RE: Substation planning application supporting information

This information note has been prepared in support of our planning application for 0238 Longue Hougue Secondary Substation

Overview

The electricity transmission and distribution network, including substations, are essential infrastructure, required to ensure the inhabitants of Guernsey have access to electricity. As with all infrastructure, substations have a finite life requiring Guernsey Electricity to continually replace and upgrade the island's suite of distribution substations. New substations are required to service new or expanding domestic or business electricity requirements.

As part of the design and planning phase for any new and replacement distribution infrastructure, Guernsey Electricity carries out an appraisal of alternative locations and design options. This process includes a high-level impact and risk assessment against key criteria including: surrounding land usage; accessibility; cost; customer requirements; health & safety; and environment (e.g. social, visual, amenity, biodiversity, environmental pollution, flood risk and cultural heritage), and a compliance review against current and planned legislation, policy and industry standard requirements.

Once installed, all substations are regularly inspected and maintained in accordance with Guernsey Electricity procedures and good industry practice. These measures ensure effective operation of the equipment whilst controlling of health, safety and environmental risk, so far as is reasonably practicable.

A summary of the key legal and policy provisions that Guernsey electricity has submitted this application against, and in fulfilment of, is detailed below.

Visual impact

The potential visual impact of the substation plant within the existing setting at Bulwer Avenue, St Sampsons, Guernsey was assessed against the functionality and health, safety and environmental (HSE) impacts from a potential disruptive failure of the substation. The assessment concluded that given the proposed location is along the main service road and in the vicinity of car parking, inclusion of a safety rated GRP enclosure is considered appropriate and proportionate to mitigate risk to as low as is reasonably practicable under the dispensation provisions in The Land Planning and Development (Guernsey) Law, 2005 with respect to 'public utility providers', namely to *'enable conditions to be imposed, where planning permission is granted on the application of a person the primary purpose of whose business is to provide the public with a public utility service, which restrict the effect of that permission as respects other persons*', and the Strategic Land Use Plan that states that '*modern infrastructure is vital to the functioning of the Island and it is an important objective of the planning system to be capable of enabling its provision'* (Island Plan 2016).

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Consideration of alternative locations

As mandated by the States of Guernsey, the GEL distribution infrastructure is designed and operated in accordance with The Electricity Safety, Quality and Continuity Regulations, 2002, as amended (ESQCR) – which state that '*before commencing a supply to a consumer's installation, or when the existing supply characteristics have been modified, the supplier shall ensure that the voltage declared in respect of a low voltage supply shall be no less than 230 volts between the phase and neutral conductors at the supply terminals*.' Given that electrical voltage decreases as it is distributed along a cable ('volt drop'), the consideration of alternative locations for the proposed substation was restricted by a technical requirement to limit the cable distance between substations to 250 – 400 metres, dependent upon power supply requirements.

Notwithstanding the above mandate, the requirements of the Land Planning and Development (Guernsey) Law, 2005 (the Law) to *'preserve and promote biological diversity*'; and to *'ensure that all development is carried out in a sustainable manner and in such a way as to achieve a safe and healthy living and working environment'* were fulfilled within the design and planning process. The proposed environmental control of the inclusion of a bund (and supporting enclosure) was considered to mitigate the risk of a pollution incident to as low as reasonably practicable. The specification of a plastic and glass fibre reinforced plastic (GRP) enclosure further mitigates any associated safety risk of a disruptive failure of the substation[1].

Environmental Pollution

Compliance with the Prevention of Pollution (Guernsey) Law, 1989 - which states that *'No person shall cause or permit a risk of pollution to arise*' and to *'take such action as is reasonably necessary to protect the Island's water resources against the pollution or risk'* - has been responded to within this application. GEL has further taken guidance from the Office of Environmental Health and Pollution Regulation (EH), whom have advised that the 'Environmental Pollution Law (2004) - Water Quality' is currently being drafted, and once enacted will require operators to demonstrate that all practicable controls have been put in place to mitigate the risk of a pollution incident to surface or groundwater from pollutant containment facilities. Given the location of the substation and volume of oil contained within the plant [c. 905 litres of oil] a bund (and supporting enclosure) is considered proportionate and appropriate to mitigate the risk of pollution.

Should you require any further information in support of this application please do not hesitate to contact us.

[1] Note that industry evidence supports that substation plant is extremely reliable and the likelihood of a disruptive failure due to internal arcing or fire is extremely low through the use of best available technology (BAT) and an ongoing programme of inspections and maintenance. The consequence of this risk does however have implications for both the design and location of substations, and the selection of design controls necessary to withstand the considerable internal overpressure, fireball and release of oil at temperature (c. 160^{o}C) produced should this condition occurs. Whilst it is not possible to measure or reasonably quantify the magnitude of any potential overpressure, industry experience has demonstrated that the prefabricated GRP Unit Substation enclosure (and the typical traditional (masonry/reinforced concrete)) are adequate to relieve and/or contain this overpressure.