



DESIGN AND ACCESS STATEMENT

PROJECT MENSA

REPLACEMENT WARHEAD ASSEMBLY AND DISSASSEMBLY FACILITY

Application for Planning Permission for the Main Processing Facility (MPF) and Support Building with 16 lightning protector towers, associated Plant Building, gatehouses, vehicle inspection bays, sub-station buildings, security fence, access roads, hard standing and Sustainable Drainage System (SuDS) infrastructure

AWE Burghfield, Berkshire

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1. INTRODUCTION

1.1 This Design & Access Statement (DAS) supports the planning application for a Main Processing Facility (MPF) and Support Building with 16 lightning protector towers, associated Plant Building, gatehouses, vehicle inspection bays, sub-station buildings, security fence, access roads, hard standing and Sustainable Drainage System (SuDS) infrastructure at the Atomic Weapons Establishment (AWE), Burghfield site.

1.2 The project, which is called MENSA, seeks to consolidate existing operations in to a single building called the Main Processing Facility. The proposed MPF building footprint is 14,760 square metres (m²) creating a total floor area of 19,603 m² gross within the context of the existing buildings at AWE Burghfield. Additional support facilities will create an additional 6970 m². Thus the total floor space comprises 26,573 m². This replaces about 30,000 m² of existing floor space providing a net reduced floor space of 3,427 m².

1.3 This statement provides information about the proposed development and its settings with details of construction techniques, which is designed to propose a high quality sustainable development. This statement does not form part of the planning application as stated in the Circular 01/2006. The aim of this statement is to set out the rationale behind the development proposals in terms of the use, amount, layout, scale, landscaping, appearance and access.

Purpose of the Proposed Development

1.4 The purpose of the development is for a replacement facility for the assembly and disassembly of warheads. The new facility is to be located centrally within the AWE Burghfield site, as close to the existing facility area as possible. The proposal comprises the following:

- Main Processing Facility – measures 131 m length x 113 m width and 12.6 m in height. The total gross floor area is 14,760 m² at ground floor level and 4843 m² at first floor.
- Support Building – measures 58.9 m x 57.4 m width and 8.5 m height, with gross floor area of 3271m²;
- 16 lightning protector towers, of which 14 towers will be 44.6 m in height and surround the Main Processing Facility and two will be 13 m in height and located at the Plant Building;
- Plant Building – measures 58 m x 36.1 m, with a gross floor area of 2095 m² and height 6.7 m;
- Two Gate Houses – northern gatehouse measures 16.4 m x 10.1 m with a gross floor area of 145 m² Southern gatehouse measures 12 m x 6,25 m with a gross floor area of 74 m²;
- Two Vehicle Inspection Bays – each measuring 17.7 m x 8.79 m with a gross floor area of 155 m²;
- Two electrical sub stations – each measuring 22.6 m x 12 m and with gross floor area of 269 m²;
- Associated access roads and hard standings;
- An Intake sub-station located adjacent to the Pingewood Gate with a gross floor area of 533 m²;
- Security fencing; and
- Two SuDS lagoons – the north storage pond will be approximately 850 m² and the east storage pond approximately 1129 m².

Table 1 summarises the floor area

| | Facility | Gross Floor Area (square metres) |
|----|---------------------------------------|---|
| 1 | Main Processing Facility Ground Floor | 14,760.13 |
| 2 | Main Processing Facility First Floor | 4,843 |
| 3 | Support Building | 3,271.32 |
| 4 | Energy Centre | 2,095.70 |
| 5 | Gate House North | 145.19 |
| 6 | Gate House South | 74.75 |
| 7 | Vehicle Inspection Bay (North) | 155.92 |
| 8 | Vehicle Inspection Bay (South) | 155.92 |
| 9 | Electricity sub station (East) | 269.26 |
| 10 | Electricity sub station (West) | 269.26 |
| 11 | Main Intake sub station | 533.16 |
| | Total | 26,573.61 |

1.5 During 2008 over 70 buildings amounting to some 13,000 m² of 1940's/50's redundant buildings have been decommissioned and demolished with the resultant crushed aggregates (about 50,000 m³) being retained on site for re-use. The demolition was undertaken as permitted development. Figure 2 identifies the location of the cleared buildings. The AWE Burghfield site provides significant employment and economic benefits to the local community. The process of modernisation of AWE is outlined in the Site Development Context Plan (SDCP 08) and includes refurbishing and replacing facilities constructed in the 1940s, 1950s and 1960s. Figure 4 is an extract from the SDCP 08 Illustrative Framework Plan AWE Burghfield 2005-2015. The location of the new modern facility is referenced No 7.

1.6 The SDCP 08 identified the principal physical components of the programme of investment which will secure the replacement and refurbishment of the ageing facilities at AWE sites. The SDCP 08 accompanied by Strategic Sustainability Appraisal (SSA) May 2006 which identifies the main environmental and related issues that are likely to arise in the course of the implementation of the programme. Both of these documents provide the context within which the programme will be brought forward.

The key elements of the programme are:

- Improving standards of design;
- Enhancing environmental performance;
- Reducing environmental impact;
- Managing traffic;
- Maximising community benefits.

The requirement for project MENSA was to provide a solution that would:

- Maintain the existing assembly/disassembly capability;
- Meet the requirements of the UK nuclear deterrent maintenance programme, and;
- Meet "modern standards" in terms of nuclear and occupational safety.

1.7 A detailed options assessment was undertaken against a range of criteria, which included technical compliance, safety, environment, stakeholder expectation, programme interaction, security, cost and potential risks. Having considered all the options it was concluded that constructing a new facility would be the best option. This option could bring all the operations under one roof; increase efficiency and reduce dispersion of the assembly/disassembly processes and tasks between buildings; improve working conditions for staff; and reduce the need for movement and transportation of goods. In addition to this it also works towards the Government's aims to make sites and buildings more sustainable, and secure.

1.8 In accordance with the SDCP 08, the figures appended in the document are as follows:

- Figure 1: The Site Location Plan / Local Context Plan
- Figure 2: Site Clearance of Existing Buildings Plan
- Figure 3: The Opportunities and Constraints Plan
- Figure 4: Extracts from SDCP 08 Plan
- Figure 5: MENSA Concept plan
- Figure 6: Development Masterplan (AWE Burghfield)

National and Local Policy Context

1.9 The design principles used in this site are based on National and Local Guidance including:

- Design and Access Statements, how to write, read and use them, CABI, 2006, reprinted 2007.
- Manual for Streets, DCLG, DFT, 2006.
- DCLG Circular 10/2006 Guidance on changes to the Development Control System, June 2006.
- Planning Policy Statement (PPS) 1: Delivering Sustainable Development, ODPM (February 2005).
- The Value of Urban Design, CABI, UCL & DETR (2001).
- Urban Design Compendium, English Partnerships (August 2000).
- West Berkshire Local Plan Policies.

1.10 The report is structured on the guidance provided by CABI on DASs. However, it is important to be aware of the particular circumstances of this case, predominantly due to the very specific nature of the planned development and the heavily constrained context in which it is being proposed. These factors limit the scope for decision-making in respect of the use, amount and location of the proposed development, which are partially predetermined by the operational requirements of such a facility and the sensitivity of its surroundings.

1.11 Notwithstanding this, in addition to design guidance, decisions about the overall design, scale, massing and appearance of the proposals must be carefully considered and measured against the recommendations of AWE's long-term SDCP 08 as well as potential impacts of such proposals on the wider site context.

1.12 The AWE 'Site and Architectural Principles for Buildings' (2006) document was prepared to ensure a consistent architectural approach for all new and refurbished buildings on both the Burghfield and Aldermaston sites, working towards the creation of a 'Science and Technology Park' image. There are four key drivers which have been identified to influence the design of proposals. These are to:

- Create a working environment that facilitates business effectiveness and efficiency;
- Provide a more modern and improved working environment for staff;
- Contribute to an improved image and character of AWE towards that of a 'Science and Technology Park';
- Work towards the Government's aims to make sites and buildings more sustainable.

1.13 The overall approach to Burghfield is to consolidate the assembly/disassembly facility into one building in the centre of the site, taking advantage of the primary access route into the site, thus enabling progressive clearance of the remainder of the site working from north to south. To enable this consolidation the Pingewood Gate will provide access to construction traffic including heavy goods vehicle (HGVs) to the site. This gate will be closed upon completion of construction with operational traffic using the existing main gate.

1.14 The context for development is defined within the parameters of the SDCP 08 and drawn up in relation to the operational requirements of AWE. It was supported by a Strategic Sustainability Appraisal of the predicted development programme over a 10 year plan in accordance with the Defence Estates Sustainability Handbook.

1.15 A project specific sustainability appraisal of the proposed facility was undertaken in May 2006 in accordance with the AWE Environmental Management System (EMS). This appraisal has informed the process of decision making to help ensure that any potential environmental impacts is minimised.

1.16 The SDCP 08 requires that the current proposals will be considered in light of a wider Transport Strategy that will involve the adoption of demand management through more control of on-site parking, the implementation of a travel plan, and by managing movements both on and off site. Where it is feasible to do so, all future development proposals should be measured against these travel plan initiatives. The Sites Development Travel Plan 2008, sets out a series of objectives in relation to promoting more sustainable transport choices for existing and future staff, contractors and visitors, and where feasible, construction workers.

1.17 This planning application forms part of an ongoing strategy in reassessing the existing operational requirements of the site. The proposal for a new main assembly/disassembly facility to replace those already in operation, will allow the intensification of existing land uses to the centre, and pave the way for a site wide programme of rationalisation involving the demolition of redundant buildings, the clearance of land and implementation of a site wide landscape scheme.

2. SITE APPRAISAL

Site Location

2.1 AWE Burghfield is located approximately 0.5 m east of Burghfield village and 6 km to the south west of Reading see Figure 1 Site Location Plan / Local Context Plan. Open fields and occasional woodland areas mainly surround AWE Burghfield. A railway line lies approximately 0.5 km to its east and several residential properties lie to its west. The M4 Motorway is 1 km to the north. The application site is located centrally within the Burghfield site as shown in Figure 4: Extracts from SDCP 08 Plan. AWE Burghfield covers an area of approximately 87 hectares (ha) and the application site area extends to 21.2 ha including construction enclave, the construction workers car park and HGV marshalling yard, open areas, access roads and The Mearings, beyond the site fence line between AWE Burghfield Main Gate and Reading Road.

2.2 Figure 2: Site Clearance of Existing Buildings Plan shows all the existing buildings which have been decommissioned and demolished to provide a cleared site. The existing access points into the site and trees on the sites form part of the opportunities and constraints in the appraisal of the site.

2.3 Figure 3: Opportunities and Constraints Plan shows that the key opportunities for this site are its main access points into the site situated at two ends of the site. This access is linked with the movement hierarchy of AWE Burghfield as illustrated in the Landscape Strategy (May 2008). This site links both accesses to the primary and secondary routes of the movement hierarchy. The other opportunity is that the site is cleared and is secured with controlled gates at entry/exit points. This provides the opportunity to design a building to the size and dimension required for the purpose of the development, as defined in Para 1.4. A key constraint however, is the existence of the mature oak trees. The retention and protection of these trees forms a priority in the design process and will play a part in determining the location and size of the building.

History

2.4 The Ministry of Defence (MOD) requisitioned the site in 1938, with 225 acres of land set aside for the construction of a Royal Ordnance Factory. At this time the site was used for the manufacture of munitions up until the late 1940s when Burghfield became part of the atomic production programme. The site was gradually developed throughout this period in light of the requirement for specialist buildings and bunkers, and the distinctive 'Gravel Gerties', so nicknamed because of the gravel reinforcement of their concrete domed roof and reinforced concrete walls.

Character and Built Form

2.5 The character of the site may be described as resolutely functional, with an over-ground, elevated network of pipes and cables extending alongside roads, and large areas of grass mounding to act as blast bunds around individual buildings. It is in part an operational nuclear licensed site containing occupied and unoccupied buildings and structures used for a variety of industrial processes. Although the proposed MENSA site falls outside the existing licensed areas, an application has been made to the NII to include the land within which the MPF and support building will be located.

2.6 The majority of the site is relatively flat with the built form alongside a series of man made mounds varying in size and proportion. The absences of any form of landscaping beyond the scattered mature trees are associated with the rolling linear grassy mounds in the south and east of AWE Burghfield. The site is surrounded by woodland belts, copses and hedgerows in the landscape to the north, south-east and south-west; the site is generally well screened in the local landscape.

2.7 The built form of the Burghfield site comprises mainly regular buildings spread throughout the site within a regular grid street structure. The buildings within the site vary considerably in terms of size, scale and appearance. There is no standard or consistent form of development other than the general trend towards large floor plate, single storey buildings of an industrial appearance, usually set within an area of grassland with parking located remotely.

Access & Movement to the site

2.8 Access to the site during operations will be through the northwest main gate, via the road called 'The Mearings'. This will be the primary access to the application site and AWE Burghfield. This encompasses the existing access extending east west across the AWE site (through, to and including The Mearings to the junction with Reading Road) and vacant and cleared land to the southwest of Pingewood Gate. AWE Burghfield is enclosed by a high security fence and is subject to strict access controls.

2.9 Pingewood Gate is presently closed to all traffic other than security, but is proposed to be opened to allow construction traffic including heavy goods vehicles (HGVs) gaining access through both gates to the site. A construction workers car park will be provided close to Pingewood Gate removing the need for the vehicles to enter the main site.

Landscape & Visual Analysis

2.10 The AWE Burghfield site lies on the southern side of the Kennet valley, where the landform begins to rise into the long ridges of the Thames Basin Heaths. The landscape character of the immediate surroundings can be described as being:

- Burghfield Open Farmland, in which groups of small woodlands and the planting around Burghfield village and Grazeley Green contrast with the trimmed hedgerows of the large, usually low-lying fields – the site is a distinctive sub-area marked by the perimeter fencing and the built development.
- Poundgreen Wooded Farmland lies to the east and south, with gently rolling topography and a dispersed pattern of settlement and small woodlands amongst the farmland.
- Burghfield Common Fringes lie to the west, with heavily wooded slopes with many small stream valleys masking the majority of properties around the edge of housing on Burghfield Common.
- Kennet Valley Gravel Beds lie to the north, where extensive water bodies, extraction and landfill mark the river floodplain, with the edge of urban Reading to the north and east.

2.11 While the study area is essentially rural in character, there are a number of detracting features such as electricity transmission lines, raised sections of the M4 motorway, and the prominent commercial buildings around junction 11 of this road.

2.12 The AWE Burghfield site itself reads as an accumulation of low-level structures and buildings, including the existing catenary structure, the central boiler house, two white silos near the eastern edge, and the perimeter fencing. The site lies at about 42 to 47 metres above ordnance datum (m AOD) on a gentle slope falling broadly southwest to northeast, and is effectively located in a shallow vale formed by the Burghfield Brook and its tributaries.

2.13 Vegetation within the site is largely confined to extensive areas of poor semi-improved grassland with pockets of good semi-improved grassland, dry dwarf shrub heath and some broadleaved plantation. There are occasional scattered trees including some mature oaks.

2.14 While it is essential to retain open views alongside the perimeter fence for the purposes of security, there may well be scope for some additional structure planting to help increase screening of the site in general.

2.15 The decanting and relocation of new and existing uses towards the north of the site will require careful consideration of the possible visual impacts of any such development on the surrounding landscape, particularly in respect of views from the north and east.

Ecology

- 2.16 There are no recognised designated sites within the site boundary. However, the AWE Burghfield Conservation Group has designated five areas of mainly good semi-improved grassland within the site as Site Conservation Areas.
- 2.17 There are no statutory sites within 1km of the site. There are two non-statutory Ancient Woodland areas within 1km of AWE Burghfield, namely Pinge Wood/Pitchkettle Wood and Amners Wood/Walkers Shaw.
- 2.18 There are no internationally protected sites within 5km radius of the site.
- 2.19 Protected species records exist for the site and a presence and absence survey has been carried out in order to determine potential impacts. It was concluded that the general location of the proposed development was of low ecological value, with the caveat that some of the buildings and a willow tree could potentially support species that have some level of legal protection and conservation interest. There are a number of mature Oaks located close to the proposed siting of the MPF together with an established tree avenue close to the proposed gate. Retention of the Oaks is highly desirable; therefore the siting of buildings should avoid their loss. In addition adequate tree protection will be required during construction. The tree avenue should be retained and extended along the main east-west thoroughfare.
- 2.20 With this in mind, development proposals will need to consider the potential for managing and mitigating potential impacts on existing flora and fauna.
- 2.21 This could be partially achieved through a well-considered landscaping scheme that includes a combination of on and off-site woodland planting and the management of grassland sward as a summer flowering meadow.

Hydrology

- 2.22 The AWE Burghfield site is supplied with water via licensed abstraction boreholes, from where it is pumped to onsite storage tanks.
- 2.23 The AWE Burghfield site is drained to the western arm of Burghfield Brook, which flows through the site along an engineered channel inside of the southern and eastern perimeters. There are eight outfalls to Burghfield Brook, all of which can be shut in case of emergency. Existing buildings drain to these consented outfalls via French drains and culverts.
- 2.24 The application site is located partially within the 1 in100 year and 1 in 1000-year floodplains of the surrounding watercourses. Development within the floodplain should not be constructed above ground levels and thus reduce flood storage.
- 2.25 Foul sewerage is dealt with via a dedicated sewerage treatment works owned by the AWE and located on site.
- 2.26 There appear to be no constraints in relation to the existing site hydrology. The new development will utilise existing infrastructure in the supply and disposal of water.
- 2.27 Opportunities to incorporate a Sustainable Drainage Scheme (SuDs) should be explored as part of the new development proposals, and indeed this is being provided as part of the application material.

Heritage

- 2.28 The existing assembly/disassembly facility, known as Gravel Gertis are currently being assessed by English Heritage for possible listing/scheduling. Should designation occur any new development will need to consider the setting/curtilage of any listing/scheduling.

3. DESIGN PRINCIPLES

Refer to Figure 5: MENSA Concept Plan and Figure 6: Development Masterplan (AWE Burghfield)

Use

3.1 The future use of the proposed development is to allow the replacement of existing facilities at AWE Burghfield to provide a single purpose-built assembly/disassembly facility and associated works. This use is predetermined by the operational requirements of the Site Development Strategy for AWE.

3.2 The site has been used by AWE for many years and the intention is to continue this use onsite for the foreseeable future. The SDCP 08 confirms that there are no practical and sustainable alternatives to AWE's continued presence at Burghfield and therefore the proposal is essential for national security reasons. The site has operated under AWE for the last 50 years and therefore the use is well established on the site, the proposed replacement facilities are appropriate within this context.

3.3 In terms of land use policies, the principle of the development of an existing employment area and re-use of brownfield land is supported by national, regional and local planning policies. The use of the site and the number of employees will not be changing; however, the scheme will support the existing Travel Plan, for example, by providing cycle parking spaces and improving the bus link between Burghfield and Aldermaston. This will enhance sustainable transport options for employees and visitors to the site.

Location

3.4 The proposed development shall be located in the central part of the AWE Burghfield site. This will allow efficient integration and consolidation between existing and proposed facilities.

3.5 Locating the proposed development within the central part of the Burghfield site will comply with the strategic aims of the SDCP 08; in that it will facilitate the ongoing characterisation, and subsequent clearance of other parts of the AWE Estate.

3.6 Locating the proposed development within the context of an existing area of industrial manufacturing, will help offset the potential visual impact of new development, forming part of an already established view framework as opposed to an individual building located in open ground elsewhere.

Amount

3.7 The amount of new development should relate well to the specific operational requirements of the assembly/disassembly process. The proposal should consider the short, medium and long-term flexibility of the proposed buildings, and how these could be internally altered or extended in a controlled future expansion.

Size, Scale and Massing

3.8 The size and scale of proposed development should be limited as far as possible in the context of the operational process required to minimise any potential visual impact from within the wider surrounding area. Building heights should be restricted in response to landscape and visual considerations and generally sit well within the wider countryside context.

3.9 As a general rule, buildings should be regularly arranged and geometrically aligned with the road network, allowing efficient access and servicing.

3.10 The physical context to development comprise the existing trees, the existing access roads, floodplain, potential listed/scheduled buildings and infrastructure. There are no other physical constraints to the overall extent of the proposals, apart from those factors that should be considered as an integral part of any development proposals involving the provision of the new facility and associated facilities. These

include the provision of adequate levels of natural light and ventilation, and the provision of emergency access to all parts of the building.

3.11 Existing buildings at AWE Burghfield vary considerably in terms of size and scale according to the specific operational requirements. In the case of the proposed facility, thought should be given to the way in which the design of new development could be lifted beyond the purely utilitarian requirements of a functional building.

3.12 A valid design approach could be one in which the requirements are met with distinctive structural/architectural aesthetic that has the benefit of ensuring proposals respond more robustly to the task of lifting the overall quality of public realm, landscape character, and gradually promote an increasingly distinctive and legible working environment. Any requirement for lightning protection should be carefully designed to integrate into the site. Although driven by a functional requirement, the aesthetic impact should not be compromised.

Layout

3.13 The building should be located inside the secure fence line and should relate well to the site, to maximise the distances to the external secure fence. Due to the need to have clear zones around the building there should be adequate space to provide vehicular and pedestrian access.

Access and Parking

3.14 The proposed development should take access from the main road utilising as far as practicable the existing internal access road, which forms the primary access into the site. There are two main entry points into the site. The main approach to street design should be based on street hierarchy for legibility. A movement plan should be prepared based on the function of the streets and roads that connect within the site and connect to the main road network. The hierarchy of the streets such as primary, secondary, and tertiary routes should be applied to the site to distinguish between streets and roads.

3.15 There is a main access road which should incorporate HGV route and pedestrian route within it. It should be linked with the internal access road located within the security fence. The building should contain appropriate shower and changing facilities to encourage staff to travel by bicycle.

Landscape

3.15 Development proposals should be set within a landscaped area and consider existing opportunities for an area, with a favourable aspect, to be used as a breakout space for employees. This space should be provided with seating / benches and hard landscaped to provide a durable, free draining surface. Appropriate low-level screen planting should also be provided within the grounds.

3.16 Ground modelling should be tied into the SuDS scheme, together with utilisation of existing outfalls.

3.17 Opportunities for standard tree planting within the setting of the building should be considered as a way of helping to provide a pleasant outdoor environment and assist ecological objectives for the site. Care should be given to the positioning of any trees to ensure that eventual canopy size and spread does not interfere with the operation of the building or the secure fence line.

3.18 Landscape design should be considered in relation to the final design of the building, the fenestration, choice of materials and location of access points etc. This ensures that the building and landscape read as a single intervention and contribute equally to the improvement of the public realm. It is, however, recognised that landscaping will be restricted to the AWE Burghfield site edges to meet with the necessary security requirements.

3.19 Landscape design proposals should be drawn up with advice from an ecologist in respect to species choice and habitat creation.

Appearance

3.20 The individual aesthetic should be driven by factors such as the need to respond to wider concerns about the sustainability of new development and its impact on the environment, the quality of employee facilities and the need to promote an accessible and equitable working environment.

3.21 This complies with the strategic aims set out in the SDCP 08 in relation to improving the standards of design, enhancing environmental performance, and reducing environmental impact.

3.22 Individual materials, styles and finishes should be chosen to reflect the progressive and modern building ethic that underpins the strategic aims of the SDCP 08.

3.23 Consideration should also be given to the large areas of blank façade, however, due to the nature of the facility windows and doors can be added to areas where it has been possible by integrating landscaping around the building to conceal the mass of the building.

3.24 The final design proposals should be drawn up with advice from an ecologist in respect to species choice and habitat creation.

4. DESIGN PROPOSAL

Design

4.1 The design approach for this proposal is one in which the requirements of the brief are met within a high quality, distinctive structural / architectural aesthetic that has the benefit of ensuring proposals respond more robustly to the task of lifting the overall quality of the public realm, and gradually promote a distinctive and legible working environment. The new building will address the shortcomings of a refurbished scheme. It will provide an optimum stimulus by accommodating all required processes and support facilities in a single building.

Design Evolution

4.2 The design process has incorporated the following key issues:

- Creating a working environment that facilitates business effectiveness and efficiency;
- Providing a building designed to modern safety standards using modern efficient equipment
- Providing a modern working environment for staff; and
- Achieving the Government's aims to make sites and buildings more sustainable.

Layout

4.3 The proposal will replace the existing buildings which are nearing the end of their useful lives. The buildings will be replaced with a single facility located centrally within the AWE Burghfield site.

4.4 The Main Processing Facility will measure 113 meters in length, by 131 metres width and 12.6 metres in height and will have four ventilation stacks at approximately 18 metres above ground level. Assembly/disassembly is carried out at ground floor level. The internal layout is dictated by the processes carried out within the facility. The proposed gross internal floor area for the MPF is approximately 19,600 square metres.

4.5 The support building consists of open plan and cellular offices, along with meeting rooms, refectory and first aid area. A ventilation stack is proposed for this area and will also measure approximately 18 metres above external ground level.

4.6 There will also be two gate houses located on the security fence line and two vehicle inspection bays provided to be located on the outside of the security fence line. These facilities are essential to provide security to the MPF.

4.7 Two sub-stations serving the MPF are provided within the secure compound, one on the east side and one on the west side.

4.8 The plant building will be located on the north of the secure compound and will act as a boiler house for the MPF; housing pumps, transformers and gas bottle storage. An open air chiller compound is provided to house external air handling units.

Size, Scale and Massing

4.9 The size of the building and the development proposed is a direct function of the uses to which it will be put and the processes that will be carried out within it. The design of the proposed facility is one large rectangular structure with an arched metal roof with a raised seam. It is a large 12.6 metre high building. The height is driven by the requirement to house internal machinery and containment space to be available in the event of certain design based events. The ground floor slab is to be a reinforced concrete raft foundation slab bearing directly on to the ground. A hard standing operational vehicle waiting area will be located to the south-east of the Main Processing Facility. The Main Processing Facility comprises of a series of functional areas each housing a discrete part of the assembly (or maintenance/ disassembly) process. Each functional

area will be bounded by a reinforced concrete envelope to form a room of its own. It will also house all critical building services plant. Given their function, and the consequent security requirements, these functional areas and the connecting corridors will also be enclosed within a single reinforced concrete envelope, without windows.

4.10 The proposed scale of the structure that is necessary to fulfil design, operational and safety requirements has dictated building location and orientation. The building generally sits well within the wider countryside context. Landform, mature trees, woodlands and hedgerows largely screen it. The lightning towers, 44.6 m in height, will rise above the building with a network of cables criss-crossing over the building. This design is applied to ensure that the building is protected in case of lightning.

4.11 The lightning protection scheme has balanced functional requirements with visual impact. As a consequence a design of lightning protection towers has evolved which creates more elegance over pure function. The 16 towers create a visual high level framework to the building without impacting significantly upon the views into the site.

4.12 By siting the building to west of centre of the site the existing oaks have been retained. In addition, above ground development within the floodplain has been minimised to one small electrical substation. All other development, lorry vehicle, access road and SuDSs, will be at existing ground levels.

Appearance/Materials

4.13 The Main Processing Facility will be covered with external metal cladding for weather proofing and for decorative purposes. The walls have low level brickwork panels approximately 3m height (maximum) above site grade. Walls are profiled trapezoidal metal cladding over a smooth metal panel. This provides a decorative function and acts as a protection against weathering. The roof consists of raised seam metal cladding. Material selection has been made with reference to 'The Building Research Establishment Green Guide to Specification' and aims to achieve a high grade.

4.14 The external lightning protector system consists of 14 steel towers sites within the secure compound with catenary cables over the MPF and 2 steel towers over the Support Building. They are to be lattices towers with a tapered point. Details of the visual impact of the Proposed Development and the mitigation measures have been considered above and are discussed in the MENSA Defence Exempt Environmental Appraisal (DEEA).

4.15 Limited storage has been provided within the building for materials that are in process only. The Main Process Facility will provide storage for equipment and consumables associated with the process operations and maintenance which includes cleaning equipment and temporary storage of waste.

4.16 The design has considered in detail all appropriate technologies for sustainability and energy efficiency to reduce energy consumption within the remit of AWE requirements.

Sustainability and Energy Efficiency

4.17 Since 2nd January 2007 there has been a requirement to assess the environmental performance of new buildings. It is regarded by the UK's construction & property sectors as the measure of best practice in environmental design and management.

4.18 When designing the new facility all sustainable methods of construction and materials were considered. It responds to Draft South East Plan Policy CC4. It adopts and incorporates sustainable construction standards and techniques, which include:

- High standards of energy efficiency that exceed current standards required by the Building Regulations and reflect best practice;
- Designing to increase the use of natural lighting, heat and ventilation, and the provision on a proportion of energy demand from renewable sources;

- Reduction and increased recycling of construction and demolition waste and procurement of low-impact materials; and
- Designing for flexible use and adaptation to reflect changing lifestyles and needs and the principle of 'whole life costing'.

4.19 The design of the building aims to achieve an excellent BREEAM rating. This is based on a preliminary assessment undertaken on the proposed facility. The Sustainability Appraisal of the MENSA DEEA discusses in detail AWE's commitment to adopt the principles of sustainability. The development strategy incorporates energy efficiency within the design. A Heating, Cooling and Ventilation System, which is mixed mode concept utilising natural ventilation wherever possible but when high external temperatures prevail mechanical cooling will be utilised. This will be achieved by air handling units and extractor fans delivering tempered external air to active chilled beams. Air from toilet facilities will be extracted by dedicated fans.

4.20 AWE's aim is to achieve sustainable development, which meets the needs of the present, without compromising the ability of future generations to meet their own needs. Sustainability is a core part of the Site Development Context Plan (SDCP 08), which will guide the implementation of the proposed development through the following strategies:

- Energy and water efficient building design and reduction of carbon dioxide (CO₂) emissions;
- Minimising environmental impact and disruption to local residents during construction through the AWE CoCP;
- Reducing single occupancy car travel and encouraging sustainable transport modes through AWE travel plan;
- Managing and minimising construction waste through the CoCP; and
- Delivering the SDCP 08 and maintaining biodiversity.

Waste

4.21 Wherever possible, materials have been selected from the Waste and Resources Action Programme building material approved list. This is primarily to take advantage of their environmental and recyclable properties, as well as their material qualities both now and when the building is eventually decommissioned in the future. In addition, the construction of the facility has re-used in excess of 50,000 m³ of aggregate made available from demolition of redundant buildings on the site.

Drainage

4.22 All drainage proposals comply with the MOD Sustainability Handbook. The objectives that apply to this development are to safeguard fresh water resources and water quality; safeguard the health and productivity of inland waters and seas; reduce the threat of persistent or diffuse pollutants to the environment and human health; prevent damage to property by flooding; and ensure that the waters are clean to sustain wildlife and communities.

4.23 The details of the measures taken to minimise pollution and control surface water run off are discussed in detail in the DEEA. Several surface water attenuation ponds will be provided to receive, store and release surface water run off at a controlled rate using a manual cut off mechanism. This will enable the ponds to be isolated in emergency situations and control water to the existing watercourses and the SuDS system.

Accessibility

4.24 The design of the development has incorporated the requirements of all users as required by Part M of Building Regulations 2004 and other guidance as stated in the DEEA where reasonable and practical. The details of all the access requirements are listed in the DEEA.

4.26 In summary, the proposed facility achieves maximum possible accessibility for all users to the majority of the building. Due to the nature of certain activities which takes place in the facility, it is not considered advisable for health and safety reasons to provide access to wheel chair users and those with sight or hearing impairment. These specific areas are exempt from Disability Discrimination Act (DDA) compliance.

4.27 To enable all users' access to the facility, there is a public transport system that delivers people within walking distance to the site. For those using the road, five disabled car parking spaces have been provided in the car park at the entrance at Pingewood Gate. This access has a level gradient and tactile pavers as required by the DDA and is located next to the bus stop.

Flooding

4.28 A flood model has been prepared for the whole of the water catchment upstream to AWE Burghfield. The model has been validated by the Environment Agency through the use of external consultants. The model has been used to prepare a Flood Risk Assessment (FRA) for the development. The FRA indicates that there will be no adverse risks to off site users or property and to those who live and work around the site.

5. CONCLUSION

5.1 This statement shows how the proposed development has been informed by the very specific operational constraints in place at the Burghfield site, along with concern for the wider issues affecting the sustainability of the AWE sites as set out in the SDCP 08.

5.2 The current proposal calls for a significant departure from previous eras of development in which the specific function of the building was predominately the driving factor in its siting, design and external appearance.

5.3 The proposed building exceeds the basic requirements of the brief to provide a manufacturing facility, and adds value in respect of its unique approach to design for the following reasons:

5.4 The building will be distinctive in its own right.

5.5 The building will be discrete when viewed from within the wider surrounding landscape.

5.6 The building will be functional for visitors and staff. The design of the façade, entrance and internal space will define a clear point of arrival and reception for visitors, with office space, meeting rooms and toilet facilities easily accessible. All mechanical plant and storage will be incorporated within the buildings.

5.7 The building will provide an enhanced working environment for existing and future employees. Dedicated employee changing and rest rooms will provide comfortable, quiet space between working hours. Shower rooms are required for working conditions and will give staff the option of cycling to work or taking exercise between times, without sacrificing comfort. An external break out space designed as part of the buildings landscaping scheme and located with an open aspect, will provide staff with outdoor rest space between times.

5.8 The building will be efficient, bringing together all the required processes that currently operate across various buildings at Burghfield, and combining these into a single operation linked to the existing process plant.

5.9 The building will be sustainable, designed with its eventual decommissioning in mind and incorporating sustainable building technology such as the use of SuDs to help reduce the amount of surface water runoff from the large roof area into surrounding streams.

5.10 For these reasons it is considered that the current development proposals will provide a good benchmark for the ongoing redevelopment and rationalisation of the Burghfield site, setting a high standard of design in the process of meeting the present and future operational requirements at AWE.

5.11 The Code of Construction Practice will be adopted during the construction process.

5.12 The sustainability measures applied to the development have been designed to achieve a BREEAM excellent rating.