

**FLOOD RISK ASSESSMENT & SURFACE WATER DRAINAGE
STRATEGY**

**PROPOSED SOLAR FARM DEVELOPMENT, VARLEY SOLAR
FARM, CROMHALL, SOUTH GLOUCESTERSHIRE**

On behalf of RES Ltd

Date: 09 December 2022 | Pegasus Ref: P22-0915 – Author: Maja Raicevic



Document Management.

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1. INTRODUCTION

Background

- 1.1 Pegasus Planning Group Ltd has been appointed by RES Ltd (herein referred to as “the Applicant”) to undertake a Flood Risk Assessment (FRA) for a proposed Solar Farm development at Cromhall, South Gloucestershire.
- 1.2 This assessment considers the risks of all types of flooding to the site including tidal, fluvial, surface, historic, groundwater, sewer and artificial sources.

National and Local Policies

- 1.3 The National Planning Policy Framework (NPPF) states that a site-specific Flood Risk Assessment (FRA) will be required for proposals:
 - a) that are greater than 1 hectare in area within Flood Zone 1;
 - b) for all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3;
 - c) in an area within Flood Zone 1 which has critical drainage problems; and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.
 - d) in an area within Flood Zone 1 identified in a Strategic Flood Risk Assessment as being at increased flood risk in the future.
 - e) in an area in Flood Zone 1 that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.
- 1.4 The site area is 50.50 hectares in size and has a portion of the site located within Flood Zone 2 and Flood Zone 3a, therefore, a full FRA is required.
- 1.5 As of April 2015, the legislation for dealing with FRAs changed, with additional emphasis put on the use of Sustainable Drainage Systems (SuDS) within drainage schemes for new developments.



- 1.6 In February 2016, the Environment Agency (EA) introduced new guidance relating to climate change allowance, which has increased the percentage rate of change applied to the 1 in 100 year event scenario.
- 1.7 As such, any new application will require a surface water drainage scheme submitted to accompany all planning applications and will be required to demonstrate the use of SuDS within the design and should be in line with the requirements as set out within the National Planning Policy Framework Technical Guidance (NPPFTG).
- 1.8 The key objectives of the South Gloucestershire Council Level 1 Strategic Flood Risk Assessment (November 2021, JBA Consulting) are:
- To provide a robust evidence base to inform the application of the Sequential, and if necessary, Exception Tests for developers and planners.
 - To assess the flood risk to and from the study area from all sources, now and in the future (accounting for climate change).
 - To assess the impact that cumulative land use changes and development in the area will have on flood risk.
 - To identify and provide recommendations on opportunities to reduce the causes and impacts of flooding to existing communities and developments.
 - To identify land usage for flood risk management.
- 1.9 The key objectives of the South Gloucestershire Council Level 2 Strategic Flood Risk Assessment (December 2011, JBA Consulting) are:
- To apply the Sequential and, where necessary, Exception Tests in determining land use allocations;
 - Fully understand flood risk from all sources within its area and also the risks to and from surrounding areas in the same catchment;
 - Inform the Sustainability Appraisal so that flood risk is fully taken account of when considering options and in the preparation of LPA land use policies;



- Prepare appropriate policies for the management of flood risk within LDDs (Local Development Documents);
- Identify the level of detail required for site-specific flood risk assessments in particular locations;
- Determine the acceptability of flood risk in relation to emergency planning capability;

1.10 Pre-app advice shared from the SGDC states:

- The proposal is sited partially within Flood Zones 2 and 3. In accordance with the NPPF Flood Risk vulnerability classification, the proposal is considered to be Essential Infrastructure (solar farms).
- A site specific Flood Risk Assessment will be required. Panels and other equipment within the Flood Zone will need to be raised above the 1 in 100 year flood levels including a 40% allowance for climate change (i.e., the 1 in 100 year event).
- A sequential test will be required to determine whether the site could be located elsewhere within the vicinity of the proposed connection which have a lower risk of flooding. A sequential approach should also be taken in the layout of the site itself, whereby the most vulnerable parts of the development are located in the areas at lowest risk of flooding.
- The developer and maintenance contractor will be expected to sign up to the EA's flood warning service for the local area, to ensure that sufficient warning is provided in the event of an extreme flood.
- A site specific drainage scheme will also be required. Planting could be incorporated within this, to reduce runoff, encourage interception, infiltration and evapotranspiration and provide water quality treatment before surface water enters the watercourses within the site. Proposed planting should also provide sufficient mitigation against soil erosion.



- The exception test will also be required, demonstrating that the development would provide wider sustainability benefits to the community that outweigh the flood risk; and the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

2. EXISTING SITE AND HYDROLOGY

Site Location & Existing Conditions

- 2.1 The site area is 50.50 Ha in size and comprises entirely of greenfield area.
- 2.2 The north side of the site is bounded by undeveloped land, the east side of the site is bounded by undeveloped land and Breedon Wickwar Quarry, the south side of the site is bounded by a field drain ditch and the west side of the site is bounded by undeveloped land and B4058 road beyond.
- 2.3 Approximate site co-ordinates are E: 370491; N:190052, with nearest post code GL12 8AJ.
- 2.4 The Environment Agency flood map shows the northern portion of the site to be lying within Flood Zone 1 (<1 in 1000 probability of flooding) whilst the southern portion is shown to be within Flood Zone 2 (1 in 1000 – 1 in 100 probability of flooding) and Flood Zone 3a (>100 probability of flooding).
- 2.5 A copy of the EA flood map can be found at Section 5 of this report.

Figure 2.1 – Site Location





- 2.6 Levels taken from a topographical survey undertaken by The Azimuth Land Surveys Limited (dated July. 2022. REF: RE 4248-01) indicate that the elevations fall towards the west central portion of the site. The north corner of the site has elevations of 61m AOD, the west side of the site has elevations of 56m AOD, the southern side of the site has elevations of 58m AOD and the east side has elevations of 60m AOD. A copy of this topographical survey can be found in **Appendix A**.

Existing Drainage and Hydrology

- 2.7 There are no main watercourses in the site's vicinity. However, there is a network of field drain ditches running across the site, bounding the site and in the site's surrounding. There are two lakes east of the site related to the Breedon Wickwar Quarry.
- 2.8 The site is currently a greenfield area, therefore it is unlikely that there is an existing drainage network running in the sites surrounding.
- 2.9 Geological data held by the British Geological Survey (BGS) indicates that the bedrock geology underlying the site is a mixture of Mercia Mudstone Group – Mudstone, Siltstone and Sandstone, Oxwich Head Limestone Formation – Limestone ooidal and Cromhall Sandstone Formation – Sandstone. Superficial deposits overlying the site comprise of Aluvium – clay,silt, sand and gravel.
- 2.10 The Soilscape soils data shows the site to be a mixture of 'Slowly permeable seasonally wet acid loamy and clayey soils with impeded drainage' and 'Slightly acid loamy and clayey soils with slightly impeded drainage'.



3. PROPOSED DEVELOPMENT

- 3.1 The proposed development seeks to deliver solar development associated infrastructure (up to 25MW) of energy, offering significant CO₂ savings during the operational life of the scheme.
- 3.2 The solar farm would consist of solar PV panels placed on metal arrays arranged in rows, allowing for boundary landscaping, perimeter fencing and access. The panels will have a maximum height of less than 3.5m.
- 3.3 The site will be accessed from the north side, off the existing Bristol Road, Farleigh Lane to the new access road.
- 3.4 A copy of the proposed site layout can be found in **Appendix B**.



4. DEVELOPMENT VULNERABILITY AND FLOOD ZONE CLASSIFICATION

National Planning Policy Framework (NPPF)

- 4.1 Local Planning Authorities, (LPA) have a statutory obligation to consult the Environment Agency, (EA) on all applications in flood risk zones. The EA will consider the effects of flood risk in accordance with the NPPF.
- 4.2 NPPF requires that, as part of the planning process:
- A 'site specific' Flood Risk Assessment will be undertaken for any site that has a flood risk potential.
 - Flood risk potential is minimised by applying a 'sequential approach' to locating 'vulnerable' land uses.
 - Sustainable drainage systems are used for surface water disposal where practical.
 - Flood risk is managed through the use of flood resilient and resistant techniques.
 - Residual risk is identified and safely managed.
- 4.3 Table 1 of NPPF, categorises flood zones into:
- Zone 1- Low probability (< 1 in 1000 years)
 - Zone 2- Medium probability (1 in 1000 - 1 in 100 years)
 - Zone 3a- High probability (> 1 in 100 years)
 - Zone 3b- The functional floodplain (>1 in 20 years)
- 4.4 The NPPF sets out a matrix indicating the types of development that are acceptable in different Flood Zones (see Table 4.1). The proposed development is a Solar Farm. The development is located in Flood Zone 1, Flood Zone 2 and Flood Zone 3a and therefore, development in this area is considered appropriate.



4.5 NPPF also categorises types of development into Flood Risk Vulnerability groups. A Solar Farm development is classified within the NPPF as being 'Essential Infrastructure'.

Table 4.1 – NPPF Guidance

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test Required	✓	✓	✓
Zone 3a	Exception Test Required	✗	Exception Test Required	Exception Test Required	✓
Zone 3b	Exception Test Required	✗	✗	✗	✓

Exception Test

- 4.6 As set out in the NPPF, for the Exception test to have been passed;
- a) it must be demonstrated that the development provides wider sustainable benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared.



b) the development should be on developable previously developed land, or, if not on previously developable land, that there are no reasonable alternative options on developable previously developed land;

c) a flood risk assessment must demonstrate that the development will be safe, without increasing flood risk elsewhere, and, where possible will reduce flood risk overall.

Based on the above the Exception Test is deemed to have been passed.



5. SITE SPECIFIC FLOODING ISSUES AND EXISTING FLOOD RECORDS

- 5.1 Local Planning Authorities, (LPA) have a statutory obligation to consult the Environment Agency, (EA) on all applications in flood risk zones. The EA will consider the effects of flood risk in accordance with the NPPF.

National Planning Policy Framework (NPPF)

- 5.2 In accordance with the National Planning Policy Framework, this Flood Risk Assessment considers all sources of flooding including:
- a) Tidal Flooding – from sea;
 - b) Fluvial Flooding – from rivers and streams;
 - c) Pluvial Flooding – overland surface water flow and exceedance;
 - d) Historic flooding – known historic flooding issues;
 - e) Groundwater flooding – from elevated groundwater levels or springs;
 - f) Flooding from sewers – exceedance flows from existing sewer systems; and
 - g) Artificial sources – reservoirs, canals etc.

Tidal Flooding

- 5.3 The Environment Agency website provides basic flood mapping data as a general guide to whether a site is at risk of flooding from various sources including rivers and seas for Flood Zoning classification.
- 5.4 This mapping (Figure 5.1) indicates that the northern portion of the site is located within Flood Zone 1 an area with a low probability of flooding occurring (< 1 in 1000 years). However, the southern portion of the site is indicated to be in Flood Zone 2, an area with a medium probability of flooding occurring (1 in 1000 – 1 in 100 years) and Flood Zone 3a, an area with a high probability of flooding occurring (> 1 in 100 years).



5.5 Given the site's inland location and its high elevations (>56m AOD), the risk from tidal source of flooding is considered to be **Low**.

Fluvial Flooding

5.6 There are no main watercourses in the site's vicinity. However, there is a network of field drain ditches running across the site, bounding the site and in the site's surrounding. There are two lakes east of the site related to the Breedon Wickwar Quarry.

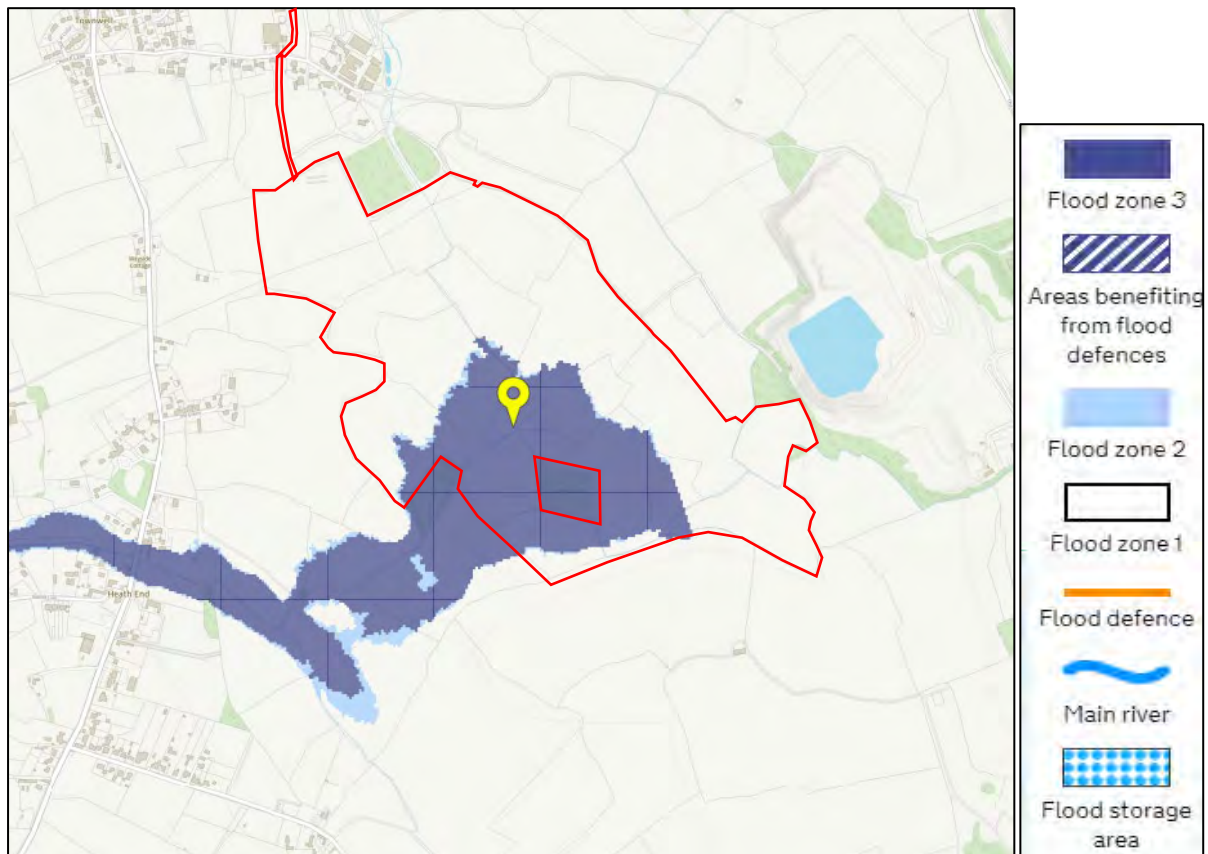
5.7 The field ditches in the west central portion of the site are indicated to be in Flood Zone 3a and the flooding is spreading across the site.

5.8 This mapping (Figure 5.1) indicates that the northern portion of the site is located within Flood Zone 1 an area with a low probability of flooding occurring (< 1 in 1000 years). However, the southern portion of the site is indicated to be in Flood Zone 2, an area with a medium probability of flooding occurring (1 in 1000 – 1 in 100 years) and in Flood Zone 3a, an area with a high probability of flooding occurring (> 1 in 100 years).

5.9 The EA Defra Spatial Map does not make any reference to historical flooding occurring at the site, however there are records of historical flooding near the site's location.

5.10 Given the above Fluvial Flood risk to the site is **High**.

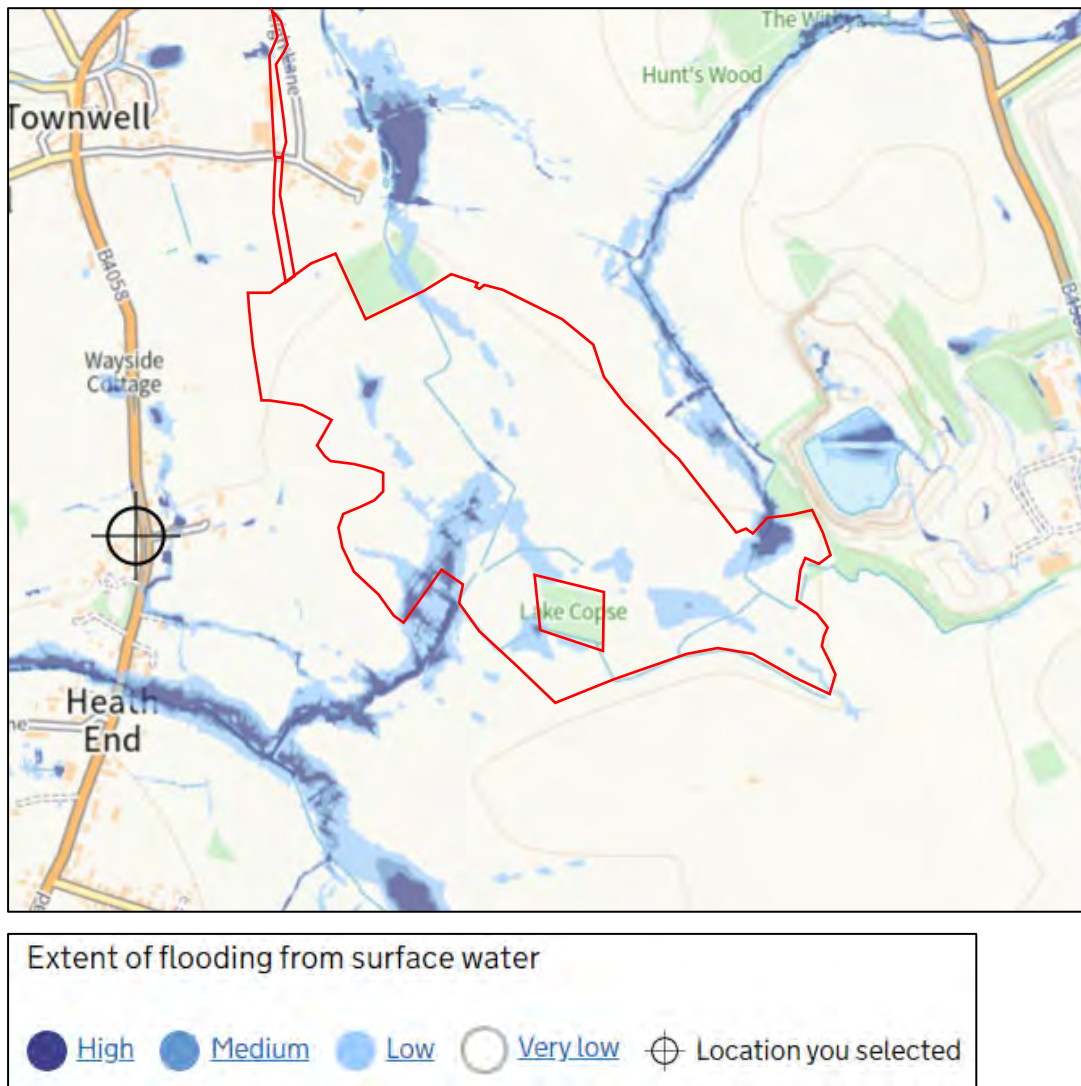
Figure 5.1 – Environment Agency Tidal / Fluvial Flooding Map



Pluvial Flooding

- 5.11 The Surface Water (Pluvial) Flood Map (Figure 5.2) indicates the majority of the site to be at very low risk from surface water flooding. However, the areas around the field drain ditches are indicated to be in low to high risk from surface water flooding. The flood depths range from 300–900mm and flow velocities are over 0.25 m/s.
- 5.12 There are a few isolated ponds across the site, most likely due to locally lower lying topography in that area. They are shown to be in medium to high risk with flood depths from 300–900mm.

Figure 5.2 – Environment Agency Surface Flooding Map



5.13 Therefore, the development is considered to be at **Medium** risk of flooding from surface water flows.

Historic Flooding

5.14 The South Gloucestershire Level 1 Strategic Flood Risk Assessment notes historical flooding in the district.

- 1977 – tidal flooding at Severn Beach resulted in tidal defences being built
- 2000 – flood defences overtopped in Oldbury-on-Severn.



- 2001 – surface water and river flooding in Emersons Green on the Folly Brook as a result of heavy rainfall
- 2009 – high surface water runoff combined with reduced rhine capacity and sewer flooding caused internal flooding of properties in Aust.
- 2011 – significant flooding of an ordinary watercourse tributary of the Stoke Brook in Little Stoke due to poor maintenance.
- Winter 2013/14 – extensive rainfall caused a number of localised flood incidents, the majority associated with main rivers, including the Avon, Frome, and Ladden Brook.

5.15 The South Gloucestershire Level 1 SFRA notes that there has been 1 flood incident in Cromhall between 2000 and 2021.

5.16 The South Gloucestershire Level 1 SFRA does not make any reference of historical flooding occurring at the site.

5.17 It is therefore considered that historic flooding at this site is **Low**.

Groundwater Flooding

5.18 Geological data held by the British Geological Survey (BGS) indicates that the bedrock geology underlying the site is a mixture of Mercia Mudstone Group – Mudstone, Siltstone and Sandstone, Oxwich Head Limestone Formation – Limestone ooidal and Cromhall Sandstone Formation – Sandstone. Superficial deposits overlying the site comprise of Aluvium – clay, silt, sand and gravel.

5.19 The Soilscape soils data shows the site to be a mixture of 'Slowly permeable seasonally wet acid loamy and clayey soils with impeded drainage' and 'Slightly acid loamy and clayey soils with slightly impeded drainage'.

5.20 The South Gloucestershire Level 1 SFRA notes 'The JBA Groundwater Flood Map identifies the majority of South Gloucestershire to be at a negligible risk of groundwater flooding. Localised areas of higher risk are located in the coastal plain near Thornbury, and in the Frome/Ladden Brook catchment between Tytherington and Yate.'



5.21 The South Gloucestershire Level 1 SFRA makes no reference of groundwater flooding occurring at the site.

5.22 It is therefore considered that flooding from this source is **Low**.

Flooding from Sewers

Flooding from Adopted Sewers

5.23 The South Gloucestershire Level 1 SFRA notes that there has been a total number of 4 sewer flood incidents with the postcode: GL12 8 from 2004 to 2020, but does not name the specific locations of the postcode or how severe the flooding was.

Flooding from Private Drainage

5.24 Due to the topography of the surrounding area any flood water from private drainage of the sites surrounding would follow the local topography, draining towards the west central portion of the site.

5.25 The risk of sewer and private drainage flooding to the site is therefore considered to be **Low**.

Flooding from Artificial Sources

5.26 From the EA map there are no reservoirs or canals in the vicinity of the site.

5.27 Therefore, the development is considered to be at **Low** risk of flooding from reservoirs, canals and artificial sources.

Figure 5.3 – Environment Agency Reservoir Flooding Map



Post Development Residual Flood Risk Summary

5.28 The risk of flooding is summarised in Table 5.1:

Table 5.1 – Flood Risk to the Site from All Sources

Flood Source	Flood Risk	Mitigation/Comments
Tidal	Low	<ul style="list-style-type: none"> The site is located in Flood Zone 1, Flood Zone 2 and Flood Zone 3a. However due to the site elevations of >56m and it's inland location tidal risk is low.
Fluvial	High	<ul style="list-style-type: none"> The site is located in Flood Zone 1, Flood Zone 2 and Flood Zone 3a.



Pluvial	Medium	<ul style="list-style-type: none">• The EA flood map shows the site to range from low to high risk from surface water flooding.
Historic	Low	<ul style="list-style-type: none">• The EA Defra Spatial Map makes no reference of historic flooding occurring at the site.• No mitigation measures are required.
Groundwater	Low	<ul style="list-style-type: none">• The site is underlain by Bedrock geology that comprise of a mixture of Mudstone, Siltstone, Sandstone and Limestone.• The soil is noted to be a mixture of 'Slowly permeable seasonally wet acid loamy and clayey soils with impeded drainage and 'Slightly acid loamy and clayey soils with slightly impeded drainage'.
Sewers	Low	<ul style="list-style-type: none">• There are no records of sewer flooding occurring at the site.
Artificial	Low	<ul style="list-style-type: none">• There is no flood risk shown from reservoirs to the site.

Access & Egress

5.29 The site is unmanned and will only be visited for maintenance purposes, therefore in the event of an extreme event occurrence, access and egress to/from the site can be easily achieved to higher parts of the site as necessary.



6. PROPOSED DRAINAGE STRATEGY

Proposed Levels and Flood Resilience

- 6.1 Flood level data was requested from the Environment Agency due to the site being located within Flood Zone 2 and Flood Zone 3a, a copy of the letter and data can be found in **Appendix C**. The flood mapping indicates the site is susceptible to flooding in the 1:1000 year storm event and the 1:100 year storm event, although these events are vastly different the water level is only indicated between 0–500mm of depth, therefore the panels (and any electrical equipment) placed within the Flood Zone 2 and Flood Zone 3a area should be raised out of the ground by around 1m to give clearance between the flood level.

Surface Water Management

- 6.2 The SuDS hierarchy demands that surface water run off should be disposed of as high up the following list as practically possible:

- Into the ground (infiltration) and re-use, or then;
- To a surface water body, or then;
- To a surface water sewer, highway drain or another drainage system, or then;
- To a combined sewer.

- 6.3 In order to determine the most suitable method of surface water disposal from the site the options listed above have been considered as follows:

Infiltration rates

- 6.4 Due to the ground conditions noted in Section 2 of this report, infiltration is not deemed feasible on site, site investigation work will be able to confirm the ground conditions and indicate the unlikelihood of infiltration within the site although considered not necessary for a solar farm development with no hard standing impermeable areas being positively drained.



SuDS selection process

6.5 Various methods of SuDS (Sustainable Drainage Systems) usage should be considered, but different methods have constraints attached to them that may not be suitable for this development. Therefore, an assessment of the suitability of different SuDS techniques have been made, which is summarised in the Table below. Guidance from 'The SuDS manual' C753 has been used to form the basis of this assessment.

Table 6.1 – Assessment of SuDS Suitability

SuDS Technique	Potentially suitable for this development	Justification
Rainwater Harvesting	No	Not appropriate to the proposed development.
Green Roofs	No	Not feasible for the proposed development.
Infiltration Systems (Soakaways, etc.)	No	Infiltration is not likely to be feasible on site.
Filter Drains	No	Infiltration is not considered feasible.
Swales	Yes	Can be used but only for land drainage purposes and the conveyance of overland flows.
Bioretention Systems	No	Not appropriate to the proposed development.



Trees	No	Area is greenfield and very vegetated. No additional tree planting is deemed necessary/appropriate for the development.
Underground storage	No	Not suitable for this development.
Detention basins & ponds	Yes	Provided near to the substation compound area at the north of the site.
Wetlands	No	Due to the nature of the site, this is not considered feasible.
Permeable Paving	Yes	Not traditional block paving but permeable gravel or gravel reinforcement type construction.

Surface Water Drainage Strategy

- 6.6 The surface water drainage design has considered the use of SuDS appropriate to the development and suitable solutions discussed in the previous section.
- 6.7 The site is currently agricultural and drains to the ground, the proposed development would look to do the same and not alter the drainage characteristics of the site. Existing watercourses / field ditches would be remained and be maintained to allow the site to drain naturally.
- 6.8 Any access tracks will be constructed out of gravel or grass reinforcement or would simply be a mown path for vehicles to gain access to panels for maintenance. These techniques would mimic the existing site drainage characteristics and would not increase flooding within or surrounding the development.



- 6.9 Only one area on site will consist of hard standing, being the substation compound, this will have a gully situated within the compound to direct flows into the attenuation feature located to the south, refer to site layout. Flows from the attenuation basin will be conveyed via a swale to the watercourse running through the site to the southwest of the compound.
- 6.10 Minimal flows will be generated by the substation compound, the basin will be designed with a higher outfall to the invert of the basin allowing a pond to occur which may provide benefits to plant life and ecology.

Water Quality

- 6.11 Upon completion, solar farms would not create much pollution from runoff over the panels, and water that comes off the panels would be conveyed across grassland which would provide water quality benefits before making its way either into the ground or into the nearest watercourse / field ditch.

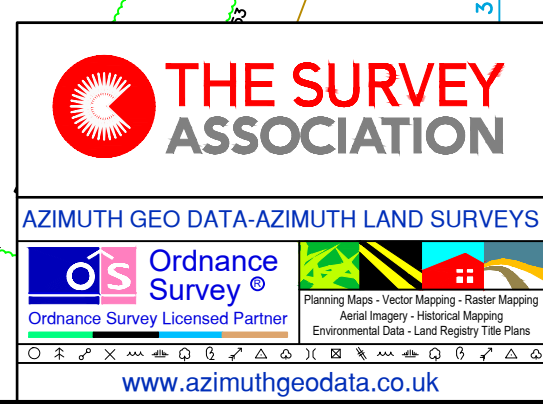
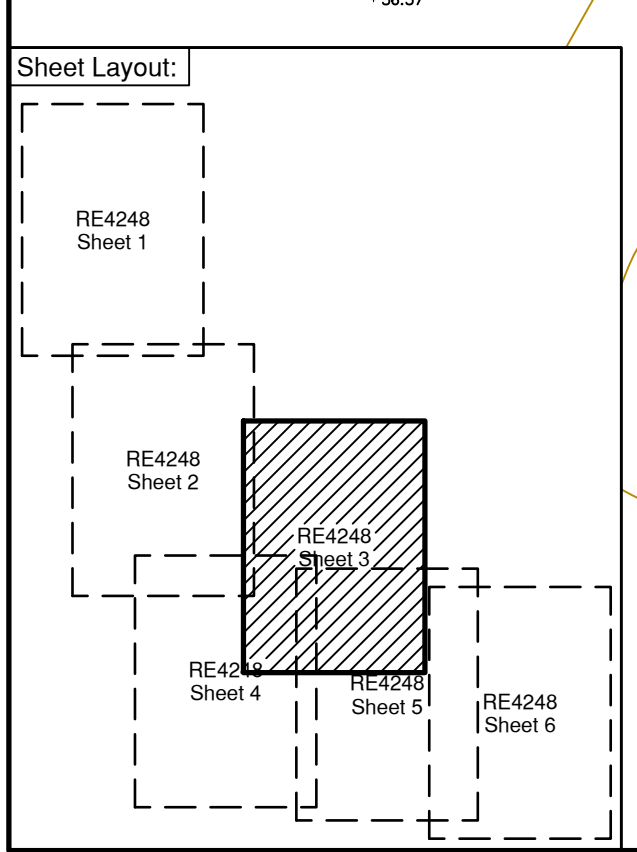
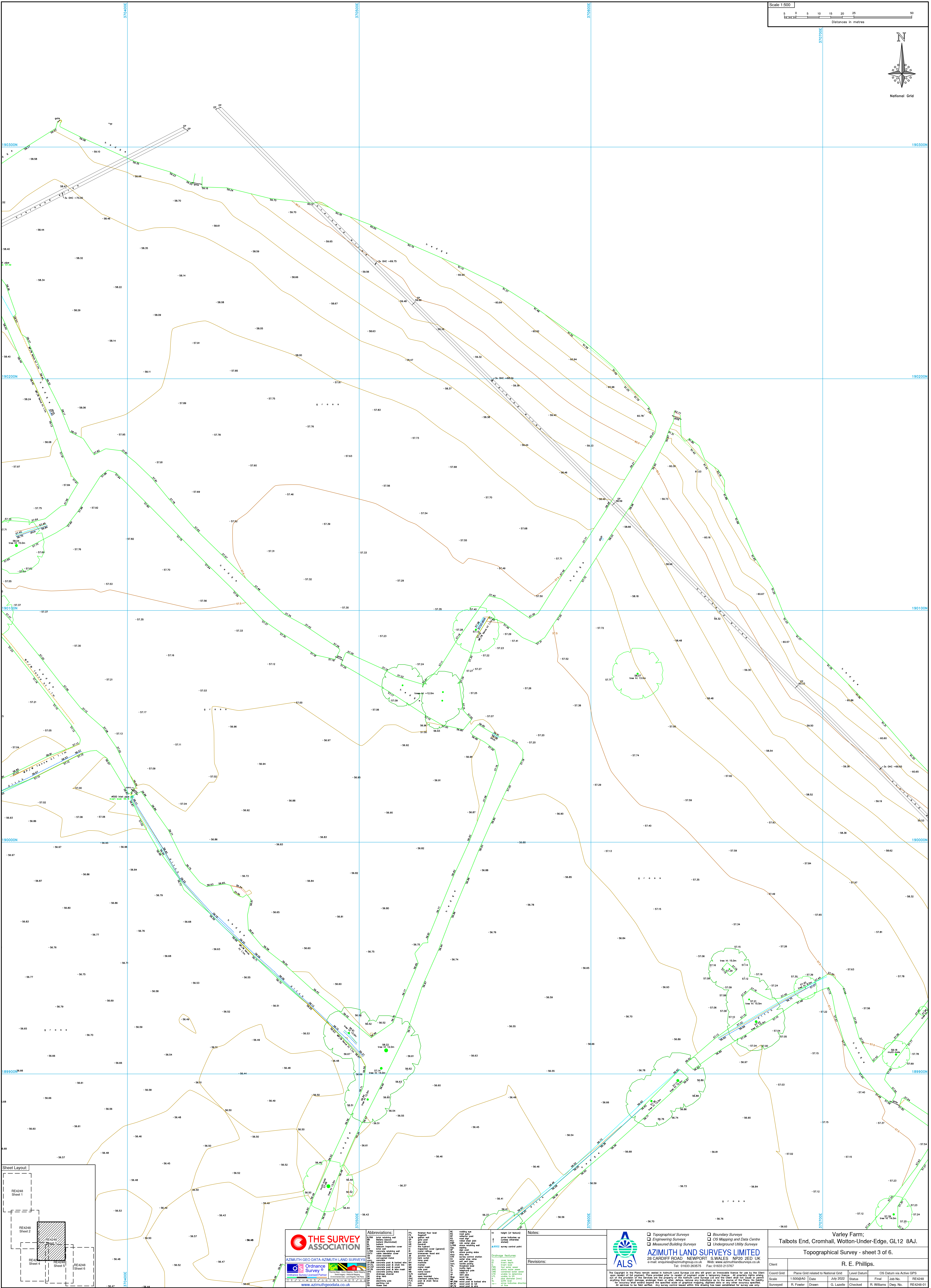
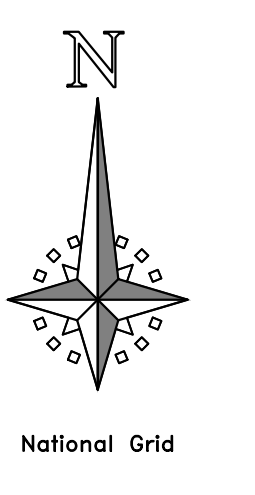
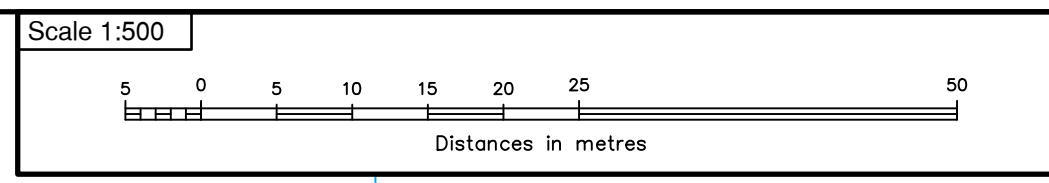


7. SUMMARY

- 7.1 The site area is 50.50 Ha in size and comprises entirely of greenfield area.
- 7.2 The proposed development seeks to deliver solar development associated infrastructure (up to 25MW) of energy, offering significant CO₂ savings during the operational life of the scheme. The site will be accessed from the north side, off the existing Bristol Road, Farleigh Lane to the new access road.
- 7.3 There is deemed to be no increase in flood risk from the proposed development. During times of flooding infrastructure will be installed 500mm above the noted flood data to avoid contact with flood waters.
- 7.4 The proposal is considered to accord with the requirements of the National Planning Policy Framework (NPPF) with residual risk to the site fully mitigated, and as such is considered at low risk.



Appendix A – Topographical Survey



Abbreviations:	Notes:
<p>1. All measurements are in metres unless otherwise stated.</p> <p>2. All bearings are in degrees, minutes and seconds.</p> <p>3. All distances are in metres unless otherwise stated.</p> <p>4. All elevations are in metres above sea level unless otherwise stated.</p> <p>5. All bearings are true bearings unless otherwise stated.</p> <p>6. All distances are horizontal distances unless otherwise stated.</p> <p>7. All elevations are vertical distances unless otherwise stated.</p> <p>8. All bearings are magnetic bearings unless otherwise stated.</p> <p>9. All distances are slant distances unless otherwise stated.</p> <p>10. All elevations are reduced elevations unless otherwise stated.</p>	<p>1. All measurements are in metres unless otherwise stated.</p> <p>2. All bearings are in degrees, minutes and seconds.</p> <p>3. All distances are in metres unless otherwise stated.</p> <p>4. All elevations are in metres above sea level unless otherwise stated.</p> <p>5. All bearings are true bearings unless otherwise stated.</p> <p>6. All distances are horizontal distances unless otherwise stated.</p> <p>7. All elevations are vertical distances unless otherwise stated.</p> <p>8. All bearings are magnetic bearings unless otherwise stated.</p> <p>9. All distances are slant distances unless otherwise stated.</p> <p>10. All elevations are reduced elevations unless otherwise stated.</p>

ALS

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<p>Varley Farm; Talbots End, Cromhall, Wotton-Under-Edge, GL12 8AJ.</p> <p>Topographical Survey - sheet 3 of 6.</p>	
<p>R. E. Phillips.</p>	
Client:	R. E. Phillips.
Scale:	1:500 (A3)
Date:	July 2022
Status:	Final
Job No.:	RE4248
Drawn:	G. Llewellyn
Checked:	R. Williams
Drawn by:	R. Williams
Drawn No.:	RE4248-01



Appendix B – Site Plan

- KEY:**
- DEVELOPMENT BOUNDARY
(OUTSIDE EDGE OF LINE DENOTES BOUNDARY)
 - NEW ACCESS TRACK
 - EXISTING ACCESS TRACK
 - PUBLIC RIGHTS OF WAY (PROW)
 - INDICATIVE SOLAR PV ARRAY
 - INVERTER
 - INVERTER HARDSTAND
 - SUBSTATION COMPOUND
 - SPARES CONTAINERS
 - TEMPORARY CONSTRUCTION COMPOUND
 - FENCE LINE
 - GATE (FENCE)
 - WATERCOURSE CROSSING
 - CCTV
 - SHEEP PEN
 - SURFACE WATER ATTENUATION
 - EXISTING PV SOLAR ARRAY



SITE LOCATION - NOT TO SCALE

2	FG	VM	BD	2022-11-04	Minor update
1	FG	VM	BD	2022-11-03	First Issue
ISSUE	DRAWN	CHKD	APPD	DATE	REVISION NOTES

PURPOSE	PERMITTING	PROJECTION	OSGB 1936
SCALE	1:5,000 @A3	DATUM	N/A
LAYOUT DRAWING	N/A	T-LAYOUT NO	N/A

PROJECT TITLE
VARLEY FARM SOLAR

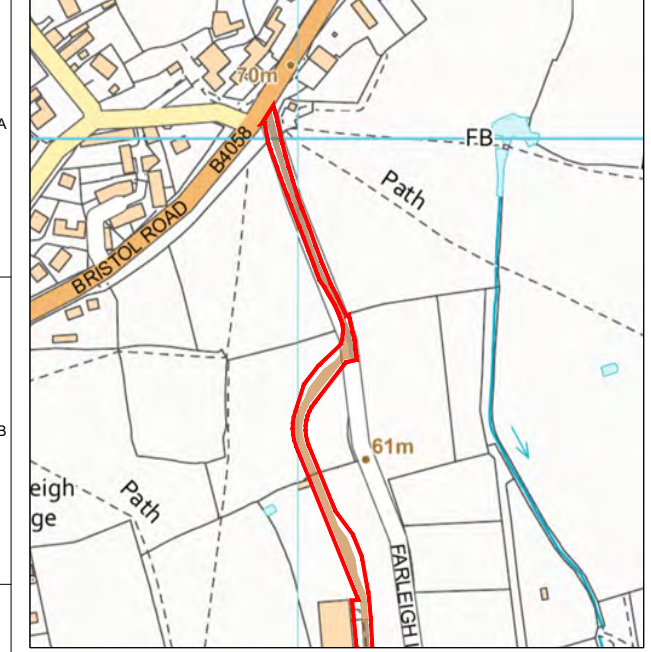
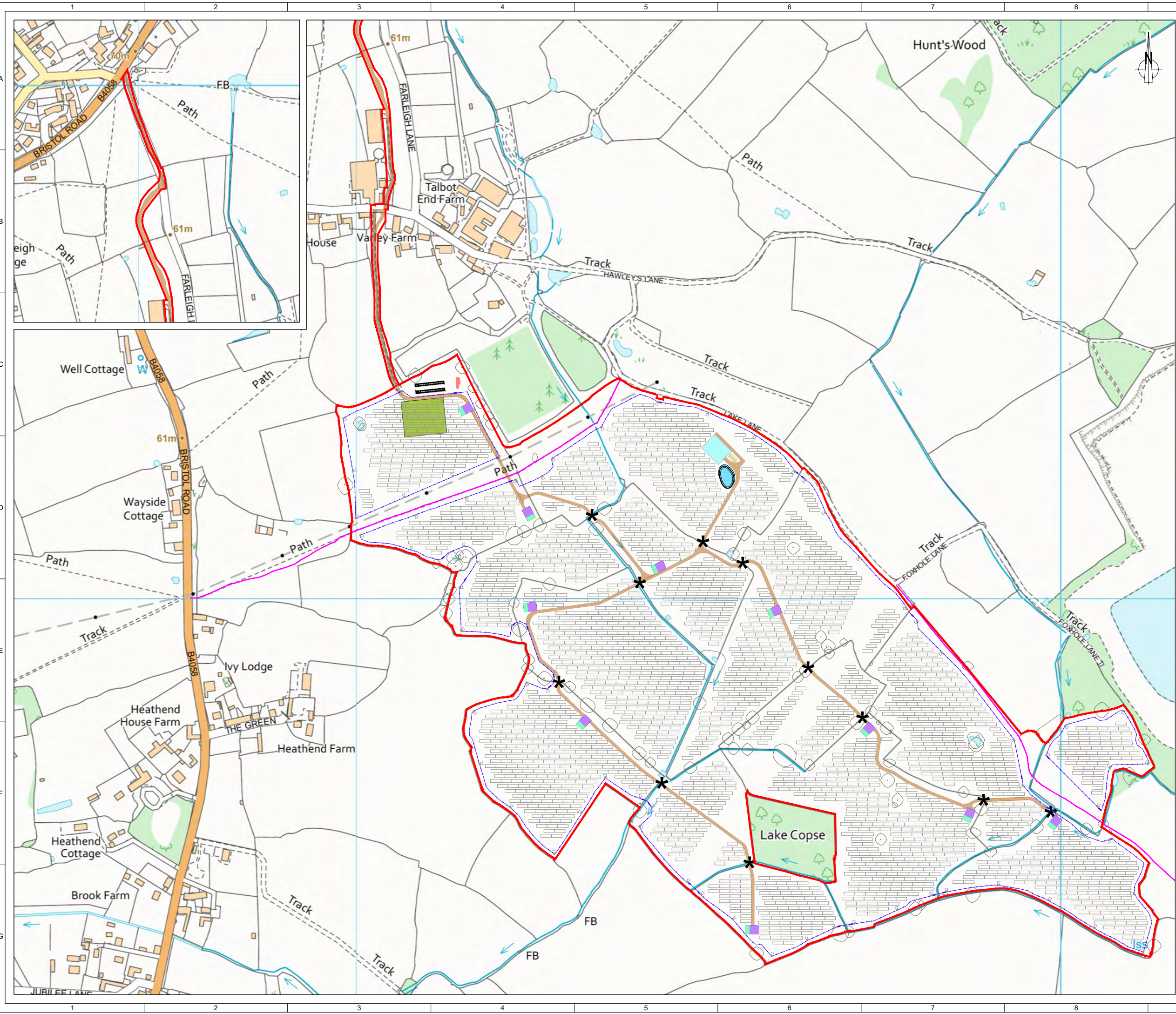
DRAWING TITLE
**FIGURE 4
INFRASTRUCTURE LAYOUT**

RES DRAWING NUMBER	04886-RES-LAY-DR-PT-003	REV	2
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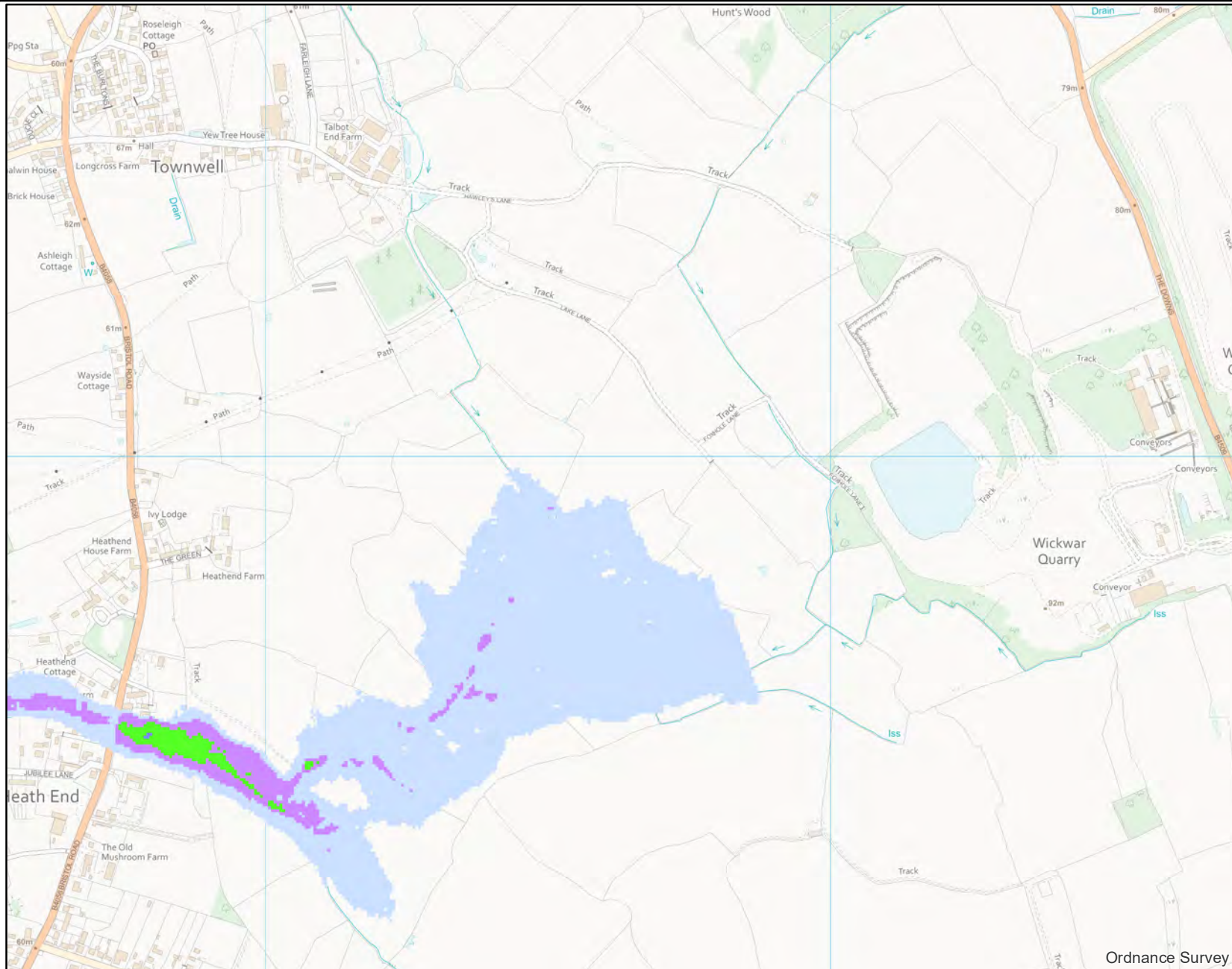
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Appendix C – Environment Agency Flood Level Data

267557-WX - JFLOW Fluvial Water depths (m) Without Flood Defences. 1000 year (0.1% AEP)
centred on land at [370633,189943]. Created 29.09.2022



Scale 1:10,000



Legend

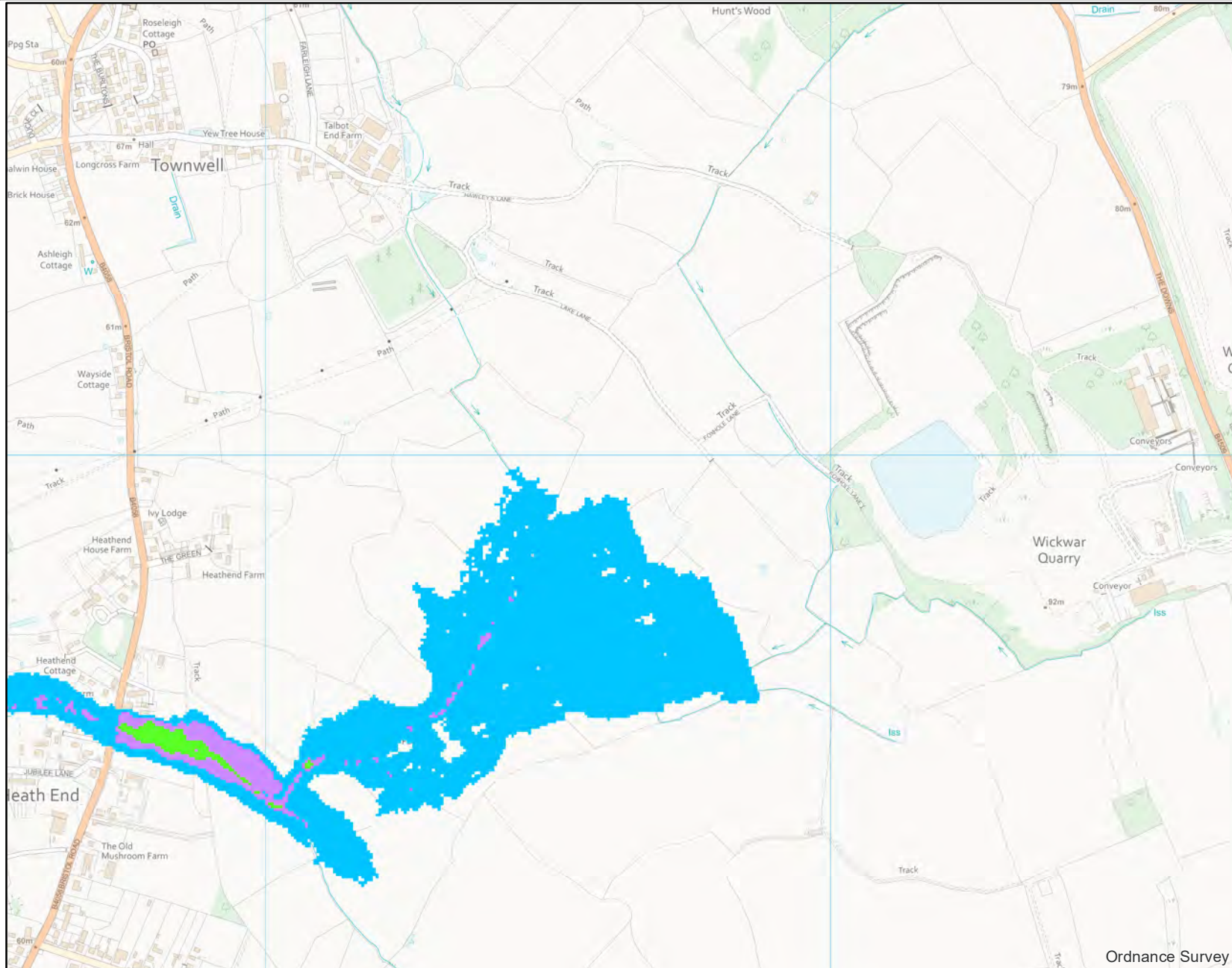
1000yr JFLOW Depth metres

- 0 - 0.5
- 0.51 - 1
- 1.1 - 2
- 2.1 - 3
- 3.1 - 4
- 4.1 - 5
- 5.1 - 10
- 10.1 - 100
- Main River

Information Warning

We do not recommend the use of water depths/levels derived from JFLOW for site specific investigations such as Flood Risk Assessments.

267557-WX - JFLOW Fluvial Water depths (m) Without Flood Defences. 100 year (1% AEP)
centred on land at [370633,189943]. Created 29.09.2022



Scale 1:10,000



Legend

100yr JFLOW Depth metres

- 0 - 0.5
- 0.51 - 1
- 1.1 - 2
- 2.1 - 3
- 3.1 - 4
- 4.1 - 5
- 5.1 - 10
- 10.1 - 100
- Main River

Information Warning

We do not recommend the use of water depths/levels derived from JFLOW for site specific investigations such as Flood Risk Assessments.

Expertly Done.

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