7.	Mitigation and Enhancement	293
9.8.	Cumulative Effects	293
9.9.	Residual Significant Effects	293
9.10.	Monitoring	295
9.11.	Summary and Conclusions	295
10.	Archaeology and Built Heritage	297
10.1.	Introduction	298
10.2.	Legislation and Policy	298
10.3.	Methodology	299
10.4.	Baseline Conditions	307
10.5.	Design Interventions and Controls	312
10.6.	Potential Significant Effects	314
10.7.	Mitigation and Enhancement	329
10.8.	Cumulative Effects	330
10.9.	Residual Significant Effects	331
10.10.	Monitoring	333
10.11.	Summary and Conclusions	333
11.	Ground Conditions and Contaminated Land	335
11.1.	Introduction	336
11.2.	Legislation and Policy	336
11.3.	Methodology	342



Ministry
of Defence

11.4.	Baseline Conditions – Ground Conditions and Contaminated Land	345
11.5.	Baseline Conditions – Waste and Materials	349
11.6.	Design Interventions and Controls.....	353
11.7.	Potential Significant Effects	356
11.8.	Mitigation and Enhancement	364
11.9.	Cumulative Effects	364
11.10.	Residual Significant Effects	364
11.11.	Monitoring	368
11.12.	Summary and Conclusions	368
12.	Water Environment, Flood Risk and Drainage.....	369
12.1.	Introduction	370
12.2.	Legislation and Policy	371
12.3.	Methodology	375
12.4.	Baseline Conditions	383
12.5.	Design Interventions and Controls.....	397
12.6.	Potential Significant Effects	402
12.7.	Further Mitigation & Enhancement	406
12.8.	Cumulative Effects	407
12.9.	Residual Significant Effects	407
12.10.	Monitoring	411
12.11.	Summary and Conclusions	411
13.	Socio-Economics	412
13.1.	Introduction	414
13.2.	Methodology	414
13.3.	Baseline Conditions	420
13.4.	Design Interventions and Controls.....	425
13.5.	Potential Significant Effects	425
13.6.	Mitigation & Enhancement	430
13.7.	Cumulative Effects	430
13.8.	Residual Significant Effects	430
13.9.	Monitoring	430
13.10.	Summary and Conclusions	430
14.	Climate Change and Carbon.....	431
14.1.	Introduction	432
14.2.	Legislation and Policy	434
14.3.	Methodology	436
14.4.	Design Interventions and Controls.....	450
14.5.	Potential Significant Effects	453



Ministry
of Defence

14.6.	Mitigation and Enhancement	457
14.7.	Cumulative Effects	457
14.8.	Residual Significant Effects	457
14.9.	Monitoring	457
14.10.	Summary and Conclusions	457
15.	Heat and Radiation	459
15.1.	Introduction	460
15.2.	Legislation and Policy	461
15.3.	Methodology	462
15.4.	Baseline	464
15.5.	Design Interventions	464
15.6.	Assessment of Effects	465
15.7.	Mitigation and Enhancement	465
15.8.	Cumulative effects	465
15.9.	Residual Significant Effects	465
15.10.	Monitoring	465
15.11.	Summary and Conclusions	466
16.	Lighting	467
16.1.	Introduction	468
16.2.	Legislation and Policy	468
16.3.	Methodology	470
16.4.	Baseline Conditions	482
16.5.	Design Interventions and Controls	483
16.6.	Potential Significant Effects	485
16.7.	Mitigation & Enhancement	487
16.8.	Cumulative Effects	487
16.9.	Residual Significant Effects	488
16.10.	Monitoring	488
16.11.	Summary and Conclusion	489
17.	Cumulative Effects	490
17.1.	Introduction	492
17.2.	Legislation and Policy	492
17.3.	Methodology	493
17.4.	Baseline Conditions	498
17.5.	Design Interventions and Controls	499
17.6.	Potential Significant Effects	499
17.7.	Mitigation and Enhancement	508
17.8.	Residual Significant effects	508



Ministry
of Defence

17.9.	Monitoring	508
17.10.	Summary and Conclusions	509
18.	Schedule of Mitigation	510
18.1.	Introduction	510
19.	Summary of Significant Residual Effects	519
19.1.	Introduction	519
20.	Glossary	521

1. Introduction

1.1. Background

Overview

- 1.1.1. This Environmental Statement (ES) has been prepared in accordance with The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017¹ (hereafter, the 'EIA Regulations') to support a full planning application to Pembrokeshire County Council (PCC) submitted by the Ministry of Defence (MOD) ('the applicant'). The applicant proposes to construct and operate a Deep Space Advanced Radar Capability (DARC) facility and all associated ancillary infrastructure (hereafter referred to as 'the proposed development') at Cawdor Barracks, located near St David's in Pembrokeshire, Wales (hereafter referred to as the 'application site') as shown on Figure 1.1 (Location of Proposed Development).
- 1.1.2. The proposed development would consist of the installation of six Transmit (Tx) antennas and twenty-one Receive (Rx) antennas at Cawdor Barracks, Pembrokeshire, Wales, United Kingdom (UK). The Tx and Rx antennas would be enclosed with perimeter fencing. The proposed development also includes associated buildings and infrastructure to support radar operations.
- 1.1.3. The buildings include the Radar Operations Building (ROB), Radar Spares Building (RSB), Switchroom Building (SRB), National Grid Electricity Distribution (NGED) connection building, and an Entry Control Point Building (ECPB) at the access to the site. The entire facility will be powered from two 10 Megavolt-amperes (MVA) feeders from the public utility. The public utility is NGED which is a regional electricity distribution network for the UK.
- 1.1.4. An auxiliary power compound will consist of diesel gensets, associated fuel storage, and Bulk Energy Storage Systems (BESS). Generator testing would be required, involving running each of the generators for a combined total of 12 hours annually (1 hour per month). A load bank will operate when testing the gensets.
- 1.1.5. Ancillary infrastructure will include Tx Array associated infrastructure, utilities, internal access tracks, fencing and security systems and lighting.
- 1.1.6. All support buildings other than the ECPB will be contained within a secure fence area.
- 1.1.7. The entire installation will be situated within the decommissioned airfield area of Cawdor Barracks with support infrastructure being constructed on existing hardstanding wherever possible. The proposed development is further described in Chapter 3 (Proposed Development).
- 1.1.8. The proposed development constitutes an Environmental Impact Assessment (EIA) development under the EIA Regulations. This ES has therefore been produced to accompany the applicant's application to PCC to construct, operate and maintain the proposed development under the Town and Country Planning Act 1990². The purpose of the ES is to present the results of the EIA which is required to identify, describe and assess the direct and indirect likely significant effects of the proposed development.

¹ The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. [Online] Available at: <https://www.legislation.gov.uk/wsi/2017/567> [Accessed 21 October 2025].

² Town and Country Planning Act 1990. [Online] Available at: <https://www.legislation.gov.uk/ukpga/1990/8/contents> [Accessed 21 October 2025].

Key Terms

1.1.9. The following terms are used throughout the ES. They are defined here for clarity and included in the glossary:

- Application site: this is the area defined by the red line boundary shown on Figure 1.1.
- Cawdor Barracks: Cawdor Barracks is the site of the former airfield Royal Air Force (RAF) Brawdy and is currently used as a working military base, occupied by 14 Signals Regiment. The application site sits within Cawdor Barracks as shown in Figure 1.1.
- Study area: the area(s) over which desk-based or field assessments have been undertaken for the purposes of the EIA. The study area varies depending on timing of surveys and the nature of the potential effects within each discipline, as informed by professional guidance and best practice regarding EIA. The study areas are therefore explained within the methodology section of the relevant chapters.
- Construction phase: the period of time associated with the site preparation and construction of the proposed development, including testing and commissioning of the proposed development.
- Operational phase: the period of time after construction has been completed.
- Tx Array: six transmit antennas and associated elements that generate electromagnetic waves.
- Rx Array: 21 receiver antennas and associated elements that capture and convert incoming electromagnetic waves into an electrical signal for processing.
- Proposed development: the construction and operation of the DARC facility and all associated ancillary infrastructure.
- The applicant: MOD is the applicant that is submitting a full planning application to PCC for the proposed development.
- EIA development: defined by the EIA regulations as a *development which is either - (a) Schedule 1 development; or (b) Schedule 2 development likely to have significant effects on the environment by virtue of factors such as its nature, size or location*. This is further described in Section 1.3.

Need for and Benefit of the Proposed Development

1.1.10. Space is increasingly congested and contested. Since 2020, the number of orbital launches has doubled, whilst active satellite deployments have increased by 374%³⁴. As of July 2025, there are between 11,000 and 12,000 active satellites in Earth orbit. Coupled with the growing volume of space debris, these challenges pose significant risks to the safe operation of orbiting satellites and the UK's ability to protect the critical services they provide.

1.1.11. The UK has a major interest in space, with more than 750 satellites in orbit (as of 2025, 747 are civil owned and operated whilst the UK MOD has six, military owned/civil operated)⁵. Satellites underpin the UK's critical national infrastructure, including emergency services coordination, national security, weather forecasting, agriculture, environmental monitoring,

³ Satellite Industry Association (2025). The 2025 State of the Satellite Industry Report.

⁴ United Nations Office for Outer Space Affairs (2025). UN Register of Objects Launched into Outer Space. [Online] Available at: <https://www.unoosa.org/oosa/en/spaceobjectregister/index.html> [Accessed July 2025].

⁵ UK Civil Aviation Authority (2025). CAP2207: UK Registry of Outer Space Objects.

food and fuel distribution, navigation, internet commerce (including banking transactions), and satellite cellular services. As of 2025, satellite-enabled services deliver 18% of the UK's Gross Domestic Product⁶, directly enabling £454 billion of national economic activity—an increase of £90 billion over the previous year⁷.

- 1.1.12. Space is integral to the UK's ability to protect national security. DARC will enhance the UK's ability to detect, identify, and track objects in Earth orbit, including satellites, space debris, asteroids, and potential threats. This capability is essential to protect and defend the services these satellites provide, ensuring they are not impacted through collisions or by debris. The capability is also vital for ensuring the resilience of UK space systems, enabling the UK to secure attribution (the ability to identify the source of cyber operations or interferences for cybersecurity purposes), maintain stability and, if necessary, inform how we respond to emerging challenges.
- 1.1.13. DARC will deliver a real-time, global space traffic management system, enabling the UK to:
- Detect, identify, and track satellites, debris and asteroids to prevent collisions and ensure the continuity of critical civil and military services.
 - Protect and defend in-orbit critical national infrastructure, which supports UK Armed Forces operations at home and abroad.
 - Enhance national security by providing decision-level information to regional and national authorities.
 - Provide, through the UK National Space Operations Centre, previously unavailable data that will be distributed amongst all branches of government, through the UK Meteorological Office and the UK Space Agency, to better inform national and regional decision-making, improve planning and identify resilience priorities.
- 1.1.14. Without DARC, the UK risks losing access to these vital services, which would have severe consequences for national security, economic stability, and public safety. The economic impact of the UK losing GPS services, alone, for 24 hours is estimated to be £1.42 billion⁸. Failure to implement DARC would leave the UK reliant on outdated and inadequate systems, exposing critical national infrastructure, and the public services they deliver, to significant risk from collision or loss. The loss of satellite services would have far-reaching consequences, from disrupting emergency services to undermining national security and economic stability.
- 1.1.15. DARC's primary mission is providing Space Domain Awareness of satellites with geosynchronous orbits. This requires the system to maintain line-of-sight across the geosynchronous orbit belt (equator extended out to orbit distances) from eastern horizon to western horizon. Therefore, it takes an array of radar sensors to detect, track and maintain custody of objects in deep space orbit (i.e., GEO belt, above 22,000 miles (36,000 km)).
- 1.1.16. In order to cover the GEO belt around the globe, it is necessary to have three locations as illustrated in Image 1.1. The UK is uniquely positioned to host DARC due to its geographic location, advanced communications infrastructure, and membership of the Five Eyes alliance (UK, Canada, US, Australia, and New Zealand). It is the only nation within the Atlantic-Europe-

⁶ UK Space Agency (2025). Factsheet: The UK Space Sector. [Online] Available at: <https://www.gov.uk/government/publications/factsheet-the-uk-space-sector> [Accessed 21 October 2025].

⁷ UK Space Agency (2025). Press release – Space's influence on economy and security grows, as new projects announced in Manchester. [Online] Available at: <https://www.gov.uk/government/news/spaces-influence-on-economy-and-security-grows-as-new-projects-announced-in-manchester> [Accessed 21 October 2025].

⁸ UK Space Agency and Department for Science, Innovation & Technology (2023). The economic impact on the UK of a disruption to GNSS - Executive summary. [Online] Available at: <https://www.gov.uk/government/publications/report-the-economic-impact-on-the-uk-of-a-disruption-to-gnss/the-economic-impact-on-the-uk-of-a-disruption-to-gnss-executive-summary> [Accessed 21 October 2025].

Africa geographical window possessing the communications infrastructure required to meet the stringent security requirements and that is able to globally integrate and distribute exceptionally large amounts of real-time data. By hosting one of the three global radar sites, the UK will be supporting international space traffic management, reinforcing its commitment to collective international security, and fostering the potential for unprecedented volumes of previously unavailable data to underpin civil and commercial economic activity.

- 1.1.17. The site at Cawdor Barracks has been identified as the optimal location, with no competing military requirements for the site. The DARC planning statement also provides a description of the need for the proposed development.

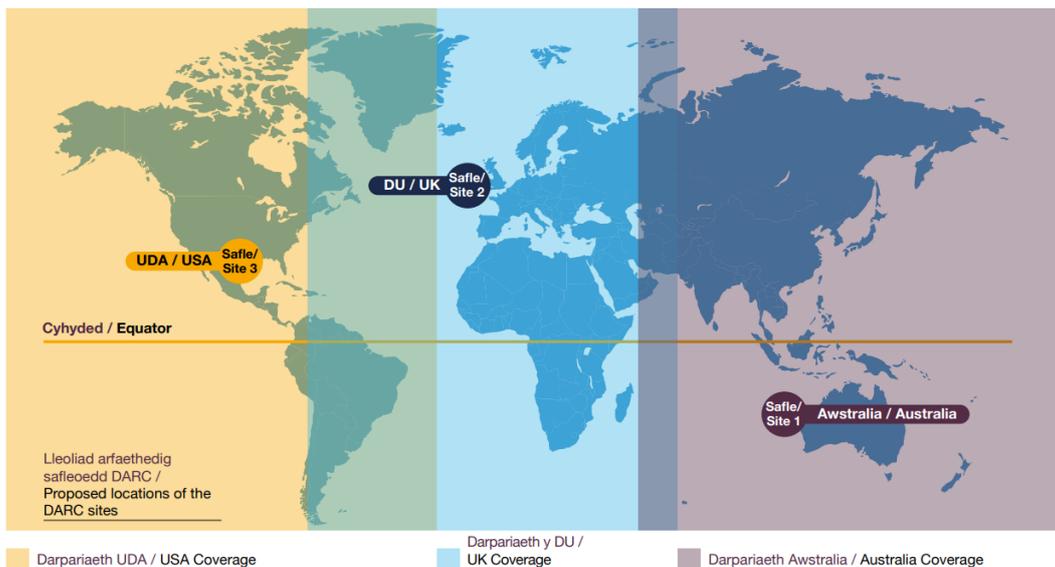


Image 1.1: Proposed DARC Global Coverage

1.2. The Application Site

- 1.2.1. The application site covers approximately 189 ha, and the layout of the proposed development covers 2.99 ha (as shown in Figure 3.1: Proposed Development Overview). The application site is located within an existing 300 hectare MOD site on St David's Peninsula in Pembrokeshire, South Wales, approximately 1.2 km north-east of the coast, between Haverfordwest and St David's, and entirely within the PCC boundary. The application site location and boundary are presented in Figure 1.1 and described in detail in Chapter 3 (Proposed Development).
- 1.2.2. The nearest settlements are the hamlets of Penycwm to the immediate south of the application site, Llandeloy to the north and the villages of Solva (4.5 km south-west) and Newgale (2 km south). The A487 is located approximately 1.2 km to the south of the application site.
- 1.2.3. The entirety of the Cawdor Barracks is owned by the MOD and managed by the Defence Infrastructure Organisation (DIO). It is the former site of airfield RAF Brawdy. Cawdor Barracks is a working military base, which, until 2028, is occupied by approximately 400 personnel of the 14 Signals Regiment. The areas of hardstanding are a decommissioned runway/taxiway with some scattered buildings that are decommissioned.
- 1.2.4. The highway network is administered by PCC as the Local Highway Authority. The primary vehicular access to the application site is via the main gate to Cawdor Barracks which is accessed from the unclassified road (U3017). The U3017 runs north-east from the A487 which is located to the south of the southern boundary of Cawdor Barracks. Further information on

the local road network is presented in Chapter 3 (Proposed Development) and Chapter 5 (Transport and Access).

1.3. Purpose of the ES

- 1.3.1. An EIA is required for certain developments (termed ‘EIA development’) under the EIA Regulations. The EIA Regulations transpose Directive 2011/92/EU of the European Parliament and of the Council on 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (hereafter referred to as the ‘EIA Directive’)⁹ and Directive 2014/52/EU of the European Parliament and of the Council¹⁰ of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.
- 1.3.2. EIA is the process of compiling, evaluating and presenting information about the likely significant effects, both adverse and beneficial, of a project. The assessment provides decision makers with the environmental information they require to determine proposals and statutory consultees with environmental information they require to comment on an application. The early detection of potential significant adverse environmental effects enables appropriate mitigation measures (i.e. measures to avoid, minimise, restore or offset significant adverse effects) to be identified and incorporated into the design of a project, or commitments to be made, for example incorporating environmentally sensitive construction methods and practices. The approach is iterative and involves close working between those undertaking the EIA and the engineering design.
- 1.3.3. Some developments always require EIA (the EIA Regulations define these under Schedule 1), while others only require EIA if they are likely to have significant effects on the environment by virtue of their nature, size or location (the EIA Regulations define these under Schedule 2).
- 1.3.4. The proposed development constitutes a Schedule 2 development (Schedule 2 paragraph 2(10)(b) – Urban Development Projects) that is likely to have significant effects on the environment by virtue of its nature, size or location. As such, the planning application is required to be accompanied by an ES setting out the findings of the EIA.
- 1.3.5. MOD’s approach acknowledges the regional and national importance of the proposed development and the environmental context of the application site and its surrounding environment.
- 1.3.6. An EIA Scoping Report was submitted to PCC on 13 March 2023 to request a Scoping Opinion under Part 4, Regulation 14 of the EIA Regulations. PCC provided an EIA Scoping Opinion on 15 May 2023. PCC consulted on the applicant’s EIA Scoping Report, and the responses received from the statutory consultees have been taken into account in adopting the EIA Scoping Opinion. The EIA Scoping Opinion (and EIA Scoping Report) sets out the scope of the EIA to be reported in the ES for the proposed development (see Chapter 2: Methodology of this ES for more information). The EIA Scoping Opinion, relevant responses and follow up consultation are provided in Appendix 2.1 (DARC EIA Scoping Opinion Response Table) and Appendix 2.2 (DARC EIA Scoping Opinion Letter Follow Up).
- 1.3.7. In addition to this ES, a Habitats Regulations Assessment has been prepared to fulfil the requirements of Article 6(3) of the EU Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora. A Flood Consequences Assessment has also

⁹ Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment OJ L 26, 28.1.2012, pp. 1–21.

¹⁰ Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment Text with EEA relevance OJ L 124, 25.4.2014, pp. 1–18 (BG, ES, CS, DA, DE, ET, EL, EN, FR, HR, IT, LV, LT, HU, MT, NL, PL, PT, RO, SK, SL, FI, SV)

been prepared in accordance with the Planning Policy Wales (PPW) and Technical Advice Note 15 (TAN 15): Development, flooding and coastal erosion.

1.4. Structure of the ES

- 1.4.1. The ES reports the findings of the EIA undertaken for the proposed development in accordance with the requirements of Regulation 17 and Schedule of the EIA Regulations. Regulation 17(4)(d) of the EIA Regulations states that an ES must “include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment”. These requirements are presented in Table 1.1 to signpost where in this ES the information required is presented.
- 1.4.2. As far as is practicable, the chapters are written in a non-technical style to make the ES accessible to a wide, non-specialist audience. Where technical terminology is used, explanation is provided in the text. A Non-Technical Summary (NTS) has also been prepared to summarise the findings of the ES in a concise manner which is easily understood and accessible by all.
- 1.4.3. An overview of the methods used to conduct the EIA for the proposed development is provided in Chapter 2 (Methodology), with the topic chapters describing the specific methodologies applied to each respective assessment. Chapter 2 (Methodology) also details the consultation with statutory consultees, relevant bodies/organisations, and public stakeholders regarding the environmental considerations of the proposed development, including the scoping process.
- 1.4.4. In accordance with the EIA Regulations, a description of the reasonable alternatives studied by the applicant, the iterative design process and the rationale for selecting the preferred option is provided in Chapter 4 (Alternatives and Design).

Table 1.1: EIA Regulations – Information for Inclusion in an ES

Sch4 Ref	Specified Information	ES Chapter Where Addressed
1a	a description of the location of the development;	Chapter 3
1b	a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works and the land-use requirements during the construction and operational phases;	Chapter 3
1c	a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;	Chapter 3 and Chapters 5–16 as appropriate.
1d	an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operational phases.	Chiefly within Chapters 5, 6, 7, 11, 12, 15 and 16.
2	A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the applicant or appellant which are relevant to the proposed development and its specific characteristics and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Chapter 4
3	A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Chapters 5–16 as appropriate.



Sch4 Ref	Specified Information	ES Chapter Where Addressed
4	A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Chapters 5–16 as appropriate.
5	A description of the likely significant effects of the development on the environment resulting from, inter alia—	Chapters 5–16 as appropriate.
5a	the construction and existence of the development, including, where relevant, demolition works;	Chapter 3
5b	the use of natural resources in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	Chapters 5–16 as appropriate.
5c	the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances and the disposal and recovery of waste;	Chapters 5–16 as appropriate.
5d	the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	Chapters 5–16 as appropriate.
5e	the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	The methodology is provided in Chapter 17, and the assessment is within Chapters 5–16.
5f	the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	Chapter 14
5g	the technologies and the substances used.	Chapter 3
5	The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at European Union level as they were immediately before IP completion day (including in particular those established under Council Directive 92/43/EECM1 and Directive 2009/147/ECM2) or at national level. ¹¹	Chapters 5–16 as appropriate and summarised within Chapter 17.
6	A description of the forecasting methods or evidence, used to identify and assess the effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Chapters 5–16 as appropriate.
7	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	Chapters 5–16 as appropriate and summarised within Chapter 17.

¹¹ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds O.J. L 20, 26/1/2010, pp. 7–25.

Sch4 Ref	Specified Information	ES Chapter Where Addressed
8	A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to assimilated law such as any law which implemented Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of any law which implemented the Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Chapters 5–16 as appropriate.
9	A non-technical summary of the information provided under paragraphs 1 to 8.	Within the Non-Technical Summary.
10	A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	As footnotes throughout the ES.

1.4.5. This ES consists of technical appendices and figures which includes technical reports and supporting information. These are listed in each chapter.

1.4.6. This chapter is supported by Figure 1.1 (Location of Proposed Development), and includes cross-references to other chapters and figures where appropriate

1.5. EIA Methodology

1.5.1. Chapter 2 (Methodology) sets out the approach to environmental assessment, including parameters, guidance and consultation. Each chapter within this ES sets out a review of legislation, policy and guidance relevant to the particular environmental discipline being assessed. All references to legislation are to the legislation in force on the date of preparation of the ES.

1.5.2. Public and statutory consultation has been undertaken throughout the iterative scoping and impact assessment stages of the EIA. The views of statutory and non-statutory stakeholders have served to focus the environmental studies and to identify specific issues that require further investigation. The detail and outcomes of these discussions are provided in Chapter 2 (Methodology) and within the relevant topic chapters of this ES.

1.6. Preparation of the ES

1.6.1. Sweco was appointed in 2022 to provide environmental services to support DARC, including input to site selection and subsequent design development, submission of the Environmental Scoping Report (March 2023), consultation and stakeholder engagement, and environmental assessment including site surveys and preparation of the draft ES chapters. This work continued until April 2025, at which stage the draft ES was considered to be around 90% complete.

1.6.2. In July 2025, Jacobs was appointed to undertake the following:

- Review and update the draft ES chapters based on a refined site design;
- Finalise mitigation proposals; and
- Complete the ES in preparation for submission with the planning application.



- 1.6.3. Due to the complexity of assessment and modelling, it was agreed that completion of the noise assessment (Chapter 7) and the landscape and visual assessment (Chapter 9) would be retained by Sweco. All other chapters of the ES were transferred to Jacobs for completion, in line with the three steps set out above.
- 1.6.4. In accordance with Regulation 17(4) of the EIA Regulations an ES must:
- (a) be prepared by persons who in the opinion of the relevant planning authority or the Welsh Ministers, as appropriate, have sufficient expertise to ensure the completeness and quality of the statement;*
 - (b) contain a statement by or on behalf of the applicant or appellant describing the expertise of the person who prepared the ES.*
- 1.6.5. This information is presented in Appendix 1.1. All topic assessments have been subject to a thorough technical review to assure technical credibility, followed by subsequent review by the EIA coordination team and the applicant.
- 1.6.6. Jacobs and Sweco are both registered companies under the Institute of Sustainability and Environmental Professionals (ISEP) EIA Quality Mark. Organisations that hold the EIA Quality Mark have made a voluntary commitment to excellence in their EIA activities from managing the process and maintaining staff capabilities, to effective presentation of the assessment findings and taking action to improve practice.

1.7. Planning Context

Form of Application

- 1.7.1. This ES has been prepared to support a full planning application to PCC for the proposed development.
- 1.7.2. The Planning Statement, submitted as a supporting planning document, examines the merits of the proposed development against relevant national, regional and local planning policy which is summarised below.

Planning Policy

Planning Policy Wales (PPW), 2024¹²

- 1.7.3. PPW is the principal land use planning policy document of the Welsh Government, supported by Technical Advice Notes, Welsh Government Circulars, and policy clarification letters, forming the national planning policy framework for Wales. The primary goal of PPW is to ensure that the planning system advances sustainable development and enhances the social, economic, environmental and cultural well-being of Wales, aligning with the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015, and other relevant legislation. PPW aims to enhance the well-being of Wales by promoting sustainable and integrated action across all levels of the planning process, rather than a fragmented approach.

Future Wales: The National Plan 2040¹³

- 1.7.4. Future Wales, prepared by the Welsh Government, is the National Development Framework for Wales, setting out the direction for development up to 2040. It sets out the strategic approach for addressing the key priorities within the planning framework, and guides

¹² Welsh Government (2024). Planning Policy Wales, Edition 12, February 2024.

¹³ Welsh Government (2021). Future Wales: The National Plan 2040.

investment in infrastructure and development to benefit the region. This is the overarching plan upon which Welsh strategic and local development plans have been based.

Local Development Plan

1.7.5. PCC's current Local Development Plan (LDP)¹⁴ was adopted in 2013 and will remain in effect until replaced by the emerging Local Development Plan 2 (LDP2). The current LDP comprises the following:

- A Written Statement outlining:
 - Strategic Policies, and
 - General Policies.
- A Proposals Map showing the geographical location and extent of site-specific development and protection policies.

General Policies and Proposals Map

1.7.6. The LDP Proposals Map indicates the following development and protection policies associated with Cawdor Barracks:

- General Development Policy (Policy GN.1) – associated with the general approval of the proposed development;
- Sustainable Design (Policy GN.2) – associated with the design of the proposed development including the local character and landscape/townscape context, resource efficiency, climate responsiveness, inclusivity and accessibility, contribution to the public realm and outdoor space.
- Infrastructure and New Development (Policy GN.3) – where development generates a directly related need for new or improved infrastructure this must be funded by the development, related in scale and kind to the development, and provided on site wherever appropriate.
- Sand and Gravel Resource (Policy GN. 22) – associated with agricultural land immediately west, and immediately east of Cawdor Barracks;
- Hard Rock Resource (Policy GN. 22) – associated with agricultural land immediately south, and immediately east of Cawdor Barracks; and
- Mineral Quarry Sites Buffer (Policy GN. 25) – a buffer zone associated with an existing mineral working site immediately east of Cawdor Barracks. This buffer zone encroaches onto Cawdor Barracks.

1.7.7. LDP policy GN.1 General Development Policy states:

“Development will be permitted where the following criteria are met:

1. The nature, location, siting and scale of the proposed development is compatible with the capacity and character of the site and the area within which it is located;

2. It would not result in a significant detrimental impact on local amenity in terms of visual impact, loss of light or privacy, odours, smoke, fumes, dust, air quality or an increase in noise or vibration levels;

¹⁴ Pembrokeshire County Council (2013). Local Development Plan: Planning Pembrokeshire's Future.

3. *It would not adversely affect landscape character, quality or diversity, including the special qualities of the Pembrokeshire Coast National Park and neighbouring authorities;*
4. *It respects and protects the natural environment including protected habitats and species;*
5. *It would take place in an accessible location, would incorporate sustainable transport and accessibility principles and would not result in a detrimental impact on highway safety or in traffic exceeding the capacity of the highway network;*
6. *Necessary and appropriate service infrastructure, access and parking can be provided;*
7. *It would not cause or result in unacceptable harm to health and safety;*
8. *It would not have a significant adverse impact on water quality; and*
9. *It would neither contribute to the coalescence of distinct settlements nor create or consolidate ribbon development.”*

1.7.8. LDP policy GN.2 Sustainable Design states:

“Development will be permitted where relevant criteria are met:

1. *It is of a good design which pays due regard to local distinctiveness and contributes positively to the local context;*
2. *It is appropriate to the local character and landscape/townscape context in terms of layout, scale, form, siting, massing, height, density, mix, detailing, use of materials, landscaping and access arrangements / layout;*
3. *It incorporates a resource efficient and climate responsive design through location, orientation, density, layout, land use, materials, water conservation and the use of sustainable drainage systems and waste management solutions;*
4. *It achieves a flexible and adaptable design;*
5. *It creates an inclusive and accessible environment for users that addresses community safety;*
6. *It provides a good quality, vibrant public realm that integrates well with adjoining streets and spaces and*
7. *It contributes to delivering well designed outdoor space with good linkages to adjoining streets, spaces and other green infrastructure.”*

1.7.9. LDP policy GN.3 Infrastructure and New Development states:

“Where development generates a directly related need for new or improved infrastructure, services or community facilities and this is not already programmed by a service or infrastructure company, then this must be funded by the development, and:

1. *Related in scale and kind to the development; and*
2. *Provided on site wherever appropriate. In exceptional circumstances contributions may be made to the provision of facilities elsewhere, provided their location can adequately service the development. The timely provision of directly related infrastructure, services and community facilities shall be secured by planning*

condition(s), the seeking of planning obligation(s) by negotiation, and/or by any other agreement or undertaking.

The viability of a development will be a key consideration when securing planning obligations and dispensation may be allowed where these requirements cannot be supported by land values.

Measures necessary to physically deliver a development and ensure that it is acceptable in planning terms will be required in the first instance. Where appropriate contributions may be sought for a range of purposes, including:

- 1) Affordable housing*
- 2) Recreational and Amenity Open Space*
- 3) Sustainable Transport Facilities*
- 4) Education*
- 5) Community Facilities, including libraries,*
- 6) Regeneration*
- 7) Waste*
- 8) Renewable and low carbon energy*
- 9) Biodiversity*

In the event that viability considerations indicate that not all the identified contributions can reasonably be required, priority contributions will be determined on the basis of the individual circumstances of each case. In the case of housing developments, priority will be given to affordable housing unless there is an overwhelming need for the available contribution, in whole or in part, to be allocated for some other appropriate purpose/s.”

1.7.10. LDP policy GN.22 Prior Extraction of the Mineral Resources states:

“Where new development is permitted in an area of mineral resource, prior extraction of any economic reserves of the mineral must be achieved, wherever appropriate in terms of economic feasibility and environmental and other planning considerations, prior to the commencement of the development.”

1.7.11. LDP policy GN.25 Buffer Zones around Mineral Sites states:

“New mineral extraction and new sensitive development will not normally be permitted within Buffer Zones around mineral working sites, where such uses would potentially have an adverse impact on one another because of their close proximity.”

Strategic Policies

1.7.12. The LDP outlines a number of Strategic Policies (SPs) of relevance. The following is not an exhaustive list, and the individual ES topic chapters will consider a review of SPs as required:

1.7.13. SP 9 Welsh Language

“Development will be managed sensitively in areas where the Welsh Language has a significant role in the local community. This may include phasing, signage and / or other appropriate mitigation measures.”

1.7.14. SP 16 The Countryside

“The essential requirements of people who live and work in the countryside will be met whilst protecting the landscape and natural and built environment of Pembrokeshire and adjoining areas. Development which minimises visual impact on the landscape and relates to one of the following will be promoted:

1. Enterprises for which a countryside location is essential;
2. Opportunities for rural enterprise workers to be housed in suitable accommodation that supports their employment; and
3. The re-use of appropriate existing buildings.”

Emerging Local Development Plan (LDP2)

- 1.7.15. PCC are in the process of producing a new local plan which, when adopted, will supersede the policies identified above. Work on the new plan has been delayed as a result of new evidence from the Joint Nature Conservation Committee about the damaging effects of phosphates to water ecosystems and species. In January 2021, Natural Resources Wales published new guidance on phosphates levels for Riverine Special Areas of Conservation in Wales. Further information and additional research are required before LDP2 can continue to be progressed.
- 1.7.16. As a result of this, the local plan has not moved beyond consultation on the Deposit Plan which was consulted on between 15 January and 18 March 2020.
- 1.7.17. LDP2 contains an emerging policy that is directly relevant to the proposed development: GN.7: Cawdor Barracks including the former Brawdy Airfield.
- 1.7.18. This ES makes reference to the current LDP and the planning statement for the proposed development considers emerging policies and therefore considers the LDP2.

1.8. MOD Policy

Joint Service Publication (JSP) 850 version 2.4.11 (2024)

- 1.8.1. JSP 850¹⁵ provides the authoritative single source of direction on infrastructure and estate policy, standards and supporting guidance for the entirety of the defence estate in the UK and overseas.
- 1.8.2. JSP 850 is the core publication within the Policy and Standards element of the Infrastructure Function Control Framework.
- 1.8.3. Part 1 of JSP 850 contains the Defence Infrastructure and Land Policy. Part 1 is mandatory and applicable pan-Defence.
- 1.8.4. Part 2 of JSP 850 contains Defence Standards and Supporting Guidance relating to the specific operations and activities of planning, developing, operating and maintaining the Defence Estate, land and infrastructure which must be adhered to (unless subject to an agreed derogation or deviation). It should be noted that:
- Standards may include mandatory requirements.
 - Guidance provides recommendations for accepted good practice. The status of the recommendation, whether it is advisory or not, will be confirmed in the content itself.

¹⁵ Ministry of Defence (2024). Joint Service Publication 850: Infrastructure and Estate Policy, Standards and Guidance. Version 2.4.11.

- Standards and Supporting Guidance are subordinate to Part 1 policy. Where there is conflict, Part 1 prevails. Where there is no specific provision in Part 2, Part 1 should be referred to for the overarching direction.

1.8.5. The proposed development is subject to JSP 850 policy. Where JSP 850 has informed specific topic chapters, including the mode of assessment or key assumptions, this is addressed in further detail within the chapters themselves.

1.9. Pre-Application Consultation

1.9.1. Non-Statutory pre-application consultation has taken place with the local community in September 2024 whereby the applicant and the technical team presented background information on the proposed development to the community over the period of two days in Solva and St Davids. The purpose of this consultation was to provide opportunity for the community to provide early comment on the proposals, ask questions on the need for the development, and to raise specific planning matters so they could be fully considered and addressed as part of the application. Full details of this event are detailed within the Pre-Application Consultation Report.

1.9.2. In accordance with the Planning (Wales) Act 2015 there is a requirement for applicants bringing forward major developments to undertake a statutory period of pre-application consultation. This is to include a copy of the draft planning application material, including the ES, and provides the public and statutory bodies with an opportunity to provide comment on the scheme and the material that has been prepared.

1.9.3. All draft application information has been made available on the applicant's project website: <https://www.gov.uk/guidance/deep-space-advanced-radar-capability-darc>, and the Pre-Application Consultation took place in January – February 2026 for the statutory period of 28 days.

1.10. Public Availability of the ES

1.10.1. Upon submission of the Planning Application to PCC as the local planning authority, electronic versions of all ES and accompanying documents will be available on the PCC planning website: <https://planning.agileapplications.co.uk/pembrokeshire>

1.10.2. The applicant strongly encourages the use of electronic versions of documentation. Printed copies of the full ES and accompanying documents are available by request.

1.10.3. Printed copies of the Non-Technical Summary will be available free of charge.

1.11. Commenting on the Application

1.11.1. Chapter 2 provides information on public and statutory environmental body consultation undertaken for the proposed development to date.

1.11.2. The advertisements referred to in Section 1.10 will provide details stating the date by which representations should be made once the Planning Application is submitted such that they can be considered by the planning authority as part of the decision-making process.

1.11.3. All representations on the planning application once formally submitted for consideration should be made directly to PCC as the planning authority. Methods for doing so can be found at <https://planning.agileapplications.co.uk/pembrokeshire>.

1.11.4. All comments made on an application must be in writing. This can take the form of a letter or electronically. The application reference number as stated in the publicity for the application must be quoted. Comments must be made within the time period set out in the publicity. Any comments received after the specified date may not be taken into account, although PCC will



endeavour to consider them up to the date the officer produces their recommendation on whether development should be allowed.

2. Methodology

2.1. Introduction

- 2.1.1. The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017¹⁶ (hereafter referred to as the 'EIA Regulations') set out the procedures for undertaking an environmental impact assessment (EIA) and the information required in an Environmental Statement (ES). This chapter outlines the EIA approach adopted to identify the nature and extent of significant environmental effects likely associated with the proposed development.
- 2.1.2. EIA is a systematic process used to identify and assess the likely significant effects that could occur as a result of a project and identify appropriate mitigation to reduce residual effects, where practicable, to a non-significant level. The component parts of the EIA process are defined under Regulation 4(1) of the EIA Regulations. Where possible and reasonably practicable and taking into account the operational requirements of the proposed development, potential adverse environmental impacts of the proposed development have been avoided or reduced through an iterative approach to the design process, alongside relying on measures to mitigate those impacts, for example siting of infrastructure on existing hardstanding where practicable to reduce potential habitat loss as outlined in Chapter 4 (Alternatives and Design Evolution).
- 2.1.3. Included within this chapter is an overview of the consultation undertaken as part of the EIA, including the EIA Scoping stage. The views of statutory and non-statutory stakeholders have influenced the design of the proposed development, served to focus the environmental technical studies and to identify specific issues which required further consideration.
- 2.1.4. The Ministry of Defence's approach acknowledges the proposed development's importance to the UK and the environmental context of the application site and its surrounding environment.

2.2. EIA Approach

- 2.2.1. The aims of the EIA are to:
- gather information about the environment, and identify environmental constraints and opportunities which may influence or be affected by the proposed development;
 - engage with statutory and non-statutory stakeholders to inform design, focus the environmental technical studies and identify specific issues which required further consideration;
 - identify and assess potential environmental impacts and effects;
 - identify and incorporate into the design of the proposed development, features and measures to avoid, minimise, mitigate, compensate and manage adverse impacts, and where practicable enhance beneficial effects; and
 - assess the proposed development's residual effects (i.e. those remaining after taking into account the effect of mitigation measures).
- 2.2.2. This ES has been prepared in accordance with the statutory requirements set out in the EIA Regulations and current best practice guidance for EIA as described in the respective topic chapters, with due consideration of the following key documents:

¹⁶ The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017



- Welsh Office Circular 11/99: Environmental Impact Assessment¹⁷;
- Institute of Environmental Management and Assessment (IEMA) (2011) The State of Environmental Impact Assessment Practice in the UK. Special Report¹⁸;
- Implementing the Mitigation Hierarchy from Concept to Construction IEMA (2024)¹⁹;
- IEMA (2020) EIA Guide to: Climate Change Resilience and Adaptation²⁰; and
- Planning Inspectorate Nationally Significant Infrastructure Projects Advice Pages²¹.

2.2.3. Image 2.1 summarises the approach for writing the ES topic chapters.

¹⁷ Welsh Office (1999). Circular 11/99: Environmental Impact Assessment. [Online] Available at: <https://www.gov.wales/planning-guidance-environmental-impact-assessments-circular-1199> [Accessed 21 October 2025].

¹⁸ IEMA (2011). The State of Environmental Impact Assessment Practice in the UK. Special Report. [Online] Available at: <https://s3.eu-west-2.amazonaws.com/iema.net/documents/2011-State-of-EIA-IEMA.pdf> [Accessed 21 October 2025].

¹⁹ IEMA (2024). Implementing the Mitigation Hierarchy from Concept to Construction. [Online] Available at: <https://www.iema.net/media/oone2qce/iema-mitigation-in-eia-guidance-final.pdf> [Accessed 21 October 2025]

²⁰ IEMA (2020). EIA Guide to: Climate Change Resilience and Adaptation. [Online] Available at: <https://www.iema.net/media/mabhqino/iema-eia-climate-change-resilience-june-2020.pdf> [Accessed 21 October 2025].

²¹ Consideration of these advice pages are voluntary and the proposed development is not being assessed as a Nationally Significant Infrastructure Project.

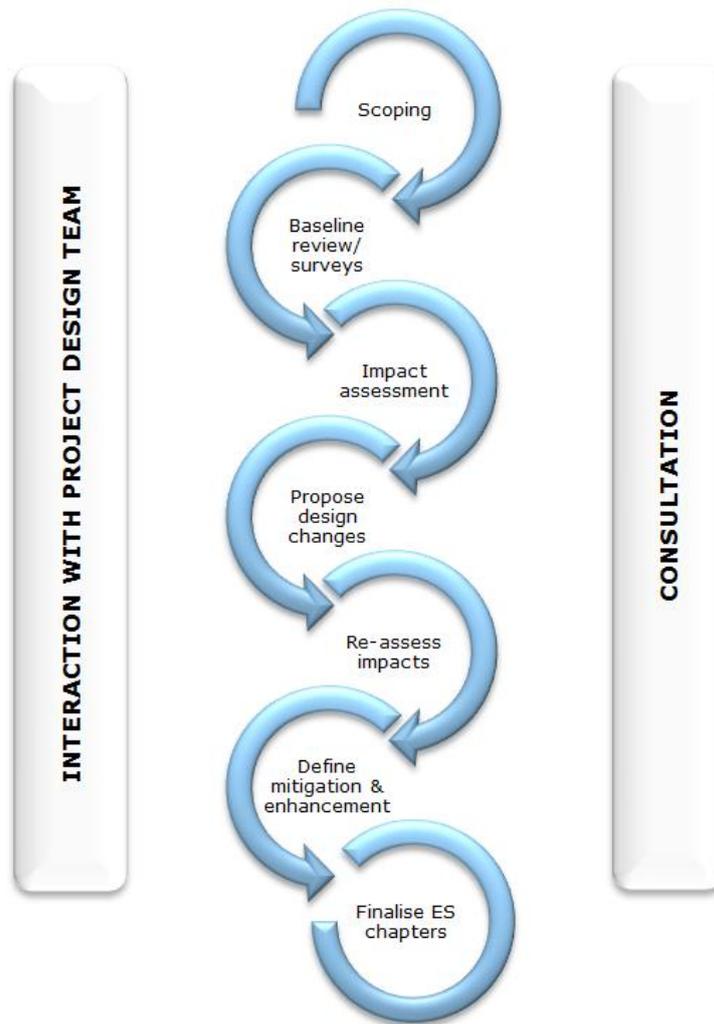


Image 2.1: EIA Approach

2.3. ES Requirements

EIA Screening

- 2.3.1. Screening is the process of determining whether a proposed project is likely to have significant effects on the environment in order that it constitutes 'EIA development', and as result would require an EIA and publication of an ES.
- 2.3.2. The proposed development constitutes a 'Schedule 2 development' (Regulation 2(1) of the EIA Regulations) by virtue of meeting the description of development under Schedule 2 paragraph 2(10)(b)(i) and (iii) – Urban Development Projects of over 1 hectare of non-dwellinghouse development; or over 5 hectares – which is triggered by the application site area.
- 2.3.3. The area of the Cawdor Barracks application site and proposed development exceeds the thresholds stated in column 2 of Schedule 2 paragraph 2 of the EIA Regulations, and it was considered that the development is *'likely to have significant effects on the environment by virtue of factors such as its nature, size or location'*. As such, the application for consent is required to be accompanied by an ES setting out the findings of the EIA and a request for a formal screening opinion has not been made. By virtue of submitting the application with this

ES, the proposed development constitutes 'EIA development' (Regulation 5(1) and 5(2)(b) of the EIA Regulations).

Scoping

- 2.3.4. The EIA scoping stage defines the proposed scope of the assessment, including the topics and aspects that are likely to result in significant effects that would be scoped into the EIA and those topics and aspects that can be scoped out. It also outlines the existing baseline environment and the proposed methodology for undertaking the assessment. The output of the scoping stage is the submission by the applicant of a scoping report and, following consultation, the adoption of a scoping opinion by Pembrokeshire County Council (PCC).
- 2.3.5. Whilst not a statutory requirement under the EIA Regulations, undertaking EIA scoping is good practice and an important step in the EIA process as it allows all parties involved to highlight key environmental issues relevant to the proposed development and to agree on the methodology to be used in the EIA. The scoping stage allows engagement of the determining authority and other stakeholders at an early stage in the development process, and enables key opinions, often based on local understanding, to be identified and considered in future assessment work.
- 2.3.6. The scoping process seeks to identify which environmental topics are to be examined in an EIA. It also identifies the level of environmental assessment to be undertaken, the methodology to be used, and any data collection/survey requirements. It provides justification, supported by evidence, for scoping in or out environmental topics from further environmental assessment by identifying the environmental topics which are likely to result in significant environmental effects or, where there remains sufficient uncertainty about potential environmental effects, a need for further assessment. This is so that the EIA undertaken for the proposed development is proportionate and compliant with the requirements under the EIA Regulations.
- 2.3.7. The EIA Scoping Report documented the scoping exercise that was undertaken to identify the nature and extent of likely significant effects associated with the proposed development. Accordingly, the EIA Scoping Report detailed the intended scope for the EIA, the proposed methodologies for undertaking the assessment and, thus, the broad content of the ES. Topics of the environment likely to be significantly affected by the proposed development were considered based on a review of the:
- sensitivity of the receptors that could be affected;
 - expected magnitude of the environmental changes (impact) that could affect sensitive receptors; and
 - potential to avoid or reduce likely adverse effects such that they are not likely to be significant and to enhance beneficial effects to increase their significance.
- 2.3.8. An EIA Scoping Report²² was submitted to PCC on 23 March 2023 in support of a request for a scoping opinion to be adopted under Regulation 14 of the EIA Regulations.
- 2.3.9. In making its formal scoping opinion, under Regulation 14(4) of the EIA Regulations, PCC is required to consult with a number of consultees and incorporate their views within the scoping opinion. In accordance with Regulation 17(4)(c) of the EIA Regulations, where a scoping opinion is adopted, the ES must be based on that scoping opinion so far as the proposed development remains materially the same as the development which was the subject of that opinion or direction. The ES must also include the information that may reasonably be required

²² MOD (2023). EIA Scoping Report, Project DARC – Cawdor Barracks. Document reference: 65208061-SWE-XX-XX-T-J-0002-CawdorScopingReport, Revision P02



for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment.

- 2.3.10. Responses to comments raised in the EIA Scoping Opinion are presented in tabular format in Appendix 2.1 (DARC EIA Scoping Opinion Response Table). The ES has been undertaken in accordance with the EIA Scoping Opinion.
- 2.3.11. Further to the EIA Scoping Opinion and follow-up discussions with PCC, there were a number of matters not fully closed out as more information and/or clarification was requested. To address these matters, a letter was sent to PCC (25 March 2024), as presented in Appendix 2.2 (DARC EIA Scoping Opinion Follow Up Letter). A response was received from PCC (20 May 2024) addressing these matters. As the latest correspondence, this letter and the response from PCC should be read in conjunction with the EIA Scoping Opinion. This further informed the assessment methodologies and scope that has been undertaken within this ES.
- 2.3.12. The applicant has maintained ongoing dialogue with PCC and other relevant statutory consultees to ensure that the scope of the EIA is proportionate and meets the requirements of the EIA Regulations.

Aspects and Matters Scoped Out of the Assessment

- 2.3.13. During the scoping process some topics were 'scoped out' of the EIA in their entirety; i.e. the topics have either not been considered applicable to the proposed development because there would not be likely significant effects, or it has been agreed during consultation that the environmental topic is suitably covered elsewhere in the ES and/or other existing legislation and agreements. Justifications for scoping out these topics are provided in the following sections below.

Material Assets and Waste

- 2.3.14. Material assets and waste will be covered in Chapter 11 (Ground Conditions and Contaminated Land).
- 2.3.15. The EIA Scoping Opinion response from PCC was that the "*proposed EIA scope is satisfactory*" and therefore this approach is accepted.

Human Health

- 2.3.16. Other ES chapters will address the potential for health effects in relation to air quality, noise, heat and radiation, socio-economics, geology and soils, and transport.
- 2.3.17. The EIA Scoping Opinion response from PCC was that the "*proposed EIA scope is satisfactory*" and therefore this approach is accepted.

Major Accidents and Disasters

- 2.3.18. Regulation 4(3)(b) of the EIA Regulations requires an assessment of "the expected effects deriving from the vulnerability of the proposed development to risks of major accidents and disasters that are relevant to that development". The types of major natural disasters, major accidents and man-made disasters were considered in the EIA Scoping Report. Overall, the EIA Scoping Report determined that the types of accidents and disasters considered were either sufficiently managed through existing legislation and procedures, other assessments or not relevant to the proposed development.
- 2.3.19. This topic was not raised as requiring inclusion by either PCC or any of the statutory consultees that responded in the EIA Scoping Opinion. Consequently, a specific assessment of major accidents and disasters was scoped out of the EIA and has not been considered further in this ES.

Radar and Telecommunications

- 2.3.20. The proposed development is anticipated to potentially interact with Radar and Telecommunications (no earlier than January 2027) through the following:
- civil and military air traffic – assessment of potential impacts of the proposed radars on civil and military air traffic; and
 - interaction with local telecommunications – both civilian and military.
- 2.3.21. With regards to civil and military air traffic, these are requirements outside the scope of the EIA Regulations. Currently, the Ministry of Defence (MOD) and the UK Civil Aviation Authority (CAA) (as national airspace regulators) are completing the formal Airspace Change Process.
- 2.3.22. Similarly, the MOD and the United States Space Force (USSF) have undertaken an assessment of the electromagnetic spectrum in accordance with JSP 604, leaflet 3032. Subsequently, the UK Office of Communications (Ofcom) and Defence Electromagnetic Authority (DEMA) (as the Regulating Authority) have allocated a frequency band in the electromagnetic spectrum for DARC.
- 2.3.23. The EIA Scoping Opinion response from PCC was that “a detailed assessment of Radar and Telecommunications would be scoped out of the EIA as this will be covered by other legislation and agreements. The local planning authority (LPA) would need comfort that this is indeed the case and thus a more detailed review to this effect would be needed.” Further evidence on the processes external to EIA were provided to PCC in a follow up letter (Appendix 2.2) and it was agreed this should be scoped out.
- 2.3.24. On this basis, a detailed assessment of Radar and Telecommunications was not considered relevant for this EIA as it will be covered through other existing legislation and agreements, and it was therefore scoped out of the ES.

Detailed EIA Scoping Opinion Comments

- 2.3.25. Responses to more detailed comments raised within the PCC EIA Scoping Opinion have been provided within the respective topic chapters and have also been presented in Appendix 2.1.

National Park Special Qualities

- 2.3.26. In their landscape and visual scoping opinion consultation response dated 04 May 2023 the Pembrokeshire Coast National Park Authority (PCNPA) requested an assessment of the effect of the proposed development on the Special Qualities of the Pembrokeshire Coast National Park (PCNP). These ‘Special Qualities’ are defined as the characteristics and features of the National Park which individually, or in combination, contribute to making the National Park unique. Table 2.1 lists the PCNP Special Qualities and details where the assessment of effects are provided within the ES.
- 2.3.27. The Planning Statement demonstrates how potential impacts on the purposes and special qualities of the National Park have been taken into consideration.

Table 2.1: Pembrokeshire Coast National Park Special Qualities

Special quality	Where assessment of effects is provided in the ES
Coastal Splendour	Chapter 9 (Landscape and Visual Impacts)
Diverse geology	Chapter 11 (Ground Conditions and Contaminated Land)
Diversity of landscape	Chapter 9 (Landscape and Visual Impacts)
Distinctive settlement character	Chapter 9 (Landscape and Visual Impacts)
Rich historic environment	Chapter 10 (Archaeology and Built Heritage)
Cultural Heritage	Chapter 10 (Archaeology and Built Heritage)
Richness of habitats and biodiversity	Chapter 8 (Biodiversity)
Islands	Chapter 9 (Landscape and Visual Impacts)
Accessibility	Chapter 5 (Transport and Access)
Space to breathe	Chapter 9 (Landscape and Visual Impacts)
Remoteness, tranquillity, and wildness	Chapter 9 (Landscape and Visual Impacts)
The diversity of experienced and combination of individual qualities	Chapter 9 (Landscape and Visual Impacts)

Residues and Emissions

- 2.3.28. The EIA Regulations (Schedule 4, paragraph 1(d)) require an estimate, by type and quantity, of expected residues and emissions. This information is provided in the relevant topic chapters. Table 2.2 sets out the residues and emissions that must be reported on to satisfy the EIA Regulations, as well as the topic chapters of the ES which cover them.

Table 2.2: Residues and Emissions

Residue or Emission	ES Topic Chapter
Air pollution	Chapter 6: Air Quality
Soil and subsoil pollution	Chapter 11: Ground Conditions and Contaminated Land
Loss of soil resource	Chapter 11: Ground Conditions and Contaminated Land
Noise	Chapter 7: Noise and Vibration
Vibration	Chapter 7: Noise and Vibration
Light	Chapter 16: Lighting
Heat	Chapter 15: Heat and Radiation
Radiation	Chapter 15: Heat and Radiation
Types and quantities of waste	Chapter 11: Ground Conditions and Contaminated Land (including consideration of material assets and waste)
Water pollution	Chapter 12: Water Environment, Flood Risk and Drainage



2.4. Consultation

Overview

- 2.4.1. Public and statutory environmental body consultation has been undertaken throughout the scoping and impact assessment stages of the EIA, prior to submission of the planning application. Full details of the public consultation process, including the Pre-Application Consultation, will be finalised and set out in the Statement of Community Involvement, which accompanies the planning application submission.
- 2.4.2. In this ES, the term ‘key stakeholder’ is used to describe organisations identified by the applicant and nominated by PCC as specific consultation bodies as well as other eminent organisations relevant to the proposed development.

Scoping Consultation

- 2.4.3. The EIA Scoping Opinion submitted to PCC and subsequently agreed, identified the key stakeholders which were to be consulted with as part of the EIA process and outlined the initial consultation already undertaken as part of the scoping and pre-application process. The key stakeholders consulted with as part of the scoping process are listed below:
- Cadw;
 - Dŵr Cymru Welsh Water (DCWW);
 - Natural Resources Wales (NRW);
 - specialist departments within PCC, and
 - PCNPA.
- 2.4.4. The consultation approach adopted has been to provide opportunities for stakeholders to obtain information, express views and participate actively in the design process. The views of stakeholders have served to focus the environmental technical studies and to identify specific issues which require further consideration.

Consultation Events

- 2.4.5. Two public consultation events were hosted in local communities at Solva and St Davids on the 13 and 14 September 2024 respectively. Details of attendance and feedback are captured in the Pre-Application Consultation Report included as part of the documentation supporting the planning application.
- 2.4.6. Key points raised from the public relevant to the EIA included:
- potential impacts on local wildlife, primarily skylark and Manx shearwater (addressed in Chapter 8: Biodiversity);
 - views of the proposed development, primarily the antenna and impacts on the Pembrokeshire Coast National Park (addressed in Chapter 9: Landscape and Visual Impact);
 - employment associated with operation of the proposed development (addressed in Chapter 13: Socio-economics); and
 - health effects from non-ionising radiation (addressed in Chapter 15: Heat and Radiation).
- 2.4.7. This feedback was presented to the technical environment teams and workshops held with the design team for their consideration and to mitigate adverse impacts and enhance benefit opportunities. Outcomes of these are presented in Chapter 4 (Alternatives and Design



Evolution) as well as specific details within the ‘Design Intervention and Controls’ section of each topic chapter.

Technical Consultation

- 2.4.8. In addition to the scoping consultation described earlier in this section, ongoing engagement with statutory environmental bodies has continued during the assessment process. This ongoing technical engagement included discussion of assessment methodology and scope, potential effects, and mitigation and enhancement. This engagement took the form of email exchanges, telephone calls, and virtual meetings. The responses and comments received are provided in further detail within the relevant topic chapters of this ES.

2.5. Environmental Statement Structure

- 2.5.1. The structure of the ES is shown in Table 2.3. Each key environmental topic that has not been scoped out has been assigned a separate chapter in the ES.

Table 2.3: Environmental Statement Structure

Chapter Number	Chapter Title
Non-Technical Summary	
Main text	
1	Introduction
2	Methodology
3	Proposed Development
4	Alternatives and Design Evolution
5	Transport and Access
6	Air Quality
7	Noise and Vibration
8	Biodiversity
9	Landscape and Visual Impact
10	Archaeology and Built Heritage
11	Ground Conditions and Contaminated Land
12	Water Environment, Flood Risk and Drainage
13	Socio-economics
14	Climate Change and Carbon
15	Heat and Radiation
16	Lighting
17	Cumulative Effects Assessment
18	Schedule of Mitigation
19	Summary of Significant Residual Effects

2.6. Topic Chapter Content

- 2.6.1. The assessment of potential effects is based on the definition of baseline conditions (i.e. the existing environment), identification and prediction of the magnitude of impacts likely to result

in effects, and the evaluation of the significance of those effects. The EIA Regulations (Regulation 17) define an ES with the content requirements set out under Schedule 4. Table 1.1 in Chapter 1 (Introduction) lists the requirements of Schedule 4 and includes where this ES addresses each point.

2.6.2. The topic chapter format and assessment methodology follows the general framework in Table 2.4. Content and descriptions in the table are expanded upon later in the chapter.

Table 2.4: Summary of Technical Assessment Chapter Structure

Chapter Content	Description
Introduction	Provides a brief introduction to each of the topic chapters, clarifying which technical area the assessment has considered, and cross-referencing other topic chapters within the ES that may have had a bearing on the technical assessment.
Methodology	<p>Outlines methods used in undertaking the technical study, referencing published standards, guidelines and best practice.</p> <p>The methodology section outlines:</p> <ul style="list-style-type: none"> • scope of the assessment – spatial, temporal, and technical; • consideration of planning policy, legislation, guidance and industry standards; • consultation undertaken; • method of baseline data collection; • assessment methodology; and • assumptions and limitations.
Baseline Conditions	Establishes prevailing environmental conditions against which the potential environmental effects of the proposed development are assessed.
Design Interventions and Controls	This terminology refers to, where relevant and in line with topic guidance, standard controls and design changes that have occurred during the design process to account for environmental constraints; reducing adverse impacts and maximising benefits.
Likely Significant Effects	Identifies and describes likely significant effects resulting from the proposed development after design interventions for construction, operation and decommissioning.
Mitigation and Enhancement	<p>This section describes the mitigation and enhancement measures considered following identification of likely significant effects (adverse or beneficial).</p> <p>Measures relate to actions that materially influence the conclusions of significance, either by:</p> <ul style="list-style-type: none"> • management measures, such as best practice construction methods, or operational management requirements that could be secured by planning condition; and • post-application measures that are likely to require a planning condition to secure the implementation as part of the subsequent detailed or technical design process. <p>Where significant adverse effects have been identified, a commitment is made by the MOD to implement appropriate mitigation measures during detailed design, construction or once the proposed development is operational.</p>
Residual Significant Effects	Identifies the residual significant effects likely to occur following mitigation or enhancement measures. Equally, if it is not possible to mitigate or enhance an effect, then its unmitigated/unenhanced effect is stated here as a residual effect.
Monitoring	Provides what monitoring measures are needed (if any).
Summary and Conclusions	Provides a summary of the key conclusions of the assessment. This section also sets out a tabulated summary of entire effects assessment and a summary of proposed mitigation and enhancement measures.

2.7. Surveys and Predictive Techniques and Methods

Spatial Scope

- 2.7.1. The geographical extent of the EIA is referred to as the spatial scope. The application site extends over approximately 189 ha and is defined by the proposed development boundary, shown in Figure 1.1 (Location of Proposed Development).
- 2.7.2. The spatial scope of the assessment in each of the topic chapters varies depending on the type of impact and the sensitivity of the particular receptors potentially present. Environmental effects may extend beyond the application site, such as those associated with air quality, noise, road traffic and socio-economics.
- 2.7.3. The spatial scope of the technical assessments is set out in the corresponding ES chapters which, in each case, take into account the following principles:
- the physical area of the application site;
 - the nature of the baseline environment;
 - the manner in which environmental effects are likely to be propagated; and
 - the nature and sensitivity of the receptor.

Temporal Scope

- 2.7.4. A requirement of EIA is to consider the timings of key activities. A detailed construction and operation programme is provided within Chapter 3 (Proposed Development).
- 2.7.5. For the purpose of the EIA, the following assumptions have been made:
- The baseline year has been taken as 2023/2024 – data and surveys typically relate to these years dependent on data availability and when surveys were undertaken.
 - The construction works are scheduled over a 21-month period, starting April 2027.
 - The opening year has been taken to be 2029. The proposed development will have a 25-year operational life-span.
- 2.7.6. Additional assessment years may have been considered within topic chapters, where appropriate and recommended by industry guidance or statutory consultees with regard to the specific technical assessment area.

Technical Scope

- 2.7.7. The scope of each topic chapter is set out within each respective chapter. Each chapter's scope has been defined in the EIA Scoping Report and resulting consultation with the respective statutory consultees (as set out in Section 2.4) and through PCC's EIA Scoping Opinion, which is set out in each respective topic chapter.

Method of Baseline Data Collection

- 2.7.8. Establishing an environmental baseline is the first step to understanding the likely impacts of a development. The baseline describes the existing environmental conditions at the application site and the wider area, where applicable. The baseline description also includes, where applicable, an overview of the expected future state of the environment in the absence of the proposed development. The approach to describing baseline conditions, including desk-based studies and site surveys, is set out in each relevant topic chapter.



- 2.7.9. The baseline data collection for the technical assessments varies depending on data availability and the requirements of the technical scope of the assessment. Typically, the main methods of baseline data collection have included:
- desktop studies reviewing readily available or published information;
 - site surveys and/or monitoring;
 - modelling (where appropriate); and
 - consultation with appropriate organisations.
- 2.7.10. The study area required or recommended by guidance and best practice varies depending on the specific environmental parameter being assessed. The study area is therefore defined separately within each assessment chapter according to topic guidance, the geographic scope of potential impacts or the geographic scope of the information required to assess those impacts and the associated likely significant effects.
- 2.7.11. The identification of environmental constraints during the baseline study also informed the layout of the proposed development. Further detail on the design process for the proposed development is provided in Chapter 4 (Alternatives and Design Evolution).

2.8. General Assessment Assumptions and Limitations

- 2.8.1. The EIA has been conducted using a robust and systematic approach, aligned with best practice guidance, relevant legislation, and the EIA Regulations. Although every effort has been made to ensure the assessment's accuracy and reliability, it is recognised that certain assumptions and limitations are an inherent part of any EIA process. Topic-specific assumptions and limitations are included within each topic chapter of the ES. This includes information on any data gaps for establishing baseline conditions, and limitations associated with surveys, modelling, and assessment techniques.
- 2.8.2. The following general limitations were encountered when preparing the ES, as follows:
- The proposed development described in Chapter 3 (The Proposed Development), has been developed to a sufficient level of detail that enables likely significant effects to be identified. Some of the technical aspects of the construction and operation have yet to be determined as they will be subject to further detailed design development and pre-construction surveys if the proposed development is granted consent. The flexibility within the design has been carefully managed using the Rochdale Envelope approach²³ drawing on best practices from the Nationally Significant Infrastructure Project (NSIP) regime. This includes the 'worst case' option from the realistic and likely options that may be developed. Where the assessment shows that no significant effect is assumed for the worst-case option, it is considered that other (lesser) options would also have no significant effect. Any assumptions made regarding the maximum design scenarios have been identified in each of the topic chapters and have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group.
 - Detailed ground investigation and geotechnical surveys will be undertaken as part of the design process programmed after the submission of the planning application. In light of this, the application will aim to provide an allowance for flexibility in the siting of the proposed radar antennae and associated infrastructure. As described further in Chapter 3

²³ Planning Inspectorate (2025). Guidance Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope Updated 25 March 2025

(The Proposed Development) the ES therefore assumes a micro-siting allowance as follows:

- Micro-siting will not exceed 40 m in any direction from that indicated within Figure 3.1 (Proposed Development Overview);
- Micro-siting between 20 m and 40 m will only be permitted following written approval from the Local Planning Authority in consultation with appropriate stakeholders; and
- The above micro-siting allowances will apply to all proposed radar antennas and associated new infrastructure as described in the ES.

2.8.3. In addition to topic-specific assumptions, a number of general assumptions were encountered when preparing the ES, as follows:

- The information provided by third-party sources is assumed to be accurate at the time of preparing this report. Data sources have been verified and updated throughout the EIA process to date. References are included to provide details of relevant sources.
- It has been assumed that the mitigation and enhancement incorporated into the proposed development will be maintained as described in the planning application and that this will form part of the planning consent.
- The principal land uses adjacent to the application site are assumed to remain as they are at the time of the ES assessment, except in cases where planning permission has already been granted for development.
- The proposed development will be in operation until 2045 in accordance with the current Memorandum of Understanding (MoU) in place between the UK, US and Australia. Should the decision be made to decommission the proposed development, in advance of decommissioning, a detailed method statement would be agreed with the relevant regulators and statutory consultees at that time. Decommissioning effects are anticipated to be less than during construction and will be considered along with any necessary surveys, permits and assessment at that time. Unless otherwise stated in the assessment chapters, decommissioning impacts are not assessed within the technical chapters.

2.8.4. Further assumptions and limitations are discussed in each topic chapter of this ES. These address the availability and validity of baseline data as well as the effect of the passage of time on the validity of the data. The assumptions and limitations set out above in paragraphs 2.8.2 and 2.8.3 and within the ES topic chapters are considered to be standard and typical of the EIA process.

2.9. Assessment Methodology

2.9.1. The topic chapters set out the specific methods of assessment that have been undertaken to identify likely significant effects. For some technical disciplines, specific guidance or standards exist, which detail how the effects of a proposed development should be assessed.

2.9.2. Regulation 4(2) of the EIA Regulations states that:

“The environmental impact assessment must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of proposed development on the following –”

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under [EU-derived domestic legislation which transposed] Directive 92/43/EEC and Directive 2009/147/EC [as may be amended from time to time]

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape; and

(e) the interaction between the factors listed in sub-paragraphs (a) to (d).

2.9.3. Schedule 4 paragraph 5 of the EIA Regulations requires a description of the likely significant effects of the proposed development on the environment resulting from a number of identified factors.

2.9.4. To meet these regulations, the assessment of the significance of effects for the majority of topics is based on a three-step process, as set out below. Any departure from this methodology deemed necessary by a qualified expert or required by topic-specific guidance is described and justified within the relevant topic chapters.

- The first step assigns sensitivity to a receptor. Sensitivity considers how susceptible a receptor is to change, and value is a measure of its relative importance.
- The second step of the assessment is to determine the magnitude of potential change. This is the scale of the change caused to the baseline conditions due to an impact from the proposed development. The influence of impact duration (including reversibility) is considered as part of the determination of magnitude.
- As the third step in the process, the likely significance of effect is considered as a function of the sensitivity of the receptor, and the magnitude of the potential change on it. To aid transparency in the assessment process, the matrix shown in Table 2.7 has been used as the typical basis for assigning potential significance to an effect. This process is described in the respective environmental chapters and, where alternative approaches or criteria were considered more appropriate, these are described and justified.

Significance Criteria

2.9.5. The output of the environmental assessment is to report the likely significance of effects using established significance criteria. The approach to assigning significance of effect relies on reasoned argument, professional judgement and taking on board the advice and views of appropriate organisations.

2.9.6. Table 1.2 in Chapter 1 (Introduction) sets out the technical competencies of the persons undertaking the technical assessments and preparing the ES.

2.9.7. The European Commission Guidance on EIA²⁴ defines the two terms ‘impact’ and ‘effect’ together as “any change in the physical, natural or cultural environment brought about by a development project. Effect and impact are used interchangeably”.

2.9.8. Although both terms can be used interchangeably, it should be noted that in this ES the term ‘effect’ has generally been used in preference to the term ‘impact’ when discussing significance in accordance with the EIA Regulations. In this ES, ‘impact’ is generally used to describe the predicted magnitude or extent of environmental or social change as a result of the proposed development. The term ‘effect’, however, is used to describe the consequences of the impact, taking into consideration the sensitivity of the affected receptor.

2.9.9. The EIA Regulations stipulate that an ES should, where possible, identify, describe and assess the likely significant effects of the development on the environment, including a consideration of:

²⁴ European Commission (2001). Guidance on EIA: EIS Review. Luxembourg: Office for the Official Publications of the European Communities.



- beneficial and adverse effects;
 - short, medium and long term effects;
 - direct and indirect effects;
 - permanent and temporary effects; and
 - cumulative effects and impact interactions (the approach to cumulative effects is provided in Chapter 17: Cumulative Effects Assessment).
- 2.9.10. The ES identifies and assesses the likely significant effects of the proposed development in relation to construction and operation phases as appropriate.
- 2.9.11. Environmental effects have been predicted with reference to definitive standards and legislation where applicable. Where it has not been possible to quantify effects, qualitative assessments have been carried out, based on available knowledge and professional judgement. Associated uncertainties and assumptions have been noted in the relevant assessment chapters.

Evaluation of Significance

- 2.9.12. Under the EIA Regulations, the likely significant effects of the proposed development on the environment must be reported in the ES. The EIA Regulations do not define what constitutes a significant effect; however, this is typically taken to be an effect of moderate or greater, adverse or beneficial, significance. Effects of negligible or minor significance are not considered to be significant effects on the environment but reflect that there may be some differences from the baseline conditions.
- 2.9.13. Assigning sensitivity to the relevant receptors for each discipline enables different environmental receptors to be placed upon the same scale and can assist with the process of assigning significance.
- 2.9.14. For the majority of environmental aspects assessed within this ES, where appropriate and evidence allows, the sensitivity of identified receptors has been provided. The sensitivity of receptors along with the magnitude of impact is reported in this ES.

Sensitivity of a Receptor

- 2.9.15. The sensitivity of the receptor is generally derived from:
- its designated status within the land use planning system;
 - an empirical assessment on the basis of characteristics, such as rarity or condition; and
 - the ability of the receptor to absorb change.
- 2.9.16. The sensitivity of a receptor is categorised from negligible to very high. Some receptors will be more receptive to certain environmental effects than others. The sensitivity or value of a receptor may depend for example on its frequency, extent of occurrence or conservation status. Sensitivity has been defined within each of the topic chapters. Table 2.5 sets out typical indicators for each category of sensitivity applied in conjunction with professional judgement and current, relevant guidance.

Table 2.5: Sensitivity Descriptions

Sensitivity of Receptor	Typical Description
	Very important designated status, typically international scale.
Very high	Very rare/sensitive condition with very limited potential for substitution.

	Very limited ability/no ability to absorb change.
	Important designated status, typically UK or national scale. Rare/sensitive condition with limited potential for substitution.
High	Limited ability/very limited ability to absorb change.
	Medium or high designated status, typically regional scale. Medium rarity/sensitive condition with limited potential for substitution.
Medium	Limited ability to absorb change.
	Low or medium designated status, typically county or local scale. Low to medium rarity/sensitive condition with potential for substitution.
Low	Limited ability to absorb change.
	No designated status. Not rare/sensitive condition.
Negligible	Ability to absorb change.

Magnitude of an Impact

2.9.17. The magnitude of an impact represents the degree of change identified as a result of the proposed development (categorised from no change to major). An impact can be either adverse or beneficial. The nature, magnitude or severity of the impact/change is generally derived from:

- the duration of impact;
- the scale/extent of the impact; and
- the frequency/number of receptors impacted.

2.9.18. Table 2.6 sets out typical indicators for each category of magnitude applied in conjunction with professional judgement and current, relevant guidance. Magnitude of change can be defined both quantitatively or qualitatively depending on information available and relevant assessment requirements.

Table 2.6: *Magnitude of Impact Descriptions*

Magnitude of Impact	Typical Description
Major	Permanent loss or improvement.
	Large scale/number of receptors impacted.
	Fundamental change to characteristics, features or elements (severe damage/major benefit)
Moderate	Permanent or temporary partial loss or improvement.
	Moderate scale/number of receptors impacted.
	Partial change to characteristics, features or elements (damage/benefit). Partial uncertainty of outcome and worst case/precautionary scenario assumed.
Minor	Permanent or temporary measurable change or improvement.
	Minor scale/number of receptors impacted.
	Limited change to characteristics, features or elements (minor damage/benefit)

	Limited uncertainty of outcome and precautionary scenario assumed.
Negligible	Permanent or temporary slight change or improvement.
	Very minor scale/number of receptors impacted.
	Very limited change to characteristics, features or elements (very minor damage/benefit)
	Very limited uncertainty of outcome and non-material scenario assumed.
No change	No material change in conditions.

Significant Effects

2.9.19. Significant effects are described as:

- Adverse – detrimental effects to an environmental resource or receptor; or
- Beneficial – advantageous effects to an environmental resource or receptor.

2.9.20. The significance of an effect is derived from combining the sensitivity of the receptor with the magnitude of the impact.²⁵ As set out in paragraph 2.9.12, significant effects in the context of the EIA Regulations, are those deemed moderate or greater.

2.9.21. Within this ES, the following generic matrix is used to define the level of significance of effects (Table 2.7). In some cases, analogous matrices for the various specialist topics are used; where these different assessment criteria are used, this is stated within the methodology section of the relevant chapters. Allocation of significant effects in intermediate situations will be a matter for professional judgement in each topic area, and underpinned by a narrative to explain the conclusions reached.

Table 2.7: Significance Matrix – Significant Effects in Bold

Receptor Sensitivity	Impact Magnitude				
	Major	Moderate	Minor	Negligible	No change
Very High	Major	Major	Moderate	Slight	Negligible
High	Major	Moderate	Slight	Negligible	Negligible
Medium	Moderate	Slight	Negligible	Negligible	Negligible
Low	Slight	Negligible	Negligible	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

2.9.22. Each of the topic chapters provides the criteria, including sources and justifications, for classifying the magnitude of impact, and the sensitivities of the identified receptors. Where possible, this has been based upon quantitative and accepted criteria from up-to-date technical guidance. These, together with the use of value judgements and expert interpretations, have been applied and assumptions set out to establish to what extent an effect is environmentally significant.

2.9.23. For some environmental topics and factors, predicted effects may be compared with quantitative thresholds and scales in determining significance. Each environmental assessment chapter within this ES describes the specific thresholds/criteria used to determine sensitivity and magnitude and will align within the general methodology described within this chapter.

²⁵ IEMA (2012). EIA and the search for significance. [Online] Available at: <https://www.isepglobal.org/articles/eia-and-the-search-for-significance> [Accessed 21 October 2025].



- 2.9.24. Professional judgement has been used when assigning significance if the significance matrix cannot be applied. This is of particular relevance where the assessment is based on a qualitative approach, and the significance of effect is a matter of judgement. Where this applies, explanatory text has been provided to explain how professional judgement has determined the significance assigned.

Design Interventions and Controls

- 2.9.25. One of the main aims of the EIA is to inform the development of mitigation measures to avoid, reduce or offset the potentially significant adverse effects of a proposed development. As part of design evolution, an iterative process has been undertaken to drive improved environmental performance into the provisional design of the proposed development, and the measures identified are reported as ‘design interventions’.
- 2.9.26. Design interventions include design elements of the proposed development which form part of the planning submission for the project (e.g. are either set out on planning drawings or included within the Design and Access Statement).
- 2.9.27. This section within each topic chapter summarises the design interventions that have been incorporated within the proposed development relevant to that discipline. As such, the subsequent likely significant effects assessment takes into account such design interventions (where technical guidance allows) when considering the significance of identified effects.
- 2.9.28. Controls refer to the use of relevant best practice construction management as embedded mitigation for reasonably foreseeable construction impacts. The likelihood of occurrence and the severity of any such incidents can be reduced through good construction site management practices. These controls will be refined by the contractor during detailed design and the Framework Construction Environmental Management Plan (CEMP) updated to reflect the requirements.

Likely Significant Effects

- 2.9.29. This section of the ES topic chapters sets out a description of the likely significant effects of the proposed development (accounting for design interventions where technical guidance allows) on the environment resulting from the:
- existence of the proposed development;
 - use of natural resources;
 - emission of pollutants, the creation of nuisances and the elimination of waste;
 - the risks to human health, cultural heritage or the environment;
 - the cumulation of effects with other existing and/or approved projects;
 - the impact of the project on climate and the vulnerability of the project to climate change; and
 - the technologies and the substances used.
- 2.9.30. As set out in the EIA Scoping Report and agreed in the EIA Scoping Opinion, likely significant effects are considered for the construction and operation of the proposed development. The description of the effects is defined based on the significance criteria as outlined previously.

Mitigation and Enhancement

- 2.9.31. Schedule 4(7) of the EIA Regulations requires an ES to contain “a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment”. The development and incorporation of mitigation and



enhancement measures is an integral part of the design and EIA processes, with the ultimate aim of reducing significant adverse effects and maximising potential beneficial effects.

- 2.9.32. Following the assessment of potential significant effects, topic chapters will (in line with best practice and relevant policy and guidance) implement additional mitigation and enhancement measures by applying the mitigation hierarchy (avoid, minimise, restore/remediate, compensate). Where possible and proportionate, these measures have been developed in consultation with statutory environmental bodies. The details of the measures are identified under the 'Mitigation and Enhancement' section within the topic chapters.
- 2.9.33. A Framework CEMP has been developed (Appendix 3.1: Framework Construction Environmental Management Plan) which outlines how controls, mitigation and management measures would be implemented to manage the environmental effects of the proposed development as identified within the ES.

Residual Effects

- 2.9.34. Environmental effects remaining after the mitigation and enhancement measures have been implemented are termed 'residual effects'. The residual effects are fully described in each of the topic chapters.

Monitoring of Mitigation for Significant Adverse Effects

- 2.9.35. Where significant adverse effects on the environment are predicted, consideration has been given to the appropriateness of monitoring measures. The purpose of monitoring measures, where it has been identified as necessary, is to ensure the mitigation measures required to avoid, reduce and offset significant adverse effects are delivered and perform as intended.
- 2.9.36. Monitoring proposals for mitigation in respect of likely significant adverse effects are detailed in the topic chapters (ES Chapters 5 to 16) and the Framework CEMP (Appendix 3.1).

3. Proposed Development

3.1. Introduction

- 3.1.1. The Ministry of Defence (MOD) is proposing to construct the proposed development at Cawdor Barracks. The proposed development would consist of the installation of six Transmit (Tx) antennas and 21 Receive (Rx) antennas at Cawdor Barracks. The proposed development also includes associated buildings and infrastructure to support radar operations.
- 3.1.2. This chapter provides details of the application site and Cawdor Barracks, and outlines the proposed development including a summary of the likely methods and programme of its construction, and a description of likely operational activities.
- 3.1.3. This chapter is supported by the following appendices and figures, and includes cross-references to other chapters and figures where appropriate:
- Figure 3.1 (Proposed Development Overview);
 - Figure 3.2 (Proposed Construction Overview);
 - Figure 3.3 (General Constraints Plan);
 - Figure 3.4 (Landscape and Ecology Proposals Plan); and
 - Appendix 3.1 (Framework Construction Environmental Management Plan (CEMP)).

3.2. Cawdor Barracks

- 3.2.1. The application site sits within Cawdor Barracks (see Figure 1.1: Location of Proposed Development). Cawdor Barracks is the site of the former airfield Royal Air Force (RAF) Brawdy. It is located within the jurisdiction of Pembrokeshire County Council (PCC).
- 3.2.2. Cawdor Barracks is presently used as a working military base, and currently occupied by 14th Signals Regiment. Cawdor Barracks measures approximately 300 ha and is centred at Ordnance Survey (OS) Grid Reference SM 85206 25339, with the nearest on-site post code being SA62 6AT. Cawdor Barracks is owned by the Ministry of Defence (MOD) and managed by Defence Infrastructure Organisation (DIO).
- 3.2.3. The majority of operational barracks buildings, including a series of accommodation blocks, mess halls, married quarters, storage areas, and other support buildings, are concentrated within a secured compound surrounded by an existing security fence, located in the south-west of Cawdor Barracks. The east side of Cawdor Barracks includes an airfield comprising three redundant runways and associated infrastructure, where the majority of the application site is located.
- 3.2.4. Cawdor Barracks is located within a rural area on St David's peninsula in Pembrokeshire, South Wales. Cawdor Barracks is approximately 1.2 kilometres (km) north-east of the coast and is to the north of the A487 between Haverfordwest and St David's. The nearest settlements are the hamlets of Penycwm to the immediate south, Llandeloy to the north and the villages of Solva (4.5 km to the south-west) and Newgale (2 km to the south).
- 3.2.5. The current primary vehicular access to Cawdor Barracks is from the unclassified road (U3017). The U3017 has a junction with the A487 on the southern boundary of Cawdor Barracks. The C3010 also has a junction with the A487 and is a single carriageway rural road along the eastern frontage of the application site.
- 3.2.6. Cawdor Barracks is a military base and currently occupied by 14th Signals Regiment. Regardless of DARC, the 14th Signals Regiment will vacate at the end of December 2028 as



all funding to the military base will stop as of end of financial year 2029. When the proposed development commences, the site will be transferred to the Airforce. In the absence of the proposed development, Cawdor Barracks would remain with MOD, however there would be no associated military unit and the future of the site would be uncertain as new funding for the site would require approval. The infrastructure at Cawdor Barracks would remain and only essential legal maintenance of the site would be undertaken from the end of December 2028.

3.3. Surrounding Area

3.3.1. A high-level overview of local designations and key environmental constraints is provided within Figure 3.3. The immediate surrounding area is characterised predominantly by agricultural farmland with the Pembrokeshire coastline and Newgale Beach to the south. Some small, isolated settlements are situated sporadically in the surrounding area including the hamlets of Penycwm and Newgale to the south, Llandeloy to the north, and Brawdy and Trefgarn Owen to the east. In addition, the Pembrokeshire Coast National Park is located approximately 150 m south of Cawdor Barracks, extending around the coastline.

3.4. The Proposed Development

3.4.1. The proposed development will include construction and operation of the DARC facility and associated ancillary infrastructure. Figures 3.1 and 3.2 show the proposed operational and construction site layouts respectively.

3.4.2. The proposed development will comprise the following key elements which are described further below in this section:

- Receiver (Rx) Array area (approximately 46 ha);
- Transmit (Tx) Array area (approximately 11 ha);
- Operations (Ops) area (approximately 4.3 ha);
- Ancillary Infrastructure (area included in Ops area);
- Entry control point building (area included in Ops area); and
- Temporary Antenna Integration Shelter (AIS) (area included in Rx Array area).

Receiver Array

3.4.3. The Rx Array covers approximately 46 ha and has 21 receiver antennas, each with a 15.6 m diameter dish and total maximum height of up to 21.5 m, comprising approximately 20.5 m height of the antenna and an allowance of up to 1 m for foundations and mounting. Each antenna has a square concrete ground foundation (5.5 m by 5.5 m), with a central ring for attachment of the antenna riser²⁶. The Rx Array antennas have a central ring (2.44 m diameter) for attachment of the antenna riser.

3.4.4. The layout pattern was developed to optimise the performance of the antenna working as a coordinated system, as well as to address potential environmental effects. In particular, the proposed layout sought to reduce the impact on existing fungi and reptile habitat (as detailed in Chapter 8: Biodiversity) and on landscape and visual aspects (as detailed in Chapter 9: Landscape and Visual Impact Assessment).

3.4.5. The dishes, pedestal and supporting structure are a light grey colour.

²⁶ An antenna riser is a vertical support structure used to elevate an antenna.



- 3.4.6. Unless already on existing hardstanding, the area surrounding the ground foundation will consist of a 15 m radius (from the centre of the concrete ground foundation) gravel apron maintenance pad, for use by installation and maintenance vehicles.
- 3.4.7. The final foundation design would vary depending on the ground conditions at each antenna location. Site-specific foundation designs would therefore be developed once detailed intrusive ground investigations are carried out during the pre-construction phase.
- 3.4.8. The general process of antenna foundation construction would be as follows:
- Construction of the antenna foundations would generally require the excavation of subsoil to a specified formation level, no greater than approximately 2.175 m below existing ground level. The depth of the excavation would depend on the depth to suitable subsoil bearing capacity, with the sides 'battered' back to ensure that they remain stable during construction.
 - Unless required to be translocated (refer to Chapter 8: Biodiversity) the top layer of turf would be kept intact and stored in accordance with best practice adjacent to working areas for reuse in reinstatement of the antenna bases and local earthworks. Overburden not used as part of the reinstatement would be stored separately for later reinstatement and landscaping.
 - The formation would be levelled off prior to the in-situ casting of a steel-reinforced concrete foundation. Foundations are likely to be circular with a diameter of approximately 15 m. Antenna foundations would comprise up to 1.6 m of concrete foundation (0.1 m above grade) and up to 0.675 m of subbase layers.
 - The foundation inserts would then be cast into a central concrete up-stand section, to which the antenna would later be bolted.
 - Various cable ducts and other ancillaries would be installed either within or adjacent to the foundation. Underground utilities, including power and fibre optics, would match the layout of the road network as much as possible to minimise additional trenching routes impacting fungi habitat. There may be several places in the Rx Array where utilities are routed across the grasslands due to the distances to follow the hardstand, but these cross-country routes will be minimised.
 - The excavated area would be backfilled with compacted layers of graded material from the original excavation and capped with soil. Locally around the antennas, the finished surface would be capped with crushed aggregate to allow for safe personnel access around the base of the antennas.
- 3.4.9. Roads internal to the Rx Array have been located on existing pavements to the maximum extent possible to reduce potential impacts on existing fungi and reptile habitat (as detailed in Chapter 8: Biodiversity) and landscape impacts (as detailed in Chapter 9: Landscape and Visual Impact Assessment). Where an antenna cannot be reached by existing hardstanding, new access roads have been sited to provide access as efficiently as possible. Previously cleared access roads will be used wherever possible. All new antenna access roads internal to the Rx Array would be of compacted gravel and up to 6 m wide. It has been assumed that access roads would be at grade and therefore any excavations required would be less than 0.5 m bgl.

Transmit Array

- 3.4.10. The Tx Array covers approximately 11 ha and has six transmit antennas, each with the same specifications of height, foundations, internal roads and layout approach as the Rx Array.
- 3.4.11. The Tx Array antennas have a central ring 3.05 m in diameter for attachment of the antenna riser.



- 3.4.12. The entire Tx Array footprint is enclosed by fencing. Security fencing is to be provided a minimum of 16 m from the centre of the antenna and safety fencing is to be provided typically at a distance 40 m, but potentially reduced to 20 m, which accounts for the minimum safe distance from non-ionising radiation sources while the array is in operation (see Chapter 15: Heat and Radiation for further details). A safety fence is only required for the Tx array as this is the only source of non-ionising radiation. Where practicable, a single fence line will be provided to serve both functions.
- 3.4.13. The non-ionising radiation emitted by the six Tx antennas has been assessed in detail in Chapter 15 (Heat and Radiation). The assessment confirms that the levels of non-ionising radiation are within internationally recognised safety standards and do not pose a risk to the public or the environment.
- 3.4.14. As part of standard operational procedures, the fenced area around the antennas will include clear signage to indicate when the array is in operation. Access to this area will be restricted to authorised personnel, who will follow established protocols to ensure safe and efficient operation of the facility.

Ops Area

- 3.4.15. The Ops area contains the operational buildings and facilities for the proposed development.
- 3.4.16. The Ops area footprint as a whole is approximately 4.3 ha and consists of five buildings located on existing hardstanding and enclosed with security fencing. The Ops area includes the entry control point building. All parking will be located on existing hardstanding.
- 3.4.17. The results of the ground condition survey (which has not been undertaken at the time of preparation of this ES) will inform whether hardstanding will need to be removed. At this stage, it has been assumed that some demolition of existing pavement and replacement with new foundations is required as a reasonable worst case for assessment. The applicant will seek to only remove small areas of hardstand for building column foundations and utility trenches. If excavations are required for foundations of buildings in the Ops area, this will be to a depth of approximately 0.5 m below ground level (bgl).
- 3.4.18. The access road in and out of the Ops area will utilise existing pavement with the exception of approximately 100 m by 6 m to 9 m section between the entry control point building that is located adjacent to the east taxiway and the main runway as shown on Figure 3.1. This section is being added to allow more direct access to the Ops area. This road will be asphalt or similar.
- 3.4.19. All the buildings in this area will have exterior walls of metal cladding that are 60 mm to 250 mm thick, depending on the use, and a building foundation depth of up to 0.5 m for the columns. The hardstand will be left in place to the extent possible with a concrete floor slab placed on top of the existing hardstand unless the ground condition survey informs otherwise.
- 3.4.20. The Ops area includes the facilities that are detailed below and shown on Figure 3.1:

Radar Operations Building

- 3.4.21. The radar operations building, the primary facility within the Ops area, houses full-time personnel and will be occupied 24/7 in multiple shifts.
- 3.4.22. The building area footprint is up to 450 m² and has a maximum height of approximately 8 m.

Radar Spares Building

- 3.4.23. The radar spares building serves a warehousing function for the site, is unoccupied and contains equipment repair functions for various equipment from the arrays. There is a designated storage area for hazardous materials. The building requires paved delivery capability and loading docks.



- 3.4.24. The building area footprint is up to 640 m² and has a maximum height of approximately 8 m.

Auxiliary Power Compound

- 3.4.25. The auxiliary power compound provides no more than three generators housed in containers for the entire site. The auxiliary power compound will be placed directly on the runway north of the radar operations building, radar spares building, and the National Grid Electricity Distribution (NGED) connection building. No excavation is anticipated to be performed for the installation of the units.
- 3.4.26. As a reasonable worst case assumed for assessment, use is up to 168 hours (7 days) of no main grid power per year. It is anticipated that the run times, on average, will be significantly less than the 168 hours and are likely to be less than 50 hours per year.
- 3.4.27. Generator testing would involve running each of the generators for a combined total of 12 hours annually (1 hour per month) at a normal operating temperature with a load applied, to ensure proper functionality.
- 3.4.28. Based on current regulations, no air pollution prevention is required for the auxiliary power compound due to it running less than 500 hours per year.

Fuel Storage

- 3.4.29. The fuel storage area will be within the auxiliary power compound and will contain no more than three bulk fuel tanks. Each will be double-walled, above ground and made of steel. Together, they will provide total storage for approximately 300,000 litres of fuel. The tanks will be located on the runway. No excavation is anticipated for the installation of the fuel storage tanks.
- 3.4.30. Fuel will be delivered to the storage area by bulk fuel trucks. The trucks will unload directly into the bulk fuel storage tanks described above. Due to the low run times of the gensets, the fuel deliveries will be very infrequent. Monthly testing of the gensets will burn less than 28,000 litres per year. Traffic numbers are detailed in Chapter 5 (Transport and Access).
- 3.4.31. Pollution prevention design for the fuel storage will meet legislative and MOD policy requirements as detailed in Chapter 6: Air Quality.

NGED Connection Building

- 3.4.32. A new electrical substation, to serve the arrays and support buildings, is co-located with the operational buildings in the Ops area. The NGED connection building ties into the National Grid by connecting to the wider NGED infrastructure. Therefore, power for the proposed development will be provided from the National Grid. The NGED Connection Building would be approximately 9.0 m x 6.6 m x 5.3 m tall. The building will be unoccupied.

Switchroom Building

- 3.4.33. The Switchroom Building will be an elevated structure that will be located near the gensets. The building will house the medium voltage (11 kV) switch gear that distributes power across the facility and the supervisory control and data acquisition system (SCADA) system that controls and monitors the electrical and mechanical equipment (heating and cooling) for the proposed development. The gensets will be controlled from this facility. The structure will be placed on the runway and will require a small amount of excavation for the building support columns. The Switchroom Building would be approximately 30.0 m x 5.3 m x 5.7 m tall. The building will be unoccupied.

Bulk Energy Storage Systems (BESS) Units

- 3.4.34. The Bulk Energy Storage Systems (BESS) units will be within the auxiliary power compound and will consist of up to four buildings that are equivalent to approximately 6.0 m x 2.5 m x 3.0

m tall containers. The BESS will meet energy demands in the event of a power outage prior to the auxiliary generators supplying power, as well as smooth energy provision. The containers will be placed adjacent to the gensets and the switchroom building. The containers will be placed directly on the runway with no excavation required.

Load Bank

- 3.4.35. The load bank will be approximately 9.5 m x 2.5 m x 3.0 m tall container equivalent with some external acoustic baffling to reduce noise levels when it operates. The load bank operates though providing resistance to the generators during testing. The unit will be sited on the runway and will require no excavation to install.

Entry Control Point Building

- 3.4.36. The entry control point building will approximately 11 m x 5 m x 3.8 m tall, and located on the entrance road to the site. It will be located at the junction of the crash gate 21 road and the eastern taxiway. The building will be staffed 24 hours/day by the site security force.
- 3.4.37. The facility will include a secure storage area for equipment and security assets required by the on-site security team. The design and operation of the armoury will be in line with MOD security procedures.
- 3.4.38. The facility will be where visitors are checked into and out of the facility, where badges are issued, and where vehicles and deliveries are inspected.

Ancillary Infrastructure

Tx Array Associated Infrastructure

- 3.4.39. Each Tx antenna is supported by an adjacent cooling unit, housed in a small structure (approximately 15.3 m x 10 m x 4.5 m tall), and adjacent transmitters housed in the equivalent of 12 m containers (approximately 12.0 m x 2.5 x 3.0 m tall).

Utilities

- 3.4.40. All utilities, as shown in Figure 3.1, as part of the proposals would be trenched below ground except in the vicinity of the gensets, load bank, BESS units, and the switchroom. Feeds from building transformers into buildings and structures will also be above ground
- 3.4.41. The average trench width for new utilities is approximately 1.5 m wide and an approximate depth of 0.8 m bgl and up to 1.2 m bgl by exception.

Temporary Antenna Integration Shelter (AIS)

- 3.4.42. The Antenna Integration Shelter (AIS) will be a temporary structure placed on the runway and used to assemble the antenna dishes during the construction phase. It will be fabric covered with doors at either end to prevent the ingress of rain, make it more comfortable to work in without heating and reduce potential light spill. The structure area footprint is up to 1,150 m² and has a maximum height of approximately 12.5 m.
- 3.4.43. The building will make use of the existing runway as the floor. It is anticipated that the building will be anchored to the runway concrete, and no excavation will be required.
- 3.4.44. Each antenna dish will arrive at this building in pieces where they will be assembled, and subsequently transported from the building to be installed on an antenna foundation. Once all dishes are operational, the AIS will be disassembled and removed from site.
- 3.4.45. As part of the construction phase, lighting may be required in and immediately around the assembly building to illuminate the work area for safe assembly conditions when nighttime works is required. The fabric of the AIS will be of a dark colour to reduce the potential for light

spill should nighttime work be required. The lighting assessment is provided in Chapter 16 (Lighting).

Temporary Construction Access

- 3.4.46. For security reasons, construction vehicles will not be able to utilise the existing access route into Cawdor Barracks. The principle of providing temporary construction access from the C3010 (road located east of the site) was agreed with the Local Highway Authority, PCC, during Scoping discussions held in May 2023, who expressed a request for construction traffic to use the A487 for as minimal time as practicable.
- 3.4.47. It is proposed the temporary construction access will be left as a new crash gate for emergency access/egress once construction is complete.

3.5. Design Characteristics

Flexibility of Design

- 3.5.1. As discussed in Chapter 2 (Methodology) detailed ground investigation and geotechnical surveys will be undertaken as part of the design process programmed after the submission of the planning application.
- 3.5.2. An archaeological management strategy has been agreed, in consultation with the statutory bodies, to undertake trial trenching post-determination as described in Chapter 10 (Archaeology and Built Heritage). This approach allows for intrusive archaeological works to be focused within the proposed works area and has been agreed as part of the wider strategy to reduce potential impacts on the fungi habitat.
- 3.5.3. The final siting of the proposed new radar antennas and associated infrastructure will be dependent on the particular geotechnical conditions found on-site and should archaeological remains of significance be encountered.
- 3.5.4. Given detailed ground and archaeological investigations will be undertaken post-submission, the application will aim to provide an allowance for flexibility in the siting of the proposed radar antennas and associated infrastructure.
- 3.5.5. The ES assumes the following micro-siting allowance within the application site:
- Micro-siting will not exceed 40 m in any direction from that indicated within Figure 3.1 (Proposed Development Overview);
 - Micro-siting between 20 m and 40 m will only be permitted following written approval from the Local Planning Authority; and
 - The above micro-siting allowances will apply to all proposed radar antennas and associated new infrastructure as described in the ES and shown on Figure 3.1.
- 3.5.6. Based on the micro-siting principles outlined above, Table 3.1 summarises the implications for each environmental topic in this ES.

Table 3.1: Micro-siting Impacts

Chapter	Topic	Micro-siting Impact on Assessment	Comment
5	Transport and Access	No material change	N/A
6	Air Quality	No material change	The micro-siting allowance is not considered likely to influence the dispersion of the generator emissions or change the conclusions of likely significant effects as reported in the ES chapter.

7	Noise and Vibration	No material change	The mitigation approach outlined in the chapter remains valid with the micro-siting allowance and does not change the conclusions of likely significant effects as reported in the ES chapter.
8	Biodiversity	No material change	The micro-siting allowance is not considered likely to materially change the conclusions of likely significant effects as reported in the ES chapter. Changes to infrastructure locations may result in a marginal net increase in area loss of habitat, but this can be accommodated / offset within the land available on site as per the proposed mitigation approach.
9	Landscape and Visual Impact	No material change	Based on the nature of the topography of the site, the micro-siting allowance is not considered likely to materially change the conclusions of likely significant effects as reported in the ES chapter.
10	Archaeology and Built Heritage	No material change	Micro-siting is part of the mitigation strategy and does not change the conclusions of likely significant effects as reported in the ES chapter.
11	Ground Conditions and Contaminated Land	No material change	Micro-siting is part of the mitigation strategy and does not change the conclusions of likely significant effects as reported in the ES chapter.
12	Water Environment, Flood Risk and Drainage	No material change	The micro-siting allowance is not considered likely to materially change the conclusions of likely significant effects as reported in the ES chapter. Changing the infrastructure locations may result in a marginal net increase of hardstanding. This change is likely to be negligible and suitably accounted for within land available.
13	Socio-economics	No material change	N/A
14	Climate Change and Carbon	No material change	N/A
15	Heat and Radiation	No material change	N/A
16	Lighting	No material change	N/A
17	Cumulative Effects Assessment	No material change	N/A

Landscape and Ecological Design

- 3.5.7. Biodiversity and landscape mitigation and enhancement measures included as part of the design are set out in Figure 3.4 (Landscape and Ecology Proposals Plan). Elements of these proposals, particularly the fungi translocation, will need to be undertaken in advance of the activities that would lead to loss of the existing habitat. Details are included in Chapter 8 (Biodiversity), 9 (Landscape and Visual Impact), and Appendix 3.1 (Framework CEMP).

3.6. Construction Characteristics

Demolition Requirements

- 3.6.1. No structures will be demolished as part of the proposals.

Construction Programme

3.6.2. Construction is due to commence in April 2027 and is anticipated to take approximately 21 months, followed by demobilisation including removal of temporary buildings, equipment, and extra materials in Month 22. This excludes biodiversity pre-construction mitigation requirements.

Key Construction Activities and Phasing

3.6.3. The precise approach for construction will be finalised as part of the design process following consent of the proposed development. Early contractor involvement has allowed for reasonable estimates to be made to inform the technical assessments within this ES on the likely approach to construction, type and sequencing of activities, and the construction workforce and traffic requirements. Details are provided in the relevant topic chapters within this ES.

3.6.4. Following environmental mitigation (including biodiversity offsetting and archaeological trial trenching – further detail in Appendix 3.1: Framework CEMP), the general approach of the construction phasing will be to start with a small cluster of two or three antenna locations and progress the key activities in parallel across the total 27 antennas. This allows for efficient use of resources and time, reducing the total construction phase as well as lowering concentrations of activities and their associated magnitude of impact.

3.6.5. Table 3.2 provides a summary of key activities and approximate timings, excluding for environmental mitigation requirements detailed in Appendix 3.1 (Framework CEMP) which will need to be completed in advance of the activities in Table 3.2. Phasing may be restricted by weather and ground conditions and may not be consecutive.

Table 3.2: Indicative Construction Activities and Timings

Phase	Indicative Construction Programme Months	Target Duration (Months)	Key Activities
Site establishment	Month 1	1	Install site amenities, access road, site offices
Temporary fencing	Month 1	1	Erection of temporary security fencing around working areas.
Antenna Integration Shelter	Months 2 to 4	3	Install temporary reflector assembly facility
Construct Buildings	Months 2 to 10	9	Excavations for foundations, install foundations, pour floor slabs, erect walls, roofs, interior fitout for all buildings
Auxiliary power compound	Months 6 to 9	4	Install gensets, BESS, bulk fuel tanks, load bank
Rx Antenna construction	Months 2 to 13	12	Excavation, install rebar, pour concrete, install electrical infrastructure
Tx Antenna construction	Months 8 to 16	9	Excavation, install rebar, pour concrete, install electrical infrastructure, install cooling infrastructure
Utilities	Months 3 to 9	7	Installation of electrical, water, foul water, and communications infrastructure
Antenna assembly	Months 4 to 18	15	Each antenna dish will arrive at the AIS in pieces, be assembled on site, and transported from the building to be installed on an antenna foundation.
Permanent fencing	Months 2 to 14	13	Erection of permanent security fencing around arrays and Ops area, install gates

Building and Equipment Commissioning	Months 12 to 14	3	Verification and testing of mechanical, electrical and fire alarm systems by a certified third party.
Antenna Site Acceptance Testing, Fitout, and Operational Testing	Months 5 to 24	20	Testing and commissioning of antennas
Demobilisation	Month 22	1	Removal of temporary buildings, equipment, and extra materials.

Construction Compounds and Haul Routes

3.6.6. All haul routes and construction compounds will be located on existing hard standing within the application site. Figure 3.2 (Proposed Construction Overview) shows the main haul routes and compound locations.

Anticipated Construction Staffing Requirements

3.6.7. Image 3.1 provides a breakdown of anticipated staffing during the construction phase. At peak times there will be approximately 100 construction staff employed.



Image 3.1: Anticipated Construction Staffing per Month

Anticipated Construction Traffic Requirements

3.6.8. Image 3.2 provides a breakdown of anticipated average daily vehicles movements (both light goods vehicles (LGVs) and heavy goods vehicles (HGVs) combined) during the construction phase.

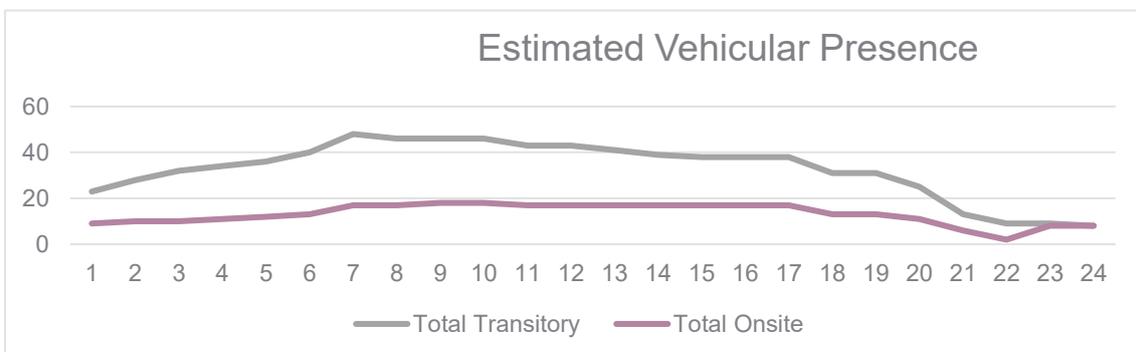


Image 3.2: Anticipated Delivery Vehicles per Month

3.6.9. The graph differentiates between anticipated daily transitory (i.e. the average number of delivery vehicles entering, and then leaving the application site each day, and the onsite



persistent (i.e. the average number of vehicles that will remain on site in the construction area for an extended period of time).

- 3.6.10. The anticipated maximum number of HGVs on a given day is 25. The assessment assumes, as a reasonable worst case, that the concrete strategy for the construction of the foundations will require for each antenna pad to have a continuous pour of concrete in one day and at a rate of one pad per week.
- 3.6.11. Construction staff are anticipated to peak at 100 and travel to site daily, as follows:
- 50% by car with occupancy of 2 (25 cars); and
 - 50% by mini bus (gangs) with occupancy of 5 (10 minibuses).
- 3.6.12. In total, there will be 35 vehicles which will arrive/depart site daily in line with shift time of 07:00 to 19:00 Monday to Saturday (extending to 20:00 in summer months) i.e., outside of peak hours for the highway network.

Working hours and methods

- 3.6.13. The following working hours have formed the basis for assessment within the ES.
- 3.6.14. Daytime work hours would be 07:00 to 19:00 Monday to Saturday (excluding Bank Holidays), extending to 20:00 during summer months, with no work on Sundays.
- 3.6.15. Night work will only be performed if needed to meet the antenna installation schedule and is not being planned as a standard activity.
- 3.6.16. No construction activities are being routinely planned for outside the normal working hours defined. There may be times that a late or early concrete pour is required, but that will be by exception.
- 3.6.17. Due to the nature of some construction activities and in the interests of health and safety and onsite practicalities, some activities, by exception, may need to be undertaken outside of these hours. Suitable approvals will be secured in advance with PCC should this be the case.

Existing Site Users

- 3.6.18. The 14th Signals Regiment, based within the application site, has been included in the assessment as a construction phase receptor based on a precautionary approach, however it is anticipated that it will have vacated the site prior to the proposed development becoming operational.

Environmental Management

- 3.6.19. All construction works would be undertaken with appropriate environmental controls in place, in line with the Framework CEMP. The Framework CEMP is included with the planning application. The document includes the Register of Mitigation which outlines the mitigation measures developed as part of the ES.
- 3.6.20. A more detailed CEMP would be developed and implemented by the principal contractor prior to the start of construction works, based on the requirements of the Framework CEMP. This would include the implementation of industry standard practice and control measures for environmental impacts arising during construction, such as, but not limited to, the control of dust, noise and other emissions, and the approach to waste and material management onsite.
- 3.6.21. Implementation of the CEMP will also support compliance with any relevant Code of Construction Practice and legislative requirements. A Framework CEMP has been prepared and is presented in Appendix 3.1.
- 3.6.22. The contents of the Framework CEMP are as follows:



- Proposed development information;
- Construction programme;
- Scheme team roles and responsibilities;
- Environmental management measures;
- Consents and permissions;
- Supporting documents;
- Environmental records and monitoring; and
- Induction, training and briefing procedures for staff.

3.6.23. As part of each technical impact assessment within this ES, a number of mitigation measures have been identified to avoid or minimise construction and demolition potential effects deemed significant and adverse. These mitigation measures are included in the Framework CEMP.

Considerate Constructors Scheme

3.6.24. The proposed development will be registered with the Considerate Constructors Scheme (CCS). The key requirements of the scheme will form the basis of the contract with the principal contractor. These will be in addition to those stipulated within the Framework CEMP and those required as mitigation measures as identified within this ES.

3.6.25. The construction of the proposed development will therefore be informed by the following five principles of the CCS designed to encourage best practice beyond statutory requirements:

- enhancing the appearance – constructors should ensure sites appear professional and well managed;
- respecting the community – constructors should give utmost consideration to their impact on neighbours and the public;
- protecting the environment – constructors should protect and enhance the environment;
- securing everyone’s safety – constructors should attain the highest levels of safety performance; and
- caring for the workforce – constructors should provide a supportive and caring working environment.

3.7. Operational Characteristics

Operational Lifespan

3.7.1. It is anticipated that the proposed development will have a 25-year operational lifespan.

Fencing

3.7.2. Security fencing as described in Section 3.4 will be 2.4 m high with a further 0.5 m of barbed wire strand topping.

Lighting

3.7.3. The proposed exterior lighting design shall be dark sky compliant (full cutoff above 90 degrees) with maximum mounting height of 2.75 m Above Finished Grade for building mounted lights



at personnel doors and 4.6 m poles for perimeter security gates. Fixtures shall meet all applicable energy codes with a minimum of 125 lumens per watt efficacy, $\leq 2700\text{K}$ colour temperature, $<90\%$ power factor, $<20\%$ Total Harmonic Distortion, colour rendering index <80 , $\geq 60,000$ hours rated lamp life and an IP66 ingress rating. All outdoor lighting will be on motion detectors except for the entry control point which will have a dimmer as it controls entry and egress of vehicles.

- 3.7.4. Exterior pole lighting (2.4 m tall) will be located at the access gates for the segregated fenced areas at the Ops area for security and safety purposes.
- 3.7.5. No tall pole lighting will be installed along the site's perimeter fence, any other additional fencing or along the hardstand (road) between the arrays. Instead, roadside lollipops and reflective paint will be used along and on the array road. Building entries and emergency exits will be backlit by the security camera infrared lighting installed at each door.
- 3.7.6. The Rx and Tx antenna pedestals will have infrared illuminators in lieu of LED pole lights for security cameras that are manually switched.
- 3.7.7. Further detail on lighting and considered effects is in Chapter 16 (Lighting).

Antenna Operation

- 3.7.8. DARC typically operates by the antennas motioning to an observation point, taking observations, then moving to the next observation point. The times between observations will vary, as will observation duration. The only exception to typical operations is a specific object search which requires constant motion. This search capability will be tested each week for 20-30 minutes and search events are expected to occur around 5% of radar operations per year. On average, DARC antennas will be stationary between 55 – 60% of the time.

Anticipated Operational Staffing Requirements

- 3.7.9. During the operational phase there will be a civilian workforce with between 11 and 24 staff on shift over a 24 hour period, including both operational and security staff. Maintenance works will be required on an ad hoc basis and have not been considered as part of the operational staffing assessed in the ES.

Anticipated Operational Traffic Requirements

- 3.7.10. With a maximum of 25 civilian contracted site support day staff, assuming an average car occupancy of 1.2, there will be approximately 21 operational staff vehicles arriving and departing on weekdays during operation.

Operational Access

- 3.7.11. Operational access for staff vehicles and operational vehicles will be via the entry control point building from the C3010.

Hours of Work

- 3.7.12. The proposed development would be in operation 24 hours a day, seven days a week.

Existing Site Users

- 3.7.13. The 14th Signals Regiment, based within the application site, has been included in the assessment as an operational phase receptor on a precautionary basis, however it is anticipated that this regiment will have vacated Cawdor Barracks prior to operation.



Maintenance and Monitoring Requirements

- 3.7.14. For 10 m inside and outside of the security fence lines, vegetation (including fungi habitat) must be maintained at a max height of 203 mm within this buffer zone. All other fungi habitat areas outside of this buffer and more than 1 m from hardstanding within the Rx / Tx areas are to be maintained as per current conditions (i.e. 1 crop cut per year).
- 3.7.15. The maintenance requirements are detailed in Figure 3.4 (Landscape and Ecology Proposals Plan) and Appendix 3.1 (Framework CEMP).

3.8. National Grid Connection

- 3.8.1. The proposed development will connect to an upgraded utility infrastructure. National Grid (NG) is planning an upgrade to the NG Haverfordwest substation, due to current capacity constraints and the need to meet future electricity demand. NG will also deliver the electrical supply for the proposed development to an onsite substation forming part of the proposed development, following the Haverfordwest substation upgrade. This will consist of two 33 kV circuits hereby called the “Cable Connection”. Once the Cable Connection is constructed it will form part of the NG distribution network, operated and maintained by NG.
- 3.8.2. These grid connection works are considered to fall under a separate consenting process for works being undertaken using statutory powers by the utility provider. This position was reviewed during the scoping process and the MOD sought legal advice on what forms part of the proposed development for EIA purposes within the context of case law and the EIA Regulations. As a result of the legal advice, it was concluded that the utilities upgrade does not form part of the proposed development for the purposes of a planning application or EIA for the DARC project. PCC agreed with this interpretation following a review by their legal representatives in 2023. This is detailed in Appendix 2.2 (DARC EIA Scoping Opinion Follow Up Letter).
- 3.8.3. Based on this legal advice, the grid connection works are not included as part of the environmental assessment of the proposed development but are considered in Chapter 17 (Cumulative Effects Assessment).

4. Alternatives and Design Evolution

4.1. Introduction

- 4.1.1. This chapter of the Environmental Statement (ES) demonstrates two key contextual elements of the Environmental Impact Assessment (EIA) for the proposed development.

Consideration of Alternatives

- 4.1.2. The Town and Country Planning (EIA) (Wales) Regulations 2017 (Regulation 17(3)(d))²⁷, requires an ES to include “a description of the reasonable alternatives studied by the applicant or appellant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the significant effects of the development on the environment”.
- 4.1.3. This chapter describes the strategic alternatives considered, the subsequent site selection process, and then the iterative design process of the proposed development.

²⁷ The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. [Online] Available at: <https://www.legislation.gov.uk/wsi/2017/567> [Accessed 21 October 2025].



Design Evolution

- 4.1.4. Setting out the design evolution provides important context to the key decisions made during the design process since project conception and improves the understanding of the stakeholders and the quality of the EIA process. This approach is in line with the criteria in Schedule 4 paragraph 2 of the EIA Regulations, which sets out the information for inclusion in an ES, including “*an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects*”²⁷.
- 4.1.5. The proposed development has been subject to a number of design iterations to achieve the defined assessment parameters. Key design decisions were guided by environmental considerations. The design iterations focused on the location and orientation of key elements to minimise significant environmental effects and ensure the design is as environmentally sensitive as possible where operational requirements allowed. This chapter provides a summary of the considerations for the location and orientation of key design elements when developing the site in the context of likely significant environmental effects.
- 4.1.6. Each ES topic chapter includes a section titled ‘Design Interventions and Controls’. This provides further detail on the assessment work and design input relevant to that topic that helped evolve the design with regard to environmental effects.

4.2. Legislation, Policy and Guidance

- 4.2.1. The consideration of alternatives to the proposed development is based on the following legislation, policy and guidance.

Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017

- 4.2.2. Under the EIA Regulations (Regulation 17(d) and Schedule 4(2)), where alternatives have been considered as part of the proposed development, the applicant is required to include in their ES a description of the reasonable alternatives studied²⁷. Suggested detail within the EIA regulations includes a description of development design, technology, location, size and scale.

Other Guidance

- 4.2.3. To maximise the accountability, understanding and transparency in the design process and consideration of effects on the environment, this ES reflects guidance from current industry best practice.

Institute of Sustainability and Environmental Professionals

- 4.2.4. The Institute of Sustainability and Environmental Professionals (ISEP) advises that consideration of alternatives should consider²⁸:
- *“alternative locations and scales of development;*
 - *alternative site layouts and access arrangements;*
 - *different approaches to scheme design; and*
 - *alternative processes and alternative phasing of construction”.*

²⁸ Institute of Sustainability and Environmental Professionals (ISEP) (2025). Considering alternatives during the EIA process. [Online] Available at: <https://www.isepglobal.org/articles/considering-alternatives-during-the-eia-process/> [Accessed 23 October 2025].



Planning Inspectorate Advice Note Seven (2020)

- 4.2.5. As per Planning Inspectorate Advice Note Seven (2020) EIA: Process, Preliminary Environmental Information and Environmental Statement²⁹, the Planning Inspectorate considers that a good ES is one that “*explains the reasonable alternatives considered and the reasons for the chosen option taking into account the effects of the Proposed Development on the environment*”.
- 4.2.6. The UK Planning Inspectorate has published a series of Advice Notes to guide Nationally Significant Infrastructure Projects (NSIPs). Although the proposed development is not an NSIP, Advice Notes are widely recognised as a benchmark for best practice in conducting EIAs and have been considered in the preparation of this ES. Following this guidance demonstrates that the proposed development is being assessed to a high standard.

4.3. Consideration of Strategic Alternatives

- 4.3.1. After assessing various options, the UK has determined that DARC is the most effective and efficient solution to address the challenges of an increasingly congested and contested space domain. These options have been rigorously assessed, and DARC has emerged as the most effective and efficient solution. The alternative strategic options considered are further described in this section.

Option 1: ‘Do Nothing’ Alternative

- 4.3.2. The ‘Do Nothing’ alternative would mean that the UK would have to rely on surveillance data based solely on legacy optical and passive radio frequency sensors. This was not considered to be an effective long-term solution for the following reasons:
- This approach is limited by adverse weather and solar exclusion periods, meaning it cannot provide 24/7 nor complete orbital coverage.
 - The data is not assured, lacks timeliness, and does not meet the UK’s requirements for real-time decision-making to manage the risk of on-orbit collisions between satellites and debris.
 - This option fails to provide the necessary surveillance and tracking of the UK’s critical satellite constellations, leaving them vulnerable to disruption or loss.
- 4.3.3. The UK National Space Strategy³⁰, Defence Space Strategy³¹ and the 2025 Strategic Defence Review³² all note the critical importance of space-based services to the national economy and national security. On this basis, the ‘Do Nothing’ alternative was assessed to be an unacceptable course of action.

²⁹ Planning Inspectorate (2020). Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements. [Online] Available at: <https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-an> [Accessed 21 October 2025].

³⁰ HM Government (2021). National Space Strategy. [Online] Available at: <https://assets.publishing.service.gov.uk/media/6196205ce90e07043d677cca/national-space-strategy.pdf> [Accessed 21 October 2025].

³¹ Ministry of Defence (MOD) (2022). Defence Space Strategy: Operationalising the Space Domain. [Online] Available at: https://assets.publishing.service.gov.uk/media/61f8fae7d3bf7f78e0ff669b/20220120-UK_Defence_Space_Strategy_Feb_22.pdf [Accessed 21 October 2025].

³² MOD (2025). The Strategic Defence Review 2025 - Making Britain Safer: secure at home, strong abroad. [Online] Available at: <https://www.gov.uk/government/publications/the-strategic-defence-review-2025-making-britain-safer-secure-at-home-strong-abroad> [Accessed 21 October 2025].



Option 2 (Preferred Option): Collaborate

- 4.3.4. Participation in the trilateral DARC Programme with the US and Australia is the most readily available, cost-effective, and realistic option. The £6.4 billion global programme, funded primarily by the US, provides full access to real-time global 24/7 coverage at a fraction of the whole-life cost through to 2045.
- 4.3.5. The UK's national interests are embedded in the programme through a Memorandum of Understanding, assuring equal priority alongside the US and Australia and leveraging the UK's uniquely advanced secure communications infrastructure, enabling the UK to detect, track, and manage objects in Earth orbit.
- 4.3.6. On this basis, Option 2 was considered the preferred strategic option.

Option 3: Develop a Sovereign UK Capability

- 4.3.7. A sovereign UK Deep Space Radar is not practical, nor is it economically viable, and it is diplomatically challenging. The lead time for sovereign technical development is measured in years (if not decades). The costs, when compared to a collaborative approach, quadruple, and the UK would need to negotiate and lease new overseas basing to deliver multiple sites at further cost and risk in order to achieve sovereign UK space domain awareness across the full geostationary belt.
- 4.3.8. On this basis, Option 3 was not considered a reasonable alternative.

Option 4: Commercial Access

- 4.3.9. Commercial space surveillance capabilities are still embryonic and do not meet national technical and security requirements. They rely on electro-optical and passive RF tracking, which are no better than the legacy systems in Option 1. Critically, commercial data cannot always be assured, thereby posing unacceptable security risks during integration with the UK's secure command and control systems.
- 4.3.10. On this basis, Option 4 was not considered a reasonable alternative.

4.4. UK Site Selection Process

- 4.4.1. The UK is uniquely positioned to host DARC due to its geographic location, advanced communications infrastructure, and membership of the Five Eyes alliance (UK, Canada, US, Australia, and New Zealand). It is the only nation within the Atlantic-Europe-Africa geographical window possessing the communications infrastructure required to meet the stringent security requirements and that is able to globally integrate and distribute exceptionally large amounts of real-time data. By hosting one of the three global radar sites, the UK will be supporting international space traffic management, reinforcing its commitment to collective international security, and fostering the potential for unprecedented volumes of previously unavailable data to underpin civil and commercial economic activity.

Initial Selection Criteria

- 4.4.2. In 2020, a desk-based assessment was conducted to identify potential UK sites for hosting DARC. The assessment aimed to address the growing risks of an increasingly congested and contested space domain, while meeting the stringent technical, security, and operational requirements of the DARC programme.
- 4.4.3. The focus was on identifying sites with sufficient acreage to accommodate the DARC infrastructure and ensuring compatibility with the radar system's technical and operational needs. Sites were evaluated based on their ability to support the programme's objectives, including optimal radar performance, secure communications, and minimal environmental constraints.



4.4.4. Using desk-based criteria such as technical feasibility, environmental considerations, and long-term supportability, seven candidate sites were shortlisted for further evaluation:

- Benbecula, Scotland;
- West Freugh, Scotland;
- Fylingdales, England;
- Cawdor Barracks (formerly Royal Air Force (RAF) Brawdy), South Wales;
- RAF Portreath, Cornwall, England;
- Chivenor, Devon, England; and
- Macrihanish/Campbeltown, Scotland.

The Shortlisting Process

4.4.5. An initial analysis of the seven candidate sites was undertaken, assessing factors such as technical feasibility, environmental constraints, and operational suitability. Four of the sites were discounted for the reasons detailed in Table 4.1.

Table 4.1: Longlist Survey Assessment

Criteria	Outline of Initial Analysis
Benbecula, Scotland	This site was deemed too far north, which would have resulted in a coverage gap for the geostationary belt. Additionally, there were evident terrain obscuration issues for the radars, and the challenge of nearby civilian and government testing ranges.
RAF Portreath, Cornwall, England	This site was ruled out due to interference risks from its existing air defence ground radar systems.
Chivenor, Devon, England	This site was ruled out due the presence of an active runway and size constraints that further reduced its suitability.
Machrihanish/Campbeltown, Scotland	Similar to Benbecula, this non-MoD site was additionally discounted due to its proximity to a regional airport.

- The remaining three sites: Cawdor Barracks (Wales); West Freugh (Scotland); and Fylingdales (England), were shortlisted for more detailed analysis.

Shortlisted Sites

4.4.6. The three shortlisted sites were surveyed in October and November 2021 and assessed against criteria such as radar system performance, land availability, and environmental considerations.

4.4.7. RAF Fylingdales was excluded due to the radio frequency interference with its Early Warning Radar System. West Freugh had insufficient geostationary belt coverage due to its latitude, and the need to vacate national test range activities. Furthermore, both RAF Fylingdales and West Freugh are located directly within multiple statutory environmental designations, including Special Areas of Conservation (SAC) and Special Protection Areas (SPA).

4.4.8. Although Cawdor Barracks has environmental constraints such as its proximity to the Pembrokeshire Coast National Park, it was selected as the preferred site due to its strategic location offering full coverage of the geostationary belt, existing infrastructure, and no on-site statutory environmental designations. Additionally, the civil airways above the site are high enough to avoid electronic interference.

4.5. Design Evolution

Environmental Constraints

- 4.5.1. As described in Chapter 9 (Landscape and Visual) the EIA Scoping Report identified the likelihood of potentially significant adverse operational phase effects on landscape and visual receptors, including parts of the National Park and sections of the national trail. Although it may not be possible to materially reduce the overall level of effect (due to the intrinsic nature and required height of the proposed antennas and the operational necessity for them to be sited in an open and elevated position), the iterative design process considered ways in which landscape and visual effects might be reduced as far as is practicably possible (within operational limitations).
- 4.5.2. As described in Chapter 8 (Biodiversity), fungi habitat has been recorded in grasslands across Cawdor Barracks, including 58 CHEGD³³ fungi species across 11 quadrats sampled. A total of 21 species of waxcap fungi (species in the family Hygrophoraceae) was detected across all 11 quadrats. The respective Site of Special Scientific Interest (SSSI) thresholds were met or exceeded for all five fungal lineages in the CHEGD group. The g1d grassland present on site meets the criteria for irreplaceable habitat under Planning Policy Wales as it is species-rich both botanically and from a fungal assemblage perspective. The habitat is also long undisturbed with minimal agricultural improvement or management. These grassland areas, which also support a rich assemblage of waxcaps are of high conservation value.
- 4.5.3. Reducing potential impacts on fungi grassland has therefore been a key consideration throughout the iterative design process. As described in the following sections, the design of the proposed development has been amended to site a greater extent of infrastructure on previously cleared land or existing hardstanding where practicable.

Layout of Key Elements

Conceptual Layout Plan August 2023

- 4.5.4. At the conceptual stage, design guidance was taken from the previous installation of a similar array at DARC Site 1 in Australia.
- 4.5.5. In the August 2023 conceptual layout plan, the Transmit (Tx) Array was at the northern end of the runway, the Receive (Rx) Array was in the middle of the runway, and the Operations (Ops) area was located to the south of the Rx area.
- 4.5.6. In the Ops area, an early concept layout had both new facilities and new paving set outside the existing runway pavements. This was altered to take advantage of existing runway pavement for both cost savings and environmental reasons such as avoiding fungi habitat. At the same time, locating the auxiliary power compound adjacent to the new substation was considered. This was altered due to its proximity to other occupied facilities, especially the potential disturbance to on-base housing. The new location, adjacent to the Ops area, resulted in security benefits by allowing the Ops facilities to watch over the unoccupied auxiliary power compound. Furthermore, included in this conceptual layout plan was a sheltered building to reduce generator noise pollution, rather than ground-mounted units as featured previously.
- 4.5.7. To reduce the need for new pavement and reduce the ecological impact on fungi habitat, a number of changes were made, including providing access to the fuel skid directly off the existing runway and fence line adjustments between the Rx and Tx Arrays. Demolition of skeet shooting buildings was avoided by moving one of the Rx antennas slightly.

³³ The groups used are clumped together into an acronym and called the CHEGD fungi. CHEGD = Clavarioids (clubs, spindles and corals), Hygrocybe (waxcaps), Entolomas (pinkgills), Geoglossum (earthtongues), and Dermolomas (crazed caps).



- 4.5.8. Figure 4.1 shows this design iteration. Over time, adjustments have been made due to newly available information and changes benefitting the installation and wider environment.

Conceptual Layout Plan February 2024

- 4.5.9. Input data from testing and modelling of operational requirements identified that the Tx Array could not be sited north of the Rx Array due to interference. The Tx Array was therefore shifted to the south side of the airfield, as far away from the Rx Array as possible for operational purposes. The shape of the Tx Array was also optimised for performance and located on the existing hardstanding as much as possible to reduce potential impacts on sensitive fungi grassland. Accompanying this move, the temporary assembly building was moved north of the new Tx Array position to give immediate road access to both arrays.

- 4.5.10. In order for the Ops area to serve as the main entrance to the array site, the Ops area was relocated to north of the Tx Array, taking advantage of existing hardstanding thereby also reducing potential impacts on sensitive fungi grassland. Figure 4.1 shows this design iteration.

Conceptual Layout Plan December 2024

- 4.5.11. To reduce the landscape and visual impact on receptors to the south of the site, the Rx and Tx Arrays were moved approximately 310 m north. Noise impacts for this location were also modelled and identified reduced impacts compared to the previous design iteration. The layout also reduced impacts on fungi habitat. This also addressed a key point raised during public consultation events hosted in September 2024 (as detailed in Chapter 2: Methodology), about views from the local landscape and impacts on the Pembrokeshire Coast National Park. Figure 4.1 shows this design iteration.

Conceptual Layout Plan January 2025

- 4.5.12. An operational performance optimisation modelling exercise was completed to refine the layout. As a result, the Rx Array was required to be slightly wider and approximately 60 m south of its previous location. The layout prioritised the principles of the environmental benefits identified for the December 2024 conceptual layout plan.

Proposed Development Layout August 2025

- 4.5.13. Following the January 2025 concept layout plan, a decision was made to group the ancillary facilities between the Tx and Rx antenna arrays. This change reduced cable runs, reduced the amount of grassland that would need to be disturbed, reduced the distance that would need to be travelled by the operating staff to visit the arrays, reduced the hardstand area that would need to be excavated, eliminated extensive changes to the technical area fencing, and reduced overall construction effort required to deliver the proposed development. The change allows the two areas of Cawdor Barracks to operate independently.

- 4.5.14. The ancillary buildings were moved to the old main runway to reduce the distance between them and the arrays, and to reduce impacts on sensitive habitats.

- 4.5.15. A new entrance, entry control building and associated parking were added near crash gate 21.

- 4.5.16. Optimized Antenna Layouts (OAL) was performed for the Rx and Tx antennas. Antennas were relocated slightly north to reduce visual impact and their layout optimised for performance. Antennas have been located on the existing hardstand areas to the extent possible to reduce impacts to the grassland and fungi.

- 4.5.17. The Proposed Development Layout August 2025 design represents the stage that forms the basis of this ES. At the time of assessment, the design was at architectural and engineering preliminary design stage. To address this, a parameter-based reasonable worst-case



approach has been adopted in the ES. This enables robust assessment of the proposed development, whilst allowing for further design refinements within the assessed parameters.

4.5.18. The final layout is presented in Figure 3.1 (Proposed Development Overview).

Construction Access

4.5.19. Four potential locations for the construction access were initially identified based on the envisaged extent of the construction works and MOD land ownership. These locations are referred to as Options 1 to 4. The merits of each option were then reviewed against a range of environmental factors and constraints to identify the preferred location, as summarised in Table 4.2.

4.5.20. In identifying the proposed location, regard has been had to the extent of the construction activities/development layout internal to the site, known ecological constraints and the prevailing speeds of background traffic on the C3010.

4.5.21. The investigations were informed by a site visit, a 3D topographical survey of the C3010 corridor and its junction with the A487, adopted highway information, the results of a search for the presence of statutory undertakers' equipment and engagement with the local highways officer at PCC.

4.5.22. Based on the findings of the review, the preferred location for the construction access was initially identified as Option 2 as this option reduced potential impacts on fungi grassland, hedgerow and statutory undertakers equipment (11kV cable).

4.5.23. Through the development of the PCC design, it was determined that the construction access required to be moved approximately 150 m north along the C3010 due to the revised layout of the Tx array.

Table 4.2: Construction Access Location Options and Considerations

Option	Highway/ Transport	Ecology	Landscape	Land Quality	Other
1	Construction traffic using C3010 over the longest length. Access junction likely at-grade with C3010.	Minimal fungi habitat footprint. Limited impact on hedgerow.	Large hedgerow north of this point.	All access options are required to cross former Naval Facilities Engineering Systems Command (NAVFAC) Bulk Fuel Installation pipeline.	Statutory undertakers' equipment: presence of 11 kV cable
2	Construction traffic using C3010 over a longer length compared to Options 3 and 4. Access junction likely at-grade with C3010.	Minimal fungi habitat footprint. Limited impact on hedgerow.	Broken hedgerow		N/A
3	Access junction located close to a bend on	Larger footprint on fungi habitat compared to Options 1 and 2.	Large hedgerow and		N/A



Option	Highway/ Transport	Ecology	Landscape	Land Quality	Other
	<p>C3010 resulting in reduced visibility splay to the south.</p> <p>Takes construction traffic off C3010 sooner compared to Options 1 and 2.</p>	<p>Additional clearance of hedgerow needed compared to Options 1 and 2.</p>	<p>overgrown verge</p>		
4	<p>Access junction located closer to bend on C3010 resulting in reduced visibility splay to the south.</p> <p>Takes construction traffic off the C3010 earliest of the four options.</p> <p>Level difference between C3010 and site.</p>	<p>Largest impact on fungi habitat.</p> <p>Additional hedgerow clearance needed for visibility splay compared to Options 1 and 2.</p>	<p>Large hedgerow and overgrown verge</p>		<p>N/A</p>

4.5.24. Options 1 to 4 are shown in Image 4.1 below.



Image 4.1: Considered Access Location Options 1 to 4