RAF CROUGHTON : SATCOM

DESIGN AND ACCESS STATEMENT

March 2016

12155-A(PL)00 - SATCOM, RAF Croughton: Design & Access Statement

Defence Infrastructure Organisation

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ACRONYMS/ABBREVIATIONS DEFINITIONS

ABG - Air Base Group
DIO - Defence Infrastructure Organisation
MOD - Ministry of Defence
JSP - Joint Service Publication (Design guidance)
LPA - Local Planning Authority

EXECUTIVE SUMMARY

The project is required to provide a new purpose-built consolidated Satellite Communications (SATCOM) / Tech Control PL 1 facility and administrative communications squadron operations facility that meets current and future operational requirements for the 422nd ABG mission at RAF Croughton.

The scope of works can be surmised as follows:

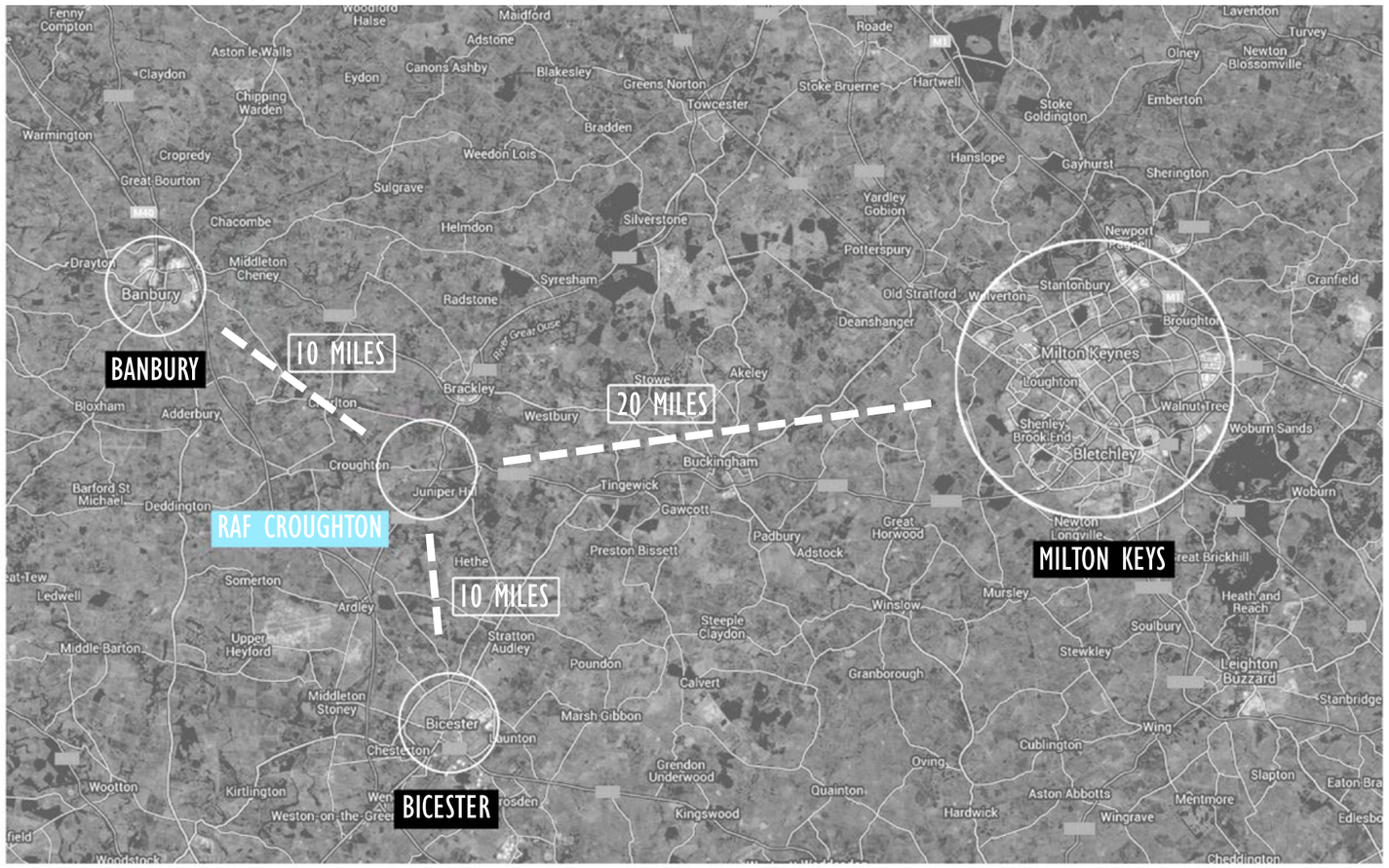
- New SATCOM/Tech Control Facility (referred to as PL1 Building herein) within fenced compound;
- New administrative communications squadron operations facility (referred to as Admin Building herein);
- Infrastructure only for six satellite terminals (four of which will be housed in geodetic domes);
- Entry Control Facility for PL1 Building;
- Access roads, temporary car park and pavements;
- Provision of associated services (power, water, gas, communications).

The new facilities are required to redevelop the inadequate and inefficient, non-purpose-built facilities and to provide additional, purpose-built space to fully enable current operations.

Work space is needed to accommodate a total of 195 personnel (84No. in the PL1 Building and 111No. in the Admin Building). The new facility shall incorporate green concepts where practicable to reduce the associated utility demand.

RAF Croughton is located near Brackley, Northamptonshire, 20 miles north of Oxford and 70 miles northwest of London. The main gate is approximately 2 miles from the A43 along the B4031.

Drawing MMD-354717-C-DR-00-XX-0001 provides an overview of the existing site layout. The new facilities are to be located to the south of the Base complex, next to the existing Building 180, which is the current SATCOM facility. This site is located on mostly undeveloped land used as part of the high frequency antenna field.



PROXIMITY OF RAF CROUGHTON TO LOCAL CONURBATIONS

1.1 INTRODUCTION TO THE SITE

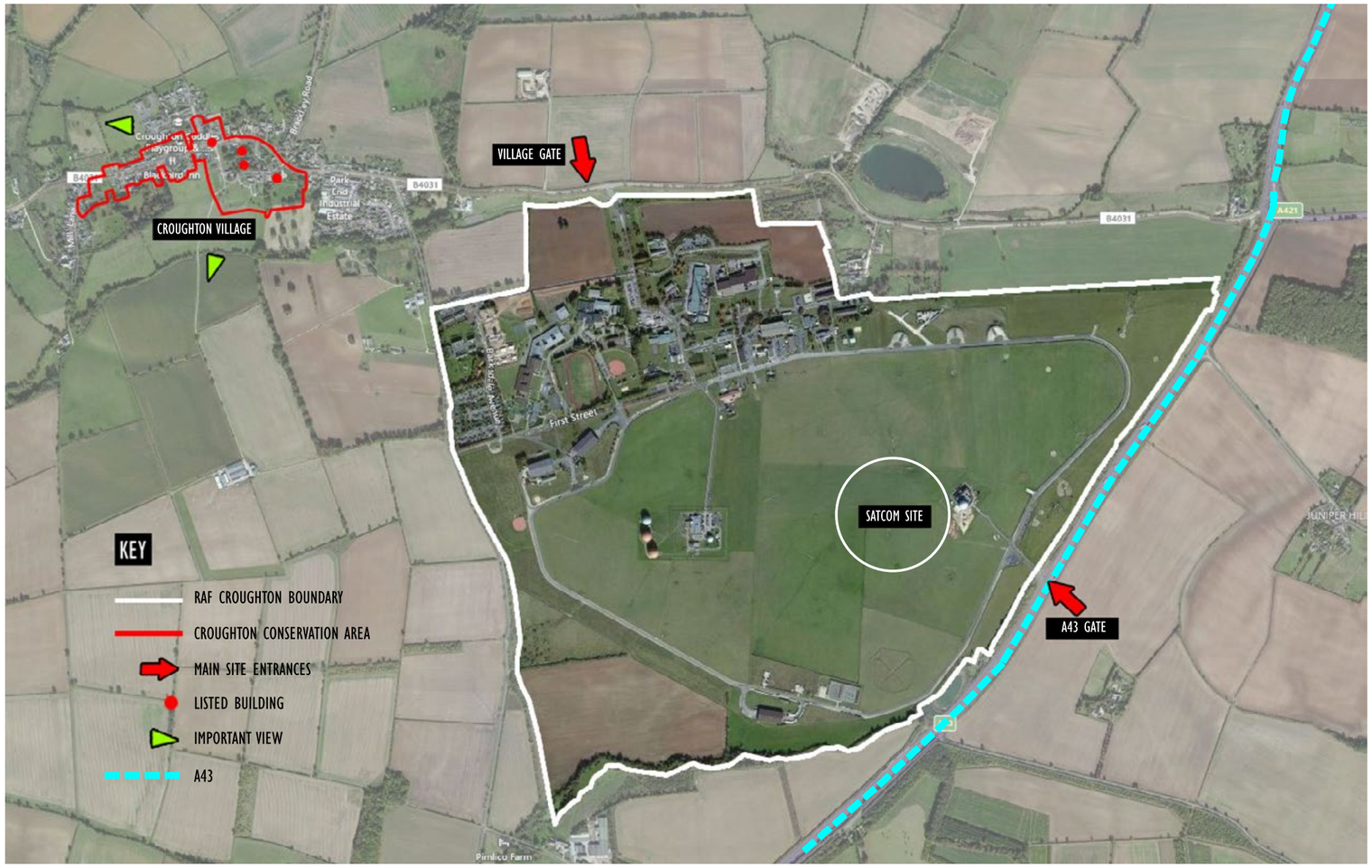
RAF Croughton is a communications base and operates one of Europe's largest military switchboards, processing approximately one-third of all U.S. military communications in Europe.

RAF Croughton is a Geographically Separated Unit (GSU) of the 501st Combat Support Wing (CSW), which is headquartered at RAF Alconbury. The 422nd ABG is presently responsible for the day-to-day operations of RAF Croughton, ensuring it is provided with the resources it needs to meet successful mission execution and a high quality of life for its people.

RAF Croughton is also home to the US Department of State's Regional Information Technical Centre (RITC), which provides communications systems transmission and support services to U.S. embassy and consulate offices between Europe, Asia, Africa, and the continental United States.

RAF Croughton is located near Brackley, Northamptonshire, 70 miles northwest of London and approximately 50 miles southwest of RAF Molesworth. The surrounding area is primarily rural farm and forested lands with numerous small villages. In addition to Brackley, other larger nearby communities include Bicester, Banbury, and Buckingham. USAF housing for RAF Croughton is located on base and in Caversfield, 9 miles south of RAF Croughton, just north of Bicester.

RAF Croughton is a 692 acre site that contains a mix of Administrative, Community Commercial, Community Services, Housing, Industrial, Outdoor Recreation, and Open Space land use classifications. The main cantonment area is located to the northwest of Glenn Road, formerly a taxiway when an airfield existed at RAF Croughton, which forms a loop around the base perimeter. Mission operations antennae and activities are located inside the perimeter loop road.



SITE CONTEXT PLAN

1.2 SITE HISTORY

Croughton Village

Croughton is an attractive and historic village located in the far south west of the county of Northamptonshire. It is a linear settlement extending east to west, which is bisected by the B4031.

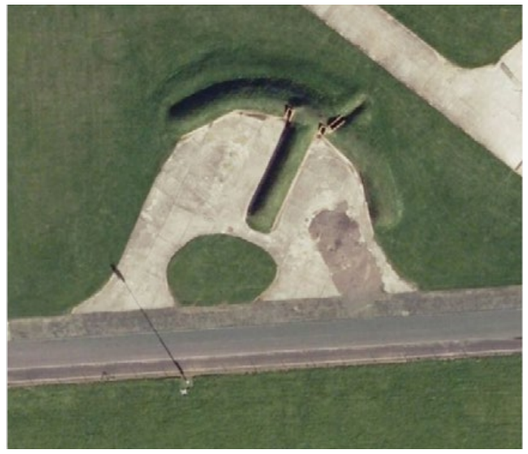
The village is defined by the use of local limestone in its buildings. Most properties are also roofed in slate. This creates a uniform character in the settlement, particularly in the terraced properties in the village. Using local limestone in the buildings also represents the underlying geology, with the Blisworth Limestone Formation being the predominant underlying rock. (Information from Conservation Area Appraisal and Management Plan, April 2015.)

RAF Croughton

RAF Croughton occupies an area of relatively flat ground 1 km to the south-east of the village of Croughton. It was built in 1938 as part of the RAF's massive pre-war expansion programme, started in 1935 in response to the increasing strength of the German armed forces. Known as Brackley Landing Ground, it became RAF Brackley in 1940 and obtained the name of RAF Croughton in July 1941. It consisted of a grass airfield with three grass runways, surrounded by a perimeter track. From June 1940 until July 1942 the station functioned as a satellite for RAF Upper Heyford and the No.16 Operational Training Unit (OTU), providing extra airfield space for night-flying training.

In September 1940, during the Battle of Britain, the airfield became designated as an emergency landing site in order to provide assistance to any operational aircraft returning damaged or with engine problems. The airfield was bombed several times in 1941. From July 1942 onwards, RAF Croughton functioned as a training base, for training on the gliders which played an important role during D-Day and the Battle of Arnhem. Training continued until after the war, but ceased on 25th May 1946. In 1950, the USAF took over the airfield, giving RAF Croughton a new role as a communications base which it retains to the present day.

The Fighter Command Works aircraft fighter pens (see images above) at RAF Croughton are thought to have been built in 1940 or 1941, when the airfield functioned as a satellite for RAF Upper Heyford. Each provided protection for two Bristol Blenheim-sized or similar twin-engine, medium-sized bombers. Originally there were six fighter pens divided into two groups of three, one group positioned on the northern edge of the perimeter track and the other group on the eastern edge. Only fragmentary remains of the eastern group survive.



PROTECTED WWII FIGHTER PENS

LISTED CROUGHTON BUILDINGS

1.3 PROPOSED WORKS LOCATIONS

BRIEF:

Following the initial site assessment (as described in Section 1.1) the works at RAF Croughton will consist of three new builds; The PL1 (Technical Building), Administration Building and Entry Control Point kiosk along with a new temporary car park for the complex of buildings.

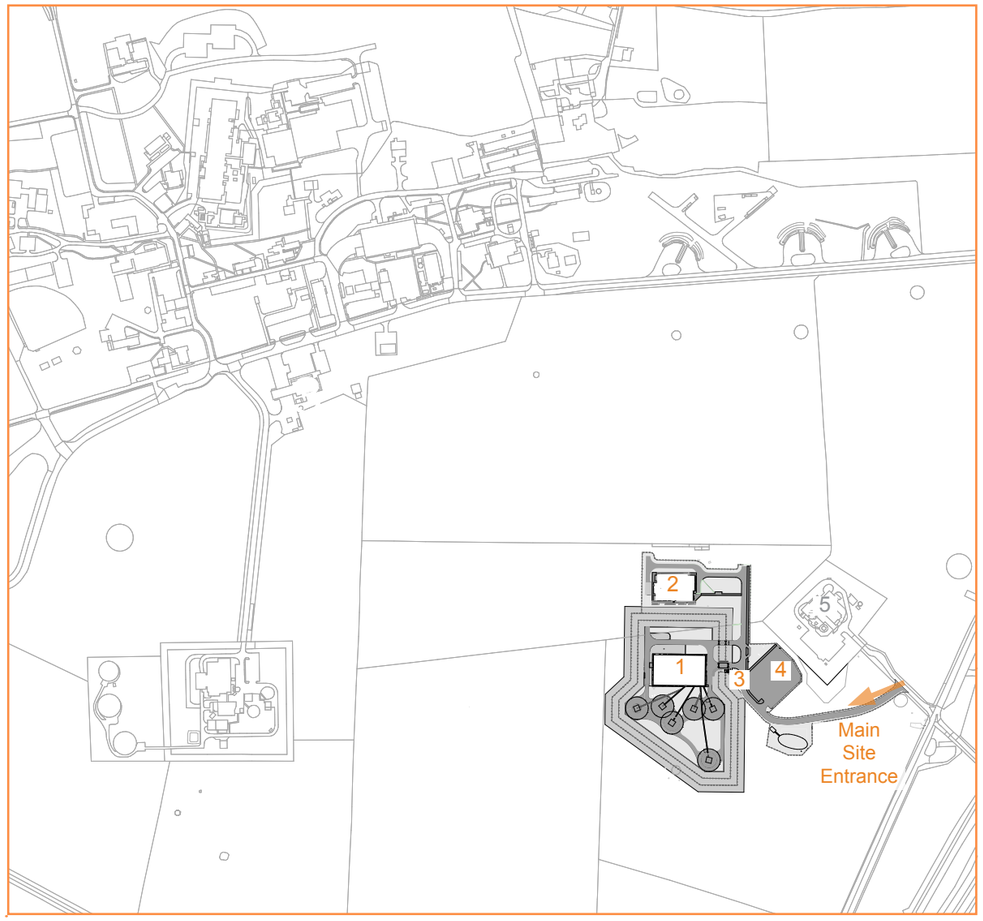
1 PL1 BUILDING
A new facility adjacent to the satellite installations housing technical control, satellite equipment, storage and plant rooms.

2 ADMIN BUILDING
Office accommodation, communications, conferencing, warehouses and storage.

3 ENTRY CONTROL POINT
A secure point of control on entry to the compound.

4 TEMPORARY CAR PARK
For SATCOM staff working in all buildings.

5 BUILDING 180
Brick built current SATCOM facility. This site is located on mostly undeveloped land used as part of the high frequency antenna field.



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KEY:

1 PL1 BUILDING
FOOTPRINT: 2790 m²

2 ADMIN BUILDING
FOOTPRINT: 1970 m²

3 ECP BUILDING
FOOTPRINT: 20 m²

4 CAR PARKING
117 SPACES

5 BUILDING 180

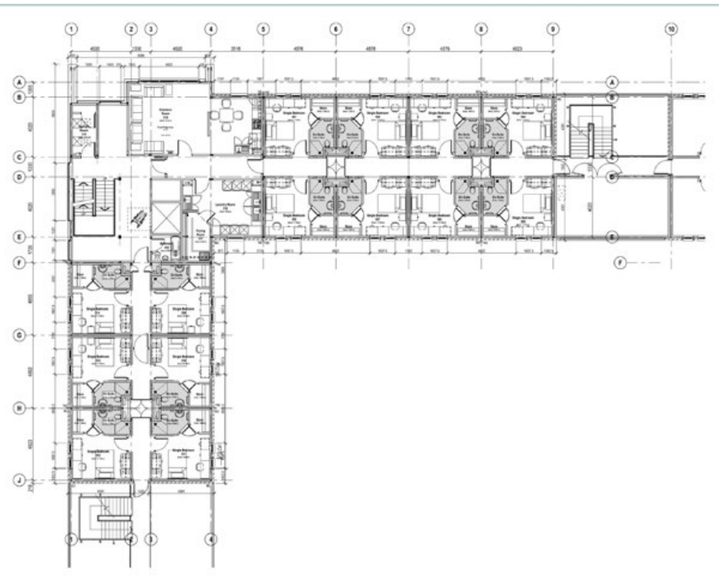
1.4 THE TEAM

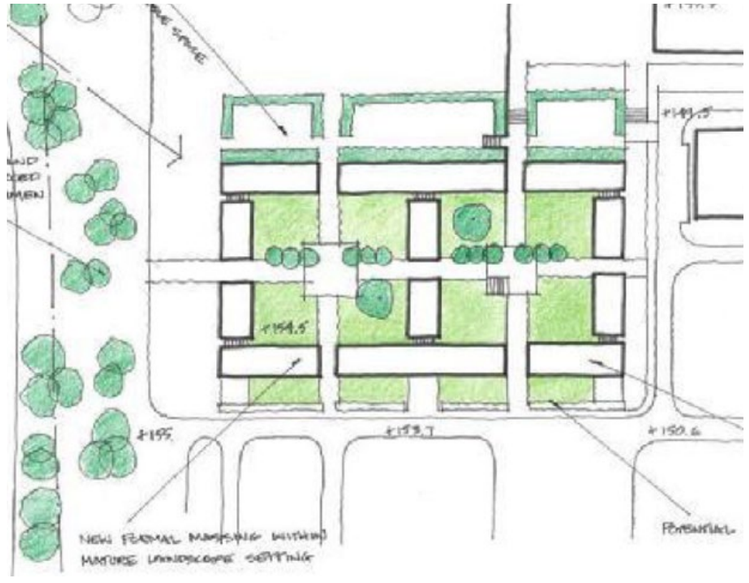
DIO have appointed Mott MacDonald and HLM Architects to carry out the design of the proposed works at RAF Croughton, as a team we have a long history of working together, for DIO, on defence projects across the UK.

As an experienced design team we are accustomed to being in a position where we work closely with Local Authorities' Planning Teams, local community groups and stakeholders at the earliest opportunity in the life of a project in order to realise a successful outcome. Our approach during the design process is to build close relationships with all relevant parties involved with the proposed works by organising design reviews from conception to pre-application. This approach ensures that we are delivering a building which not only meets the end users expectations, but also complies with the Local Authorities Planning Policies.

An example of our recent collaboration is the Gaza Barracks in North Yorkshire (see images opposite), which has received national acclaim from within the MOD and much appreciated by the end users, the servicemen/ women. The proposed works at RAF Croughton will incorporate experience drawn from projects such as Gaza to deliver a building which aims to achieve the following:

- Welcoming and modern environment
- Efficient and flexible working space
- Offices and Store rooms that are compliant with the most onerous of UK and US regulations and based on tested designs that are known to work.
- Contextual and site sensitive driven design
- Robust and hard wearing materials to ensure that the buildings will stand the test of time
- Sustainable materials and technologies are incorporated where appropriate to the site.

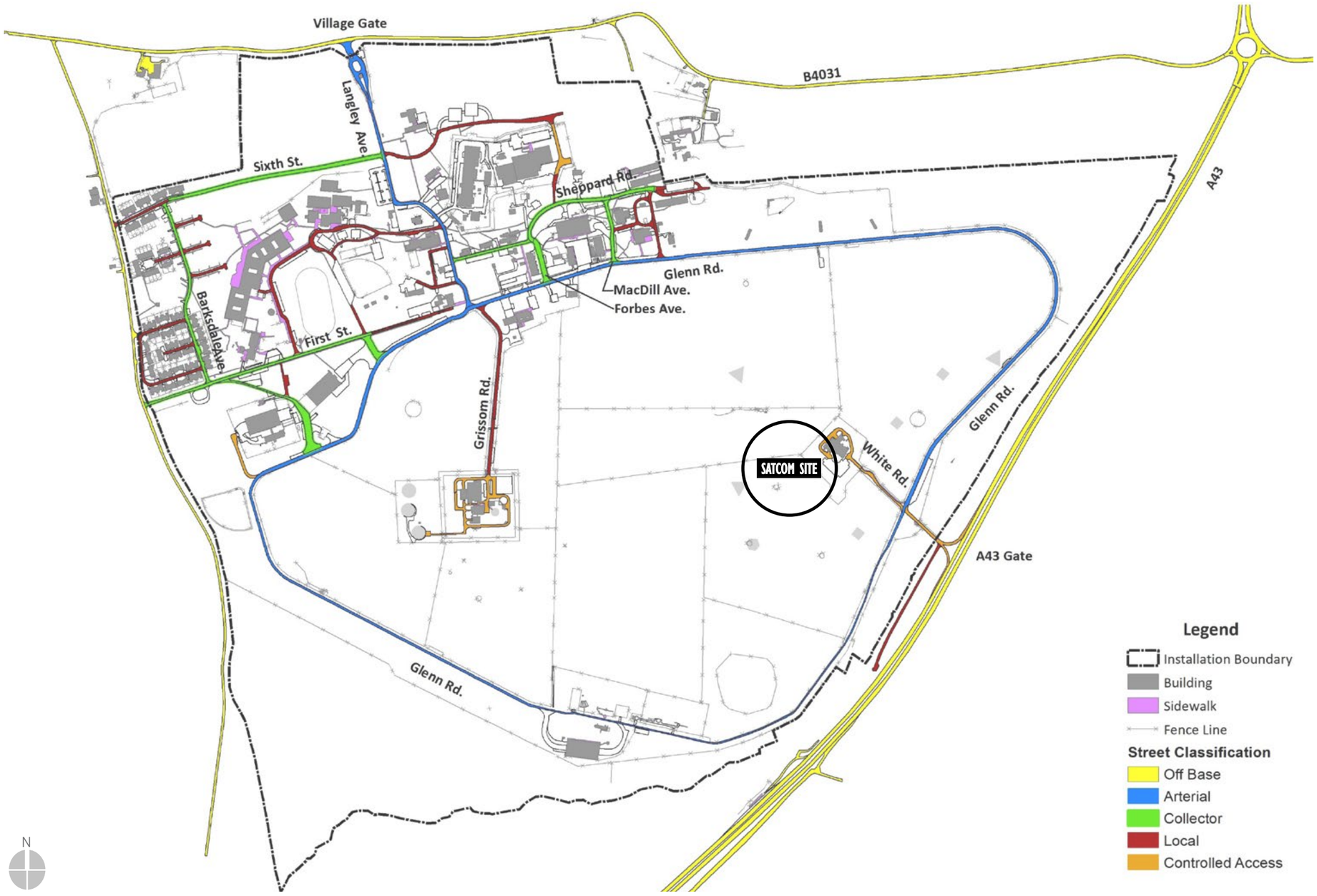




SINGLE LIVING ACCOMMODATION, GAZA BARRACKS, CATTERICK

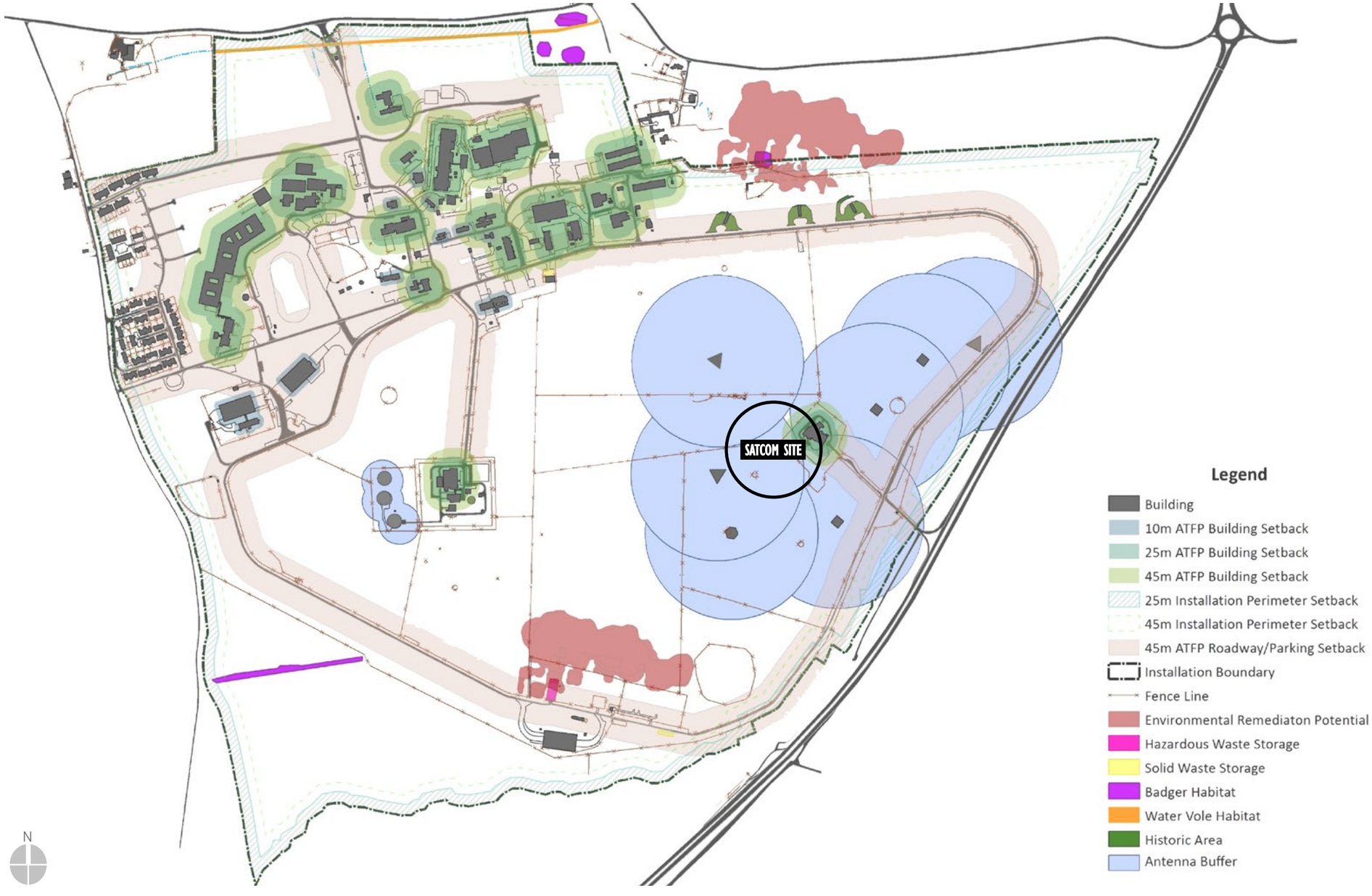
2.1 ACCESS

The primary route onto the base is off the B4031 to the north, leading to a arterial road which circumscribes the large hillside at the centre of the base. There is a secondary access from the A43 to the south, which is used in emergency and for alternative access for oversized vehicles. It is anticipated that a new access road will be formed off White road, leading to the new Satcom site.



2.2 CONSTRAINTS

The main offsets to be considered in the vicinity of the new Satcom proposals, are the antenna buffer zones and the ATFP building offsets from Building 180. The antenna opposite Building 180 is to be decommissioned to accommodate the new proposals



2.3 MICRO CLIMATE AND SITE VIEWS

The Satcom site is on an exposed aspect, at the centre of a open hillside on the base. In this respect it is very exposed to prevailing winds, which could accelerate through the inclining topography towards the site. Landforms or trees could be used to act as a buffer to lessen these impacts, and also provide shade to the otherwise exposed southern elevations.

2.4 TOPOGRAPHY / STORM WATER

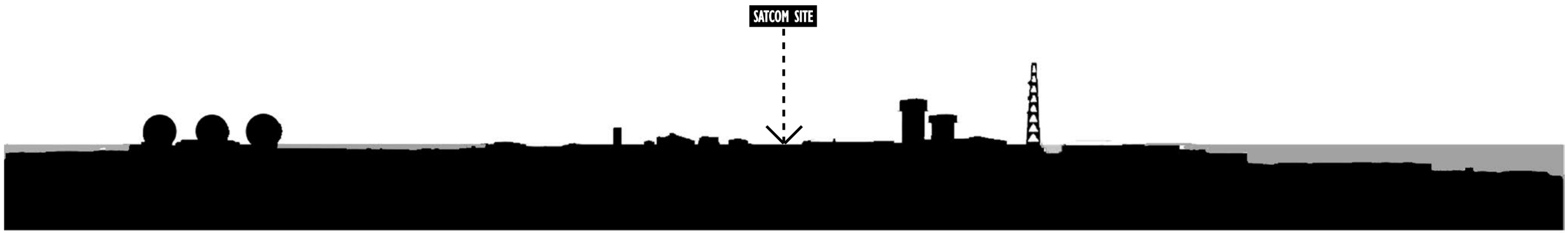
RAF Croughton has an elevated ridge line in the centre of the Base running from east to west. The ground slopes down to the north and south. The elevation changes 30 meters at a slope of between 3-12% from the Village Gate up to the ridge. The terrain slopes at 2-4% down to the southeast from the ridge line with an elevation change of 14 meters to the south perimeter fence.

RAF Croughton does not have a traditional Base-wide storm drainage collection system. Rather it has several small collection systems that drain areas within the Base. The Environmental Department has determined that current practices are acceptable due to the type of activity on Base (non-industrial). Five small individual collection systems are located throughout the Base. These systems collect storm flows and convey them to oil-water separators where the flows are treated and discharged to creeks. Three of these systems discharge to the north, one to the west out of the housing area, and one to the south out of the facilities management office (FMO) area.

The oil-water separators are visually inspected as they do not have electronic sensors to report alarms. Because of its remote location on Base, Building 180 has its own collection system. The system is a “soak away” or French-Drain system where storm flows are collected by an underground network of pipes which drain toward a single catch basin. From this catch basin the flows are percolated into the soil.

For all proposed construction, it is recommended that Low-Impact-Development (LID) techniques be employed. LID involves land planning and implementation of engineering measures to manage storm water runoff by using on-site natural features to protect water quality by detaining runoff close to its source where flows are filtered and stored for infiltration and evaporation.

KEY PLAN

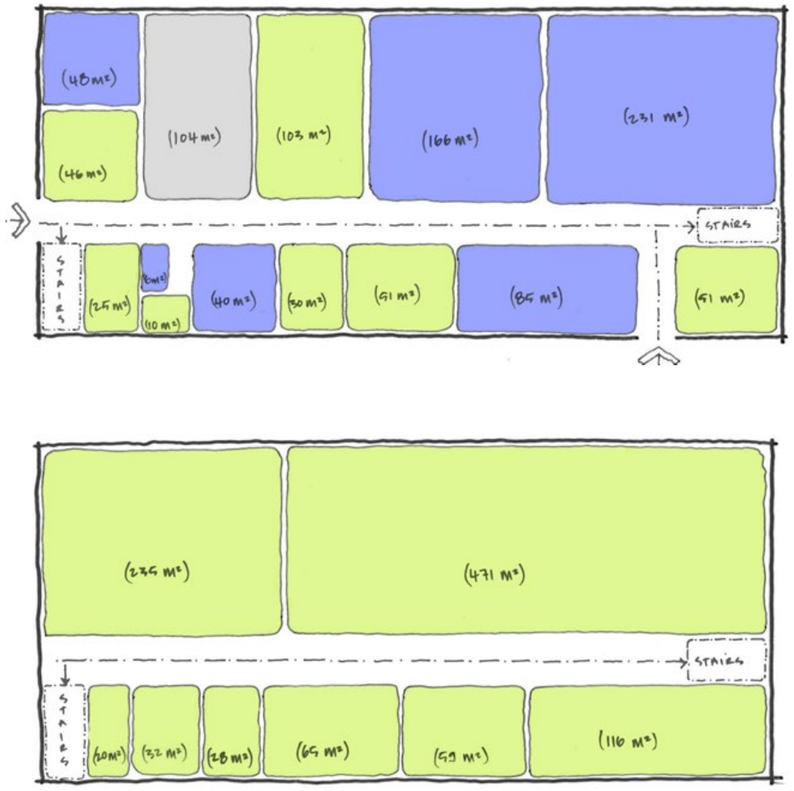


3.11 ADMIN AND PL1: PROPOSAL DESCRIPTION

The proposed Facilities shall be standalone as shown the drawings MMD-354717-C-DR-00-XX-9010 and MMD-354717-C-DR-00-XX-9011. The new PL1 and Admin buildings shall sit next to the existing Building 180 and associated buildings (these buildings will be demolished under a separate contract following transfer of the mission to the new facilities). Existing Buildings 180, 184 and 186 are of 1950s construction with brick and brown cladding however Base preference is for the new buildings to match the Medical-Dental Centre to the north of the site as the intention is for that building to form the basis for the revised Base Design Guide, rather than the existing buildings that are to be demolished.

The floor levels of the new buildings have been determined based on the minimum look angle from the existing antennas to ensure that they are not obstructed by any feature on the horizon. The buildings are required to be single storey with the roof levels being determined by service void requirements and also the requirements of the antennas.

The Admin building massing has been designed to reflect the internal height requirements to meet the functionality of operations within the building. This has rationalised height to where it is needed, economising the use of cladding and wall construction. An additional benefit of this approach is that the building elevations are minimised, which is a welcome attribute in the HF antenna field. Cladding & landscaping shall be used in order to soften the features of these large single storey buildings. Due to the nature of the PL1 facility, windows have not been incorporated into the design by request of the End Users. The Admin building shall have windows as it is not restricted by the same constraints as the PL1 building.

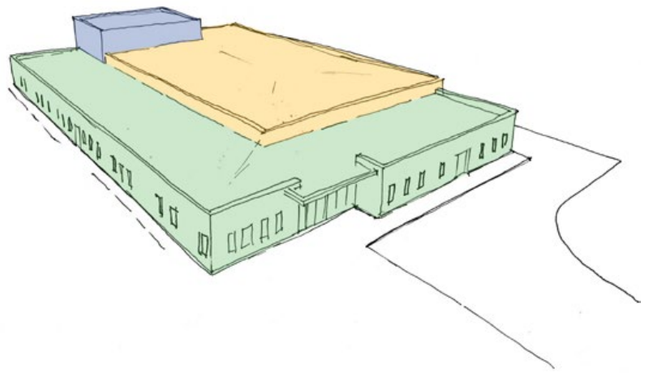


ADMIN BUILDING: EARLY ADJACENCY DEVELOPMENT

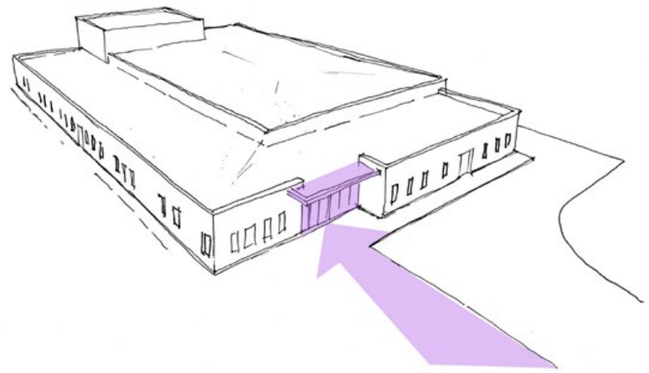
PL1 BUILDING: EARLY ADJACENCY DEVELOPMENT

3.12 ADMIN BUILDING: DESIGN DRIVERS

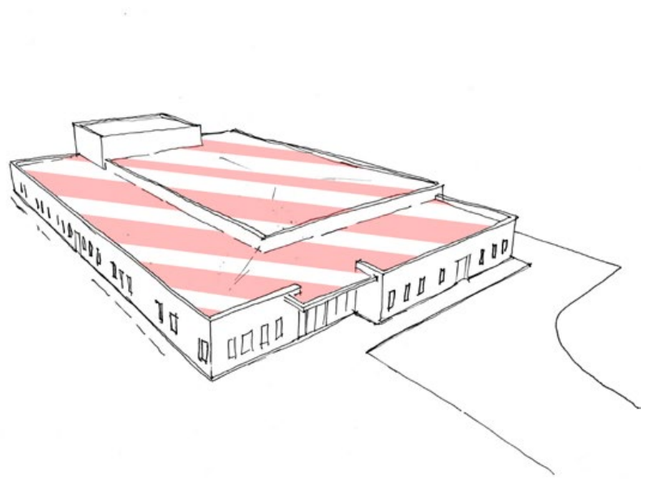
The following design drivers inform the form, massing and orientation of the proposed Admin building.



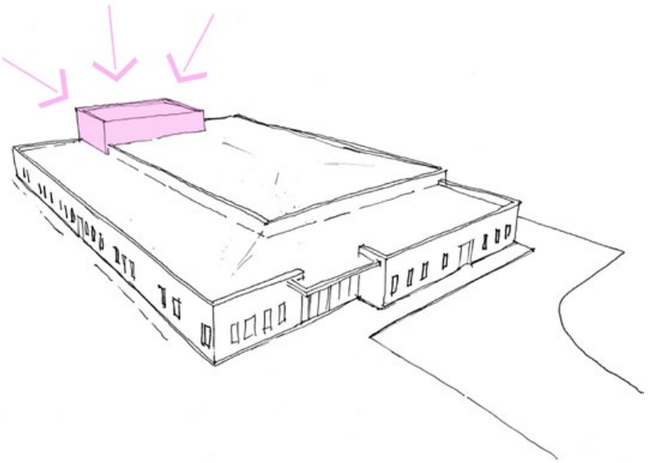
THE MASSING OF THE ADMIN BUILDING BREAKS DOWN INTO:
- ADMIN AND OFFICES
- STORAGE
- PLANT, STORAGE AND EQUIPMENT



THE POINT OF ENTRY TO THE BUILDING HAS BEEN DESIGNED TO BE VISIBLE ON APPROACH TO THE BUILDING FROM THE ROAD



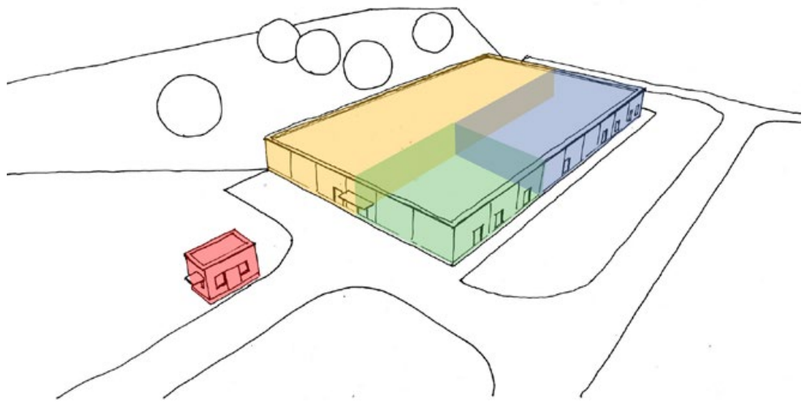
THE ROOF HAS BEEN DESIGNED TO BE AS LOW AS POSSIBLE TO AVOID INTERFERENCE WITH THE SATELLITES



INTRODUCING POLYCARBONATE WILL NATURALLY LIGHT THE WAREHOUSE AND WILL HELP TO REDUCE THE BUILDINGS ENERGY USAGE IN DAYLIGHT HOURS.

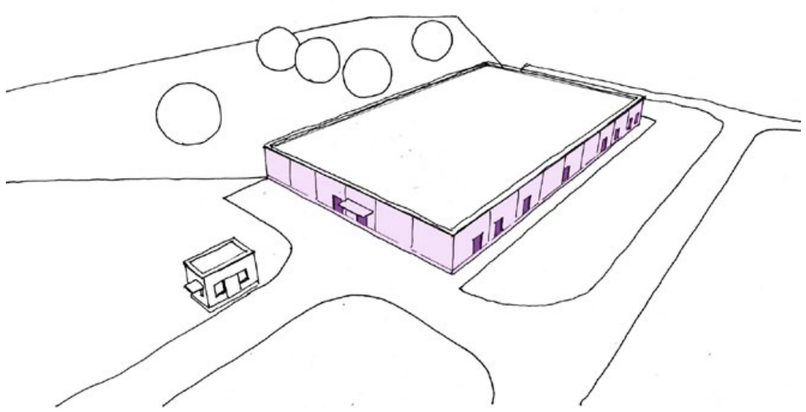
3.13 PL1 BUILDING: DESIGN DRIVERS

The following design drivers inform the form, massing and orientation of the proposed PL1 building.

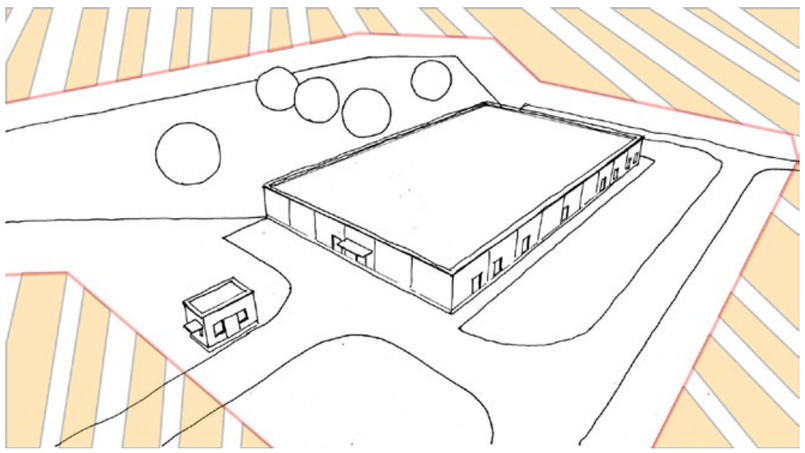


THE MASSING OF THE PL1 BUILDING BREAKS DOWN INTO:

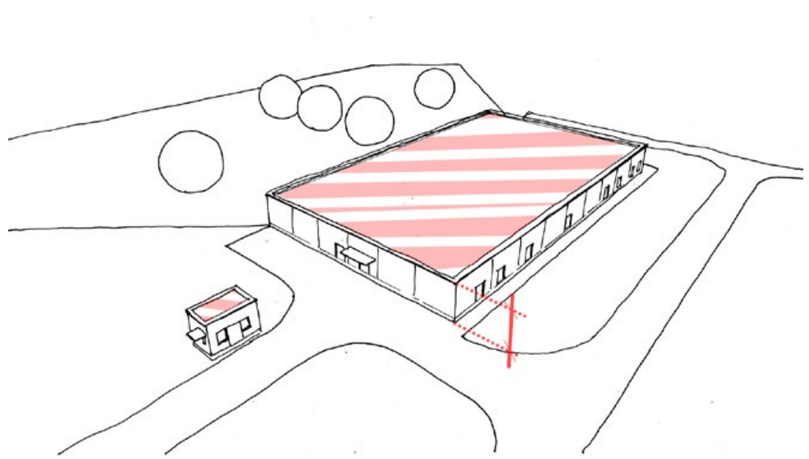
- ADMIN AND OFFICES
- PLANT AND SERVICES
- MAIN EQUIPMENT AREAS
- SECURE GATE HOUSE ENTRANCE



NO REQUIREMENT FOR THE PL1 BUILDING TO HAVE WINDOWS THEREFOR ONLY FIRE / ACCESS DOORS WILL PROVIDE BREAKS IN THE FACADE.



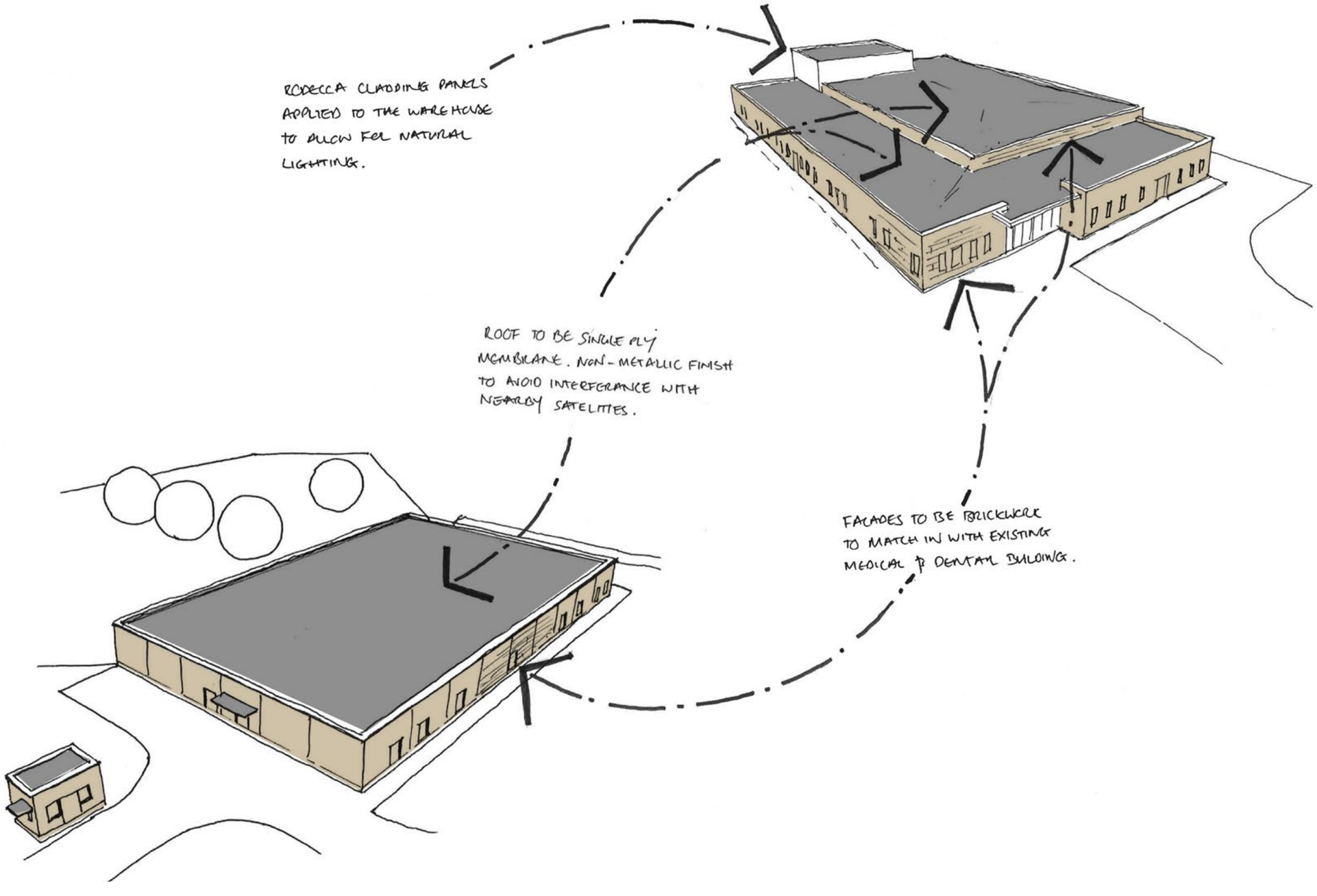
A SECURE FENCE IS REQUIRED AROUND THE PERIMETER OF THE PL1 BUILDING



THE ROOF HAS BEEN DESIGNED TO BE AS LOW AS POSSIBLE TO AVOID INTERFERENCE WITH THE SATELLITES

3.14 DESIGN DEVELOPMENT

Initial concept sketches exploring mass and volume manipulation.



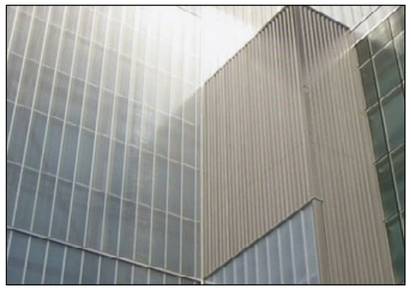
3.15 MATERIALS PRECEDENTS

The following design precedents explore buildings of similar scale the SATCOM proposals and examine how the chosen material palette can break down the building facade, reducing the scale of the building and aiding the building to blend into the context through reflecting their surroundings

POLYCARBONATE WILL BE APPROPRIATE FOR USE ON THE WAREHOUSE WHERE IT WILL PROVIDE NATURAL DAY LIGHTING

A RUSTIC BRICKWORK SIMILAR TO THAT OF THE MEDICAL DENTAL CENTRE WILL KEEP CONTINUITY IN LINE WITH NEW DEVELOPMENT ON THE BASE

A SMALL GLAZED ELEMENT BREAKING THE EASTERN ELEVATION WILL CLEARLY ANNOUNCE THE ENTRANCE



POLYCARBONATE WILL BLEND INTO THE SKY LESSENING THE IMPACT ON THE SKYLINE

BRICK DETAILING ON REVEALS, TO HEAD / SILLS AND STEPPED BRICKS ON THE RECESSED PANELS WILL GIVE A MODERN APPEARANCE WHILST BEING IN KEEPING WITH THE BASE AESTHETICS

A GREY BRICK PLINTH WILL CONTRAST TO THE BUFF BRICKS AND COMPLIMENT PAVING AROUND THE BUILDING

3.16 DESIGN DEVELOPMENT

The following elevation study explores massing, materials and scale. (Refer to supporting information for the proposed elevations.)

ADMIN BUILDING DEVELOPMENT

PL1 BUILDING DEVELOPMENT

Early concept designs for the buildings explore the barrel vaulted roof as used on the medical dental centre. Through consultations with the end user it was found that a metallic roof such as that used on the medical dental building would cause interference in the high frequency antennae field

3.16 DESIGN DEVELOPMENT

The following elevation study explores massing, materials and scale. (Refer to supporting information for the proposed elevations.)

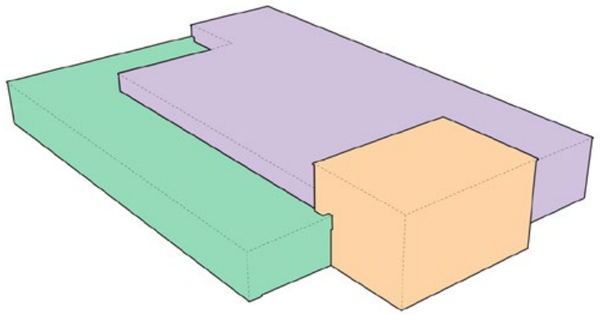
ANALYSIS OF THE EARLY CONCEPT FOUND THAT THE MAIN ROOF WOULD BE CREATING A LARGE VOLUME, MOST OF THE HEIGHT OF WHICH IS NOT NEEDED IN THE BUILDING

THE CURVED ROOF PROFILE DOESN'T ALLOW FOR WATER ATTENUATION AND THE GLAZED ELEMENT DOES NOT NECESSARILY DELIVER NATURAL LIGHT TO WHERE IT IS NEEDED IN THE BUILDING

INITIAL DESIGNS DID NOT CLEARLY ARTICULATE WHERE THE MAIN ENTRANCE WAS RELATIVE TO THE MAIN PEDESTRIAN ROUTES ON SITE

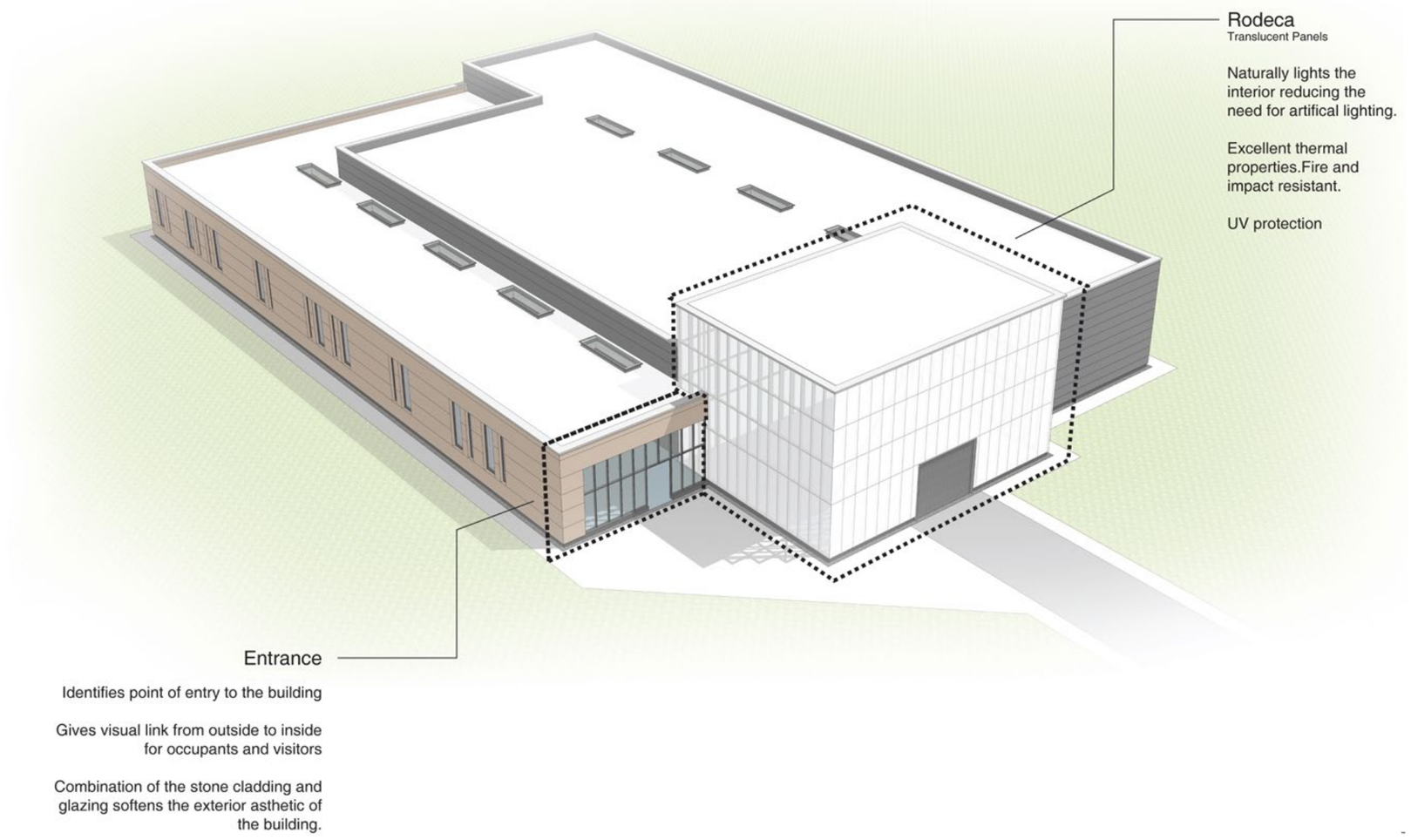
3.16 DESIGN DEVELOPMENT

The following elevation study explores massing, materials and scale. (Refer to supporting information for the proposed elevations.)



The massing of building relates to the height requirements at different locations in the building -5m in the warehouse (orange) 3.9m in the main storage areas (purple) and 2.7m in the Admins areas (green). This approach ensures that building fabric is used only where it is required, leading to cost efficiencies in the construction.

Following on from this principle, the materials used for each distinct mass are appropriate to the usage. Rodeca is proposed on the warehouse to admit natural light which will lessen the need for artificial lighting. The thermal performance of this material is appropriate to a warehouse use. The main storage and technical uses are built with composite cladding, which is economical and provides the necessary thermal performance and stonework or masonry is used on the main office areas which is the visible quality of the building at the entrance.

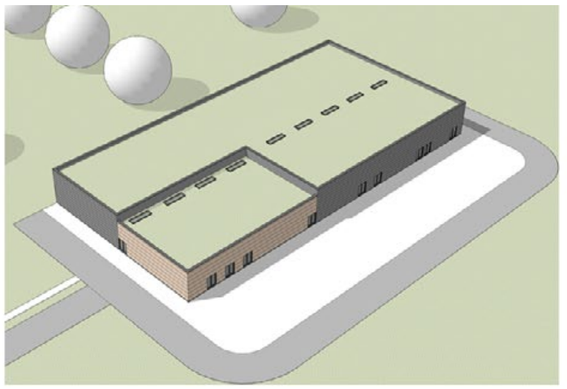


3.16 DESIGN DEVELOPMENT

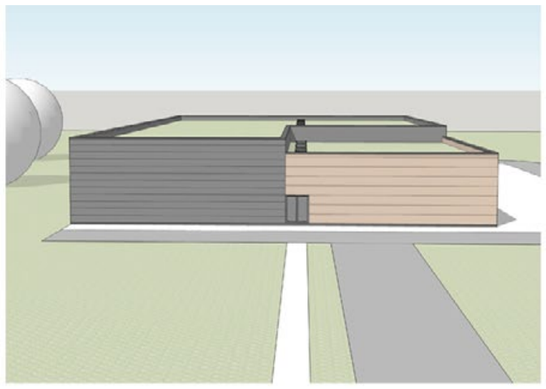
The following elevation study explores massing, materials and scale. (Refer to supporting information for the proposed elevations.)

ELEVATED SOUTH EAST FACING ISOMETRIC (ADMIN)

FRONT ELEVATION

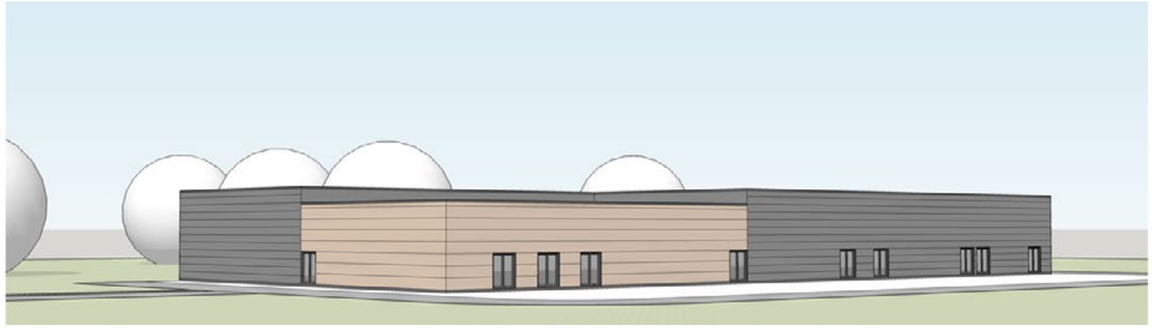


ELEVATED NORTH-EAST FACING ISOMETRIC (PL1)



PL1 APPROACH

GROUND LEVEL SOUTH-EAST VIEW

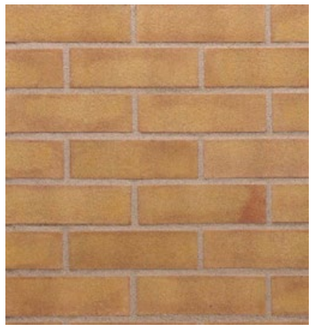


PL1 NORTH-EAST GROUND LEVEL VIEW

The following development images show how a material palette could be used to unite the buildings across the site. Masonry cladding could be used at the main entry points and the composite cladding to less prominent elevations and Rodeca cladding used on the warehouse. Following further development of the proposals with the End Users, the composite cladding was repalced with masonry cladding to avoid potential interference issues with the antennaes.

3.17 MATERIAL PALETTE

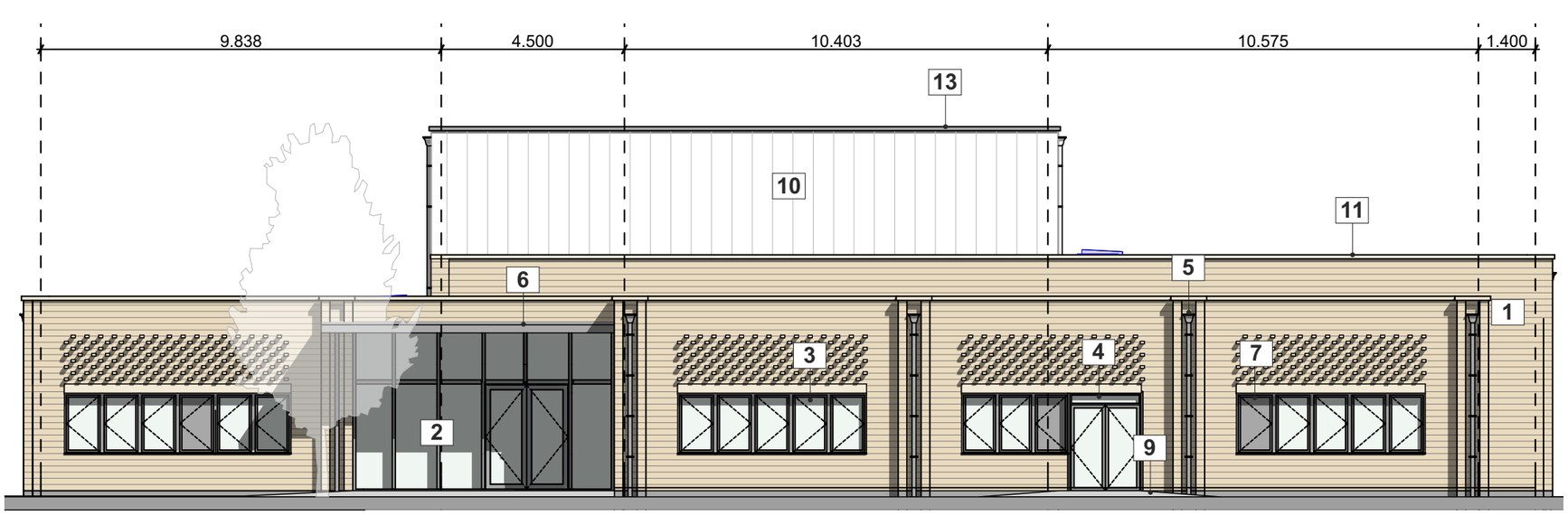
The chosen material palette consists of materials that are translucent and natural in colour, this approach reflects the desire for the building to be unassuming and harmonious with the surrounding context whilst integrating with the base design guide.



1. WEINERBERGER BUFF BRICK
(Planners approval to match Medical & Dental)

2. KAWNEER CURTAIN WALL SYSTEM
(Light grey colour to match Medical & Dental).

13. RODECA CLADDING
(Opal clear translucent as a neutral palate).



ADMIN BUILDING FRONT (EAST) ELEVATION

MATERIALS KEY

1. BRICKWORK IN WEINERBURGER BUFF FACING BRICKS IN NATURAL MORTAR AND STRETCHER BOND.
2. KAWNEER CURTAIN WALL STICK SYSTEM AAR100 (OR EQUIVALENT) POWDER COATED IN MID/LIGHT GREY
3. WINDOW FRAMES TO BE KAWNEER CURTAIN WALL STICK SYSTEM AAR100 (OR EQUIVALENT) POWDER COATED IN MID/LIGHT GREY EXTERNALLY AND WHITE INTERNALLY
4. DOOR FRAMES TO BE KAWNEER CURTAIN WALL STICK SYSTEM AAR100 (OR EQUIVALENT) POWDER COATED IN MID/LIGHT GREY EXTERNALLY AND WHITE INTERNALLY, RECONSTITUTED STONE LINTEL TO MATCH BRICK COLOUR
5. RAINWATER GOODS TO BE UPVC, COLOUR; MID/LIGHT GREY
6. CANOPY FORMED FROM SINGLE PLY ROOFING MEMBRANE, COLOUR TO MATCH WINDOWS / CURTAIN WALLING
7. CERAMIC BACKED GLASS TO FORM LOOK-A-LIKE PANELS, COLOUR; MID/LIGHT GREY.
8. LOUVRED STEEL DOORS AND FRAMES IN MID/LIGHT GREY POWDERCOATED PAINT.
9. CONCRETE PAVING TO PATHS TO BE MARSHALLS SAXON (OR EQUAL APPROVED) COLOUR; NATURAL.
10. RODECA 60MM LBE 60MM OPAL ANTIBLEND RAINSCREEN PANEL SYSTEM
11. RECONSTITUTED STONE PARAPET CAPPING TO MATCH BRICK COLOUR
12. NOTE: ROOFING TO BE SARNAFIL SINGLE PLY MEMBRANE. NOT SHOWN ON ELEVATION (BEHIND PARAPET)
13. MID/LIGHT GREY ALUMINIUM POWDER COATED PARAPET CAPPING.

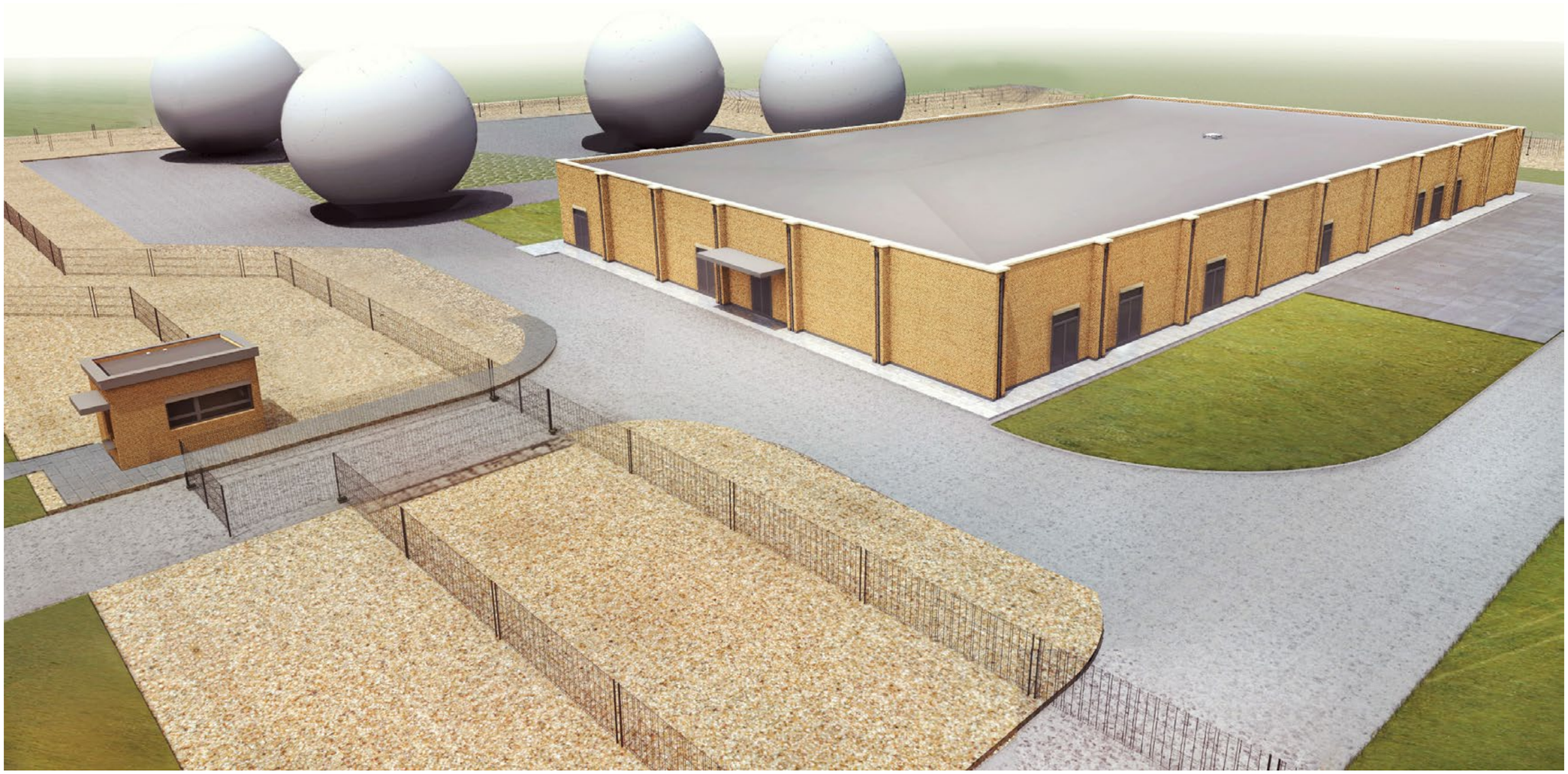
3.18 VIEWS OF PROPOSAL

South-East facing view highlighting the admin building main entrance

ADMIN BUILDING

3.18 VIEWS OF PROPOSAL

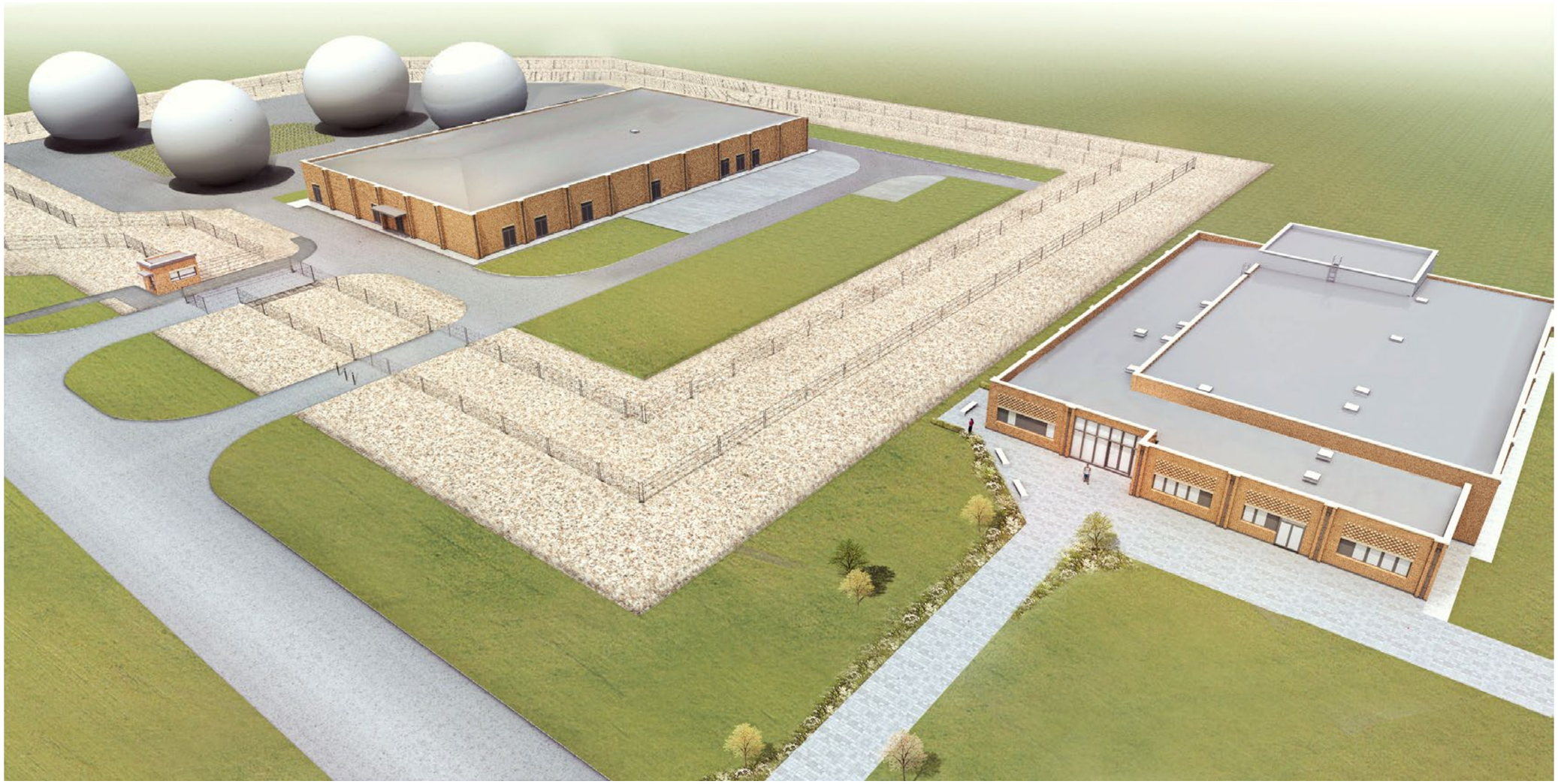
South West facing view of the PL1 building and Entry Control Point kiosk with satelittes behind



PL1 BUILDING AND ECP KIOSK

3.18 VIEWS OF PROPOSAL

South West facing view of the PL1 and Admin buildings



ISOMETRIC VIEW OF THE SATCOM FACILITY

Please note that the four geodetic domes shown in these views are provided for illustrative purposes only. The foundations and sub-surface infrastructure for these domes will be incorporated within this application however the provision and installation of the geodetic domes will be undertaken by others and will be the subject of a separate planning application.

3.19 LANDSCAPE DESIGN

(Refer to the supporting documents the proposed site and landscape plans.)

The proposals have been designed to enhance the existing landscape, contributing to the open countryside feel of the site, while still complementing the building forms. Physical and visual connectivity across the site has been a key driver in the design process with the design has taking into account security considerations and responding with a pallet of durable hard and soft landscape treatments.

The main aim of the landscape design is to create an inviting pedestrian link from the car park to the Admin building. This will act as the main route for building users. A durable vehicular grade macadam road is also proposed to provide vehicular service access across the site.

The landscape surrounding the Admin building will be enhanced through the use of shrub and hedge planting. This will provide a pleasant area for staff to enjoy sitting outside and will also soften the view towards the PL1 security fences.

The scheme proposes the use of native and ornamental specimen shrubs to compensate for a lack of trees which would not be in compliance with the security requirements of this development. Suggested planting locations have been designed to connect the new development to the existing site and surrounding hillside. Proposed species rich meadow areas blend with existing landscape character. A reduced cutting regime for these areas will aid in establishment of wildflower meadow, contribute to environmental credits and lead to significantly reduction of maintenance inputs. Some of the prominent areas will benefit through the use of spring bulb planting. This will have a big impact during the spring season.

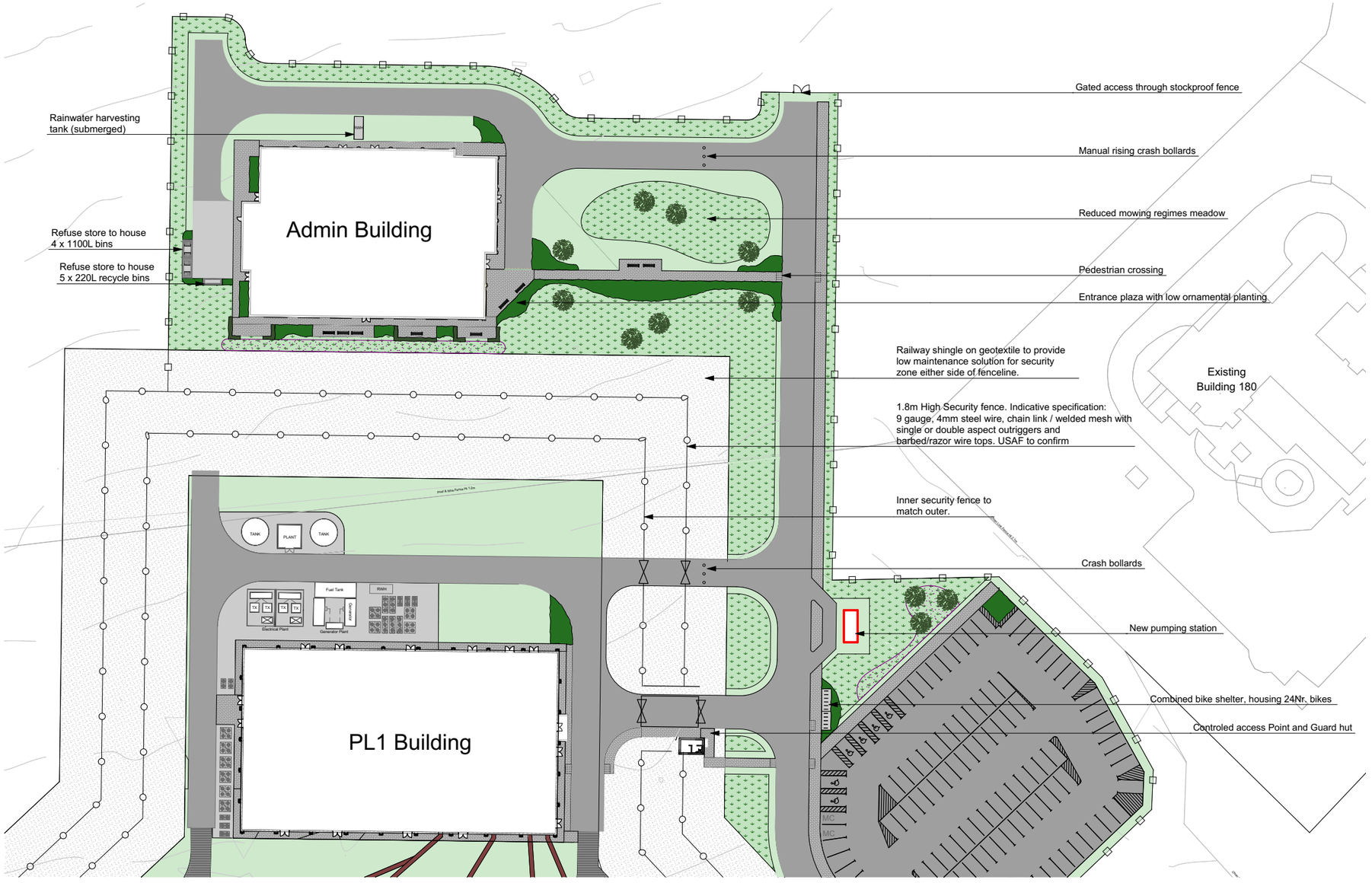
The enhanced plaza to the east façade of the Admin building, has been designed to create an inviting entrance space. A pedestrian link is proposed between the plaza and the main car park. Bike shelters are also provided adjacent to the car park to encourage more active and sustainable means of transport. A number of benches have been proposed for the area to the front of Admin building providing social opportunities for site users. Timber panelled bin store compounds provide space for recycling and refuse bins are strategically located within good access of the building. Vehicular access is provided from both sides of the Admin building to allow for servicing and bin collection to the rear and a drop off point to the front.

The proposed planting around the building takes the form of clipped hedges and ornamental shrubs adding important seasonal interest. A planting strips run along the west façade of the Admin building, which offers for some privacy to the offices behind. The major planting bed runs along the pedestrian link and then wraps around the entrance plaza, preventing users from feeling too exposed while moving through the open landscape.

A landscape plan has been developed for the proposed facilities and is included in the planning submission. An external lighting report and Ecology report have been produced and are included in the planning submission.

EXAMPLES OF LANDSCAPE PALLET

3.20 LANDSCAPE PROPOSAL



LEGEND

Proposed shrub
shallow rooted specimen shrubs

Proposed grass areas
seeded/ turfed.

Low maintenance meadow planting
seeded, reduced mowing regimes

Proposed mixed ornamental planting
shrubs, and perennials

Proposed hedge
Double staggered at 450mm centres.

Spring Bulb Planting
for seasonal intrest

Concrete base
for bin store compounds and concrete hardst service areas (to engineers specifications)

Vehicle grade macadam
to Engineers details -
parking bays / dropoff.

Block paving
Pembury
Block edging.

Buff Tactile paving
blister paving denoting level change with associated drop kerbs.

Benches & Seats
FSC® hardwood, galvanized steel

Bin store
Refuse store to house 4 x 1100L bins and 5 x 220L recycle bins.

Reinforced grass or Grasscrete
Grass road(Grass Concrete Ltd or similar approved)
Occasional vechicle over - run & maintence access.

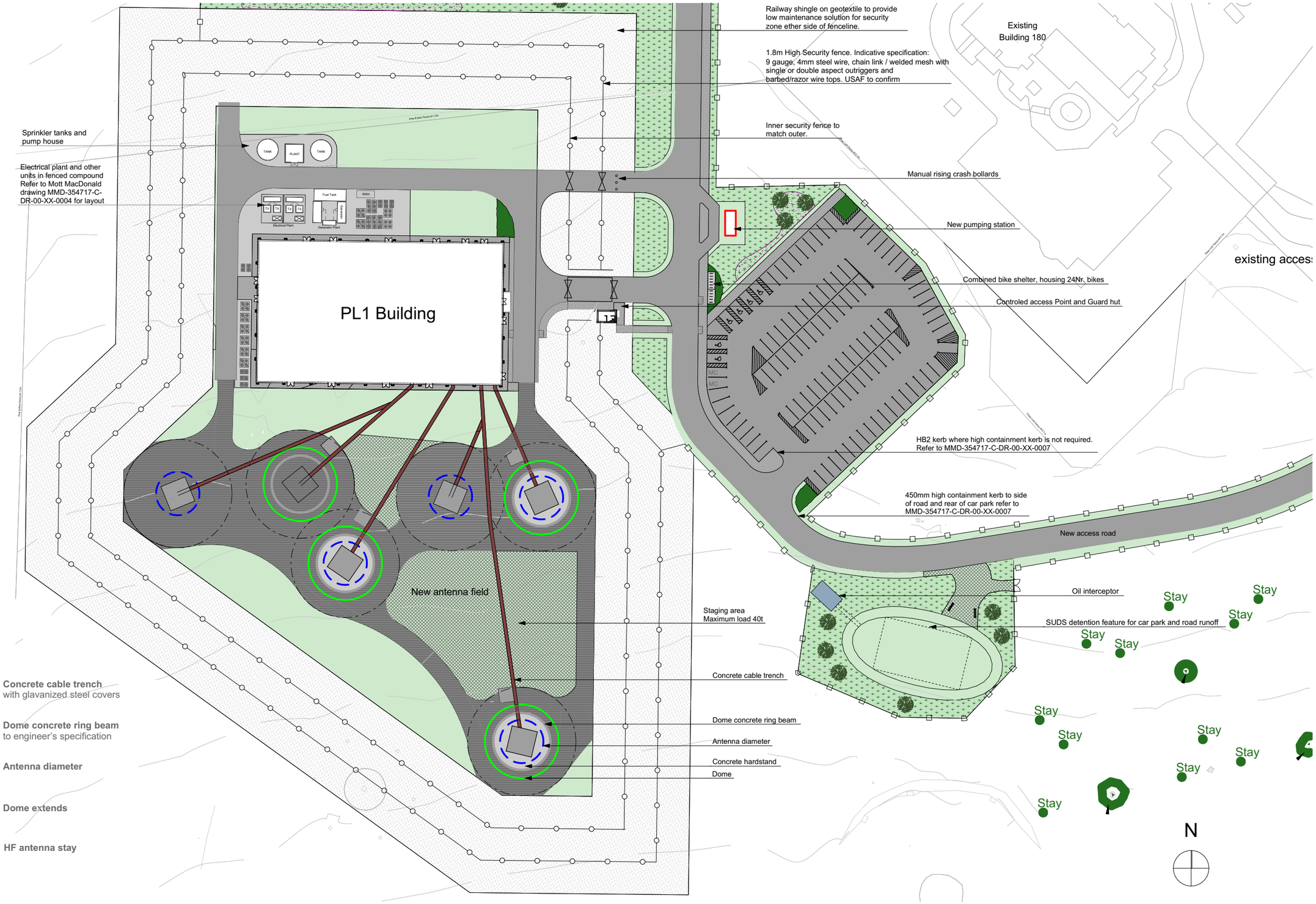
Heavy duty surface able to support crane
to engineer's specification

Shingle security zone
railway shingle

New security fence
to USAF specifications

New stock proof fence
with gate

Cycle shelter


Railway shingle on geotextile to provide low maintenance solution for security zone ether side of fenceline.
1.8m High Security fence. Indicative specification: 9 gauge, 4mm steel wire, chain link / welded mesh with single or double aspect outriggers and barbed/razor wire tops. USAF to confirm
Inner security fence to match outer.
Manual rising crash bollards
New pumping station
Combined bike shelter, housing 24Nr. bikes
Controled access Point and Guard hut
HB2 kerb where high containment kerb is not required. Refer to MMD-354717-C-DR-00-XX-0007
450mm high containment kerb to side of road and rear of car park refer to MMD-354717-C-DR-00-XX-0007
New access road
Oil interceptor
SUDS detention feature for car park and road runoff
Sprinkler tanks and pump house
Electrical plant and other units in fenced compound Refer to Mott MacDonald drawing MMD-354717-C-DR-00-XX-0004 for layout
Staging area Maximum load 40t
Concrete cable trench
Dome concrete ring beam
Antenna diameter
Concrete hardstand
Dome
PL1 Building
New antenna field
Existing Building 180
existing acces
TANK
PLANT
TANK
Fuel Tank
RWH
Electrical Plant
Generator Plant
Concrete cable trench with glavanized steel covers
Dome concrete ring beam to engineer's specification
Antenna diameter
Dome extends
Stay
HF antenna stay
N

3.21 HARD LANDSCAPE TYPOLOGIES

HARD SURFACES AND EDGING

RAILWAY SHINGLE

Railway shingle will be placed on geotextile in a wide strip to provide low maintenance solution for security zone between and either side of the secure fencelines.

HIGH CONTAINMENT KERB

A 390 x 400 x 665mm kerb designed to prevent vehicles from leaving their intended path and protect buildings from being driven into.

PEMBURY BLOCK PAVING

Charcoal 100 x 200 x 60mm block paving is used to highligh the pedestrianised areas through the development

TRUCKPAVE

Reinforcing areas of the new antenna field which are likely to be utilised for staging, and allowing for access to the SUDS detention feature. Maximum load 40t. Manufactured from recycled plastic, filled with grass seed.

KEY MATERIALS:

- New access roads will be asphalt surfaced edged with pin kerbs.
- Reinforced (grass crete) areas have been provided for ease of temporary maintenance of the antennas, whilst retaining a green appearance.
- Surrounds of the buildings and surfaces intended for pedestrian use only are highlighted with the use of feature block paving.
- A 300mm gravel strip runs immediately along the building edge.

FENCING

HIGH SECURITY FENCE

Example image of barbed/razor wire toped security fence. Final specification to be confirmed by USAF.

STOCK PROOF FENCE

1.15m high stock proof fence build using FSC timber posts at 3.5m centres and strained wire

STREET FURNITURE / EQUIPMENT

TIMBER BENCH

BOLLARDS

Static Bollards to provide a versatile high security solution against unauthorised vehicle access or hostile attack (To spec PAS 68 V/7500(N2)/48/90 with zero penetration or equivalent tested to IWA or ASTM as appropriate)

BIKE SHELTER

TIMBER BIN STORE

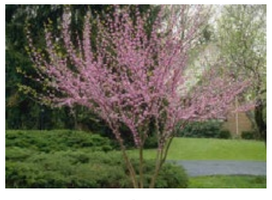
Combined bike shelter, housing 24Nr. bikes and example picture of a FSC timber bin store. The bin stores by the Admin building needs to accommodate 4 x 1100l bins and 5 x 220l recycling bins.

3.22 SOFT LANDSCAPE TYPOLOGIES

SPECIMEN SHRUBS

The design takes into account security considerations and therefore specimen shrubs are proposed where trees would be typically used. In addition, the proposed species are also shallow rooted to avoid the potential for interfering with underground services. Three ornamental species (Amelanchier Canadensis, Cercis Canadensis and Cornus Florida) have been selected to provide year-round interest and modern setting for the Admin Building. Two native species (Corylus avellana and Salix viminalis) are used to provide suitable backdrop for the SUDS detention feature. The shrubs should be maintained as a multi stem to achieve a tree-like effect whilst maintaining visual permeability.

Amelanchier Canadensis



Cercis Canadensis

Cornus Florida

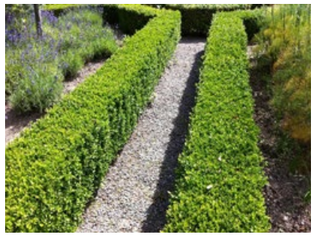
Corylus avellana

Salix viminalis

LOW GROWING SHRUBS

Ornamental shrub planting is proposed at prominent areas of the site to add interest and soften larger areas of hard landscaping. Ground cover species should be used to establish low growing closed planting requiring little maintenance.

LOW HEDGES



Clipped hedges will accompany the shrub planting by the Admin building, to create and define spaces for people to relax outside. It will also be providing a sense of enclosure whilst allowing for natural surveillance and view into the wider landscape. Species which would serve well this purpose are Berberis darwinii Prunus laurocerasus, Lonicera nitida or Buxus sempervirens ‘Suffruticosa.

LOW MAINTENANCE MEADOW

Reduced cutting regimes are proposed to minimise maintenance, increase biodiversity and create a landscape blending with the surrounding countryside. To achieve tidy appearance, a 1.5m wide mown strip should be maintained anywhere where the meadow borders with hard surface. Ideally the cutting should be left on the ground for a few days to help shed the seed back into the meadow. After this all the cuttings should be removed, helping to maintain low soil fertility which prevents grass species from taking over.

NATURALISING BULBS IN LAWNS

Two areas of the site, which are expected to be most visited, have bulb planting proposed to extend the flowering season of the scheme. Bulbs such as dwarf daffodils, crocuses, snowdrops and winter aconites will transform the lawn into a wonderful display of colour in spring.

WILDFLOWER SUDS TURF

Specialised Wildflower SuDS Turf should be used to plant the newly created detention feature. This turf is suitable for periodic flooding and assists in flood water dispersal whilst also being drought tolerant. It requires cutting only once every autumn, with cuttings collected and removed to a suitable composting facility.

3.23 ACCESS STRATEGY

The access strategy needs to be undertaken to demonstrate and ensure that access into and around the proposed works and use of the buildings will be accessible for all. The following describes the access into the main site, and summarises the main points for each of the proposed works.

The design shall fully comply with all aspects of these requirements which shall be treated as mandatory and minimum requirements. It shall be the full aspiration of the design to ensure that physically handicapped persons working or visiting these premises shall have ready access to, and use of, the building. The most onerous conditions contained within US ADAAG, US ABA and UK Building Regulations shall apply.

ACCESS INTO THE SITE

RAF Croughton is a secure site accessed via a village gate off the B4031 to the north, or a vehicular gate off the A43 to the south.

We have taken advice and used the following as main sources of reference:

- Approved Document to Part M of the Building Regulations (2004)
- Access to and use of buildings, although not all of it is relevant to the proposed work;
- BS8300:2009 'Design of buildings and their approaches to meet the needs of disabled people- Code of Practice, although not all of it is relevant to the proposed works.
- A transport assessment has been undertaken to assess the impact of the reconfigured access and demand on the existing and proposed site infrastructure. The transport assessment has been included in the planning submission.

PL1 BUILDING AND ADMIN BUILDING

Entrances:
The main entrances for both buildings are fully accessible with ramped access provided where required.

Accessible WC:
At least one unisex toilet has been provided at ground floor for both buildings.

Accessible Shower:
Both buildings incorporate an accessible shower.

Entrance Lobbies:
Lobbies are to be sized to be suitable for users both standing and seated and space on both sides for wheel-chair users with a waiting area with adequate seating and space for wheelchair users. A firm and flush entrance mat will be provided extending a minimum of 1500mm into the building.

Corridors:
Main corridors are to be minimum 1200mm clear width with sufficient space to allow one door to be cleared before negotiating the next.

Direction:
Signage for way-finding will be provided.

Internal doors:
Clear opening widths will be a minimum of 800mm with a 300mm clear, unobstructed space adjacent to the leading edge of the door, to the pull side.

Internal Finishes:
The colour scheme will be chosen so that there is a Light Reflectance Contrast between the walls, floors, ceilings, counters, doors and ironmongery. The recommendations used will be from design guidance produced by ICI Paints, Building Sight by JMU Access Partnership and the Royal National Institute for the Blind.

3.24 SUSTAINABLE STRATEGY

A combination of two approaches can be taken to reduce the emissions due to buildings. Steps can be taken to improve the efficiency of buildings so less energy is used in providing the same building performance. Examples of this would be using light fittings that give the same light output for a lower electrical power and controls that turn off building services when rooms are unoccupied. Preferably in addition to such measures, the second approach is to provide systems that emit less Carbon Dioxide for the same building energy usage.

Wherever possible in the detailed building services design for the two buildings, the efficiency of systems and controls will be maximised.

This report focuses on the feasibility and appropriateness of the second approach that is to say the installing Low or Zero Carbon Dioxide (LZC) emitting technologies as energy sources.

In response to the increasing concerns about Carbon Dioxide emissions the DREAM assessment offers credits for enhancement against Part L requirements, in addition to the credits for the LZC feasibility review. These can be achieved where the Building Emission Rate (BER) figure is at least 10% lower than the Target CO2 Emission Rate (TER).

The minimum 10+% target is a significant factor to be considered in the assessment of feasibility and appropriateness of LZC systems that follows, as it dictates a much more challenging reduction target than typical current planning constraints. Some systems may not be able to meet these targets or may only meet them in an unfeasible way.

The PL 1 building will require a stand-alone building management system (BMS) controlling all major building services plant. This BMS shall not be connected to the existing site wide BMS infrastructure.

The Admin building will require a building management system (BMS) controlling all major building services plant. This will also be a standalone system.

It is essential that the energy uses in the building are sub metered to comply with the current building regulations.

To summarise the most feasible LZC energy systems include: Air Source Heat Pumps, Photovoltaics on the Admin Building, Solar Thermal panels on the Admin Building. Rainwater harvesting is also considered a good design choice.

Consideration will need to be given as to the capital costs and resilience of the above systems, should an N+1 requirement be implemented. The base loads for power and cooling which may be covered by the systems will need to be backed up by more traditional plant. i.e; generators, water based chillers, gas fired boilers, etc, meaning that extra plant space with low security access needs to be allowed for at the very early stages of the design process.

Further detailed analysis needs to be carried out on the above energy sources to ensure the most environmentally sound, cost effective and practical solutions are identified.

3.25 SURFACE WATER MANAGEMENT

RAF Croughton does not currently have a traditional Base wide surface water drainage system. Instead there are several small collection systems that drain areas within the Base which discharge, via oil separators, into two small watercourses beyond the Base's boundary to the north, west and south.

All new surface drainage shall be developed in accordance with BS EN 752, the current edition of Sewers for Adoption 7th edition and Building Regulations Part H. Any appropriate Environment Agency requirements shall also apply.

The design life of any new drainage shall reflect the design life of the building, the finished floor levels being a minimum of 0.15m above adjacent grades. Design and construction strategies shall be implemented to reduce surface water runoff and the discharge of polluted water offsite. Where possible and practical, it is recommended that all new surface water drainage be designed to utilise sustainable urban drainage system (SuDS) techniques.

A number of soakaway tests were carried out as part of the initial ground investigation which found good rates of infiltration across the site. Therefore as part of this drainage strategy no positive outfall has been investigated. Drainage features have been sized based on current known information and are briefly summarised below. A 30% allowance should be made for climate change with a 1 in 100 return period used to ensure the system is adequately sized to limit the risk of flooding both on the site and outwith the site boundary.

Drawing MMD-354717-C-DR-00-XX-9021 indicates the drainage master plan.

The proposed building sits approximately 400m south of a ridgeline which runs from northeast to southwest across the Base. The existing site terrain may be categorized as grazing land which slopes between 2-4% to the southeast. As such any new paved areas associated with the new development are unlikely to impact on the existing surface water drainage system for the Base which is predominantly located to the north side of the ridgeline.

The new works consists of the following areas;

PL1 building,
Admin building,
Entry Control Facility (including Entry Control Building)
External plant areas
Antenna pads (including connection of sump from cable trenches)
Associated pavements and access roads
117 space car park

This results in a total paving/ building area of approximately 25170m2

The drainage strategy will utilise a rainwater harvesting system with a single attenuation feature which has been designed as a hybrid infiltration blanket and basin system.

In order to meet DREAM requirement D-WR-5 the rainwater harvesting system would need to be sized to accommodate a 2 week storage capacity for WCs, however, the attenuation blanket and basin will need to be sized assuming that this system is full and can therefore not be used for attenuation purposes.

Based on provisional calculations it is envisaged that rainwater harvesting tanks and associated infrastructure would need to be provided within a plan area of:

PL1 building – 5m x 2m
Admin building – 5m x 2m

Surface water generated from the development will be collected via a pipe network and attenuated in a hybrid infiltration blanket and basin system (provisionally sited south of the new access road) with approximate dimensions detailed below:

Infiltration Blanket

– Infiltration Blanket Width = 15m
– Infiltration Blanket Length = 25m
– Infiltration Blanket Depth = 0.6m

Attenuation Basin

– Width of basin bottom = 26m
– Length of basin bottom = 28m
– Depth = 1.5m

Based on soakaway tests undertaken in this area, it has been assumed that water will infiltrate at 4.83x10-5 m/sec mitigating the need for a high level overflow to accommodate events which exceed the normal design standard (1 in 100 +CC).

A flood risk assessment has been undertaken to access the flood risk of the new proposals at RAF Croughton. The flood risk assessment has been included in the planning submission.

4.0 SUMMARY AND CONCLUSIONS

The proposed buildings will provide a valuable new SATCOM / Tech Control facility for 422nd ABG. The site context and functionality has driven the design of the buildings, from the materiality, scale and massing. Developing sensitive buildings driven by response to context is integral to a site located within rural communities. We have developed a series of proposals which have the following core principles to the design:

- The visual impact is kept to a minimum so that the 'openness' of the site is maintained, preserving views across the site
- The building materials have been carefully selected so that they harmonise with the surrounding context
- Through programmatic interrogation the building footprints and heights have been optimised for the needs of 422nd ABG.

The material palette was carefully selected so that it would help harmonise with the surrounding context and wider buildings of Croughton. Continuity between the material palette of the new builds and the existing Medical Dental Centre ensures the formation of a continuity between buildings on site. The reflective and subtle colours of the materials chosen for all proposals aids in creating minimum disturbance to the landscape and illustrates sensitive design.

The proposals will provide the following benefits:

- Purpose built PL1 and Admin buildings to serve the ongoing operational requirements at RAF Croughton with increased energy efficiency.
- Naturally day lit warehouse for equipment storage.
- Consolidation of existing services at RAF Croughton.
- Specialised accommodation for vital security assets of national importance

5.0 SUPPORTING DOCUMENTS

The following documentation is included in support of this planning application. It is worth noting that some of these documents were produced at the Project Brief phase where a wider scope of works was proposed. Following this phase, through the MOD/DIO approvals and design process the scope of the requirement has been refined and altered accordingly.

Design Drawings (Proposed Plans, Elevations, Landscape & Visuals)

1 PL1 Building

2 Admin Building

3 Entry Control Point Building

Supplementary Reports & assessments

- Biodiversity / Ecology Survey
- Contaminated Land Assessment
- Flood Risk Assessment
- Heritage Assessment
- Noise Impact Assessment
- Planning Statement
- Transport Statement
- Lighting assessment