



Ministry
of Defence

Deep Space Advanced Radar Capability (DARC)

Environmental Statement - Volume 1 Non-Technical Summary

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



1. Introduction

1.1. Introduction

- 1.1.1. This is a Non-Technical Summary (NTS) of the Environmental Statement (ES) which has been prepared in accordance with The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (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').
- 1.1.2. The proposed development will 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 will be enclosed with perimeter fencing. The proposed development would also include associated buildings and infrastructure to support radar operations.
- 1.1.3. The buildings would include a 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 a revised 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 would consist of diesel generators, associated fuel storage, and Bulk Energy Storage Systems (BESS). Generator testing will be required, involving running each of the generators for a combined total of 12 hours annually (1 hour per month).

- 1.1.5. Ancillary infrastructure would include Tx Array associated infrastructure, utilities, a temporary Antenna Integration Shelter (AIS), access roads/internal roads (including a revised site access), fencing and security systems and lighting.
- 1.1.6. All support buildings other than the ECPB would be contained within a secure fence area.
- 1.1.7. The entire installation would be situated within the decommissioned airfield area of Cawdor Barracks with support infrastructure being constructed on existing hardstand wherever possible.
- 1.1.8. A description of the proposed development is provided in Section 4 of this NTS, and in ES Chapter 3 (Proposed Development). The location and layout of the proposed development is shown in Figure 1.

1.2. Purpose of the NTS

- 1.2.1. The purpose of the NTS is to provide a clear and concise overview of the findings of the ES, prepared in accordance with the EIA Regulations and relevant guidance. This summary aims to present information on the likely significant environmental effects of the proposed development in an accessible and straightforward manner for all audiences, including the public, local communities, and other stakeholders.
- 1.2.2. It also summarises the steps and measures taken during the design development process to avoid, minimise, restore or offset potential significant adverse environmental effects as well as proposals for biodiversity enhancement.

1.3. Environmental Statement Structure

- 1.3.1. The ES documents consist of:
- NTS;



- Main report and appendices; and
- Figures.

1.3.2. The application is accompanied by the following documents which do not form part of the ES:

- Planning Statement;
- Design and Access Statement; and
- Pre-Application Consultation Report.

1.4. Public Availability of the Environmental Statement

1.4.1. 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>

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

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

1.5. Commenting on the Application

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

1.5.2. The advertisements referred to in Section 1.4 above 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.

1.5.3. 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>

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

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



2. The Site and Existing Environment

- 2.1.1. The application site covers approximately 189 ha and sits within Cawdor Barracks. Cawdor Barracks is the site of the former airfield Royal Air Force (RAF) Brawdy. It is located within a rural area on St David's Peninsula in Pembrokeshire, South Wales. Cawdor Barracks is approximately 1.2 kilometres (km) northeast of the coast and is to the north of the A487 between Haverfordwest and St David's.
- 2.1.2. 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.
- 2.1.3. A high-level overview of local designations and key environmental constraints is provided within Figure 2. 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.
- 2.1.4. Cawdor Barracks is presently used as a working military base, 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 MOD and managed by Defence Infrastructure Organisation (DIO).
- 2.1.5. The majority of operational barracks buildings are concentrated within a secured compound surrounded by an existing security fence, located in

the southwest 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. Background to the Proposed Development

3.1. Need for and Benefit of the Proposed Development

- 3.1.1. Space is increasingly congested and contested. Since 2020, the number of orbital launches has doubled, whilst active satellite deployments have increased by 374%. 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.
- 3.1.2. 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). Satellites underpin the UK's critical national infrastructure, including emergency services coordination, national security, weather forecasting, agriculture, environmental monitoring, 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 Product, directly enabling £454 billion of national economic activity—an increase of £90 billion over the previous year.
- 3.1.3. 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, and potential threats. This capability is 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 the UK responds to emerging challenges.

- 3.1.4. DARC will form the cornerstone of the UK's ability to detect, identify, and track objects in Earth orbit, including satellites, space debris, and asteroids. This capability is essential to protect and defend the services these satellites provide, ensuring they are not impacted through collisions or by debris. 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 billion .
- 3.1.5. 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.
- 3.1.6. 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.

- 3.1.7. 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 (36,000km)).
- 3.1.8. 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-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.
- 3.1.9. The site at Cawdor Barracks has been identified as the optimal location, with no competing military requirements for the site. The Planning Statement accompanying the application also provides a description of the need for the proposed development.

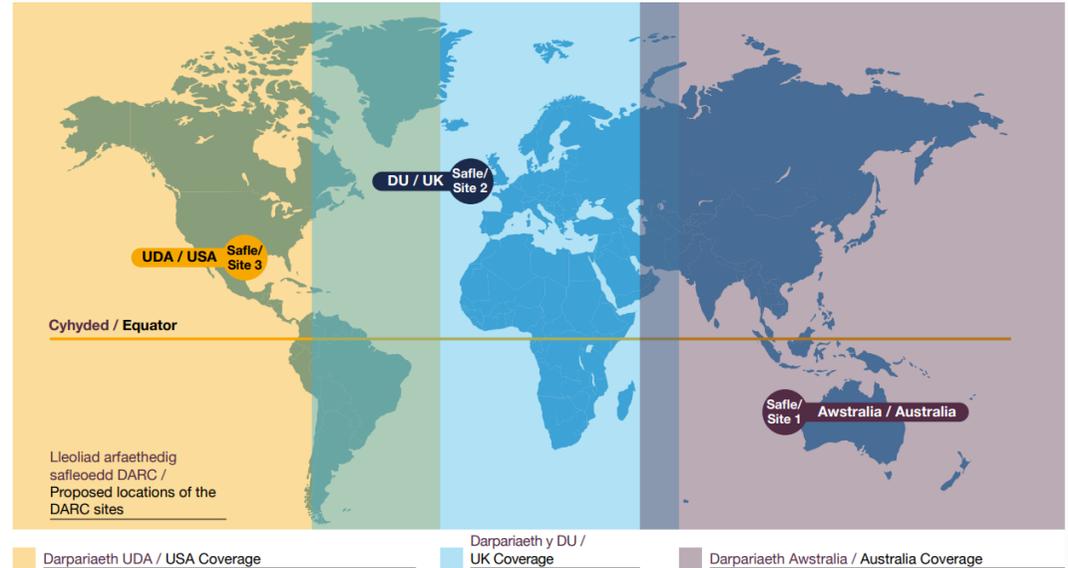


Image 1.1: Proposed DARC Global Coverage

3.2. Alternatives Considered and Iterative Design Process

Consideration of Strategic Alternatives

- 3.2.1. 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

3.2.2. 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.

3.2.3. This option fails to provide the necessary surveillance and tracking of the UK’s critical satellite constellations, leaving them vulnerable to disruption or loss.

3.2.4. The UK National Space Strategy , Defence Space Strategy and the 2025 Strategic Defence Review 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.

Option 2 (Preferred Option): Collaborate

3.2.5. 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.

3.2.6. 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.

3.2.7. On this basis, Option 2 was considered the preferred strategic option.

Option 3: Develop a Sovereign UK Capability

3.2.8. 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.

3.2.9. On this basis, Option 3 was not considered a reasonable alternative.

Option 4: Commercial Access

3.2.10. Commercial space surveillance capabilities are still embryonic and do not meet national technical and security requirements. They rely on electro-optical and passive Radio Frequency 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.

3.2.11. On this basis, Option 4 was not considered a reasonable alternative.

UK Site Selection Process

3.2.12. 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

- 3.2.13. In 2020, a desk-based assessment was conducted to identify potential UK sites for hosting DARC. 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.
- 3.2.14. Using desk-based criteria such as technical feasibility, environmental considerations, and long-term supportability, seven candidate sites were shortlisted for further evaluation.

The Shortlisting Process

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

Shortlisted Sites

- 3.2.16. 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.

- 3.2.17. 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).
- 3.2.18. 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.

Design Evolution

Environmental Constraints

- 3.2.19. 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).
- 3.2.20. As described in Chapter 8 (Biodiversity), sensitive fungi habitat has been recorded in grasslands across Cawdor Barracks. 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

3.2.21. The evolution of layout of key elements are summarised below and shown on Figure 3:

- Conceptual Layout Plan August 2023: Design guidance was taken from the previous installation of a similar array at DARC Site 1 in Australia. The Tx Array was situated at the northern end of the runway, the Rx Array was in the middle of the runway, and the Ops area was located to the south of the Rx area.
- Conceptual Layout Plan February 2024: The Tx Array was shifted to the south side of the airfield for operational purposes, and the shape was optimised for performance. The Tx Array and the Ops area were located on the existing hardstanding as much as possible to reduce potential impacts on sensitive fungi grassland.
- Conceptual Layout Plan December 2024: To reduce the landscape and visual impact on receptors to the south of the site (including views from the local landscape and impacts on the Pembrokehire Coast National Park), the Rx and Tx Arrays were moved approximately 310 m north. Noise impacts and impacts on fungi habitat for this location were also reduced.
- Conceptual Layout Plan January 2025: The Rx Array was refined and moved approximately 60 m south of its previous location for operational purposes.
- Proposed Development Layout August 2025: The ancillary facilities were grouped between the Tx and Rx antenna arrays. This change reduced cable runs, reduced the amount of grassland that will need to be disturbed, reduced the distance that will need to be

travelled by the operating staff to visit the arrays, reduced the hardstand area that will need to be excavated, eliminated extensive changes to the technical area fencing, and reduced overall construction effort required to deliver the proposed development. A new entrance, entry control building and associated parking were added near crash gate 21. Antennas were relocated slightly north to reduce visual impact, reduce impacts to fungi grassland and their layout optimised for performance.

The 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 ensures that the proposed action's environmental impacts are robustly assessed while allowing for further design refinements within the assessed parameters.

Construction Access

3.2.22. Through the development of the Proposed Development Layout August 2025 design, it was determined that the construction access required to be located north along the C3010 due to the layout of the Tx array.

4. The Proposed Development

4.1.1. The proposed development will include construction and operation of the DARC facility and associated ancillary infrastructure.

4.1.2. 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);
- Site Access revisions;
- Entry control point building (area included in Ops area); and
- Temporary AIS (area included in Rx Array area).

4.2. Receiver Array

- 4.2.1. 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 21.5 m once mounted on a pedestal.
- 4.2.2. The layout pattern was developed to optimise the performance of the antenna working as a coordinated system, and to reduce the impact on existing fungi habitat (as detailed in Chapter 8: Biodiversity) and landscape impacts (as detailed in Chapter 9: Landscape and Visual Impact Assessment).
- 4.2.3. The final foundation design will vary depending on the ground conditions at each antenna location. Site-specific foundation designs will therefore be developed once detailed intrusive ground investigations are carried out during the pre-construction phase.
- 4.2.4. Roads internal to the Rx Array have been located on existing pavements to the maximum extent possible to reduce potential impacts on existing habitats (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. All new antenna access roads internal to the Rx Array will be of compacted gravel and up to 6 m wide.

4.3. Transmit Array

- 4.3.1. 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.
- 4.3.2. The entire Tx Array footprint is enclosed by fencing. 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.

4.4. Ops Area

- 4.4.1. The Ops area contains the operational buildings and facilities for the proposed development. 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.
- 4.4.2. The access road in and out of the Ops area will utilise existing pavement with the exception of a 100 m section between the entry control point building that is located adjacent to the east taxiway and the main runway.
- 4.4.3. The Ops area includes the following facilities:
- Radar operations building;
 - Radar spares building;
 - Auxiliary power compound;
 - Fuel storage;
 - NGED connection building;



- Switchroom building;
- BESS units; and
- Entry control point building.

4.5. Ancillary Infrastructure

- 4.5.1. The Tx Array is supported by cooling units, housed in small structures, and transmitters in 12 m housings.
- 4.5.2. All utilities as part of the proposals will be trenched below ground except in the vicinity of the auxiliary power compound, BESS units, and the switchroom. Feeds from building transformers into buildings and structures will also be above ground.
- 4.5.3. The average trench width for new utilities is approximately 1.5 m wide and an approximate depth of 0.8 m below ground level (bgl) and up to 1.2 m bgl by exception.

4.6. Temporary Antenna Integration Shelter (AIS)

- 4.6.1. The 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.
- 4.6.2. 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.

4.7. Temporary Construction Access

- 4.7.1. 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.
- 4.7.2. It is proposed the temporary construction access will be left as a new crash gate for emergency access/egress once construction is complete.

4.8. Design Characteristics

- 4.8.1. An archaeological desk-based assessment (DBA), Historic Settings Assessments and a detailed geophysical survey have been undertaken to assess the archaeological features of the application site. Detailed archaeological investigations will be undertaken post-submission as agreed with Heneb DM – Dyfed region. This approach minimises unnecessary impacts on ecological receptors as archaeological investigations will be limited to areas where construction works will definitively take place.
- 4.8.2. 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.
- 4.8.3. The ES assumes a micro-siting allowance of up to 40m for all proposed radar antennas and associated new infrastructure as described in the ES and shown on Figure 1 within the application site. 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.



- 4.8.4. The micro-siting allowance has been assessed to not materially change the conclusions of likely significant effects as reported in the ES chapters.

4.9. Construction Programme

- 4.9.1. Construction is due to commence in April 2027 and is anticipated to take approximately 21 months (excluding certain biodiversity pre-construction mitigation requirements due to seasonal constraints), followed by demobilisation including removal of temporary buildings, equipment, and extra materials in Month 22.
- 4.9.2. At peak times there will be approximately 100 construction staff employed.

4.10. Construction Working Hours

- 4.10.1. Daytime work hours will be 07.00 to 19.00 Monday to Saturday (excluding Bank Holidays), extending to 20:00 during summer months, with no work on Sundays. 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.
- 4.10.2. 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 such as night works. Suitable approvals will be secured in advance with PCC should this be the case.

4.11. Operation and Decommissioning

- 4.11.1. It is anticipated that the proposed development will have an operational lifespan measured in decades in accordance with the current Memorandum of Understanding (MoU) in place between the UK, US and Australia.

- 4.11.2. The proposed development would be in operation 24 hours a day, seven days a week. 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.
- 4.11.3. 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.



5. EIA Process

5.1. Overview of the EIA Process

- 5.1.1. The EIA has been undertaken as an integral part of an iterative design process, with environmental constraints and issues identified and incorporated into the decision-making process throughout. The aims of the EIA were to:
- gather information about the environment, identify environmental constraints and opportunities which may influence or be affected by the proposed development;
 - identify and assess potential (pre-mitigation) environmental impacts;
 - identify and incorporate into the proposed development design, features and measures to avoid, reduce or offset adverse impacts, and where possible enhance beneficial effects; and,
 - assess the proposed developments residual effects (those remaining after mitigation measures are implemented to avoid or reduce potential impacts).
- 5.1.2. The ES presents the results of the EIA process undertaken and covers the construction and operation phases of the proposed development. The ES is based on desk studies and site surveys which have informed an

understanding of the existing environment and how this may change in the future with the proposed development.

Scoping

- 5.1.3. To enable the EIA process to be proportionate and focus on those impacts likely to be significant, an EIA Scoping Report¹ 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. This Scoping Report set out what should be assessed in the ES to help define how to approach the assessment and what information may be needed to identify the likely significant effects from the proposed development. A Scoping Opinion was provided by PCC. The Scoping Opinion and the statutory consultee responses have subsequently informed the assessment work and further design evolution undertaken.

Consultation

- 5.1.4. Public and statutory environmental body consultation has been undertaken throughout the scoping and impact assessment stages of the EIA, prior to pre-application consultation.

Scoping Consultation

- 5.1.5. Following the submission of an EIA Scoping Request to PCC, a Scoping Opinion was issued, which identified and agreed upon the key stakeholders to be consulted with as part of the EIA process. The Scoping Opinion also 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:

¹ MOD (2023). EIA Scoping Report, Project DARC – Cawdor Barracks. Document reference: 65208061-SWE-XX-XX-T-J-0002-CawdorScopingReport, Revision P02



- Cadw;
- Dŵr Cymru Welsh Water (DCWW);
- Natural Resources Wales (NRW);
- specialist departments within PCC, and
- Pembrokeshire Coast National Park Authority (PCNPA).

5.1.6. 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

5.1.7. Two public consultation events were hosted in local communities at Solva and St Davids on the 13 and 14 September 2024 respectively. 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).

5.1.8. 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.

Technical Consultation

5.1.9. 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.



6. Summary of Environmental Effects

6.1. Transport and Access

- 6.1.1. The Transport and Access chapter (Chapter 5) assesses the impact of the proposed development on road users, pedestrians, cyclists and all other users in terms of effects on severance, delay, amenity, fear and intimidation, and road safety. Any impacts to existing public transport as well as the potential for impacts on access to outdoor areas is also assessed.
- 6.1.2. The assessment identifies construction routes, construction traffic, and operational traffic associated with the proposed development. Turning count surveys and automatic traffic counts surveys were undertaken in 2023 at junctions and roads that may be used by the proposed development. Changes in traffic flows were assessed in combination with its impacts and ultimately its effects based on the sensitivity of routes involved.
- 6.1.3. Peak traffic generation from the proposed development is expected to occur during the construction phase, and specifically in 2027, when concrete foundation pours for the antenna are scheduled. The roads that may be used by the proposed development are of low sensitivity due to minimal pedestrian infrastructure and activity, and the reduced speed limits.
- 6.1.4. Overall, the proposed development will result in up to a daily average of 101 (76 LGVs and 25 HGVs) additional vehicle movements on the road network during a concrete pour day. When considering the construction traffic, on average there are just over 7 trips per hour over the 12-hour operational day which equates to less than two additional vehicles every 15 minutes. On the anticipated 27 days when foundations are being poured, this increases to on average 8 trips per hour, which equates to two vehicles every 15 minutes. This level of additional traffic is not expected to result in other road users experiencing any notable increase in delays due to operational issues at junctions or on the highway network in general.
- 6.1.5. At its peak, staff traffic will result in up to 35 vehicles arriving in the AM and 35 vehicles departing in the PM. This traffic is likely to be focused over a 30-minute period preceding or following the working shift. Overall, this traffic results in an average of 1 vehicle every minute.
- 6.1.6. A construction traffic management plan will be developed pre-construction and will consider the operation and management of all construction traffic to ensure the safe and efficient transportation of materials to the application site during the construction phase.
- 6.1.7. During operation, there will be 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.
- 6.1.8. The assessment considered mitigation and enhancement embedded in the proposed development design and concludes that no receptors are likely to experience a significant effect (Moderate, Large, and Very Large) as a result of the proposed development's construction and operation.
- 6.1.9. There are no potential significant cumulative impacts when considered in combination with impacts identified for other developments.
- 6.1.10. No significant residual effects are anticipated for vehicle and non-motorised users, to continue accessing roads public transport or outdoor areas as they currently do, during construction and operation as a result of the proposed development.



6.2. Air Quality

- 6.2.1. The Air Quality chapter (Chapter 6) sets out the potential effects of construction and operation of the proposed development on air quality at sensitive human and ecological receptors.
- 6.2.2. The chapter outlines the relevant legislation and policy, includes a review of the existing baseline conditions, consideration of the potential impacts and identification of proportionate mitigation for likely significant adverse effects resulting from the proposed development.
- 6.2.3. Following consultation with PCC, the chapter and accompanying appendices considers the potential emission sources of air pollutants and dust associated with the proposed development as set out below:
- Construction phase: Dust emissions generated by demolition and construction activities including site preparation, excavation and material handling/storage.
 - Operational phase: Emissions of pollutants to air from the proposed on-site auxiliary power compound.
- 6.2.4. The construction dust risk assessment concluded that, in the absence of mitigation, there is predicted to be a medium risk of dust impacts from earthworks and construction activities and a low risk of dust impacts from demolition activities.
- 6.2.5. Good practice mitigation measures will be needed to reduce the potential for dust emissions to lead to significant effects in the vicinity of the proposed development. The mitigation measures presented in this assessment would normally be sufficient to reduce construction dust nuisance and risks to human health and ecological impacts to a not significant effect.
- 6.2.6. The mitigation measures taken forward from this assessment will be used by the contractor to develop a Construction Environmental Management Plan (CEMP) for agreement with PCC prior to construction commencing (anticipated to be required as a condition of the planning permission).
- 6.2.7. The results of the air dispersion modelling of emissions from the auxiliary power compound indicate that the predicted concentrations at sensitive human receptors do not exceed any relevant long-term or short-term environmental quality standards (EQS).
- 6.2.8. For annual mean nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}) concentrations, the respective process contributions (PCs) are less than 1% of the relevant long-term EQS and the impacts are considered 'insignificant' as per Environment Agency guidance.
- 6.2.9. As per the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) planning guidance, the percentage change in concentration relative to the EQS means the impact is considered 'negligible adverse' when operating the proposed auxiliary power compound.
- 6.2.10. For short-term PM₁₀ concentrations, the PC is less than 10% of the relevant EQS and the impacts are considered 'insignificant'. As per the EPUK and IAQM planning guidance, the percentage change in concentration relative to the EQS means the impact is considered 'negligible adverse'.
- 6.2.11. For short-term NO₂ concentrations, the PC is above 10% of the relevant EQS (i.e. 63.6%). However, the corresponding PEC is less than 70% of the relevant EQS and the impacts are considered 'not significant'.
- 6.2.12. At the assessed protected conservation areas, the results indicate that the annual mean PCs are less than 1% of the relevant critical level and critical load value and the effect is considered 'insignificant' as per NRW guidance.



- 6.2.13. For the maximum 24-hour mean critical level for oxides of nitrogen (NO_x), the PC is either less than 10% of the relevant EQS, or where the PC is above 10% of the relevant EQS, the corresponding PEC is less than 70% of the relevant EQS and the impacts are considered 'not significant'.
- 6.2.14. This assessment assumes the auxiliary power compound operates simultaneously and continuously at full load as this approach ensures that the worst-case or maximum short-term concentrations are quantified. This is an overly conservative approach to the assessment as in practice, the auxiliary power compound will typically operate up to 180 hours per year and is unlikely to operate simultaneously or for a continuous period up to 24 hours. Therefore, the results presented are likely to be considerably higher than would reasonably be expected.
- 6.2.15. Based on the findings of the assessment of pollutant emission during the operation phase, it is concluded that the proposed auxiliary power compound are acceptable not significant from an air quality perspective.

6.3. Noise and Vibration

- 6.3.1. The Noise and Vibration chapter (Chapter 7) presents an assessment of the noise and vibration impacts on human receptors that may arise as a result of the construction and operational phases of the proposed development, as well as identifying proportionate mitigation to minimise noise and vibration effects.
- 6.3.2. Noise sensitive receptors in the vicinity of the application site, including residential, non-residential and Public Right of Way uses, have been identified following a review of publicly available mapping, resources and site investigations. Subsequently, the baseline environmental noise conditions have been determined following the completion of an extended noise survey at locations around the application site representative of the identified noise sensitive receptors. Details of the baseline noise survey, including results and observations, are presented in Appendix 7.2 of the ES.

- 6.3.3. Assessments of noise and vibration impacts have then been undertaken in accordance with relevant national and professional design guidance and following consultation with PCC.
- 6.3.4. Construction noise, traffic, and vibration impacts have been determined primarily with reference to British Standard BS 5228:2009+A1:2014 Parts 1 & 2 and Design Manual for Roads and Bridges LA 111 Revision 2. Details of the construction noise sources, phasing and equipment used to inform this assessment, along with receptor specific LOAELs, SOAELs and construction noise predictions, are provided in Appendix 7.3 of the ES.
- 6.3.5. Operational noise impacts have been determined primarily with reference to BS 4142:2014+A1:2019 for each of the operational conditions for the site (comprising the normal operations, and three temporary and short-term conditions). Due to the low background sound levels in the vicinity, and following PCC consultation, consideration has also been given to the levels described as "very low" in the now superseded BS 4124:1997. Details of the operational noise sources proposed at the application site have been provided by the project team. This includes in-situ measured noise emission data for the proposed antenna captured both at DARC Site 1 (Australia) and at a US test facility. Refer to the operational assessment section of this chapter for details and to Appendix 7.4 of the ES for receptor specific noise assessments.
- 6.3.6. Consideration has also been given throughout to the potential impacts resulting from the micro siting of the antenna equipment. The assessment of micro siting presented in this chapter takes an approach similar to that used for windfarms, wherein the change in noise emissions is evaluated on the worst-case basis that the equipment was to move homogeneously in any cardinal direction.
- 6.3.7. The initial assessment of construction impacts finds that no significant effects are anticipated as a result of construction traffic, noise, or



- vibration, with the exception of a potential significant noise effect at the on-site Cawdor Barracks residential units during months 8-9 of the works.
- 6.3.8. The initial assessment of operational noise impacts finds that significant effects are expected at several of the identified receptors, including Public Right of Way, in each of the operational conditions. These effects were determined in accordance with BS 4142:2014+A1:2019 including subjective character corrections for tonality and intermittency. The applied character corrections were determined utilising the test results and observations made during the DARC Site 1 and US test facility witnessing.
- 6.3.9. The assessment of micro siting finds that there will be no change to the conclusions of the construction noise, traffic or vibration assessments; however, micro siting may result in an increased number of receptors at which significant effects may be expected in the unmitigated operational scenarios.
- 6.3.10. Accordingly, guidance on appropriate construction noise mitigation has been presented including Best Practicable Means, local acoustic barriers, careful programming, and community engagement. With this mitigation implemented, no residual significant construction noise, traffic, or vibration effects are anticipated for the proposed development.
- 6.3.11. With regard to operational noise, mitigation requirements have been presented in the form of the minimum broadband noise reductions that will be achieved for each component part of the site (i.e. Tx array, Rx array, chillers, etc), including the influence of micro siting. A commentary on typical engineering solutions has been provided where appropriate, however it is noted that the detailed design and implementation of the operational mitigation will be undertaken by the responsible Contractor and is beyond the scope of this chapter. Notwithstanding, with this mitigation implemented no residual significant operational noise effects are anticipated.
- 6.3.12. On the basis of the assessments presented in this chapter, no residual significant noise or vibration effects are expected as a result of the proposed development.
- ## 6.4. Biodiversity
- 6.4.1. The Biodiversity chapter (chapter 8), and associated appendices considered the potential effects of construction and operation of the proposed development on Biodiversity. The chapter and associated appendices also outline the relevant legislation and national and local planning policy, details the outcome of stakeholder consultation, includes a review of the existing baseline conditions, consideration of the potential impacts and identification of proportionate mitigation and habitat enhancement for the identified adverse effects resulting from the proposed development.
- 6.4.2. Habitats recorded within the application site primarily consisted of other lowland acid grassland surrounding the dis-used runways. This habitat also holds a nationally important assemblage of fungi and is considered an 'irreplaceable habitat' under PPW. Other semi-natural habitats recorded included: dense scrub other neutral grassland; a small area of lowland heath priority habitat; hedgerows; lines of trees; and a small area of other coniferous woodland. Urban areas present comprised hardstanding and buildings making up the Cawdor Barracks site. Further habitats recorded within the wider Cawdor Barracks site included priority habitat wet woodland and arable and horticulture habitats.
- 6.4.3. Field surveys recorded a population of reptiles, comprising all four common UK species with county level importance. County level important assemblages of ground-nesting birds, notably skylark and meadow pipit, were also recorded as well as an assemblage of over-wintering birds. The application site was also used for commuting and foraging bat species, including the rare species barbastelle, greater horseshoe bat and Nathusius' pipistrelle in low numbers, although no roosting sites for



bats were recorded. Evidence of badger activity was recorded to the north of the application site with an outlier sett identified. The invasive species cotoneaster and rhododendron were recorded on site.

- 6.4.4. No Manx shearwater were recorded within Cawdor Barracks. It is considered unlikely that Manx shearwater would be using the site given its distance (approximately 950m) from the coastline and given that they predominantly return to the colonies they were born into and nest in rabbit burrows around rock and cliff areas, which are not present within or near to Cawdor Barracks.
- 6.4.5. The assessment of potential significant effects on biodiversity features was undertaken with reference to guidelines. The assessment identified potential impact pathways and subsequent effects during both construction and operation of the proposed development.
- 6.4.6. Potential significant effects (in the absence of mitigation but with standard controls and measures) were identified upon biodiversity features during construction of the proposed development for:
- Grassland supporting a nationally important fungi assemblage – habitat loss and disturbance of mycelium network;
 - Reptiles – habitat loss; and
 - Breeding birds – habitat loss and disturbance of ground nesting birds.
- 6.4.7. No potential impacts and subsequent significant effects were identified in the operational phase of the proposed development.
- 6.4.8. Following the implementation of appropriate design interventions and controls, no significant effects on statutory and non-statutory designated sites, priority habitats and vascular plants (excluding fungi grassland),

barn owl, badger, or 'other priority species' were identified during construction or operation.

- 6.4.9. In summary, mitigation measures focus on provision, enhancement and where feasible, translocation, of grassland habitats that support fungi (including a Grassland Fungi Mitigation Plan); enhancement of retained scrub habitats and enhancement of a hedgerow currently in poor condition; and measures to reduce noise and visual disturbance to ground nesting birds during construction comprising removal of suitable habitat in advance of works and, where necessary, installation of temporary barriers around the works. The landscape and ecology mitigation plan is shown in Figure 4.
- 6.4.10. No residual significant effects are considered likely following correct implementation of the mitigation measures.
- 6.4.11. Monitoring of the translocated grassland fungi turves and related habitat enhancements will be developed with PCC / NRW and academic specialists as part of the Grassland Fungi Mitigation Plan. Monitoring will involve undertaking further eDNA surveys of the enhanced grassland areas to determine fungi species-richness. Where required, remedial measures will be adopted to improve the habitat conditions for fungal growth, likely through changes to the management regime.
- 6.4.12. The Landscape and Ecology Management Plan will define the necessary monitoring required for successful establishment of the woodland, tree and scrub planting. This will include measures for intervention should there be any establishment failure.

6.5. Landscape and Visual Impact

- 6.5.1. The Landscape and Visual Impact chapter (Chapter 9) assesses the effects of the proposed development on landscape and seascape character, and on visual amenity. The approach to the assessment is based on Landscape Institute and Institute of Environmental



Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) and the criteria used has been informed by the scoping stage consultation response from the Pembrokeshire Coast National Park Authority (PCNPA). A study area extending to a 15 km radius around the proposed development was adopted following further consultation with the PCNPA.

- 6.5.2. The assessment of effects on character considers the effects on various landscape and seascape character areas identified by PCC and PCNPA in published studies. Relevant areas (those potentially subject to significant effects) were identified at scoping stage and through consultation with the two authorities. The assessment of visual effects has principally drawn on detailed consideration of 33 representative viewpoints which were agreed with PCC, PCNPA and Natural Resources Wales (NRW). These representative viewpoints include a number along the route of the Pembrokeshire Coast Path National Trail (PCPNT) and several at sea in St Brides Bay.
- 6.5.3. The significance of effects has been established by combining an assessment of landscape and visual sensitivity with an assessment of the magnitude of change that would occur. Landscape and visual sensitivity across parts of the study area is high due to the presence of the National Park designation; the presence of the coastal National Trail; and the simple and open character of the landscape including its generally uninterrupted skylines.
- 6.5.4. The principal landscape and visual effects would arise as a result of the proposed antennas which would be up to approximately 21.5 m in height. The elevated and open site means that these would potentially be visible over a wide area and sometimes over long distances. The magnitude of landscape and visual change would however diminish considerably over greater distances due to their limited height.

6.5.5. Careful consideration has been given to how the landscape and visual effects of the proposed development could be reduced and mitigated. Tree planting has been proposed in a number of locations to soften the visual effects of the proposed development and to deliver improved integration of the site with the surrounding landscape (Figure 4). The extent of this planting has however been constrained by operational requirements and the ecological value of grassland at the site.

6.5.6. The greater part of the study area and areas of the PCNP within it would not be subject to effects due to falling outside of the Zone of Theoretical Visibility (ZTV) of the proposed development or due to distance from the site. The assessment has not identified any landscape, seascape or visual effects which would be categorised as Very Substantial. Some landscape and visual effects have, however, been identified as significant - either categorised as Substantial or Moderate. In general, these significant landscape and visual effects principally reflect the high sensitivity of the receiving environment rather than a high magnitude of landscape and visual change upon it. In those limited areas from which it would be visible the effects of the proposed development would diminish considerably with distance. The significant landscape and visual effects of the proposed development would principally be limited to occasional elevated areas and transient views within the PCNP to the south of the site at distances of less than 8 km.

6.6. Archaeology and Built Heritage

6.6.1. The Archaeology and Built Heritage chapter (Chapter 10) summarises and assesses the potential impacts on Archaeology and Built Heritage. The chapter references four appendices: an archaeological DBA, Historic Settings Assessments and a detailed geophysical survey report (Gradiometer). The application site largely comprises that of RAF Brawdy which was constructed prior to World War II in the 1930s. Previous to this, the application site was largely rural in character.



- 6.6.2. Information from the geophysical survey identified the presence of anomalies consistent with possible archaeological remains relating to Iron Age occupation and activity within the application site.
- 6.6.3. The settings assessment considered the possible effects of the proposed development on the heritage significance of historic assets outside of the application site through a change in their setting. All assets other than the Grade II listed Church of St Teilo, the Grade I listed Roch Castle, the Scheduled Monument Brawdy Promontory Fort, the Scheduled Monument Pointz Castle Mound and the St Davids Peninsula and Ramsey Head Registered Historic Landscape were scoped out.
- 6.6.4. The assessment identified the potential for direct impacts on buried archaeological remains located within the application site leading to a loss of their heritage significance. By implementing a programme of archaeological investigation and mitigation, as set out in the Archaeological Management Strategy, agreed with Heneb DM – Dyfed region, the effect of these direct impacts will be reduced.
- 6.6.5. To further investigate the nature, extent, and significance of archaeological remains within the application site, trial trenching will be completed post-determination but pre-construction phase. Following the completion of the trial trenching programme, should the presence of archaeological remains be confirmed within the application site mitigation measures will be applied to either remove impacts on archaeological remains entirely or to mitigate their loss through preservation by record.
- 6.6.6. Indirect effects within and beyond the application site are difficult to fully mitigate as the scale and the size of the proposed development means views will be afforded towards it from certain locations across the surrounding area. This will be reduced where possible through planting of vegetation to screen the proposed development from the surrounding area (Figure 4). See Chapter 9 (Landscape and Visual Impact) for further information.

- 6.6.7. In conclusion, the proposed development will have no significant adverse effect on the heritage significance of any designated heritage assets through a change in their setting.

6.7. Ground Conditions and Contaminated Land

- 6.7.1. The Ground Conditions and Contaminated Land chapter (Chapter 11) evaluates existing baseline conditions across the study area(s) and assesses potential significant effects for ground conditions and contaminated land, waste generation and materials use as a result of the proposed development. The contaminated land assessment is informed primarily by a Phase 1 Land Quality Assessment (LQA) report which incorporates a review of third-party regulatory data, Ministry of Defence site records, and previous LQA reports prepared by third parties. The information within the Phase 1 LQA report is relied upon in the presentation of baseline conditions.
- 6.7.2. The study area comprises land associated with the historically operational RAF Brawdy, now referred to as Cawdor Barracks. The Sweco Phase 1 LQA report concluded that significant sources of contamination are unlikely to be present based on historical evidence and previous phases of targeted ground investigation, however localised sources of contamination have been identified in soil and groundwater. Contaminants of concern include metals, hydrocarbons, inorganic and organic compounds, polychlorinated biphenyls (PCBs), explosive residues, per- and polyfluoroalkyl substances (PFAS) and asbestos-containing material (ACM).
- 6.7.3. Based on the current understanding, with appropriate design interventions and further ground investigation and risk assessment in accordance with Land Contamination Risk Management (LCRM) to render the site suitable for use, the proposed development is not expected to result in significant effects during construction and operation. This assumes mitigation will be implemented prior to and during



construction through LCRM and a robust CEMP and via operational environmental management systems during operation.

- 6.7.4. The materials and waste assessment in the chapter has been undertaken in accordance with the 2020 Institute of Environmental Management and Assessment (IEMA) guidance on key terms, concepts, and considerations for assessing the environmental impacts and effects of materials and waste as part of the EIA process.
- 6.7.5. The assessment of the impact of waste and resources on the proposed development considers the sensitivity of receptors and the magnitude of impact to calculate the overall effect. The sensitivity assessment for waste considers landfill void capacity, and based on current predictions, this would result in a very high sensitivity factor. However, the magnitude of impact is negligible; therefore, the overall impact is not significant for waste.
- 6.7.6. Based on a negligible sensitivity for all key construction materials and the highest key construction material magnitude being minor, the calculated effect is considered neutral or slight; therefore, the overall impact is not significant for materials.

6.8. Water Environment, Flood Risk and Drainage

- 6.8.1. The Water Environment, Flood Risk and Drainage chapter (Chapter 12) summarises and assesses the potential impacts of the proposed development upon the water environment, which covers surface water (water quality and resources), groundwater and flood risk (including drainage). The application site largely comprises that of RAF Brawdy which was operational between 1944 and 1992 when it was turned over to the Army. Prior to this, the application site was largely rural in character.
- 6.8.2. The proposed development could affect surface water quality through accidental spillages or leakages during construction, these will be short-

term and will be addressed via measures set out in the CEMP. Bunding will be included in the design that will prevent potentially polluting hydrocarbons discharging to the environment during operation, resulting in no likely significant effects.

- 6.8.3. During construction groundwater resources could be affected by topsoil stripping and dewatering due to excavations, however it is anticipated that these will be very shallow and localised and will therefore not significantly affect receptors (superficial deposits and bedrock). Topsoil stripping could affect groundwater quality if contaminated land is encountered, however the Phase 1 Land Quality Assessment indicates the presence of significant contamination is unlikely. During operation potential impacts to groundwater resources are: pollution risk, reduction in recharge due to increased impermeable areas and alteration of flows due to the introduction of below-ground structures. However, these potential impacts will be addressed resulting in no significant effects.
- 6.8.4. The proposed development is at minimal risk of flooding due to its elevated location. It is located largely within Flood Zone 1 with minimal areas of Flood Zone 2 and 3 attributed to small watercourses or surface water, rather than Main Rivers which would not change when the predicted impact of climate change is considered. The development could impact other parties due to the increase in impermeable area and the alteration of existing overland (pluvial) flow paths. The proposed development includes mitigation in the form of attenuation storage within the proposed surface water drainage network to address these risks, resulting in no significant residual effects. The proposed development will not increase flood risk for its lifetime.

6.9. Socio-economics

- 6.9.1. The Socio-Economics chapter (Chapter 13) sets out the potential effects of construction and operation of the proposed development on the resident population both within PCC and nationally.



6.9.2. The Socio-Economics assessment was carried out with reference to IEMA (now Institute of Sustainability and Environmental Professionals (ISEP)) guidance on determining significance for human health in EIA, and includes a review of local and national planning policies of relevance to socio-economics.

6.9.3. Baseline conditions were established through desktop research and analysis of official statistics. The local socio-economic profile is consistent with a rural area, showing low population density, and older and less ethnically diverse population than national average. Local residents were found to have higher skill levels than national average, with more residents having degree-level qualifications and working in higher level occupations. Unemployment rates are low, and relatively few residents are claiming out of work benefits. Nevertheless, the local economy is highly dependent on tourism, with 30% of jobs being in accommodation and food services – by far the largest sector within the Pembrokeshire 003 MSOA.

6.9.4. Employment effects, tourism economy effects and social infrastructure effects were assessed for both the construction phase and the operational phase.

6.9.5. During the construction phase:

- 65 gross direct construction jobs (full-time equivalent (FTE) are expected to be created, rising to 90 FTE once indirect and induced jobs are taken into account (alongside allowances for leakage and displacement). In the context of the national construction industry, this effect was found to be not significant.
- Up to 100 temporary accommodation bedspace could be required for the duration of the construction project. This would require around 2.1% of existing bedspaces, which is not expected to have an adverse impact on availability of accommodation for tourist visitors and therefore is not significant.

- Very few, if any, temporary construction workers are expected to make use of existing local social infrastructure, however in the event that they do, there is sufficient capacity within existing provision to accommodate. This effect is also not significant.

6.9.6. During operation:

- 60 FTE staff members are required. All staff are expected to live locally, and the workforce is expected to comprise both existing local residents and new residents moving to the local area with their families to take up work at the completed development. Though beneficial, this effect in context of there being 49,000 total jobs in PCC, is not significant.
- Workers relocating from other parts of the country to take up work are expected to bring their families with them. Assuming this is the case for half of the 60 total jobs created, this could create demand for up to 90 additional general practitioner (GP) registrations and 30 school places (assuming each worker, on average, brings a spouse and one child). As noted above, there is sufficient capacity within existing local provision to accommodate this increase in local population, and therefore this is not a significant effect.
- The permanent operation is not expected to impact on the local tourism economy, as there is no evidence to suggest that the presence of the completed development will cause a drop in visitor numbers.

6.9.7. Based on the findings of this assessment, it is concluded that the proposed development is acceptable and not significant from a socio-economics perspective.



6.10. Climate Change and Carbon

- 6.10.1. The Climate Change and Carbon chapter (Chapter 14) provides an initial, high level assessment of potential changes in greenhouse gas (GHG) emissions as a result of the proposed development. The assessment indicates that such changes are likely to be negligible in comparison to UK and Welsh carbon budgets. Furthermore, a number of design interventions and controls will be implemented to reduce the magnitude of GHG emissions generated as a result of the construction and operation of the proposed development. On this basis, the proposed developments GHG impacts are considered to be fully consistent with applicable policy requirements and good practice design standards for projects of this type and fully in line with measures necessary to achieve the UK's trajectory towards net zero. As such, the impact of the proposed development on climate is considered to be a minor adverse not significant effect.
- 6.10.2. Furthermore, while elements of the proposed development have the potential to be adversely affected by future changes in climate, by applying design interventions, this assessment suggests unlikely the potential climate-related risks identified will result in significant impacts during the operational phase of the proposed development.

6.11. Heat and Radiation

- 6.11.1. The Heat and Radiation chapter (Chapter 15) provides an assessment of potential impacts from heat and non-ionising radiation from the proposed development. The operational radiation from the proposed development will only be from the transmit (Tx) Array and is non-ionising, which is non-radioactive.
- 6.11.2. The proposed development is designed to comply with the relevant provisions of the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines. Due to the stringent nature of the guidelines, there is no possibility that the proposed development will

result in significant effects from non-ionising radiation. Additionally, Planning Policy Wales (PPW) outlines that as the proposed development is meeting the ICNIRP guidelines, planning authorities do not need to consider health impacts from non-ionising radiation equipment.

- 6.11.3. The proposed development will also operate in line with The Control of Electromagnetic Fields at Work Regulations 2016 and Joint Services Publication 392, which place a duty of care on the employer to protect employees.
- 6.11.4. Design interventions for the proposed development include that the entire Tx Array footprint will be enclosed by a security fence at a minimum safe distance as defined by testing at DARC Site 1 in Western Australia (report provided in Appendix 15.2 of the ES). Security signage will be displayed, and only authorised personnel who will be properly trained will be allowed access to the Tx array security fence line.
- 6.11.5. Although risks to public health will not occur due to the inherent design of the proposed development, compliance with ICNIRP and The Control of Electromagnetic Fields at Work Regulations 2016, a technical report is included in Appendix 15.1 which considers potential non-ionising radiation hazards of the proposed development to humans during operation. The potential impacts of non-ionising radiation on habitats and species were also considered and eliminated in Appendix 15.1.
- 6.11.6. As there is no pathway that would lead to a significant effect on humans from non-ionising radiation, the chapter detailed that there are no likely impacts on occupationally exposed individuals and members of the public, based on the conclusions from the assessment work reported in Appendix 15.1.

6.12. Lighting

- 6.12.1. The Lighting chapter (Chapter 16) addresses the impacts of lighting applied to the proposed development on the surrounding human



- receptors, ecological receptors and National Landscape (NL). The assessment applies a method of assessing light, based on the most appropriate industry standard guidance, to conclude the residual effects outcome of the effects of lighting on the surrounding light sensitive receptors.
- 6.12.2. Multiple editions of the layout have been reviewed and a description of the intent for lighting has been outlined. Based on the layout and the proposed lighting intent, along with assumptions of the likely light levels using British Standards and the Institution of Lighting Professionals (ILP) guidance, to conclude the likely outcome of likely light spill. Should any opportunity to enhance the proposed development to reduce potential impact on the surrounding occur, this is then reported back to the applicant, and the approach is reviewed and, in necessary, revised to align to the intended purposes for the application site whilst reducing the potential for negative effects to occur to the surrounding sensitivities.
- 6.12.3. Based on the information provided, the assumptions used to determine the likely outcome indicate, that after the implementation of the agreed design interventions, the expected outcome of the residual effects will be of a Neutral effect.
- 6.12.4. Whilst there will be a change in the view upon the landscape the lighting will be mounted at such a low level and with no upward light directly as a result of the lanterns proposed, this will not significantly alter the nighttime view of the landscape and would comply with dark skies guidance. The proposed lighting will not be obtrusive in nature based on the design brief and the location of the proposed development.
- 6.12.5. Without implementation of the proposed development, the application site is not expected to experience any substantive change in artificial lighting, and baseline night-time light levels are therefore predicted to remain effectively unchanged.

6.13. Cumulative

- 6.13.1. The Cumulative Effects chapter (Chapter 17) presents information required by the EIA Regulations. As part of the EIA process, this ES Chapter reports the Cumulative Effects that may arise as a result of the proposed development.
- 6.13.2. Cumulative effects result from multiple impacts on receptors over time. Cumulative effects are generally described as either:
- intra-cumulative – where multiple different impacts from the proposed development result in a significant effect on a single receptor or group of receptors; or
 - inter-cumulative – where effects from several different developments combine together resulting in a significant cumulative effect.
- 6.13.3. An assessment of the intra- and inter-cumulative impacts of the proposed development has been undertaken for scoped in environmental disciplines. This was undertaken to determine whether there would be any predicted cumulative effects, and whether additional mitigation measures would be required to reduce any potentially significant cumulative effects.
- 6.13.4. The intra-cumulative assessment was carried out by identifying residual effects on the following receptors: residents and/ or the wider community, construction personnel, ecological sites, habitats, protected species, landscape features, historic environment, water environment. No intra-cumulative significant effects are anticipated as a result of the proposed development.
- 6.13.5. Four 'other developments' were assessed for potential inter-cumulative effects:



- Proposed Residential Development, Land east of Pilgrims Way, Roch, Pembrokeshire: The cumulative effects assessment is provided in Chapter 10 (Archaeology and Built Heritage) due to potential cumulative effects on the Grade I listed Roch Castle. The assessment concluded that no significant effects are likely. For all other EIA topics, significant inter-cumulative effects are not considered likely given the residential development does not constitute an EIA development. Additionally, given the residential development is approximately 3.5 km southeast of the proposed development and the small scale of the residential development (approximately 2.65 ha), significant cumulative effects are not expected from the proposed residential development.
- Newgale Coastal Adaptation Project: The cumulative effects assessment is provided in Chapter 5 (Transport and Access) due to potential cumulative effects associated with traffic volumes. The assessment concluded that there is insufficient information available on expected construction traffic volumes at the time of writing to assess potential cumulative effects. The appointed contractor will liaise with other local development projects throughout the construction phase of the proposed development to avoid any significant overlap in works activities as much as feasibly possible. This will reduce the likelihood of significant cumulative effects for transport and access. The Newgale Coastal Adaptation Project is expected to be subject to the same legislation and best practice guidance as the proposed development. Given this, and that the two projects are independent of each other, no cumulative effects are anticipated during construction and operation on all other EIA topics.
- High-Resolution Direction Finder (HRDF) Relocation: No significant cumulative effects are expected from the HRDF Relocation.
- National Grid Electricity Distribution (NGED) Cable Connection: NGED has confirmed that the Cable Connection will consist entirely of underground cable and is not considered to be EIA development. The applicant understands that NGED will be likely to carry out its works to lay cables within the public highway under its permitted development rights (as an electricity undertaker) together with relevant authority under the New Roads and Street Works Act 1991. NGED has been liaising with the South Wales Trunk Roads Agent in relation to roads under their authority to manage traffic flow. Some areas of the Cable Connection will be located in third party land, however this has not been fully defined at the time of writing. Based on the information provided by NGED with regards to the proposed Cable Connection, no significant cumulative impacts are considered to occur in combination with the proposed development.



7. Summary

- 7.1.1. In summary, the applicant has undertaken a robust and transparent process to assess options and to carefully consider the different beneficial and adverse effects each may have, across a wide range of criteria including environmental, socio-economic, technical and cost factors, with the aim of finding a balanced outcome.
- 7.1.2. The process was guided by detailed environmental assessment, specialist engineering considerations and engagement with local stakeholders and statutory and non-statutory consultees.
- 7.1.3. Though the iterative design process and in taking into consideration the embedded, good practice and additional mitigation measures, no significant residual effects are identified for: Transport and Access, Air Quality, Noise and Vibration, Biodiversity, Archaeology and Built Heritage, Ground Conditions and Contaminated Land, Water Environment, Flood Risk and Drainage, Socio-economic, Climate Change and Carbon, Heat and Radiation, and Lighting.
- 7.1.4. Significant residual adverse landscape and visual effects have been identified during construction and operation as described in Section 6.5.

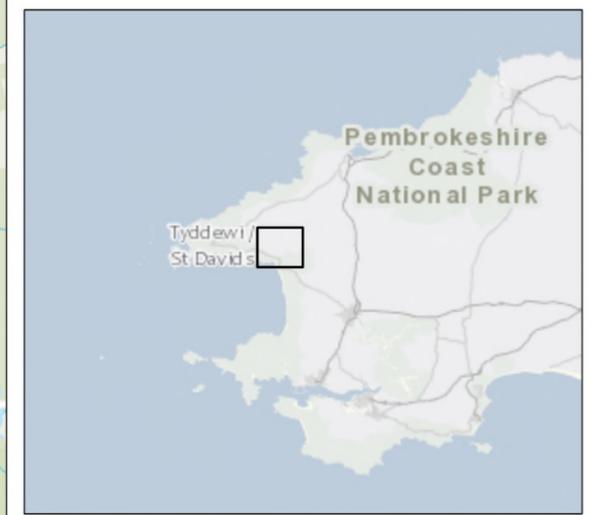
FIGURE 1

Legend

- Application Site
- Cawdor Barracks Site
- Proposed Layout
- Proposed Fences
- Primary Site Access
- Proposed Temporary Construction Access

Routes of Interest

- A487
- C3010
- U3017



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Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Jacobs

Client: Ministry of Defence

Project: Project DARC - Cawdor Barracks

Drawing Title: Location of proposed development, application site and proposed development overview

Drawing Status: INITIAL ISSUE

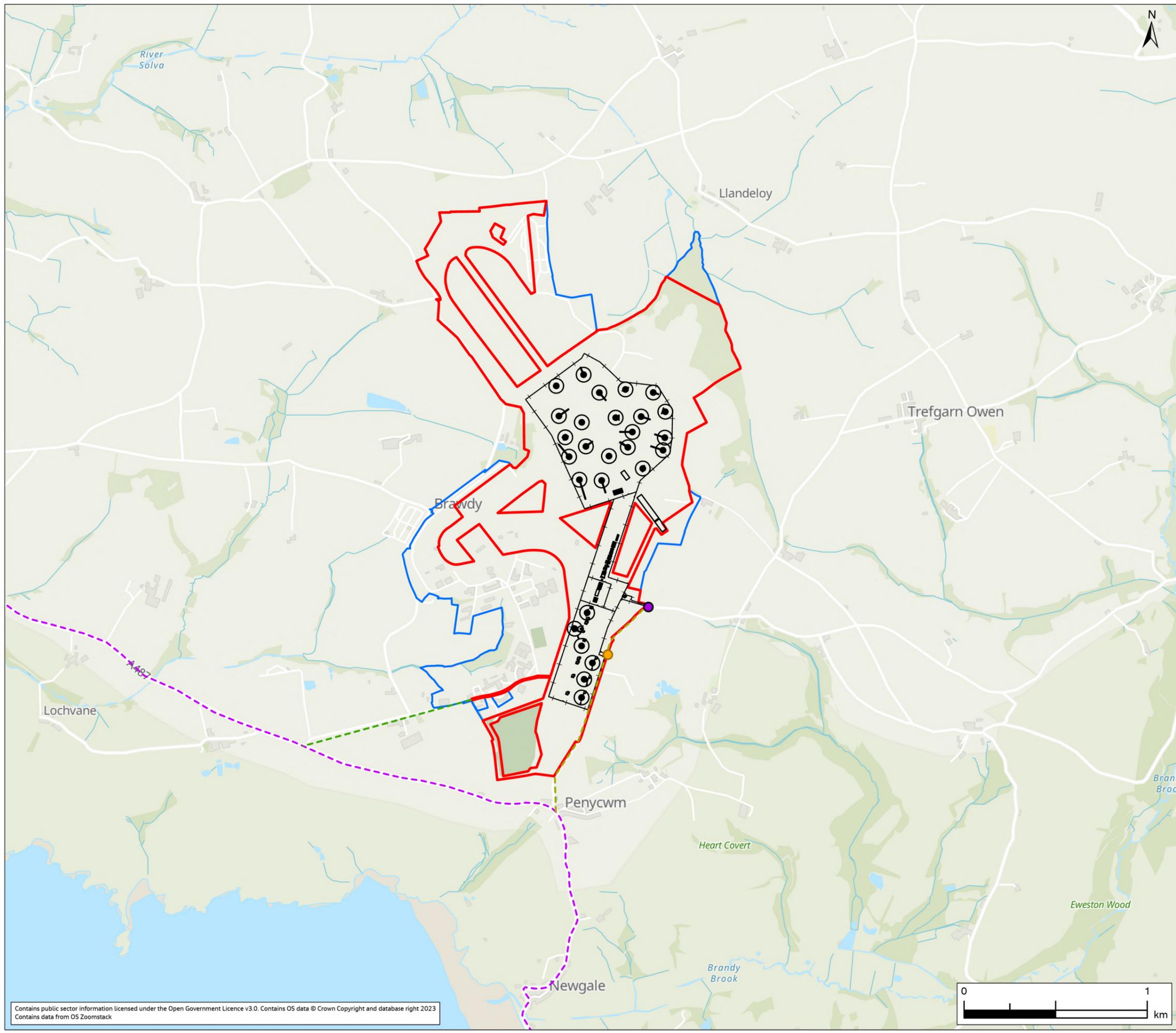
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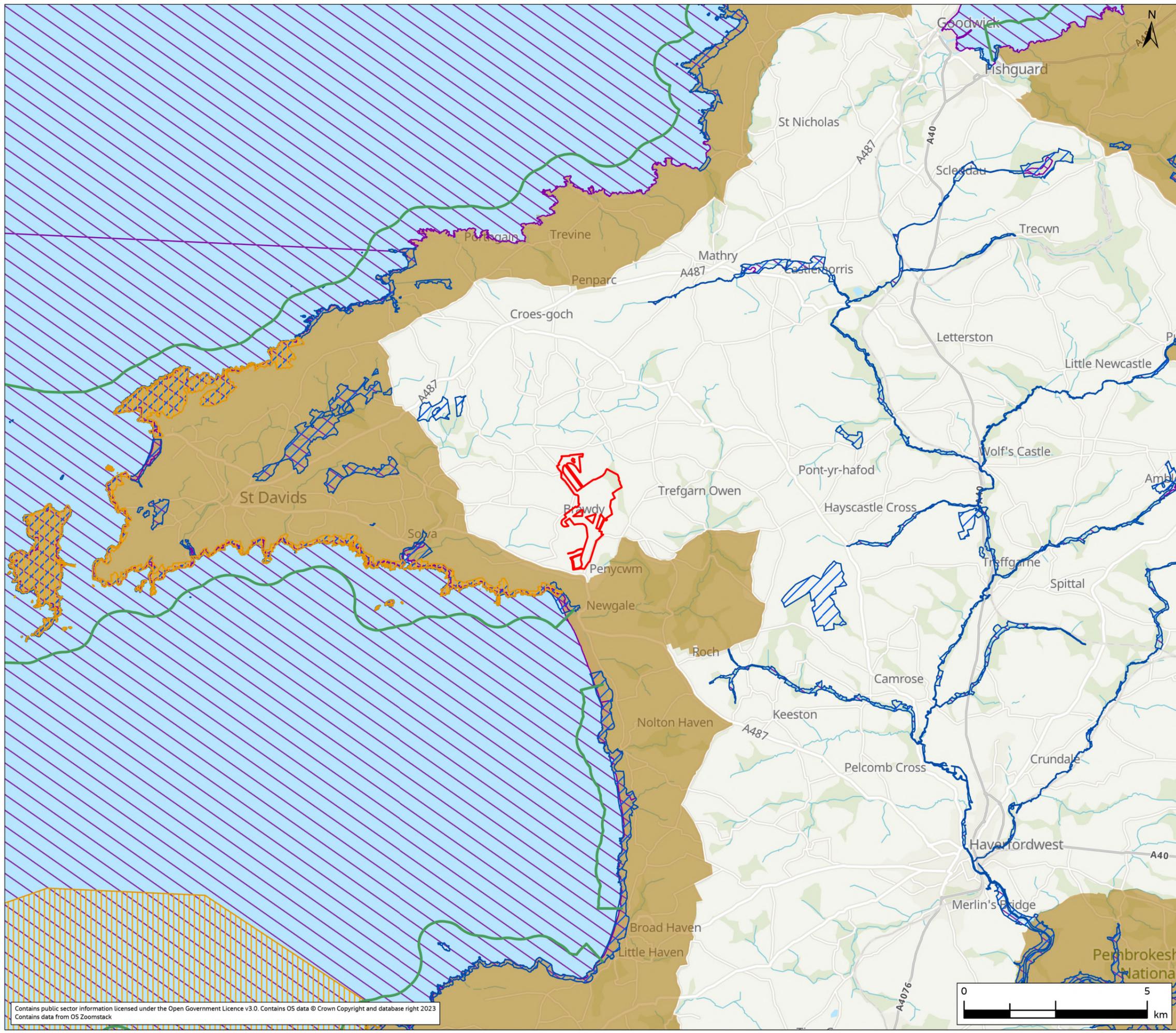
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FIGURE 2

Legend

- Application Site
- Sites of Special Scientific Interest
- Special Areas of Conservation
- Special Protection Areas
- Heritage Coast
- National Parks



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Client: Ministry of Defence

Project: Project DARC - Cawdor Barracks

Drawing Title: General Constraints Plan

Drawing Status: INITIAL ISSUE

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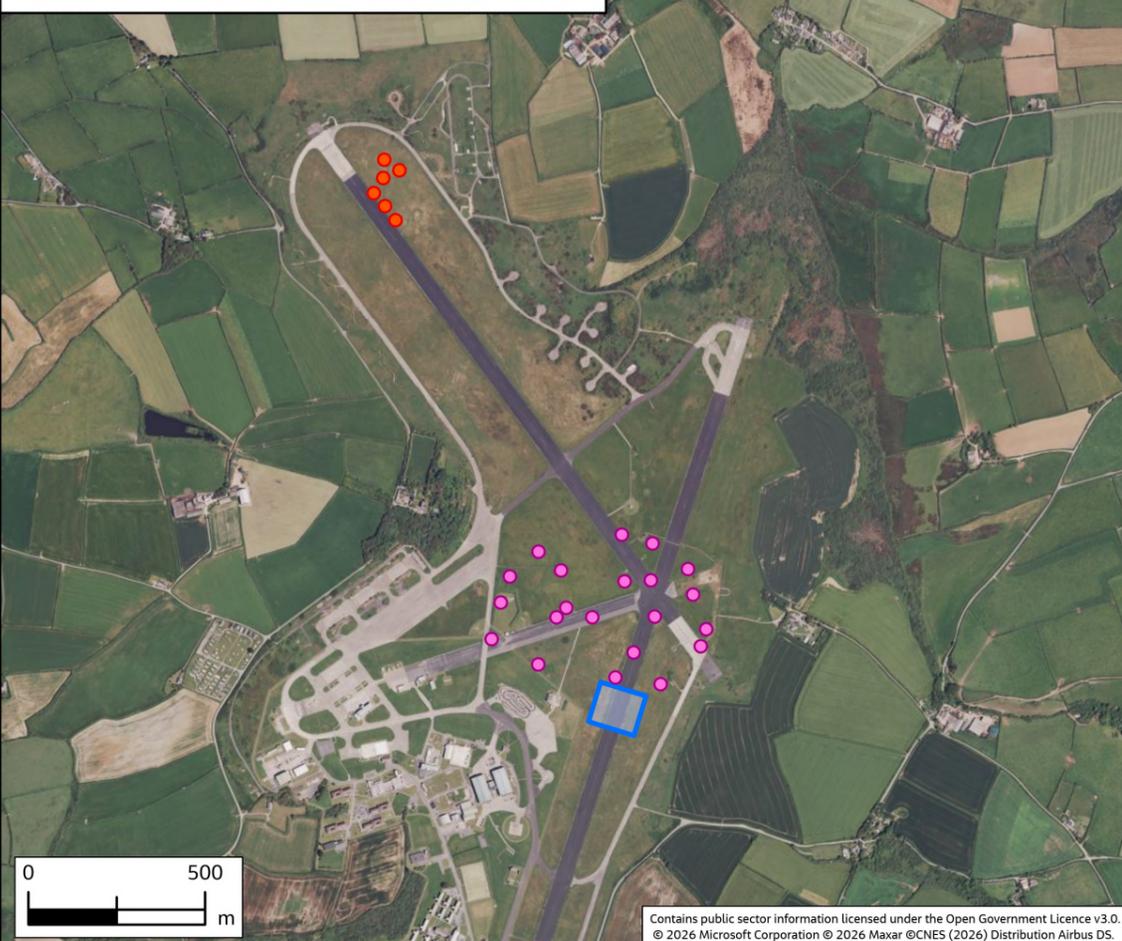
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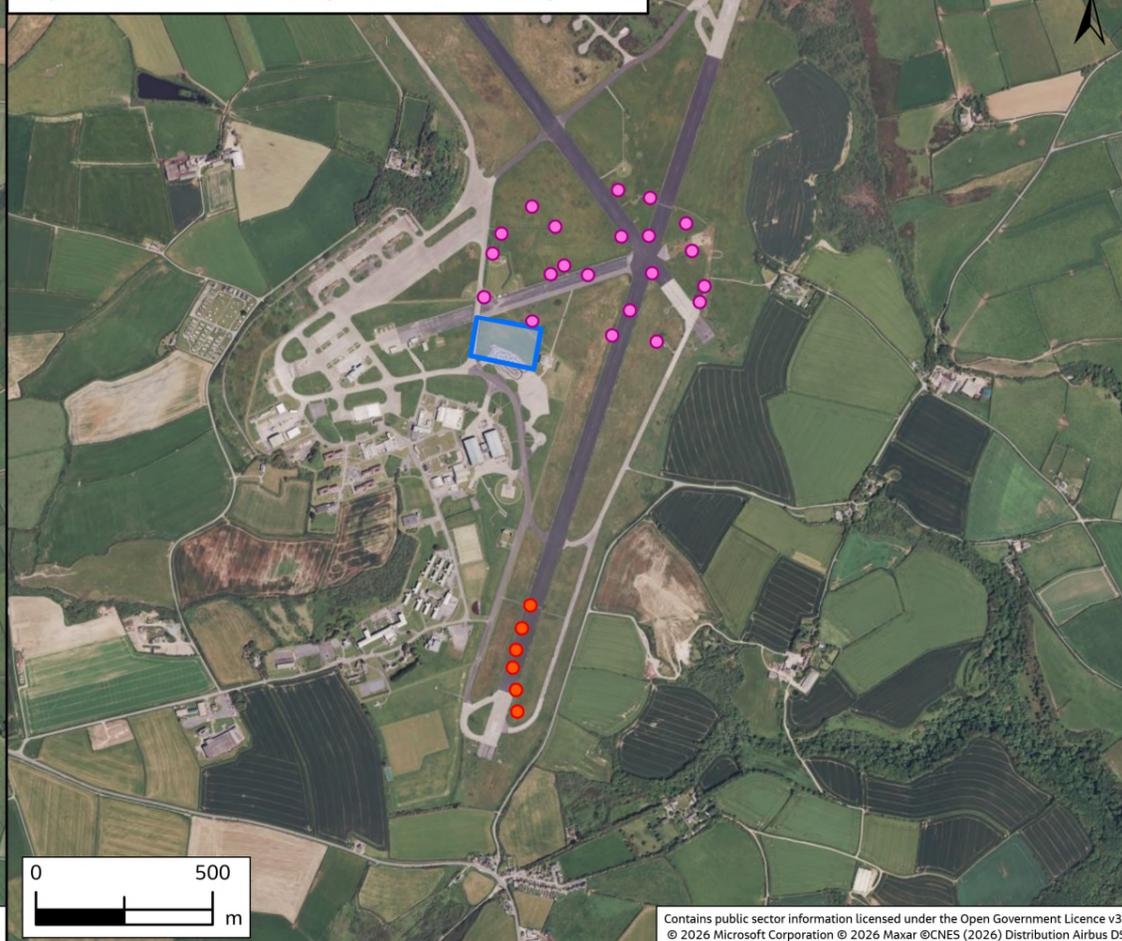


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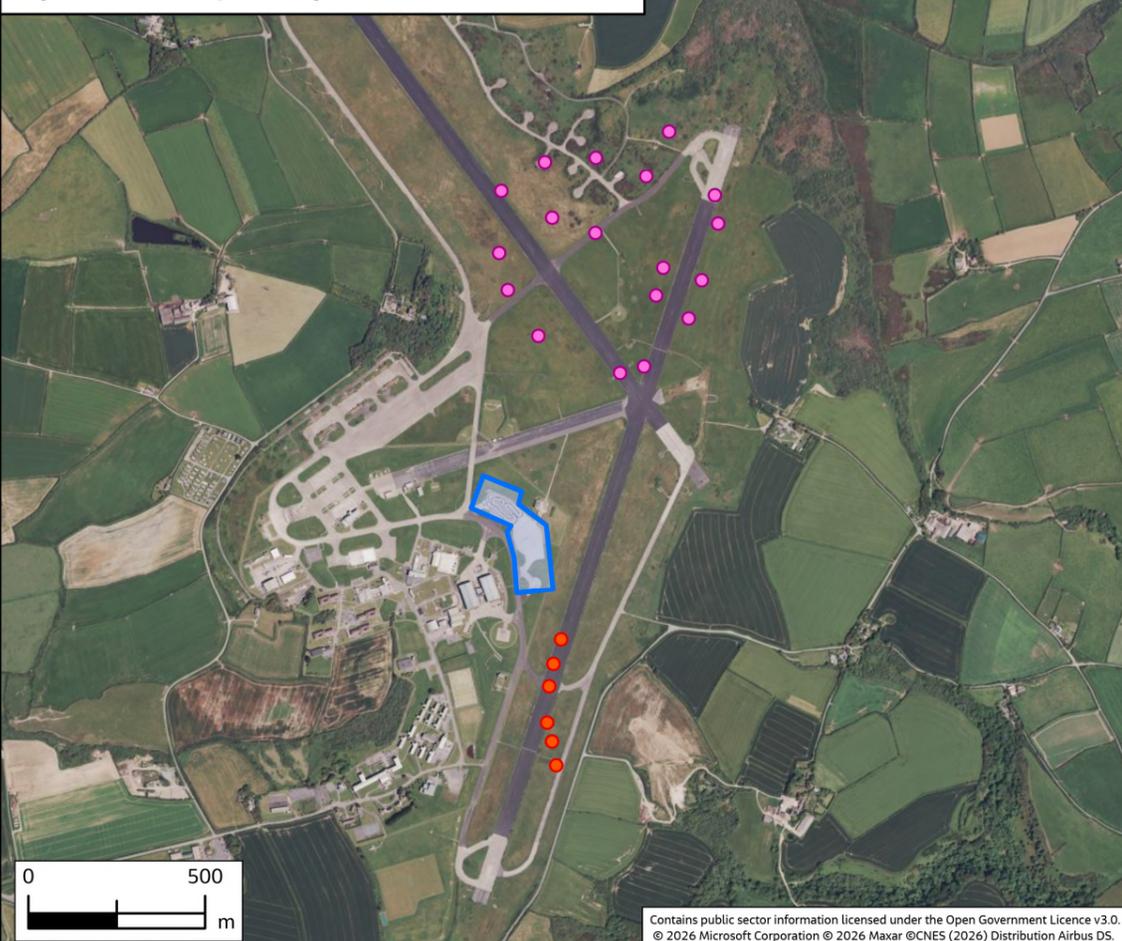
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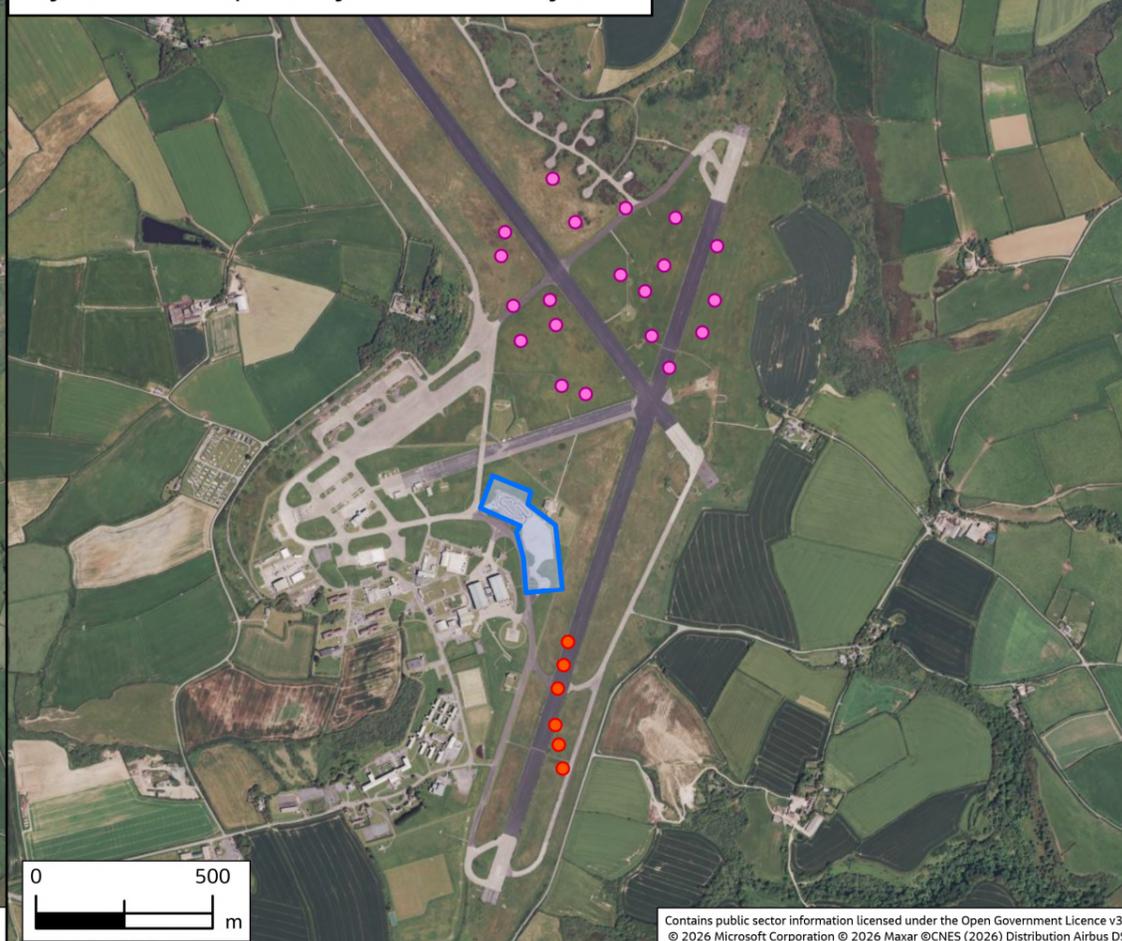
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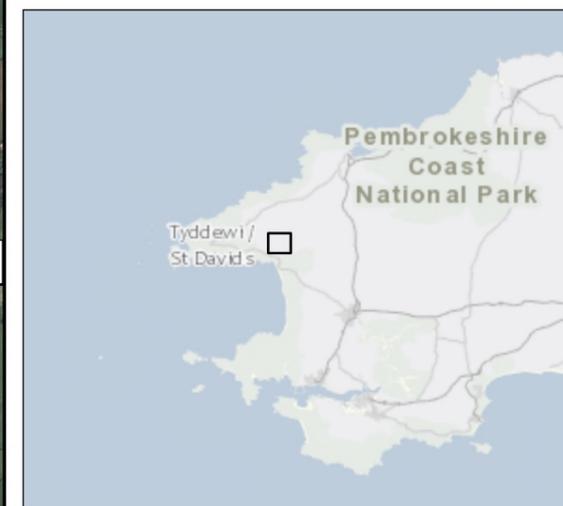


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FIGURE 3

Legend

- Ops Areas
- Rx Antenna
- Tx Antenna



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Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Jacobs

Client
 Ministry of Defence

Project
 Project DARC - Cawdor Barracks

Drawing Title
 Conceptual Layout Plans

Drawing Status
 INITIAL ISSUE

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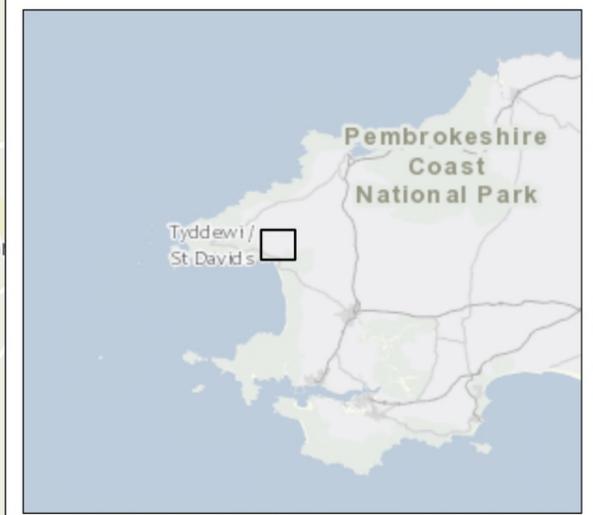
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FIGURE 4

- Legend**
- Application Boundary
 - Ownership Boundary
 - Proposed Layout
 - Proposed Fences
 - Existing Buildings
 - Hard Surfaces (Existing and Proposed)
 - Potential Fungi Grassland Receptor Area
 - Existing Lower Quality Fungi Grassland to be Enhanced Through Management
 - Habitat Enhancement Area to Include Scrub Management and Creation of Reptile Hibernaculum
 - Target Areas for Proposed Tree Planting



PO1	FEB 26	Draft for Pre-Application Consultation	CS	LS	DD	KW
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Jacobs

Client: Ministry of Defence

Project: Project DARC - Cawdor Barracks

Drawing Title: Landscape and Ecology Proposals Plan

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