



Ministry
of Defence

Design and Access Statement

Deep Space Advanced Radar Capability –
Radar Facility at Cawdor Barracks,
Pembrokeshire, Wales

Contents

- 1.0 Introduction 2
- 2.0 The DARC Project..... 5
 - 2.1 The need for the Deep Space Advanced Radar Capability (DARC) 5
 - 2.2 What is DARC? 6
 - 2.3 How does it work? 7
- 3.0 Site and Context Analysis..... 8
 - 3.1 Surrounding Area..... 9
 - 3.2 The Application Site..... 11
 - 3.3 Flood Risk 12
 - 3.4 Local Heritage 13
- 4.0 Site Opportunities and Considerations 14
- 5.0 Design Development 16
- 6.0 Proposed Development..... 23
 - 6.1 Design Policy 25
- 7.0 Proposal Components..... 27
- 8.0 Community Safety 32
- 9.0 Access and Movement 34
- 10.0 Sustainability and The Environment 38
- 11.0 Conclusion 40

1.0 Introduction

This Design and Access Statement has been prepared in support of an application for full planning permission for the proposed Deep-space Advanced Radar Capability (“DARC”) project located at Cawdor Barracks, Pembrokeshire. The proposal consists of several individual elements across the application area, namely the construction and installation of radar antennas, support buildings, auxiliary power compound, site security, infrastructure, landscaping and associated ancillary works.

This Design and Access Statement (DAS) has been prepared to accompany and support the planning application. It explains the vision, principles and concepts that have been applied to the development alongside explaining why the proposed development is a suitable response to the Site and its context.

The Site is located on the disused runway area at Cawdor Barracks, to the north of Penycwm within the County of Pembrokeshire and comprises an area of approximately 188.99 ha of the wider Cawdor Barracks site (approximately 300 ha).

The A487 is located to the south of the Barracks, providing access to several surrounding roads and towns, as well as the nearest city of St David’s. The Barracks is almost wholly surrounded by mixed (pasture and arable) agricultural land. The main uses abutting the Barracks is a small industrial estate (Brawdy Business Park - located at the southern, main entrance to the Barracks), a caravan park (Park Hall Village) located on the western flank, with a number of homes and holiday-lets dispersed around the surrounding area.

To deliver the proposed facility the proposal includes the following aspects:

- Six Transmit radar antennas and associated infrastructure;
- Twenty-one Receive radar antennas and associated infrastructure;
- Radar antenna operations area, which will incorporate:
 - An auxiliary power compound and fuel storage tanks;
 - System spares building;

- Operations area; and
- Site-specific sub-station
- New highway access (including secondary emergency access point) and associated security infrastructure and buildings
- Security fencing
- Ecological / Structured Planting and drainage works
- Extinguishment of the isolated public right of way

Whilst the design of the project is guided by its technical requirements and function, effort has been made to site the proposed equipment and buildings in a way which minimises the potential for impact upon the wider area. This Design and Access Statement provides commentary on the approach taken to the design aspects of the project, and is to be read alongside the suite of documents submitted in support of the planning application including the Environmental Statement and the Planning Statement which provide technical and detailed commentary on technical and policy matters.

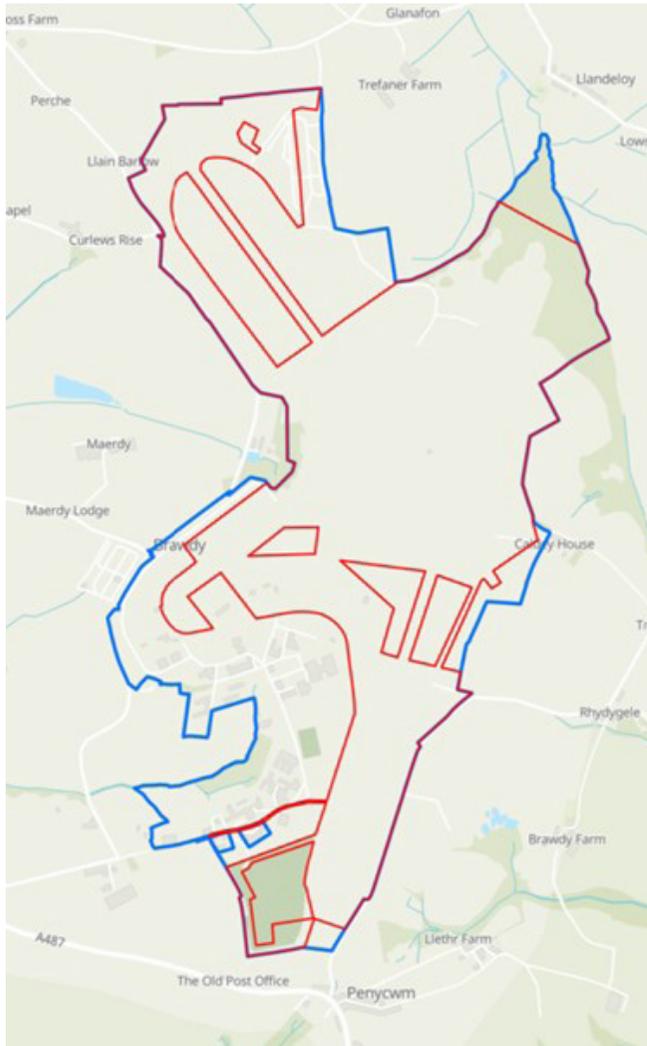


Figure 1: DARC Planning application boundary (red) and wider Cawdor Barracks boundary (blue)



Figure 2: DARC application area, Cawdor Barracks



Figure 3: DARC application area, Cawdor Barracks



Figure 4: DARC application area, Cawdor Barracks

2.0 The DARC Project

2.1 The need for the Deep Space Advanced Radar Capability (DARC)

Satellites and their space-based services play a crucial role in our everyday lives, underpinning the modern economy and delivering essential services such as satellite navigation (GPS), and Position, Navigation & Timing (PNT) systems used for financial transactions, the national distribution of food and fuel, emergency-services coordination and national security. To safeguard these vital services, it is important to maintain a clear understanding of activities occurring in space.

Currently, it is estimated that more than 1.2 million objects exceeding 1 centimetre in size orbit the Earth, in addition to millions of smaller items including space debris. Among these, there are over 40,000 larger objects with diameters greater than 10 centimetres, of which more than 12,000 are active satellites. These space-borne assets are responsible for providing a range of global services, such as communications, navigation, timing, Earth observation and climate monitoring.

While alternative methods like telescopes can be used to identify space objects, their effectiveness is limited by factors such as weather conditions. In contrast, radar systems are capable of operating continuously, day and night, regardless of the weather. However, existing global radar infrastructure is restricted in terms of range. For example, the UK's space radar facility at RAF Fylingdales can only detect objects located up to 4,828 kilometres away. This capability includes monitoring objects in Low Earth Orbit (LEO), at altitudes up to 2,000 kilometres, including satellites that provide commercial communications—including internet, television, radio etc. However, the majority of critical, strategic satellite services are delivered from Geostationary/ Geosynchronous Earth Orbit (GEO) at an altitude of 36,000 kilometres.

The introduction of DARC will significantly enhance the identification and tracking of these critical assets, effectively establishing a space traffic management system that does not exist at present, and requires public sector intervention to produce due to the cost and multi-national location / coordination. Whilst this must therefore be led by Government,

data collected will be made available to the private sector for operational use and research via the UK Space Agency, further strengthening the security and resilience of space-based services and the ability for the regional economy and national space enterprise to develop and thrive.

Without DARC, the UK faces a significant risk of losing access to these vital services, which would have severe consequences for national security, economic stability, and public safety. For context, the economic impact of losing GPS services alone is estimated at £1.422 billion per day, highlighting the scale of potential disruption.

A wider list of proposal benefits is set out within the Planning Statement.

2.2 What is DARC?

The DARC system is a ground-based radar network developed between the UK, US and Australia, integrating three identical radar sites, strategically located at approximately 120 degrees of longitude apart. Albeit the radar antenna technology is well established, by digitally integrating the satellite and debris tracking signals received by each station, these sites would collectively deliver a substantial enhancement to Space Domain Awareness (SDA) for each participating nation. This collaborative approach enables the continuous detection, identification, and tracking of objects in space at much greater altitudes than was previously achievable.

DARC is designed to operate continuously, around the clock and in all weather conditions, providing the capability to track space objects up to and including those in Geostationary Orbit (GEO) at 36,000 kilometres altitude. This continuous global coverage is crucial for the protection and defence of both civil and military space services. By enabling effective space traffic management, DARC significantly bolsters the United Kingdom's ability to safeguard its satellite infrastructure and maintain the security and resilience of space-based services.



Figure 5: DARC Locational Diagram

2.3 How does it work?

To achieve comprehensive global coverage, the DARC system relies on three separate but identical installations, each situated roughly 120 degrees of longitude apart across the globe (Figure 6). These sites operate together as an integrated network. The proposed site will function seamlessly alongside other radar stations located in Australia and the United States, collectively providing a significant boost to space domain awareness. Notably, construction of the Australian facility and the Integrated Radar Operations Centre in the US has completed.

The Deep Space Advanced Radar Capability features a configuration of six Transmit antennas and twenty-one Receive antennas, with the two arrays positioned approximately 0.6 miles apart from each other (Figure 7). The transmitting antennas work in pairs, emitting narrow, low-power beams that intersect at the required altitude to create a detectable signal. Meanwhile, the receiving antennas are electronically interconnected, allowing them to operate as a single, extensive radar dish to capture the returning signals.

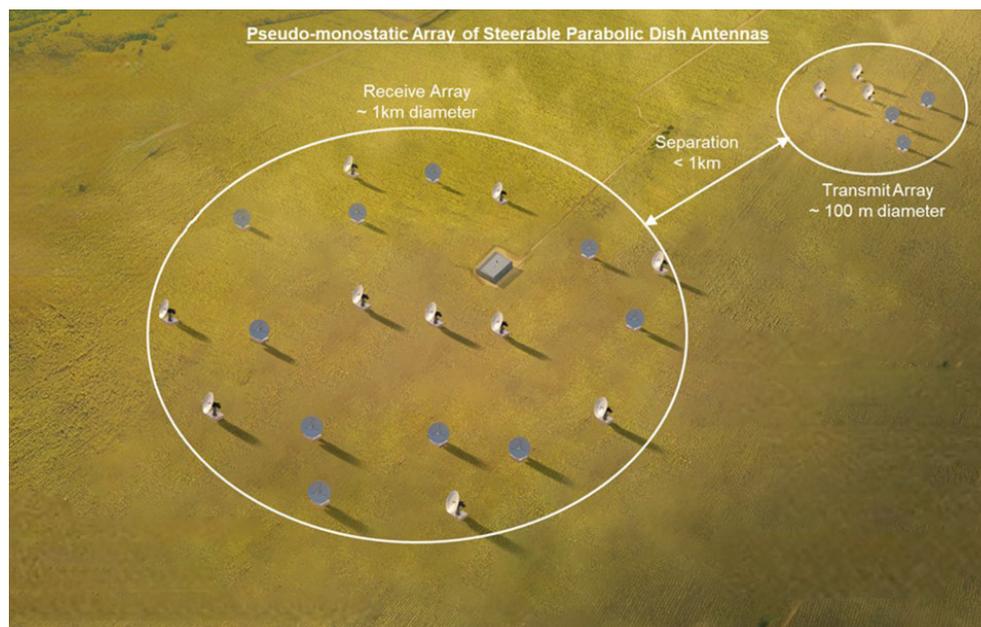


Figure 6: DARC Concept Layout

3.0 Site and Context Analysis

The application Site sits within the wider area of Cawdor Barracks, which currently has the Army's 14th Signal Regiment stationed there. The airfield, where the proposals are located, is disused and the Site therefore benefits from a large area of brownfield land comprising of a series of underutilised areas of hardstanding in the form of runways and taxiways. The Site is not at risk of flooding, nor does it contain any designated heritage assets. Ecological habitats are limited to the areas of grassland and scrub habitat surrounding the runways.

The Site has been selected following the assessment and consideration of several potential locations across the UK before Cawdor Barracks was confirmed as the selected location. Further consideration of alternative locations is detailed within Chapter 4 of the Environmental Statement which is submitted with this application.

The site selection process commenced in 2020, with a 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.

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.

From a desk-based assessment, four of the sites were discounted for technical conflicts with existing operations. The remaining 3 – West Freugh, RAF Fylingdales and Cawdor Barracks – were taken forward for further consideration.

These three sites were surveyed and assessed against criteria such as radar system performance, land availability, and environmental considerations.

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)

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.

3.1 Surrounding Area

Cawdor Barracks is located between the villages of Penycwm, Trefgarn Owen, Llandeloy, Whitchurch and Solva, to the south, east, north and west respectively (Figure 7). The Barracks themselves are situated roughly 2.25km to the northeast of St Brides Bay, the Pembrokeshire Coast National Park is located to the south and east (Figure 8).

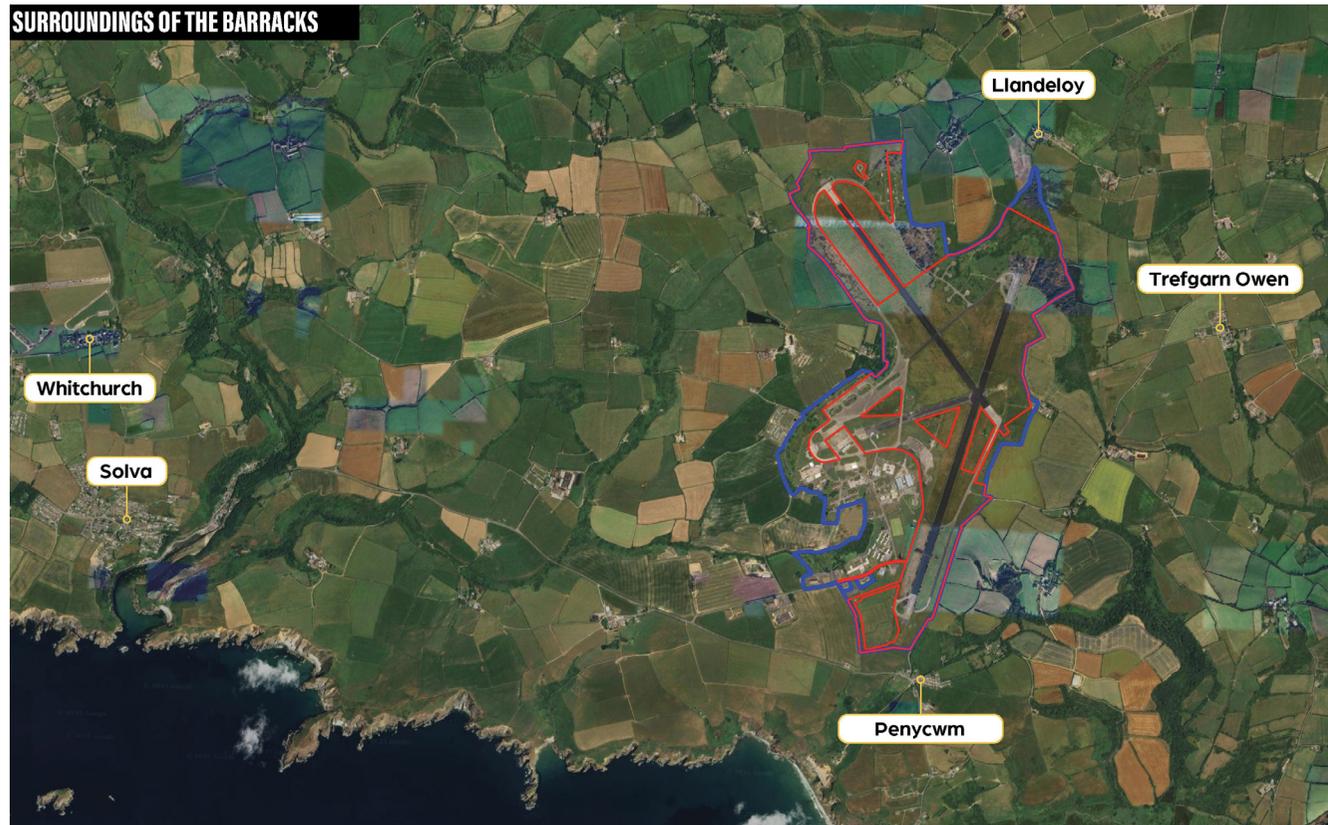


Figure 7: DARC Location

The adjacent Wider Barracks is presently utilised as a military base and includes a series of accommodation blocks, mess halls, married quarters and wider support buildings to support its function.

The surrounding area is predominately rural comprising agricultural farmland on the St David's Peninsula within Pembrokeshire, Wales. The Pembrokeshire Coast National Park and coastline and Newgale Village and Beach lie to the south.

The towns of Haverfordwest and Milford Haven are located roughly 14km and 19km away to the southeast and south, with St Davids and Swansea otherwise being the nearest cities, being circa 10km and 86km away to the west and southeast, respectively. The immediately surrounding hamlets and villages offer little by way of amenities, with most services provided in the nearby city of St Davids with local schools, pubs and small retail stores being present.

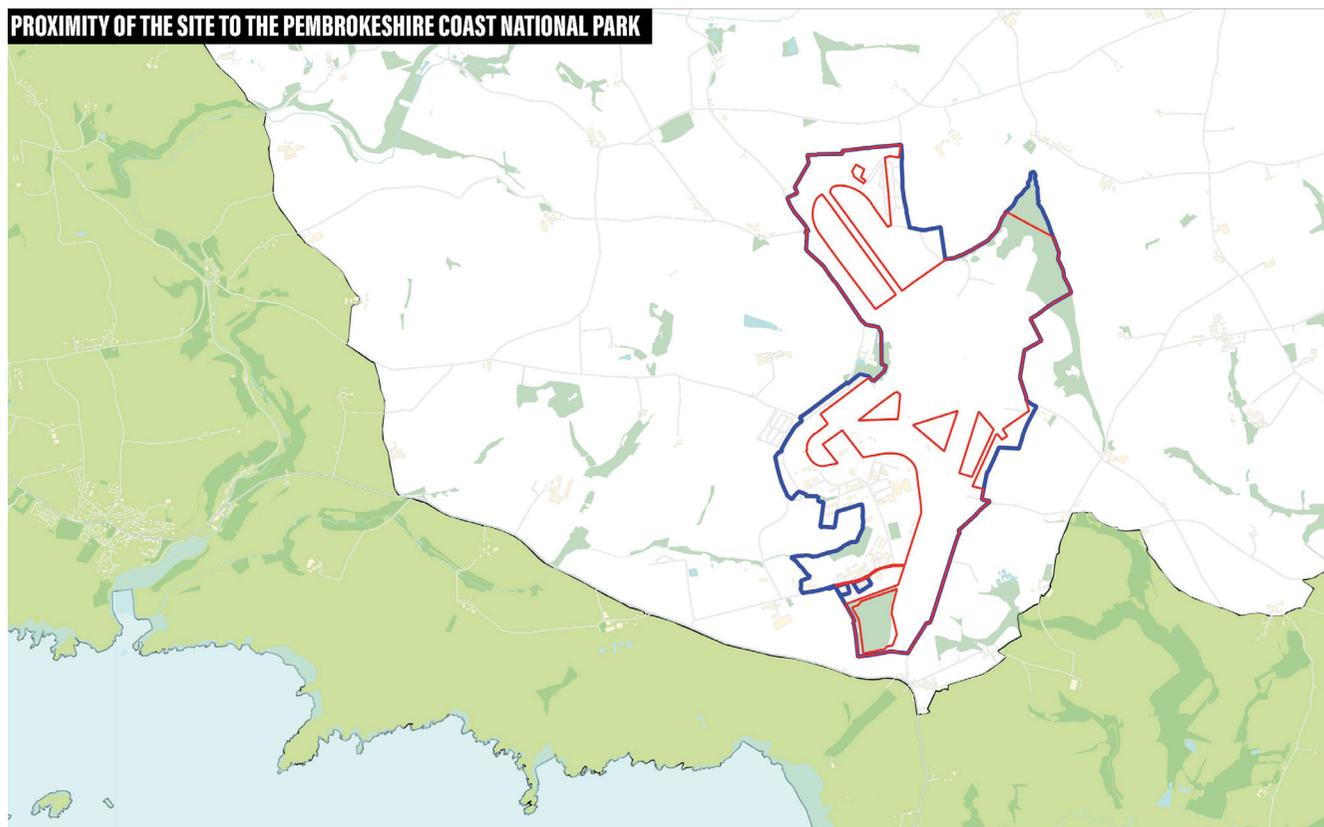


Figure 8: DARC Location in proximity to Pembrokeshire Coast National Park

3.2 The Application Site

The Application Site itself comprises the historic airfield element of the wider Cawdor Barracks. With the entirety of Cawdor Barracks under the ownership of the Ministry of Defence and managed by the Defence Infrastructure Organisation (DIO).

The Site comprises the former airfield of the Royal Air Force (RAF) Brawdy consisting of large areas of hardstanding from the disused runways, taxiways and associated infrastructure. The Site also incorporates scattered decommissioned buildings.

The existing primary vehicular access to the application site is via the main gate to Cawdor Barracks which is accessed from the unclassified road (U3017). The road runs northeast from the A487 which is located to the south of the southern boundary of Cawdor Barracks. Further information on the local road network is provided within Chapter 3: Proposed Development and Chapter 5: Transport and Access.

3.3 Flood Risk

The Site does not lie within an identified fluvial Flood Zone, and the majority of the Site is at very low risk of flooding.

There are small, isolated areas of the Site which are at medium to high risk from surface water flooding. In relation to groundwater flooding there is limited risk of this occurring. The Site is not at risk of flooding from other sources including rivers and or the sea.

Detailed assessment of the wider flood risk considerations is undertaken in Chapter 12 of the EIA (Water Environment, Flood Risk and Drainage).

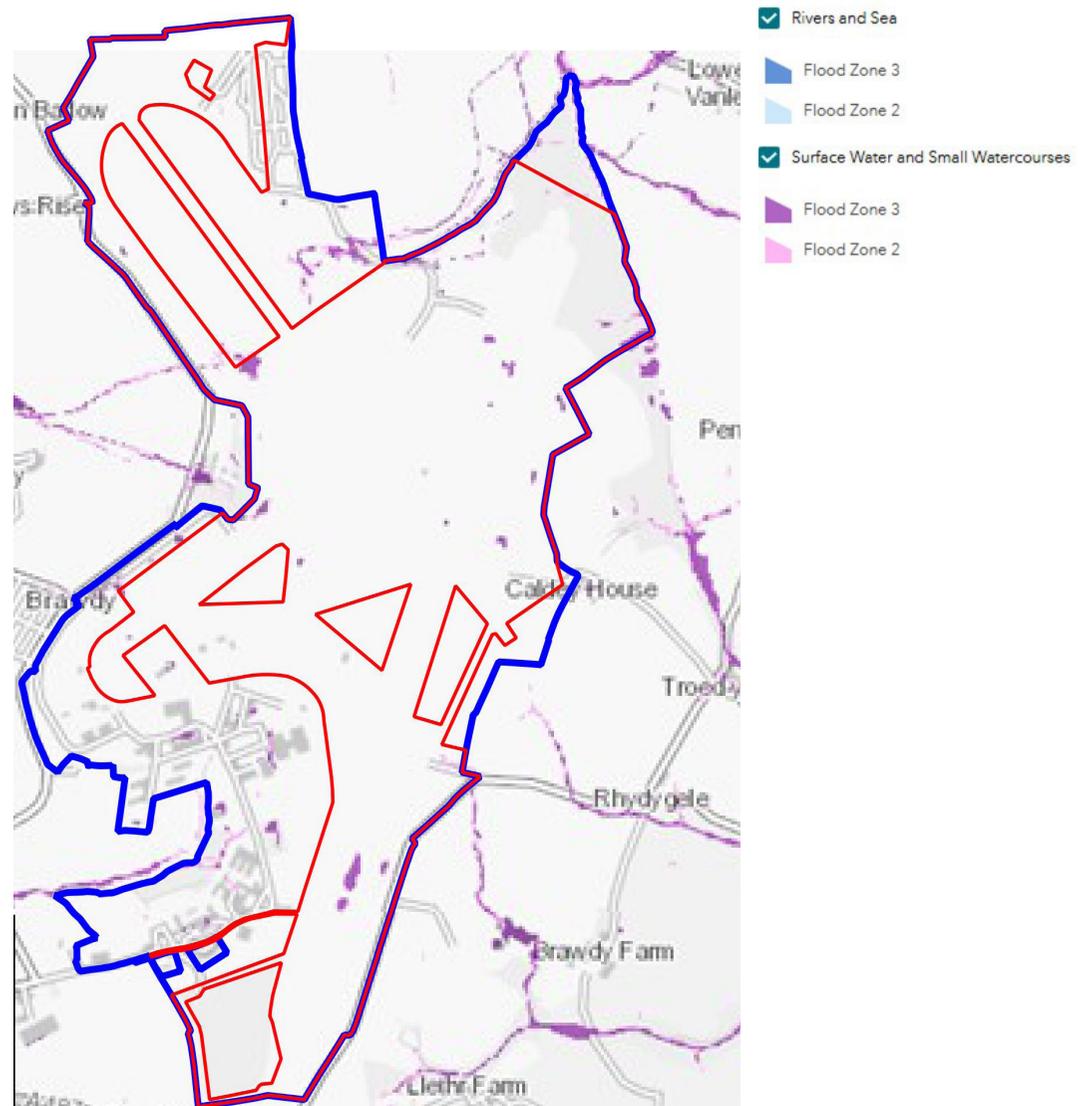


Figure 9: Flood Map

3.4 Local Heritage

The Site itself does not fall within a conservation area nor comprise any heritage listed assets; however, several designated heritage assets are located within proximity of the application site. These include but are not limited to:

1. Listed assets of Rickeston Hall in Brawdy directly adjacent to the west of the Site, the assets range between Grade II and Grade II*;
2. Grade II listed Church of Saint Teilo in Llandeloy to the north of the Site;
3. Grade II* listed Church of St David to the east located within Brawdy Farm; and
4. Grade II listed assets in respect of Llethr Farm located just outside of Penycwm.

These assets all benefit from extensive screening in the form of mature landscaping and whilst the listed structures can be found in the nearby vicinity, the Site is not visible from the setting of these heritage assets. Consideration and assessment of wider heritage assets as well as appropriate mitigation factored into the proposal is undertaken in Chapter 10 of the EIA (Archaeology and Built Heritage).

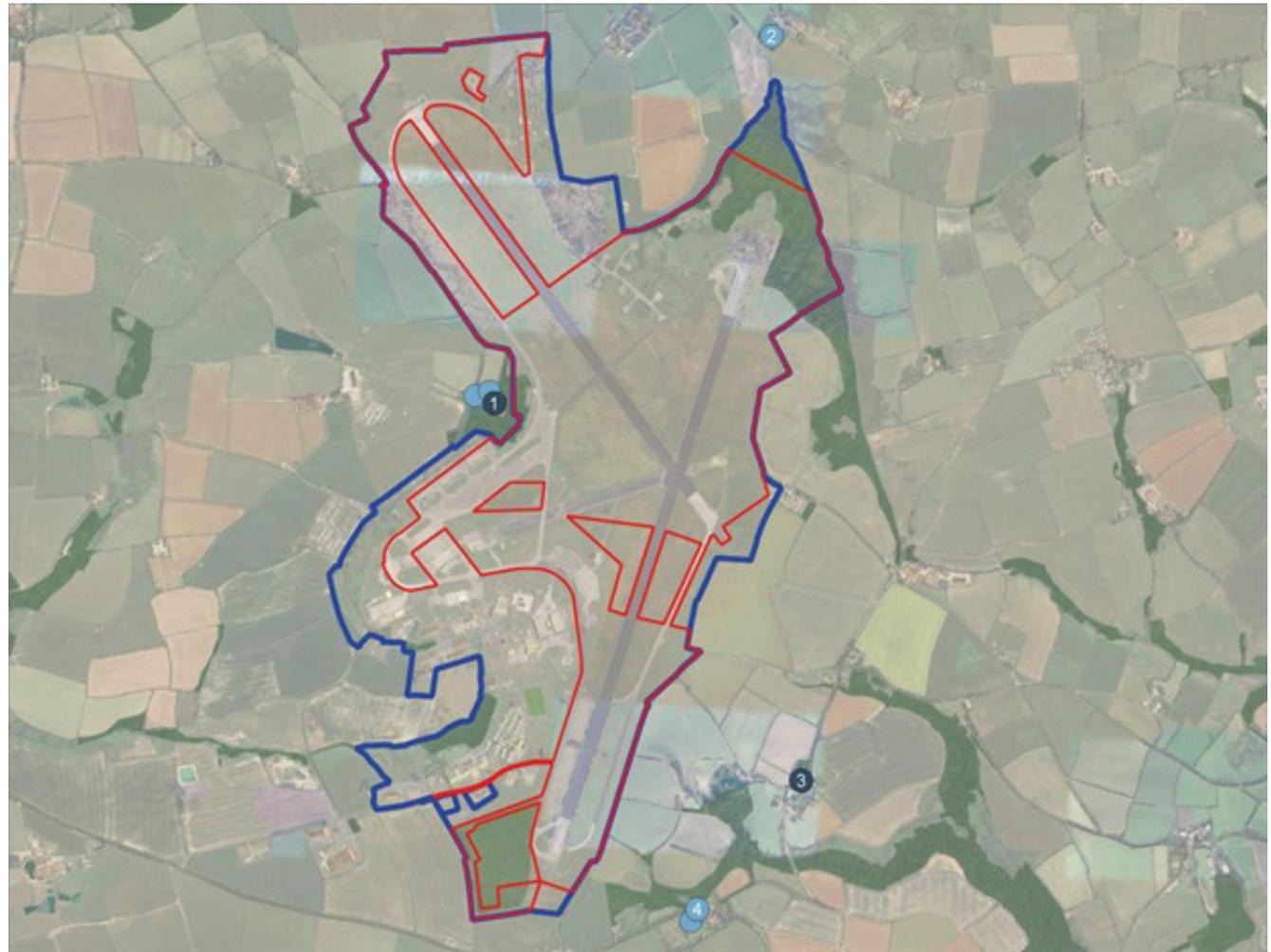


Figure 10: Localised Heritage Asset Plan

4.0 Site Opportunities and Considerations

When designing the proposed development, the applicant has taken into account the opportunities and considerations of the Site, as outlined on Figure 11 below. These are discussed in further detail within the Planning Statement and the Environmental Statement Chapters 3 (Proposed Development) and 4 (Alternatives and Design), and the key matters can be summarised as follows

Opportunities:

- Ecological and Landscape enhancements to the edges of the Site;
- Utilises the existing hardstanding in place from the disused airfield use;
- Sufficient size to physically accommodate the scheme;
- Given the existing military nature of the wider Site, the location is well suited for the proposal in terms of operational and security considerations;
- No onsite statutory environmental designations; and
- The existing site boundary vegetation should be retained, reinforced and enhanced to soften views towards the proposed built form.

Considerations:

- Number of heritage designated assets in proximity of the boundary of the Site;
- Identification of fungi habitat which meets the criteria for irreplaceable habitat under Planning Policy Wales as it is species-rich both botanically and from a fungal assemblage perspective;
- Onsite priority habitats of lowland heath and wet woodland which include to notable plant species.
- Seeking to avoid conflict with the extant military operations on the Wider Site;
- Proximity to the Pembrokeshire Coast National Park boundary; and
- Visibility of the Site from the surrounding area.

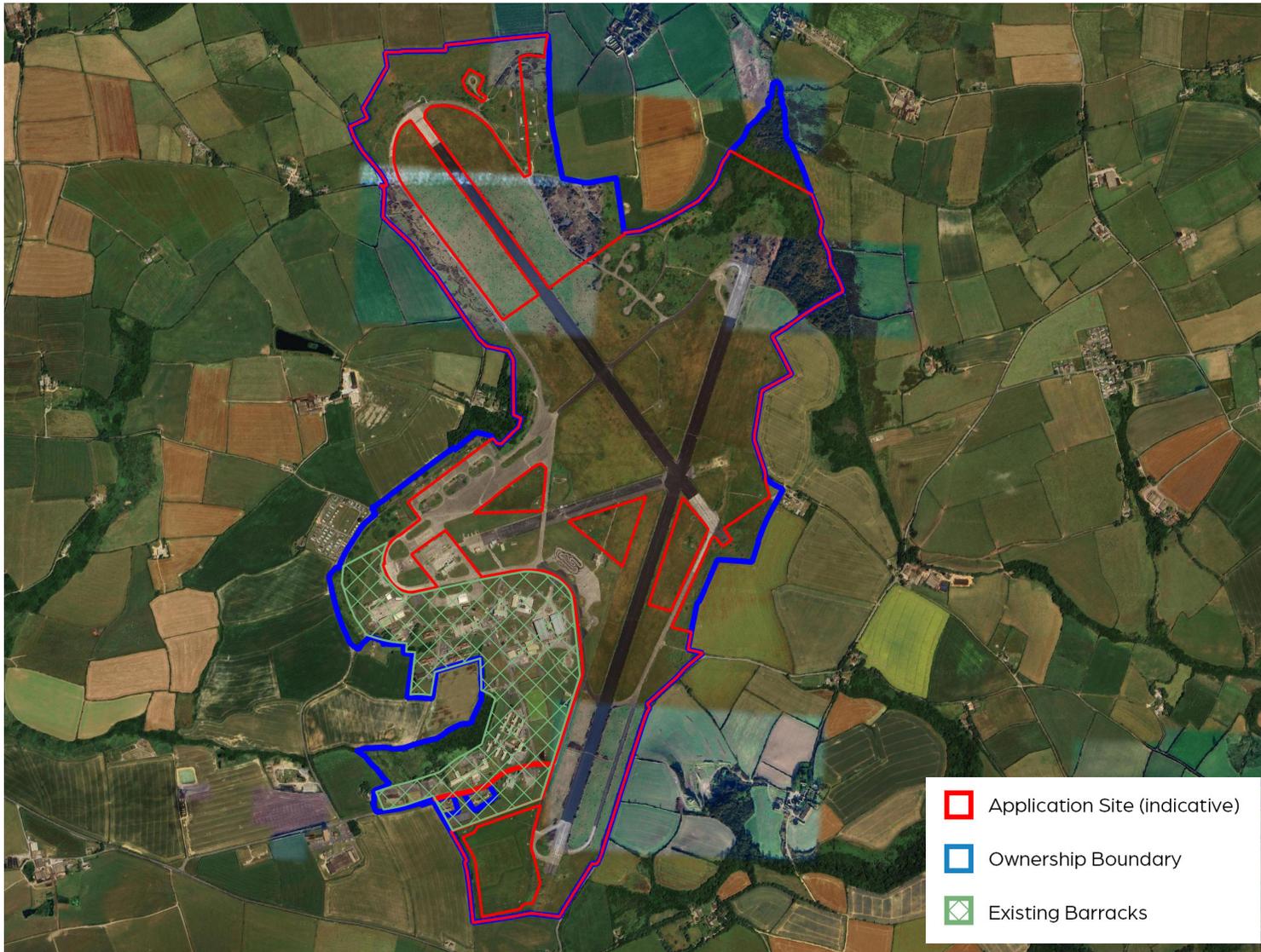


Figure 11: Opportunities and Constraints Plan

5.0 Design Development

The design of the development has been progressed since 2023, with four different iterations of the scheme used to develop the detail required to submit a planning application. These have been subject to adjustment over time as a result of enhanced technical and survey data that has been attained over the course of the preparation of the application as well as comments from the local community. Further detail of the alternatives and design evolution are provided within Chapter 4 of the Environmental Statement on Alternatives and Design and Chapter 9 on Landscape and Visual Impact.

Conceptual Layout Plan August 2023

In August 2023 the conceptual layout of the scheme utilised the whole of the airfield, locating the Transmit (Tx) Array 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 (Figure 12, 13 and 14). This utilised both areas of existing hardstanding as well as delivering new paving, however the approach was altered to take advantage of existing runway pavement for both cost savings and environmental reasons such as avoiding fungi habitat.

Other options for the location of the auxiliary power compound adjacent to the new substation were also considered, but was altered due to its proximity to other occupied

facilities on the Barracks. The preferred location, adjacent to the Ops area, resulted in security benefits for the scheme as well as reducing any conflicts with other operations. A sheltered building to reduce generator noise pollution, rather than ground-mounted units as featured previously, was included in this conceptual layout plan.

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. The demolition of skeet shooting buildings was avoided by moving one of the Rx antennas slightly.



Figures 12: Alternative Layout Images



Figures 13: Alternative Layout Images

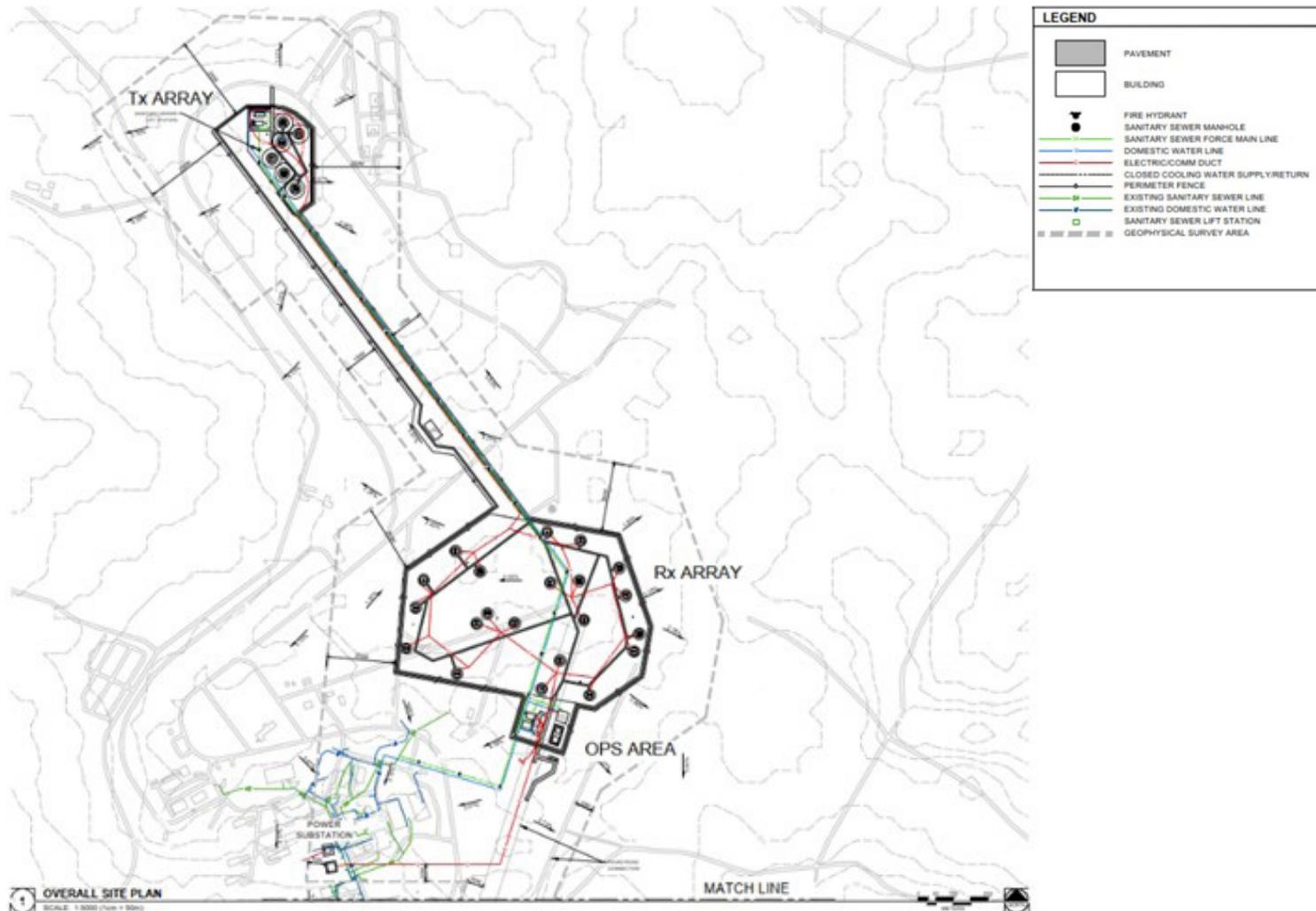


Figure 14: Conceptual Layout Plan August 2023

Conceptual Layout Plan February 2024

Technical testing of the scheme identified that the Tx Array could not be sited north of the Rx Array due to the interference. This resulted in an update to the scheme that moved the Tx Array to the south side of the airfield and also in an arrangement that optimised operational requirements and the use of existing hardstanding to reduce the impact on fungi grassland.

This necessitated a new location for the Ops buildings which were moved north of the Tx Array and making greater utilisation of existing hardstanding. This is reflected in Figure 15.

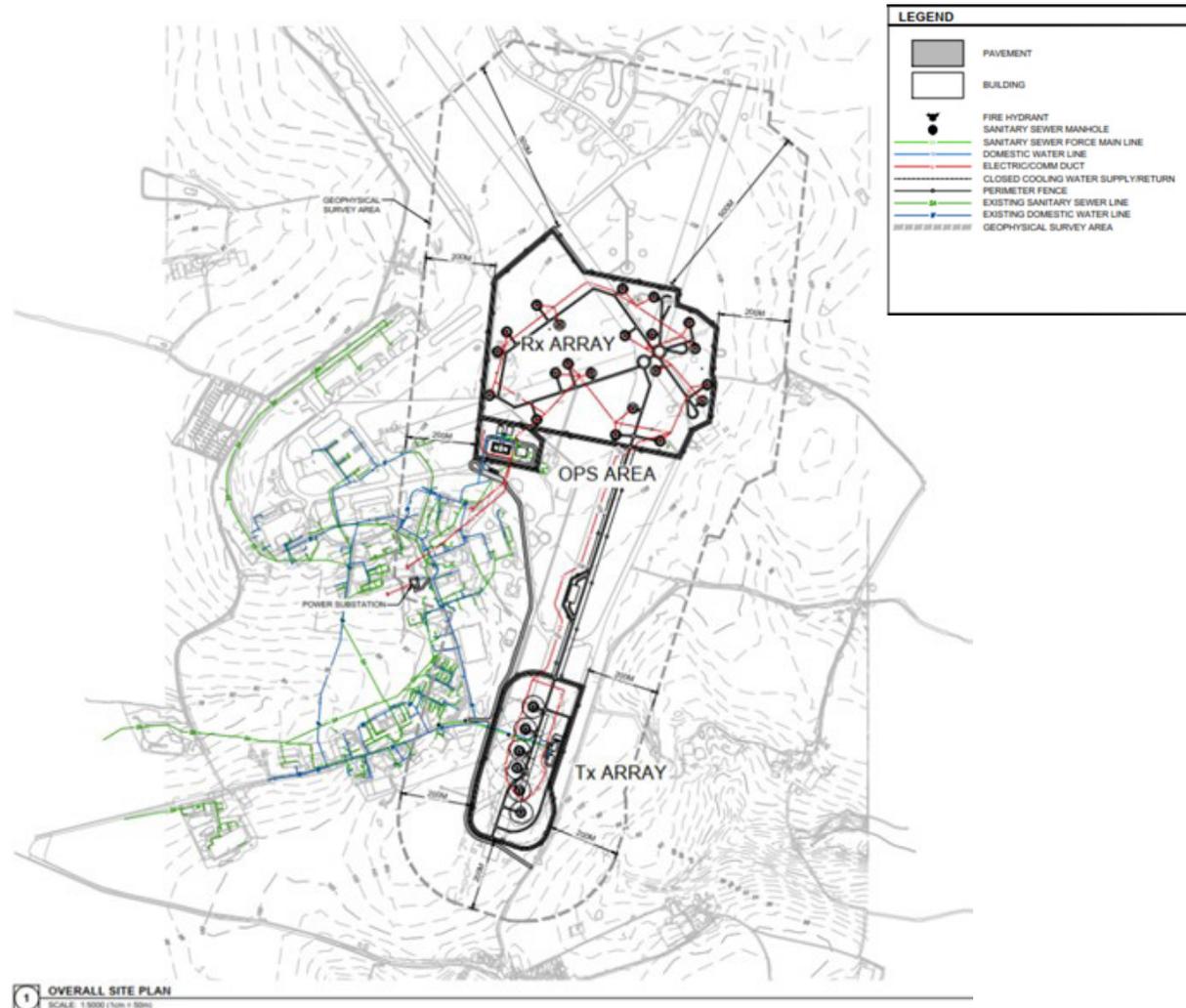


Figure 15: Conceptual Layout Plan February 2024

Conceptual Layout Plan December 2024

The issue of landscape and visual impact has been a key consideration throughout the project, and following feedback from the local community at the September 2024 non-statutory consultation event, the design team moved the array 310m away from the southern boundary of the Site. This increases distance from sensitive receptors located to the south and to assist with minimising the visual appearance of the installation (Figure 16)

The proposed built form originally consisted of the creation of new facilities and hardstanding on the outside of the existing runway; this was amended to maximise use of the existing hardstanding and minimise the ecological impact of the proposals. The proposed masterplan therefore has sought to maximise the extent of existing hardstanding incorporated within the proposal.



Figure 16: Conceptual Layout Plan December 2024

Conceptual Layout Plan January 2025

Further technical adjustments to the scheme were undertaken in January 2025, requiring an adjustment to the Rx Array which widened the arrangement and sited it circa 60m to the south of the previous location. This scheme continued to utilise the layout principles in the December 2024 iteration of the scheme.

6.0 Proposed Development

The proposed radar array and its associated supporting facilities have been carefully designed to take incorporate stakeholder feedback, environmental assessment findings, and relevant planning policy considerations throughout the process. These matters have all been balanced against the highly specific operational and technical constraints which inherently limit the extent of feasible design alterations.

Whilst the design has been refined wherever possible, the overall form and appearance of the proposed buildings must remain functionally driven. As a result, the development adopts an architectural approach that is consistent with, and complementary to, the established military character of the wider built form on the Site.

The antennas themselves are split between six Transmit and twenty-one Receive arrays, each grouping is laid out in a pattern which is specifically engineered to minimize self-shadowing or blocking of another antenna's line of sight within the array, when looking in any given direction. The Receive array is set within the northern area of the Site, and the Transmit array is set in the southern area of the Site, these are separated by the supporting buildings and plant in the Operational Area that sits in the middle of the Site with access obtained to the east by utilising the arrangements for crash gate 21 to connect to the adjacent unnamed public highway (C3010).

The antennas will consist of large grey pieces of advanced electromechanical equipment, which will have the greatest reach and offer the most detail of any ground-based radar.

The Transmit array must be at least 500 metres away from the Receive array to prevent self-interference, and it must be located to the south of the Receive array, again to ensure that self-interference is minimised insofar as possible. Each antenna must have a service access road for maintenance, and at least one pathway from the temporary integration shelter to the antenna foundation which can pass a fully assembled 15m dish without collision, with the Site secured through the incorporation of a security fence.

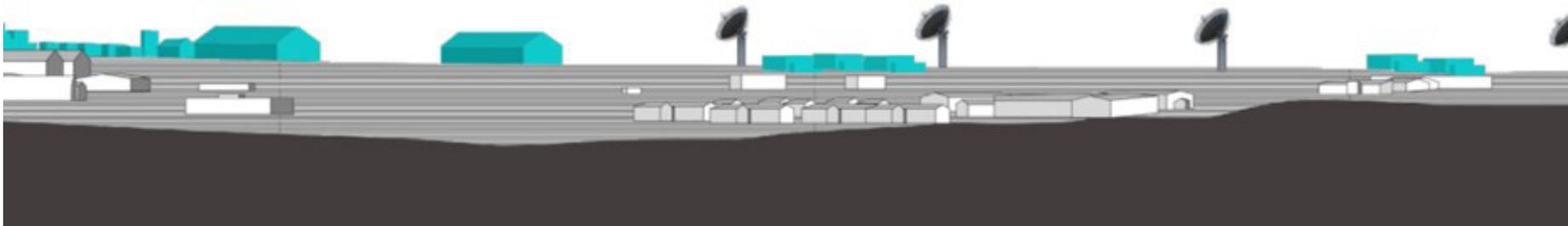


Figure 17: Site Section

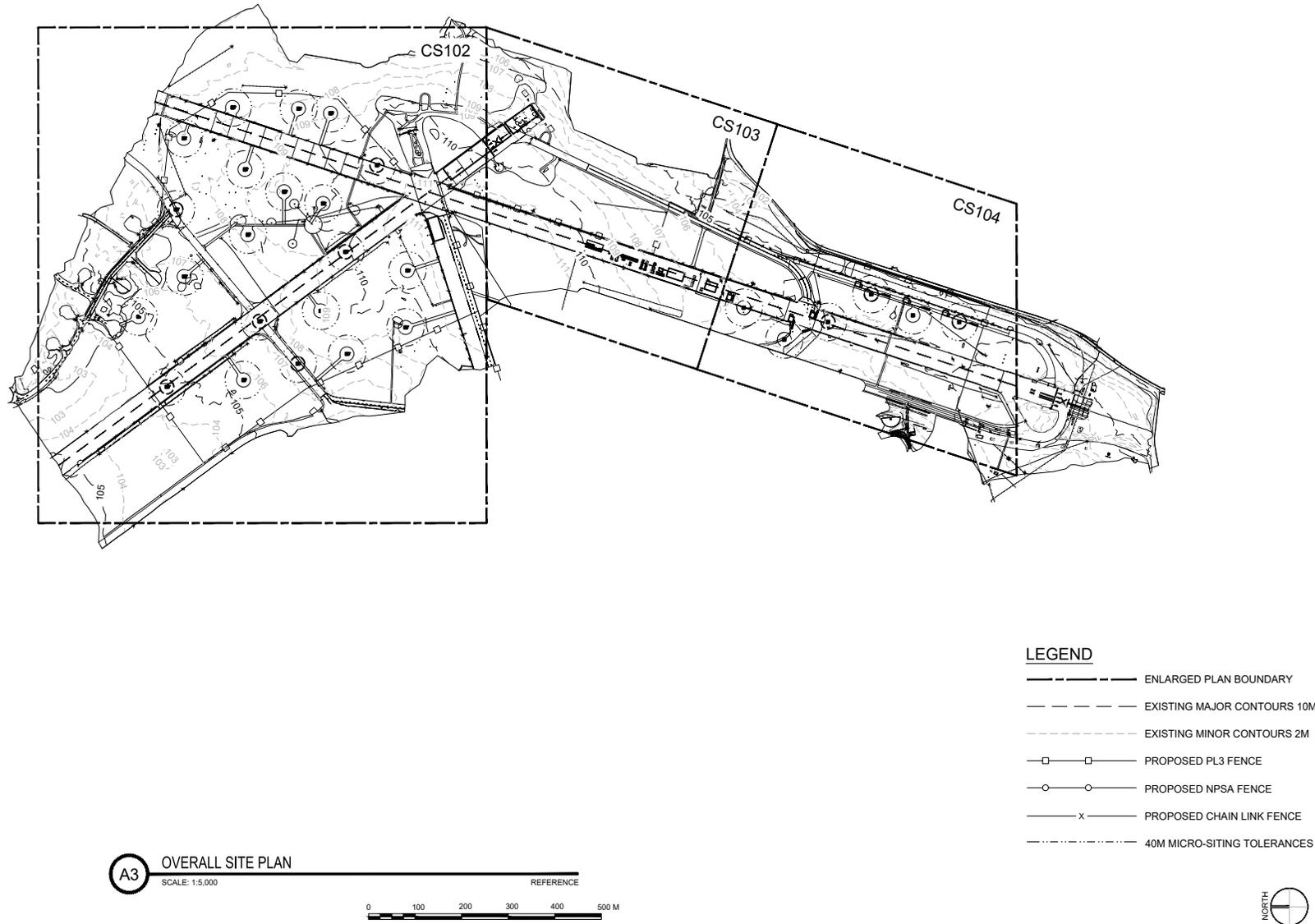


Figure 18: Site Layout Drawing Extract

At this stage, each of the antenna is subject to a micro-siting allowance to allow for detailed design and site investigations to take place and inform the final siting of the equipment. This is an established approach often used for wind-turbine scheme which face similar design issues and has been allowed for in the methodology of the Environmental Impact Assessment for the scheme.

The arrays are supported by the Radar Operations Building, which is situated within the designated Operations Area of the Site. Several ancillary buildings are also proposed, each serving essential functions required to ensure the smooth, reliable and continuous operation of the facility. The form and appearance of all proposed buildings have been designed to align with, and be sympathetic to, the established military character of the wider site.

6.1 Design Policy

Pembrokeshire County Council Local Plan Policy GN.2 (Sustainable Design) provides a criteria that is to be used in the assessment of proposals, many of which relate to publicly accessible urban residential and commercial development projects. The full criteria are provided below followed by an assessment of the proposal, noting the limited aspects where this Policy is relevant and applicable to this form of development:

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.
7. It contributes to delivering well designed outdoor space with good linkages to adjoining streets, spaces, and other green infrastructure.

Points 4-7 of Policy GN.2 are not relevant to this application as such are not assessed further. The specific local context for this site found in its military use which is reflected in the existing buildings on the Barracks site. The proposed ancillary support buildings have been designed in a manner that responds to the military context, both in terms of design and materiality. The Proposed Development will respond to the military character of the Site, wider Barracks and the operational/technical requirements in terms of form, function and design.

Proposed Development

The layout, scale, form, siting, massing and height of the buildings and equipment are governed by the technical requirements of the installation. Where possible, buildings have been sited in locations which minimise their visual appearance, balancing this against the need to locate buildings on the existing hardstanding. The dish arrays are located in a manner which meets the technical requirements of the system whilst again maximising the use of existing hardstanding, and the location has been moved by c300m in response to comments from the public on visual impact.

The proposals have been designed in a manner that responds positively to climate change and resource efficiency. The proposed development creates a functional and accessible environment within the confines of this specific form of development. Safety is an inherent feature of the proposals and as a secure site, the general community will not be able to access the Proposed Development. Notwithstanding this, the proposal is ICNIRP compliant, the standard by which technology is considered acceptable under the town planning process.

Alongside Local Policy, TAN 12: Design sets the national design objectives which comprises character, community safety, environmental sustainability, movement and access. These topics have been considered within the Planning Statement prepared by Montagu Evans and within the relevant sections of this Design Access Statement.

As such it is considered that the proposals are compliant with the relevant sections of GN.2 and TAN 12 in respect of design.

7.0 Proposal Components

The proposal components have been located in consideration with operational and technical constraints. Antennas are placed in a specific pattern to minimise obscuring their own views. Buildings are placed in locations where they do not require demolition of existing structures, minimise visual impact and utilise areas of existing hardstanding to minimise ecological impact. Similarly, internal roads and access pathways are located on existing hardstanding to minimise impact whilst maintaining operational requirements.

The proposal can be broadly categorised under the following three components:

- Operations Area
- Transmit and Receive Arrays
- Temporary Integration Shelter

The Operations Area

The Operations Area is centrally located between the Receive Array, and the Transmit Array and adjacent to access points from the highway. The centralised Operations Area contains the Radar Operations Building and the Radar Spares Building which will be the subject of regular occupation in relation to the

proposal. They will consist of insulated metal wall panels and gable roofs. The intention is for the buildings material palettes to be consistent with the barracks, being a non-reflective mid-tone grey which aligns with the existing buildings.

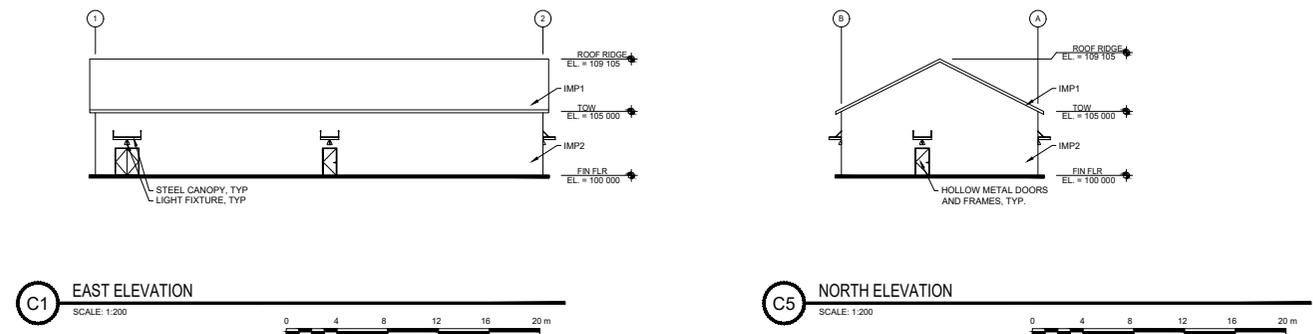


Figure 19: Operations Building Drawing Extract

Proposal Components

The proposed built form will be of an industrial and military nature aligned with the wider Cawdor Barracks, with buildings designed to fulfil their function. Proposed buildings will comprise functional equipment, buildings for spare parts or plant. Due to the nature of the built form, the design will utilise insulated metal panelling or prefabricated metal enclosures. The external finishes are intended to ensure the development is durable and requires minimal ongoing maintenance. As with the main buildings, the wider structures will be clad in a non-reflective, mid-tone grey finish that aligns with the appearance of the existing buildings.

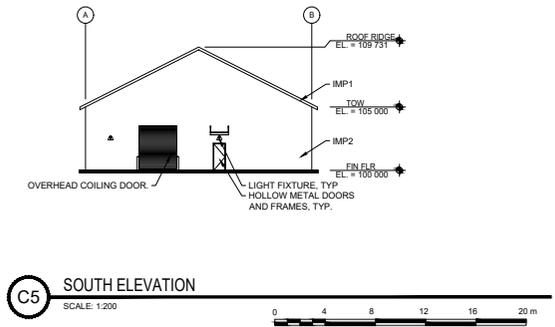
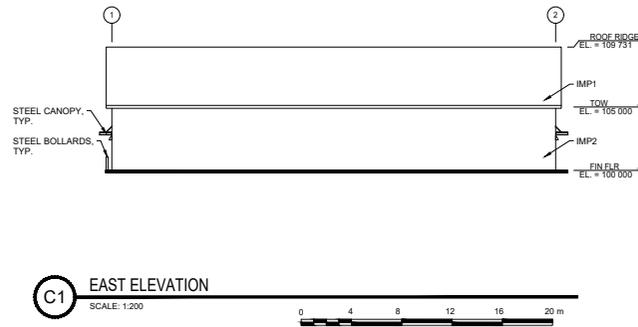


Figure 20: Radar Spares Building Drawing Extract

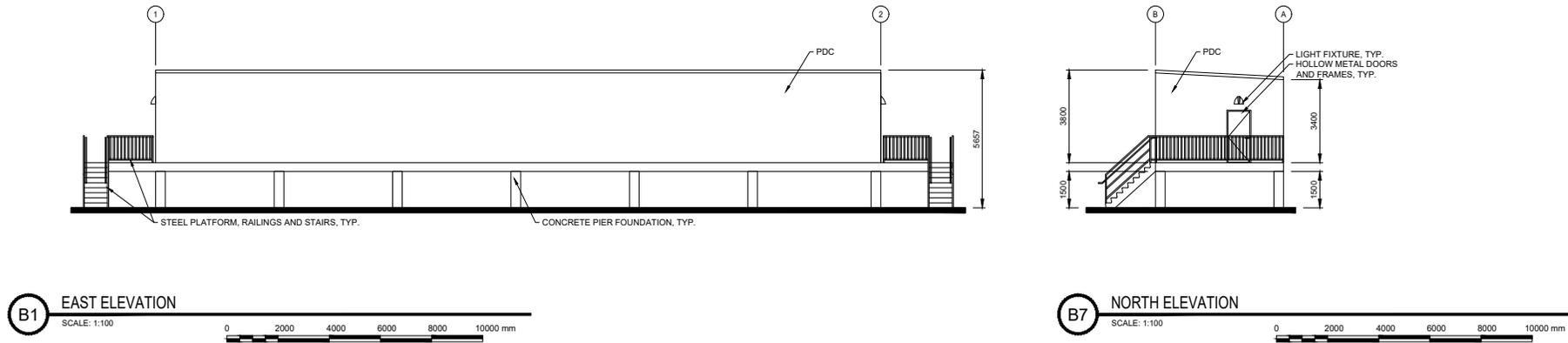


Figure 21: Switch Room Building Drawing Extract

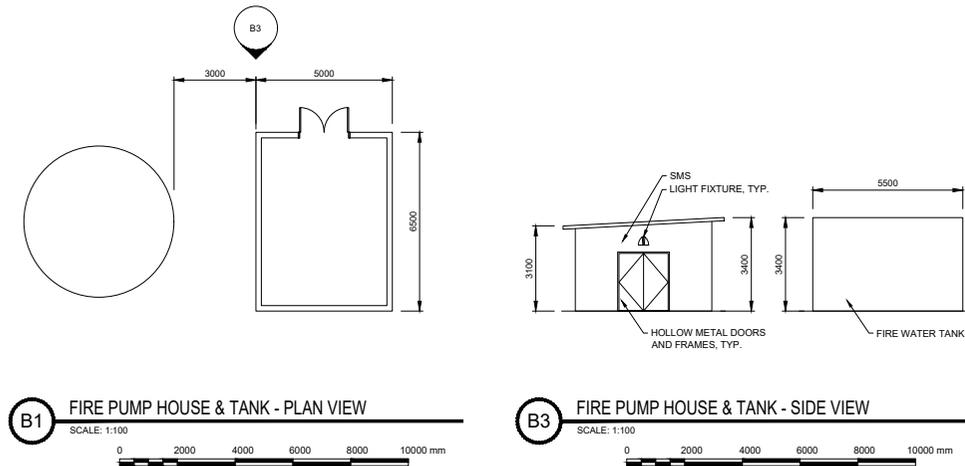


Figure 22: Fire Pump House & Tank Drawing Extract

The Transmit and Receive Arrays

The antennas will comprise large pieces of electromechanical equipment, the dishes will re-orient to ensure optimal coverage and as part of tracking, as such these movements will take place throughout day and night, daily every day of the year.

The Receive Array comprises 21 Receive antennas, each with a 15.6m dish. The antennas are laid out in a randomised pattern, provided by the ARRAY SYSTEM program, which was developed to maximise the number of antennas with clear sight lines in any given direction.

Each array will consist of a 15.6 m diameter dish with a maximum total height of up to 20.5 m. For robustness the LVIA has assessed an envelope of up to 22.5m. The Transmit Array has 6 Transmit antennas, each with the same specifications of height, foundations, internal roads and layout approach as the Receive Array.

The Transmit Array comprises 6 Transmit antennas, each with a 15.6m dish. The antennas are laid out in a pattern, provided by the ARRAY SYSTEM program, which was optimized specifically for the size and orientation of this potential site. The pattern was developed to maximize the number of antennas with clear sight lines in any given direction. Each radar antenna and associated new infrastructure is set within a 40 metre micro-siting tolerance to ensure appropriate flexibility in the final placement of the arrays, which can then be secured by a planning condition which will need to be discharged prior to the installation of the equipment.

Micro-siting has been considered as part of the proposal assessment. This approach, commonly used in the delivery of infrastructure such as wind turbines, allows for the refinement of Environmental Impact Assessment impacts and enables detailed design work and ground investigations to be undertaken post-planning.

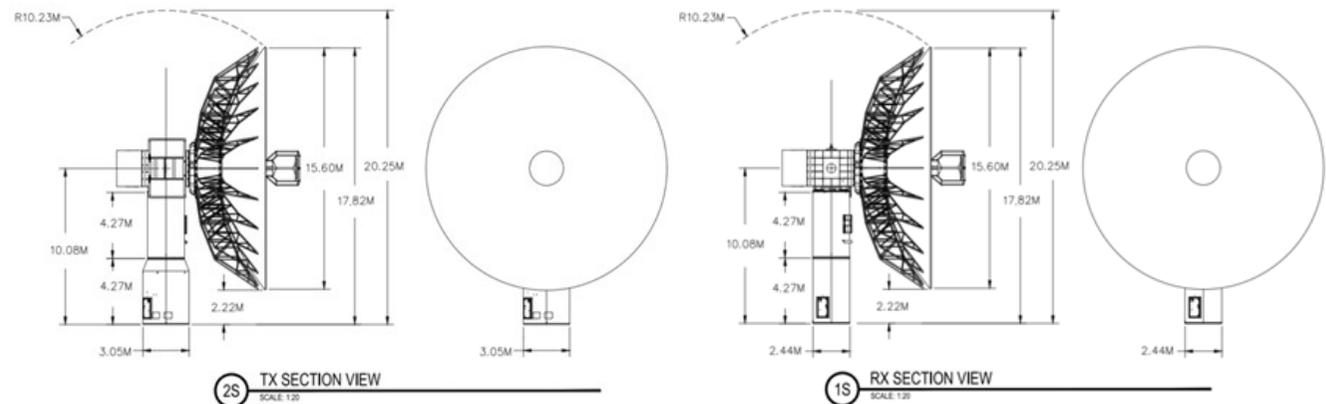
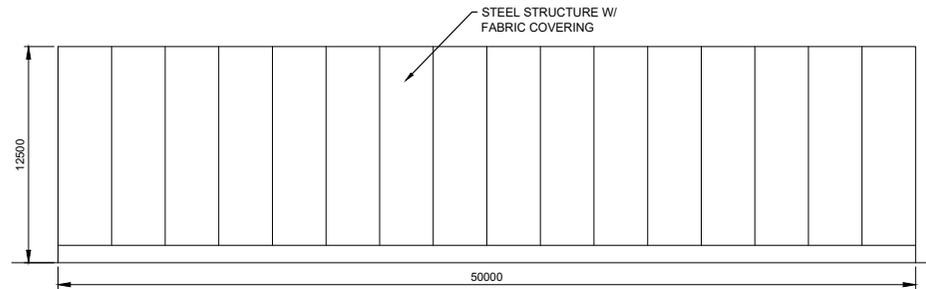


Figure 23: Typical TX and Rx Array Detailed Drawing Extract

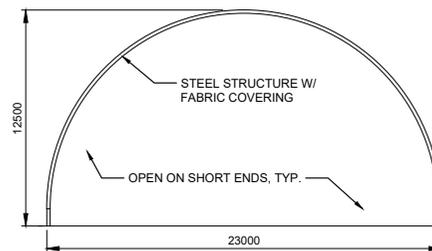
Temporary Integration Shelter

The Temporary Integration Shelter is a demountable structure measuring 50m long by 23m wide that will be utilised for the duration of onsite antenna assembly. Once the structure is no longer required, the building will be removed.

The enclosed structure provides weather protection for workers and equipment and will consist of a steel structure which will be covered with a fabric and installed on the runway area between the two arrays to utilise the existing hardstanding.



C1 SOUTH ELEVATION
SCALE: 1:200



C5 EAST ELEVATION
SCALE: 1:200



Figure 24: Temporary Antenna Integration Shelter Drawing Extract

8.0 Community Safety

The need to ensure the safety of the general public has been a key consideration in the formulation of this proposed development. Part of the reasoning for being located at Cawdor Barracks is the fact that this an existing secure site, a key operational requirement and a measure that is required to keep the local community safe.

New security fencing and control measures will be installed to allow the safe operation of the Site, including security equipment and lighting that adheres to the necessary design standards.

The fencing is located at the perimeter of the Site and maintains a safe and secure distance from the equipment and buildings. The issue of public safety and health was discussed at the non-statutory public engagement in September 2024, and Chapter 15 of the Environmental Statement provides a comprehensive evaluation of radiation hazards associated with the project and concluding that the proposals are safe to humans.

The International Telecommunication Union (ITU) regulations includes a series of definitions of different technologies that utilise forms of telecommunication. A range of technologies fall within the definition of telecommunications, including radar as a radiodetermination system, as are “stations” for one or more transmitters or receivers necessary at one location for carrying on a radiocommunication or radio astronomy service.¹

Established through the Communications Act 2003, Ofcom represents the United Kingdom in the ITU, managing and coordinating telecommunication services. These are defined as a transmission system for the conveyance, by the use of electrical, magnetic or electro-magnetic energy, of signals of any description under Section 32(1) of the Act.

The proposals are therefore classed as a telecommunications services, and associated planning policies are applicable. This includes Planning Policy Wales (Edition 12, 2024) which states that:

5.2.18 Provided that the development meets the International Commission on Non-Ionising Radiation Protection (ICNIRP) guidelines, planning authorities should not consider the health aspects of mobile telecommunication equipment. All new base stations are expected to meet the ICNIRP guidelines.

¹ International Telecommunication Union Regulations Article 1 - Terms and Definitions <https://life.itu.int/radioclub/rr/art1.pdf>

It has been confirmed and shown in Figure 25 that the proposal is ICNIRP compliant, ensuring the health and safety of the local community at large, and safety on site will be maintained through it being a secure establishment with no general access to the community.



 **DEPARTMENT OF THE AIR FORCE**
UNITED STATES SPACE FORCE
SPACE SYSTEMS COMMAND

08 October 2024

Declaration of Conformity with ICNIRP Public Exposure Guidelines ("ICNIRP Declaration")

Space Systems Command Space Domain Awareness Ground Sensors (SSC/SZGG)
290 W. Duluth Avenue, Bldg. 504
Peterson SFB, CO 80914

Declares that the proposed equipment and installation as detailed in the DARC Site 2 planning application at:

Cawdor Barracks
Brawdy
Haverfordwest
Wales
SA62 6NN

Is designed to be in full compliance with the 2020 International Commission on Non-Ionizing Radiation (ICNIRP) Guidelines For Limiting Exposure to Electromagnetic Fields (100 kHz to 300 GHz) requirements for both occupational and public radio frequency (RF) exposure.

BORAH.JON.HOW Digitally signed by
ARD.1091818562 BORAH.JON.HOW#ARD.10918185
Date: 2024.11.08 13:53:58 -0700

JON BORAH, Capt, USSF
DARC Deputy Lead Engineer

Figure 25: ICNIRP Declaration

9.0 Access and Movement

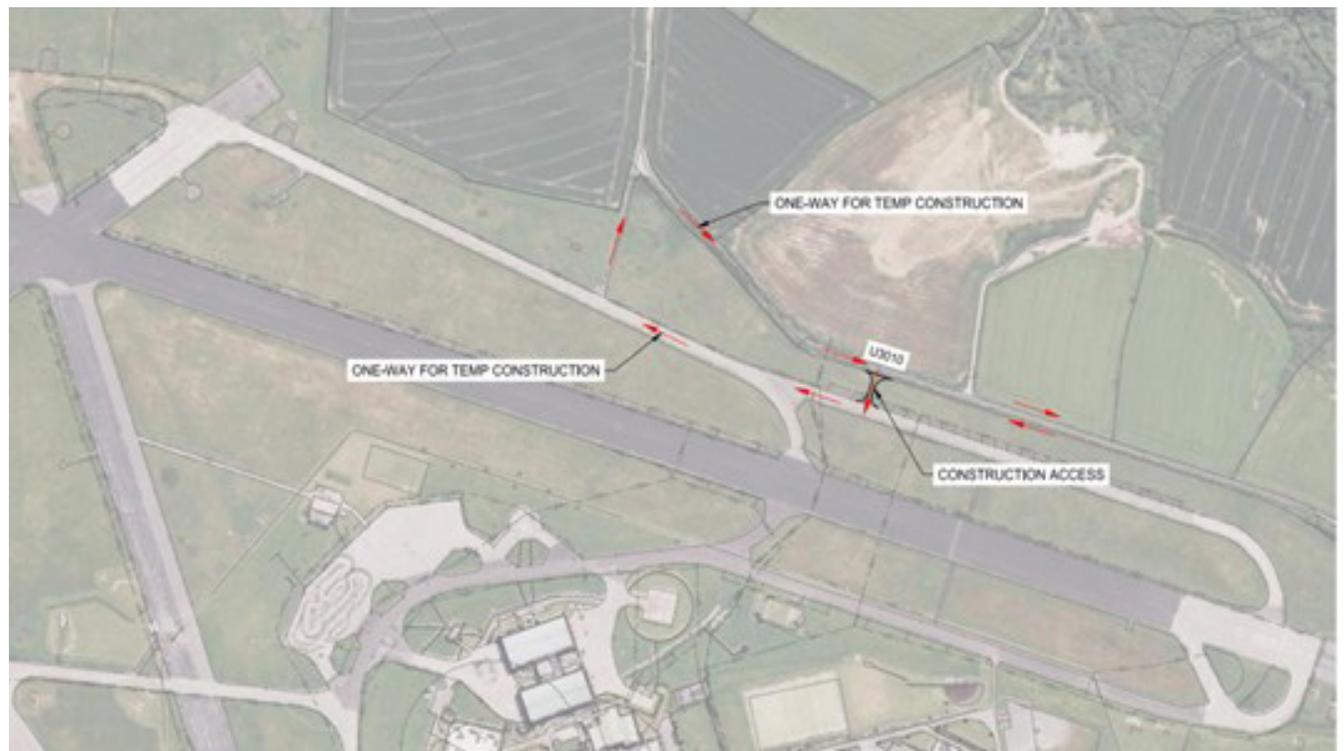
Access to the Site will be attained to the eastern boundary of the Site, connecting to the existing access to the unnamed public highway (C3010). A new entry control point and gate is proposed that will be staffed 24 hours a day.

To avoid disruption to existing military activities during the construction phase, a temporary secondary construction access will be established off the C3010. Construction traffic will enter the Site from the eastern boundary, utilising a one-way system via the unnamed country road (C3010) that connects to the A487 at Penycwm to the south. This access arrangement will operate solely for the duration of the construction works and will subsequently be retained as a secondary emergency access point once construction is complete.

This secondary access point will allow the creation of a one-way vehicle routing to minimise disruption on to the main highway.

The proposed new access roads will not be accessible to the public and will be secured through fencing, gates and security patrols.

Due to the remote location of the Site and its limited access to public transport options it is anticipated that the movement to and from the Site will primarily be undertaken by private vehicles.



Figures 26: Vehicular Access extracts

Car Parking

The Operations Area comprises the Radar Operations Building and the Radar Spares Building, both of which will be the most regularly occupied elements of the proposed development. The buildings will be supported by twenty-six dedicated parking spaces to accommodate operational staff. In addition,

four visitor parking spaces are proposed adjacent to the vehicular access, close to the entry control point, to serve authorised visitors and contractors. In total, the development provides 30 car parking spaces, which is considered sufficient to meet the day-to-day operational requirements of the site.

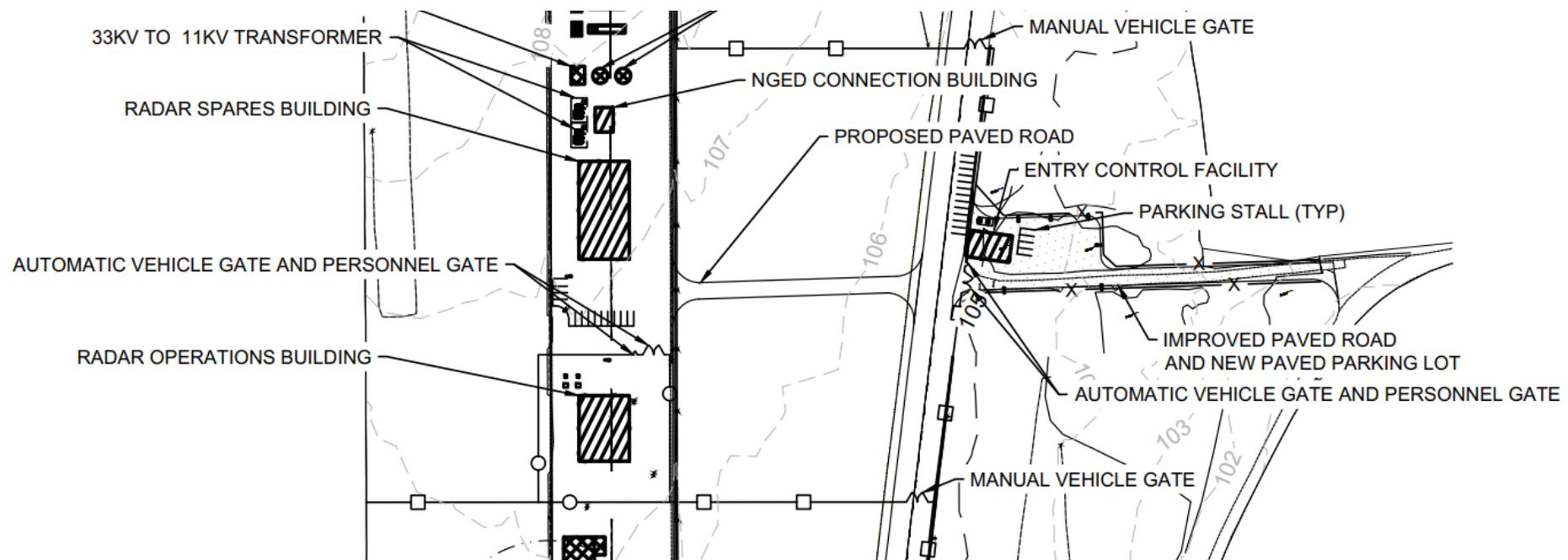


Figure 27: Layout and Access Drawing Extract

Extinguishment of existing Footpath

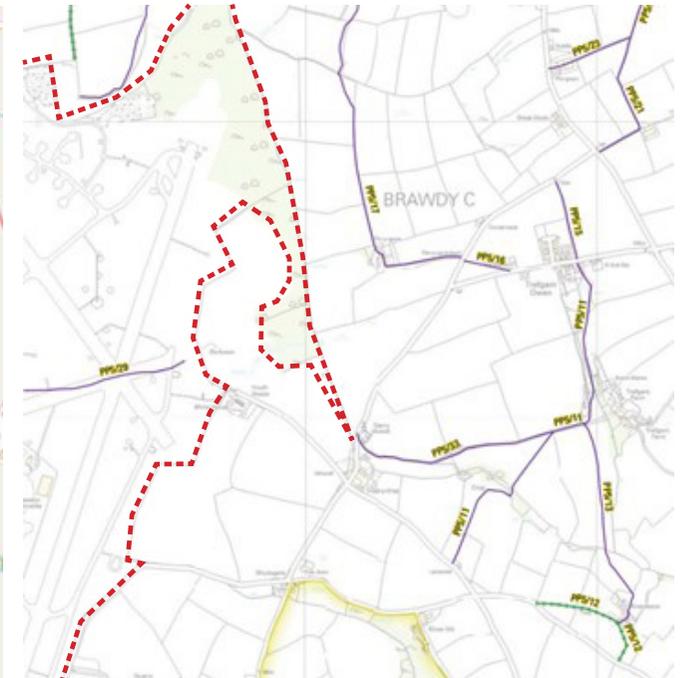
It is acknowledged that there is an isolated section of public right of way currently crossing the former runway and located within the application area (Footpath reference PP5/29).

This footpath crosses the line of the runway and is wholly within the secure boundary of the barracks. It is inaccessible to the public, beginning and terminating within the defence site with approximately 130 m of private land separating it from the nearest adopted road to the east of the Site.

Public Footpath PP5/29 is therefore to be extinguished as it is no longer accessible or fit for purpose, and it is necessary to do so to implement and deliver the planning permission. This action would have no impact upon the local network of footpaths and would be achieved through a Public Path Order made under s257 of the Town and Country Planning Act 1990 (as amended) should planning permission be granted.



Figures 28: Public Footpath Maps



Figures 29: Public Footpath Maps

10.0 Sustainability and The Environment

The proposal has been focused to utilise development on the existing hardstanding insofar as possible to sustainably optimise previously developed land, further assessment of the sustainability and environmental considerations of the proposal are considered within the submitted Environmental Statement.

The existing landscape within the Site is predominantly maintained grassland, with minimal trees or shrubs present across the historic airfield. This reflects long-standing safety and operational requirements, as maintaining an open landscape is essential to safeguarding sightlines, preventing wildlife attraction, and ensuring the secure and efficient functioning of the Site. Routine landscape maintenance is therefore mandatory to support the continued operational integrity of the Site's environment.

Site surveys and investigation identified the presence of fungi grassland on the Site. As detailed within Chapter 8 (Biodiversity) of the Environmental Statement, a total of 21 species of waxcap fungi have been reported, and the respective Site of Special Scientific Interest

(SSSI) thresholds have been 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 scheme has been designed to minimise impact upon the fungi grassland, with as much of the proposed infrastructure located on existing hardstanding or cleared land. Where waxcap grassland is impacted, the turf will be translocated in accordance with a Fungi Mitigation Strategy. Receptor sites for the turf will consist of low value modified grassland, which is found within the northwestern area of the Site. Works will seek to mitigate the impact of development on the priority habitats of lowland heath, wet woodland and impacts to notable plant species through mitigation measures including translocation. Further detail on this is set out within Chapter 8 (Biodiversity) within the Environmental Statement, with detailed methodologies for construction activities conditioned.

Structured Planting will be incorporated where it is safe to do so and doesn't detrimentally impact the security of the proposed development or the adjacent barracks. The planting will not only provide visual mitigation for the proposal, but also habitat enhancements and mitigation measures as detailed on the submitted landscape drawing (Figure 36). Full details of the planting and mitigation measures will be secured via condition.

The proposed buildings will be designed with energy and water efficiency insofar as possible subject to technical and operational constraints. As a result of consistent operation, the radar system will require a highly reliable supply of electricity, and water for cooling at the Transmit array. Where toilet fixtures are incorporated, they will use low flow. Proposed lighting will utilise LED to ensure maximum light output with minimal energy usage and wider impact upon the sensitive nighttime environment.

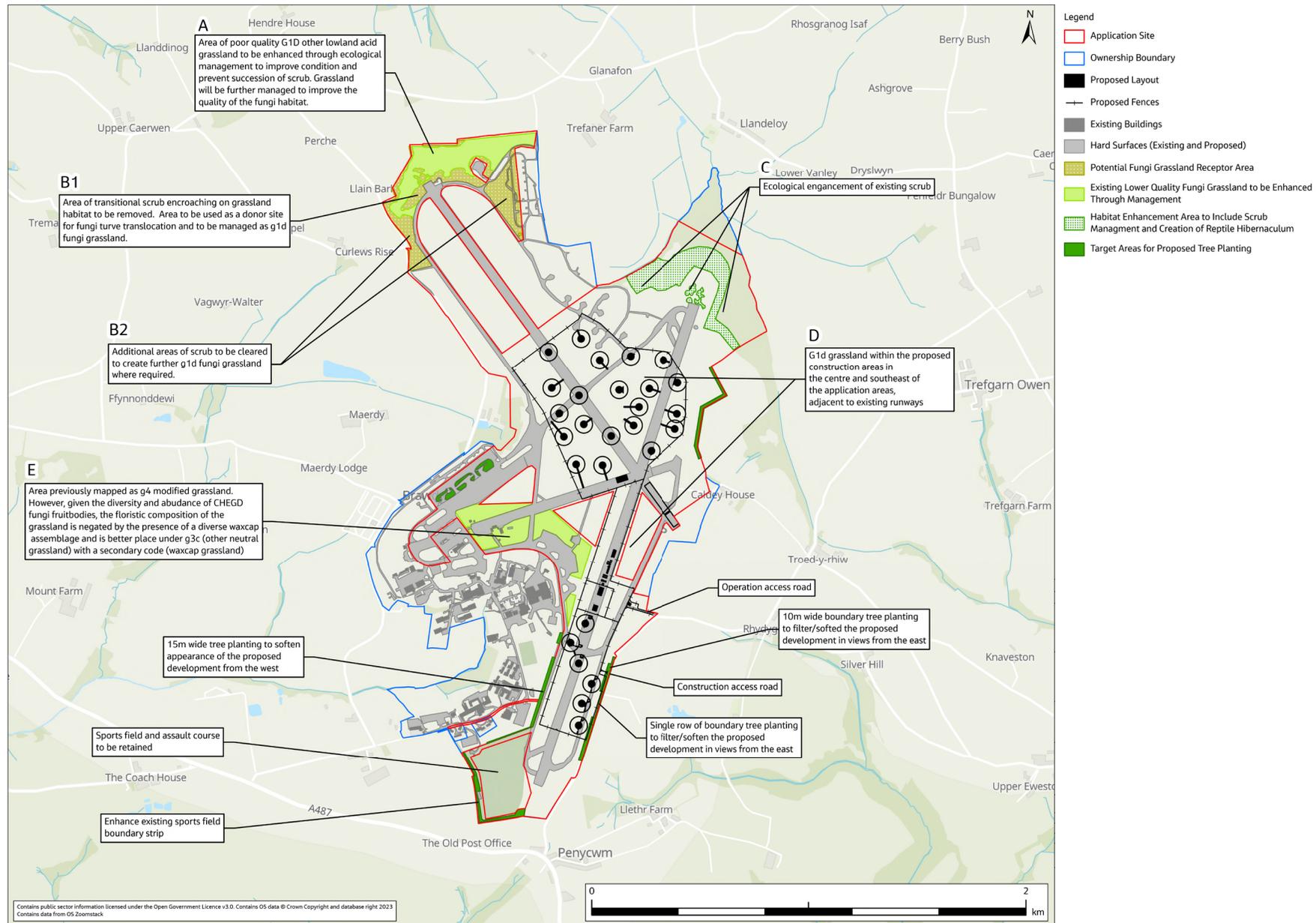


Figure 30: Landscape and Ecology Proposed Drawing Extract

11.0 Conclusion

The proposed development seeks to provide an infrastructure project of national and international significance. The proposal will form a key site as part of a global strategy to ensure full global coverage of Geostationary/ Geosynchronous Earth Orbit (GEO). This will support wider international space traffic management enhancing collective international security through the provision of previously unavailable information.

The proposed development comprises a series of built elements, including antennae, support buildings and associated plant, all of which will be in keeping with the wider military character of Cawdor Barracks. Through the incorporation of structured planting where appropriate, the scheme seeks to minimise any wider visual effects. Energy efficiency will also be maximised wherever possible as part of the design approach.

Key Project Facts

- Six Transmit radar antennas and associated infrastructure;
- Twenty-one Receive radar antennas and associated infrastructure;
- Radar antenna operations area, which will incorporate:
 - An auxiliary power compound and fuel storage tanks;
 - System spares building;
 - Operations area; and
 - Site-specific sub-station
- New highway access (including secondary emergency access point) and associated security infrastructure and buildings
- Security fencing
- Ecological / Structured Planting and drainage works
- Extinguishment of the isolated public right of way

The introduction of DARC will significantly enhance identification and tracking capabilities, establishing a space traffic management system that does not exist at present, and requires public sector intervention to produce due to the cost and multi-national location / coordination. Whilst this must therefore be led by Government, data collected will be made available to the private sector for operational use and research via the UK Space Agency, further strengthening the security and resilience of space-based services and the ability for the regional economy and national space enterprise to develop and thrive.

Conclusion

Wider benefits of the proposal include the delivery of construction and operational jobs with the Site fully compliant with the appropriate requirements and continue Pembrokeshire's tradition of supporting our military and protecting the nation.

The proposal's design and layout is appropriate to its function, and the approach to materials for the buildings is taken from the surrounding military buildings on Cawdor Barracks. The proposed development has incorporated feedback from both technical consultees and the general public, and it has been refined as far as reasonably possible to minimise any potential impacts arising from the proposed installation. The design approach adopted is proportionate and robust, striking an appropriate balance between the technical and operational requirements of the proposal and the locational opportunities and sensitivities of the application site.

