



Canolfan Fyd-Eang Rhagoriaeth Rheilffyrdd
Global Centre of Rail Excellence

GCRE/RW/RJKT/01
24th March 2023

Powys County Hall
Spa Road East
Llandrindod Wells
Powys
LD1 5LG

and

Neath Port Talbot CBC
Civic Centre,
Port Talbot
SA13 1PJ

Your references:
21/0559/OUT (Powys County Council)
P2021/0327 (Neath Port Talbot CBC)

Discharge of Condition 30: Site Wide Energy Strategy

Dear Sir/Madam,

This letter is pursuant to Condition 30 imposed on the planning consents 21/0559/OUT issued by Powys County Council and P2021/0327 issued by Neath Port Talbot CBC to GCRE Ltd as the applicant.

Condition 30 requires:

“As part of the submission of the first reserved matters application (for any phase of development as agreed under Condition 7) a site wide Energy Strategy shall be submitted to the LPA for its approval in writing. Thereafter, for each phase of development as agreed under Condition 7, the first reserved matters submission for that phase shall be accompanied by an Energy Assessment which shall include, but not be limited to proposed methods of energy production and generation, including renewable energy, together with passive methods to be implemented to achieve energy reduction, to demonstrate compliance with the overarching energy strategy for the site. The development of each phase shall thereafter be operated in accordance with the scheme as approved”.

This letter therefore sets out our Site Wide Energy Strategy (the “Energy Strategy”), which we hereby submit for your approval.

In the document, we describe:

- The Site Wide Energy Strategy, which will apply to all phases of development.
- The specific features of the Energy Strategy as relevant to Phase 1(a) of the development.
- Additional considerations beyond Phase 1(a).

Hereafter, for each phase of development as agreed under Condition 7, the first reserved matters submission for that phase will be accompanied by an Energy Assessment, as defined in Condition 30.

1 Site Wide Energy Strategy

It is an underlying principle of GCRE's mission that the facility will be net zero in its operations. Further, a central pillar of GCRE's work will be to support the improvement of sustainability in the railway sector. GCRE's work and operations will therefore, by definition, align with the reason for Condition 30, namely:

"In the interest of sustainability and to comply with the decarbonisation objectives of Planning Policy Wales and Future Wales, and the requirements of Policy RE2 of the Neath Port Talbot Local Development Plan."

To describe our Energy Strategy, in the following sub-sections we have used the internationally accepted IEMA¹ Greenhouse Gas Management Hierarchy (avoid, reduce, substitute, compensate).

1.1 Electricity supply

GCRE is pursuing the following electricity connection options in parallel, to ensure there are adequate supplies of net zero electricity as the construction project concludes, and operations start to ramp up:

- A main connection to the NGED 132kV system. This connection will be capable of an import level of 32 MVA, which is sufficient for all projected future loads on the site. This connection also has an export capacity of 12.7 MVA, which would allow export up to that level, for any renewables generated on site but not required by site demand. The import capacity will not be available until early 2026; the export capacity is subject to the current NG embargo on new generation connections, meaning no new export in excess of 1MW is allowed before 2036.
- Two connections to the NGED 11kV system, with a total import capacity of 5.7 MVA. These connections will be delivered earlier than the longer term 132kV connection, and will be used on an interim basis to supply site loads until the larger scale connection is available.
- Private wire connections. We are in discussions with two parties in relation to potential private wire connections: with Pennant Walters in respect of their Maes Gwyn windfarm; and with EdF Renewables in respect of their proposed Hirfynydd windfarm

¹ Institute of Environmental Management and Assessment

The energy supply through the combination of these connections can be considered using the IEMA Hierarchy as follows:

Avoid: All electricity used on site will be procured through a combination of (1) purchase through renewable tariffs; (2) renewable Power Purchase Agreements (PPAs); (3) renewable generation on site.

Reduce: A design brief is being prepared for buildings, identifying design principles to support energy efficiency by maximising daylight and retaining heat and coolth.

1.2 Heating and cooling supply

Avoid: The GCRE site is currently off-gas grid. The option of applying for a connection to the gas grid to supply building space heating was excluded on the grounds of both carbon emissions and cost. All heating and cooling shall be supplied from electrified plant, for which only zero-carbon sources of electricity will be used (see 1.1).

Substitute: Passive methods including heat recovery from air (using air source heat pumps), ground (using ground source heat pumps) and mine water have been considered. The economics and the staged development of the site currently favour the use of air-source heat pumps. Discussions were held with the Coal Authority which revealed uncertainty about the location and depth of water deposits and a significant distance from the heat loads. It was concluded by both GCRE and the Coal Authority that it was not worthwhile further investigating the feasibility of incorporating ground source based technologies within the site.

1.3 Rail traction energy

Avoid: A 25kV single phase AC traction supply will be provided to avoid the use of diesel locomotives for infrastructure testing. The new rolling stock being tested by customers at GCRE is likely to predominantly consist of electrified or hybrid rolling stock. The 25kV traction supply will be fed via a static frequency converter (SFC), which will be connected to NGED's incoming supply. Only zero-carbon sources of electricity will be used to supply the rail traction system (see 1.1).

1.4 Potential means of offsetting

Compensate: An early assessment of embedded carbon in the construction process has been carried out. It is intended to offset a small portion of this embedded carbon through appropriate planting on GCRE land, subject to other use requirements including commonage. The bulk of the embedded carbon, investment funds allowing, will be offset through the purchase of appropriate, certified offsetting products.

2 Energy Strategy as relevant to Phase 1(a)

Phase 1a is short term development that covers only rolling stock storage (stabling) facilities, and other smaller interim loads such as temporary offices. Stabling facilities will be progressively developed over time, so as to gradually allow more stabling to take place.

These electrical demands will therefore be supplied from a combination of the two 11kV NGED connections, as described at (1.1) above. The energy will be supplied via a renewable PPA or tariff.

3 Other considerations beyond Phase 1(a)

3.1 Renewable / Low Carbon Energy generation potential on site

Mott MacDonald have confirmed the high level feasibility of an initial solar PV scheme with a capacity of approximately 13MWp. Export provision for this scheme has been included in the 132kV connection agreement with NGED. There is potentially greater capacity on the site for energy transition assets such as renewable generation and storage; the extent to which this is pursued will be a matter for GCRE's future strategic investors. The public procurement process to bring such investors on board is in progress, and expected to conclude by Q4 2023.

Yours faithfully



Rob Thomson
Implementation Director
GCRE Ltd

CC	Robert Wasson	GCRE Ltd
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