

Planning Statement – Installation of Solar Canopy and Electric Vehicle Charging Points at Site 11, Five Islands School

Project Background

The number of cars on the Isles of Scilly remains relatively high in relation to the tiny adopted road network of under 10 miles. In a bid to change behaviour away from car ownership and encourage the uptake of electric vehicles, the Council of the Isles of Scilly is delivering the GO-EV project as part of the Smart Islands programme (www.smartislands.org).

The project will see a network of 27 electric vehicle charging points installed across all five islands during 2020, providing a solid infrastructure of electricity grid network connections to support the transition to electric vehicles. 10 charging points will be dedicated to the car share scheme (www.ioscv.co.uk/carshare) and the remaining chargers will be for general use by those wishing to purchase their own electric vehicles.

As part of the innovation side of the project, the vehicles from the car share will also become part of the electricity network on Scilly, capable of discharging the energy from their batteries to optimise balancing of the grid. Known as vehicle-to-grid bidirectional charging or V2G for short, the project will help the rest of the UK understand how this type of technology might become part of the electricity grid of the future. The car share vehicles will also be housed under solar canopies allowing the project to test the optimisation of direct charging of electric vehicles from solar photovoltaic panels.

The project is also hoping to deliver an electric community bus and a network of electric cargo bikes for hire alongside the car share scheme. The aim is to get as many people as possible walking and cycling with the provision of a bus service as a second option and the car share providing a full complement of mobility options. The project is managed by the Council of the Isles of Scilly and is being delivered by two project partners: the Isles of Scilly Community Venture and Hitachi Europe Ltd. The GO-EV project is being funded by the Cornwall and Isles of Scilly Local Enterprise Partnership with £606,000 from the Government's Local Growth Fund and £2.4 million from European Regional Development Fund.

The UK policy context will see a ban on the sale of new diesel and petrol cars by 2035 with electric cars currently providing the main alternative. The network of electric vehicle charge points on Scilly will place the islands in an excellent position to begin that transition. The provision of a car share scheme and potentially a bus on St Mary's provides a huge opportunity to reduce the number of vehicles on the islands by providing positive alternatives to private vehicle ownership. The [Destination Management Plan](#) for the Isles of Scilly highlights a car share scheme as a means to 'reduce and control the levels of traffic' which will 'reinforce the welcome and ultimately help visitors get the most from their time with us'.

The draft Isles of Scilly Local Plan and Conservation Designations

This application recognises that there are a number of designations across the Isles of Scilly that will have relevance to this application. The designations are listed below:

Constraint Type	Name	Link
Local Plan	draft Isles of Scilly Local Plan 2015-2030	https://www.scilly.gov.uk/planning-development/local-plan-review
Historic Environment	Conservation Area	https://historicengland.org.uk/advice/planning/conservation-areas/ https://www.scilly.gov.uk/planning/heritage-conservation-environment#Conservation
Historic (Marine) Environment	Heritage Coast	https://www.gov.uk/government/publications/heritage-coasts-protecting-undeveloped-coast/heritage-coasts-definition-purpose-and-natural-englands-role
Natural Environment	Area of Outstanding Natural Beauty	https://landscapesforlife.org.uk/index.php/about-aonbs/aonbs/isles-scilly
Natural (Marine) Environment	Special Area of Conservation	https://sac.jncc.gov.uk/site/UK0013694

The emerging draft Isles of Scilly Local Plan 2015 – 2030 provides strong support for projects under the Smart Islands programme. Under Key Issues and Challenges the Plan recognises the challenges for infrastructure in developing capacity, resilience and sustainability and highlights Smart Islands and similar programmes as a way to address these issues. Relating to transport, the Plan goes on to support the need for ‘better access across the islands, in particular supporting sustainable and active transport solutions, by foot, bicycle or electric vehicles’.

In the vision for 2030 the Plan sees a future for Scilly where ‘Innovative systems and technologies have taken advantage of the islands’ location and environment, and provided the catalyst for achieving exemplary and innovative sustainable development, thus providing a model for how other communities around the world can function. It also sees ‘The islands’ infrastructure is a beacon of sustainability for the UK and beyond; it provides an affordable, innovative and lowcarbon model for managing energy, water and waste, with considerable benefits to the environment and residents’ quality of life.’ In particular the Plan supports ‘development that secures improvements to the islands’ infrastructure and utilities through a coordinated approach as part of and in step with planned sustainable growth, including innovative and low-carbon technologies, as part of the Smart Islands programme and other investment initiatives.’

The specific policies under the Plan provide the following support for the GO-EV project:

- Under Policy SS1 development will be permitted where it makes a positive contribution to the social, economic and environmental needs of the Isles of Scilly by ‘locating, designing and constructing development where it makes a positive contribution to reducing the islands carbon footprint and consumption of natural resources’ and ‘improving accessibility and creating a network of safe and well-connected routes by integrating measures that encourage and promote walking, cycling and electric vehicles as part of any new development wherever opportunities allow’.
- Development is further encouraged where it uses sustainable and natural materials which avoid the proliferation of unacceptable or unsustainable resources.
- Policy SS5 states that development will be permitted where it makes a ‘positive contribution to the sustainability of the islands’.
- Policy SS8 provides specific support for projects associated with the Smart Islands programme and projects that seek to reduce the emissions of greenhouse gases and help move to a carbon neutral island environment.
- Policy SS10 supports development which promotes ‘the use of sustainable transport such as walking, cycling and electric vehicles’

In relation to the historic environment and natural designations, the development of solar canopies and charging points have been designed in such a way as to minimise their impact. In particular:

- The design of the solar canopy uses natural green oak timber that will age to a silvery colour and blend well with the natural and built landscape on Scilly
- The solar panels will have a high quality non-reflective finish as a reflective or jarring finish will stand out and detract from the from the roofscape of the Conservation Area and other identified heritage assets as it reflects the sun.
- The development uses existing areas that are already used for vehicle parking
- By the very nature of the car share scheme, the sites are close to areas of habitation and other buildings
- The cabling for the connection to the electricity grid will be underground to minimise spacial interference
- In discussion with the Wildlife Trust, the sites will include the provision of bird, bat and bug boxes as appropriate to improve biodiversity at each site.

The impact on other heritage assets close to the site is addressed in the separate Heritage Impact Assessment.

Description and Specification


Solar Canopy Design

Community Consultation



The purpose of the community engagements was to increase the communities' knowledge of the GO-EV project. It was also an opportunity for the GO-EV team to get the view of potential users and possible barriers to using the car share scheme to help with the design of the project for the public. On display was an overview of why the Isles of Scilly is a prime location for electric vehicles, what the GO-EV project is delivering, who is funding the project, who is responsible for the delivery of the project and an explanation of the Vehicle to Grid (V2G) innovation.

Six random photos of solar canopies were displayed with the majority preferring the sturdy wood canopies. The most important factor was the resilience of the solar canopies, which ones would stand the high winds, last the longest and require the least maintenance.

Another requirement was for the canopy to fit with the current build environment and look natural. Modern looking canopies would be acceptable at the school and airport as it would fit with the current buildings. Additional suggestions included using block and/or recycled plastic, to consider wildlife e.g. provide nesting opportunities for birds and bats, and whether it could provide a bus shelter.

	Solar Canopy	Comments
a		<p>*Yes, more in keeping * Best of all 3, In keeping with vernacular * mixture of blocks and wood * make it with recycled plastic - bat and bird boxes * looks sturdy re wind* fits in with look of Scilly * recycled plastic * could add bird boxes * best and practical</p>

<p>b</p>		<p>*More suitable for a modern urban environment * splendid choice and will not rot like wood (it may well rust of course) *too urban *not natural looks modern *is this Milton Keynes *only at some locations (school / airport)</p>
<p>c</p>		<p>*Too fancy *flimsy sides *needs to stand up to Scilly weather *too flimsy</p>
<p>d</p>		<p>weather wind proof, may need to be strengthened * made of recycled plastic? *Is it strong enough to withstand weather / protect vehicle from rust * This style fits more with the current built environment (it would need to be smaller though) *which one is most long lasting / least maintenance *bit suburban</p>

e		<p>Nice eaves for sparrows and other nesting birds, tiles can be good for bats * rather large? Could be made to incorporate nest space for birds and roost for bats</p>
f		<p>way to modern * not Natural * looks modern * too "Spacey" * ugly *not as nice as the others * which can handle a hurricane *certainly pushing the boundaries * good choice</p>

Following the consultation, the preferred options were image (a) and image (e) which helped to inform the design decisions for the generic solar canopy design.

Generic Design

Based on the requirement for a timber frame structure the generic design employs a green oak frame structure which will provide weather resilience and longevity while at the same time providing the aesthetic required on the islands.

The design uses a standard timber framing technique of using oak upright posts supported by braces and cross members between the posts. An alternative design using straight rather than curved timbers could be considered if this is a preferred option by the planning authority. A wall plate lies across the top of the posts to support the rafters which in turn will support the Solar PV module mounting system.

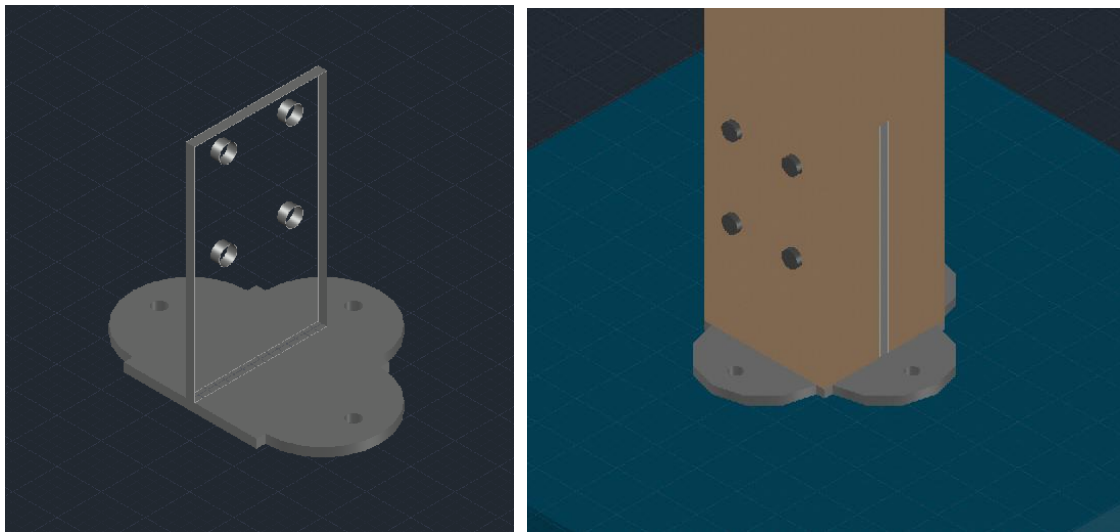


Itemised list of materials for generic solar carport are as follows:

Item	Size (mm)	Material	Qty
Upright posts	150 x 150	Green Oak	2
Short Uprights	150 x 150	Green Oak	3
Cross members	200 x 75	Green Oak	2
Side braces	175 x 75	Green Oak	4
Rear braces	200 x 75	Green Oak	2
Front braces	125 x 75	Green Oak	4
Wall plates	150 x 150	Green Oak	2
Rafters	150 x 75	Tanalised C24 Structural	11
Fitch plates	150 x 150	10mm 316 Grade Stainless Steel	5
Rafter Brackets		Galvanised	44
PV Modules	1600 x 1000 (appx)	Black with black backsheet	20
Roof Hooks		Stainless or aluminium	22
Mounting Rail		Aluminium	22.5m
Insertion Rail		Black anodised aluminium	38.4m

The frame uprights will rest on Stainless Steel fitch plates. The fitch plate will form an inverted 'T' section which will fit into a slot cut into the bottom of the upright post. In order to resist the high wind uplift, the fitch plates and upright posts will need to be through bolted with 4 No M12 Stainless Steel bolts.

The fitch plates will be constructed from 10mm 316 Grade stainless steel and have flanges with holes for M16 resin anchors. This allows the frame to be located and then the anchor or resin fixings inserted after the frame is built and finally located.



The individual frame members will be secured with oak pegs in the traditional manner. Softwood timber for the rafters, will need to be C24 rather than C16.

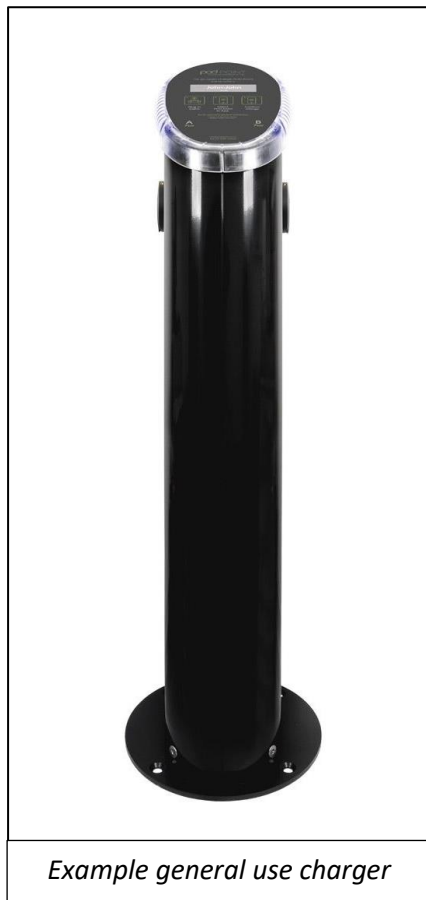
The pad foundation bases have been estimated as 1.1m square x 600mm deep to provide resistance against uplift and have been used for calculations, however it is recognised that there will be different site conditions at each location and so it is likely that these foundation requirements may change.

Photovoltaic (PV), EV charger and street cabinet design

The precise specification of the PV panels, EV charge points and street cabinets is subject to an ongoing tender exercise, the outcome of which will be clear at the end of May 2020. In their tender specification, bidders have been asked to take account of the sensitive environment of Scilly in considering their choice of products as well as considering the harsh weather and salty conditions on the islands when it comes to the longevity of products.

For the PV panels, it is intended that they will have a high quality non-reflective finish as a reflective or jarring finish will stand out and detract from the from the roofscape of the Conservation Area and other identified heritage assets as it reflects the sun. The layout of the PV panels are shown in the elevations drawings. It should be noted that the PV panels are the roof of the solar canopy, there is no other roof surface.

It is anticipated that the design of the charging points will be for a floor mounted pillar units. Examples of a general use charger and a V2G charger are shown the images below. For the street cabinet, it has been estimated that all required supply equipment can be fitted into a 1200 x 660 x 440 GRP cabinet designed for ground mounting. The layout of the chargers and street cabinet is shown in the floor plan drawing.



Example general use charger



Example V2G charger

Street Works and Furniture

Car Parking Bays

Where it is not possible to use the existing hard surfacing at a location, or no hard surfacing exists, the parking bays shall be created from cast concrete together with a black dye additive to mimic a tarmac-like surface. It is acknowledged that it is only possible to use cold-lay tarmac on the islands without bring in special equipment and that cold-lay does not have the required longevity or durability therefore concrete is a suitable alternative.

Barriers

In almost all instances it will be required to install barriers in front or at the side of ground mounted charge points to avoid damage by drivers accidentally driving into the charge points. In some cases the charge point manufacturers supply barriers and bollards matched to the specific charge point and these should be used where possible. In all cases manufacturers instructions for mounting and fastening the barriers must be followed.

Signage

GO-EV specific signage will be provided by the Client to be fixed by the Contractor at each of the charge point locations.



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Street Painting

In most instances the car parking bays will need to be sign written to identify the bay as an electric vehicle charging space. Exact designs will be proposed by the Contractor for acceptance by the Client. Proposed designs have been included in the floor plan. These works to be carried out in durable road marking paint using a stencil for lettering and symbols.



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