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Pfizer Havant, 50kW Ground Mounted PV – Planning & Environment Information

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1 Introduction

1.1 350 Energy Ltd

350 Energy Limited is owned and run by a small group of environmentally committed Chartered Civil and Electrical Engineers. Together the company has nearly 50 years' experience of environmental technologies and is motivated by the prospect of doing good engineering, in a sector that makes a positive impact on both people and the planet. The company has been appointed by Pfizer to design, develop and construct a ground mounted solar PV installation at the New Lane, Havant manufacturing site and this report provides information on the proposed development.

1.2 The Site

The New Lane manufacturing site is Pfizer's main UK manufacturing site, employing approximately 290 people in the manufacture of pharmaceutical products. The site has been operational for many years and is subject to continuous development, investment and evolution. The site has recently undergone such a redevelopment leading to the demolition of a number of older buildings and investment in new facilities.

The manufacturing operations consume a significant amount of electricity (2013 projected consumption is over 10,378MWh) so as part of the organisation's commitment to sustainability, Pfizer has decided to invest in solar PV facilities on the site of some recently demolished buildings at the site. Figure 1 below shows an aerial photograph of the site with the development area divided into two phases.



Figure 1: Pfizer Havant: Ground mounted PV Phase I & II

Pfizer Havant – 50kWp Ground Mounted Solar PV

Figure 2 below shows the area of the proposed development from ground level.



Figure 2: The development area from Substation 2/3 looking west

1.3 Photovoltaic (PV) Electricity generation

It has been reported that global solar energy potential could cover humankind's total energy needs three times over. Generating electricity using solar PV technology is a low carbon technology that helps organisations such as Pfizer to make a contribution in the fight against anthropological climate change. Allowing for the energy consumed in the manufacture of the PV modules and other parts, PV systems have a carbon payback period of less than 5 years.

The proposed development will utilise the standard crystalline silicon cell based solar panel technology to directly convert photons of sunlight into Direct Current (DC) electricity. The DC electricity will then be converted into useable Alternating Current (AC) electricity using electrical inverters.

1.4 Project Objectives

The project objective is to provide environmentally friendly electricity to help support manufacturing activities at the site. The development area has been divided into two phases. Phase I is to be undertaken immediately upon receipt of planning approval and Phase II is to be designed and developed following successful review of Phase I system performance. The Phase I investment by Pfizer in PV is projected to generate over 50,000kWh per year of electricity that will be consumed entirely within the site. This represents a small but worthwhile contribution to the current energy demand of the site and over the projected 25 year life of the project it will avoid approximately 700 tonnes of greenhouse gas emissions.

1.5 Project Scale

The project scale for Phase I is 50kWp, comprising 200 PV modules and three inverters. This is at the lower end of commercial scale PV projects but Pfizer will use the project to evaluate the performance and benefits of solar technology and could lead to the further investment in Phase II. Phase II is expected to be of broadly similar configuration and scale to Phase I but exact design will be based on learnings from Phase I.

2 Development Works

2.1 Introduction

There are two main elements to the development works as described below:

- PV Module installation
- Inverter installation and grid connection

2.2 PV Module installation

Modules will be installed at ground level with modules arranged in single rows and in landscape format. This means the maximum height of the array above ground level will be less than 1m. Figure 3 below shows a typical cross section through the mounting.

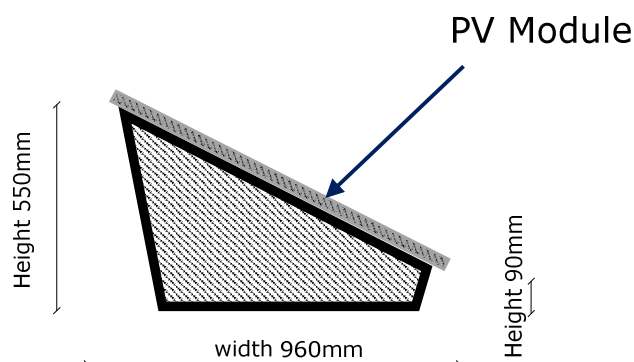


Figure 3 – Typical module and mounting cross section

Pfizer Havant – 50kWp Ground Mounted Solar PV

The modules are arranged in rows of varying length depending on various factors including the need to avoid shadows from buildings and the need to join individual modules into “strings”. Figure 4 below provides a layout drawing for the Phase I modules. There are 200 modules, each of 250W capacity arranged into 9 strings. Although the figure shows different colours (to represent the strings) all modules will be identical and the mountings will be black. Each row is aligned to face south in order to maximise the amount of solar radiation collected.

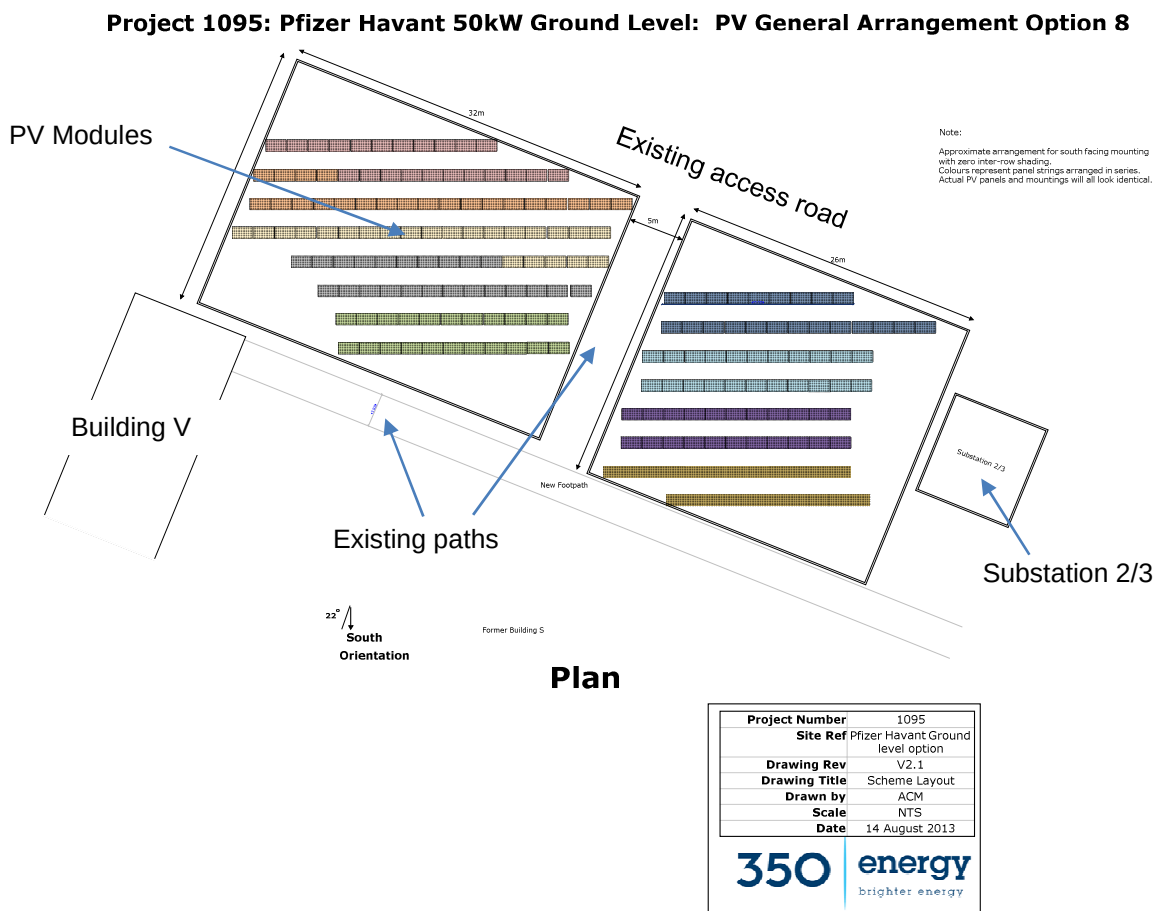


Figure 4: Phase I Solar PV module layout

Figure 5 below shows an example of a PV array installed using a similar mounting system and details of the PV modules and mounting system are provided as separate attachments.



Figure 5 – Example of PV array using similar mounting system

2.3 Inverter installation and grid connection

The PV modules generate electricity in Direct Current (DC) format and this needs to be converted into Alternating Current (AC) at the correct voltage and frequency to synchronize with the UK national electricity distribution network and Pfizer's internal site ring main. This conversion is achieved using "grid tie inverters". Phase I of the development will utilise three transformerless inverters to be located within an existing electrical substation located adjacent to the array. This building is a secure high voltage facility and the inverters will not be visible or accessible from outside.

3 Social & Environment

3.1 Employment

The Pfizer site currently employs 290 staff and uses a significant amount of electricity in its manufacturing operations. The installation work will provide short term employment approximately six staff but more importantly the investment will help to improve the manufacturing efficiency of the business and demonstrates an ongoing commitment to the area by Pfizer.

3.2 Carbon

The project rationale is primarily environmental and it is intended to have a positive overall impact on the environment. Over its 25 year design period the scheme will displace around 700 tonnes of CO₂ that would otherwise be emitted by fossil fuel based electricity generation. It will therefore make a contribution to goal of sustainable development.

3.3 Noise

PV arrays operate silently so operations will have no noticeable noise impact.

3.4 Visual Intrusion

The array is located well within the site and will be less than 1m above ground. The nearest edge of the array is located over 50m from the New Lane site boundary and is not visible from the road due to the large hedge.

3.5 Traffic

It is estimated that not more than five lorry deliveries will be required to deliver parts and equipment for Phase I of the system.

3.6 Design & Access

The development is not considered to require a formal Design and Access Statement as no new buildings or dwellings are proposed. The development will retain existing internal site footpaths and will have no impact on access.

3.7 Flood Risk Statement

The site is not located within a flood risk area and will neither increase nor decrease flood risk in the area. No special drainage arrangements are proposed and rainwater will continue to drain into the shingle base beneath the modules.