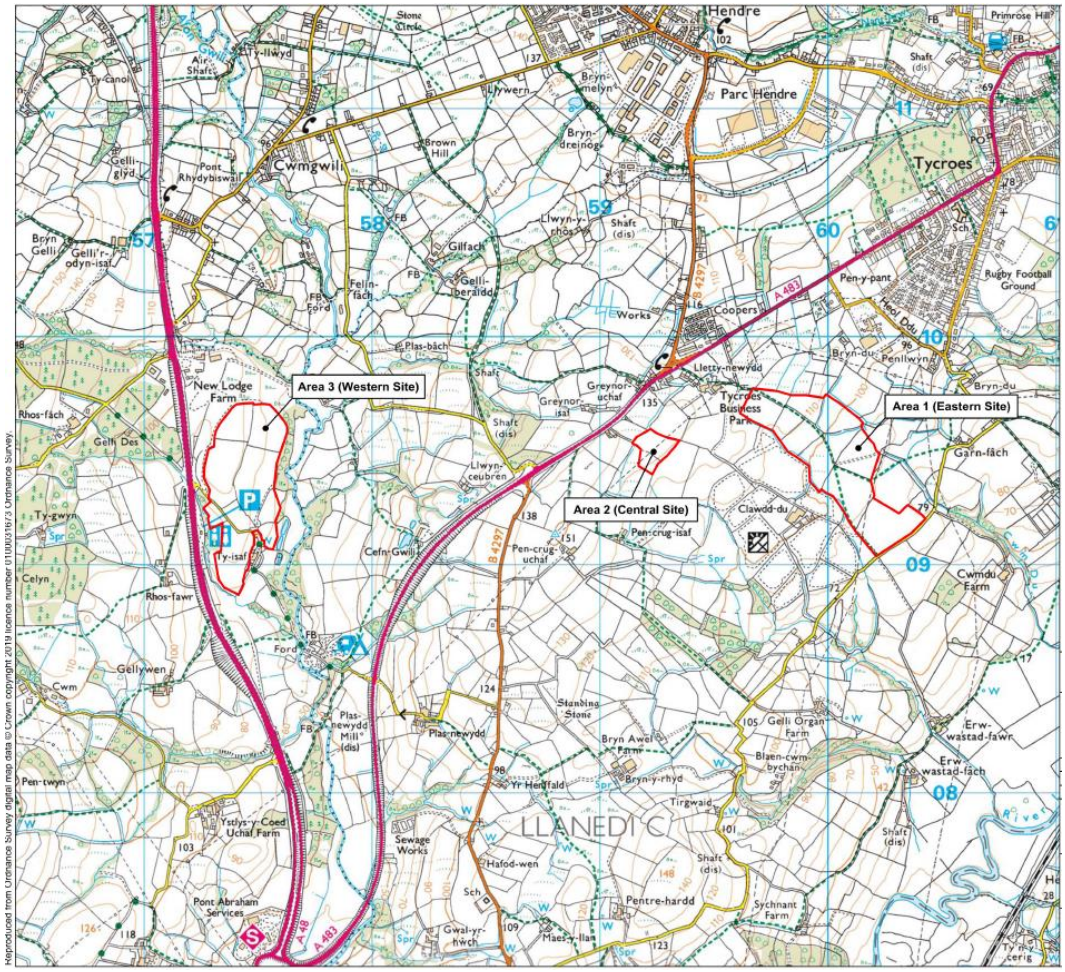
Construction Environmental Management Plan

In support of a planning application for the installation of Standalone Solar PV modules and Associated Infrastructure on land to the east of the A48 and Land to the south-west of Tycroes

April 2020

Prepared by

SPRING
ENABLING CLEAN GROWTH



Location: Land to the east of the A48 and Land to the south-west of Tycroes

Grid Reference: E257386 N209389 and E259219 N209551; & E259904 N209590

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Contents

1. General

1.1. The Construction Environmental Management Plan is prepared in connection with the development and installation of Solar PV modules and ancillary equipment for the generation of electricity. The development includes installation of Solar PV modules on arrays, with associated infrastructure and 33kV cable to the Distribution Network Operator's substation.

2. Public Engagement

2.1. If permission is forthcoming, the Community Councils (Llannon and Llanedi) and local highways department will be notified prior to commencement on site and provided with a copy of the Construction Environmental Management Plan. During construction the contact details of an on-site representative will be made available.

3. Construction Programme

3.1. Construction is anticipated to commence following the grant of planning approval and the discharge of any pre-commencement conditions. The construction of the development will take approximately 18 – 24 weeks. An overview of the project construction programme is set out in section 13 of this report.

4. Working Times

4.1. Construction of the development will be undertaken 7 days a week. No activities audible from the boundary of the nearest noise sensitive receptor shall take place on Sundays during the construction period or at times outside 07:30 and 19:30 (or dusk if earlier). Vehicular deliveries including all HGV movements shall arrive, be received or dispatched from the site between the hours of 07:30 and 19:30 (or dusk if earlier) Monday to Friday and 07:30 to 12:00 on Saturdays.

5. Construction Traffic - Route to site.

5.1. The development is located approximately 2km to the north of the M4 Pont Abraham Interchange (Junction 49) and comprised of three distinct areas.

5.2. Areas 1 and 2 are located to the east of the A483, some 3km north east of the Pont Abraham Interchange and 2km south west of Tycroes. Areas 1 and 2 will be accessed separately utilising existing accesses.

5.3. Vehicles will approach Areas 1 and 2 via the Eastbound carriageway from Pont Abraham services is as shown in Figure 1 below.

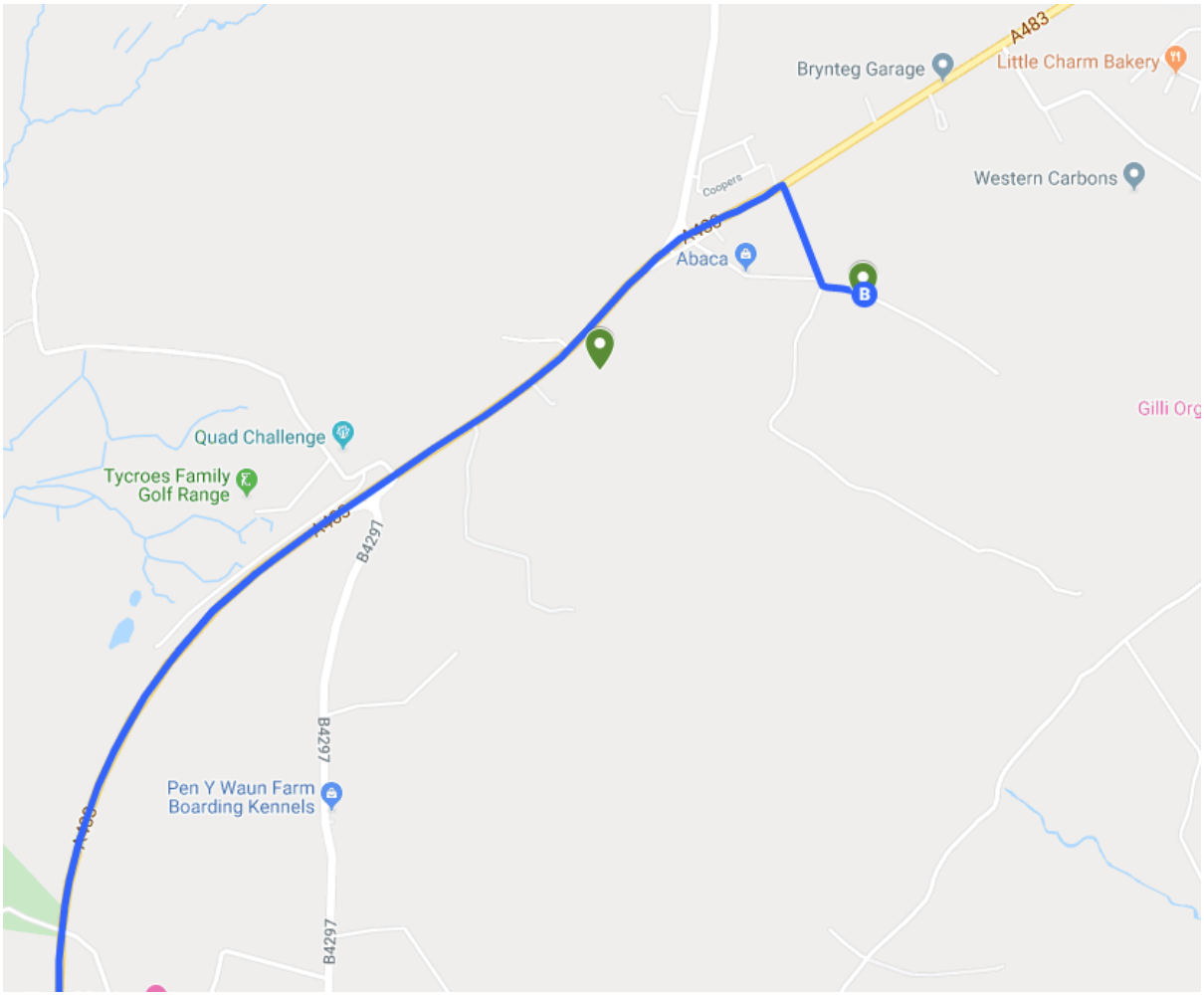

Figure 1 - Proposed site access for Areas 1 & 2

5.4. Area 3 will be approached via the A48. Vehicles will approach the site via the southbound carriageway from Cross Hands to Pont Abraham services is as shown in Figure 2 below. Vehicles will access the site via the unclassified county road U2310 (a no through road) and turn in the site compound as marked on the plan. The turning into the county road from the A48 has a large splay (shown in photos 4 of section 16) which is currently used to facilitate agricultural vehicles.

5.5. Further information about route to site is included in the April 2020 Transport Statement prepared by Acstro Ltd.

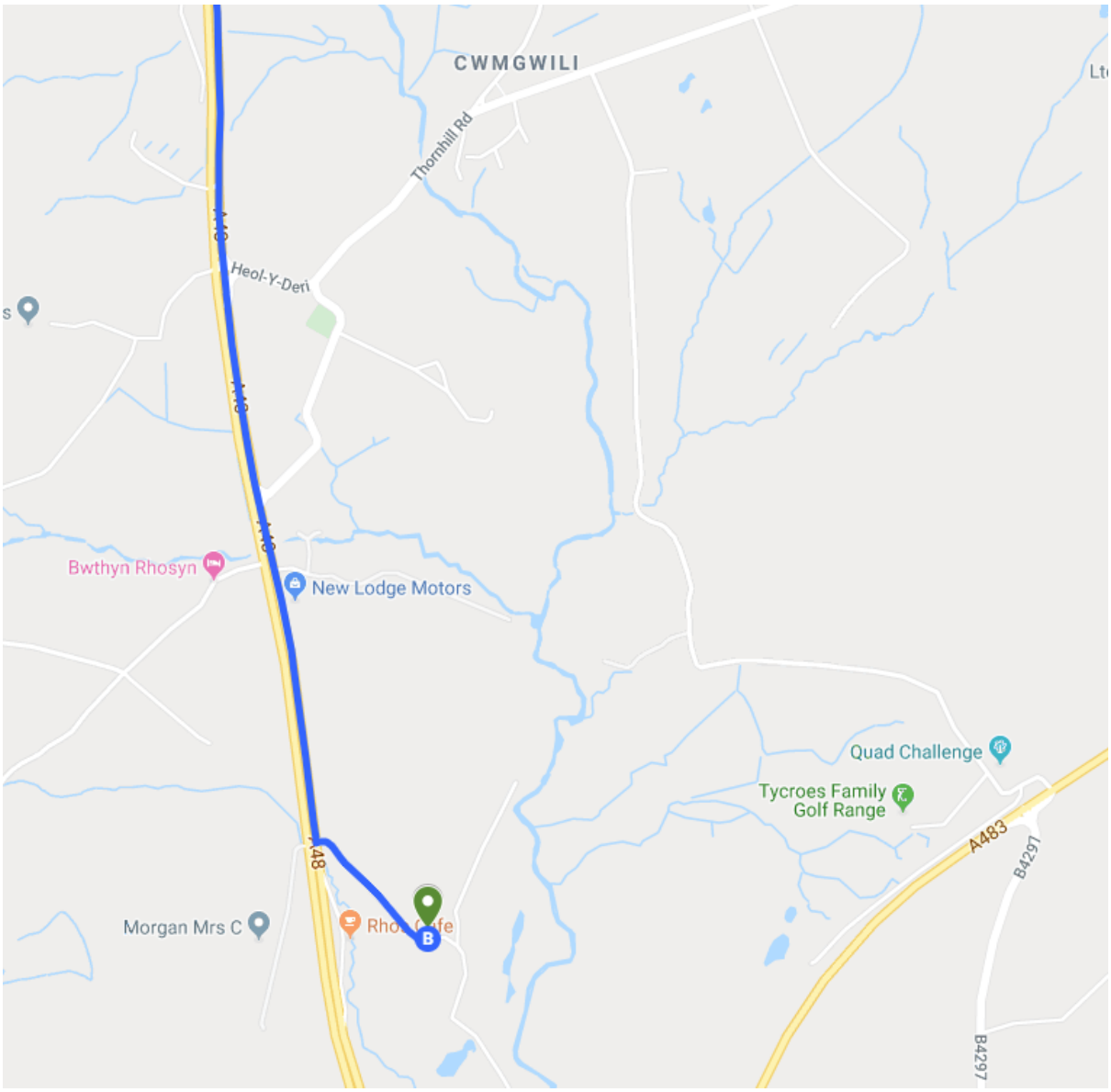

Figure 2 - Proposed delivery route for Areas 3

6. Site Access

6.1. AREA 1 will be accessed via the Clawdd Ddu Farm access, some 250m to the north east of the Coopers Road junction. A 40mph speed limit applies at this location. This access has previously been used during the installation of a previous solar energy development at Clawdd Ddu (S/27987). Use of this access has therefore previously been tried and tested and it is envisaged that the use of the access for the development proposed will pose no issues. Area 1 access shown in figure 3 and photos 2 in section 16.

6.2. AREA 2 – access is located approximately 300m to the south west of the A483's junction with Coopers Road. The access currently serves two dwellings and a field. National speed limits apply at this location with the speed limit reducing to 40mph some 60m to the north

east. There is good visibility in both directions, with at least 215m visibility available to the west (where national speed limit applies) and 90m visibility available to the east (into the 40mph speed limit area). Area 2 access shown in figure 3 and photos 3 in section 16.

6.3. At the field entrance to area 2 a section of hedgerow a maximum of 3m will be removed to enable suitable access to area two as identified in the Transport statement. Prior to removal, the area of hedge will be subject to ecological survey and the works conducted outside of the bird nesting season. Once the works are completed, the hedgerow will be replanted following the methods given in the submitted Landscape and Ecology Management Plan.

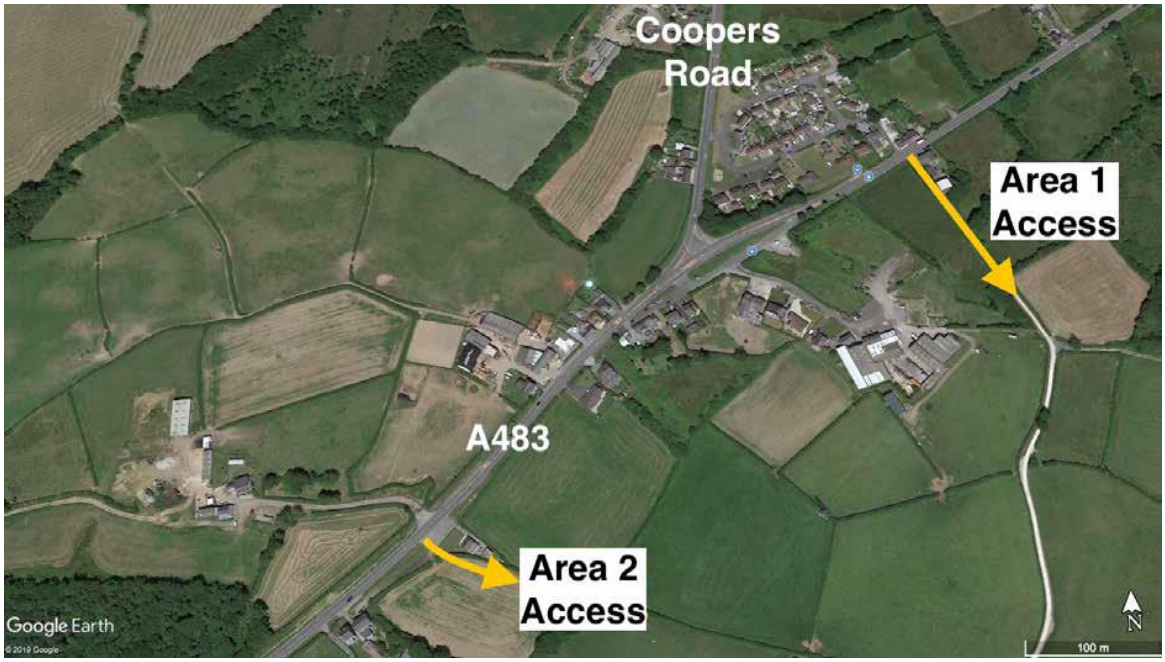

Figure 3 – Site access for Areas 1 & 2

6.4. AREA 3 will be accessed via the existing field entrance in the northern side of the U2310. There is good visibility in both directions and traffic on this county road is minimal providing access to Ty-Isaf farm only. AREA 3 access is shown in figure 4.

6.5. Further information about site access is included in the April 2020 Transport Statement prepared by Acstro Ltd.

Figure 4 – Site access for Area 3

7. Site Compound

7.1. The development will require the delivery and storage of construction materials, plant, machinery and office/welfare accommodation. It is proposed that temporary construction compounds are provided during the construction period as shown in Figure 5 for Areas 1 & 2 and Figure 6 for Area 3.

7.2. The compound at Area 2 is principally for lay-down of materials and delivery vehicle turning. There will be limited welfare facilities with principle facilities situated at Area 1.

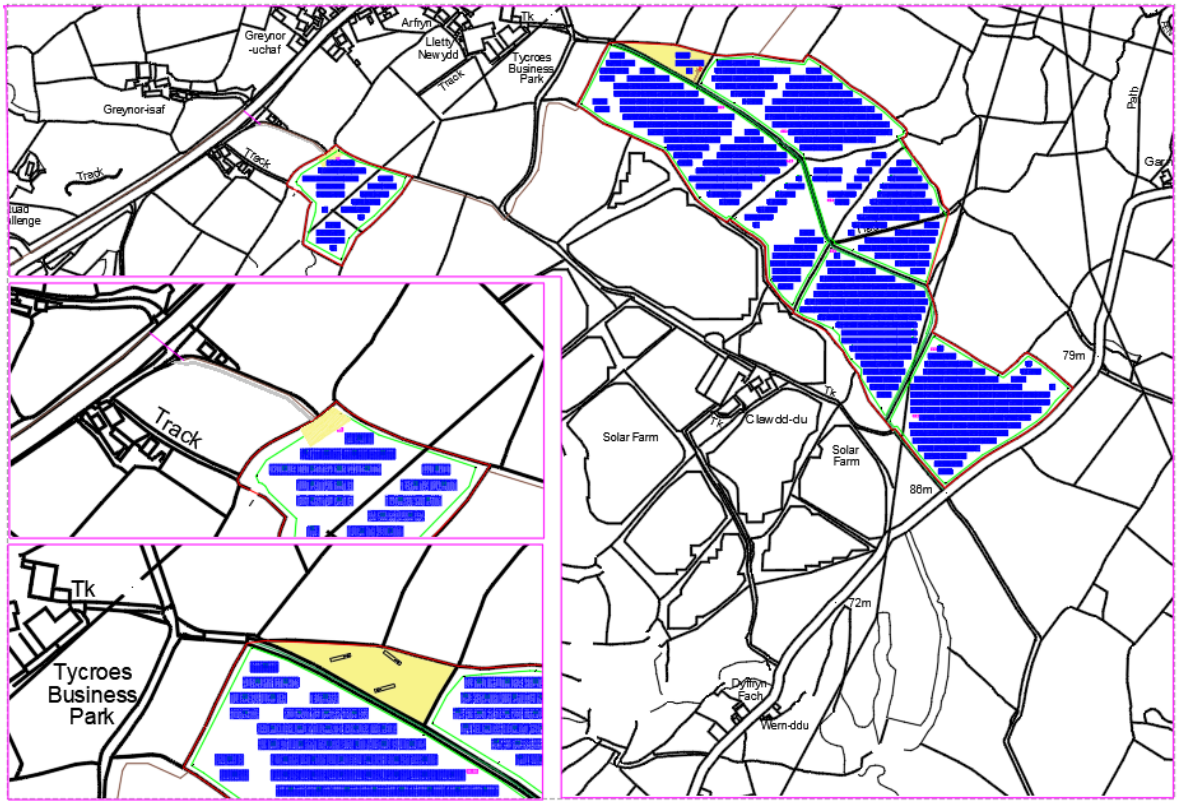

Figure 5 - Area 1 Compound (lower insert highlighted in yellow) and Area 2 Compound (upper insert. highlighted in yellow)

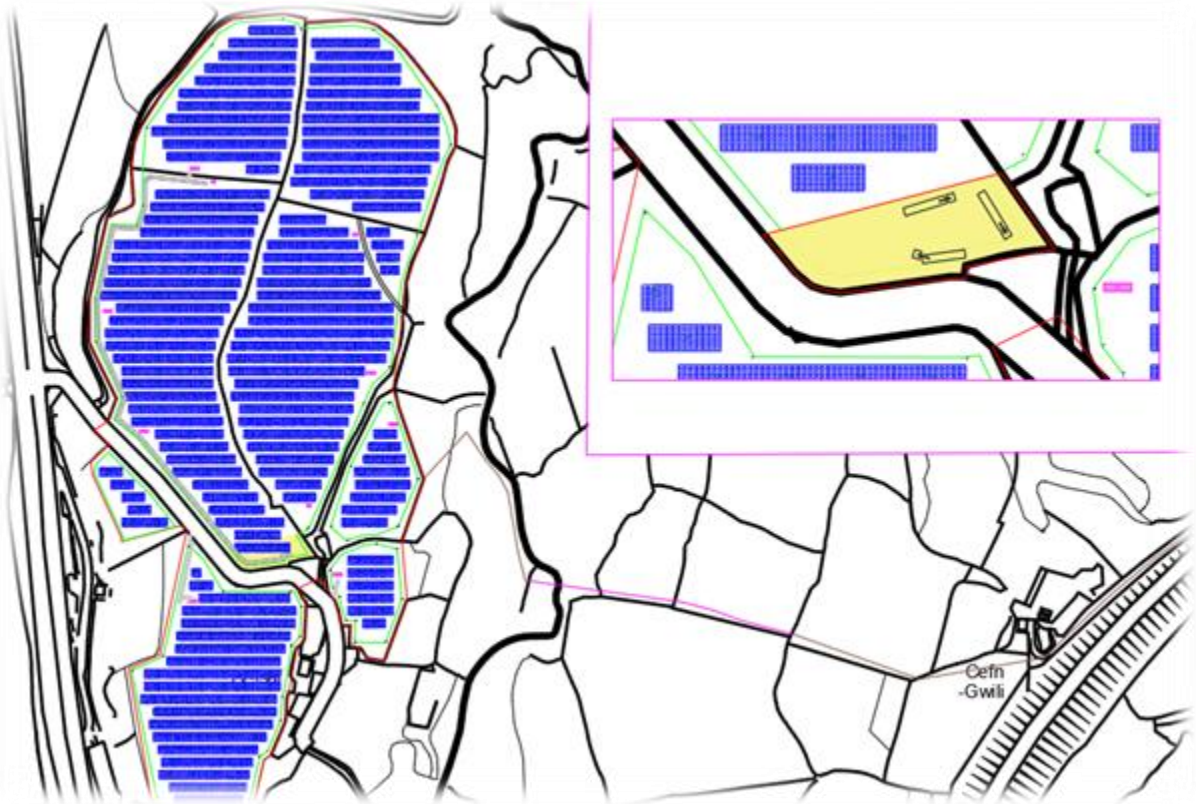

Figure 6 - Area 3 Compound (highlighted in yellow)

7.3. The compound areas will have allocated space for parking of construction and workers vehicles, turning of HGVs, loading/unloading of all vehicles during the construction period. All deliveries will be unloaded and loaded within the site, both during construction and deconstruction. The surface of the compound will be hard standing aluminium/plastic trackway which will not require any formal drainage arrangements and will adhere to the surface water management guidelines detailed at 10.3 of this report. Figure 7 shows aluminium trackway used within the compound at a solar farm construction site.

Figure 7 – Aluminium trackway used to provide hardstanding within a construction compound

7.4. The construction compounds will be reinstated during the last phase of the construction period and in certain areas, as the compounds are removed solar PV arrays will be installed to maximise the utilisation of land within the site for electricity generation.

7.5. The following temporary building and structures will be in place during the construction period.

7.6. Site Office

7.6.1. Three (3) containers 6/2.4/2.4m

7.6.2. The container will be delivered and hooked on hardstanding trackway

7.7. Toilets

7.7.1. Two (2) container 6/2.4/2.4m

7.7.2. The container will be delivered and hooked on hardstanding trackway

7.8. Storage container

7.8.1. One (1) container 12/2.4/3m

7.8.2. The container will be delivered and hooked on hardstanding trackway

7.9. Open Storage area for plant and equipment

7.9.1. The area will be partly covered with hardstanding trackway

7.10. Temporary Hardstanding areas

7.10.1. Parking for workers

7.10.2. Unloading and turning area for deliveries

7.11. Tree & Hedgerow Protection

7.11.1. Existing mature trees and hedgerow boundaries will be protected according to the Landscape and Ecological Management Plan (LEMP) and Arboricultural Impact Assessment and Method Statement (that adheres to British Standard BS5837) that has been prepared and submitted with the according planning proposal. Temporary protective fencing a minimum of 7 metres from trees and hedges will be installed in locations where the permanent site fence (as detailed in ***Fence Plan ref. SP-SFD2-PL*** submitted with the application) is not present to provide that function.

7.12. All the above will be removed on completion of the construction works.

8. Deliveries

8.1. The main deliveries, utilising larger vehicles, of equipment to site will be spread throughout the construction period.

8.2. Whilst construction will be undertaken 7 days a week, the proposed hours of deliveries during the construction period will be restricted to between 07.30 - 19.30 Monday to Friday and 07:30 - 12:00 on Saturdays. A key site contact in respect of the construction phase will be appointed and the local highways department will be notified appropriately.

8.3. A wheel wash will be located on site for all vehicles exiting the site onto the public highway to avoid depositing mud onto the road. Similarly, in excessively dry periods the points of access to the highway from the site access/entrance would be swept if there is excessive dust.

8.4. Anticipated Vehicle Movements

8.4.1. The HGV volumes are expected to total approximately 222 deliveries. The delivery programme may vary due to external factors such as the shipping of materials, however construction traffic for this scheme is calculated as follows:

Activity	Estimated Number of HGV Movements (40 tonne semi-trailers)
Earthworks	80
Mounting system	24
Modules	50
Inverters and Substation	18
Fencing, Cables, and others	50
Total HGVs	222

8.4.2. In addition to the above HGV movements, there will also be a number of construction staff on site which will vary over the construction period depending on the activity that is taking place. The majority of staff will travel in crew buses. In addition, there are expected to be a small number of managerial cars/vans. The number of vehicles will be limited to no more than 30 vehicles at peak construction periods. A sufficient number of parking spaces for typical construction vehicle numbers will be allocated within the designed compound areas.

8.5. A detailed break-down of the vehicle movements by area and by week of construction programme is included in the April 2020 Transport Statement prepared by Acstro Ltd.

8.6. Traffic summary

8.6.1. The peak construction rate of the project would be 12-15 HGV movements a week for the delivery of modules, mounting systems and electrical balance of plant. These deliveries would take place over a period of the installation and construction phase of the project (see construction programme below).

8.6.2. Deliveries will be timed to prevent multiple HGV's arriving at once. This will prevent any potential for HGV's to park on the public highway. However, the construction compound will also be able to accommodate more than one HGV if necessary, as stated above. Given the scale of construction activity proposed it is considered that the local road network will be readily able to accommodate the small number of additional vehicles during the construction of the solar farm.

9. Lighting for Construction and Security

9.1. External lighting will be used during the construction period if required and only between the hours of 07.30 and 19.30.

10. Storage of Oils, Fuels and Pollution Prevention

10.1. All oil and fuel will be stored in fuel containers in accordance with specific UK Regulations e.g. The Control of Pollution (Oil Storage) (England) Regulations 2001 (OSR England).

10.2. Pollution Prevention

Watercourses

10.2.1. Measures will be developed, implemented, maintained and monitored in order to comply with the Water Resources Act (1991) section 85 and associated regulations. The following list shows measures that will be put in place to prevent pollution and conform to the guidance policy proposed by the Environment Agency (EA) via the Pollution Prevention Guidelines:

10.2.2. the handling, use and storage of hazardous materials to be undertaken in line with the EA's Pollution Prevention Guidelines (e.g. oil storage regulations);

10.2.3. adequately bunded and secure areas with impervious walls and floor for the temporary storage of fuel, oil and chemicals on site during construction;

10.2.4. drip trays to collect leaks from diesel pumps or from standing plant;

10.2.5. oil interceptor(s) fitted to all temporary discharge points and for discharge from any temporary oil storage/ refuelling areas;

10.2.6. development of pollution control procedures in line with the EA's Pollution Prevention Guidelines, and appropriate training for all construction staff;

10.2.7. Provision of spill containment equipment such as absorbent material on site.

Watercourses: site specific measures

10.2.8. The principle watercourse near to the development is the Afon Gwili. There are a small number of drainage ditches adjacent or within areas 1, 2 and 3. Prior to construction, a full topography survey will be undertaken to identify any potential pollution pathways. The site is designed to minimise and mitigate pollution risk by locating the controlled area at the construction compounds for fuels, oils and chemicals. A safety cordon of 'no construction' within 30m of the Afon Gwilli and 7m from drainage ditches will be implemented. Vegetated buffers between the edges of the site and the receiving watercourses/boundaries will remain untouched.

10.2.9. Install geofabric fences or straw bales between the Afon Gwilli and the closest construction works to hold back, settle and filter any surface water.

10.2.10. Construction access will be routed away from the watercourses and site fencing, temporary fencing or a rope barrier will be used to prevent access within the safety cordon.

10.2.11. The watercourses will be monitored by daily visual inspection (start and end of day), inspection during times of rain, and inspection of the water quality in watercourses where they leave the area of the site.

10.2.12. If silt pollution is observed, steps will be undertaken immediately to find the source and to stop the cause of pollution. A written record of inspections will be kept, including photos and reported to the site manager.

10.2.13. The water quality will be measured upstream and downstream to ensure consistent comparison. This will be conducted routinely in the area where work is being conducted and continue until any bare ground created by the construction has been re-sown and the vegetation has established.

10.2.14. Prior to construction, a full scan of the site will be undertaken to identity any buried services. Any identified services will be clearly marked and cordoned off to ensure that they are protected. And the site management will check daily to ensure the cordons are maintained. A Constraints plan of the identified services will be available in the site office.

Surface Water Management

10.3. The perceived risks to surface water in the form of silt will be managed as follows:

10.3.1. Wheel wash facilities will be provided for vehicles moving to and from the Site at all entry and exit points. Silty water from wheel-wash facilities will require appropriate disposal to prevent unacceptable levels of suspended solids entering any nearby surface water bodies. Any disposal of surface water generated on site during construction to controlled waters will require consent from the EA. Wheel wash facilities will not be located near areas prone to surface waters pooling.

10.3.2. Where dewatering is required along any part of the construction corridor, pumped groundwater will be disposed of appropriately according to EA Pollution Prevention Guidelines.

10.3.3. Following construction the re-seeding of cleared land, where practicable, will be done swiftly to minimise exposed land and the entrainment of sediment by overland flow. This can be further managed by ensuring construction plant/ materials are stored on hard-standing surfaces. In addition, compacted topsoil will be loosened as soon as possible following completion of the works.

10.3.4. Following the results of the detailed topographical study - if required - attenuation ponds within each identified drainage catchment to be constructed first and used to attenuate and store run-off from the site during construction to prevent contamination of the surface and groundwaters.

10.3.5. In the unlikely event of an environmental incident the site management to be made aware immediately. They will follow appropriate HSE guidance.

To report an environmental incident:

Call national resources wales 0300 065 3000
Call environment agency 0800 80 70 60

11. Ecological and Habitat Protection

11.1. The potential for impacts during the construction and operation phases is considered in full detail in the Landscape Ecological Management Plan prepared by Western Ecology and submitted with the application. Principal protection and mitigation is detailed below:

11.2. Construction Period

11.2.1. During the construction phases there are predictable adverse effects which are generally unavoidable; many are temporary or short term and can be minimised as part of the construction management, but some have the potential for more lasting effect. The potential for adverse effects arises largely from disturbance including noise, vibration, light, dust, and human presence.

11.2.2. These would be minimised as far as possible through the application of good practice techniques and adherence to well-designed method statements. Mitigation measures are outlined within the accompanying reports (Arboricultural Impact Assessment and Method Statement, Landscape Ecological Management Plan and Flood Consequence Assessment), these include;

11.2.2.1. The site will be unlit at night (19.00-07.30) to provide mitigation for both bats and dormice

11.2.2.2. Hedgerows and the trees are left intact and a buffer (minimum 7m) is left adjacent to the site boundary following the methodology detailed in table 2 of the LEMP

11.2.2.3. A buffer (minimum 7m) is left adjacent to any watercourses within the site and 30m from the Afon Gwilli

11.2.2.4. If any hedgebanks or trees are to be removed, or hedgebanks breached, further survey work will be required.

11.2.2.5. Passing of cables beneath hedgebanks will follow the methodology detailed in table 3, point 5 of the LEMP.

11.2.2.6. Install geofabric fences or straw bales to attenuate the runoff and settle/filter the silt out of the runoff if a potential risk of silt pollution in a watercourse arises.

11.2.3. All avoidance and mitigation measures as detailed in tables 2 and 3 of the LEMP to be strictly implemented.

11.3. Operational Period

11.3.1. A flood risk assessment has been completed by Clive Onions Ltd, considering topography of the site and local area, and the proximity of the site to watercourses. Within this assessment the surface of the solar PV modules is not considered to lead to a significant increase in impermeable area since surface water from the panels will quickly run-off to the existing greenfield below. Therefore the presence of solar PV panels is considered to have a minor impact on the existing drainage.

11.3.2. However, it is noted that the ground fixings of the PV arrays will constitute a loss of permeable area across the site, as will any additional structures associated with the proposed development, such as inverter housing. Any access tracks to be constructed will use permeable materials and as such are not considered to increase the hardstanding across the site.

11.3.3. It is proposed to implement a range of ecological enhancements to the site, these are further outlined within the Landscape and Ecological Management Plan.

12. Construction Method for Framework

12.1. The posts for mounting the PV modules and substructure will be assembled first. This involves driving of galvanised steel posts into the ground and subsequent assembly of the substructure.

12.2. The PV modules are mounted on a steel substructure and fixed through their frame to the steel rails. Modules are designed as shatter proof and will be lifted into position for mounting in a landscape orientation with eight modules arranged above each other in rows. A total of approx. 98,700 modules will be mounted.

12.3. During construction, a number of ground-work installation teams will work on the site to establish the posts in the ground using tracked pile driving vehicles, each team expecting to erect 300 posts a day. Other teams will then assemble the substructure and fix the PV panels onto the structure. The substructure will be assembled using battery operated power tools and hand tools. The noise created by the pile driving will not exceed 80 decibels. Vibration is only very local and will not exceed an area of 5m².

13. Construction Method for Horizontal Directional Drilling (HDD)

13.1. The HDD process begins with the excavation of launch and reception pits at either end of the length to be drilled. These pits allow the drilling fluid to be collected throughout the process and either re-cycled during the job or removed for disposal upon final completion.

13.2. The first stage of the process involves drilling a small diameter pilot bore along a prescribed route from launch to reception pits.

13.3. The second stage of the process enlarges the pilot bore by pulling a larger cutting tool known as the back reamer from the reception pit to the launch pit connected to the drill rods installed during pilot boring. The back reamer is also rotated during this stage cutting the surrounding ground to create a passage for product.

13.4. The third stage of the process is to install the product or casing pipe by pulling it back through the hole enlarged by the reaming process. If required, the reaming stage may actually be carried out in a number of successively larger stages until the final bore size is between 25 and 50% larger than the product to be installed.

13.5. Throughout all stages of the Horizontal Directional Drilling (HDD) process a drilling fluid is pumped down the bore to the drill head or reaming tool. This fluid is used to facilitate the removal of cuttings, stabilise the bore hole, cool the cutting head + transmitter, and also to lubricate the passage of the product pipe. The constituents of the drilling fluid are chosen to match the properties of the ground being drilled.

In environmentally sensitive areas such as watercourse crossings or areas of special scientific interest, biodegradable drilling lubricants and additives would be used to further minimise the impact of construction works.

13.6. A diagram to illustrate the HDD process is included at figure 8.

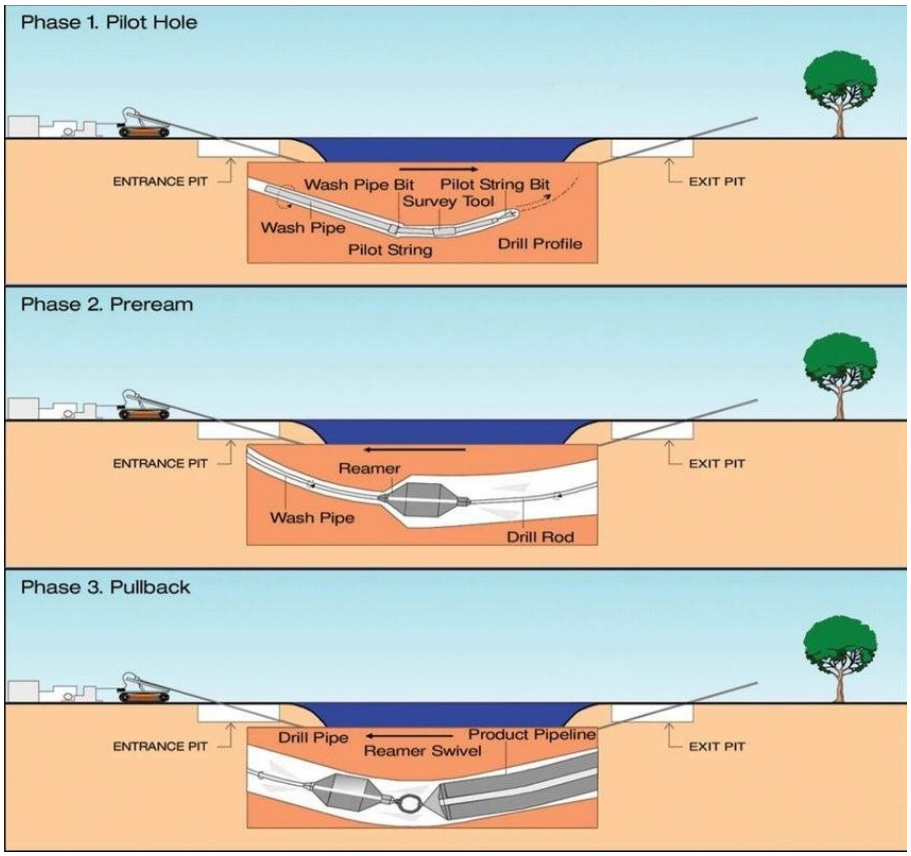

Figure 8: Diagram to illustrate the Horizontal Directional Drill process

14. Construction Programme

14.1. The proposed construction timeline is set out below and the construction of the site is anticipated to be approximately 18-24 weeks. This may vary dependent on weather and other constraints unknown at this stage. Construction of the development will be undertaken 7 days a week.

14.2. No activities audible from the boundary of the nearest noise sensitive receptor shall take place on Sundays during the construction period or at times outside 07:00 and 19:00. The proposed hours of working during the construction period will be between 7.30am and 5.30pm with the intention to avoid use of local highway network for deliveries during peak hours (08.00-09.30 & 16.30-18.00).

Stage 1	Formation of temporary access track, cable trenches, casting substation foundations, security fence and CCTV cameras/poles	Weeks 1-5
Stage 2	Installation of ground piles	Weeks 4-8
Stage 3	Erection of mounting framework, fixing panels and routing of cables	Weeks 6-16
Stage 4	Installation of inverters, HV substations and all cabling and Commissioning	Weeks 15- 20
Stage 5	Reinstatement of temporary tracks, hard standing and open storage areas	Weeks 18-20
Stage 6	Operation	Weeks 20-24

15. Construction Signage

15.1. The following construction traffic signage will be erected and retained throughout the construction and installation phases of the project.

15.1.1. Direction signs for construction traffic

15.1.1.1. Rigid plastic 1000mm across

15.1.1.2. Attached to posts of existing directions signs

15.1.1.3. To be attached to existing directions signs at junctions with the purpose of directing traffic to the site along the agreed delivery route. The proposed size and format is intended to be clearly visible and understandable to drivers heading to the site.

15.1.2. Red Warning Signs – Caution Lorries Turning

15.1.2.1. Rigid plastic 600mm x 450mm

15.1.2.2. Attached to a metal frame or equivalent

15.1.2.3. To be placed along the unclassified road at Area 3 at an appropriate distance in either direction from the junction with the entrance to the site to warn road users of heavy goods vehicles liable to be turning into or emerging from the farm access.

15.1.2.4. Also to be placed on the A483 road either side of the site entrance at a reasonable distance with the purpose of warning road users of construction traffic entering or emerging from the site access.

15.1.3. Red Warning Signs – Caution Construction Traffic

15.1.3.1. Rigid plastic 600mm x 450mm

15.1.3.2. Attached to a metal frame or equivalent

15.1.3.3. To be placed on either side of the site entrances at a reasonable distance with the purpose of warning road users of construction traffic entering or emerging from the site access.

16. Site Access Photos

Photo 1: Exit from Pont Abraham Roundabout onto A483

Photo 2: A483 eastbound

Photo 3: Turning location into Area 1 from A483

Photo 4: Exit from A48 southbound onto unclassified road to Area 3