

Environmental Impact Assessment/Sustainability for Building 1045 Extension and Associated Substation

1 Site Description

The RAF Menwith Hill Station is situated along the southernmost boundary of a designated Area of Naturally Occurring Beauty. In recognition of this valued resource, it is imperative that any new development at the facility considers the impact and not detract any further to existing views. Hence, RAF Menwith Hill is committed to protecting the environment while in pursuit of its business objectives. As such, construction design and build individuals are required to be pro-active in producing a building where every consideration has been given to the environmental impact.

2 Project Description

This project effort demands an addition to be built onto the existing Building 1045 and a distribution sub-station. This addition will be constructed on the south side of the existing structure. The existing road network around Building 1045 shall be extended as necessary to accommodate the new addition. Externally, the development will have a low visual impact as required of the HBC Planning Process. As such, the building shall be designed to the same standards as Building 1045 and designers will identify the best way to achieve low visual impact when viewed from the A59 trunk road. The external roof elevation will form a clean level run between Building 1045 and the new development.

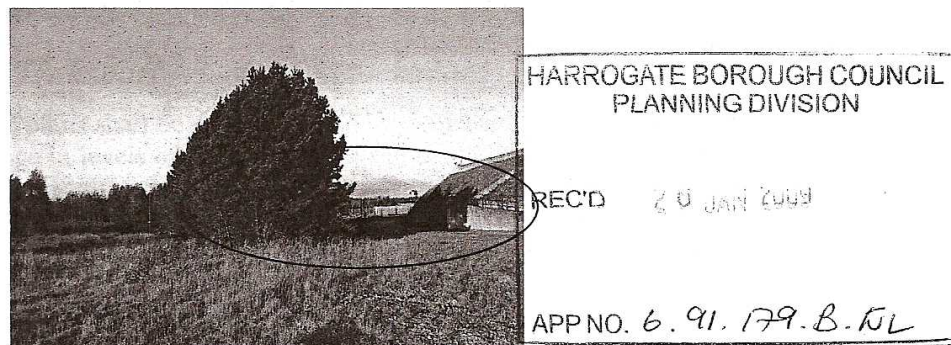


Figure 2.1- Proposed Construction Site

3 Sustainability Appraisal

In accordance with the Ministry of Defence (MoD) Sustainable Development and Environment Manual (JSP 418) and Sustainability Appraisal Handbook, the design of the Building 1045 Extension and a distribution sub-station incorporates the Government policy of putting the environment and sustainable development at the center of the decision-making process. The design will take into consideration the

environmental and socioeconomic factors and attempt to mitigate potentially adverse effects while identifying opportunities for enhancement. A Sustainability Assessment (SA) has been prepared in accordance with the MOD's Sustainability Appraisal Handbook, which requires that the SA process is applied for all new construction activities. This effort against MODs 15 sustainability objectives allowed for the identification of potential negative impacts, positive sustainability benefits, and enhancement opportunities. For each negative impact found, alternative options were sought and mitigation measures developed for implementation. Although the overall assessment leads to the conclusion of minor negative impact, each of the sustainability objectives are addressed herein and the summary matrix is attached.

3.1 Climate Change and Air Quality

With an increase in dust and fuel usage, measures such as dust suppression and energy efficiency plans will be incorporated throughout the construction phase of this project. To the greatest extent possible, the Contractor shall maintain dust, airborne debris, and other noxious elements generated by the construction to the immediate site. Also, a green code of practice will be established to employ techniques and technology to minimize dust releases. To reduce fuel usage construction equipment will not run idle, but only turned on when in operation. Best available techniques and Standard Operating Procedures to minimize emissions will be employed to this end.

For cleaning purposes, non-volatile substances will be used to minimize release of gases. The following materials are prohibited from entering site: asbestos in any form, urea formaldehyde or materials that may release formaldehyde, materials containing fibers less than 3 microns diameter, lead or material containing lead other than in roof flashings where rainwater run-off is discharged directly into a sewer, CFC based refrigerants, equipment containing PCB's, and insulations formed using CFC's as well as any other substance not in accordance with relevant British Standards, Codes of Practice, or generally acknowledged as good building practice, current at the date of the detailed design.

3.2 Travel and Transport

Traffic management plans shall be developed and implemented to reduce the impact of the baseline change in levels of congestion on local roads. To that end, the traffic management plan will also develop fuel efficiency goals to decrease vehicle emissions and the volume of vehicles commuting/traveling outside of peak travel hours as feasible. Ride sharing will also be encouraged as well as planned delivery or disposal runs.

3.3 Energy Consumption

With the addition of portacabins for the Contractor's use, additional power will be required. However, energy efficiencies will be sought within the Contractor's compound to support the increased number of personnel on site during the construction of this project. All personnel will be educated about energy consumption to promote behavioral changes and encourage mitigation techniques. The Contractor shall use a practical combination of energy conserving building envelope technologies. Energy efficient technologies such as those found in Building

Energy Management Systems will be designed into the new addition and measures such as energy efficient light bulbs will be used in the Contractor's compound.

3.4 Noise and Vibration

Normal construction noise is expected during this phase of the project as equipment is mobilized and the work is accomplished. A change in the volume of heavy vehicles on roads within the community will be noticed, but monitored with the traffic management plan. Sensitivity will be included in decision making for routes taken and for the time of day in which they are utilized. The project team will be educated on issues surrounding noise and vibration as they relate to the community to promote behavioral changes and minimize negative impacts.

3.5 Water and Drainage

A sediment and erosion control plan will be developed and implemented to reduce the effects of land use changes in the footprint of this project. With the need to excavate and build, there will be an increase in the potential for pollution in the runoff storm water. However, measures such as silt fence and sediment traps will greatly reduce this potential. The sediment and erosion control plan will also be utilized to control any runoff from water used during construction activity as well as Best Practices for construction. To decrease the effect of additional water usage, conservation techniques will be employed throughout the construction of this project. In addition, bunds and oil-separators will be incorporated into any drainage system found near the storage and handling areas of fuel.

3.6 Waste

A Site Waste Management Plan is required of the Contractor to ensure proper disposal of all waste produced. The objectives of this plan are to reduce, recycle, reuse, and to evaluate best disposal practices for generated waste. The Contractor shall also comply with UK, MHS, and local requirements for any task involving the transportation of hazardous wastes and/or contaminated materials to off-site treatment, storage, and/or disposal facilities. This requirement shall also include 40 CFR 260, 49 CFR 172, 173, 178, and 179 as applicable.

Opportunities will be considered to reduce, recycle or reuse where appropriate as a first option. Waste will be disposed of as near to its source as possible to minimize unnecessary transport impacts. Opportunities for disposal on site, such as placing excavated soil, will be explored. Accurate estimates for materials will also be expected to reduce waste and thus eliminating or decreasing the amount of excess materials.

3.7 Land, Buildings, and Construction Materials

The Contractor will carefully consider the materials and processes used in the design and construction to reduce any impact or influence to the environment as is reasonably practicable. However, the construction of this project requires a change in land use from green space to building or from pervious to impervious. Appropriate storm water mechanisms will be implemented to transfer the additional runoff. All land disturbances caused from this construction will be restored and activities will be

planned and implemented in a manner that protects the areas beyond the immediate construction area. This also includes the protection of trees, shrubs, and other vegetation not in the area of construction activity from damage, soil compaction, and physical contact with machines and equipment.

3.8 Geology and Soils

The additional fuel required to be stored in support of the Contractor's lay down area leads to the requirement to ensure proper containment for leak prevention. To this end, a storage plan will be developed and implemented. The Contractor shall provide all hazardous materials use and hazardous waste disposal documentation to the installation or facility point of contact, and shall register with the installation to ensure appropriate and efficient tracking of the Contractor's hazardous material purchases, inventories, use, and releases such as required by the Emergency Planning and Community Right-to-Know requirements. Excavated soil will also be handled with priority in order to properly dispose thereof or reuse. Careful consideration will be given for reusing the stripped topsoil in other locations, possibly on site. Strategies to minimize the amount of waste to be carried off site will be implemented.

3.9 Biodiversity and Nature Conservation

Applicable considerations for this objective are the change in people and vehicle movement, noise, dust, and potential habitat lost. As stated earlier, the construction of this project will produce an increase in people, vehicles, noise, and dust. Measures already identified will adequately decrease the risks of these negative impacts. However, the potential habitat lost arises from the removal of approximately 30 trees (average circumference 940mm) within the footprint of this project. Although there are no identified/protected species living within this area, a landscape plan will be implemented to include the planting of three trees for every one removed.

3.10 Archaeology and Historic Environment

The footprint of this construction effort does not affect any archaeological or heritage features.

3.11 Landscape and Townscape

An opportunity for a positive change in the land management regime is the strategy to replant three trees for every one removed. This landscape plan will be carried out ensuring the growth of the newly planted trees.

Building materials for the new addition will reflect those characteristic of the local area. Opportunities will be explored for mitigating the impacts of this development with earth banks or other landscape features as allowable.

To combat the impact of additional lighting required at the Contractor's compound, energy efficient lighting will be employed for the work area and only used when necessary.

3.12 Health, Safety, and Crime

By implementing proper Construction, Design, and Management (CDM) practices at the work site and educating all relevant personnel on Site safety and handling procedures, the likelihood of any health or safety events will be greatly reduced. Site Standard Operating Procedures (SOPs) for security are already in effect to prevent any likelihood of crime events.

3.13 Communities and Social Values

Improvements to community relations will continue through Town and Country Planning meetings, which occur every two months. At these meetings a representative from Site attends to keep local planners informed of the Site's intentions in regard to new construction initiatives and to seek approval.

3.14 Infrastructure and Amenities

There are no impacts of this construction effort to the goals of the Infrastructure and Amenities sustainability objective.

3.15 Economy and Employment

The Economy and Employment sustainability objective does not apply to this effort.

4 Summary of Actions Required

In order to successfully meet the requirements of the Building 1045 Extension and distribution sub-station project while protecting and sustaining the impacted environment, the main positive and negative sustainability impacts were identified along with mitigating actions to be undertaken. The main positive sustainability impacts of the project are:

- Energy and water efficiencies: This project will endeavor to utilize energy saving technologies and techniques.
- Landscape and townscape: This project will implement a landscape development plan which includes the planting of three trees for every one removed.
- Communities and social values: This project will promote further the relationship developed between the Site and the local planners.

The main negative sustainability impacts of the project are:

- Construction impacts: This project will adversely impact the amount of dust, noise, vibration, waste, sediment in runoff, and construction traffic.
- Energy and water consumption: This project will require an increase in power and water to support the construction and workers.
- Land impacts: This project will require a change in land use area from a green area to hard surface.
- Fuel storage: This project will require the storage of fuel, which introduces a risk to Site and potentially runoff.

Actions required to minimize negative impacts and improve sustainability include:

- Development and implementation of Construction Environmental Management Plan to minimize and manage construction impacts on the environment.
- Development and implementation of Sediment and Erosion Control Plan.
- Explore technologies to further reduce water and energy use.
- Development and implementation of Traffic Management Plan.
- Development and implementation of Site Waste Management Plan.
- Implementation of proper CDM and Safety SOPs
- Implementation of Landscape Management Plan
- Recycling of as much building waste and topsoil as possible in Landscape Management Plan.

The above recommended actions or proposed alternatives must be implemented to ensure the sustainment of the local environment according to the rules and guidelines set forth by MOD. Failure to minimize or eliminate the negative impacts of this construction project will result in non-compliance and possibly detrimental effects to the environment to include pollution to the area's waterways. Every effort must be made to protect and sustain the local area's air, water, and land in accordance with MODs sustainability objectives while meeting the business objectives of RAF Menwith Hill.