

P e l l F r i s c h m a n n

Swansea North Greener Grid Park

Construction Traffic Management Plan

February 2023

107203

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# 1 Introduction

Pell Frischmann has been instructed by Statkraft UK Limited (the Applicant) to produce a Construction Traffic Management Plan (CTMP) to support a planning application on land located to the east of the existing Swansea North substation, located approximately 1km to the northeast of the Felindre Park & Ride site, Swansea.

The planning application is for a Greener Grid Park (GGP) featuring six synchronous condensers (the proposed development) which includes associated access infrastructure, electrical grid connections and soft and hard landscaping features.

This CTMP provides an overview of the proposed development in relation to construction traffic, will assess the anticipated impact of the proposed development on the road network within the local area and sets out the proposed mitigation measures for use at the site.

## 2 Development Description

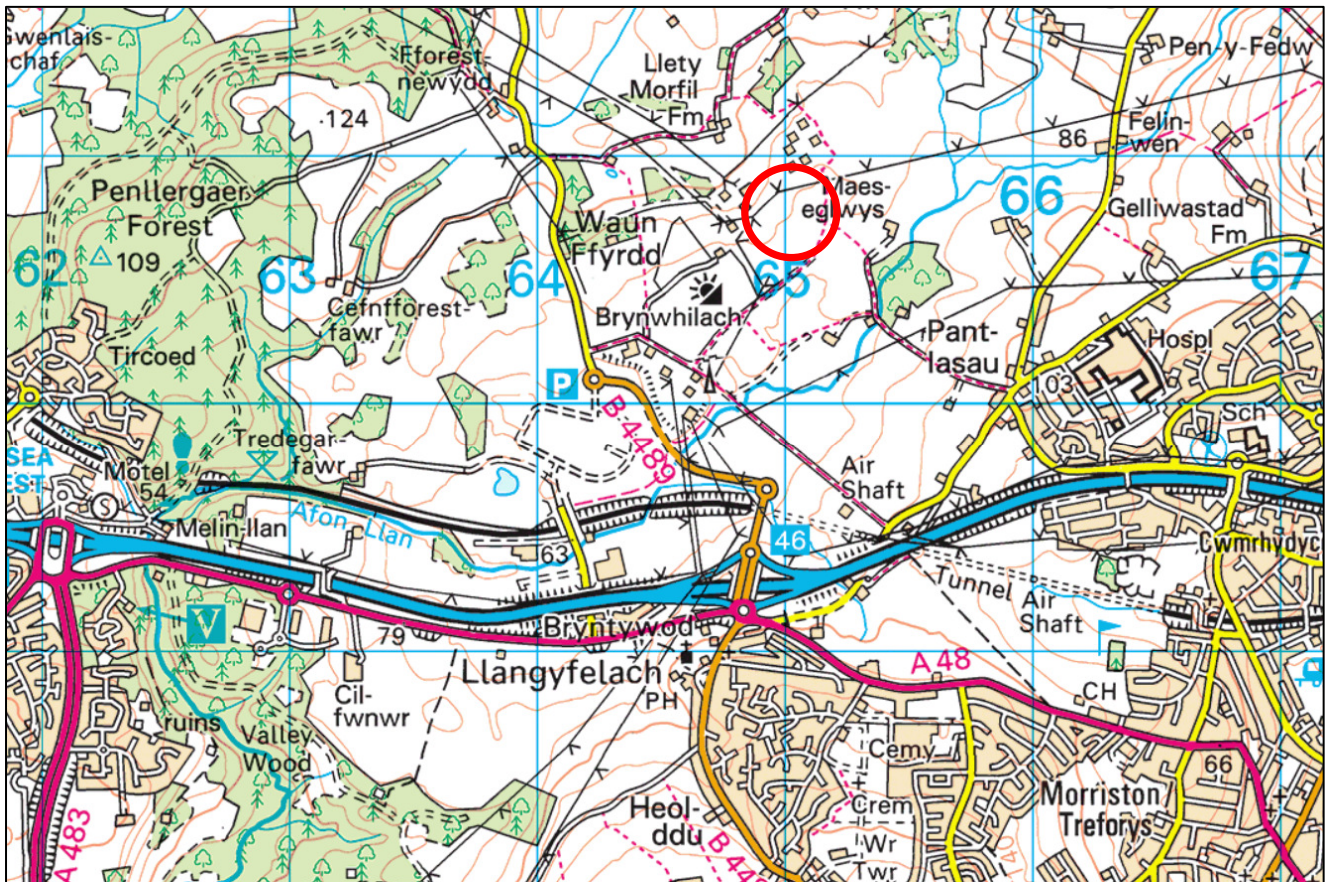
### 2.1 Development Location and Layout

The Development comprises of a Greener Grid Park, featuring the following facilities:

- 6 synchronous condensers and their associated electrical equipment and connections;
- Grid connection infrastructure and control facilities;
- Security fencing, landscaping and other soft features; and
- An access located from an existing access track / segregated access.

The Development location is illustrated in Figure 1.

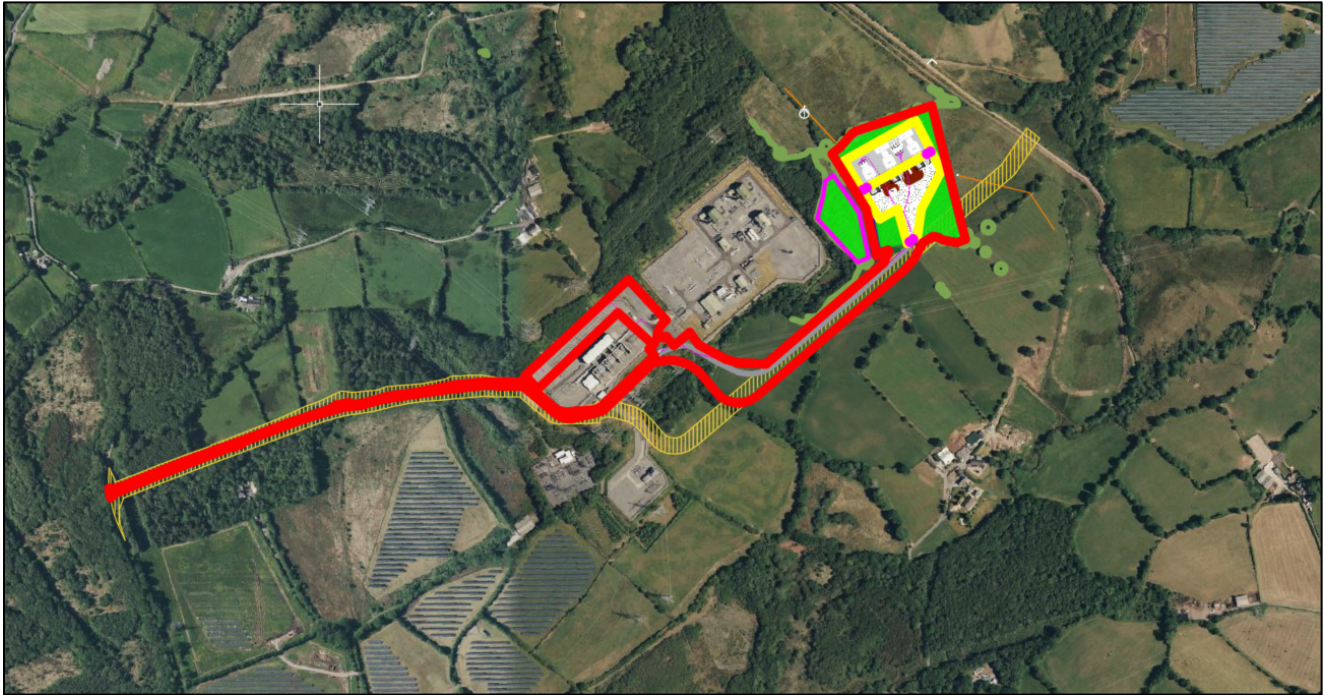
Figure 1 Development Location



Access to the Development is to be made from the B4489 that connects Felindre with Junction 46 of the M4. Access will be taken from the existing substation access road, with a new spur being provided to link the site into this private access road.

The layout of the proposed development is illustrated in Figure 2.

**Figure 2 Development Layout**



## 2.2 Proposed Access Strategy

Access to the site will be via the new access track that connects to the existing substation access track. Both the new track and the existing substation roads are private and would remain so, following construction of the proposed development.

The site will feature a construction compound that will provide space for material deliveries, site offices, staff parking and component set down. There is no need for offsite set down areas and none is proposed as a result of this scheme.

Parking places will be provided within the site during the operational phase and all vehicles will exit and enter the public road network in a forward gear.

## 3 Existing Network

### 3.1 Active Travel Network

The National Cycle Routes (NCR) map of the United Kingdom indicates that there are no NCR located in close proximity to the Development. The closest route is located to the east of the River Tawe and is over 5km from the easternmost extents of the site boundary.

A review of the Swansea Council Rights of Way map (<https://www.swansea.gov.uk/article/5887/Rights-of-way-map>), indicates that there are two Rights of way that intersect the access to the existing substation and proposed new access track. They are:

- Path LC34. This Right of Way Crosses the existing substation access track midway between the substation and the access junction on the B4489; and
- Path LC32. This Right of Way bisects the proposed new access track leading to the proposed development, prior to it entering the main development area.

### 3.2 Existing Highway Links

The M4 is located to the south of the development site and is the closest strategic trunk road in the area. Access from the M4 is available at Junction 46, providing a direct connection onto the B4489.

The B4489 provides local access between the wider Swansea area and the M4. The southern section is a modern, well engineered road leading from the motorway junction through to the nearby Felindre Park & ride site. The northern section from the Park & Ride roundabout is more historic in design and is subject to a 40mph speed limit.

The access track leading from the B4489 is a private access road and is owned and maintained by National Grid.

### 3.3 Road Safety Review

A review of the online accident database, [www.crashmap.co.uk](http://www.crashmap.co.uk), indicates that there has been only one accident recorded at the B4489 in the previous five years. The accident is categorised as “Slight” (i.e. a damage only incident) and occurred in September 2020. A Young Driver and an HGV were involved, with the accident occurring approximately 1km to the north of the substation access junction on a constrained bend..

### 3.4 Baseline Traffic Flows

Baseline traffic flows have been obtained from the nearby Pentre Felindre strategic housing Transport Assessment. The baseline traffic flows for 2018 (avoiding impacts associated with Covid 19 restrictions) are illustrated in Table 1.

**Table 1: 2018 Baseline peak hour traffic data**

Time Period	Description	Cars & LGV	HGV	Total Traffic
AM Peak Hour (0800 – 0900)	B4489 to the immediate North of Junction 46, M4	321	16	337
PM Peak Hour (1700 – 1800)	B4489 to the immediate North of Junction 46, M4	134	15	149
AM Peak Hour (0800 – 0900)	B4489 to the immediate North of P&R Site	151	15	153
PM Peak Hour (1700 – 1800)	B4489 to the immediate North of P&R Site	62	2	64

Construction work is expected to commence in 2023, should the proposed development be consented. To provide a future year baseline, the 2018 surveys were factored using National Road Traffic Forecast (NRTF) Low Growth factors to create 2023 flows.

The future year baseline traffic data is illustrated in Table 2.

**Table 2: 2023 Baseline peak hour traffic data**

Time Period	Description	Cars & LGV	HGV	Total Traffic
AM Peak Hour (0800 – 0900)	B4489 to the immediate North of Junction 46, M4	332	17	349
PM Peak Hour (1700 – 1800)	B4489 to the immediate North of Junction 46, M4	139	16	154
AM Peak Hour (0800 – 0900)	B4489 to the immediate North of P&R Site	156	2	158
PM Peak Hour (1700 – 1800)	B4489 to the immediate North of P&R Site	64	2	66

The proposed development will need to consider nearby committed development (i.e. those that have gained planning consent) in the baseline traffic review.

The proposed development is located adjacent to the proposed Abergelli Gas Fired Power Station and share the same access junction arrangement. This scheme has planning approval and will therefore be considered within the baseline traffic flows.

To provide a robust assessment, it is assumed that the peak of construction traffic associated with the power station would coincide with those of the proposed development. For the purposes of the assessment, it is assumed that 15% of all daily traffic flows will pass through the network at each peak hour.

In practice, this is unlikely that the peak of construction traffic associated with the power station and proposed development will coincide. Should this occur, a combined Construction Traffic Management Plan will be developed between the two developers.

The use of NRTF growth factors also provides some further provision for future planning decisions with respect to network growth caused by smaller developments in the surrounding area.

The finalised future year baseline + committed development traffic flows for use in the study are provided in Table 3.

**Table 3: 2023 Baseline + Committed Development peak hour traffic data**

Time Period	Description	Abergelli Power Station Traffic	Total Traffic Flow
AM Peak Hour (0800 – 0900)	B4489 to the immediate North of Junction 46, M4	60	409
PM Peak Hour (1700 – 1800)	B4489 to the immediate North of Junction 46, M4	60	214
AM Peak Hour (0800 – 0900)	B4489 to the immediate North of P&R Site	60	218
PM Peak Hour (1700 – 1800)	B4489 to the immediate North of P&R Site	60	126



## 4 Construction Traffic

### 4.1 Trip Generation

The proposed construction works are estimated to take up to 14 months and would commence in 2023 if planning permission is granted.

The programme has been divided into its component sections and estimates of the likely traffic generation have been made from the material quantities, staff requirements and component deliveries required. The main areas of construction traffic can be subdivided into:

- Import of Plant and Machinery;
- Site Establishment and Platform Creation Loads;
- Import of Bulk Materials;
- Import of Ready Mix Concrete;
- Import of General Building Supplies;
- Delivery of HV Electrical Components;
- Delivery of general site materials and supplies;
- Grid and electrical connection works; and
- Arrival and departure of construction and commissioning staff at the site.

The traffic generation during the construction phase has used first principles to establish the volume and tonnage of construction materials. This has then been converted to two way vehicle movements to create the construction programme illustrated in Appendix A.

The peak of construction activity occurs in Month 6 of the construction programme.

### 4.2 Distribution of Construction Trips

Access to the development site will be from the M4, with all loads departing at Junction 46 and travelling to the site via the B4489. No construction or staff trips will approach the site from the B4489 from the north.

It is assumed that 15% of all HGV construction trips will access / egress the site during the peak hours. 100% of all Car / LGV movements are assumed to operate in the peak hours (split 50% AM and 50% PM) to reflect staff arrivals / departures.

The peak construction traffic flows are summarised in Table 4.

**Table 4: Peak Construction Traffic Flows**

Time Period	Description	Cars & LGV	HGV	Total Traffic
AM Peak Hour (0800 – 0900)	B4489 to the immediate North of Junction 46, M4	8	12	20
PM Peak Hour (1700 – 1800)	B4489 to the immediate North of Junction 46, M4	8	12	20
AM Peak Hour (0800 – 0900)	B4489 to the immediate North of P&R Site	8	12	20
PM Peak Hour (1700 – 1800)	B4489 to the immediate North of P&R Site	8	12	20

### 4.3 Abnormal Load Access

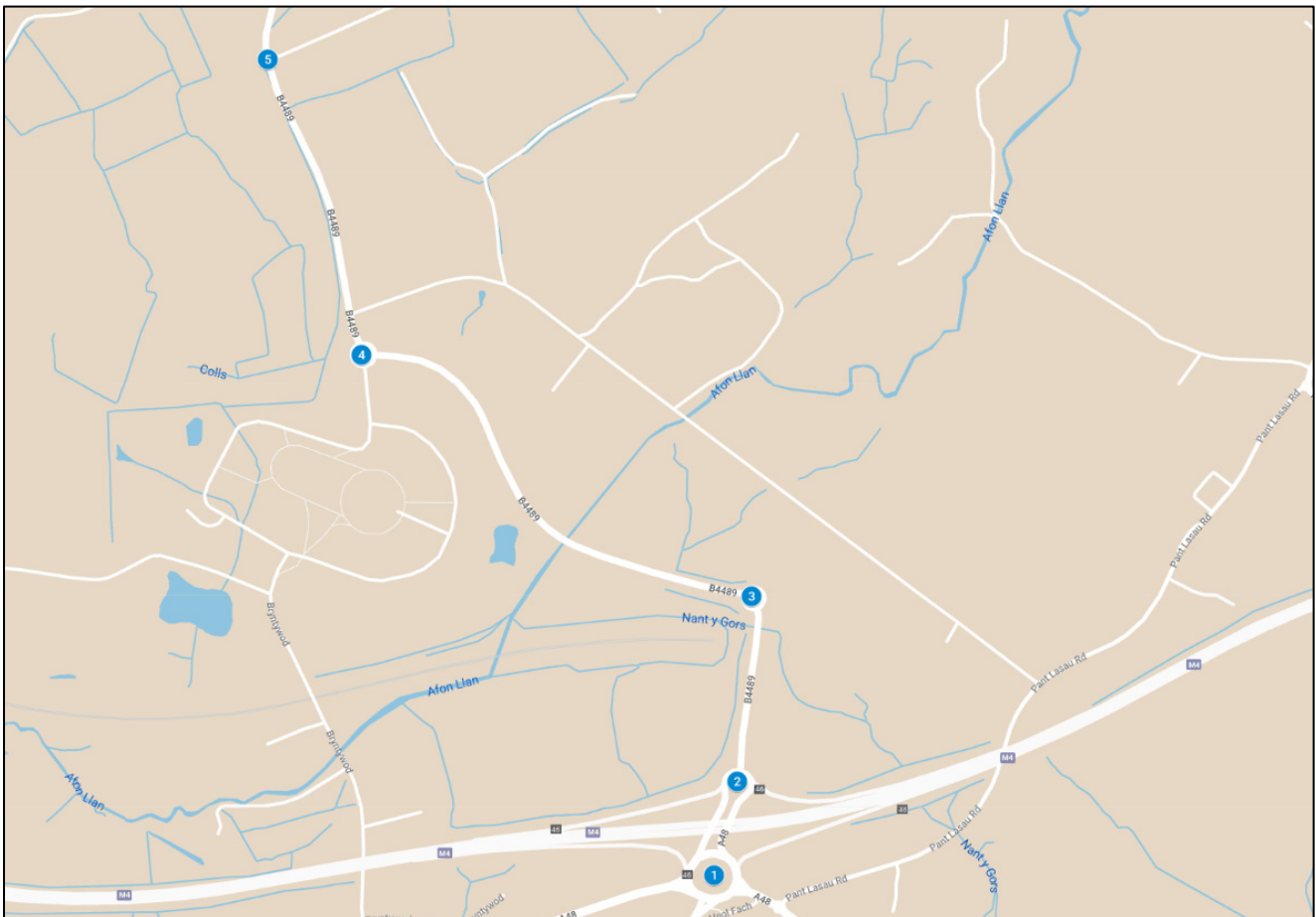
AIL access for the site is required for the transport of Synchronous Condenser loads. Data for the proposed loads are provided in Appendix B. AIL traffic will comprise of the following:

- 6 Synchronous Condenser loads;
- 3 transformer loads;
- 1 main crane; and
- Associated civilian and police escort loads.

AIL access to the Development has been assumed to be from the M4, with loads being imported via Swansea Docks. The worst case loads for AIL are the Synchronous Condenser loads and these have been modelled using a bespoke swept path model of the transporter. Swept path assessments from the M4 to the site access junction have been undertaken and are presented in Appendix B.

Swept path assessments have been undertaken at the locations illustrated in Figure 3.

**Figure 3 Swept Path Assessment Locations**



The colours illustrated on the swept paths are:

- Grey / Black – OS / Topographical Base Mapping;
- Green – Vehicle body outline (body swept path);
- Red – Tracked pathway of the wheels (wheel swept path); and
- Purple – The over-sail tracked path of the load where it encroaches outwith the trailer (load swept path).

No physical road mitigation works are required, however trimming of the vegetation on the northern section of the B4489 will be required. Verge trimming and tree canopy trimming works will be undertaken to allow AIL access and to improve forward visibility.

Traffic management measures will be required to allow the proposed loads to move in safety, under police escort. Loads may require access to all lanes of the road at locations and may undertake contraflow manoeuvres at the junctions.

#### 4.4 Traffic Impact During Construction

The peak traffic data was combined with the baseline traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is predicted to increase traffic on the B4489 by 22% on the southern section and by 42% on the upper section near the site access during the AM peak hour. As there are no sensitive receptors on the B4489, this temporary increase in traffic is not considered to have a significant impact.

#### 4.5 Traffic Impact During Operation

The traffic associated with the operational phase of the development is minimal with occasional maintenance trips expected during the operation of the development. These are likely to be in the region of four car / LGV trips per day and as such, no operational impact assessment of the development is required.

## 5 Construction Traffic Management Proposals

The traffic management proposals in this report will be provided to the principal contractor and they will be required to abide by these regulations as part of their commercial contracts with the Applicant. Failure to follow the traffic management measures proposed would be a contractual matter and could result in contractors being dismissed from the site.

Pages with information about the construction of the proposed development will be available on the project website. These will be updated throughout the construction period. If visitors to the site are unable to find the answer to their question in the webpages, an email address will be provided on the project website to contact the Applicant. In addition, details will also be circulated via a newsletter advising about ongoing activities. A telephone number for the Principal Contractor would be published during operational hours to resolve any traffic management problems that occur and these calls would be logged and reported to the Applicant on a weekly basis to monitor the situation.

The following measures would be provided to assist in managing traffic across the study area road network.

### 5.1 General Measures

Wherever reasonably possible, local suppliers such as quarries and concrete works are proposed to help minimise traffic levels of the network.

The following measures would be implemented through this Construction Traffic Management Plan (CTMP) during the construction phase:

- Contractual requirement in the Balance of Plant contract that contractors will only use the agreed access route;
- Direction signage signposting traffic on the agreed access route;
- Identification numbers of HGV and vans to allow easy recognition;
- Providing the public with details of how to report use of unapproved routes or driving issues of concern;
- Using GPS trackers to allow the monitoring of bulk delivery vehicle movements;
- Setting out site staff disciplinary measures for those who ignore the agreed access route and enforcing these throughout the construction period;
- All site vehicles will feature “white noise” reversing warning devices to reduce noise disruption when on site;
- All materials delivery lorries (dry materials) will be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures will be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Wheel cleaning facilities will be established at the site entrance; and
- Site induction for all staff instructing them on what route to site they can use to enter and exit the site and obtaining their acknowledgement that there is only one approved access route. The induction would include:
  - A tool box talk safety briefing;
  - The need for appropriate care and speed control; and
  - A briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through Lerwick and other sensitive areas).

### 5.2 Road Signage

A junction signage strategy will be prepared and agreed with Swansea Council prior to works commencing. The strategy will include the following:

- Direction signage to ensure vehicles access the site safely from the northern B4489 junction with the M4; and
- Site access signage and Chapter 8 (Traffic Signs Manual) “Slow Down” and “Heavy Plant Crossing” signage to advise other road users of increased movements at the site access junction.

Regular maintenance will be undertaken at the sign locations to keep the plates clean and to ensure that verge vegetation does not obscure them.

### 5.3 Site Access Junction

The vegetation at the site access junction will be cut back to improve junction visibility to the north and south of the junction.

### 5.4 Wear & Tear Agreement

An agreement is suggested to cover the cost of any abnormal wear and tear on the B4489. This would be agreed with the Council subject to the granting of planning approval.

The wear & tear agreement will address concerns about possible damage to the public road, verges and structures. It will be based upon condition surveys of the road to ensure that the condition of the road does not deteriorate as a result of the construction works.

Video footage of the pre-construction phase condition of the agreed area covered by the condition survey would be recorded to provide a baseline of the state of the road prior to any construction work commencing. This High Definition (HD) baseline review would inform any change in the road condition during the construction stage of the proposed Development as it notes the existing condition of the road surface and features and details current condition.

The condition survey would feature still images for the survey and would measure specific defects to monitor their progression. Locations of points would be accurately logged using a GPS tracker.

To agree the current state of the road, the report would be agreed with the Council prior to construction works commencing.

Any immediate necessary repairs would be coordinated with the Council. Any damage caused by traffic associated with the proposed development, during the construction period that would be hazardous to public traffic, would be repaired immediately.

During construction activities, a general road wear and tear review would be undertaken with the Council every three months during construction. Interim reviews will be undertaken by the principal contractor on a regular basis and the progress reports issued to the Applicant.

Any damage to road infrastructure caused directly by construction traffic would be made good, and street furniture that is removed on a temporary basis would be fully reinstated.

There would be a regular road edge review and any debris and mud would be removed from the public carriageway to keep the road clean and safe during the initial months of construction activity, until the construction junction and immediate access track works are complete.

Where defects occur, the principal contractor will ensure that they maintain a stockpile of road repair material on site to undertake repair works quickly and efficiently, when authorised by the Council to undertake interventions.

Upon completion of construction activities, a follow on condition review will be undertaken and a defects list prepared. Works required to reinstate the road back to its original condition would be undertaken at the Applicant's expense follow a review by the Council.

There are cases where defects will need to be undertaken quickly and the contractor will have arrangements in place to respond to serious and significant defects within agreed hours.

## 5.5 Turning Facilities & Banksman

For safety reasons both onsite and for other road users, the site has been designed so all vehicles can enter and exit the site in a forward gear. No vehicle shall reverse onto public roads and shall only enter / exit the site using forward gear only.

A banksman will be provided at the site access to help guide traffic within the site and to ensure health and safety access for the site. The banksman will be in radio contact with the wider site compound to advise of movements to and from the site.

Upon completion of construction works, a gate will be provided on the access track at its junction into the proposed Development. The gate will be set back from the public road to ensure that any future HGV vehicles can stop at the gate without blocking back onto the future public road.

## 5.6 Non-Motorised Road Users

### 5.6.1 Pedestrians and Cyclists

The principal contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors. Advisory speed limits of 10mph will be installed on the Port Business Park roads in advance of the site access to help reduce speeds and make drivers aware of other road users.

Signage will be installed on the site exit that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists in the area. This will also be emphasised in the weekly tool box talks.

A pedestrian crossing over the new access track to allow continued use of Right of Way LC032 will be provided, with appropriate warning signs provided from drivers to be aware of the pedestrian crossing and to give way to path users. The path will cross the access track at the same level to avoid the need for changes in grade. Alterations to the approach and departure may be required and engagement with the Council will be undertaken to provide a suitable design.

### 5.6.2 Equestrians

The British Horse Society has made recommendations on the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away in panic if really frightened. Riders will do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.

The main factors causing fear in horses in this situation are:

- Something approaching them, which is unfamiliar and intimidating;
- A large moving object, especially if it is noisy;
- Lack of space between the horse and the vehicle;
- The sound of air brakes; and
- Anxiety on the part of the rider.

The British Horse Society recommends the following actions that will be included in the site training for all HGV staff. These will be added to tool box talks and the general staff induction:

- On seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
- If the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
- The vehicle should not move off until the riders are well clear of the back of the HGV;
- If drivers are wishing to overtake riders, please approach slowly or even stop in order to give riders time to find a gateway or lay by where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
- All drivers delivering to the site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

## 5.7 AIL Traffic Management Measures

AIL movements must be escorted by the Police. Given the size of the proposed loads, it is expected that at least one private escort and a minimum of two police escort vehicles are likely to be required (exact requirement will be confirmed with the police). The likely deployment of escorts will be as follows:

- The first police escort vehicle will be the advance escort and will be located sufficiently ahead of the convoy, to advise the convoy in good time of traffic stoppages, constraints and oncoming hazards;
- The second police escort will provide support to the first escort at junction closures and would be located at the front of the lead vehicle; and
- The civilian escort will be located behind the last vehicle to protect the rear of the convoy and ensure that following vehicles do not attempt dangerous overtaking manoeuvres. This escort will also assist with direction during constrained turning manoeuvres.

Before the convoys depart the Port of Entry (PoE), the Lead Driver should check weather and traffic conditions and ensure this information is included within the daily toolbox talks.

Within the route, there are locations where general traffic flows will need to be stopped to allow the safe manoeuvre of the loads. In these circumstances the advance escorts will ensure that the traffic is stopped before the convoys enters the affected section. The advance escorts will confirm through radio contact that the area is clear and safe for transit. Should general traffic fail to observe the request to stop, the advance escort will advise the convoy to immediately halt and will then proceed to remove the rogue traffic. The convoy must not start without approval from the advance escort.

In areas where the load is likely to, or is close to straddling the centre line, the advance escort should be positioned to give advance warning to the convoy such that evasive action can be taken. In constrained areas and other locations where verges are potentially soft the drivers must exercise care to ensure the trailer wheels do not leave the road surface as this may result in adverse load stability conditions.

Urban areas along the route pose different challenges for the abnormal loads. Whilst the vehicle speeds will be less than those in the rural sections of the route, there are more potential conflicts with other road users to be aware of. These include:

- Pedestrians and cyclists;
- Local vehicular traffic;
- Parked vehicles;
- Side junctions; and
- Street furniture.

Within urban areas, the convoy escorts will need to be aware of all road and footway users at turn sections within the route. At these locations there is potential for load over-sail and reference to the swept path assessment drawings is considered essential to identify these areas. It is important to note that only the Police have the power to request that vehicles and pedestrians move.

Within urban areas there is a higher chance of parked vehicles along the route and a possibility that parked cars will restrict available road width. Whilst these areas will not impede the loads they do create a further zone where the load drivers and escorts will need to take care of conflicts that include restricted road widths, car doors opening and pedestrians crossing the road between parked vehicles.

Information relating to AIL movements will be provided directly to residents living in the immediate vicinity of the access route. Information on the movement of the abnormal load convoys would also be provided to local media outlets by the Principal Contractor (or their appointed AIL delivery contractors) to help assist the public. Information would be provided to local newspapers and radio stations.

The project website will also be used to help advise of movements. Information would relate to expected vehicle movements on the route. It is hoped that this level of information will make residents aware of convoy movements and help reduce any conflicts.

## 5.8 AIL Convoy Health & Safety Measures

All staff working on the project will be inducted before entering the site. This will be undertaken prior to the commencement of AIL movements.

A daily Tool Box Talk for all convoy staff to be held at the start of each working day and carried out by the appointed Transport Co-ordinator or Appointed Lead Driver. A detailed record of the talk should be kept and filed once the convoy has arrived at the site.

The Tool Box Talks will cover a minimum of the following matters:

- The current version of the CTMP to be carried by all convoy vehicles;
- Identification of any updates since the previous version of the CTMP;
- Requirement to have a CB radio (fixed or portable), with fully charged batteries;
- Anticipated transport restrictions in each section of the route;
- Driver instructions on incident reporting;
- Driver instructions on trailer steering methodology, and availability of assistance;
- Instructions on areas requiring traffic stoppage, and methodology for convoy passing through these areas;
- The welfare arrangements for drivers;
- A summary of the predicted weather, traffic and road conditions; and
- Any questions on the contingency plans.

Each of the convoy vehicles must be suitably equipped with hazard warning devices to warn all other road users. All the tractor, trailer and escort vehicles operating on the project must have the following:

- Tractor units to have beacon bars on the roof and 3M reflective markings on both sides;
- All vehicle warning signage to be in English;
- Trailer units to have amber beacons on the rear with 3M reflective markings on both sides;
- All escort vehicles will have beacon bars on the roof, with 360 degree motion for all round visibility, and 3M reflective markings;
- Fire extinguisher and first aid kit; and
- Certified cargo lashing straps are to be used at all times. Certification must be carried and made available for inspection, kept within the cab.



All hazard warning equipment must be checked and cleaned at the start of each day. Additional cleaning of the warning equipment may be required throughout the day and must be undertaken when required.

All relevant personnel must have the appropriate Personal Protective Equipment (PPE). All PPE clothing must be 'CE' marked to show it meets current standards and should be appropriate for use in trunk road situations (i.e. must be full coats with reflective bands on the arms).

## 5.9 Emergency & Contingency Plan

To ensure access for emergency service vehicles, a coordination protocol will be established with the blue light emergency services. As the AIL convoys are escorted by the Police, the Police will be aware of potential access issues for ambulances and fire service vehicles and can take appropriate action on the route to pull to the side of the road or mount a verge to allow emergency vehicles past.

The civilian escort vehicles carry equipment to make running repairs to vehicles in the unlikely event of a breakdown. Further spares and equipment can also be based at the site for faster responses in case of mechanical issues.

The haulier will establish contracts with local suppliers to attend to any punctures and tyre issues, to minimise any stoppage time on the route.

## 6 Summary

This Construction Traffic Management Plan has considered the likely impact of traffic generated by the proposed development on the local roads network.

A review of the type and volume of vehicles associated with the construction programme has been provided and the peak of construction activities identified. This peak in traffic has been used to review the likely impact that construction activities would have.

Construction of the proposed Development will generate approximately 91 movements vehicle movements per day at the peak of construction. It is expected that during the peak month of construction (Month 6), 75 two-way HGV movements per day will occur per day. A further 16 car / LGV trips would be created by construction staff travelling to and from the site.

The increase in traffic generation due to construction traffic was calculated. This noted that the impact of construction traffic on the B4489 will not lead to operational difficulties. On this basis, and due to the lack of sensitive receptors on the access route, the impact on traffic generation due to construction is therefore negligible.

Traffic management procedures have been proposed within this report which would ensure the safe operation of the approach route to the proposed development during construction. Determination of the final details of these traffic management measures will occur once the Balance of Plant contractor has been appointed and can be secured via an appropriately worded planning condition.

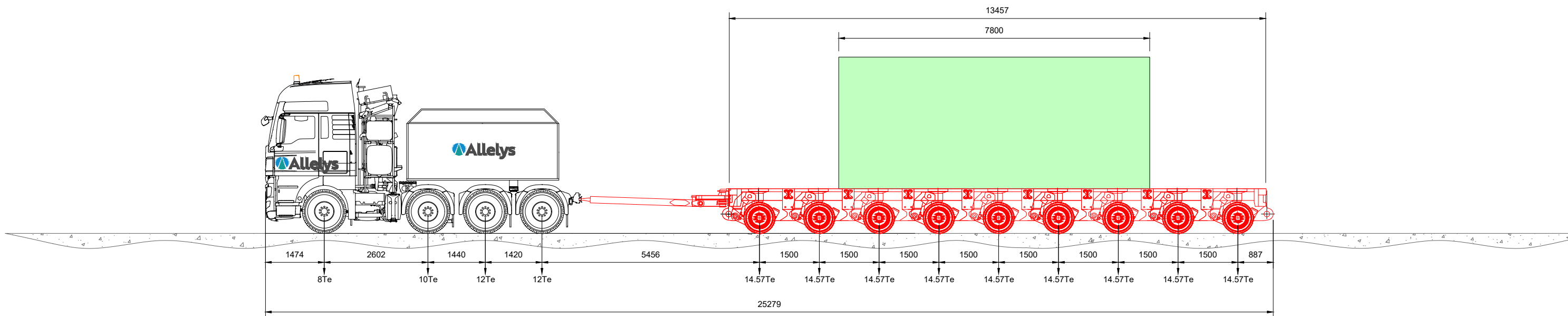
The proposed development will not be manned, operational traffic is expected to be minimal and would be conducted by smaller vehicles. The impact of this on the wider road network will be negligible.

## Appendix A Construction Programme

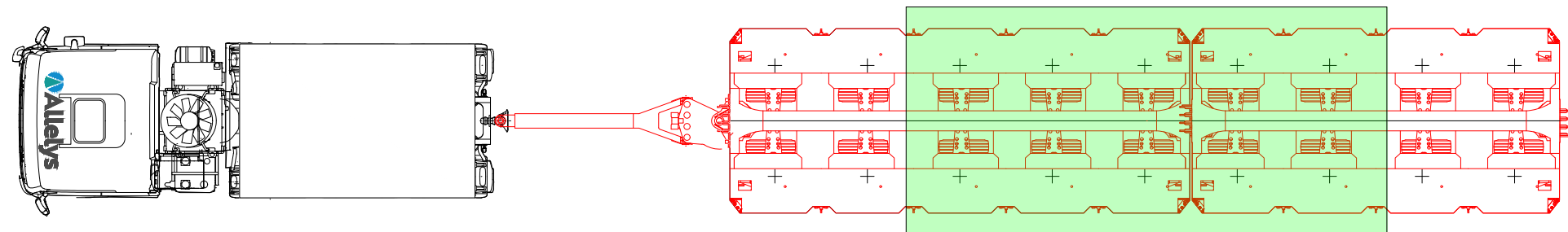
Construction Programme

Element	Vehicle														
Month		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Site Establishment / Reinstatement	HGV	150													150
General Deliveries	HGV	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Site Clearance & Preparation	HGV	542	542	542	542										
Access Track	HGV		94	94	94										
Geotextile	HGV		2	2	2										
Development Platform	HGV			993	993	993	993								
Foundation Steel	HGV					20	20	20	20						
Foundation Concrete & Piles	HGV						590	590	590	590					
Cabling	HGV							10							
Cable Sand	HGV							22	22	22					
Synchronous Condensers & Associated Equipment	HGV								6	6					
Transformers	HGV										6				
EV Gear & Switchgear	HGV											20	20		
Cranes	HGV								6			6			
Buildings	HGV									36	36	36	36		
Fencing	HGV								12	12	12	12			
Fit Out	HGV													40	
Landscaping	HGV												40	40	
ALL Escorts	LGV									12	12	12			
Commissioning	LGV												40	40	
Staff	LGV	308	308	308	308	361	361	572	572	572	572	572	572	361	308
Total		1040	986	1978	1978	1414	2003	1254	1268	1290	678	698	788	481	498
Total HGV		732	678	1670	1670	1053	1643	682	696	706	94	114	176	80	190
Total LGV		308	308	308	308	361	361	572	572	584	584	584	612	401	308
<b>Total HGV / Day</b>		<b>33</b>	<b>31</b>	<b>76</b>	<b>76</b>	<b>48</b>	<b>75</b>	<b>31</b>	<b>32</b>	<b>32</b>	<b>4</b>	<b>5</b>	<b>8</b>	<b>4</b>	<b>9</b>
<b>Total LGV / Day</b>		<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>16</b>	<b>16</b>	<b>26</b>	<b>26</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>28</b>	<b>18</b>	<b>14</b>
<b>Total per Day</b>		<b>47</b>	<b>45</b>	<b>90</b>	<b>90</b>	<b>64</b>	<b>91</b>	<b>57</b>	<b>58</b>	<b>59</b>	<b>31</b>	<b>32</b>	<b>36</b>	<b>22</b>	<b>23</b>

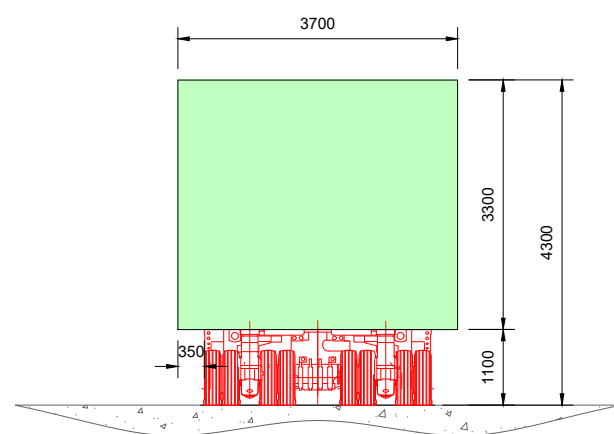
## Appendix B Abnormal Loads Swept Path Drawings



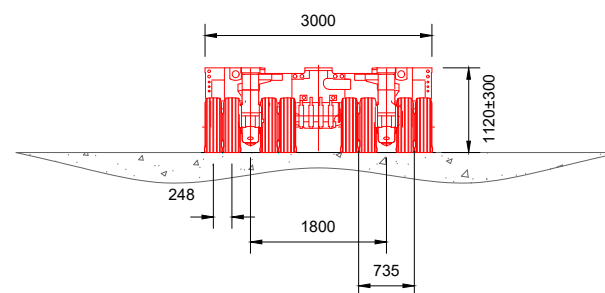
**SIDE ELEVATION**  
(1:100)



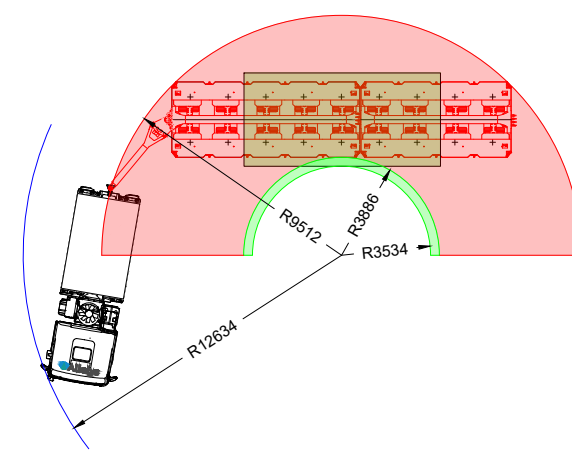
**PLAN VIEW**  
(1:100)



**END ELEVATION**  
(1:100)



**BOGIE SECTION**  
(1:100)



**TURNING RADII**  
(1:300)

- DRAWING NOTES:**
1. All dimensions are in mm unless otherwise stated.
  2. All weights are in metric tonnes unless otherwise stated.
  3. All details are provisional and are subject to confirmation.
  4. Tractor unit(s) dimensions and axle spacing's may vary depending on the type of tractor unit(s) used.

- TECHNICAL NOTES:**
1. Suitable trailer lashings to be applied, not drawn.

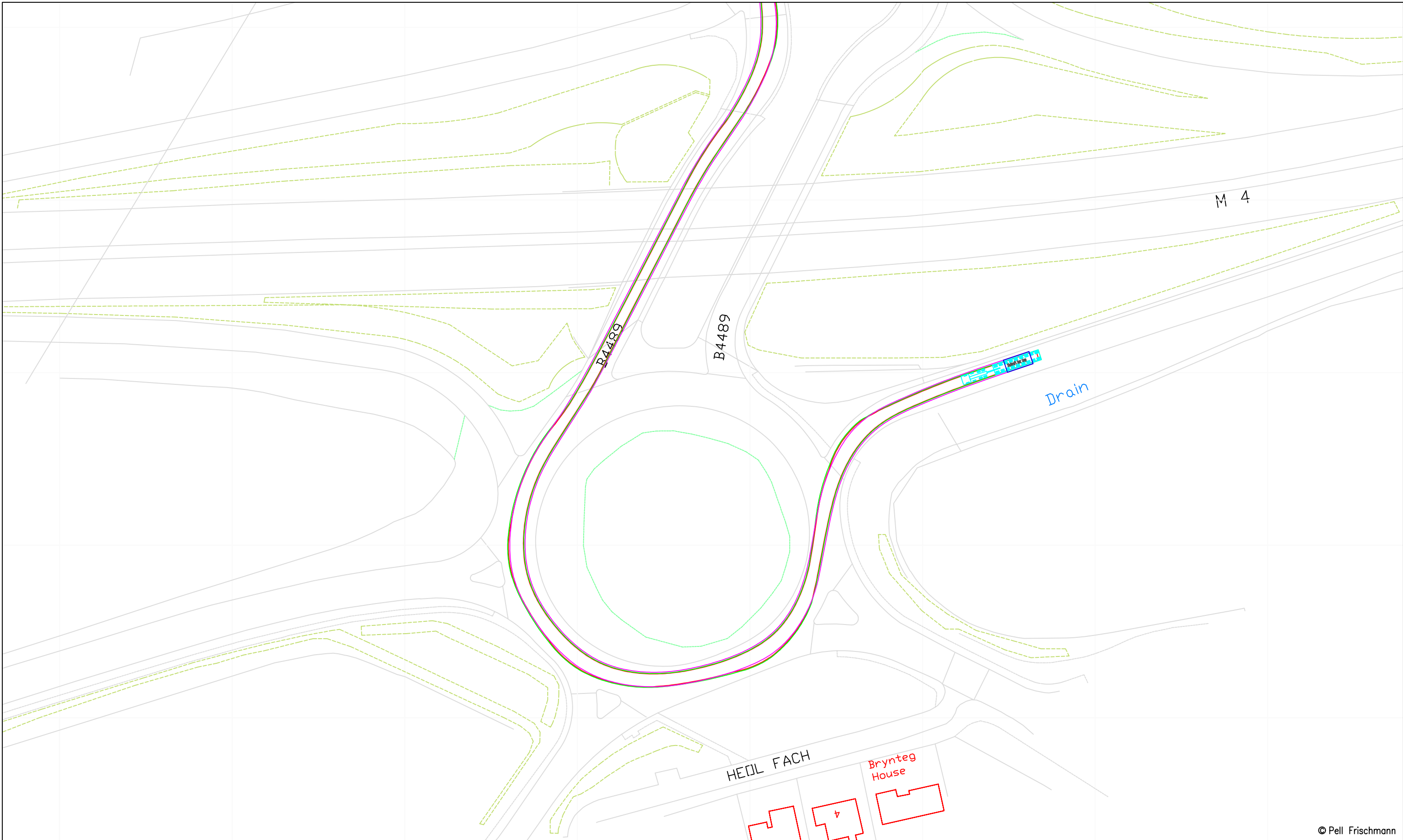
Load Table	
Applied Load Weight (Te)	105.00
Trailer Tare Weight (Te)	26.10
Auxiliary Steel Work (Te)	0.00
Trailer Gross Weight (Te)	131.10
Load per Axle (Te)	14.57
Block Ground Loading (Te/m <sup>2</sup> )	3.24

Rev.	Date	Drawn	Checked	Amendments
0	16/12/21	EDA	DJA	Issued for Comment

**Allelys**  
The Slough, Studley, Warwickshire, B80 7EN  
Tel: +44 (0) 1527 852 408  
e-mail: enquiries@allelys.co.uk

Client: GE  
Project: Rotary Stabilizer  
Title: 105 Te Rotary Stabilizer  
9 Axle Modular Flat Top Transport Arrangement

Scale (A3): 1:100, 1:300  
Drawn: EDA  
Checked: DJA  
Dwg. No: WWPN-21-017-00  
Sheet: 1 of 1  
Revision: 0



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 www.pellfrischmann.com

Client: Statkraft

Key	Wheel SPA	Body SPA	Load SPA	Indicative	Over-run	Over-sail

Project: Swansea North GGP

Drawing Title: Synchronous Condenser Swept Path Assessment

SPA Location: Junction 46, M4 Southern Roundabout

Name	Date	Scale
Drawn: GB	05/02/2023	1:1000 @ A3
Designed: GB	05/02/2023	File No. 230205 Tracking Drawings.dwg
Checked: TL	06/02/2023	Drawing Status: Draft
Point of Interest	1	Revision
Drawing No. SK01	Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.	0

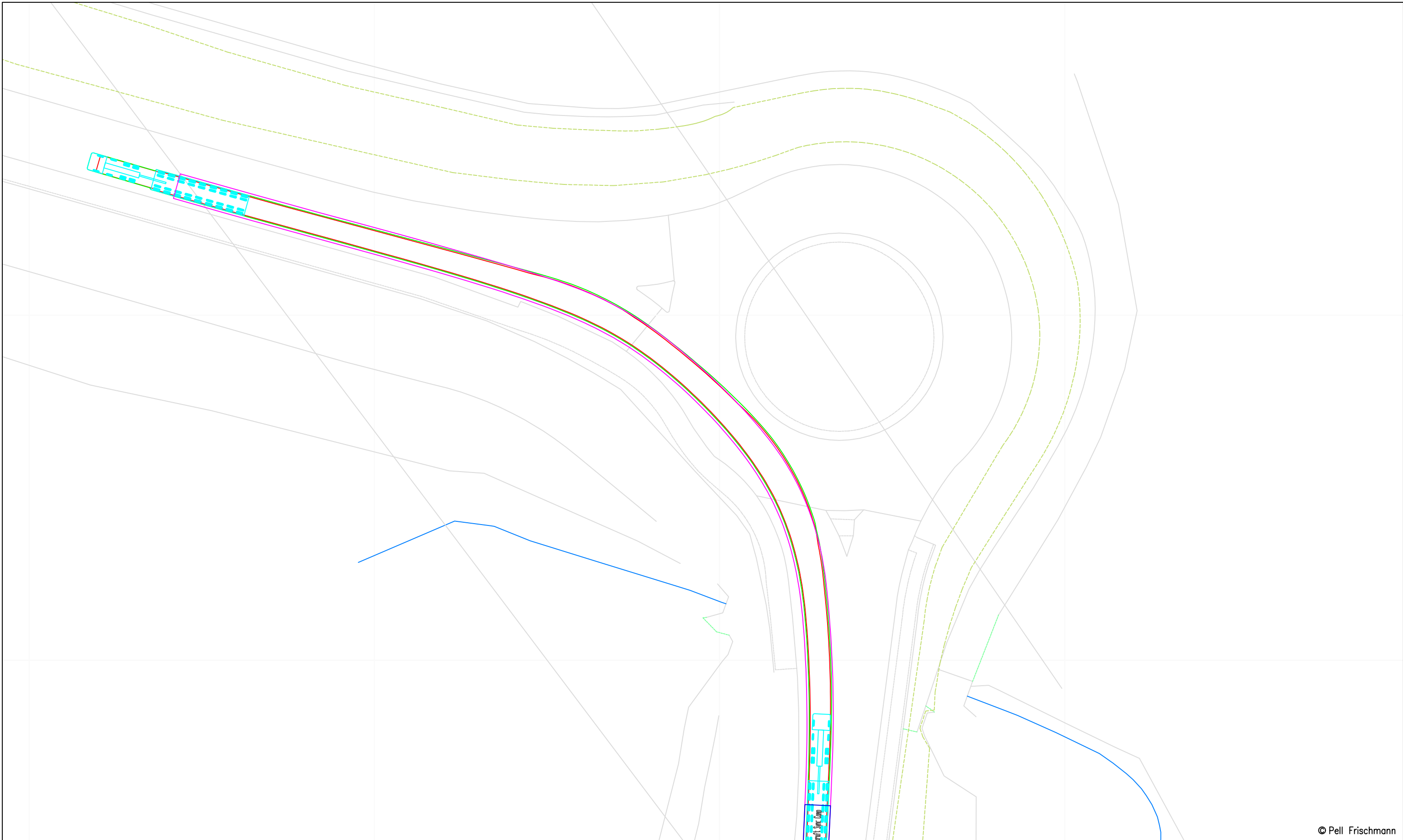


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<b>Pell Frischmann</b> <small>93 GEORGE STREET, EDINBURGH, EH2 3ES</small> <small>Tel: +44 (0)131 240 1270</small> <small>Email: pfe@pellfrischmann.com</small> <small>www.pellfrischmann.com</small>	Project	Swansea North GGP	Drawn	GB	05/02/2023	Scale	1:1000 @ A3	
	Client	Statkraft	Drawing Title	Synchronous Condenser Swept Path Assessment	Designed	GB	05/02/2023	File No.
<b>Key</b> <span style="color: red;">—</span> Wheel SPA <span style="color: green;">—</span> Body SPA <span style="color: magenta;">—</span> Load SPA <span style="color: cyan;">—</span> Indicative <span style="border: 1px solid red; display: inline-block; width: 10px; height: 10px; transform: rotate(45deg);"></span> Over-run <span style="border: 1px solid blue; display: inline-block; width: 10px; height: 10px; transform: rotate(45deg);"></span> Over-sail	SPA Location	Junction 46, M6, Northern Junction	Checked	TL	06/02/2023	Drawing Status	Draft	
			Point of Interest	2	Drawing No.	SK02	Notes:	Revision

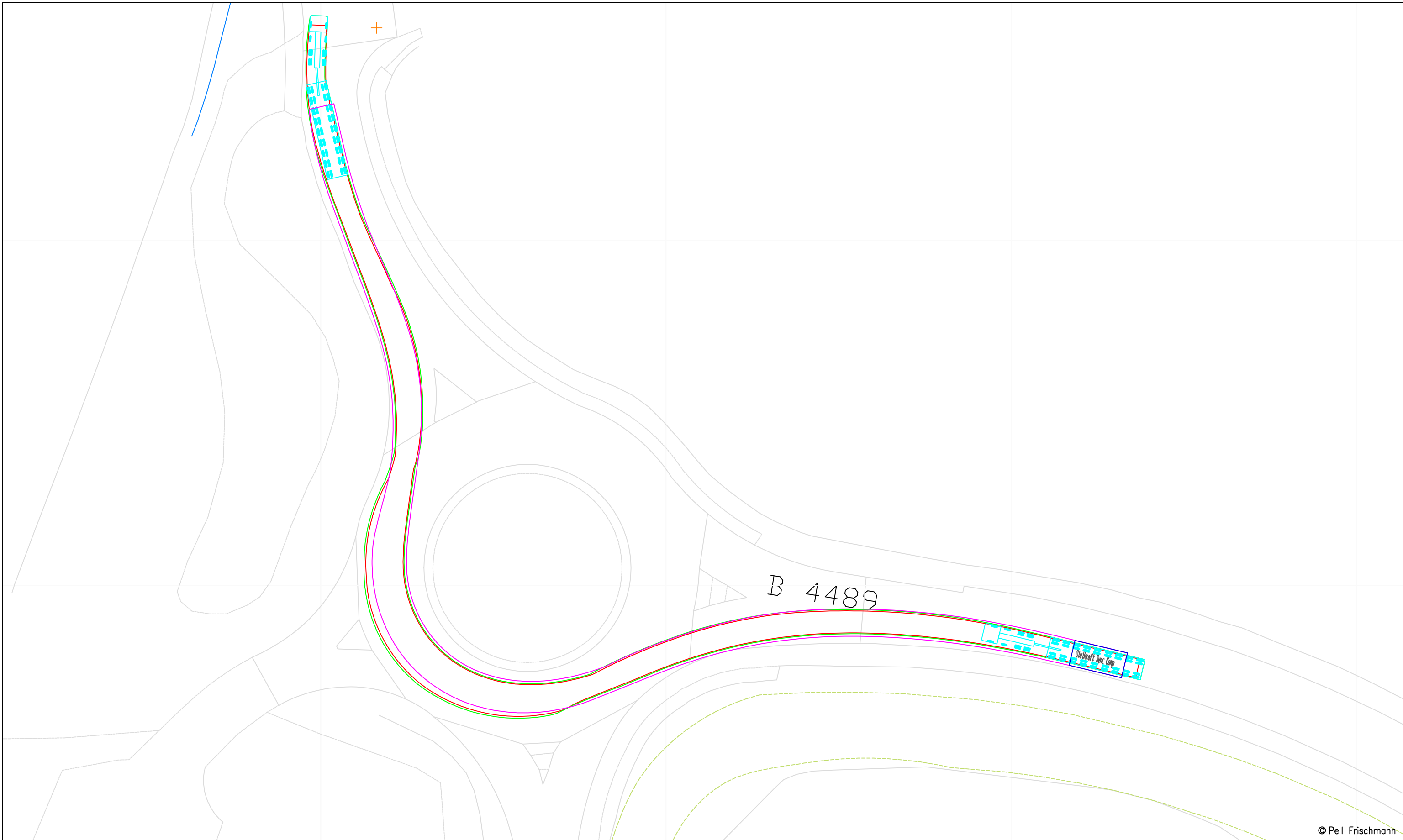
1. All mitigation is subject to confirmation through a test run.  
 2. This is not a construction drawing and is intended for illustration purposes only.





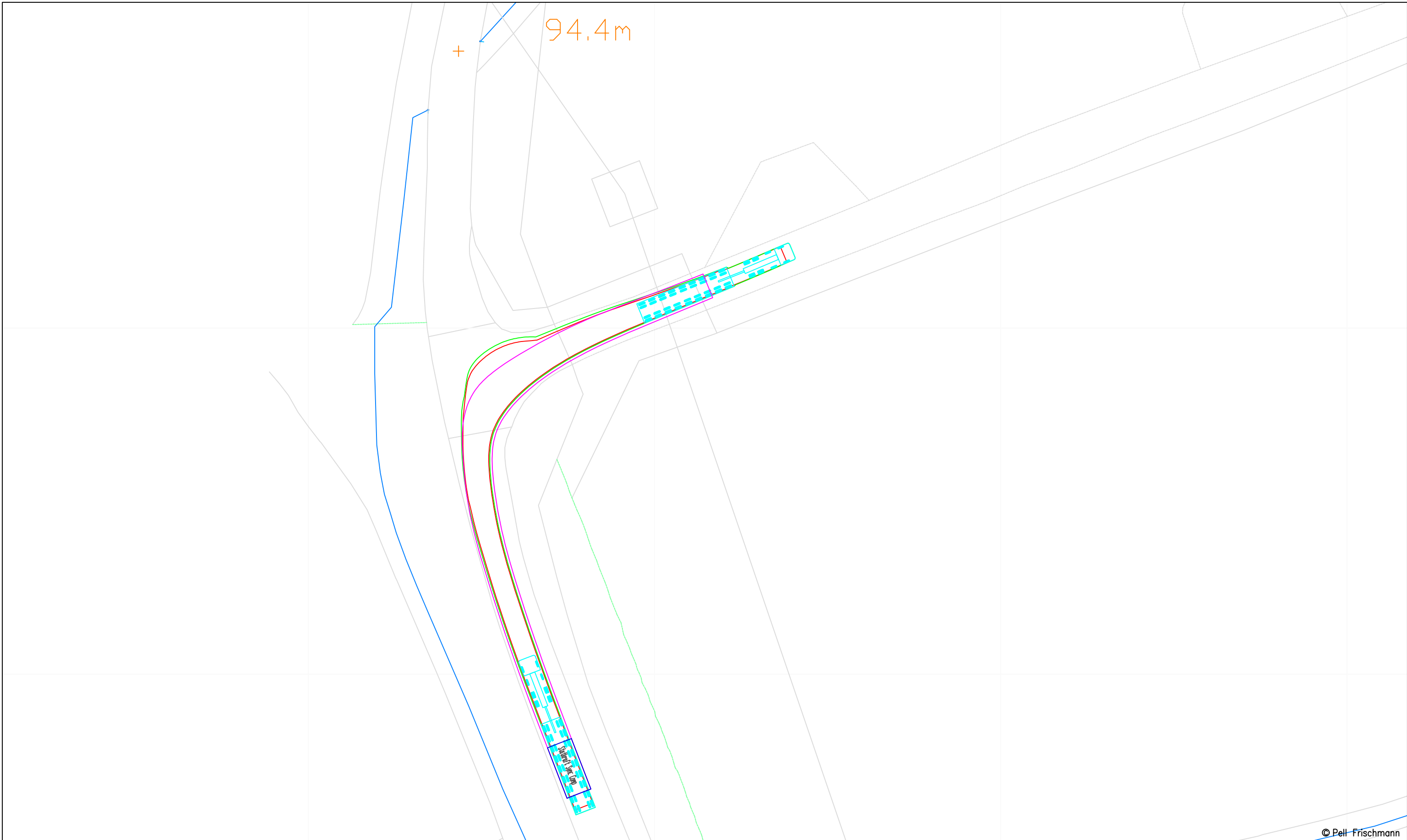
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<b>Pell Frischmann</b> 93 GEORGE STREET, EDINBURGH, EH2 3ES Tel: +44 (0)131 240 1270 Email: pfe@pellfrischmann.com www.pellfrischmann.com	Project	Swansea North GGP			Drawn	GB	05/02/2023	Scale	1:500 @ A3	
	Client	Statkraft			Designed	GB	05/02/2023	File No.	230205 Tracking Drawings.dwg	
<b>Key</b> Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	Drawing Title	Synchronous Condenser Swept Path Assessment			Checked	TL	06/02/2023	Drawing Status	Draft	
	SPA Location	B4489 Roundabout			Point of Interest	3		Drawing No.	SK03	
								Notes:	Revision	
								1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.	0	



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	Client	Statkraft	Drawing Title	Synchronous Condenser Swept Path Assessment		Designed	GB	05/02/2023	File No.
<b>Key</b> <span style="color:red">—</span> Wheel SPA <span style="color:green">—</span> Body SPA <span style="color:magenta">—</span> Load SPA <span style="color:cyan">—</span> Indicative <span style="border: 1px solid red; padding: 2px;"> </span> Over-run <span style="border: 1px solid blue; padding: 2px;"> </span> Over-sail	Drawing Title	Synchronous Condenser Swept Path Assessment		Checked	TL	06/02/2023	Drawing Status	Draft	
	SPA Location	B4489 Felindre Roundabout		Point of Interest	4		Drawing No.	SK04	Notes:
								1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.	0



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	Client	Statkraft	Drawing Title	Synchronous Condenser Swept Path Assessment			Drawn	GB	05/02/2023	File No.
<b>Key</b> <span style="color:red">—</span> Wheel SPA <span style="color:green">—</span> Body SPA <span style="color:magenta">—</span> Load SPA <span style="color:cyan">—</span> Indicative <span style="border: 1px solid red; padding: 2px;"> </span> Over-run <span style="border: 1px solid blue; padding: 2px;"> </span> Over-sail	SPA Location	B4489 Site Access Junction	Checked	TL	06/02/2023	Drawing Status	Draft			
			Point of Interest	5		Drawing No.	SK05	Notes:	1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.	
			Revision	0						