

Parc Solar Caenewydd, Swansea

Outline Construction Environmental Management Plan

Development of National Significance in the Renewable Energy Sector
Application Submission





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1. INTRODUCTION

- 1.1. Pegasus Group has been appointed by Taiyo Power & Storage Limited (herein referred to as "the Applicant") to coordinate an Outline Construction Environmental Management Plan for a proposed Non-EIA¹ utility-scale solar and battery storage facility (herein referred to as "the proposed development") on land fronting the A484 and Swansea Road (B4560) at Gowerton, Swansea (herein referred to as "the application site"). The proposed development will deliver a host of landscape, biodiversity, soil and hydrological enhancements. Including measures to strengthen habitat connectivity through this part of the valley, the creation of green buffer zones and public right of ways improvements. The proposed development is called 'Parc Solar Caenewydd'.

Purpose of Document

- 1.2. This Outline CEMP has been produced to set out the commitments of the Applicant towards securing specific mitigation measures and best working practices to adequately protect environmental resources during the construction phase of the proposed development, including potential impacts on human receptors. The Outline CEMP also sets out details on the construction working approach, including details on proposed working hours, construction compounds, control of lighting, management of vehicle movements, wheel washing facilities and waste removal.
- 1.3. The Outline CEMP outlines the measures which will be implemented by the Applicant during the construction phase of the proposed development once the permission is granted by the Welsh Ministers. The intention is for it to be converted into a Final CEMP following discussion with and approval by the Local Planning Authority (LPA) and Natural Resources Wales. This process will be secured by an appropriately worded planning condition attached to the permission.
- 1.4. The Final CEMP will be in accordance with this Outline CEMP and must be adhered to throughout the construction works by the contractor appointed by the Applicant to undertake the proposed development (referred to in this document as "the Contractor").
- 1.5. The Outline CEMP includes measures for the protection of habitats and species during the construction phase. This includes pollution control and runoff measures to protect a number of designated sites which are located within the Zone of Influence of the proposed development.

¹ On 17 August 2022, Planning & Environmental Decision Wales adopted its Environmental Impact Assessment (EIA) Screening Direction. The Welsh Ministers direct that the development is not EIA development within the meaning of the Regulations.



2. ROLES AND RESPONSIBILITIES

2.1. The following table will be completed for the Final CEMP and prior to the commencement of any works on site.

Role	Responsibilities	Contact Details
Construction Manager/Site Supervisor	Overall responsibility for the organisation and implementation of this CEMP. Ensure the site induction includes an introduction to the CEMP.	TBC
Site Environmental Manager	Monitor site works and ensure no negative impacts on the environment occur. Conduct appropriate monitoring to ensure the CEMP is being adhered to. The Site Environmental Manager will also be responsible for conducting toolbox talks at the commencement of new activities, which will also draw from the CEMP and the ecological assessments that formed part of the application.	TBC
Ecological Clerk of Works	Provide ecological advice and conduct monitoring during construction.	TBC
Emergency Contact	Natural Resources Wales – Pollution Hotline 0300 065 3000	
Wildlife Rescue Centre	Gower Bird Hospital, Sandy Lane, Southgate, Swansea SA3 2EW	



3. DEVELOPMENT SITE

- 3.1. The application site is located off of the A484 and B4620 – Swansea Road. The National Grid Reference (NGR) for the centre of the application site is 260432, 196889, the closest postcode to the application site is SA4 4LE. The surrounding land uses consist of a mix of residential, agricultural and industrial areas. The redline boundary for the application extends to a total area of 83.2 hectares. The site location plan is provided at Appendix 1.
- 3.2. The application site sits at the southeast residential edge of Gorseinon. The south of the residential site is offset from the edge of Gowerton and Waunarlwydd by woodland and vegetation along the railway line, Afon Llan and Westfield Industrial Park. The edge of Swansea is to the east, beyond intervening fields, woodland blocks, and vegetation along the Afon Llan.
- 3.3. The application site currently consists of a number of individual, agricultural fields. The site is bordered by the river Afon Llan to the south, Gowerton Sewage Treatment Works to the west, agricultural land to the east, a business park, the B4560 and A484 roads to the north.



4. DEVELOPMENT DESCRIPTION

- 4.1. The application proposal relates to the construction, operation, maintenance and decommissioning of a ground mounted solar power and battery storage facility.
- 4.2. The application proposal relates to the construction, operation, maintenance and decommissioning of a ground mounted solar power and battery storage facility and ancillary development. An operational lifespan of 40 years is sought after which the proposed development will be decommissioned, and the application site returned to full agricultural use.
- 4.3. Individual elements of the proposed development are shown on the accompanying Planning Application Drawings, the key drawings are also provided at Appendix 2 of this Statement.
- 4.4. The proposed development can be split into three key components, these are:
 - Ground Mounted Solar PV Arrays.
 - Compounds for the Battery Energy Storage System and Substations.
 - Ecological Enhancement and Biodiversity Habitat Management Areas.

Design Flexibility

- 4.5. The proposed development has employed a 'maximum design scenario' approach which reflects the Rochdale Envelope approach.
- 4.6. The Rochdale Envelope is employed where the nature of the proposed development means that some details of the whole project have not been confirmed and flexibility is sought to address uncertainty. It provides a 'maximum design' scenario approach to the impact of a project and allows for a broad definition of the project to be framed within a number of set parameters. This approach allows for a project to be assessed on the basis of maximum project design parameters in order to provide flexibility, while ensuring all potentially significant effects (positive or adverse) are assessed within the planning application. The need for flexibility in design, layout and technology is required to address uncertainties inherent to the development. This is very pertinent to solar development due to the rapid pace of change in module technology and commercial availability. As technology advances, it is possible that modules could become more efficient which would result in a potential reduction in total module area required to deliver the same amount of generation. This in turn could require the micro-siting of ancillary equipment to reflect such changes, i.e., the final locations of cabling and inverters. Accordingly, a final build plan would be submitted to the Local Planning Authority as part of a pre-commencement condition. The final build plan would demonstrate how the final 'as-built' design remains within the parameters of the DNS application submission. This approach is consistent with good practice applied at other recently permitted DNS energy schemes².

² Including Penderi Solar Farm (DNS 3213164); Brynrhyd Solar Farm (DNS/3260565), & Penpergwm Solar Farm (DNS/3252305)

Ground Mounted Solar PV Arrays

- 4.7. The design principles of the solar modules are:
- Arrays will be comprised of a galvanised steel and anodised aluminium mounting structure with the solar panels attached to it.
 - Arrays will have a maximum top height of 3m and the lowest part of the arrays will be 0.8m above ground level.
 - All solar panels will be south facing.
 - Solar panels will be dark blue, grey or black in colour.
 - Indicative slope of the solar panels from horizontal would be 15 degrees.
 - Internal access track will be of permeable construction.
 - Typical minimum distance between edge of the arrays to the 2m high perimeter fencing would be 5m (this varies across the site).
 - Biodiversity will be enhanced within and around the arrays.
 - Appropriate offset will be provided between the development and the Public Rights of way running through the site.
 - CCTV will be positioned along the perimeter fencing of the arrays, on 2.7m high poles.
- 4.8. The solar PV modules would convert solar irradiance into Direct Current (DC) electricity. The proposed PV panels may also be bifacial (such that they will collect light both on the front and the rear sides of the panel as it captures sunlight reflected from the grass surface under the solar framework).
- 4.9. The PV modules would be mounted on south facing galvanised steel and anodised aluminium metal racks. The racks will be laid out in multiple parallel rows running east to west across the various field enclosures. The framework and arrays would be static. The distance between the arrays would respond to topography but would vary between 3.0m to 5.2m. Land between and beneath the panels would be used for biodiversity enhancements and/or seasonal sheep grazing. This is discussed in detail below.
- 4.10. Parts of the two south-westerly fields, which fronts onto Afon LLan, are located within a flood risk area. The applicant has confirmed that solar modules are water compatible development and can still operate after being partly submerged by flood water. Sensitive components such as inverters and transformers will be positioned above projected maximum flood level of 12.5m and outside the flood risk area. The lowest levels within the site boundary where panels are placed would be approximately 10.5m AOD suggesting that the base of the panel would be set at 11.2m AOD with the flood water set partially up the panels.
- 4.11. The arrays would be set within a 2.0m high security fence. Cables linking the rows of panels will be buried in the ground within trenches, typically 0.5–1.1m in depth. Further cables will be used to link areas of panels to inverters and then the substation compound located in the



eastern parcel of the application site. The dimensions of the cable trenches will vary and this is dependent on its location and ground conditions.

- 4.12. Sections of the cable will also be laid via trenchless techniques and this is discussed within the Outline Construction Environmental Management Plan.
- 4.13. An existing agricultural underpass, located under the A484, will be used for the cable route section linking the single northern land parcel and the main site.
- 4.14. Internal access tracks of permeable aggregate are required during the lifetime of the development.

Battery Energy Storage System (BESS) and Substation Compounds

- 4.15. The battery energy storage system consists of containerised battery units that can store energy and are able to release or absorb energy from the power network. Being able to absorb and release energy, the BESS at the proposed development can be used to contribute towards the frequency balancing services, where the power is being generated or absorbed statically or dynamically depending on the system frequency. When there is not enough power, batteries are discharged to balance under frequency preventing black and brown outs. To balance over frequency batteries are charged to prevent dangerous spikes across electricity infrastructure.
- 4.16. Under normal working conditions, the BESS would be unmanned. Visual checks will be undertaken during maintenance visits to the proposed development. The compound for the battery energy storage will require engineering works comprising cut and fill to achieve a level platform. Underground cabling works will be installed to connect the battery energy storage system to the proposed substation.
- 4.17. A new substation compound will be required for the proposed development, and this will be constructed in the easternmost field of the main application site. This is necessary to step up and covert voltage of the electricity delivered by the solar PV for connection to the National Grid Circuit.
- 4.18. The equipment and infrastructure to be installed at the BESS and Substation compounds include:
 - Compound created through cut and fill
 - Internal access tracks
 - Vehicular parking
 - 42 No. containerised battery units measuring 7.81m by 2.65m with a height of 3.05m.
 - 5 No. skid mounted transformers and inverters
 - 2.4m high palisade fencing and lighting with CCTV
 - DNO compound comprising: emergency floodlight & CCTV columns; high level connectors; circuit breaker, low level disconnectors; and anchor blocks

- 15m high lattice telecoms tower
- The compounds will be surfaced with chippings.
- DNO/BESS track providing ingress / egress directly to/from Carmarthen Road.

4.19. There are two options put forward within the application submission for the connections works linking the substation and point of connection to the circuit, these are: -

- Option 1 – the first is the overhead pylon located off Ystrad Road, Forestfach. The proposed routing option runs along the existing local highways (namely Swansea Road, Carmarthen Road, Ystrad Road and Denver Road).
- Option 2 – the alternative point of connection is the terminal overhead pylon tower located to the north off Carmarthen Road, near the Paper Mill Fisheries. The proposed routing option runs along the existing local highways (namely Swansea Road and Carmarthen Road).

4.20. A final decision on the point of connection will be made prior to construction and this can be secured by pre-commencement condition as part of the final build plan.

Ecological Enhancement and Biodiversity Habitat Management Areas

4.21. Measures have been specifically designed to enhance habitats after intensive grazing and provide a gain in biodiversity at the site post-development.

4.22. Green infrastructure provision delivered as part of the proposed development will include new tree and hedgerow planting, targeted habitats for reptiles, invertebrates and farmland birds, enhanced habitats along the Afon Llan, and re-establishment of grassland habitats.

4.23. Habitat conservation, creation and enhancement measures are proposed across the entire application site in order to increase the extent and quality of habitat along key corridors within and through the application site, notably complete exclusion from development of the most sensitive Rhos grassland habitat field in the centre of the application site.

Access Arrangements

4.24. The primary access for the development is from the private access road which serves Penyfodau Fawr Farm.

4.25. A secondary access fronts the rear of an existing lay-by on the southern side of the B4560 Swansea Road, approximately 430m east of the Hospital Road access. Access to this farm track is currently blocked up and the applicant understands that the landowners is looking to reinstate access. Improvement works to the access and track will be delivered as part of the application proposal. This access will be used by both the operator of the BESS compound and National Grid to access its substation compound.

4.26. The development parcel located to the north of the A484, will be served via an existing access on the western side of the B4560 Swansea Road (W), located approximately 30 metres northwest of the A484 / B4560 Swansea Road roundabout.



Operational Lifespan

- 4.27. A temporary operational lifespan of 40 years would be sought for the entire development and linked to the first export date of electrical energy from the development. During the operational phase, the activities on the application site would amount to servicing and maintenance of plant and equipment and vegetation management. Traffic impacts from the operational phase of the proposed development will only consist of between 10-15 Light Goods Vehicles per year.

Decommissioning

- 4.28. After a 40 year generation period the proposal would be decommissioned with all electricity generating equipment and built structures associated with the proposed development removed from the application site and the land returned to agricultural use.
- 4.29. A decommissioning plan would be prepared prior to the decommissioning commencing. The application site will be surveyed by an appropriately qualified ecologist to identify any ecological constraints arising from decommissioning activities. Depending on the ecological value of the habitats that develop over the lifespan of the scheme, it is possible that certain areas of the site may need to be retained due to their value for wildlife on decommissioning. Alternatively, and on application of the mitigation hierarchy principles, their loss may require compensation through on or off-site measures to ensure land/habitats are preserved for wildlife into the future.
- 4.30. It cannot reasonably be foreseen what legislative protection will be afforded to particular wildlife species at the end of the scheme's lifespan. Further surveys for protected species, which could be impacted by decommissioning, would also be expected. Where possible and when electrical items have an ongoing life-span they will be removed from the application site in whole units and re-used in current form. Where units do not have an ongoing life-cycle they will be placed into a suitable re-cycling skip or container and then removed from the application site to a suitable waste recycling centre. Following decommissioning, there may be a period of soil management aftercare.

Undertakers

- 4.31. The layout of the proposed development will provide an appropriate easement for the existing underground infrastructure, which include sewers and gas pipes. No arrays will be erected over the line of any underground infrastructure. The applicant is in discussion with Welsh Water and Wales & West Utilities to agree a strategy for the directional drilling of the cable run under their assets.

Public Rights of Way (PRoW)

- 4.32. The proposed layout incorporates and protects the definitive line of the Public Rights of Way traversing the application site. The application proposal introduces a permissive footpath that links the farm track fronting the layby on the southern side of the B4560 Swansea Road, to other existing PRoWs within the site.



5. CONSTRUCTION PRINCIPLES

5.1. The application site will be set up and managed with consideration of the principles laid out below:

- Considerate: All work is to be carried out with positive consideration to the needs of local businesses, neighbours, site personnel, visitors, and the public.
- Environment: Be aware of the environmental impact of the application site and minimise the effects of dust, noise, light and air pollution. Attention will be paid to waste management to reuse and recycle materials where possible.
- Cleanliness: The application site will be kept clean and in good order at all times. Application site facilities, offices, toilets and drying rooms will be maintained to a good standard. Surplus materials and rubbish will not be allowed to accumulate on the site or spill over into the surroundings and dirt and dust from construction operations kept to a minimum.
- Good Neighbour: General information regarding the works will be available to nearby neighbours. Full and regular communication with neighbours, including adjacent residents, farmsteads and businesses, regarding programming and site activities to be maintained from prestart to completion.
- Respectful: Respectable and safe standards of dress to be maintained at all times. Pride in the management and appearance of the application site and the surrounding environment shown at all times.
- Safe: Construction operations and site vehicle movements are to be carried out with care and consideration for the safety of site personnel, visitors, the public and the environment.
- Responsible: Ensure that everyone associated with the application site understands implements and complies with this code.

5.2. The health, safety and environmental expectations are as follows:

- To have no accidents or dangerous occurrences on site;
- To have no occupational ill health arising from the project;
- To ensure no environmental damage occurs from the project;
- To ensure the least disruption to the local community from the project, and
- To exclude as far as is reasonably practicable all unauthorised persons from the project.

Temporary Construction Compounds

5.3. Two temporary construction compounds are proposed, the main construction compound will be located off the Penyfodau Fawr Farm access track, the secondary construction



compound will be positioned within the field containing the substation. As the proposed development is built out, the construction compounds would be scaled down and removed from the application site.

5.4. The construction compounds would contain the following: –

- Temporary site facilities (Port-a-Cabin type) to be used for site office and welfare facilities, including welfare facilities with provision for sealed waste storage and removal
- Container storage unit(s) for tools and equipment storage
- Container storage unit(s) for components and materials
- Refuelling compound for construction vehicles and machinery
- Adequate parking area for cars, construction vehicles and machinery
- Designated skips for recycling and construction waste
- Wheel washing facility
- Adequate space for HGV to manoeuvre and offload within site to reduce impacts on local roads.

5.5. Construction is expected to be carried out in a single phase of around 8–9 months, depending upon any required enabling works, available daylight hours, ground conditions and ecological considerations. During this period, there will be a combination of HGVs for the component deliveries and cars/vans for construction staff. HGV movements are expected to be most intense throughout the early stages of construction, tailing off towards the final weeks.

5.6. All traffic movements will be carried out between the hours of 07.00 to 19.00 on Monday to Friday and 08.00 to 16.00 on Saturdays. The primary access for construction is the private access road which serves Penyfodau Fawr Farm. Construction vehicles will access the road from the southern arm of the A484 / B4560 Swansea Road roundabout.

5.7. The secondary construction compound is principally to aid the construction of the substation, battery storage area and the cable trench works from the substation to the point of connection, this will be accesses via the secondary farm track fronting the layby on the on the southern side of the B4560 Swansea Road.

5.8. For the single field north of the A484, all plant and machinery will be off loaded at the main compound and then transported along the local road to the northern site.



6. POLLUTION PREVENTION

Pollution & Spillages

- 6.1. To avoid pollution incidents which may impact the watercourses within or adjacent to the application site, and designated sites located downstream, measures for the safe storage of chemicals and materials shall be implemented.
- 6.2. Any potential contaminants (fuel, oils and chemicals) used during construction will be stored in designated compounds on an impermeable surface, at least 15m from any watercourse. These will be securely locked away when not in use.
- 6.3. Where bunds or similar containment systems are used at fuel/chemical/COSHH storage and handling areas, they should be sized to hold 110% of the capacity for a single container/drum/tank, or where there is more than one container/drum/tank, not less than 110% of the largest container or 25% of their aggregate capacity, whichever is the greater. This is in line with CIRIA guidance.
- 6.4. Appropriate pollution control measures will be employed in accordance with those outlined in the NetRegs document Guidance for Pollution Prevention (GPP) 5: Works and maintenance in or near water (February 2018). Although not endorsed by Natural Resources Wales (as NRW do not currently provide good practice guidelines following the withdraw of Pollution Prevention Guidelines (PPG) 5), measures in this document (accessed at: <http://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf>) should nevertheless be followed in order to prevent pollution of the nearby watercourses and ensure any pollution events are dealt with swiftly.
- 6.5. A spill kit must be kept on site with sand, earth or commercial products for the containment of fuel and other material spillages. All staff will receive appropriate training in the use of these kits and are to be made aware of where the kit is stored.
- 6.6. A detailed pollution/spill response plan will be kept within the site office.
- 6.7. In the event of an accidental spillage, the following procedures will occur:
 - The source of the spill will be stopped and any surrounding site personnel informed
 - The Site Environmental Manager will be informed immediately
 - The spill will be contained through use of a spill kit or other available materials.
 - If the spill occurs close to a watercourse or other sensitive habitat, measures will be taken to ensure that the spill does not affect this area (this may include covering with ground mats, creation of a bund or channel)
 - If required, the Site Environmental Manager will contact NRW to inform them of the situation.
- 6.8. Machinery, plant and vehicles have the potential to cause pollution via hydrocarbon contamination. All vehicles and plant used for construction must be maintained to good working order to ensure that there is minimal risk for potential fuel or oil leaks within the



application site. Refuelling of any plant and site-based vehicles will be carried out by a suitable qualified person to ensure that potential pollution incidents are prevented, and a quick response plan is implemented should a spill occur. Fuel delivery and refuelling will take place in the construction compound(s).

Noise Pollution

6.9. 'Best Practicable Means' should be employed across the construction phase to ensure impacts are minimised. These measures should include:

- Equipment should be turned off when not in use and no vehicle idling should be permitted within the construction site including construction yards etc;
- Where possible all noisy plant and equipment should be replaced with less noisy alternatives;
- All plant should be properly maintained, and all noise control measures be properly employed i.e. exhaust silencers fitted, vehicle panels closed etc;
- All panel frame supports are to be rammed or push driven. Pre-auguring can be used to facilitate this. Where ground conditions do not allow this, alternative methods should be selected with a view on their potential noise emissions. Impact driven supports should be viewed as a last resort;
- Do not drop materials i.e. access road surface materials etc, from excessive heights. Where necessary consider screens around material drop areas;
- Where no other practicable means are available, the use of appropriately designed, temporary acoustic screens can be considered for noisy works close to residential properties;
- Construction traffic should be timed and routed to minimise the impact to local residents; and,
- Noise monitoring should be carried out in the event of valid complaints.

7. THE MANAGEMENT OF SEDIMENT AND SURFACE WATERS

- 7.1. The CEMP must include measures which will reduce the risk of silt and waste entering the receiving watercourses during construction, which may affect the watercourses and designated sites located downstream.
- 7.2. Within the higher risk areas, mitigation will be installed adjacent to watercourses (between the construction area and the watercourse) prior to construction commencing as a precautionary approach. This may include a geofabric fence or straw/hay bales. The management of sediment and surface water run-off generated during the construction phase of the proposed development will be controlled through good practice construction techniques.
- 7.3. Major construction works (e.g., large-scale earthworks associated with the construction of the substation and battery compounds; directional drilling; creation of new access tracks) will be minimised during heavy precipitation events. The CEMP will be required to include precautions to be taken if the weather is wet during construction. The precautions and mitigation measures include: –
- Planning the construction work to minimise repeated trips over the ground;
 - Forming the permeable tracks early in the process;
 - Using machines with low pressure tyres – e.g. farm type machinery;
 - Monitoring the weather and being alert to the implications of wet weather;
 - Inspecting surfaces to identify areas at risk of causing silt pollution to watercourses;
 - Restricting operations in areas vulnerable to causing pollution, especially in wet weather;
 - Keeping a store of straw/hay bales and geofabric fence equipment to delay and filter runoff;
 - Being ready with trained staff to deploy the equipment if a risk of silt pollution arises;
 - Early preparation, seeding and protection to encourage vegetation to establish on all bare areas as soon as possible after construction.
- 7.4. Generally, an appropriate 8m buffer zone will be set between the proposed development and any watercourse / ditches. No development will be proposed within these minimum buffer zone, with an exception for fence crossings, culverts and access tracks.
- 7.5. The first step towards preventing silt pollution from the proposed development shall be to minimise the generation of silt-laden runoff. This can be achieved by the Site Manager carefully planning the site works so that activities likely to generate silt-laden runoff are carried out during drier weather, and erosion of surface soils and excavations is controlled. The second step is to treat surface water containing silt prior to it entering watercourses.



Prior to commencement of construction, a double layer of high-performance silt fencing will be installed between sources of siltation and watercourses where vegetation clearance, temporary stockpiling of soil or other materials, or access/egress routes are required. Where silt fencing cannot be installed, straw bales or other measures will be adopted to prevent silt-laden water from flowing overground or via the existing network into watercourses.

7.6. Environmental emergency response measures are required in the event that either of these two steps fail. The emergency response procedure is set out below:

- Any environmental incidents will be reported directly to the Site Environmental Manager;
- The emergency response will be led by the Site Environmental Manager;
- Measures will be put in place immediately such as the installation of silt fencing or hay bales. Surface water may need to be redirected from watercourses through the use of swales or attenuation pools; and
- NRW will be contacted if appropriate to report the incident.

Foul Drainage

7.7. During the construction phase, 'Porta-loo' type facilities, or equivalent, will be used and emptied by a waste contractor, therefore nullifying any potential effects on drainage ditches and watercourses.

Site Establishment

7.8. During the mobilisation period of development, a security cabin will be placed within the areas designed for the temporary construction compounds.

7.9. The construction compounds will be positioned at an appropriate distance into the application site to prevent the likelihood of any construction traffic having to queue on the adjacent public highway during busy periods.

7.10. A project notice board would be installed at the main entrance to the application site and at the internal crossing points along the Public Rights of Way traversing the application site.

7.11. Site welfare facilities and offices will consist of linked "Portakabin" type units.

7.12. The welfare facilities will have hot and cold running water, with a clean drinking water supply. Washing facilities and showers will be provided for the duration of the works, to include soap and towels or other suitable means of drying.

7.13. All welfare facilities will always be kept clean, tidy, and hygienic.

7.14. First aid facilities will be provided together with a trained first aider during working hours.

7.15. The temporary construction compounds will be equipped with Fire Points and a wireless evacuation alarm system. Designated Fire Marshall and Fire Coordinator would be appointed as part of a Construction Phase Health and Safety Plan.



- 7.16. Construction works will be carried out Monday to Friday 07:00–18:00 and between 08:00 and 13:30 on Saturday, unless otherwise agreed by the relevant planning authority. The following works may occur outside these hours: –
- emergency works; and
 - works which do not cause noise that is audible at the boundary of the Order limits.
- 7.17. Any emergency works must be notified to the relevant planning authority within 72 hours of their commencement.



8. PUBLIC RIGHTS OF WAY

- 8.1. The existing PRow routes are incorporated into the layout of the proposed development and will remain open during the construction period. For the locations that the PRow would be affected by the construction works, namely, the internal access crossing points, signs for both PRow users and construction vehicles will be erected to allow safe crossing of construction tracks for PRow users. The final CEMP will include details with regards to the wording and location of the construction signage.
- 8.2. Where a PRow crosses a temporary access track, it would be disproportionately disruptive to close the PRow for the duration of the use of the temporary access track, particularly when the risk to the public is likely to be lower than crossing a public road due to the 10 mph speed limit of construction vehicles, as outlined in the Outline Construction Traffic Management Plan. A banksman will be provided at the crossing points and priority will be given to users of the PRow.
- 8.3. Temporary fencing or the proposed stock fencing will be erected along either side of the PRow at the start of the construction, and this will be retained for the period of construction.

9. DUST AND EMISSION MITIGATION

- 9.1. It is considered that employment of construction best practice should ensure that no problematic dust or PM10 concentrations occur during the construction process.
- 9.2. IAQM guidance outlines a number of site-specific mitigation measures based on the assessed site risk. The measures are grouped into those which are 'highly recommended' (i.e. should be employed) and those which are 'desirable' (i.e. should be considered under best practice).
- 9.3. As the application site is classed as low risk the following mitigation measures are highly recommended:
- 9.4. With respect to communications:
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
 - Display the head or regional office contact information.
- 9.5. With respect to site management:
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
 - Make the complaints log available to the local authority when asked.
 - Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- 9.6. With respect to monitoring:
- Carry out regular site inspections to monitor compliance with the CEMP, record inspection results, and make an inspection log available to the local authority when asked.
 - Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- 9.7. With respect to preparing and maintaining the application site:
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
 - Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- 9.8. With respect to operating vehicle/machinery and sustainable travel:
- Ensure all vehicles switch off engines when stationary – no idling vehicles.



- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.

9.9. With respect to operations:

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

9.10. With respect to waste management:

- Avoid bonfires and burning of waste materials.

9.11. Additionally, as the application site is classed as low risk the following mitigation measures are desirable:

9.12. With respect to preparing and maintaining the application site:

- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

9.13. With respect to operating vehicle/machinery and sustainable travel:

- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- A speed limit of 10mph is set on where the surfaced areas cross Public Rights of Way.

9.14. With respect to operations:

- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.



- 9.15. As the application site is classed as low risk for earthworks no mitigation measures are required with respect to earthworks.
- 9.16. As the application site is classed as low risk for trackout the following mitigation measures are desirable:
- All site access roads are to be assessed daily in terms of transient dust, with roads to be dampened down where required.
 - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
 - Avoid dry sweeping of large areas.
 - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
 - Record all inspections of haul routes and any subsequent action in a site log book.
 - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).



10. LOCAL COMMUNITY RESPONSIBILITY

10.1. The Site Manager will manage and co-ordinate on-site environmental activities and act as a point of contact for local residents. Liaison between the Construction Contractor and local residents will seek to ensure that any concerns are resolved quickly.

10.2. The Site Manager will be responsible for:

- briefing the Construction Environmental Management Plan to construction staff;
- fulfilling environmental obligations on site;
- attending to any on-site environmental incidents or concerns;
- reporting and monitoring any environmental incidents; and
- ensuring waste management procedures are followed.

11. CONTROL OF LIGHTING

- 11.1. Depending on the time of year, some artificial lighting may be required to facilitate safe working environments during the working hours. Any artificial lighting would be limited to winter to reflect the shorter daylight hours.
- 11.2. A sensitive lighting strategy will be developed and any lighting will be deployed in accordance with the following recommendations:-
- Use of lighting will be minimised to that required to achieve safe site operations;
 - Use of any portable lighting will utilise downward directional fittings to minimise outward light glare. Construction vehicles will use dipped headlights.
 - Key habitat corridors for bats, including hedgerows and woodland edge, will remain unlit. These restrictions are to be applied during the bat activity season which is from April to October (inclusive).



12. MANAGEMENT AND MOVEMENT OF CONCRETE

- 12.1. Ready-mix concrete will be used for the substation and transformer foundations and as such concrete will not be batched on site. If the truck cannot discharge directly into the works, then transport to move the concrete from the delivery truck to the works must be provided. On completion of discharge and before the truck returns to public highway the discharge chute will be cleaned. The Contractor will provide suitable facilities, such as lined skip, within the construction compound. The ready-mix concrete delivery lorries will then return to the batching plant for washout. Excess concrete will be sent back to the batching plant. To prevent pollution, it is important that all concrete pours are planned in advance and that specific procedures are adopted where there may be a risk of surface water or groundwater contamination.



13. ARBORICULTURAL MATTERS

- 13.1. The proposed site security fence (deer fence) that is to be erected within and around the periphery of the application site will act as an effective tree protection barrier if erected before any construction works commence within each part of the application site. This will mitigate the need to install large amounts of temporary protection fencing (to the standards set out in BS5837:2012) around the perimeter of the application site.

14. ECOLOGICAL MATTERS

- 14.1. A number of designated sites are located within the Zone of Influence of the project: Camarthen Bay and Estuaries SAC, Burry Inlet Ramsar Site and SSSI, Penyfodau Fawr To Llewitha SINC, Alcoa Wet Meadows SINC. During construction there is the potential for sediment runoff and pollution as a result of construction activity which could affect the designated sites within the Zone of Influence of the project. The pollution prevention and water management control measures outlined in Sections 5 and 6 above have been designed to avoid and minimise this risk.
- 14.2. Badgers are present throughout the site. As a precautionary measure, a sloping plank or ramp will be left in any excavations deeper than 1m which are to remain open overnight, to avoid trapping any badgers that may access the excavation. Alternatively, excavations will be covered or fenced overnight.
- 14.3. A sensitive lighting strategy will be detailed, and key habitat corridors for bats, including hedgerows and woodland edge, will remain unlit.
- 14.4. The habitats within the survey area are considered likely to support a diverse assemblage of nesting bird species, The removal of any vegetation suitable for nesting birds should be undertaken outside of the main bird nesting season of March to August (inclusive). If such works cannot be undertaken outside of the nesting season, a nesting bird check should be undertaken by an ecologist immediately before the vegetation removal works. The construction schedule should allow for potential delays in this case as any active nests must remain undisturbed until all the young have fledged naturally, which may take several months.
- 14.5. Otter presence on site has been confirmed through the identification of spraint on features within the river. As a precautionary measure, a sloping plank or ramp will be left in any excavations deeper than 1m, which are to remain open overnight, to avoid trapping any otters that may potentially access the excavation. Construction works within 100m of the watercourse will not take place at night as this is likely to unduly disturb any foraging/dispersing otters.
- 14.6. In order to protect the low number of reptiles recorded on site during the surveys, prior to construction vegetation around the limited field margins will be carefully strimmed or cut to ground level to enable any reptiles present to relocate into an area of safety. These works will be undertaken during periods of warm, sunny weather from April to September (inclusive).

Japanese Knotweed

- 14.7. All Japanese Knotweed plants that have an impact on the proposed solar farm have been treated with herbicide in October 2023 and November 2023, aside from a small section which is located in the immediate vicinity of the tenant farmers beehives. The applicant is committed to continued treatment throughout 2024. The applicant will commit to further necessary remedial works as part of the construction strategy, and these would be set out in a final CEMP.



15. OPEN CUT TRENCHES

- 15.1. The preferred method of laying cables is by burying them in an open-cut trench. However, sections of the cable run will be laid using non-open cut techniques.
- 15.2. For open trenches, the trench will be progressively dug using excavators and the excavated soil will be placed adjacent to the trench. Excavated soil will generally be stored on the opposite side of the working area from topsoil and there shall be no mixing of topsoil and subsoil. Dependent on the structure of the subsoil it may be necessary to excavate some areas in distinct layers and backfill the material in the same structured layers once the pipe is installed.
- 15.3. Once the trench is in an acceptable depth and condition to receive the cables; lower and lay operations can commence. Occasionally it may be necessary to remove water from the trench and excavations and this is carried out using portable pumps. As a precautionary measure, a sloping plank or ramp will be left in any excavations deeper than 1m which are to remain open overnight, to avoid trapping any badgers that may access the excavation.
- 15.4. Backfilling commences progressively to keep up with lower and lay activities so that excavations are kept open no longer than necessary and that the length of open trench is minimised. Backfill will progress in layers with each layer compacted sufficiently to prevent subsidence in the future. Part way through the backfill process heavy duty warning tape may be laid as a protection measure against the possibility of damage to the cabling works from any future excavation activities.



16. NON-OPEN CUT (TRENCHLESS) CROSSING

- 16.1. Trenchless techniques may be used for the laying of the cables under more sensitive area within the site, such as where the cable run would cross under other utilities. Trenchless drilling has the advantage of minimising impacts to surface areas and reducing the levels of reinstatement requirement. It is a well-established and appropriate technique for crossing difficult terrains and sensitive features.
- 16.2. A proposed generic Method Statement is provided at Appendix 2.



17. FISHERIES

17.1. For the protection of fish and fish habitat, the final CEMP should, subject to final design, set out the need:

- A bespoke Flood Risk Activity Permit will be obtained by the contractor for works located in, under, over or within 8 metres of the bank top of the River Llan.

18. SOIL MANAGEMENT PLAN

18.1. Key threats to the soil resource at construction sites are trafficking of vehicles/plant and incorrect handling, which can cause damage to soil structure through compaction and smearing. These effects compromise the ability of the soil to perform its functions, such as providing adequate amounts of water, air and nutrients to plant roots. The risk of compaction and smearing increases with soil wetness. To minimise the risk of damage to soil structure, the generic guidance for construction sites is as follows:

- no trafficking of vehicles/plant over in situ or bunded soils to occur outside demarcated working areas;
- no trafficking of vehicles/plant on reinstated soil (topsoil or subsoil);
- where practicable, soil handling when soil moisture content is above the plastic limit (the moisture content at which soil begins to behave as a plastic material and the soil is deemed too wet to handle without causing damage to the soil structure) will be avoided. Where operational constraints require the disturbance of plastic soil material, suitable remediation should be specified for instance the wind rowing of loose tipped material;
- soil handling should be by excavator and dump truck as per sheets 1 to 4 of the Defra Good Practice Guide for Handling Soils;
- avoid handling of soils to be carried out during periods of prolonged, heavy rainfall;
- no mixing of topsoil with subsoil, or of soil with other materials;
- soil only to be stored in designated soil storage areas to be agreed as part of the approved CEMP;
- plant and machinery only work when ground or soil surface conditions enable their maximum operating efficiency (i.e. when machinery is not at risk of being bogged down or skidding causing compaction or smearing);
- all plant and machinery must always be maintained in good working condition to ensure that the soil is stripped correctly, for example to ensure that the depth of the strip can be accurately controlled, and to minimise the risk of contamination through spillages.



19. WASTE MANAGEMENT PLAN

19.1. Key environmental consideration for construction sites include the reduction of waste and the re-use of recycling of waste materials. Waste such as packaging, plastic, pallets, metal, general waste, etc, will be segregated on site and removed from site by an appointed waste contractor(s) for either reuse, recycling or disposal. All equipment associated with the development would be manufactured off site and delivered to the development site in appropriate packaging.

Implementation

19.2. Prior to the commencement of the proposed development a member of the on-site construction management staff will be assigned the role of Construction Waste Manager. The Construction Waste Manager will be in charge of preparing and implementation of the objectives of the Waste Management Plan (WMP), ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy, waste segregation arrangements and waste collection arrangements are adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on scheme adheres to the WMP. The WSP will form part of the final Decommissioning Plan.

Waste Management Hierarchy

19.3. The waste management hierarchy sets out the most efficient way of managing waste in the following order:

- Prevention and Minimisation – The primary aim of the WMP will be to prevent and thereby reduce the amount of waste generated at each stage of the project.
- Reuse of Waste – Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site to recovery facilities or landfill, for example reusing wooden pallets.
- Recycling of Waste – There are a number of established markets available for the beneficial use of construction waste such as using waste aggregate as fill for new access roads.

19.4. At all times during the implementation of the WMP, disposal of waste to landfill will be considered only as a last resort.

19.5. The expected waste types arising during the construction phase are expected to be: -

Materials type	Example	Waste Classification Code
Cables	Electrical wiring offcuts, Copper, aluminium	17 04 01 17 04 02

Cardboard	Boxes and cartons	15 01 01
Composite packaging	For transportation to site.	15 01 05
Metals	Copper, aluminium, iron and steel (mixed metals)	17 04 07
Inert materials	Sand, stone, aggregates	17 01 07
Mixed municipal waste	Daily canteen waste from construction workers, miscellaneous	20 03 01
Plastic packaging	Packaging with delivery of equipment	15 01 02
Wooden packaging	Boxes and pallets	15 01 03
Soil & stone	Soils and subsoils	17 05 04
Staff welfare facilities	Foul water / waste	20 03 04
Street-cleaning residue	Cleaning of local roads	20 03 03

Waste Arisings

- 19.6. Construction waste will arise on the proposed development mainly from unavoidable construction waste, including material surpluses and damaged materials and packaging waste.
- 19.7. Appropriate measures will be taken to ensure excess waste is not generated during construction, including:
- Ordering of materials will be on an 'as needed' basis to prevent over supply to site. Co-ordination is required with suppliers enabling them to take/buy back surplus stock.
 - Purchase of materials pre-cut to length to avoid excess scrap waste generated on site.
 - Request that suppliers use least amount of packaging possible on materials delivered to the site.
 - Ensuring correct storage and handling of goods to avoid unnecessary damage that would result in their disposal.
 - Ensuring correct sequencing of operations.
 - Use reclaimed materials in the construction works.

- Waste Storage, Containment and Segregation.

19.8. The waste materials will be segregated into reuse, recyclable or general waste in clearly identified skips or stockpiles in designated areas within the temporary construction compound. Materials to be reused or recycled will be sorted on-site and stockpiled for collection. All waste will be stored in an appropriate container to prevent escape of material. The application site will be left in a clean and tidy condition at the end of each day. Areas around the canteen, offices and skip will be clean and tidy. Food waste will be collected regularly to avoid attracting vermin to the site.

Anticipated Quantities

19.9. The predicted quantities are set out below and are based on the construction waste management records of a 25MW solar scheme.

Category	Type	Waste arising recorded from a 25MW solar scheme.	Predicted estimates for a 44MW scheme
General Waste Exchange	12yard skip	12	22
General Waste Exchange	RoRo – 20 yard skip	23	41
Timber Exchange	RoRo- – 20 yard skip	33	59
Card / Paper exchange	RoRo – 20 yard skip	12	22
Metal waste exchange	RoRo – 20 yard	6	11
Recyclable plastics	12 yard skip	2	4
Total skips	-	88	159

19.10. If necessary, a Materials Management Plan will be prepared by the Contractor to ensure that any excavated soils will be reused or reclaimed wherever possible, to maximise the resource and minimise waste generation. Topsoil, subsoil and bedrock spoil should not be mixed or stored together. The design proposed may be able to reuse topsoil and other materials, or dispose of the anticipated small quantities off-site. Effects on soil resources will therefore be mitigated by employing high standards of soils handling and management to recycle all potential reusable material either within the site or elsewhere.



20. CRUSHING / SCREENING OF MATERIALS ON-SITE

- 20.1. Construction does not involve the use of a mobile unit for crushing / screening of material on site.



21. SUMMARY

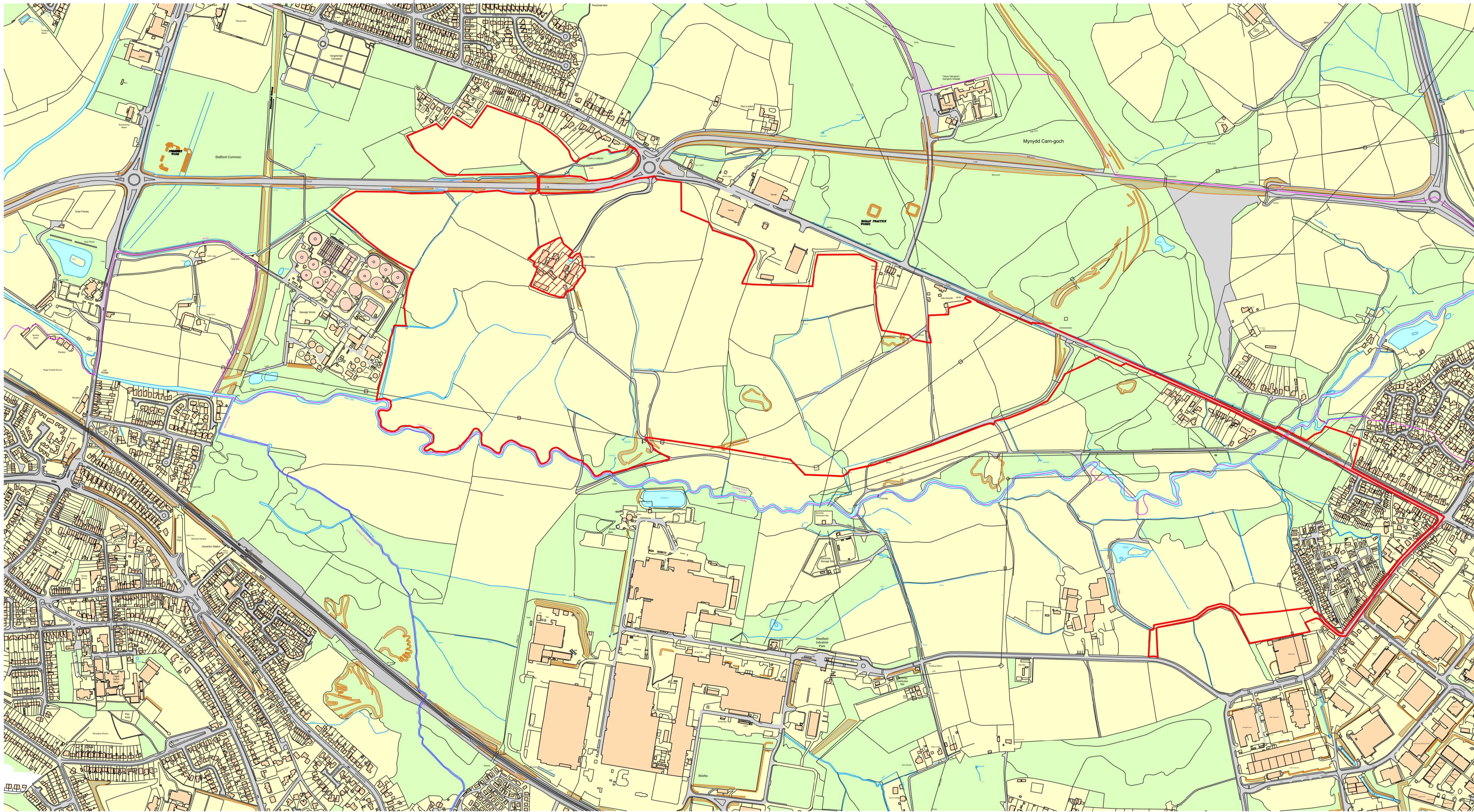
- 21.1. The purpose of this Outline CEMP is to set out the appropriate pollution protection & construction commitments that will be adopted by the appointed contractor team. This document demonstrates the measures that could be used during the construction phase to adequately protect environmental resources, including potential impact upon human receptors, as well as provide appropriate detail on the construction working approach. Post-consent, this Outline CEMP will require updating in accordance with approved documentation by the appointed contractor prior to any construction commencing onsite. A Final CEMP will be submitted to the LPA for approval prior to commencement to specify the details of the persons / bodies responsible for the activities associated with the CEMP and emergency contact details.



Appendix



Appendix 1 – Site Location Plan



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On behalf of:



Notes

Key:

— Red Line Boundary

DRWN	CKD	APP	REV	DESCRIPTION
GR				REV
28/11/2023	SC		V9	
PROJECT		Parc Solar Caenewydd		
TITLE		Site Location PLAN		
CLIENT		Taiyo Power and Storage		
STATUS		Planning Application		
Sheet No	Sheet Title		Sheet Size	
1			A1	
Scale:		Drawing Number		
1:5000		PSC 100 002		



Appendix 2 – Directional Drilling Method Statement

Trenchless Installation by HDD, Auger Boring,

Trenching and Open Cut

[Company Address]

Phone: Mobile:

E-mail:

Company Registration Number: VAT No:

**GENERIC METHOD STATEMENT 2 X 180MM UNDER GAS MAIN AND BRIDGE
USING DIRECTIONAL DRILLING METHOD.**

**CROSSING LOCATION
PARC SOLAR GOWERTON**

Customer:	
Start Date:	
Address:	

PROJECT DETAILS: Parc Solar Caenewydd, Gowerton, Swansea.

DOCUMENT NO.

PROJECT NO.

ISSUE						
DATE						
PREPARED BY						

AMENDMENT RECORD

This document will be updated when necessary by distribution of a complete replacement of the relevant section. Amended or additional parts of revised pages will be identified by italic text and a vertical black line in the right margin.

Issue	<u>Date</u>	<u>Amendment Details</u>
01	02/10/2023	First Issue

Contents

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- 1.0 Introduction
- 2.0 Scope of Work
- 3.0 Hazards Identified
- 4.0 Railway and Public Interface Arrangements
- 5.0 Detection of Services
- 6.0 Environmental Information
- 7.0 Plant and Equipment
- 8.0 Personnel Involved
- 9.0 Methodology
- 10.0 Briefing Arrangements
- 11.0 Safety of Contractors Personnel
- 12.0 Communication and Liaison
- 13.0 Handback Arrangements
- 14.0 Emergency Plans
- 15.0 Supporting Information
- 16.0 Any Other Relevant Information

Appendices:

Addendum

Site Specific Risk Assessments

COSHH Assessments

Distribution List

Name:	Company:
----- (Operations and Compliance Manager)/CEM	
----- (CRE Construction)	
----- (Construction Manager)	
----- (Senior Project Planner)	
----- (Director)	
Project Title:- [PARC SOLAR, GOWERTON]	
Location Area: GRID REF TBA	Engineer's Reference: TBA
	Mileage: N/A

Project Details: [Installation of 180MM O/D MDPE PE100 SDR11 DUCT BENEATH GAS MAIN/BRIDGE]	SC-ICP	
Method Statement No.	Issue 1 Revision 0	Date:
Detailed Work to be Undertaken:		
Commencement Date: to be confirmed	Completion Date: to be confirmed	

Author:

Name:	Title:
Signature:	Date:
Organisation:	

Reviewed:

Name:	Title:
Signature:	Date:
Organisation:	

Accepted by:

Name: ----- (CEM)	Title:
Signature:	Date:
Organisation:	

1.0	<u>Introduction</u>	
1.1	Purpose of work	To install a cable utilising multiple techniques.
2.0	<u>Scope of Work</u>	
2.1	Work to be undertaken	<p>Visual survey and examination of services records in the areas of the launch and receive pits Controlled Infrastructure and the agreed location of the URX.</p> <p>Cat scan of areas/site surveys to be excavated or drilled through where services are identified from visual survey, records or are indicated by other information.</p> <p>Excavate launch and reception pits using 360° excavator and/or wheeled loader/backhoe.</p> <p>Form route for 180mm duct by directional drilling. Make good pit areas.</p>
2.2	<p>Limits of work and site boundaries, including time limits</p> <p>Date and Hours of work</p>	<p>The URX will be installed on a 10-hour basis, shift times to be confirmed. DAYS ONLY. The URX is to be installed under a 10-hour shift.</p> <p>Highways/Utilities to advise on the following:</p> <ol style="list-style-type: none"> 1. Depth and width of highways/footway 2. Zone of influence at each side 3. Depth of cover beneath utility/highways. 4. For this method statement it will be taken as 10 metres total depth 5. Monitoring requirements <p>The monitoring will record all changes in ANY level and calculate changes to any data, this data will be compared to the levels shown and acted upon as stated therein through the reporting procedure stated below and the Emergency Action Plan</p> <p>Other assets within 30 metres of the HDD such as OLE stanchions, will be monitored as detailed in the monitoring RAMS.</p> <p>Should it become necessary to abort the URX the created void must be grouted up, Highways/Utilities authorities to be notified immediately and work suspended until such time as an alternative route has been accepted.</p> <p>In the event of mechanical breakdown, all efforts will be made to carry out repairs, failing this a replacement rig can be on site within 4 hours.</p> <p>Any change in working methods, conditions or additional risks identified whilst work is in progress will need to be brought to the attention of the Drilling</p>

		<p>Manager who will need to discuss the implications with the client and highways/utilities authorities. Where applicable, a request to amend the Method Statement should be made to its' Originator. Any revisions will then need to be approved by client and communicated back to copy holders.</p> <p>Emergency numbers and Key contacts are detailed in the Emergency Action Plan, a copy of which will remain on site for the duration of the works.</p> <p>Prior to commencement of the HDD URX Plant Certification and Operator Competence tickets will be issued. Roles and Responsibilities Form will also be issued prior to commencement of work highlighting names, roles, responsibilities, and any required competency certificate appended there to.</p> <p>Extracted materials will be checked against amount of materials calculated and extracted.</p> <p>Regular checks will be made on the amount of Bentonite injected against the calculated/expected amount.</p> <p>Direction and depth of the pilot bore to be monitored from launch to reception pit ensuring correct line and the depth to crown of bore is maintained within the Zone of Influence. Drilling logs will be produced throughout the drilling process, these will be submitted to the client and then submitted to agreed recipients with the monitoring data.</p>
2.3	Completion criteria	180mm duct installed and pit areas established. Post Monitoring of Infrastructure will continue in accordance with Highways/Utility authorities requirements
3.0	<u>Hazards Identified</u>	
3.1	State how hazards have been identified	<p>Site hazards and consequent risks have been identified during site inspections and will be briefed to all staff prior to works commencing.</p> <p>Task based risk assessments have been carried out using experience of previous similar work.</p>
3.2	List significant hazards only	Working adjacent to and beneath a HP gas main. Relevant utility company will oversee works.
4.0	<u>HIGHWAY and Public Interface Arrangements</u>	
4.1		
4.2	Movement On Bridge/Highways	Disruption on the bridge/highway will be kept to a minimum.
4.3	Signal Sighting Implications	N/A
4.4	Security of materials from vandals	All arising from the excavation of the launch and reception pits will be contained within the block and mesh fencing erected to protect the excavations
4.5	Road traffic management (TM)	N/A
5.0	<u>Detection of Services</u>	

5.1	Identify hidden services GPS	Drawings will have been obtained (<i>Copies to be available on site</i>) showing the known services in the area of the work. Trial holes will be excavated to prove location and depth of services to the requirements of CLIENT and Highway/Utility AUTHORITIES
5.2	Use of approved Cable Locating Tools	An approved RD8000 CAT Scanner will be on site at all times for all excavation work. It will only be used by a certified competent person. All areas to be excavated/pins driven into ground or where ground is to be otherwise disturbed will be scanned AND A Permit to Dig issued.
5.3	Identify infrastructure susceptible to damage e.g. power, signalling and telecommunications equipment, pipes, air mains, fire detection equipment	All areas will be subject to investigation of any potential services and be recorded on the permit to drill.
5.4	Sketch showing location of services	A sketch or drawing will be appended to the Permit to Drill if deemed necessary by the person issuing the permit.
5.5	Plant movement	All plant movement and operation is outside of the utility/bridge support zone
5.6	Additional fire precautions required, Hot Work arrangements	No hot works will be carried out under this method statement
5.7	Isolation and fail safe reconnection of fire protective systems	No isolation or disconnections will take place under this method statement.
5.8	Disconnection and reconnection of services	No isolation or disconnections will take place under this method statement.
6.0	<u>Environmental Information</u>	
6.1	Waste and pollution including control measures	Excavate pit adjacent to launch pit to store drilling slurry. Empty as required. [Contractor] to supply SLURRY TANKER. Slurry tanker to be on site at all times of drilling
6.2	Noise, dust, smoke and vapour including control measures	Noise and dust will be monitored and kept to a minimum during the works. Although work is planned on a 10 hour DAY.
6.3	Dewatering arrangements and disposal of water	N/A.
6.4	Fuels, oils etc: storage and containment	These will be stored in tanks on H.G.V drill transporter. A spill kit will be maintained on site.
6.5	Habitats and Sites of Special Scientific Interest (SSSI)	These works are not expected to affect any habitats or sites of SSSI.
6.6	Contaminated land	The land is not considered to be contaminated.
7.0	<u>Plant and Equipment</u>	
7.1	Specify plant and equipment to be used	Vermeer 40/55 S3 DR. Navigator Drilling Machine. Scania 32 tonne H.G.V. Box Lorry Ford Transit/Transit Van. Digitrack Locating system. F5 FALCON
7.2	Competency requirements to operate or erect plant and equipment	All Drill operators to have the necessary competence certificates (e.g. N.V.Q) and will be available on site for inspection.
7.3	Inspection and examination certificates available for inspection	Records of inspection and examination certificates for all plant and equipment are to be kept on site by [Contractor].
7.4	Temporary lighting	The works will be carried out on a 10 hour DAY until the MAIN is complete. Temporary general and task lighting

		will be on site which would be powered by low-noise generator RWB to supply IF NEEDED. Lighting will be positioned so as not to affect drivers and sighting of signals.
7.5	Details of cranes, lifting machines, appliances and lifting tackle including site access, rigging and de-rigging	No lifting works to be carried out under this method statement.
7.6	Arrangements for stand-by plant	All key items of plant, especially the drilling machine, can be duplicated if needed within 2 TO 3 hours .2 x rigs allocated
7.7	Loading and marshalling of LORRY mounted equipment	No mounted equipment is to be used for these works.
8.0	<u>Personnel Involved</u>	[Confirm names of personnel working on site]
8.1	Number of M9 HDD LTD Drilling operatives on site.	For all Drilling work to be carried out. [Contractor] Drilling – 2 no. supervisor, 1 no. operatives per shift DAYS ONLY
8.2	Supervision arrangements, including names of persons in charge.	[Contractor name: confirm contractor supervisors working on site]
8.3	Competency and training requirements, especially in respect of plant and equipment used	All Drill operators to hold a valid Competence Certificate. In date E.U.S.R./CSCS cards.
8.4	Working hours	10 hour DAYS ROUND the clock working - Shift times to be confirmed IF NEEDED.
8.5	Shift handover arrangements	A 30 minute shift handover will be allowed for in order for changing personnel to be briefed if needed
8.6	Access requirements, special conditions	Access to land. Full Orange HV clothing including leggings must be worn plus safety Footwear and a hard hat plus any other PPE for the particular task(s).
8.7	Welfare and First Aid	Welfare facilities to be provided by Principal Contractor, accommodation and toilet /washing facilities. A competent First Aider will be on site at all times during the works who will be identified at the RAMS briefing
9.0	<u>Task Specific Methodology of Works for:</u>	
9.1	State order of work and fully detail how it is to be carried out	Scope of works will consist of the following: - During the planning phase for this work ground investigation (GI) of the area has been carried out to determine the nature of the material to be drilled through. From the GI information and to ensure, as far as is reasonably practicable, that any unidentified services or obstructions are encountered it has been determined that the minimum depth from crown of duct to underside of M1 is UP TO 6 metres. See Drawing and GI report contained within Design Submissions. Prior to the work commencing, CAT scan the areas affected before excavating the launch and reception pits which are situated, See Longitudinal Cross Section Drawing contained within the Design Submissions. The pits will be located well clear of the assets such that the RIGHT depth is achieved at the support zone. Prior to the directional drilling commencing a site

	<p>induction will be given to the drilling operatives and a Method Statement briefing given to all personnel on site.</p> <p>The directional drilling procedure is as follows:</p> <ol style="list-style-type: none">1. Emergency procedure is briefed to all employees on site.2. Check and put on personal protective equipment.3. Carry out site calibration of guidance and tracking equipment.4. Walk site and familiarise themselves with the site environment and any prohibited areas.5. Check to ensure the method statement is specific and briefed to all site operatives, who must then sign the method statement confirming they understand and agree.6. Ensure site safety, barricade machinery and make safe working area.7. Personnel to scan works area using CAT and generator including visual checks and refer to all utility plans. Excavate to prove depths if required.8. Ensure all identified services are marked out and logged on [Contractor] Drill permit for future reference. Drill operatives to be made aware of all underground plant and obstacles.9. Erect fencing around launch site.10. Fix and display block and mesh safety fencing and signs as required.11. The drilling rig is to be tracked from the lorry to the rear of the launch pit within the fenced area.12. Fit the drill head containing the radio sonde to the first rod.13. Drilling is then to commence reaching a depth of UP TO 10 metres beneath utility/highways to crown of MAIN. Depth will be maintained until beyond the exit support Zone.14. Bentonite bore gel is to be pumped down the rods and through the drill head and used as a coolant and lubricant whilst drilling is in operation. If required. (adverse ground conditions). G.I report to verify ground conditions required.) SANDSTONE/LIMESTONE.15. Drill rods are to be added to the drill string in 3 metre lengths as the drill proceeds beneath the utility assets.16. The drill head is located from ground level at three
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		<p>metre intervals as drill rods are loaded on the machine.</p> <p>17. The depth and position of the drill head is monitored every three metres up to and beyond boundary fences, steering and adjustments are to be made to keep the drill on line and level as required. Contact is maintained at all times between the drill operator and the person locating the drill head using two way radios.</p> <p>18. A daily email showing data for the URX line and level will be sent to all contacts shown in the Emergency Action Plan. Each email to include an Executive Summary explaining events if required.</p> <p>19. Upon receipt of the drill head into the reception pit, remove the drill head and fit the first back reamer.</p> <p>20. Back reaming by stage reaming will be required and will be carried out in the following order for the size of duct to be installed:</p> <p style="padding-left: 40px;">150mm pilot bore 1st ream (250mm diameter) 2ND REAM 350MM 4TH REAM 400MM PULL 315MM MAIN</p> <p>21. If ground conditions require it, drill rods are connected to the built in swivel on the back of the reamer and connected in 3 metre lengths as the reamer is rotated and pulled back to the drilling machine. This procedure allows a connection to be maintained between launch and reception pits.</p> <p>22. Bentonite drilling fluid is pumped from the drill machine down the drill rods to the back reamer at all times as reaming is carried out (If required.). The amount of bentonite used will be checked against calculated amounts to ensure non is escaping into surrounding ground.</p> <p>23. When the reamer reaches the launch pit it will then be pushed back through the bore hole back to the reception pit, drill rods and back reamer will be disconnected and 2nd back reamer fitted. This procedure is then repeated.</p> <p>24. Upon completion of the reaming, attach a swivel and towing head to the 315mm MAIN to be installed and connect it to the back reamer.</p> <p>25. Commence pullback of the duct to be installed.</p> <p>26. Completion is achieved once the MAIN reaches the launch pit.</p> <p>27. The towing head is removed from the duct and the drill machine removed from site.</p>
9.2	Bar chart showing sequence of separate tasks	N/A.
9.3	Standards and Procedures	All work to be carried out in accordance with the

	(HIGHWAYS and/or Contractors)	relevant legislation; HIGHWAYS Group Standards; HIGHWAYS Standards and Specifications;
9.4	Sketches – plan, elevation and cross sections to fully illustrate the proposed work	Will be found in Design Submissions
9.5	Access and egress to HIGHWAYS Controlled Infrastructure	Access to Utility/Highway Infrastructure will be in the T.M. Any required access for Permit request form Approved PPE must be worn including but not limited to: <ul style="list-style-type: none"> • Orange HV Clothing including leggings • Safety boots/wellingtons • Blue Hard Hat (for non-PTS and Probationary PTS operatives) • White Hard Hats for experienced PTS operatives • Eye and ear protection if required
9.6	Delivery of materials	Materials will be delivered to site immediately before work commences and will remain on each vehicle until needed. Banksman are to guide any reversing vehicles, which are fitted with reversing alarms.
9.7	Detail temporary structures	No temporary structures will be erected under this method statement.
9.8	Method of authorising start of work	[Contractor] supervisor will give the RAMS briefing to the workforce before work starts. The briefing will be recorded on the RAMS briefing form, and signed by all working under the RAMS as evidence that it is fully understood. A copy of the most recent accepted RAMS signed by all personnel will be available on site at all times.
10.0	<u>Briefing Arrangements</u>	
10.1	Who is responsible for briefing the Method Statement	[Confirm responsible person]
10.2	How is understanding confirmed	Understanding of these briefings is confirmed by the signing of the method statement briefing form after question and answer sessions.
10.4	Who is briefed on complete Method Statement, are some personnel on site only briefed on specific aspects?	All site personnel are briefed on the methodology, the risks and the hazards, PPE, access arrangements etc The Client and/or representatives are briefed on the complete Method Statement
11.0	<u>Safety of Contractors Personnel</u>	
11.1	Control measures for specific health hazards e.g. Leptospirosis	Briefing at induction and task specific briefing will be given on all hazards. Personal protective equipment needed to eliminate/reduce the risks will be briefed and issued, this will be worn at all times whilst the task is carried out that has created the identified risk.

11.2	Relevant contractor's risk assessments, including COSHH and manual handling	See [Contractor] Risk assessments.
11.3	Permit to work systems.	N/A
11.4	Personnel Protective Equipment requirements	This will include safety boots, hard hats, hi-visibility vests (orange with sponsoring company name on back where applicable) and gloves as a minimum requirement. Operatives will then be issued with task-specific PPE when required.
12.0	<u>Communication and Liaison</u>	
12.1	Identify specific persons who must be contacted. Property, ALL Companies, other Contractors working nearby, Highway Authorities, occupiers of adjacent property, businesses)	[Contractor] to liaise.
12.2	Specify communication and liaison arrangements for such persons.	The emergency plan identifies contact points. Close liaison to be established between surveyor, driller and Surveyor/utility/highways authorities. Key contact details can be found in Emergency Action Plan, a copy of which will be on site at all times. Drilling data will be sent with the monitoring data daily.
13.0	<u>Handover/Handback Arrangements</u>	
13.1	Identify arrangements additional to handback strategy. In particular consider liaison arrangements with maintenance organisation.	Arrangements will be made via the Construction Manager for a handover meeting to be arranged between the AIN [Contractor] and Utility/Hlghways authorities prior to commencement of work.
13.2	Handback contingency arrangements	Following satisfactory completion of the UMX and infrastructure monitoring arrangements will be made via the Construction Manager for the site to be handed back to the highways/utility ownership.
14.0	<u>Emergency Plans</u>	
14.1	Contact phone numbers: Contractor including contact outside normal working hours, Project manager	See Infrastructure Monitoring Emergency Action Plan and Asset Management Plan (Key contact details)
14.2	Contingency plans	None of this work is considered time critical (as in possession working). Specific contingency plans are related to environmental events, damage to services and accidents causing injury where separate arrangements are in place.
14.3	Accident reporting and investigation	Accident reporting and investigation will follow [Contractor] procedures.
14.4	Nearest Hospital	Not sure where to go? Call 111 - in an emergency always call 999
16.0	<u>Any Other Relevant Information</u>	For a drill depth of 10 metres total.

100/150MM MM PILOT BORE VOLUME 7.85 LITRES/M 628LITRES HOLE VOLUME 0.63 M³

Volume of fluid in and out will be regularly checked as the drilling progresses with the above form being submitted with the monitoring data. Any loss of fluid, i.e. less out than in will result in work being stopped until checked

DRILL RECORD FOR M1 J15 X 315MM GAS IN A 400MM BORE

DATE	TIME	ROD NO	BORE LENGH	PICH%	DEPTH	GALS PER MIN IN	GALS PER MIN OUT	150MM PILOT BORE HOLE VOLUME 942LTS 7.85 PER M (IN)	250MM REAM BORE HOLE VOLUME 2,545LTS 2.54 M ³ (OUT)	SLURRY TANKER OUT LTS OUT
		1	Entry							
		m pit								
		2	3M							
		3	6M							
		4	9M							
		5	12M							
		6	15M							
		7	18M							
		8	21M							
		9	24M							
		10	27M							
		11	30M							
		12	33M							
		13	36M							
		14	39M							
		15	42M							
		16	45M							
		17	48M							
		18	51M							
		19	54M							
		20	57M							
		21	60M							
		22	63M							
		23	66M							
		24	69M							
		25	72M							
		26	75M							
		27	78M							
		28	81M							

DRILL RECORD FOR ----- X 315MM GAS IN A 400MM BORE

DATE	TIME	ROD NO	BORE LENGH	PICH%	DEPTH	GALS PER MIN IN	GALS PER MIN OUT	100MM PILOT BORE HOLE VOLUME 942LTS 7.85 PER M (IN)	400MM REAM BORE HOLE VOLUME 125.66LITER/M 18,221LTS 18.22 M³	SLURRY TANKER OUT LTS OUT
		1	3							
		2	6							
		3	9							
		4	12							
		5	15							
		6	18							
		7	21							
		8	24							
		9	27							
		10	30							
		11	33							
		12	36							
		13	39							
		14	42							
		15	45							
		16	48							
		17	51							
		18	54							
		19	57							
		20	60							
		21	63							
		22	66							
		23	69							
		24	72							
		25	75							
		26	78							
		27	81							
		28	84							

Volume of fluid in and out will be regularly checked as the drilling progresses with the above form being submitted with the monitoring data. Any loss of fluid, i.e. less out than in will result in work being stopped until checked. 400MM HOLE VOLUME 125.66 LITER/M 18,221 LITRES 18.22 M³

**VERMEER 40/55 S3 FOR INSTALLING ----MM
GAS @ URX or UMX**



PLEASE SEE
BELOW FOR
INFORMATION

D40x55 S3 NAVIGATOR

HORIZONTAL DIRECTIONAL DRILL

PREMIUM PERFORMANCE. With 40,000 lb (177.9 kN) of thrust/pullback and 5500 ft-lb (7457 Nm) of rotational torque, the D40x55 S3 offers a 10% increase in thrust and rotation over its predecessor, the D36x50 Series II — helping to maximize productivity. **SIGNIFICANT SOUND REDUCTION.** With a 104 dB(A) guaranteed sound power level and an operator ear rating of 82.9 dB(A) [in-cab rating of 75.7 dB(A)], the D40x55 S3 is significantly quieter than its predecessor — contributing to a quieter working environment with less neighborhood disturbance and easier communication among the crew. **VARIETY OF ROD OPTIONS.** The D40x55 is available with a range of drill rod options, including a 10' (3 m) length in 2.38" (6 cm) or a 2.63" **COMFORTABLE CAB.** The excavator-style cab provides operators more legroom and greater comfort.

(6.7 cm) diameter, and a 15' (4.6 m) length in a 2.63" (6.7 cm) diameter. A variety of rod options allows the drill to be configured to the specific needs of the contractor. **CLASS-LEADING CYCLE TIMES.** The D40x55 features a carriage speed of 188 fpm (57.3 m/min) — which is 7% faster than its predecessor, the D36x50 Series II — helping contractors install more linear feet per day.

AURORA™ TOUCHSCREEN DISPLAY. Interactive full-color touchscreen display delivers real-time, easy-to-view locate information, bore plans and more that can help increase productivity.

D40x55 S3 NAVIGATOR⁰ HORIZONTAL DIRECTIONAL DRILL

GENERAL WEIGHTS AND DIMENSIONS

Min transport length: : 20.1' (6.1 m)
Min transport width: 89" (226.1 cm)
Min transpon height: 76" (193 cm)
Min weight: 22,380 lb (10,151.4 kg)
Max weight: 26,110lb (11,843.3 kg)

ENGINE OPTION ONE

Make and model: John Deere 4045
Fuel type:
Ultra low sulfur diesel
Max engine rpm:
2400 rpm
Gross horsepower: 140 hp (104 kW)
EPA certification family: Tier 4 Final (EU Stage IV)

ENGINE OPTION TWO

Make and model: John Deere 4045
Fuel type: Diesel
Max engine rpm: 2400 rpm
Gross horsepower: 140 hp (104 kW)
EPA certification family: Tier 3 (EU Stage IIIA)

OPERATIONAL

Thrust/Pullback: 40,000 lb (177.9 kN)
Max carriage speed at max engine rpm: 188 Wmin (57.3 m/min)
Max spindle torque (low at max engine rpm): 5500 ft-lb (7457 Mm)
Max spindle speed at max engine rpm: 227 rpm
Min bore diameter: 4" (10.2 cm)
Max ground drive speed at max engine rpm O/d): 3.3 mph (5.3 km/h)
Noise level at operator's ear: 82,9 dB(A)
Noise level at operator's ear (cab) : 75.7 dB(A)
Drill rack angle [10' (3 m) rod]: 15.5-20.5° (27.7-37.4%)

FLUID CAPACITIES

Fuel tank: 44 gal (166.3 L)
Antifreeze tank capacity: 1.6 gal (6 L)

DRILLING FLUID SYSTEM OPTION ONE

Max flow: 50 gpm (189.3 L/min)
Max pressure: 1050 psi (70.2 bar)

DRILLING FLUID SYSTEM OPTION TWO

Max flow: 70 gpm (264.6 L/min) Max pressure:
1300 psi (87 bar)

FEATURES

Breakout system: Standard hydraulic vise
Drilling lights: Standard
Flow indicator: Standard
Stakedown system: Standard
Strike alert: Standard
Remote lockout: Standard

DRILL PIPE OPTION ONE

Type: Firestick@ drill rod
Length: 10' (3 m)
Rod diameter:
2.38" (6 cm)
Weight: 80 lb (36.3 kg)
Bend radius: 170' (51.8 m)

VERMEER 40/55/S3

H.D.D CROSSINGS ROAD/RIVER/RAIL/SSSI SITES INVOLVEMENT AND COMPLETED. [Provide a list of contractors relevant experience inc projects]

Items For Discussion/Briefing			
Item No.	Subject	Follow Up Action By:	
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
Health & Safety Topics for Discussion/Briefing Suggested By Employees			
Item No.	Subject	Suggested By	Follow-Up Action By:
11.			
12.			
Special Presentations At This Meeting By Senior Managers (In Addition To The Briefer)			
Subject		Presented By	
List Any Visual Aids Used (Videos, Slides, etc.) and/or Materials Distributed			
A.			
B.			
C.			

Emergency Plan Appendix B.

Installation of HDD Crossing URX X 2 X 315 MM MAIN.

Include out of normal hours' contact numbers.
telephone number of the First Aider before starting work.

*** Add the name and**

Local Utility/Highways contacts are:

Person responsible for briefing site details (risks, hazards, access etc.) is:

Local Utilities/Highways authorities contacts are:

TM EMERGENCY CONTACTS ARE

PLEASE SEE BELOW FOR COMMUNICATION PLAN AND ESCALATION SCENARIOS REV A

Emergency Plan In brief [contractor]

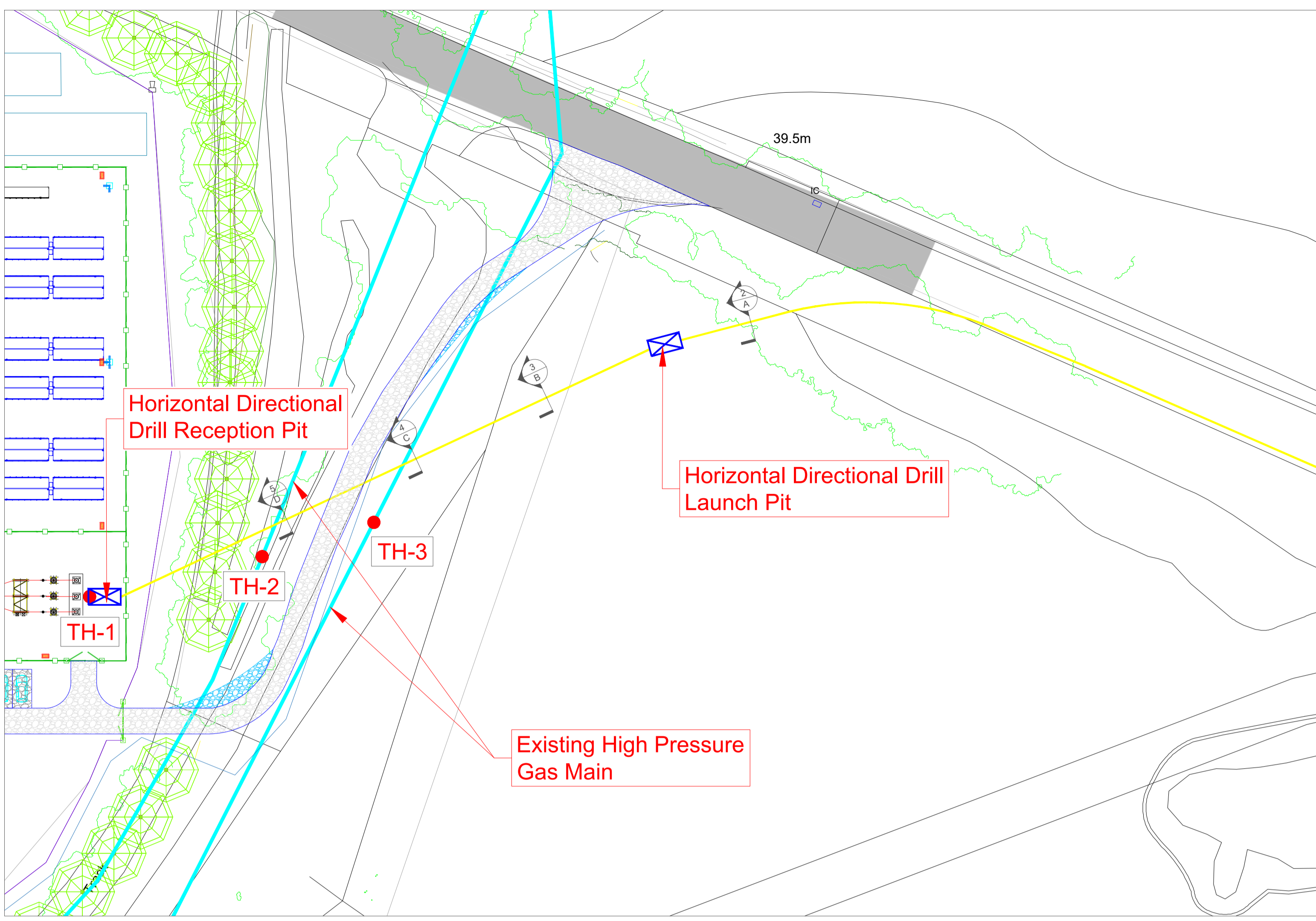
Triggers levels to be set by (Utility/Highways - - mm.)

If trigger levels get to - - mm above contingency to follow.

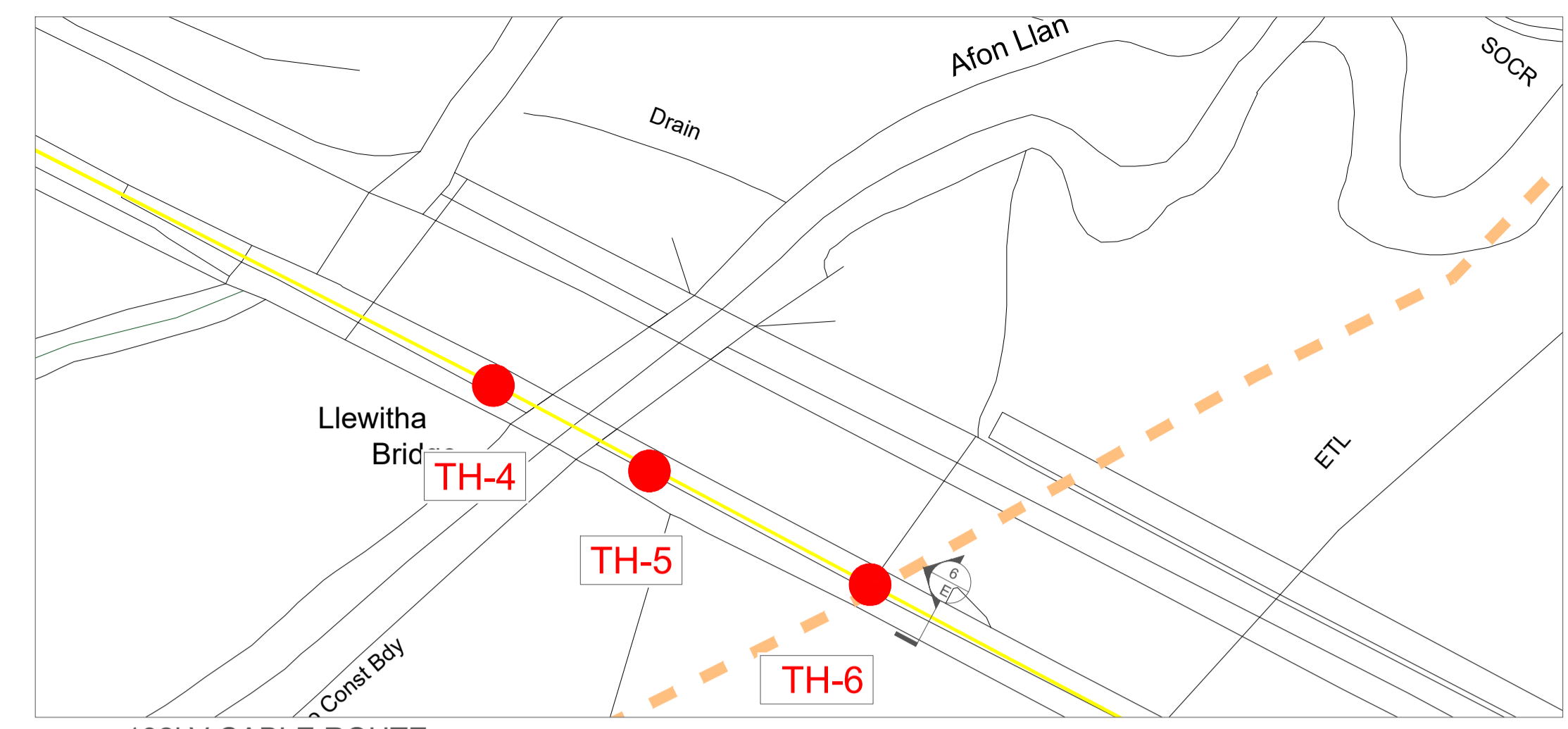
Frac out stop container clean up seal if possible slurry tankers on site at all drilling sages

If drilling must be aborted for any reason any holes will be bentonite grout to seal any void.

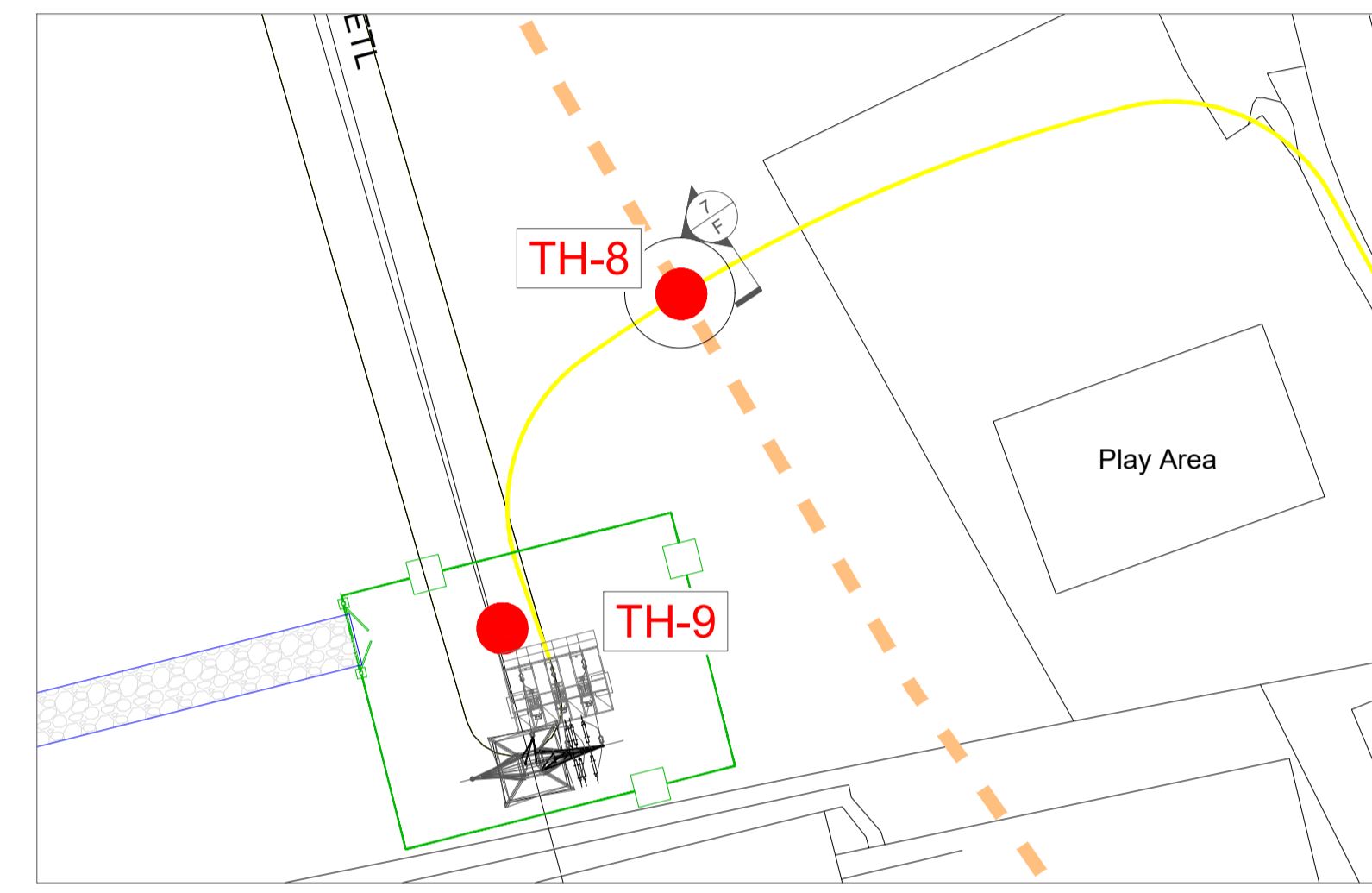
- Key:**
- Existing Assets**
- Water Main
 - HP Gas Main
 - Hedges & Trees
- Proposed Assets:**
- Proposed 132kv Cable
 - Proposed Trial hole
 - TH-3 Trial Hole 3



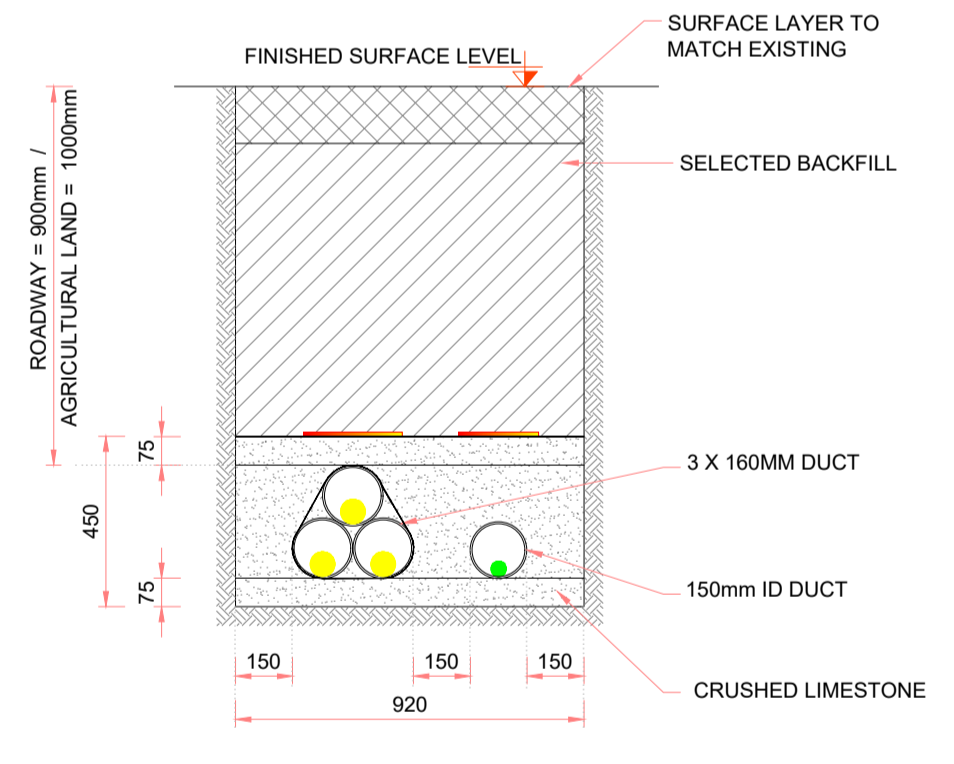
1 132kV CABLE ROUTE AT HDD LOCATION
Scale: 1:500 @ A1 1:1000 @ A3



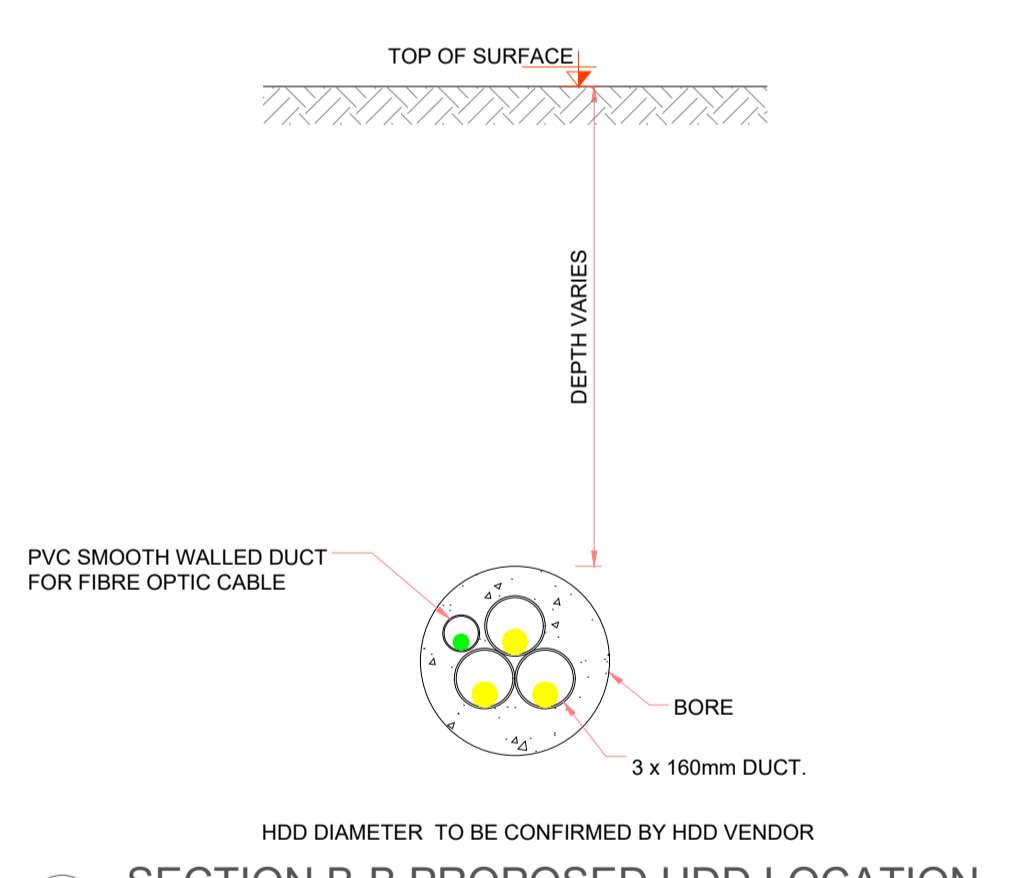
8 132kV CABLE ROUTE
Scale: 1:500 @ A1 1:1000 @ A3



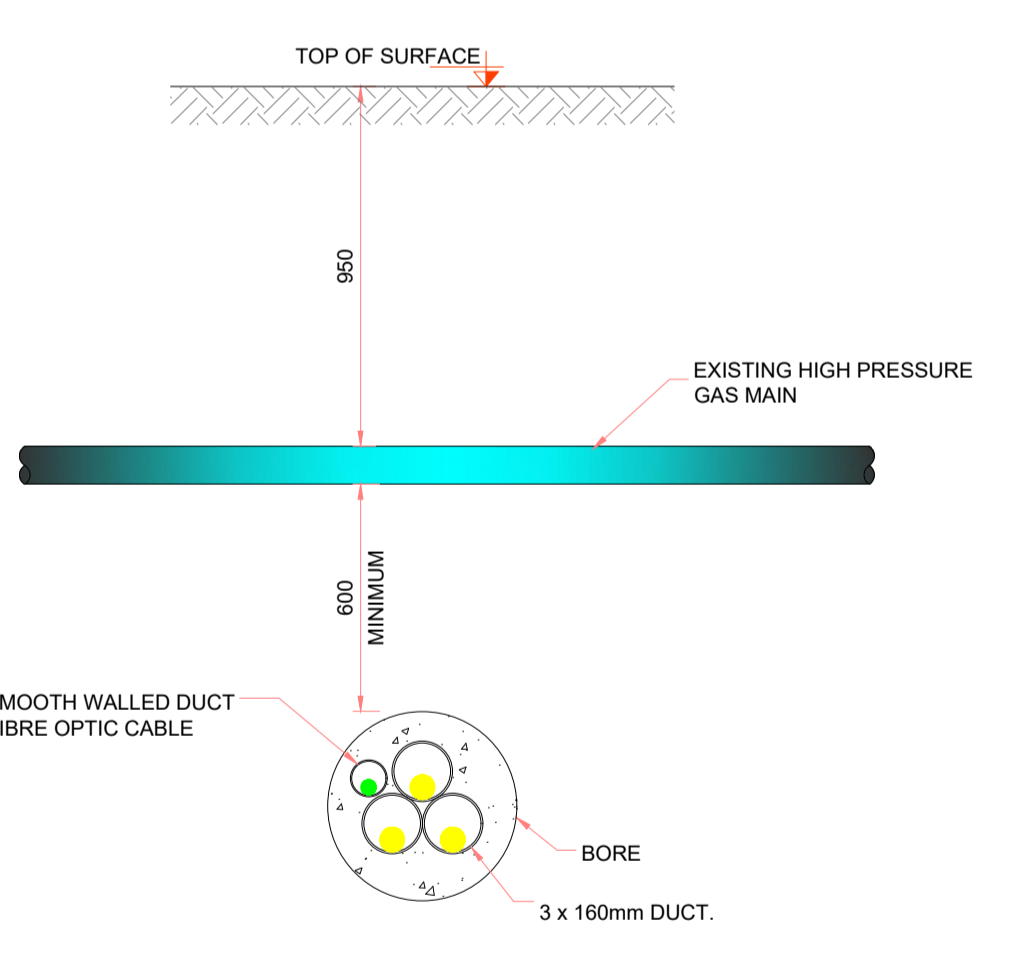
9 132kV CABLE ROUTE
Scale: 1:500 @ A1 1:1000 @ A3



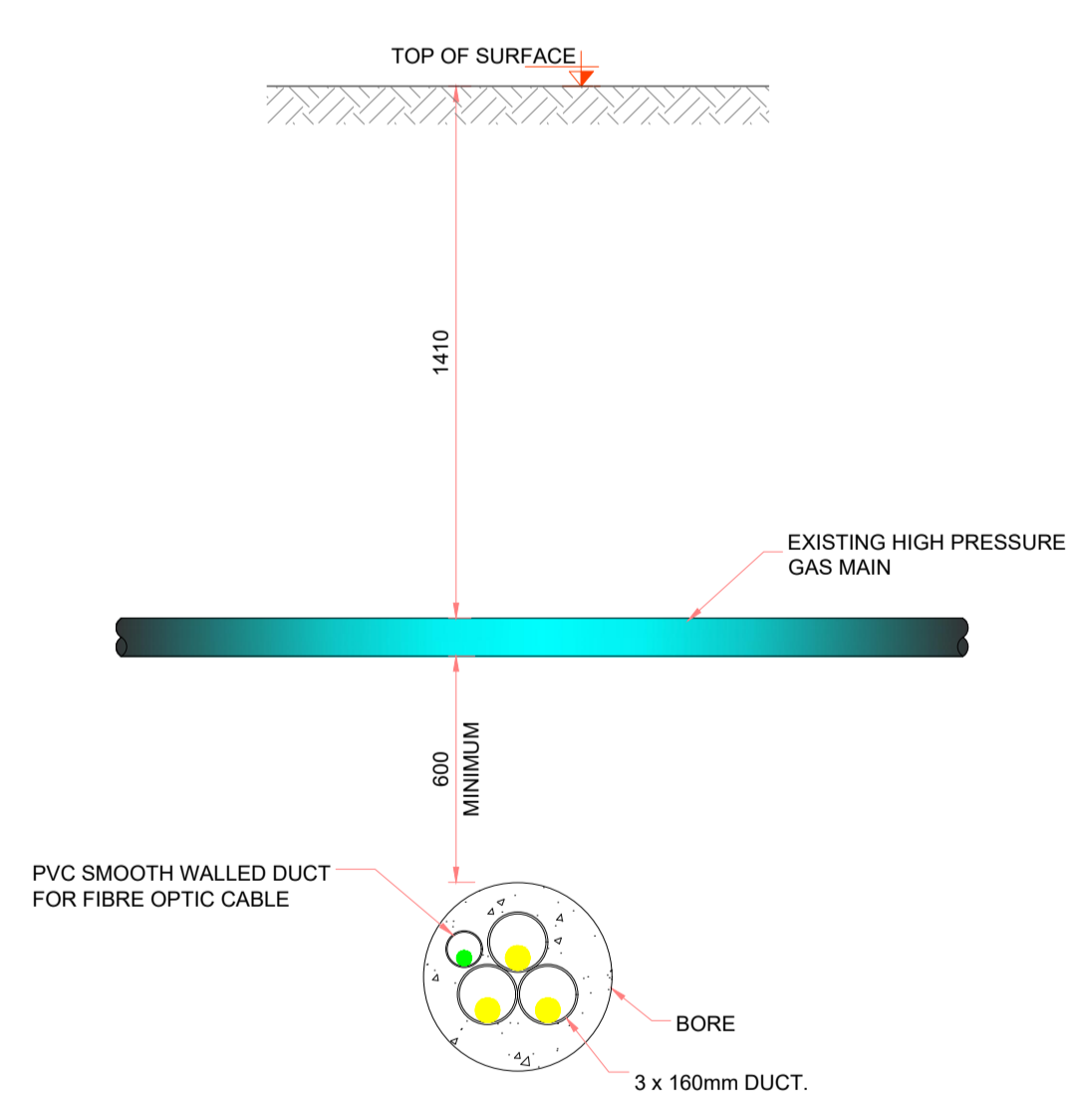
2 132kV CABLE TRENCH SECTION A-A
Scale: 1:20 @ A1 1:40 @ A3



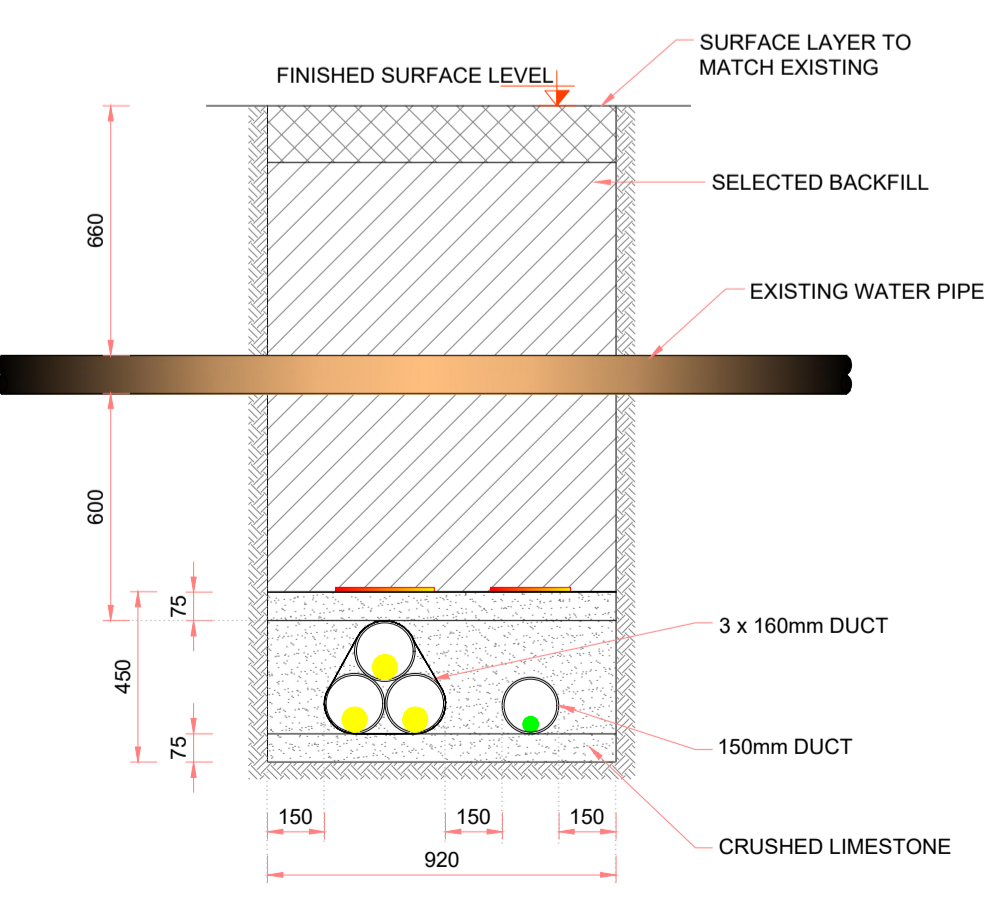
3 SECTION B-B PROPOSED HDD LOCATION
Scale: NTS



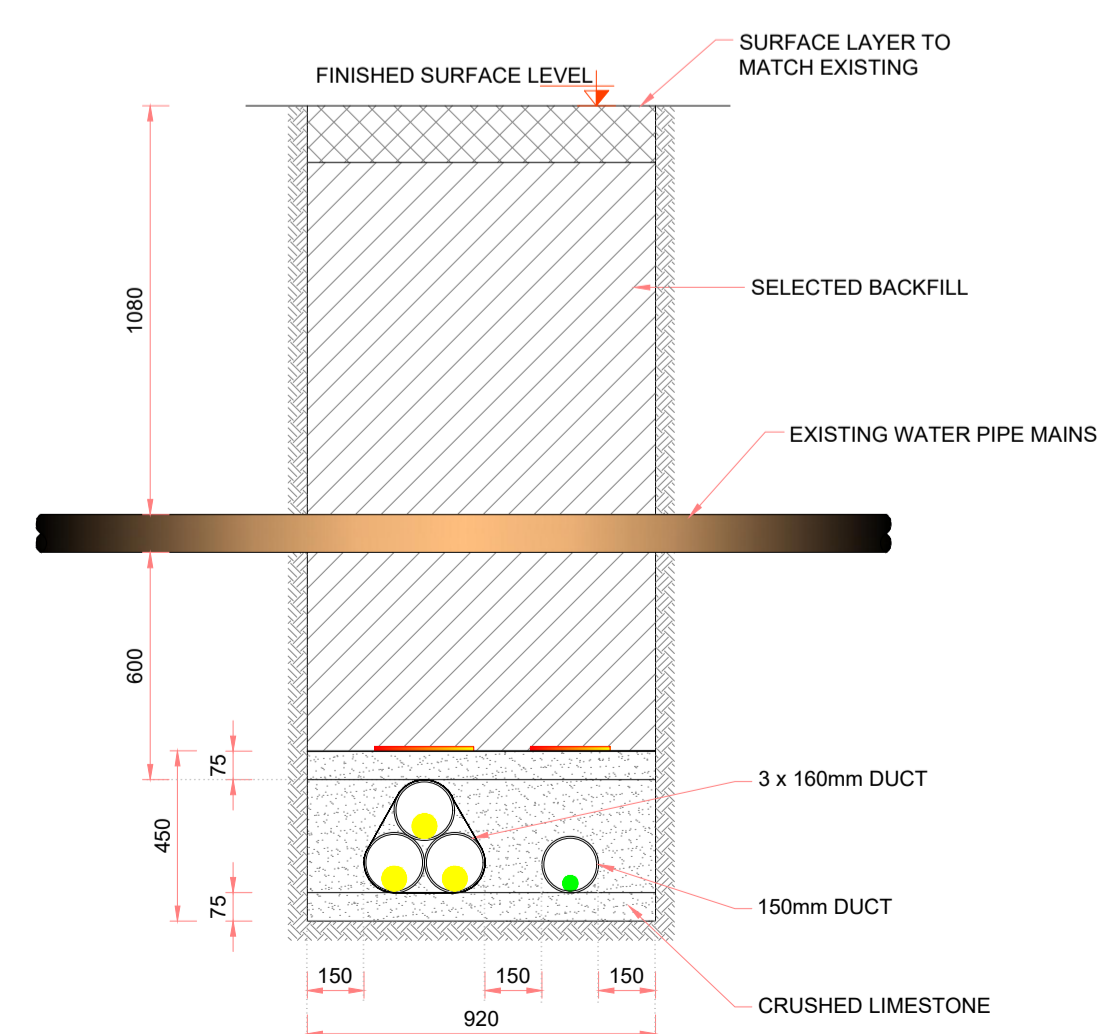
4 SECTION C-C
Scale: NTS



5 SECTION D-D
Scale: NTS

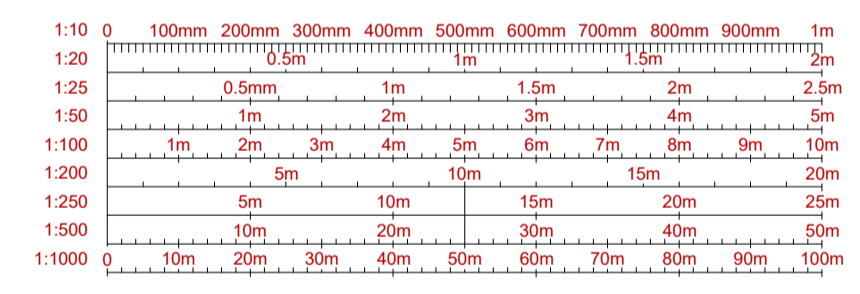


6 TRENCH SECTION E-E
Scale: 1:20 @ A1 1:40 @ A3



7 TRENCH SECTION F-F
Scale: 1:20 @ A1 1:40 @ A3

Site Address : Gowerton Solar PV & BESS,
Swansea Road, Goreinon,
Swansea, South Wales
Site Postcode: SA4 4LE



Issue	Date	Purpose of Issue	Drawn	Checked
2.0	11.12.2023	Amended as per Comments	SR	SF
1.0	06.12.2023	For Information	SR	SF

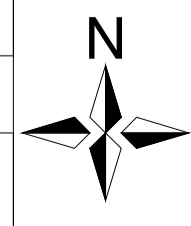


Suite 5, Exchange Station, Tithebarn St, Liverpool, L2 2QP

Client:
Low Carbon Alliance

Drawing Title:
132kV Cable Route Trench Sections

Drawn: SR	Date: 06.12.2023	Checked: SF	Date: 06.12.2023
Project Title: Gowerton		Scale: As Shown @ A1	
Job Ref: SC PJ 55 02		Page Number: 1 of 1	
Drawing Number: SC PJ 55 02-150-31		Issue: 2.0	



Town & Country Planning Act 1990 (as amended)
Planning and Compulsory Purchase Act 2004

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