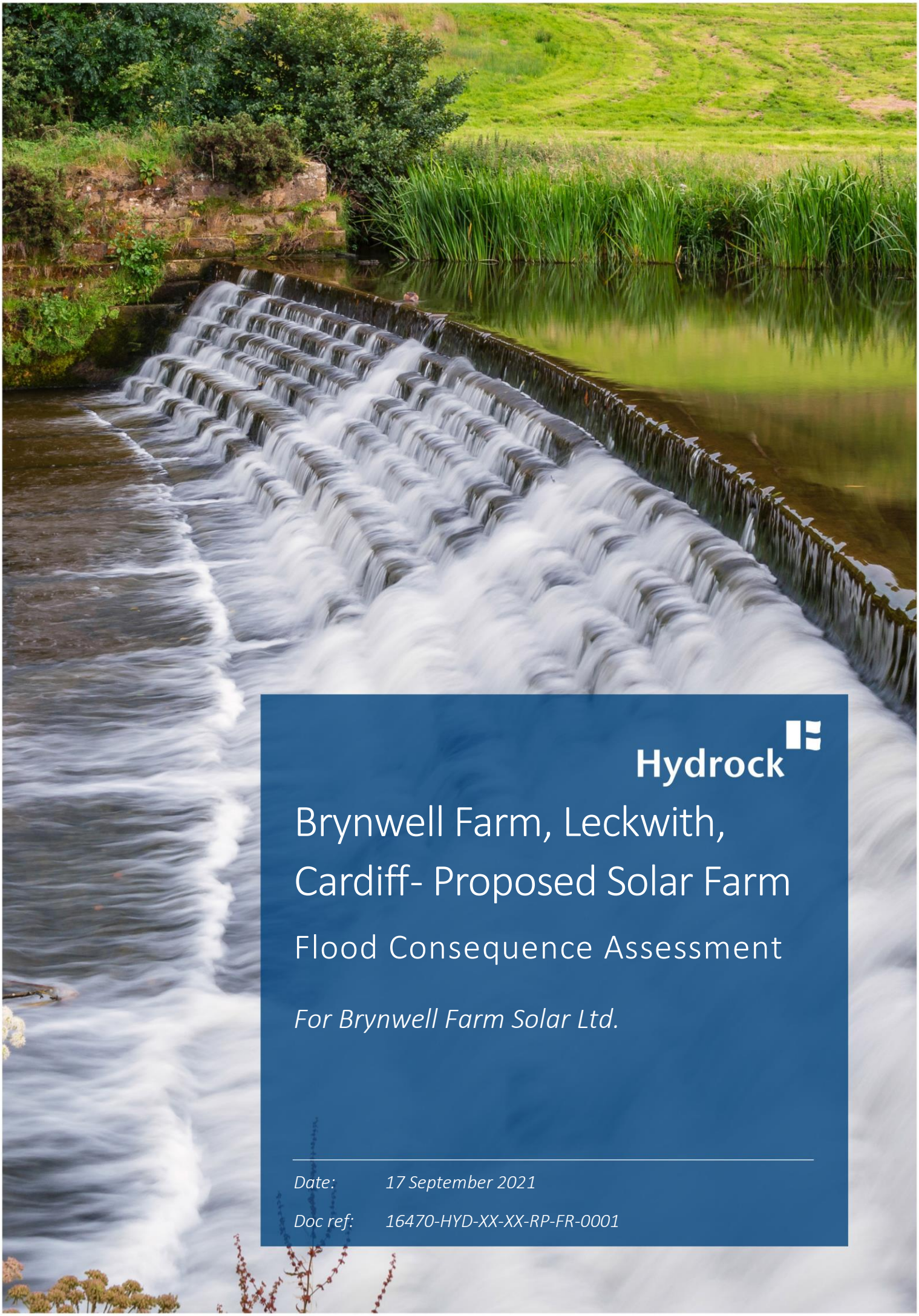

Hydrock

Brynwell Farm, Leckwith, Cardiff- Proposed Solar Farm

Flood Consequence Assessment

For Brynwell Farm Solar Ltd.

Date: *17 September 2021*

Doc ref: *16470-HYD-XX-XX-RP-FR-0001*

DOCUMENT CONTROL SHEET

Issued by	Hydrock Consultants Limited Over Court Barns Over Lane Almondsbury Bristol BS32 4DF United Kingdom	[redacted] www.hydrock.com
Client	Brynwell Farm Solar Ltd.	
Project name	Brynwell Farm, Leckwith, Cardiff - Proposed Solar Farm	
Title	Flood Consequence Assessment	
Doc ref	16470-HYD-XX-XX-RP-FR-0001	
Project no.	C-16470-C	
Status	S2 – For Information	
Date	17/09/2021	

Document Production Record		
Issue Number	P06	Name
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Document Revision Record			
Issue Number	Status	Date	Revision Details
P01	S2	04/09/2020	Initial Issue
P02	S2	25/09/2020	Final
P03	S2	17/02/2021	Updated site layout
P04	S2	02/03/2021	Updated site layout
P05	S2	10/03/2021	Updated section 2.3
P06	S2	17/09/2021	Addressing comments from NRW & VoG

CONTENTS

Figures

Appendices

1. INTRODUCTION

This report has been prepared by Hydrock Consultants Limited on behalf of Brynwell Farm Solar Ltd. in support of a Planning Application to be submitted to Vale of Glamorgan Council for a proposed solar farm at Brynwell Farm, Leckwith, Cardiff.

This Flood Consequence Assessment report has been prepared to address the requirements of Technical Advice Note 15: Development and Flood Risk (TAN15), through:

- Assessing whether the site is likely to be affected by flooding.
- Assessing whether the proposed development is justified in the proposed location.
- Presenting any flood risk mitigation measures necessary to ensure that the proposed development and occupants will be safe, whilst ensuring flood risk is not increased elsewhere.

The report considers the requirements for undertaking a Flood Consequence Assessment as detailed in TAN15.

It is also noted that the Planning Application is to be submitted to the Planning Inspectorate as a Development of National Significance (DNS) Application.

Pre-application engagement has been undertaken and has involved the following scope of activities:

- Pre-application engagement with the Local Planning Authority.
- Preparation of project website hosting plans and providing information.
- Engagement with Parish Councils and Ward Members.

2. SITE INFORMATION

2.1 Location and Setting

The site lies approximately 4.2km to the south-west of the centre of Cardiff, and currently comprises agricultural land separated by hedgerows. The site location plan also indicates a cable route using existing infrastructure and highways leading to the point of connection (POC) located in Leckwith approximately 1.4km to the east of the site.

Agricultural land bounds the site to all boundaries, except to the north where an existing solar farm is located, and Beggan Farm to the south-east corner of the site.

The site has grid reference ST 14459 74816 (at its centre) and post code CF11 8AS.

A site location plan is included in Appendix A.

2.2 Topography

On a broad scale, the site is located on the western slope of a hill, the summit of which is located approximately 0.8km to the east of the site. As such, ground levels generally fall south-westwards across the site.

Two distinct valleys fall to the south-east within the central portion of the site, and parallel to the western site boundary, respectively, before converging and continuing south-westwards.

A LiDAR ground level survey (included in Appendix A) shows ground levels to fall from around 75m AOD in the north-eastern corner of the site, to approximately 48m AOD in the south-western corner.

2.3 Proposed Development

The Planning Application / DNS Application submitted seeks permission for the 'installation of a solar farm comprising ground mounted solar PV panels with a net installed generating capacity (AC) of up to 25MW, including mounting system, battery storage units, inverters, underground cabling, grid connection hub, stock proof fence, CCTV, internal tracks and associated infrastructure, landscaping and environmental enhancements, for a temporary period of 40 years'.

A proposed site layout plan is included in Appendix A.

3. ASSESSMENT OF FLOOD RISK

3.1 Fluvial Flooding

Natural Resources Wales' (NRW's) Flood Zone mapping (Figure 1) and Development Advice mapping (Figure 2) shows the entirety of the main solar farm site and immediate surrounding area to be within Flood Zone 1 (land having a less than 1 in 1,000 annual probability of fluvial flooding) and Zone A (land considered to be at little or no risk of fluvial flooding), respectively.

However, the route of the cable is indicated to cross Zones B, C1 and C2 when crossing the Ely River over Leckwith Bridge and upon reaching the point of connection in Leckwith to the east of the main site.

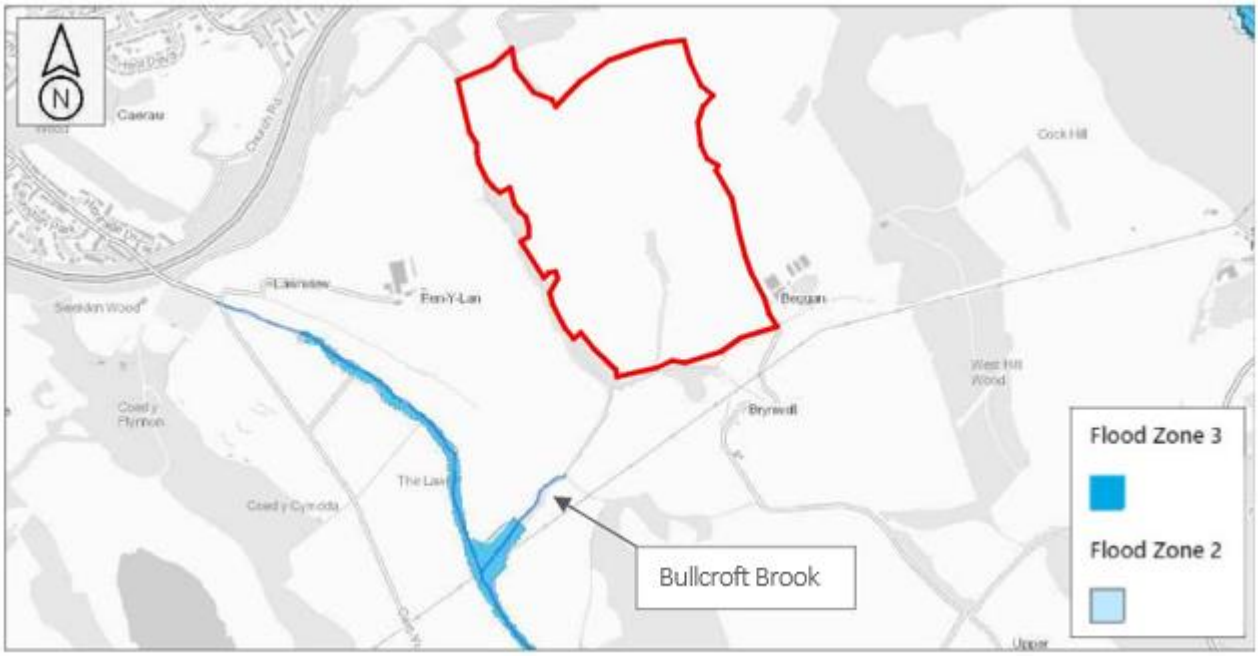


Figure 1. NRW Flood Zone Mapping with Approximate Site Boundary

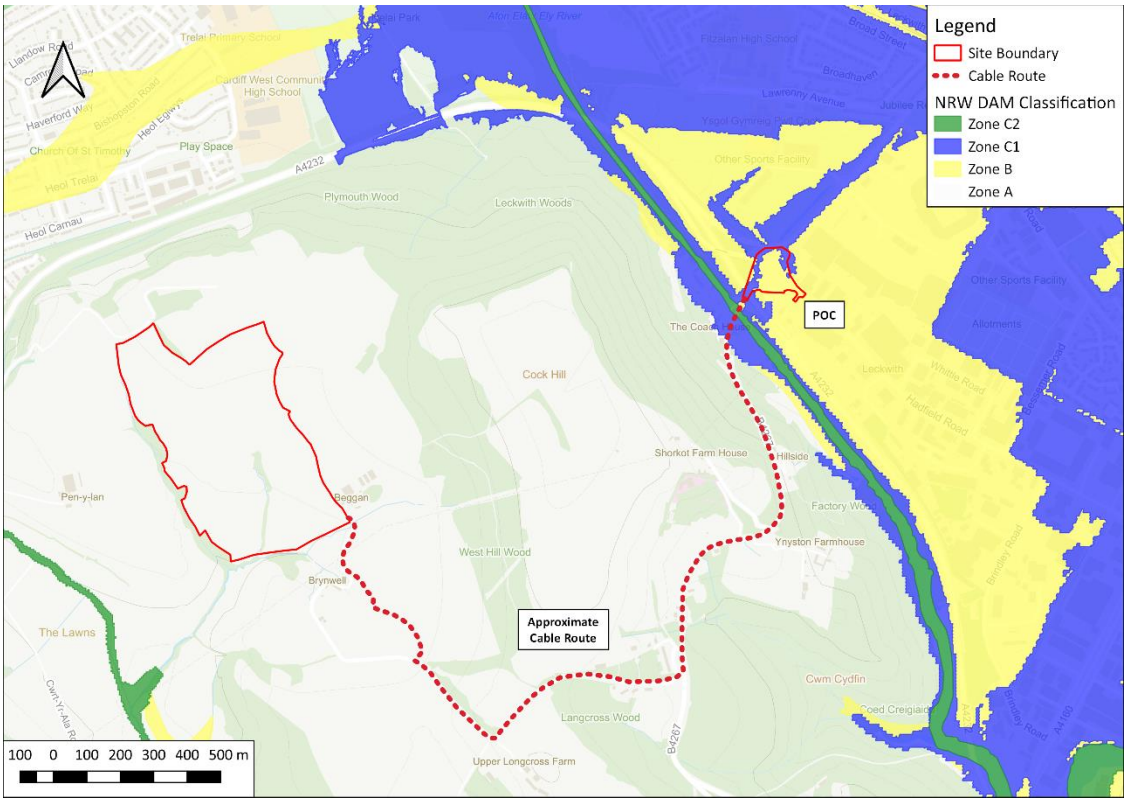


Figure 2. NRW Development Advice Mapping with Approximate Site Boundary and Cable Route

No 'significant' watercourses have been identified within, adjacent or uphill of the site, with the nearest watercourse (the Bullcroft Brook) located downstream of the site to the south-west, and at a lower elevation than existing site ground level.

This spatial and level difference is considered to afford the site a high degree of protection from any 'out-of-bank' flows from the Brook, as evidenced by NRW's Flood Zone mapping and Development Advice mapping.

Whilst the main site is indicated to be at low risk of fluvial flooding, the latest plans indicate the cable route would cross Zone B, C1 and C2 based on latest NRW DAM mapping. Mapping shows the cable to cross over Leckwith Bridge and the Ely River which is a likely source of fluvial flooding within Cardiff City.

As such, the main site is concluded to be at low risk of fluvial flooding however there is an increased risk associated at the POC and therefore mitigation has been provided.

3.2 Tidal Flooding

Given the elevation (minimal site level of around 48m AOD) and location (i.e. around 4.7km from the nearest tidal water body (Severn Estuary)) of the area, the site is concluded to be at negligible risk of tidal flooding.

3.3 Surface Water Flooding

Several ditches are located within and adjacent to the site, principally:

- The upstream headwaters of the Bullcroft Brook, which flows westwards parallel to the southern site boundary.

- The Nant Garw which issues close to the north-western corner of the site and then flows south-eastwards parallel to the western site boundary, before discharging to the Bullcroft Brook at the south-western corner of the site
- An unnamed ditch which issues in the approximate centre of the site and then flows southeastwards through the site, and discharges to the Bullcroft Brook on the site's southern boundary.

The ditches within and adjacent to the site all flow within incised channels/valleys, and consequently any 'out-of-bank' flows are likely to be retained within the valleys immediately adjacent to the ditches, as opposed to resulting in any significant flooding of the site and/or surrounding land. This analysis is supported by NRW's Surface Water and Small Watercourse Flood Risk mapping, as shown in Figure 3, which shows the majority of the site to be at 'very low' risk of surface water/small watercourse flooding, with any potential surface water/small watercourse flooding shown to be contained within the incised valleys immediately adjacent to the ditches.

Noting the permeable nature of existing land uses, and limited catchment area uphill of the site, there is considered to be a minimal risk of significant overland surface water flows being generated within or uphill of the site, with rainfall likely preferentially infiltrating to ground.

In the scenario that the infiltration capacity of the site is exceeded (i.e. as a result of prolonged and/or intense rainfall), any surface water run-off will likely be directed overland south-westwards as shallow 'sheet flow' (based on the sloping topography of the site which will act to direct any overland flows downhill, as opposed to 'ponding' within the site), and into the valleys which fall to the south-east through the approximate centre, and parallel to the western boundary, of the site. Flows will then likely either be conveyed away from the site by the ditches, or continue to flow south-westwards away from the site with the prevailing topography, as opposed to 'ponding' within the site.

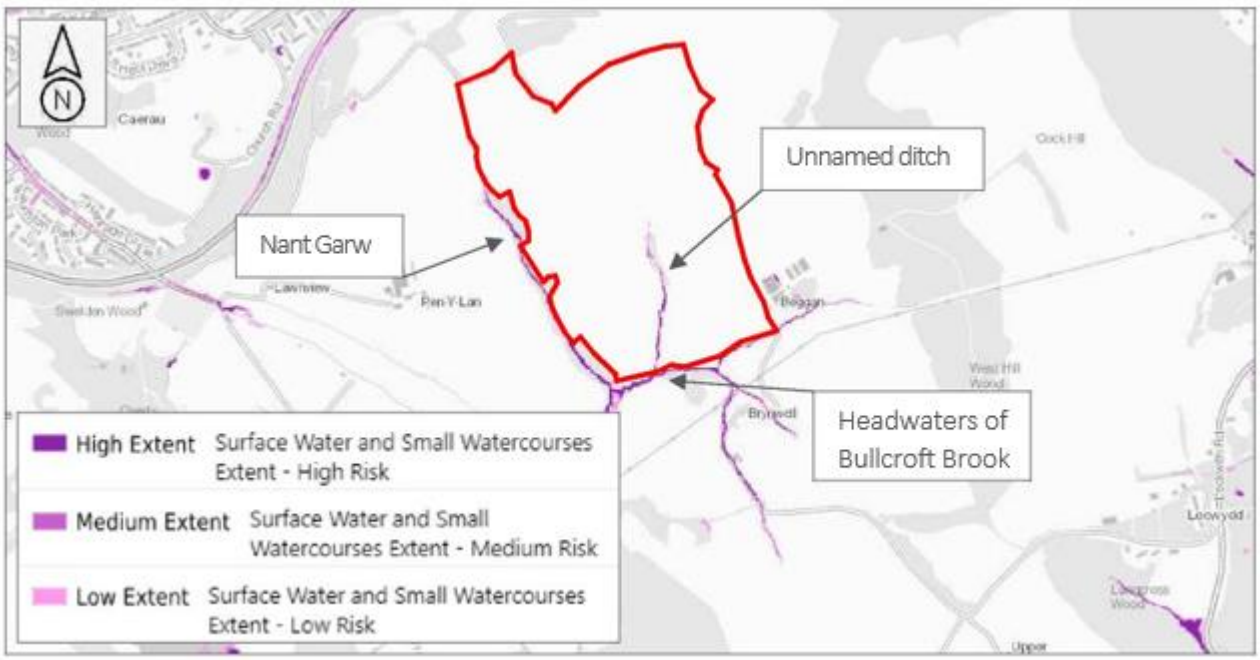


Figure 3. NRW Surface Water and Small Watercourse Flood Risk Mapping with Approximate Site Boundary

As such, whilst the majority of the site is concluded to be at low risk of surface water flooding, land within the valleys within the approximate centre, and parallel to the western boundary, of the site, are concluded to be at risk of surface water flooding.

3.4 Groundwater Flooding

British Geological Survey (BGS) mapping, as shown in Figure 4, shows the entirety of the site to be underlain by a bedrock geology comprising interbedded Mudstone and Limestone of the Blue Anchor Formation (shown green in Figure 4), the Penarth Group (shown brown in Figure 4), and Mary's Well Bay Member (shown light brown in Figure 4).

Figure 4. BGS Mapping with Approximate Site Boundary

The variable permeability of such geology could result in the emergence of groundwater within the site, i.e. where a limestone beds lies atop a layer of mudstone, groundwater could infiltrate through the more permeable limestone geology, before emerging where the geological boundary with the lower permeability mudstone outcrops.

Noting the topography of the site and surrounding area, any groundwater emergence will likely be directed overland as shallow 'sheet flow' towards and within the valleys which fall to the south-east through the approximate centre, and parallel to the western boundary, of the site. Flows will then likely either be conveyed away from the site by the ditches, or continue to flow south-westwards away from the site with the prevailing topography, as opposed to 'ponding' within the site.

As such, whilst there is an identified risk of groundwater emergence within the site, any overland flows

are likely to be concentrated within the valleys within the approximate centre, and parallel to the western boundary, of the site.

3.5 Infrastructure Failure Flooding

Noting the largely undeveloped nature of immediately surrounding/uphill land, it is considered unlikely that there is a significant sewer network present within the vicinity of site, and as such a minimal risk of

surcharged sewer flows being generated within the vicinity of the site and directed onto the site.

No other potential sources of infrastructure failure flooding, such as reservoirs or canals, were identified within the immediate vicinity, or uphill, of the site, and as such the site is concluded to be at negligible risk of infrastructure failure flooding.

3.6 Proposed 'Distribution Network Operator' Site

A proposed 'distribution network operator' ('DNO') compound is located around 0.4km to the southeast of the 'main' site, as shown in the proposed site layout plan included in Appendix A.

NRW's Flood Zone mapping and Development Advice mapping shows the entirety of the 'DNO' site and immediate surrounding area to be within Flood Zone 1 (land having a less than 1 in 1,000 annual probability of fluvial flooding) and Zone A (land considered to be at little or no risk of fluvial flooding), respectively. Furthermore, no watercourses have been identified within, adjacent or uphill of the 'DNO' site.

Similar to the 'main' site, given the elevation and location of the area, the 'DNO' site is likewise concluded to be at negligible risk of tidal flooding.

NRW's Surface Water and Small Watercourse Flood Risk mapping also shows the entirety of the 'DNO' site to be at 'very low' risk of surface water flooding.

Similar geological and surrounding artificial waterbody conditions have also been identified at the 'DNO' site, to those identified at the 'main' site.

As such, the 'DNO' site is concluded to be at low risk of flooding from all sources assessed.

4. TAN15 REQUIREMENTS

4.1 Justifying the Location of the Development

This assessment has demonstrated that the sites ('main' site and 'DNO' site) are on land designated as Zone A by NRW's Development Advice mapping.

Figure 1 of TAN15 states that Zone A is "Used to indicate that Justification Test is not applicable and no need to consider flood risk further".

Section 9 of TAN15 also indicates that all forms of development are 'appropriate' in Zone A without application of the Justification Test.

It is noted that the proposed cabling route crosses into land designated as Zone B, C1 and C2. Whilst proposed development within Zone C1 and C2 should normally be subject to the Justification Test, given that the cable route to the POC is a necessary piece of componentry for the overall solar farm development and would be routed within the existing highway infrastructure and alongside existing transmission utilities it is deemed that this piece of infrastructure would not cause an increase in flood risk to third party land. It is also noted that where the cable crosses Zone C2, it would be routed across Leckwith Bridge and would likely be above any flood event from the Ely River at this location.

Therefore subject to confirmation from the Planning Consultants and Local Planning Authority, the application of the Justification Test is concluded to not be required in this instance

4.2 Mitigation Measures

Whilst a Justification Test is not explicitly required under TAN15, the following section details any measures necessary to mitigate the flood risks identified, to ensure that the proposed development will be safe for its lifetime taking account of the vulnerability of any occupants, without increasing flood risk elsewhere, akin to the requirements of section 'iv' of the Justification Test, as outlined in TAN15.

4.2.1 Resistance and Resilience Measures

A 'sequential approach' to site use has been adopted, through the locating of all proposed more 'flood risk vulnerable' associated infrastructure (i.e. inverter housing and sub-station) within those portions of the 'main' site demonstrated to be at low risk of flooding, i.e. outside of the valleys running through the site.

Whilst proposed photovoltaic panels will be positioned across the 'main' site, the structures will be elevated above ground level approximately 0.85m which will offer a high degree of protection from any potential overland flood flows. Furthermore, the 0.85m clearance is to the bottom of the lower modular frame, so the more 'flood risk vulnerable' electrical connections will be >0.85m above ground level, thereby providing a greater degree of flood resistance.

Furthermore, the proposed layout provides in excess of an 8m stand-off from the ditches (see section 4.2.4), which will ensure that proposed photovoltaic panels will not be sited in portions of the 'main' site where there is a greater risk of potential surface water and groundwater flood risks.

The adoption of such a flood mitigation approach is considered an appropriate and proportionate means of addressing the relatively minor flood risks identified.

Given the low risk of flooding identified at the 'DNO' site, no mitigation measures are considered necessary for proposed infrastructure within the 'DNO' site.

The cable route has been identified as crossing into Zone B and cross areas designated as Zone C1 and C2. The cable will utilise existing highway infrastructure and alongside existing transmission utilities. The cable would not be fluid filled and would be protected within its proprietary housing and enclosed within the highway itself. Power through the cable could also be disconnected remotely in the event of an emergency, including any unexpected flood event

4.2.2 Safe Access and Egress

Given the generally low risk of flooding identified at the 'main' site and 'DNO' site, there should be no need to evacuate the sites.

Regardless, access to the sites will be via the existing surrounding highway network, which is indicated to be at low risk of flooding within the immediate vicinity of the sites, based on NRW's Flood Zone, Development Advice, and Surface Water and Small Watercourse Flood Risk mapping.

The potential overland surface water flow route shown to cross the proposed site access is indicated to be 'low' risk, and therefore is not considered to impede 'safe' access (given that the majority of site vehicles will likely be able to safely drive through shallow depths of floodwater).

As such, safe/dry access and egress is concluded to be possible to and from the site.

4.2.3 Flood Risk within Catchment

On the basis the sites ('main' site and 'DNO' site) have been demonstrated to be at low risk of fluvial flooding, and therefore outside a functioning floodplain, the proposed development is not considered to increase flood risk within the catchment through a loss of fluvial floodplain storage.

However, it is acknowledged that proposed photovoltaic panels will be positioned across the 'main' site, where potential overland surface water and groundwater flood risks have been identified. Nevertheless, as noted in section 4.2.1, the structures will be elevated above ground level approximately 0.85m on a modular frame. Therefore, any shallow (<0.3m) overland surface water and groundwater flood flows will be able to flow unimpeded beneath the proposed panels, between the legs of the proposed modular frame.

The proposed structures are therefore considered to pose no adverse effect on floodplain storage or overland flow routes, and accordingly no further mitigation measures are considered to be required in this respect.

4.2.4 Watercourse Easements

The proposed layout within the 'main' site provides in excess of an 8m stand-off from the ditches (classified as 'Ordinary Watercourses'), which is considered to provide sufficient inspection and maintenance access to the watercourses.

Whilst not anticipated, prior consent will be sought from Vale of Glamorgan Council (in their role as Lead Local Flood Authority) for any works within the channel of the ditches.

5. SURFACE WATER DRAINAGE

5.1 Pre-development

Currently, no positive surface water drainage system serves the 'main' site. Therefore, rainfall will likely preferentially infiltrate to ground (noting the variable nature of the geological conditions at the site (section 3.4)). In the scenario that the infiltration capacity of the site is exceeded (i.e. as a result of prolonged and/or intense rainfall), any surface water run-off will likely be directed overland south-westwards as shallow 'sheet flow', and into the valleys which fall to the south-east through the approximate centre, and parallel to the western boundary, of the site. Flows will then likely either be conveyed away from the site by the ditches, or continue to flow south-westwards away from the site with the prevailing topography, as opposed to 'ponding' within the site.

5.2 Post-development

Whilst a portion of the 'main' site will comprise proposed panels, the remainder of the site area will comprise grassed spacing between rows, field margins, and retained hedgerows. However, the nature of photovoltaic panels means that the area represented by the proposed panels is not considered impermeable, as the ground beneath all panels will be grassed and as such remains permeable. Rainfall will drain freely off the panels onto the ground beneath the panels where the surface remains permeable. Thus, the total surface area of the photovoltaic array is not considered to act as an impermeable area. This is confirmed by the Environment Agency (EA) who, with regard to a similar proposed solar farm site, has previously stated that 'We accept the premise that surface water volumes are unlikely to be exacerbated by the proposed development since the overall impermeable area will not be significantly altered'.

A study on the hydrological implications of solar farms (Cook, L.M. and McCuen, R.H. (2013) 'Hydrologic Response of Solar Farms', Journal of Hydrologic Engineering, 18: 536 - 541) confirmed that solar panels themselves will not have a significant effect on the surface water run-off rate, volume or time to peak from a site. However, the study did identify that the nature of the underlying groundcover can have a demonstrable influence on the surface water run-off characteristics of a site, i.e. if the ground cover beneath panels is proposed as bare earth, peak discharges can increase significantly. As such, it will be ensured as part of this proposed scheme that grass cover will be well-maintained across the site. This practice was identified by the study as ensuring that such proposed schemes will not increase the surface water run-off rate, volume or time to peak compared to the pre-development situation.

Consequently, it is proposed to direct run-off from the panels and the small ancillary structures to discharge directly onto the surrounding ground. Rainfall will continue to preferentially infiltrate to ground, or run-off overland into the valleys/ditches running through and adjacent to the site once the infiltration capacity of the ground has been exceeded, as per the existing situation. Whilst it is accepted that there will be a concentration of run-off from the bottom edge of the panels, any rainwater unable to infiltrate at that point will flow across the ground between the proposed panel rows and beneath the downslope rows and infiltrate there as per the existing 'natural' situation, i.e. the same surface area will be available for infiltration compared to the pre-development situation. This arrangement will ensure that existing drainage patterns will not be altered, and therefore that flood risk is not increased off-site.

To negate any concerns regarding soil compaction during construction and operation, which has the potential to increase surface water run-off, any access tracking and construction compounds will be formed pre-construction using permeable materials (most likely gravel) so as to avoid creating impermeable areas

across the site, and limit ground compaction and hence surface water run-off intensification. Any rainwater falling onto the permeable areas will preferentially infiltrate to ground, or run-off overland into the valleys/ditches running through and adjacent to the site once the infiltration capacity of the ground has been exceeded.

On the basis of the above, the need for runoff calculations or infiltration testing are not deemed necessary due to the negligible change in impermeable land as a result of the development. The impact on the surface water flows is more to do with the movement of these flows through the site, with the key impact being how rainfall flows across the panels and then makes its way onto the existing (and unchanged) permeable surfaces. Any impact on flows will be very localised to the (individual) panels and therefore the runoff rates from the overall site (for which would typically be calculated/assessed) will be unaffected and neither will the flow routing i.e. it will continue to follow existing topography and drainage off site. Consequently, if calculations were to be undertaken this would only confirm 'no impact' and are therefore considered unnecessary.

In summary, the proposed drainage strategy utilises the existing topography and natural drainage regime to ensure that any overland flows, although not increased compared to the existing situation, will be allowed to run-off overland south-westwards as shallow 'sheet flow', and into the valleys which fall to the south-east through the approximate centre, and parallel to the western boundary, of the site. Flows will then likely either be conveyed away from the site by the ditches, or continue to flow southwestwards away from the site with the prevailing topography, as per the existing situation. Assuming that grass cover will be retained across the site (with the exception of the proposed gravelled access tracking and construction compounds), this will therefore maintain the existing hydrological regime, without resulting in any increased volume or intensity of run-off; alteration of catchment drainage patterns; or, unintentional creation of preferential flow paths.

5.3 Proposed 'Distribution Network Operator' Site

Likewise, currently no positive surface water drainage system serves the 'DNO' site. Therefore, rainfall will likely preferentially infiltrate to ground (albeit noting the variable nature of the geological conditions at the site (section 3.6)). In the scenario that the infiltration capacity of the 'DNO' site is exceeded (i.e. as a result of prolonged and/or intense rainfall), any surface water run-off will likely be directed overland north-westwards as shallow 'sheet flow', with the prevailing topography.

The majority of the 'DNO' site will remain permeable / covered with permeable materials (most likely gravel), including the proposed access track serving the compound. Furthermore, given the limited number and relatively small scale of proposed structures, it is intended that surface water run-off from proposed impermeable areas (i.e. structures) within the compound area is to be allowed to run-off onto adjacent land. Noting the geological and topographic conditions, the majority of such run-off is likely to preferentially infiltrate to ground (albeit noting the variable nature of the geological conditions at the site (section 3.6)), with any excess flows directed overland north-westwards. The area immediately downhill of the proposed compound area comprises agricultural land and as such is considered 'insensitive' to any potential additional surface water run-off.

6. CONCLUSIONS

A detailed assessment of flood risk has identified that the entirety of the 'main' site is within Flood Zone 1 / Zone A, with the majority of the site also at low/negligible risk of flooding from all other sources assessed. However, potential surface water and groundwater flood risks have been identified within the base of the valleys running through and adjacent to the site.

The cable route is shown to go through land designated as Zone B, C1 and C2 as it reaches the POC in Leckwith to the east of the main site.

The 'DNO' site is concluded to be at low risk of flooding from all sources assessed.

It is deemed that the cable is a necessary component of the overall developments and by using existing highway infrastructure and following existing transmission utilities through Zone C1 and C2, subject to confirmation by the Planning Consultants and Local Planning Authority, it is concluded the application of the Justification Test is not required in this instance.

In order to address the relatively minor flood risks identified, a ‘sequential approach’ to site use has been adopted, through the locating of all proposed more ‘flood risk vulnerable’ associated infrastructure (i.e. inverter housing and sub-station) within those portions of the 'main' site demonstrated to be at low risk of flooding.

It is also noted that the proposed photovoltaic panels will be elevated above ground level approximately 0.85m which will offer a high degree of protection from any potential overland flood flows. Furthermore, the 0.85m clearance is to the bottom of the lower modular frame, so the more 'flood risk vulnerable' electrical connections will be >0.85m above ground level, thereby providing a greater degree of flood resistance.

Given the low risk of flooding identified at the 'DNO' site, no mitigation measures are considered necessary for proposed infrastructure within the 'DNO' site.

It has also been demonstrated that a means of safe access and egress is possible to and from the sites; and, that the proposed development is not considered to increase flood risk within the catchment through a loss of floodplain storage or impedance of overland flow routes.

The proposed drainage strategy for the 'main' site utilises the existing topography and natural drainage regime to ensure that any overland flows, although not increased compared to the existing situation, will be allowed to run-off overland as shallow 'sheet flow' to the valleys running through and adjacent to the site, as per the existing situation. Assuming that grass cover will be retained across the site (with the exception of the proposed gravelled access tracking and construction compounds), this will therefore maintain the existing hydrological regime, without resulting in any increased volume or intensity of run-off; alteration of catchment drainage patterns; or, unintentional creation of preferential flow paths. It is deemed that the requirement of run off calculations and infiltration testing is not required in this instance given the negligible change to overall site run off rates as a result of the development.

The majority of the proposed 'DNO' site will remain permeable / covered with permeable materials (most likely gravel), including the proposed access track to the compound. Furthermore, given the limited number and relatively small scale of proposed structures, it is intended that surface water run-off from proposed impermeable areas (i.e. structures) within the compound area is to be allowed to run-off onto adjacent land. Noting the geological and topographic conditions, the majority of such run¬off is likely to preferentially infiltrate to ground, with any excess flows directed overland north-westwards. The area

immediately downhill of the proposed compound area comprises agricultural land and as such is considered 'insensitive' to any potential additional surface water run-off.

This report therefore demonstrates that the proposed development of the site with a solar farm:

- Is justified in the location proposed.
- Will be adequately flood resistant and resilient.
- Will not place additional persons at risk of flooding, and will offer a means of safe access and egress.
- Will not increase flood risk elsewhere as a result of the proposed development through the loss of floodplain storage or impedance of flood flows.
- Will put in place measures to ensure surface water is appropriately managed.

As such, the Planning Application / DNS Application are concluded to meet the flood risk requirements of TAN15.

Hydrock Consultants Limited

Appendix A – Site

Reference	Title
20.13_100	Site Location Plan
16470-HYD-XX-XX-DR-FR-0001	LiDAR Topographical Survey
20.13_301	Site Block Plan - Proposed

SITE LOCATION PLAN
Scale 1:5000 @ A1

NOTES

Do not scale from these drawings unless for Planning purposes. Figured dimensions only are to be used.

All dimensions must be checked on site by the contractor prior to the commencement of any fabrication or building works.

Where applicable, dimensions and details are to be read in conjunction with specialist consultants' drawings, any disparity between drawings is to be brought to attention prior to the commencement of any fabrication or building works.

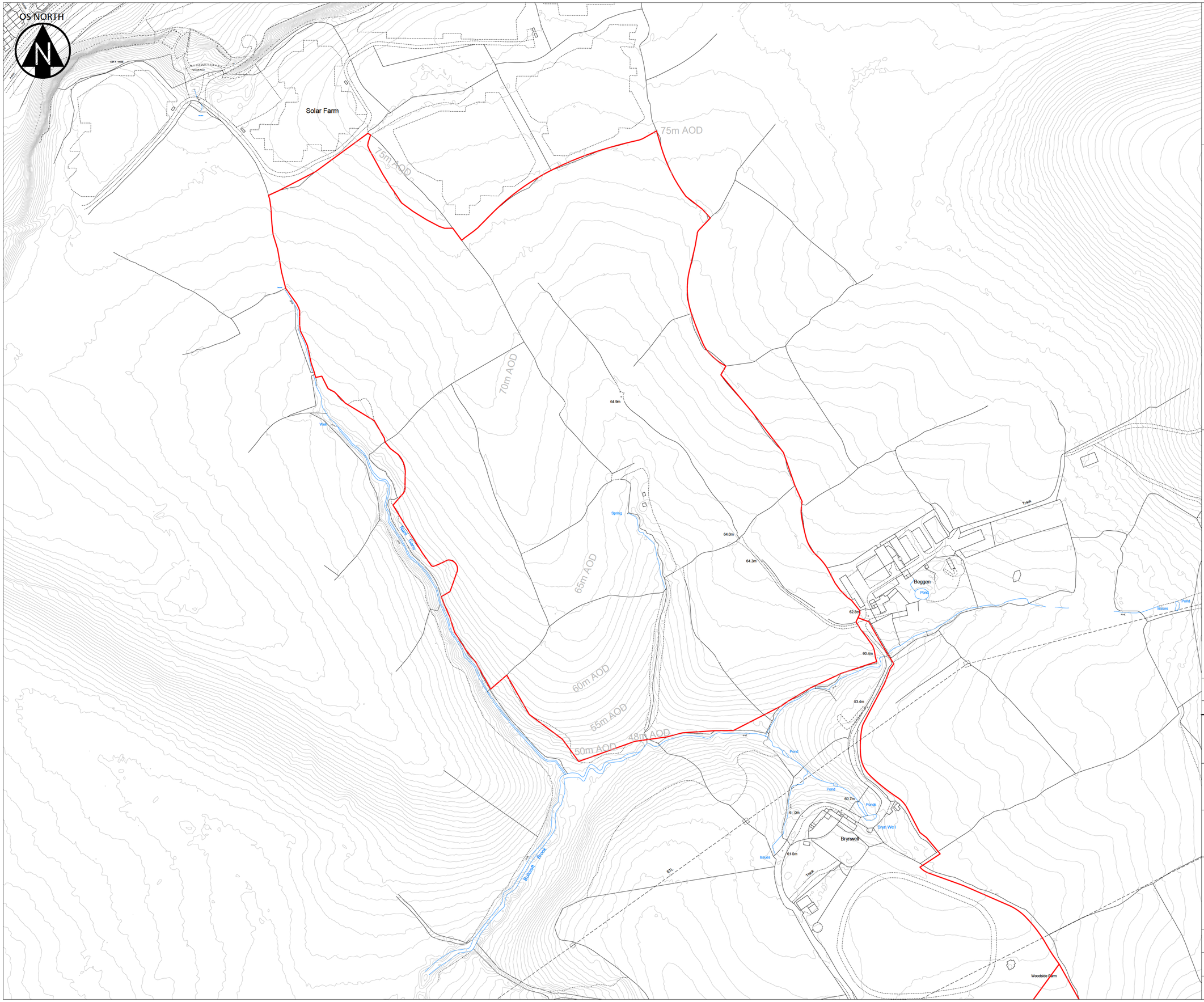
REVISIONS

REV	NOTE	DATE

savills

JOB TITLE		
Proposed Solar Site, Brynwell Farm (DNS)		
CLIENT DETAILS		
Brynwell Farm Solar Ltd		
DRAWING TITLE		
SITE LOCATION PLAN		
SCALE		
1:5000@ A1	0 50m 100m 150m 200m	
DRAWING STATUS	**DRAWING NUMBER**	**REV**
Prelim Planning	2013_100_Internal Issue	
DRAWN	**CHECKED**	**DATE**
PR	PG / NB	08/07/2020

[redacted]



KEY PLAN

NOTES

Contours based on LiDAR data.

REVISIONS

Rev	Date	Description	By	Ckd	App
P01	31/07/20	First Issue.	JC	SM	TS

Hydrock
OVER COURT BARNS
OVER LANE
ALMONDSBURY
BRISTOL
BS32 4DF
[redacted]

CLIENT
BRYNWELL FARM SOLAR LTD.

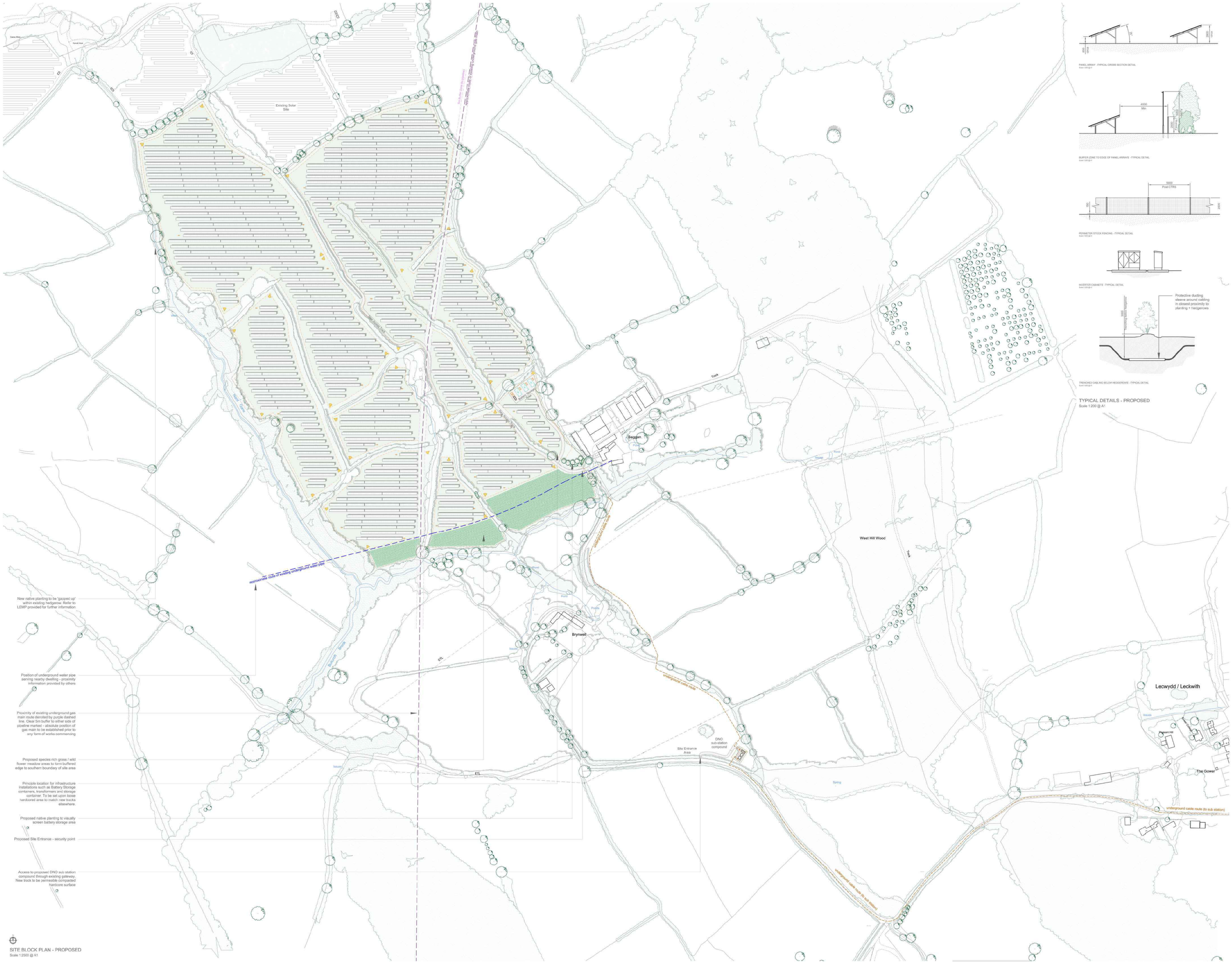
PROJECT
BRYNWELL FARM, LECKWITH, CARDIFF

TITLE
LiDAR TOPOGRAPHICAL SURVEY

HYDROCK PROJECT NO.	SCALE @ A1
C-16470-C	1 : 2,000

STATUS DESCRIPTION	STATUS
INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
16470-HYD-XX-XX-DR-FR-0001	P01



SITE BLOCK PLAN - PROPOSED
Scale 1:2500 @ A1

PANEL ARRAY - TYPICAL CROSS SECTION DETAIL
Scale 1:200 @ A1

BUFFER ZONE TO EDGE OF PANEL ARRAYS - TYPICAL DETAIL
Scale 1:200 @ A1

PERIMETER STOCK FENCING - TYPICAL DETAIL
Scale 1:200 @ A1

INVERTER CABINETS - TYPICAL DETAIL
Scale 1:200 @ A1

TRENCHED CABLING BELOW HEDGEROWS - TYPICAL DETAIL
Scale 1:200 @ A1

TYPICAL DETAILS - PROPOSED
Scale 1:200 @ A1

NOTES

Do not scale from these drawings unless for Planning purposes. Figured dimensions only are to be used.

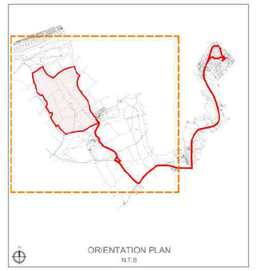
All dimensions must be checked on site by the contractor prior to the commencement of any fabrication or building works.

Where applicable, dimensions and details are to be read in conjunction with specialist consultants' drawings, any disparity between drawings is to be brought to attention prior to the commencement of any fabrication or building works.

REVISIONS

REV	NOTE	DATE
A	Approximate location of existing gas main added. Buffer line altered to accommodate gas main. Amends by CL comments by NB	18/08/2020
B	Underground cable route altered and red line boundary area to DNO compound increased - amends PR comments by NB	12/10/2020
C	Underground water pipe location added, panel arrays reduced, Battery storage area adjusted & species rich grassland areas introduced to south boundary of proposal	16/12/2021
D	Battery storage area relocated & adjusted to suit noise recommendations- comments by NB changes by PR	01/03/2021

- Existing trees to be retained
- Existing vegetation retained
- Grassland to be managed through sheep grazing
- Edge of buffer zone and management tracks - Grass tracks
- Proposed post and wire stock-proof fence
- Proposed solar panels
- Proposed batteries
- Proposedinverters
- Proposed 'gapping up' of hedgerows with native species
- Proposed species rich grassland / wildflower meadow
- Proposed bat boxes
- Proposed bird boxes
- Proposed areas for log piles: for terrestrial refugia to provide sites of shelter for reptile and amphibian species
- Proposed CCTV



ORIENTATION PLAN
N.T.S

savills

JOB TITLE
Proposed Solar Site, Brynwell Farm (DNS)

CLIENT DETAILS
Brynwell Farm Solar Ltd

DRAWING TITLE
SITE BLOCK PLAN - PROPOSED

SCALE
1:2500 @ A1

0 25m 50m 75m 100m

DRAWING STATUS	DRAWING NUMBER	REV
Planning Issue	20.13_301	D

DRAWN	CHECKED	DATE
PR	PG / NB	01/03/2021

[redacted]