

PAP/2023/0071



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Enviromena Project Management UK
Limited
Nailcote Farm
Warwickshire
Flood Risk Assessment

NORTH WARWICKSHIRE
BOROUGH COUNCIL

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**PLANNING & DEVELOPMENT
DIVISION**

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EXECUTIVE SUMMARY

This Flood Risk Assessment (FRA) has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance (PPG). It has been produced on behalf of Enviromena Project Management UK Limited in respect of a planning application for a proposed temporary solar farm at Nailcote Farm, Warwickshire. This report demonstrates that the proposed development is at an acceptable level of flood risk subject to the recommended flood mitigation strategies being implemented.

It is understood that this FRA (dated November 2023) will be resubmitted to the live planning application "PAP/2023/0071". Therefore, the flood risk guidance at the time of the planning application validation (24/02/2023) has been used within this updated FRA.

The Site is located wholly within Flood Zone 1 (Low Probability). However, extents of Flood Zone 2 and 3 are shown adjacent to the northwest Site boundary, associated with Bourne Brook. Bourne Brook and an Unnamed Ordinary Watercourse (UOW) cross the site from the southern boundary to the northern boundary and from the southern boundary to the eastern boundary respectively. Within the Site there are several ditches; these outfall into either the Bourne Brook or UOW, with the exception of the ditch located at the centre of the Site which has no visible connectivity.

These UOWs are not included within the Environment Agency's (EA) Flood Map for Planning due to their small catchment size (i.e., < 3km²), therefore EA surface water flood mapping has been used to indicate the potential floodplain extents associated with the UOWs.

The development should be set back an appropriate from the top of bank from Bourne Brook, the UOW and all ditches, in accordance with local guidance.

It is recommended that all ancillary equipment is raised 150mm above the external ground level to discourage water ingress. External levels adjacent to the ancillary equipment should be profiled away from the equipment to provide further mitigation against the residual risk of flooding.

Other flood risk sources such as sewer, groundwater and reservoirs have also been assessed and are considered to pose a low risk to the site.

A more detailed surface water drainage strategy has been produced to accompany this report. In compliance with the requirements of NPPF, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the site.

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1. INTRODUCTION

- 1.1 This Flood Risk Assessment (FRA) has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Enviromena Project Management UK Limited in respect of a planning application for a proposed temporary solar farm at Nailcote Farm, Warwickshire.
- 1.2 This FRA is intended to support a full planning application (PAP/2023/0071), the level of detail included is commensurate and subject to the nature of the proposals at the planning stage. Summary information is included as **Table 1.1**.
- 1.3 It is understood that this FRA (dated November 2023) will be resubmitted to the live planning application "PAP/2023/0071". Therefore, the flood risk guidance at the time of the planning application validation (24/02/2023) will be used within this updated FRA.

Table 1.1: Site Summary

Site Name	Nailcote Farm
Location	Warwickshire
NGR (approx.)	SP 275 860
Application Site Area (ha)	62.2 (Approx.)
Development Type	Solar Farm
Flood Zone Classification	Flood Zone 1
NPPF Vulnerability	Essential Infrastructure
Anticipated Development Lifetime	40 years
Environment Agency Office	West Midlands
Lead Local Flood Authority	Warwickshire County Council
Local Planning Authority	North Warwickshire Borough Council
Planning Application	PAP/2023/0071

Sources of Data

- Topographical Survey by BWB Consulting, reference NFW-BWB-00-ZZ-M2-G-001
- OS Explorer Series mapping
- Warwickshire County City Council Consultation

- iv. Environment Agency (EA) Risk of Flooding from Surface Water Data
- v. Warwickshire County Council Strategic Flood Risk Assessment
- vi. Warwickshire County Council Preliminary Flood Risk Assessment
- vii. North Warwickshire Borough Council Local Plan
- viii. Ground Investigations undertaken by DUNELM Geotechnical & Environmental (reference: D10836)
- ix. British Geological Survey Drift & Geology Maps

Existing Site

- 1.4 The Site is located approximately 785m south-west of Fillongley and 9km northwest of Coventry city centre. The Site's location is illustrated within **Figure 1.1**.

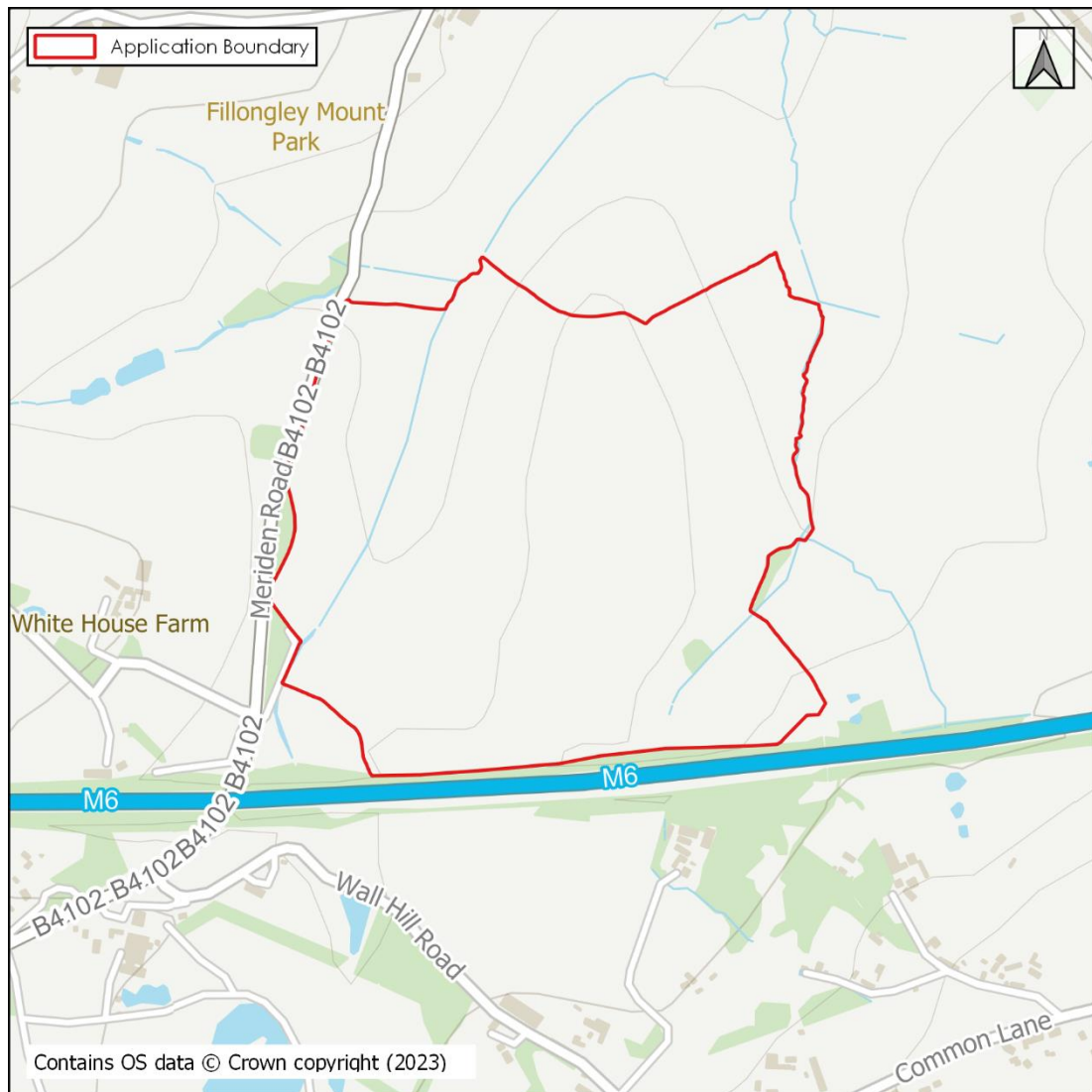


Figure 1.1: Site Location

- 1.5 The existing Site access is via a dirt track off Meriden Road (B4102). The Site is bound to the north by agricultural fields, to the east by further agricultural fields and an unnamed ordinary watercourse (UOW) to the east. The southern boundary of the Site is bound by the M6 motorway and Fillongley Shooting Club, the west of the Site is bound by Meriden Road (B4102).
- 1.6 Within the Site there is the UOW along the east boundary, as well as Bourne Brook which cuts through the west of the Site on a south to north axis and exits along the northern boundary.
- 1.7 A topographical Survey (**Appendix 1**) shows the levels within the Site to undulate; however, the Site generally falls from the high points located at the centre of the Site towards the southern boundary and the ditches located within the Site to the east and west. The levels at the Site range from the highest point at approximately 148.7m Above Ordnance Datum (AOD) in the southern centre of the Site to approximately 122.3m AOD in the northeast Site corner.
- 1.8 The existing Site access levels range from 132.7m AOD to 133.6m AOD.

Proposed Development

- 1.9 The proposed development is for the construction of a temporary Solar Farm, to include the installation of ground-mounted solar panels together with associated works, equipment and necessary infrastructure.
- 1.10 The existing access road will remain unchanged.
- 1.11 A proposed development plan is presented in **Appendix 2**.

2. FLOOD RISK PLANNING POLICY & GUIDANCE

National Planning Policy Framework

- 2.1 The NPPF¹ sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance (PPG) is also available online².
- 2.2 The PPG sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.
- 2.3 The PPG also states that alternative sources of flooding, other than fluvial (river flooding), should be considered when preparing an FRA.
- 2.4 The PPG includes a series of tables that define Flood Zones (Table 1), the flood risk vulnerability classification of development land uses (Table 2) and 'compatibility' of development within the defined Flood Zones (Table 3).
- 2.5 This FRA is written in accordance with the NPPF and the PPG.

Flood Map for Planning

- 2.6 With particular reference to planning and development, the Flood Map for Planning identifies Flood Zones in accordance with Table 1 of the Planning Practice Guidance. Further details on the Flood Zone classifications are outlined in **Table 2.1**.

Table 2.1: Flood Zone Classifications

Flood Zone	Description
Flood Zone 1 (Low Probability)	Land having less than a 1 in 1000 annual probability of river or sea flooding (<0.1% Annual Exceedance Probability). All land outside of Flood Zone 2 and 3.
Flood Zone 2 (Medium Probability)	Land having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1% AEP); or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1% AEP).
Flood Zone 3a (High Probability)	Land having a 1 in 100 or greater annual probability of river flooding (>1% AEP); or land having a 1 in 200 or greater annual probability of flooding from the sea (>0.5% AEP). This is represented by "Flood Zone 3" on the Flood Map for Planning.
Flood Zone 3b (The Functional Floodplain)	Flood Zone 3b (The Functional Floodplain) is defined as land where water must flow or be stored in times of flood. This is not identified or separately distinguished from Zone 3a on the Flood Map for Planning.

¹ Revised National Planning Policy Framework, Ministry of Housing, Communities & Local Government, amended 2021

² Planning Practice Guidance: <https://www.gov.uk/government/collections/planning-practice-guidance>

2.7 The site is shown to be located entirely within Flood Zone 1, as shown in **Figure 2.1**.

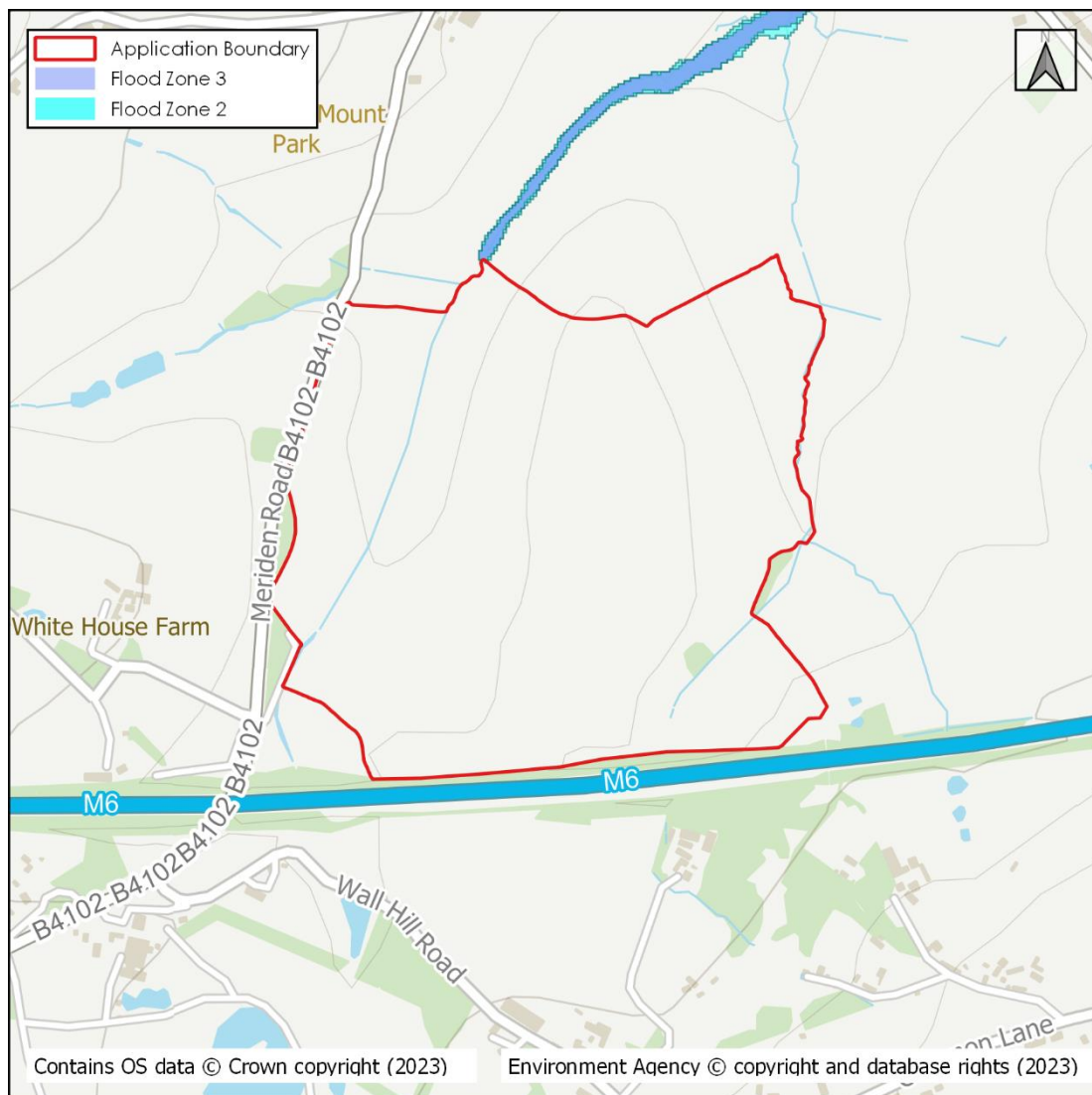


Figure 2.1: Flood Map for Planning

The Design Flood

- 2.8 The PPG identifies that new developments should be designed to provide adequate flood risk management, mitigation, and resilience against the 'design flood' for their lifetime.
- 2.9 This is a flood event of a given annual flood probability, which is generally taken as fluvial (river) and surface water (pluvial) flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year), or tidal flooding with a 0.5% annual probability (1 in 200 chance each year), against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.

Climate Change

Peak River Flow

- 2.10 Predicted future changes in peak river flows caused by climate change are provided by the EA³, with a range of projections applied to regionalised 'River Basin Districts', which are further subdivided into Management Catchments.
- 2.11 The Site falls within the Tame Anker and Mease Management Catchment of the Humber River Basin District. **Table 2.2** identifies the relevant peak river flow climate change allowances from this Management Catchment.

Table 2.2: Peak River Flow Climate Change Allowances for the Tame Anker and Mease Management Catchment within the Humber River Basin District

Allowance Category	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2125)
Upper End	24%	30%	51%
Higher Central	15%	17%	30%
Central	10%	11%	22%

- 2.12 When determining the appropriate allowance for use in a FRA the Flood Zone classification, flood risk vulnerability and the anticipated lifespan of the development should be considered. **Table 2.3** provides a matrix summarising the EA's guidance on determining the appropriate allowance(s).

Table 2.3: Application of Appropriate Peak River Flow Climate Change Allowances

Flood Zone	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	Use the central allowance where a location may fall within Flood Zone 2 or 3 in the future.				
2	Use the higher central allowance	Use the central allowance			
3a	Use the higher central allowance	Development should not be permitted	Use the central allowance		
3b	Use the higher central allowance	Development should not be permitted			Use the central allowance

³ Environment Agency, Flood risk assessments: climate change allowances: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>. Last Accessed January 2023.

Flood Zone	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
If development is considered appropriate by the local authority when not in accordance with Flood Zone vulnerability categories, then it would be appropriate to use the higher central allowance.					

2.13 The site is located entirely within Flood Zone 1, the proposed development is classified as essential infrastructure, and it has an anticipated lifespan of 40 years. Therefore, the Central allowance for the 2050s epoch will be considered.

2.14 Therefore, to ensure the development is designed adequately for its lifetime an allowance of 11% will be applied to the design flood to identify minimum development levels.

Peak Rainfall

2.15 Predicted future changes in peak rainfall intensity caused by climate change are provided by the EA⁴, with a range of projections applied to River Basin District Management Catchments.

2.16 The site falls within the Tame Anker and Mease Management Catchment. **Table 2.4** identifies the relevant peak rainfall climate change allowances from this Management Catchment.

Table 2.4: Peak Rainfall Climate Change Allowances for the Tame Anker and Mease Management Catchment

Tame Anker and Mease Management Catchment Allowance	Total Potential Change Anticipated for the '2050s' (Lifetime up to 2060)	Total Potential Change Anticipated for the '2070s' (2061 to 2125)
1 in 30-Year Rainfall Event		
Upper End	35%	35%
Central	20%	25%
1 in 100-Year Rainfall Event		
Upper End	40%	40%
Central	20%	25%

2.17 The future increase in rainfall will need to be considered when designing a development to ensure its drainage system is sufficient for its lifetime and that it does not increase flood risk elsewhere. When determining the appropriate allowance(s) the anticipated lifespan of the development should be considered.

⁴ Environment Agency, Flood risk assessments: climate change allowances: Environment Agency, Flood risk assessments: climate change allowances: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>. Last Accessed January 2023.

- 2.18 **Table 2.5** provides a summary of the EA's guidance on determining the appropriate allowance(s).

Table 2.5: Application of Appropriate Peak Rainfall Climate Change Allowances

Area Assessed	Anticipated Development Life Span		
	up to 2060	between 2061 and 2100	up to or beyond 2100*
Development Sites[^] Assess the 1 in 30-year and 1 in 100-year storm events with the respective climate change allowance(s) applied. Development to be designed so that with the climate change allowance applied to the 1 in 100-year storm: • there is no increase in flood risk elsewhere the development will be safe from surface water flooding	Use the Central Allowance for the 2050s	Use the Central Allowance for the 2070s ⁺	Use the Upper End Allowance for the 2070s ⁺
Urban Catchments Assess the flood risk at the 1 in 30-year and 1 in 100-year storm events with the respective allowance(s) applied.			
Rural Catchments <5km² Assess the flood risk at the 1 in 30-year and 1 in 100-year storm events with the respective central climate change allowances applied.			
Rural Catchments >5km²	Direct rainfall analysis is not appropriate, use flood flow estimation methods.		

*Includes all residential developments

[^]the Lead Local Flood Authority may have local standards that also need to be considered.

+unless the 2050s allowance is greater

- 2.19 The development site has an anticipated lifespan of 40 years. Therefore, the Central allowance for the '2070s' epoch will need to be considered in the design of the associated drainage infrastructure.

Strategic Flood Risk Assessment

- 2.20 A Strategic Flood Risk Assessment (SFRA) is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future.

- 2.21 The Stratford-on-Avon District Council, Warwickshire County Council, Warwickshire Borough Council & Rugby Borough Council Level 1 SFRA⁵ has been reviewed in the production of this FRA. The SFRA provides information specific to the site location in the form of fluvial, surface water and groundwater flood risk mapping, as well as records of historical flooding. It also includes flood risk policy and guidance for the area. Information from the Level 1 SFRA has been referenced within **Section 3** where applicable.

Preliminary Flood Risk Assessment

- 2.22 A Preliminary Flood Risk Assessment (PFRA) is an assessment of floods that have taken place in the past and floods that could take place in the future. It generally considers flooding from surface water runoff, groundwater and ordinary watercourses, and is prepared by the Lead Local Flood Authorities (LLFAs).
- 2.23 The Warwickshire PFRA⁶ considers flooding from surface water runoff, groundwater, ordinary watercourses and canals. It also references the historical river flooding which occurred in the local area in 1998, 2007 and 2008.
- 2.24 In 2017 an Addendum⁷ was produced for the PFRA, this states that they are publishing several Section 19 reports from the March 2016 flood event, an update to the Flood Map for surface Water and Risk of Flooding from Surface Water maps, Upon review no applicable information in relation to flood risk at the site was identified within the PFRA Addendum.

Local Flood Risk Management Strategy

- 2.25 A Local Flood Risk Management Strategy (LFRMS) is prepared by an LLFA to help understand and manage flood risk at a local level.
- 2.26 The LFRMS aims to ensure that the knowledge of local flood risk issues is communicated effectively so that they can be better managed. The LFRMS also aims to promote sustainable development and environmental protection. The Warwickshire County Council LFRMS⁸ has been reviewed during the production of this report.

River Basin Flood Risk Management Plan

- 2.27 Flood Risk Management Plans (FRMPs) explain the risk of flooding from rivers, the sea, surface water, groundwater and reservoirs. FRMPs set out how risk management authorities will work with communities to manage flood and coastal risk. Risk management authorities include the EA, Natural Resources Wales, local councils, internal drainage boards, Highways England and LLFAs.

⁵ Stratford-on-Avon District Council, Warwickshire County Council, Warwickshire Borough Council & Rugby Borough Council Level 1 Level 1 Strategic Flood Risk Assessment (URS, September 2013)

⁶ Warwickshire Preliminary Flood Risk Assessment (Royal Haskoning, May 2011)

⁷ Preliminary flood risk assessment: Warwickshire County Council Addendum available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/698528/PFRA_Warwickshire_County_Council_2017.pdf

⁸ Warwickshire County Council Local Flood Risk Management Strategy (Michael Green, Richard Stevens, Andy Smith, April 2016)

- 2.28 The first FRMPs were published in March 2016 with the latest FRMP was published in December 2022. They describe actions to manage flood risk across England between 2021 to 2027.
- 2.29 The site is located within the Humber River Basin District, and the Humber River Basin District FRMP⁹ has been reviewed and the relevant site scale objectives have been considered in **Section 4** of this report.

Local Plan

- 2.30 The North Warwickshire Local Plan 2021¹⁰ is the Statutory Development Plan for North Warwickshire and is the basis for determining planning applications. This Local Plan Strategy document sets out the overall vision and planning strategy for development in the borough and contains planning policies to ensure that new development addresses the economic, environmental and social needs of the area.
- 2.31 Policy LP29: Development Considerations within the Local Plan states that developments should 'manage the impacts of climate change through the design and location of development, including sustainable building design and materials, sustainable drainage, water efficiency measures, use of trees and natural vegetation and ensuring no net loss of flood storage capacity'.
- 2.32 It is also stated in policy LP29 that the development must 'protect the quality and hydrology of ground or surface water sources so as to reduce the risk of pollution and flooding, on site or elsewhere'.

⁹ Humber River Basin District Flood Risk Management Plan (Environment Agency, December 2022) available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1120221/Humber-FRMP-2021-2027.pdf

¹⁰ North Warwickshire Local Plan (September 2021, North Warwickshire Borough Council)

3. POTENTIAL SOURCES OF FLOOD RISK

- 3.1 Flooding can occur from a variety of sources, or combination of sources, which may be natural or artificial. **Table 3.1** below identifies the potential sources of flood risk to the site in its current condition, and the impacts which the development could have in the wider catchment, prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within **Section 4**.

Table 3.1: Pre-Mitigation Sources of Flood Risk

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial			X		The site is located in Flood Zone 1. However, extents of Flood Zones 2 and 3 associated with Bourne Brook are located adjacent to the northwest site boundary.
		X			There are several ditches and UOW's located within the Site. These generally convey water towards Bourne Brook.
Coastal				X	This Site is not tidally influenced.
Canals				X	There are no canals in the vicinity.
Groundwater			X		SFRA groundwater susceptibility mapping indicates the Site to be at 25% or lower susceptibility to groundwater flooding.
Reservoirs and waterbodies			X		The Site is shown to fall far outside the nearest mapped maximum reservoir failure extent and is not situated downstream of an impounded artificial body of water.
Pluvial runoff			X		EA surface water flood risk mapping shows several low to high-risk surface water flow routes. These are to be associated with the UOW's. The high-risk areas are generally contained within the UOW's channel.
Sewers			X		There is no evidence of public or private sewers within the site or the immediate vicinity.

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Effect of Development on Wider Catchment			X		Given the nature of the proposed development. There is a negligible risk of impedance of flood routes and/or displacement of floodplains from the solar arrays. There is a residual risk of the ancillary equipment impeding / displacing flood routes / if situated within areas of pluvial flood risk.
			X		The nature of the proposed development will have a negligible impact on the surface water runoff and volume regime within the Site. However, residual risks remain.

Fluvial Flood Risk

- 3.2 Flooding from watercourses occurs when flows exceed the capacity of the channel, or where a restrictive structure is encountered, which leads to water overtopping the banks into the floodplain. This process can be exacerbated when debris is mobilised by high flows and accumulates at structures.

EA Flood Map for Planning

- 3.3 The Site is entirely located within Flood Zone 1 (Low Probability). However, extents of Flood Zone 2 and 3 are present adjacent to the northwest Site boundary, associated with Bourne Brook downstream from the Site.
- 3.4 A 'Product 4' request has been sent to the EA requesting any hydraulic modelled flood data associated with the Bourne Brook at the Site. The response from the EA is included in **Appendix 4**. The EA did not have any hydraulic modelling information to provide regarding the Site.
- 3.5 The areas of Flood Zone 2 and 3 are shown not to be extensive and constrained to the channel. Without results relating to the potential impacts of climate change, the Flood Zone 2 extent (1 in 1000-year event) can be used as a proxy.

Ordinary Watercourse and Ditches

- 3.6 The UOW's and ditches present within the Site are not included in the EA's Flood Zone mapping, due to the small catchments (i.e., <3km²) associated with them. The indicative locations of the watercourses are shown in **Figure 3.1**.

- 3.7 In the absence of Flood Zone mapping and the EA hydraulic model flood data, the EA's surface water flood risk map can provide a useful indicator of the potential floodplain extents associated with the UOW's. This is shown **Figure 3.2** in with mappings showing the potential flood depths during the 1 in 100-year rainfall event presented as **Figure 3.3**.

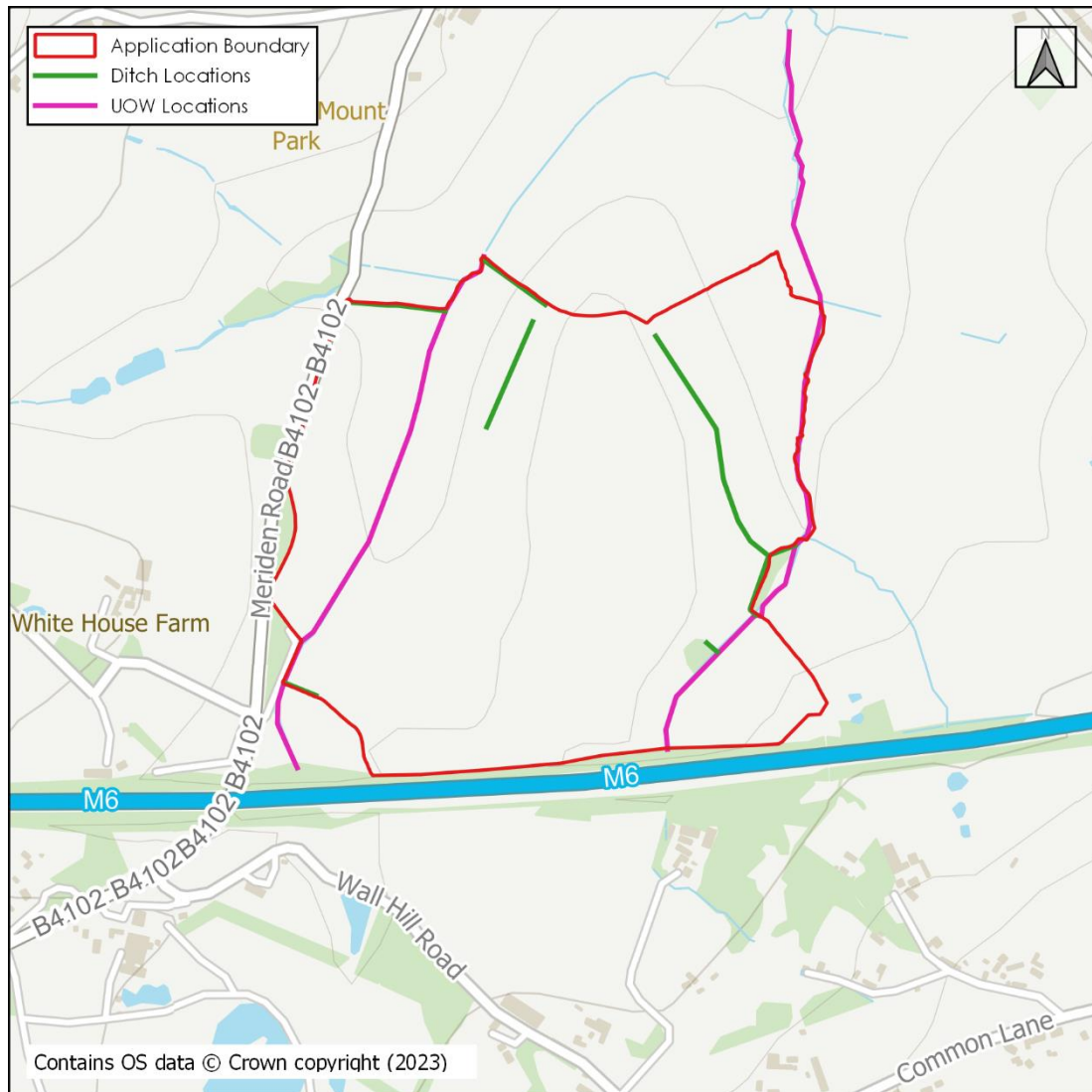


Figure 3.1: Location of UOWs and Ditches

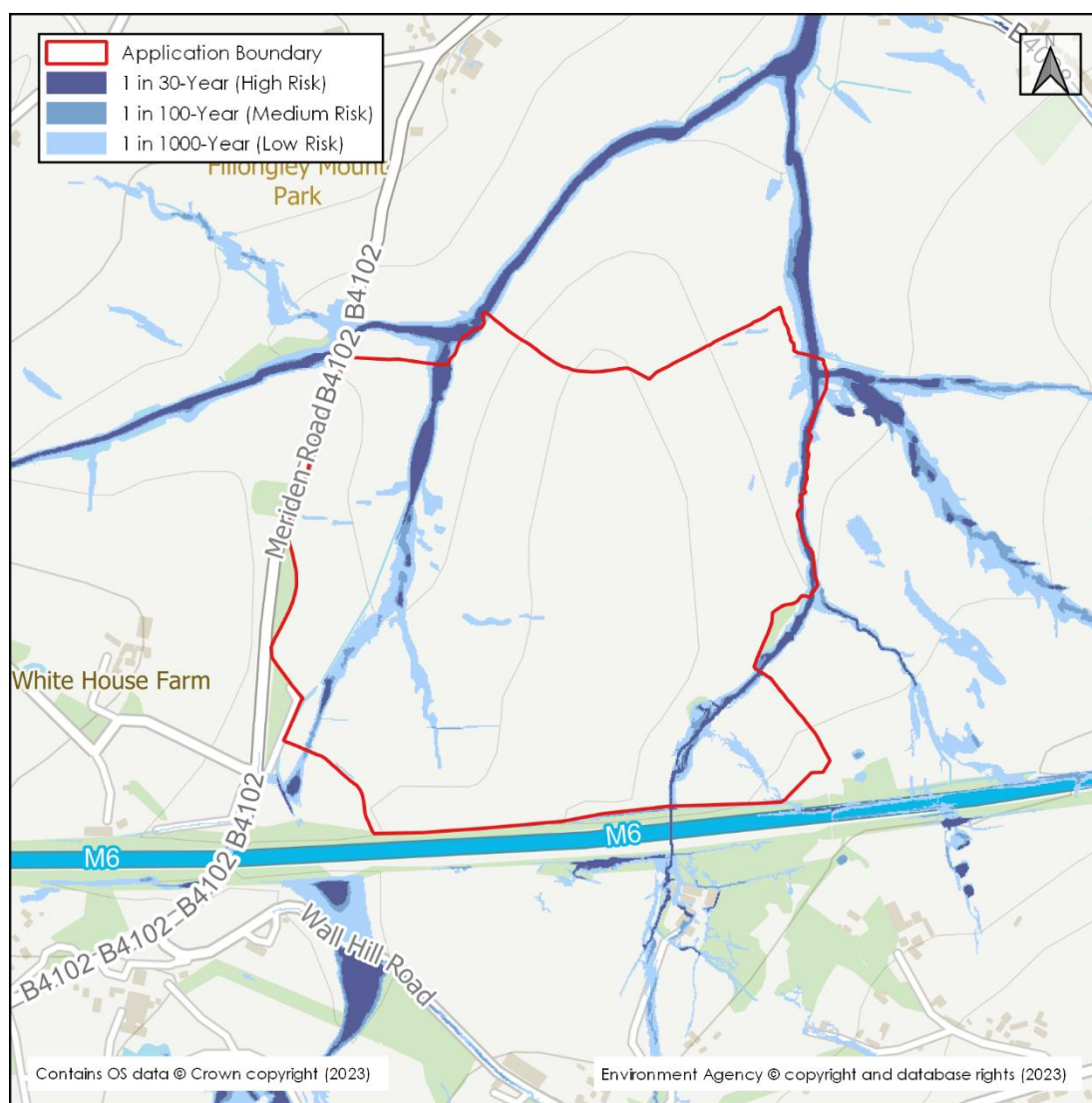


Figure 3.2: EA Surface Water Flood Extents

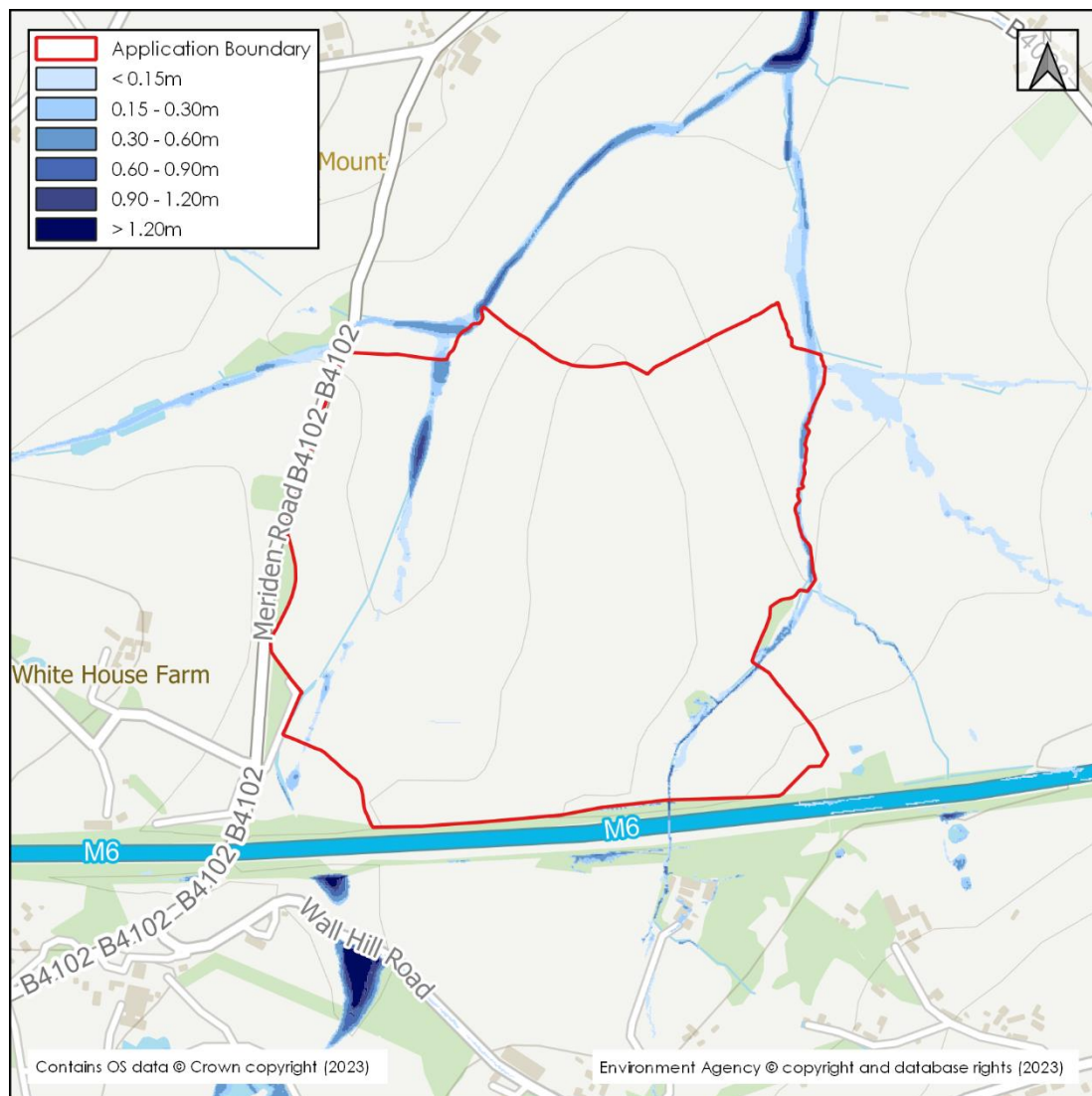


Figure 3.3: EA Surface Water Flood Depths Mapping for 1 in 100-year Event

- 3.8 From a review of the topographical survey and surface water flood risk mapping, the pluvial flow routes are shown to be relatively confined to the UOWs and therefore it is expected that flows are likely to remain in channel during the 1 in 30-year and 1 in 100-year events, with some exceedance during the 1 in 1000-year return period. Any exceedance flows are shown to remain close to the channel as they are conveyed towards the UOW or Bourne Brook. Typically, the depths are shown not to exceed 600mm.
- 3.9 The depth of ditches vary across the Site ranging from 0.3m deep to 1m deep, the majority of the ditches can be measured to 0.8m deep. The Site noticeably raised above most of the ditches with the exception of the land directly west of the ditch located in the middle of the Site and the land directly east of the ditch located within the east of the Site.

- 3.10 The overland flow route associated with the western UOW differs marginally compared to the indicative route shown in **Figure 3.1**; however, this is considered to have occurred due to the EA's surface water mapping not fully representing the connectivity within the UOW, as it runs through the site. It is therefore considered that the overland flow route should be aligned to the UOW.
- 3.11 When considering the future impacts of climate change on the flows within the UOW's, it is expected that there will be an increase in the floodplain extents and depths. However, due to the minimal increase, it is expected that the majority of the site will be unaffected by any potential flooding from these watercourses.

Historical Flood Events

- 3.12 There are no historical records referenced within the EA recorded flood outlines or within the SFRA of fluvial flooding known to have occurred within the site.

Pluvial Flood Risk

- 3.13 Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 3.14 Risk of flooding from surface water mapping has been prepared by the EA, this shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. An extract from the mapping is included in **Figure 3.2**.
- 3.15 As shown in **Figure 3.2**, the majority of the site is shown to be at very low risk of surface water flooding. There are several pluvial flow routes located within the Site, presenting a low to high risk of surface water flooding, associated with Bourne Brook and the UOWs. The risk associated with these features has been assessed above in the fluvial section.
- 3.16 There are small pockets of low-medium risk of surface water flooding, these are isolated and assumed to be related to topographical depressions.
- 3.17 The access road is shown to be at low risk of pluvial flooding and the site can be accessed and egressed via Meriden Road which is generally at very low risk of pluvial flooding.
- 3.18 Overall, the Site is considered to be at low risk of surface water flooding.

Groundwater Flood Risk

- 3.19 Groundwater flooding occurs when the water table rises above ground elevations. It is most likely to happen in low lying areas underlain by permeable geology. This is most common on regional scale chalk aquifers, but there may also be a risk on sandstone and limestone aquifers or on thick deposits of sands and gravels underlain by less permeable strata such as that in a river valley.

- 3.20 British Geological Survey (BGS) mapping shows the Site predominantly to be underlain by Keresley Member - Sandstone, a small pocket along the eastern UOW is underlain by Keresley Member – Argillaceous rocks and sandstone and conglomerate, interbedded.
- 3.21 Within the Site there are three superficial deposits. Along the north-western boundary there are deposits of Alluvium – clay, silt sand and gravel. A large area of Thrussington Member – Diamicton is located in the middle of the Site from the south boundary to the northern boundary. Along the UOW to the south of the Site there are traces of glaciolacustrine deposits, mid Pleistocene, clay and silt. Rest of the Site has no recorded superficial deposits. **Figure 3.4** shows the arrangement of Bedrock Geology and Superficial Deposits within the Site
- 3.22 The geology is also supported by the report published by DUNELM Geotechnical & Environmental (report number: D10836). Within 'Appendix C' of this report is a Groundsure report which states that the risk of groundwater flooding is to be considered 'low-risk'.

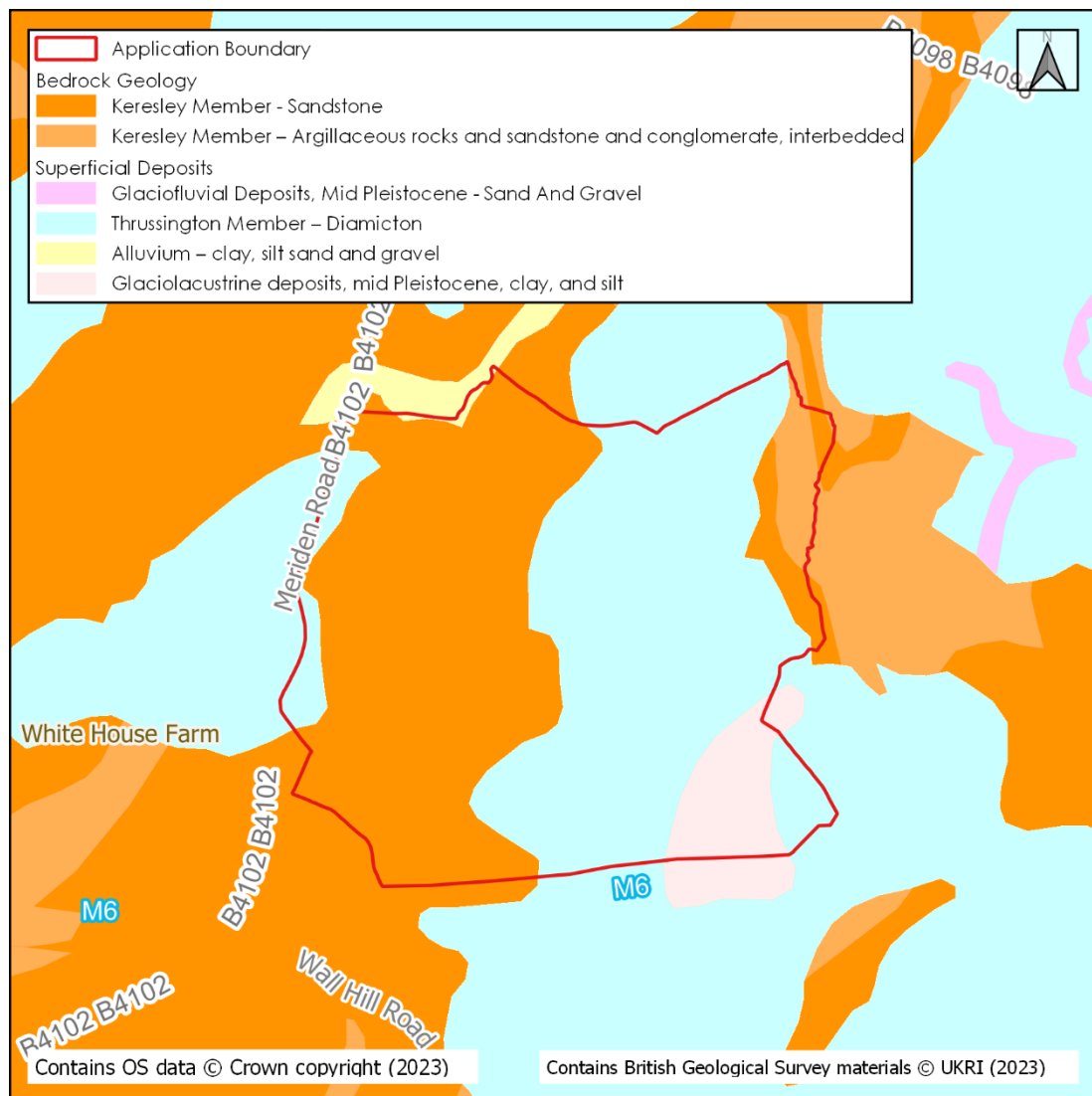


Figure 3.4: Bedrock Geology and Superficial Deposit

- 3.23 The EA designates the bedrock strata to be principal aquifers, this means the bedrock holds a significant amount of groundwater that is used to support water supply, base flows to rivers, lakes and wetlands on a strategic scale.
- 3.24 The areas of superficial deposits are classed as unproductive strata. There are several areas within the site (mainly the central area of the site) which is classed as a Secondary (undifferentiated) Aquifer, this means that the superficial deposit contain both characteristic traits of Secondary A and Secondary B Aquifers. There is also an area which seems to align with the area of Alluvium which is classed as a Secondary A Aquifer which is defined as a permeable layer which can support local water supplies and may form a base flow of a river.
- 3.25 A review of BGS borehole logs identifies records of two previous boreholes located within the Site, these are SP28NE128 and SP28NE68, which were excavated to depths of 705.24m and 716.57m, respectively. These show no recorded of ground water being struck.

- 3.26 The site is located in a Groundwater Source Protection Zone III.
- 3.27 The Warwickshire SFRA reports the susceptibility of areas to groundwater flooding at a 1km² grid tile scale. The site is located within a series of tiles where the geological and hydrogeological properties of the land indicate that the susceptibility to groundwater flooding (groundwater emergence) is <25%.
- 3.28 Neither the Warwickshire County Council nor Warwickshire County Council SFRA have provided any evidence to suggest that the site has historically flooded from groundwater sources.
- 3.29 The overall risk posed by groundwater source is therefore considered to be low.

Flood Risk from Sewer

- 3.30 Sewer flooding can occur when the capacity of the infrastructure is exceeded by excessive flows, or as a result of a reduction in capacity due to collapse or blockage, or if the downstream system becomes surcharged. This can lead to the sewers flooding onto the surrounding ground via manholes and gullies, which can generate overland flows.
- 3.31 From the obtained Severn Trent Water (STW) sewer records which are included in **Appendix 5**, there are no recorded public sewers within the Site. A review of the topographical survey included as **Appendix 1**, also shows no evidence of drainage infrastructure within the Site boundary.
- 3.32 Any sewers located within the immediate surrounding area are likely to be within the highway and therefore in the event of any exceedance flows would be managed by the highway.
- 3.33 The overall risk posed by the sewer source is considered to be low.

Effect of Development on Wider Catchment

Displacement of Floodplain and Impedance of Flood Flows

- 3.34 The nature of the development is such that there will be negligible displacement of the floodplain or impedance of flood flows, with the raised nature of the panels enabling flows to pass beneath them freely.
- 3.35 The most significant risk for the impedance of flood flows associated with the proposed development is the proposed fence and ancillary equipment if located within the regions of the Site shown to at risk of surface water flooding. These areas are however considered minimal due to flows being contained with the various ditches within the site. Appropriate mitigation for the residual risk is outlined within **Section 4**.

Development Land Use/Drainage Considerations

- 3.36 The runoff regime will not be significantly impacted as a result of the proposed development. The surface water drainage considerations and mitigation have been assessed in more detail within an accompanying Drainage Statement (DS, reference: NFW-BWB-ZZ-XX-RP-CD-0001_DS).
- 3.37 The proposed development will result in a negligible increase in impermeable surfaces, leading to a minor increase in runoff rates and volumes. Appropriate mitigation measures to manage the residual risks are outlined in the accompanying DS

4. FLOOD RISK MITIGATION

- 4.1 **Section 3** has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be incorporated within the proposed development to address and reduce the risk of flooding to within acceptable levels.

Sequential Arrangement

- 4.2 The Site has been sequentially arranged such that no development is located within all ancillary equipment is located entirely within Flood Zone 1 and areas at very low risk.

Exception Test

- 4.3 The requirement to undertake an Exception Test is based upon the vulnerability of the proposed development and Flood Zone status as outlines in **Table 4.1**.

Table 4.1: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood risk vulnerability classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required^	✓	✗	Exception Test Required	✓
	Zone 3b Functional Floodplain	Exception Test Required*	✓*	✗	✗	✗

^In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

*In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test, and water compatible uses should be designed and constructed to; remain operational and safe for users in times of flood, result in no net loss of floodplain storage, and not impede water flows and not increase flood risk elsewhere.

- 4.4 As the proposed development is classified as 'Essential Infrastructure' and is located within Flood Zones 1, the development is considered to be suitable without the need for an exception test.

Watercourse Easements

- 4.5 In line with the Warwickshire county council SFRA, an appropriate easement should be applied from the top of bank of all watercourses for maintenance access.

Fencing

- 4.6 The proposed fences around the perimeter of the proposed development should be designed such that water can flow freely through the fence where possible, particularly within the regions indicated to be at risk of flooding. They should be appropriately inspected and maintained following flood events, especially to prevent the accumulation of debris.

Development Levels

- 4.7 It is recommended that the ancillary equipment associated with the solar development are raised 150mm above the external ground level, along with being set back from the ditches/areas impacted by pluvial source.
- 4.8 External levels adjacent to the ancillary equipment should be profiled away from the equipment to provide further mitigation against the residual risk of flooding.

Flood Resilient/Resistant Construction

- 4.9 The solar panels are raised and therefore are expected to be protected in the event of a potential out of bank flows. They are not expected to impede pluvial/fluviial flows. An assessment of the fluviial and surface water flood depths and extents has been undertaken, these are anticipated to be within the appropriate easement from the top of banks and the UOW channels. With this in mind, the proposed minimum 600mm clearance between the ground level and underside of the lowest part of the solar panel, (see sections shown in **Appendix 3**) is considered appropriate.

Surface Water Drainage Considerations

- 4.10 An assessment of the surface water drainage regime has been undertaken in a Drainage Strategy (DS, reference: NFW-BWB-ZZ-XX-RP-CD-0001_DS) which accompanies this FRA.

5. CONCLUSIONS AND RECOMMENDATIONS

- 5.1 This FRA has been prepared in accordance with requirements set out in the NPPF and the associated PPG. The FRA has been produced on behalf of Enviromena Project Management UK Limited in respect of a planning application for a proposed temporary solar farm located at Nailcote Farm, Warwickshire.
- 5.2 This FRA is intended to support a full planning application, the level of detail included is commensurate and subject to the nature of the proposals at the planning stage. It is understood that this FRA (dated November 2023) will be resubmitted to the live planning application "PAP/2023/0071". Therefore, the flood risk guidance at the time of the planning application validation (24/02/2023) has been used within this updated FRA.
- 5.3 This report demonstrates that the proposed development is at an acceptable level of flood risk, subject to the recommended flood mitigation strategies being implemented. The identified risks and mitigation measures are summarised within **Table 5.1**.

Table 5.1: Summary of Flood Risk Assessment

Flood Source	Risk & Proposed Mitigation Measures
Fluvial/Pluvial	The Site is wholly within Flood Zone 1. There are several areas of low to high-risk flows associated with the Bourne Brook and UOWs that flow through the Site. Flows within the UOWs are shown to be constrained to the channel. The proposed development should be set 8m back from the top of bank of Bourne Brook, the UOW and all ditches. It is recommended that all ancillary equipment is raised 150mm above the surrounding area and set back from areas impacted by pluvial sources, to deter water ingress. External levels adjacent to the ancillary equipment should be profiled away from the equipment to provide further mitigation against the residual risk of flooding. The proposed fencing around the development should be hydraulically 'permeable' where possible, particularly around regions of the Site which are at risk of flooding.
Other Flood Risk Sources.	Other flood risk sources including, groundwater, sewer and reservoirs have been assessed and are considered to be at low risk such that specific mitigation is not deemed to be required.
Impact of the Development	The proposed development is anticipated to have a negligible impact on the existing floodplain and flow routes located within the site. The proposed solar arrays located within the site are considered to be 'permeable' in terms of flood water displacement and impedance. The anticipated impact from the development is considered to be negligible; however, a more detailed assessment is provided within the accompanying DS.
This summary should be read in conjunction with BWB's full report. It reflects an assessment of the Site based on information received by BWB at the time of production.	

- 5.4 In compliance with the requirements of NPPF, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the site.

APPENDICES

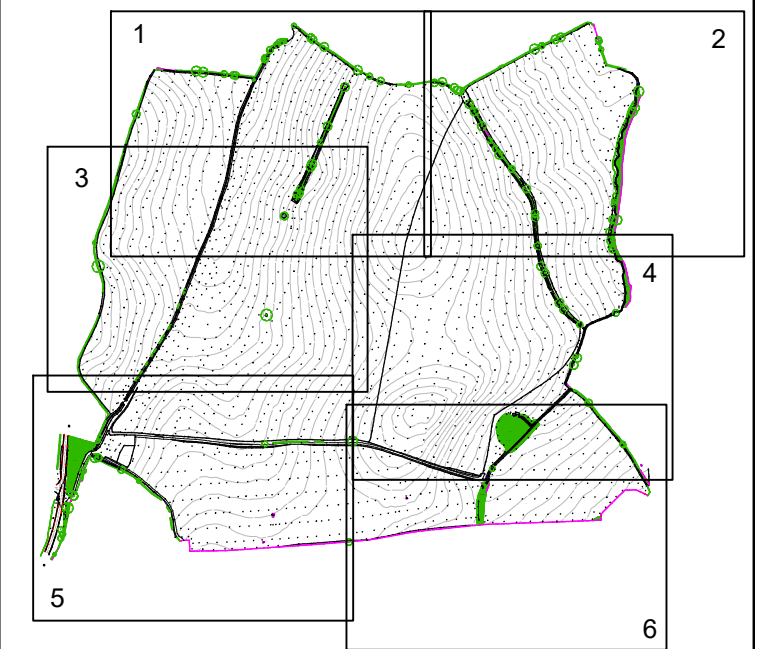
Appendix 1: Topographical Survey



Station Coordinates			
Station Name	Eastings (m)	Northings (m)	Height (m)
BWB01	427107.283	285586.147	137.020
BWB02	427131.275	285603.351	133.907
BWB03	427147.832	285612.084	136.132

- Notes**
- Do not scale this drawing. All dimensions must be checked/verified on site, if in doubt ask.
 - This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
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 - All manhole data is collected from ground level therefore discrepancies may occur. More accurate data is only achievable via confined space entry.
 - OS license number: 100022432

Key Plan



Legend

- | | | |
|--------------------|--------------------|--|
| OS Buildings | Surveyed Buildings | Contour Lines |
| Building | Building | Flow direction and pipe diameter |
| Wall | Wall | Station Name |
| Kerb Channel Line | Kerb Channel Line | Monitoring Borehole |
| Top of Kerb | Top of Kerb | Tree / Bush / Sapling |
| Edge of Surface | Edge of Surface | Area of Vegetation / Extent of Tree Canopy |
| Bottom of Bank | Bottom of Bank | Hedge |
| Canopy / Overhang | Canopy / Overhang | Body of Water |
| Line Marking | Line Marking | Body of Water from OS |
| Centre Line | Centre Line | Spot Level |
| Watercourse | Watercourse | Assumed Surface |
| Centre Line | Centre Line | Water Drainage Line |
| Barrel | Barrel | Surface Water Drainage Line |
| Fence | Fence | |
| Gate | Gate | |
| Overhead Powerline | Overhead Powerline | |
| Overhead Utilities | Overhead Utilities | |
- AP Anchor Point
BC Back Gully
BO Bollard
BS Bus Stop
BT British Telecom
C Chest
CL Cover Level
CMP Cable Marker
Post
CCTV Security Camera
CTV Cable TV
DC Drainage
Channel
OK Drop Kerb
DP Down Pipe
Elec Electric
EP Electricity Post
ER Earth Road
FL Floodlight
- FBW Fence Barbed Wire
FCL Fence Chain Link
FEL Fence Electric
FMP Fence Metal Panel
FMR Fence Metal Rolling
FOW Fence Open Board
FPM Fence Post & Wire
FSP Fence Steel Palisade
FVL Fence Wire Mesh
FSL Finished Floor Level
FP Flagpole
GV Gas Valve
GU Gully
HR Height
IC Inspection Chamber
IFL Internal Floor Level
IL Invert Level
(as indicated level)
- LB Little Bin
LP Lamp Post
MH Manhole
Mtr Service Marker
PB Post Box
Post
RE Rodding Eye
Sign Post
SV Stop Valve
TCB Telephone
TCL Threshold Level
THK Threshold
TL Traffic Light
TTS Telegraph Post
TS Traffic Signal
UTS Unleaded to Survey
WL Water Level
WM Water Meter
WC Wash Out

P1	15.12.22	First Issue	BC	DB
Rev	Date	Details of Issue / Revision	Drawn	Rev

Issues & Revisions

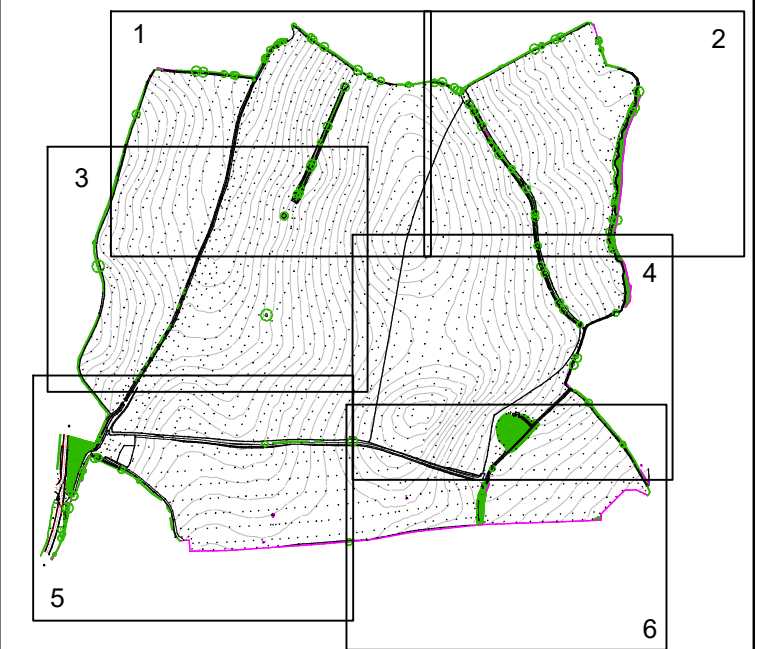
- BWB**
AEC GROUP COMPANY
- Client
Enviromena Project
Management UK Limited
- Project Title
Nailcote Farm, Warwickshire
- Drawing Title
Existing Site Plan
Sheet 1 of 6
- Drawn: B. Connolly
BWB Ref: 221748.00
Date: 15.12.22
Scale: A0
1:500
- Reviewed: D. Smith
Date: 15.12.22
Scale: A0
1:500
- Drawing Status
Information
- | | | |
|--|--------|-----|
| Project - Originator - Zone - Level - Type - Role - Number | Status | Rev |
| NFW-BWB-00-01-DR-G-001 | S2 | P1 |



Station Coordinates			
Station Name	Eastings (m)	Northings (m)	Height (m)
BWB01	427107.293	285586.147	137.020
BWB02	427131.275	285693.351	133.907
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Key Plan



Legend

- OS Buildings
 - Surveyed Buildings
 - Building
 - Wall
 - Kerb Channel Line
 - Edge of Surface
 - Top of Kerb
 - Bottom of Bank
 - Canopy / Overhang
 - Line Marking
 - Centre Line
 - Watercourse
 - Centre Line
 - Barrel
 - Fence
 - Gate
 - Overhead Powerline
 - Overhead Utilities
 - Contour Lines
 - Inspection Chamber
 - Flow direction and pipe diameter
 - Station and Name
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 - Body of Water
 - Body of Water from OS
 - Spot Level
 - Assumed Surface
 - Water Drainage Line
 - Surface Water Drainage Line
- AP Anchor Point
BC Back Gully
BO Bollard
BS Bus Stop
BT British Telecom
C Crest
CL Cover Level
CMP Cable Marker
Post
CCTV Security Camera
CTV Cable TV
DC Drainage
DK Drop Kerb
DP Down Pipe
Elec Electric
EP Electricity Pole
ER Earth Road
FL Floodlight
- FBW Fence Barbed Wire
FCL Fence Closed Board
FEL Fence Electric
FMP Fence Metal Panel
FPM Fence Post & Rail
FOW Fence Open Board
FPR Fence Post & Rail
FSP Fence Steel Palisade
FWM Fence Wire Mesh
FSL Finished Floor Level
FP Flagpole
GV Gas Valve
GY Gully
HR Height
IC Inspection Chamber
IFL Internal Floor Level
IL Invert Level
(as indicated level)
- LB Little Bin
LP Lamp Post
MH Manhole
MR Service Marker
PB Post Box
PT Post
RE Rodding Eye
SP Sign Post
SV Stop Valve
TCB Telephone
THK Threshold Level
TL Traffic Light
TP Telegraph Post
TS Traffic Signal
UTS Unable to Survey
WL Water Level
WM Water Meter
WC Wash Out

P1	15.12.22	First Issue	BC DB
Rev	Date	Details of revision / revision	Dwn Rev

Issues & Revisions

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**Enviromena Project
Management UK Limited**

Project Title

**Nailcote Farm,
Warwickshire**

Drawing Title

**Existing Site Plan
Sheet 2 of 6**

Drawn:	B. Connolly	Reviewed:	D. Smith
BWB Ref:	221748.00	Date:	15.12.22
Scale:	A0	Scale:	1:500

Information

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
NFW-BWB-00-02-DR-G-001	S2	P1

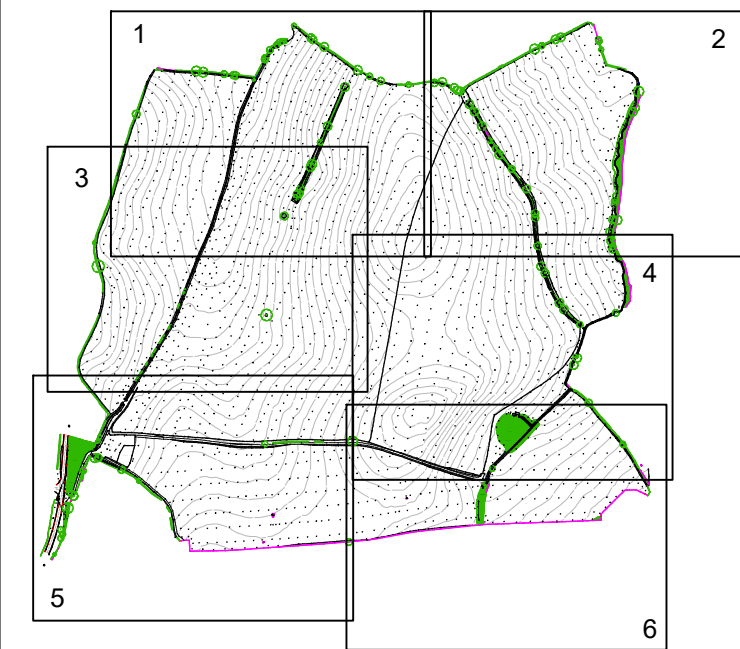


Station Coordinates			
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Key Plan



Legend

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Surveyed Buildings	Inspection Chamber
Building	Flow direction and pipe diameter
Wall	Station and Name
Kerb Channel Line	Monitoring Borehole
Top of Kerb	Tree / Bush / Sapling
Edge of Surface	Area of Vegetation / Extent of Tree Canopy
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Line Marking	Spot Level
Centre Line	Assumed Surface
Watercourse	Water Drainage Line
Centre Line	Surface Water Drainage Line
Barrel	
Fence	
Gate	
Overhead Powerline	
Overhead Utilities	

AP	Anchor Point	FBW	Fence Barbed Wire	LB	Litter Bin
BC	Back Gully	FCL	Fence Closed Board	LP	Lamp Post
BO	Bollard	FCL	Fence Chain Link	MH	Manhole
BS	Bus Stop	FEL	Fence Electric	Mir	Service Marker
BT	British Telecom	FMP	Fence Metal Panel	PS	Post Box
C	Crest	FMR	Fence Metal Rolling	PT	Post
CL	Cover Level	FOB	Fence Open Board	RE	Rodding Eye
CMP	Cable Marker	FPW	Fence Post & Wire	SP	Sign Post
Post		FSP	Fence Steel Palisade	ST	Stop Tap
CCTV/Security Camera	FWM	Fence Wire Mesh	SV	Stop Valve	
CTV	Cable TV	FSL	Finished Floor Level	TGB	Telephone
DC	Drainage	FP	Flagpole	THL	Threshold Level
Channel		GV	Gas Valve	TL	Traffic Light
OK	Drop Kerb	GY	Gully	TT	Traffic Light Post
DP	Down Pipe	HR	Height	TS	Traffic Signal
Elec	Electric	IC	Inspection Chamber	UTS	Unable to Survey
EP	Electricity Pole	IFL	Internal Floor Level	WL	Water Level
FL	Floodlight	IL	Invert Level	WM	Water Meter
			(as a reduced level)	WC	Wash Out

P1	15.12.22	First Issue	BC	DS
Rev	Date	Details of revision / revision	Dwn	Rev

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**Nailcote Farm,
Warwickshire**

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**Existing Site Plan
Sheet 2 of 6**

Drawn:	B. Connolly	Reviewed:	D. Smith
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Drawing Status:	Scale: @A0	1:500	

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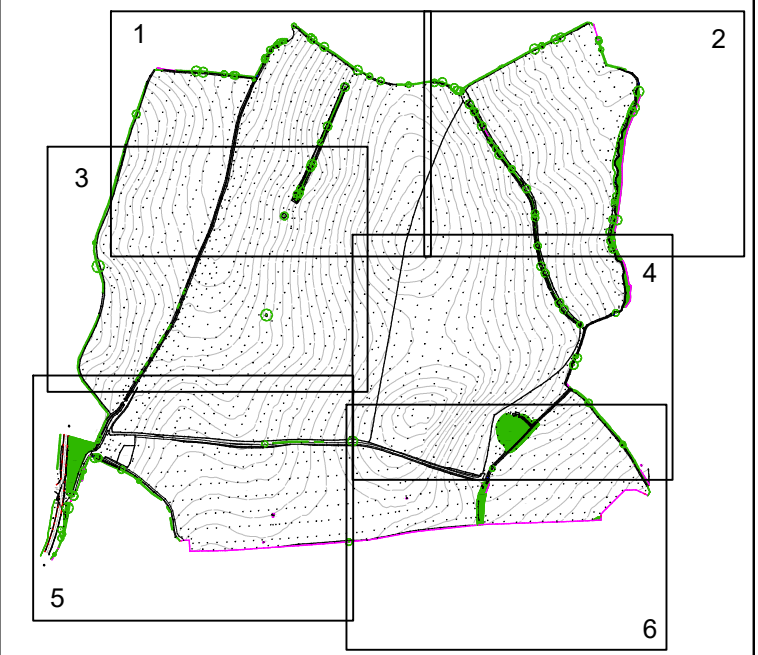
Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
NFW-BWB-00-03-DR-G-001	S2	P1



Station Coordinates			
Station Name	Eastings (m)	Northings (m)	Height (m)
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| Fence | |
| Gate | |
| Overhead Powerline | |
| Overhead Utilities | |
- AP Anchor Point
BC Back Gully
BO Bollard
BS Bus Stop
BT British Telecom
C Chest
CL Cover Level
CMP Cable Marker
CTV Cable TV
DC Drainage
DK Drop Kerb
DP Down Pipe
Elec Electric
EP Electricity Post
ER Earth Road
FL Floodlight
- FBW Fence Barbed Wire
FCL Fence Closed Board
FEL Fence Electric
FMP Fence Metal Panel
FOW Fence Open Board
FPW Fence Post & Wire
FSP Fence Steel Palisade
FWM Fence Wire Mesh
FSL Finished Floor Level
FP Flagpole
GV Gas Valve
GU Gully
HR Height
IC Inspection Chamber
IFL Internal Floor Level
IL Invert Level
LB Litter Bin
LP Lamp Post
MH Manhole
Mtr Service Marker
PB Post Box
PT Post
RE Rodding Eye
SP Sign Post
SV Stop Valve
TCB Telephone
THK Threshold Level
TL Traffic Light
TTS Telegraph Post
TS Traffic Signal
UTS Unable to Survey
WL Water Level
WM Water Meter
WC Wash Out

P1	15.12.22	First Issue		BC	DB
Rev	Date	Details of Issue / Revision		Drawn	Rev

Issues & Revisions

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Management UK Limited**

Project Title

**Nailcote Farm,
Warwickshire**

Drawing Title

**Existing Site Plan
Sheet 4 of 6**

Drawn:	B. Connolly	Reviewed:	D. Smith
BWB Ref:	221748.00	Date:	15.12.22
Scale:	As Shown	Scale:	1:500

Information

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
NFW-BWB-00-04-DR-G-001	S2	P1

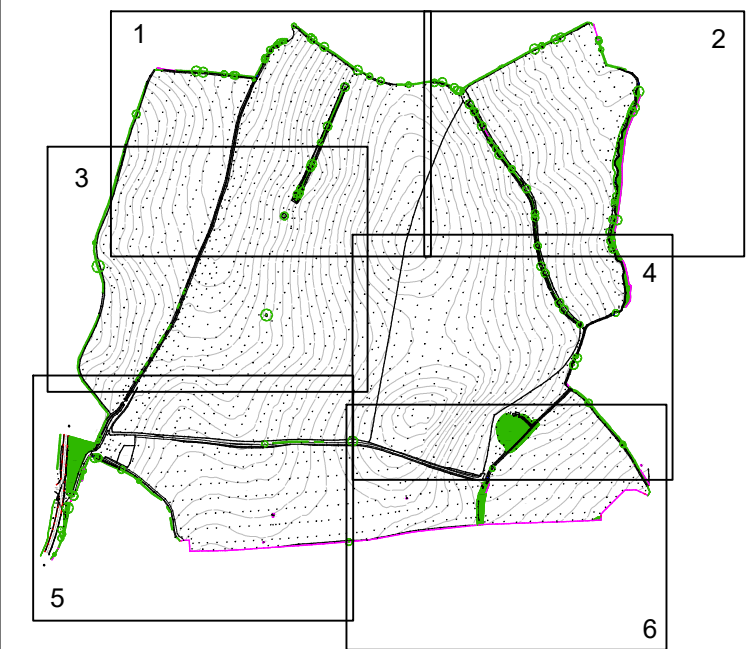


Station Coordinates			
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 3. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
 4. Any discrepancies noted on site are to be reported to the engineer immediately.
 5. No scale factor has been applied to this survey, therefore the OS coordinates are to be treated as arbitrary. Please refer to survey station information below for on site control establishment.
 6. All coordinates and height data relate to OSGB36(15). Control stations are coordinated by means of GPS receiving real time corrections via OS smart net.
 7. All manhole data is collected from ground level therefore discrepancies may occur. More accurate data is only achievable via confined space entry.
 8. OS license number: 10002432

Key Plan



Legend

- | | |
|--------------------|--|
| OS Buildings | Contour Lines |
| Surveyed Buildings | Inspection Chamber |
| Building | Flow direction and pipe diameter |
| Wall | Station and Name |
| Kerb Channel Line | Monitoring Borehole |
| Top of Kerb | Tree / Bush / Sapling |
| Edge of Surface | Area of Vegetation / Extent of Tree Canopy |
| Top of Bank | Hedge |
| Bottom of Bank | Body of Water |
| Canopy / Overhang | Body of Water from OS |
| Line Marking | Spot Level |
| Centre Line | Assumed Surface |
| Watercourse | Water Drainage Line |
| Centre Line | Surface Water Drainage Line |
| Barricade | |
| Fence | |
| Gate | |
| Overhead Powerline | |
| Overhead Utilities | |
- AP Anchor Point
BC Back Gully
BS Bollard
BT British Telecom
C Crest
CL Cover Level
CMP Cable Marker
CCTV Security Camera
CTV Cable TV
DC Drainage
OK Drop Kerb
DP Down Pipe
Elec Electric
EP Electricity Post
ER Earth Road
FL Floodlight
- FBW Fence Barbed Wire
FCL Fence Chain Link
FEL Fence Electric
FMP Fence Metal Panel
FMR Fence Metal Rolling
FOB Fence Open Board
FPW Fence Post & Wire
FSP Fence Steel Palisade
FVL Fence Wire Mesh
FSL Finished Floor Level
FP Flagpole
GV Gas Valve
GY Gully
HR Height
ICS Inspection Chamber
IFL Internal Floor Level
IL Invert Level
IS Inverted Level
- LB Litter Bin
LP Lamp Post
MH Manhole
MR Service Marker
PB Post Box
PT Post
RE Rodding Eye
SP Sign Post
SV Stop Valve
TCB Telephone
TCL Threshold Level
THK Threshold
TL Traffic Light
TT Traffic Light Post
TS Traffic Signal
UTS Unable to Survey
WL Water Level
WM Water Meter
WC Wash Out

P1	15.12.22	First Issue	BC	DB
Rev	Date	Details of Issue / Revision	Drawn	Reviewed

Issues & Revisions

BWB
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Client

Enviromena Project Management UK Limited

Project Title

Nailcote Farm, Warwickshire

Drawing Title

Existing Site Plan
Sheet 5 of 6

Drawn:	B. Connolly	Reviewed:	D. Smith
BWB Ref:	221748.00	Date:	15.12.22
Scale:	1:500		

Drawing Status

Information

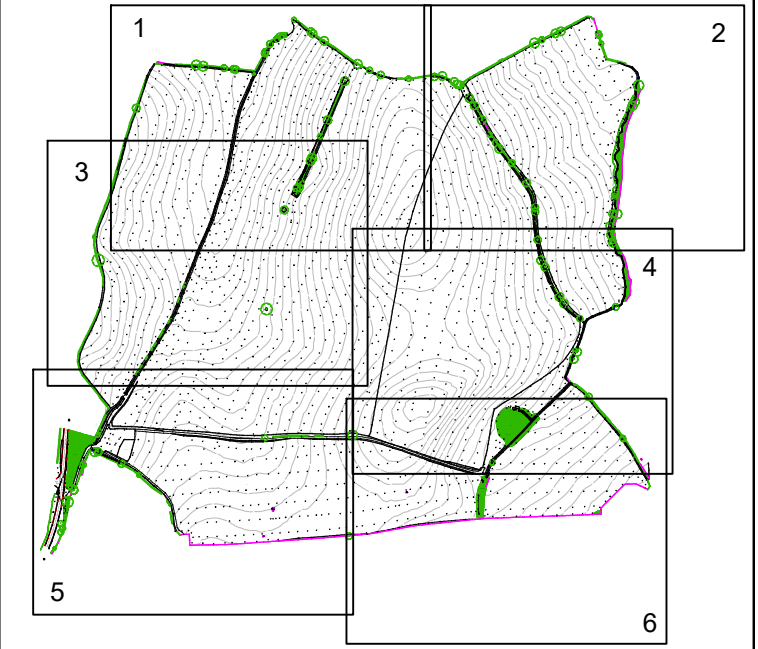
Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
NFW-BWB-00-05-DR-G-001	S2	P1



Station Coordinates			
Station Name	Eastings (m)	Northings (m)	Height (m)
BWB01	427107.293	285586.147	137.020
BWB02	427131.275	285593.351	133.907
BWB03	427147.832	285612.084	136.132

- Notes**
1. Do not scale this drawing. All dimensions must be checked/verified on site. If in doubt ask.
 2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
 3. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
 4. Any discrepancies noted on site are to be reported to the engineer immediately.
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 7. All manhole data is collected from ground level therefore discrepancies may occur. More accurate data is only achievable via confined space entry.
 8. OS license number: 100022432

Key Plan



Legend

- OS Buildings
- Surveyed Buildings
- Building
- Wall
- Kerb Channel Line
- Top of Kerb
- Edge of Surface
- Bottom of Bank
- Canopy / Overhang
- Line Marking
- Centre Line
- Watercourse
- Centre Line
- Barrel
- Fence
- Gate
- Overhead Powerline
- Overhead Utilities
- Contour Lines
- Inspection Chamber
- Flow direction and pipe diameter
- Station and Name
- Monitoring Borehole
- Tree / Bush / Sapling
- Area of Vegetation / Extent of Tree Canopy
- Hedge
- Body of Water
- Body of Water from OS
- Spot Level
- Assumed Surface
- Water Drainage Line
- Surface Water Drainage Line

- AP Anchor Point
- BC Back Gully
- BO Bollard
- BS Bus Stop
- BT British Telecom
- C Crest
- CL Cover Level
- CMP Cable Marker
- DC Drainage
- CCTV Security Camera
- CTV Cable TV
- DK Drop Kerb
- DP Down Pipe
- Elec Electric
- EP Electricity Pole
- ER Earth Road
- FL Floodlight
- FBW Fence Barbed Wire
- FCD Fence Closed Board
- FCL Fence Chain Link
- FEL Fence Electric
- FMP Fence Metal Panel
- FMR Fence Metal Rolling
- FOB Fence Open Board
- FPW Fence Post & Wire
- FPL Finished Floor Level
- FP Flagpole
- FSL Finished Floor Level
- GV Gas Valve
- Gully
- HR Height
- IC Inspection Chamber
- IL Internal Floor Level
- LB Little Bin
- LP Lamp Post
- MH Manhole
- MR Service Marker
- PS Post Box
- PT Post
- RE Rodding Eye
- SP Sign Post
- SV Stop Valve
- TCB Telephone
- THL Threshold Level
- TL Traffic Light
- TP Traffic Post
- TS Traffic Signal
- UTS Unable to Survey
- WL Water Level
- WM Water Meter
- WC Wash Out

P1	15.12.22	First Issue	BC	DB
Rev	Date	Details of Issue / Revision	Dwn	Rev

Issues & Revisions

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Client

Enviromena Project Management UK Limited

Project Title

Nailcote Farm, Warwickshire

Drawing Title

Existing Site Plan Sheet 6 of 6

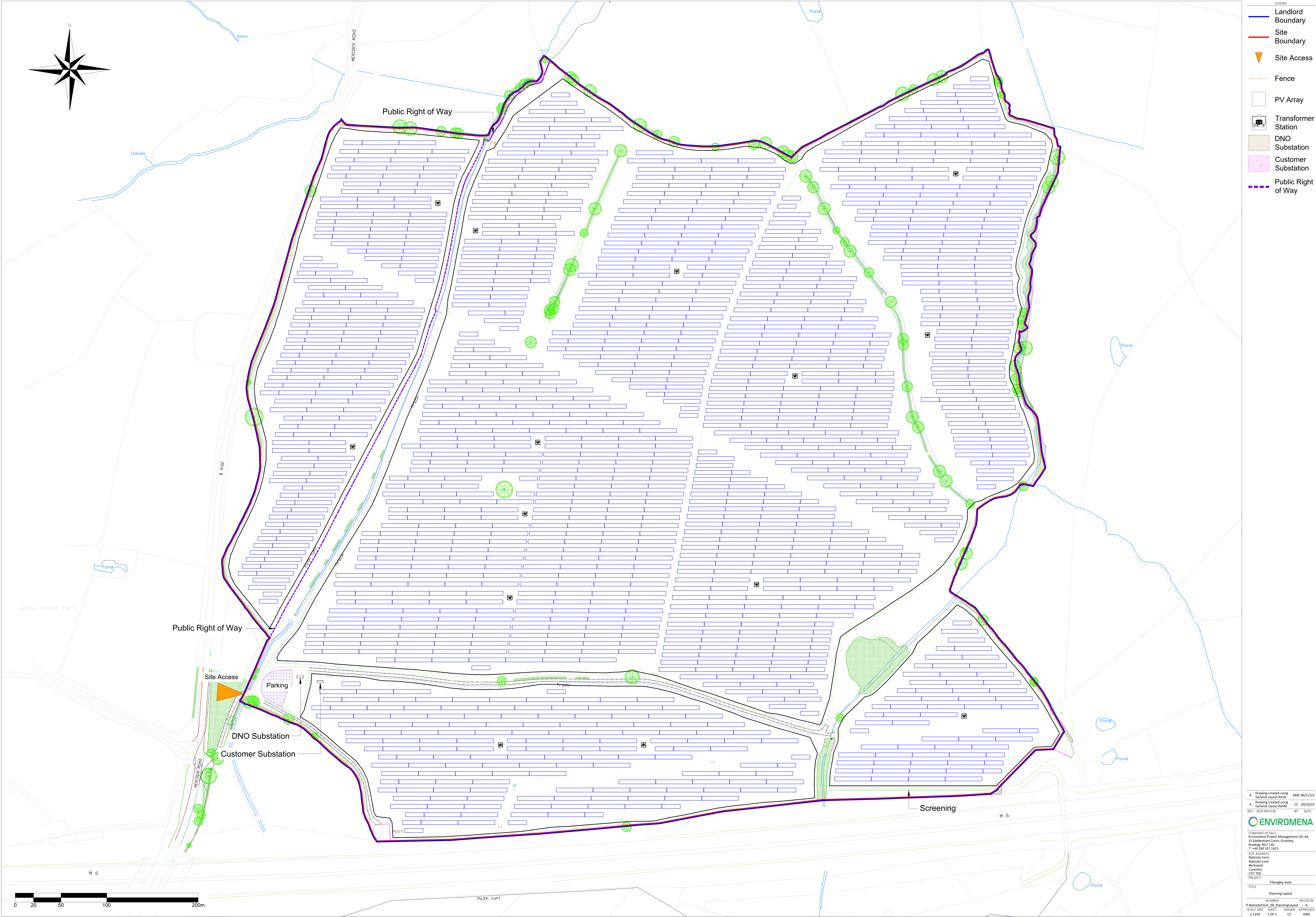
Drawn: B. Connolly
BWB Ref: 221748.00
Date: 15.12.22
Scale: A0: 1:500
Drawing Status

Information

Project - Originator - Zone - Level - Type - Role - Number Status Rev

NFW-BWB-00-06-DR-G-001 S2 P1

Appendix 2: Proposed Development and Sections Plan



LEGEND

- Landlord Boundary
- Site Boundary
- Site Access
- Fence
- PV Array
- Transformer Station
- DNO Substation
- Customer Substation
- Public Right of Way

REV

B	Drawing created using General Layout RevN	AMS	06/11/23
A	Drawing created using General Layout RevN	CC	20/10/23

REV DESCRIPTION BY DATE

COMPANY DETAILS

Enviromena Project Management UK Ltd,
15 Diddenden Court, Grazeley,
Reading RG7 3JD
T: +44 330 107 3435

SITE ADDRESS

Nailcote Farm
Nailcote Lane
Berkswell
Coventry CV7 7DE

PROJECT

Fillongley Solar

TITLE

Planning Layout

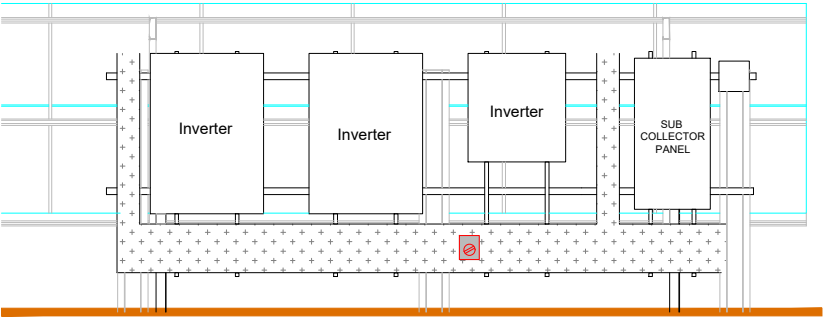
NUMBER	REVISION
P.Nailcote Farm_09_PlanningLayout	A

SCALE: 1:1250 SHEET: 1 OF 1 DRAWN BY: CC APPROVED BY: AMS

The diagram illustrates the components and dimensions of a Netting LHT/13/190/15 structure. Key features include:

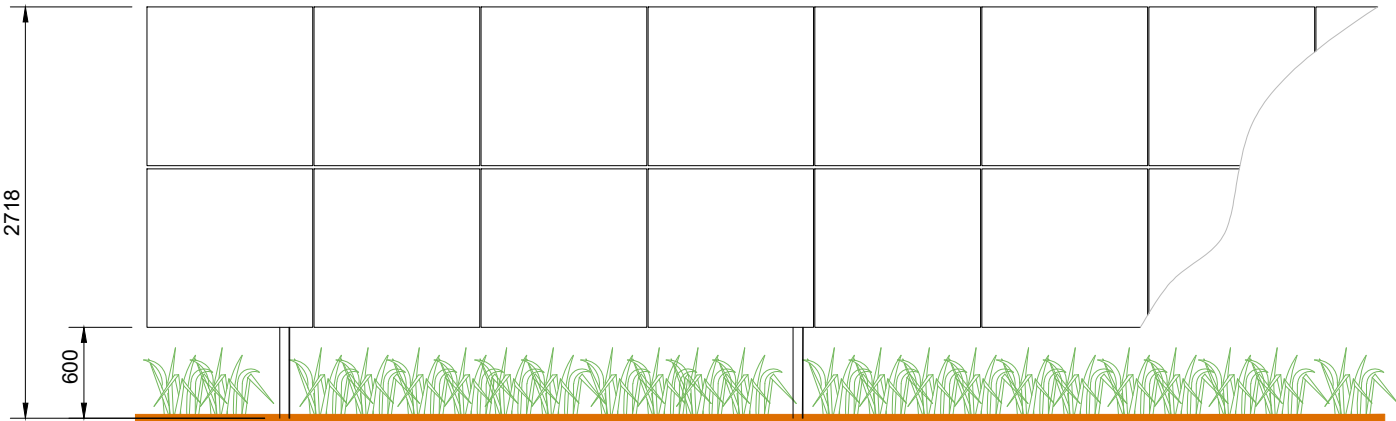
- Dimensions:**
 - Height: 2050 (total) and 1900 (netting section).
 - Width: Up to 5000.
 - Ground Level: Indicated by a horizontal line.
 - 150mm gap between netting and ground level.
 - 150mm (height of the gap).
- Components:**
 - Strainer posts at all significant changes of direction.
 - Netting LHT/13/190/15.
 - Round Intermediate posts.

NORTH ELEVATION
(rear - showing typical inverter arrangement)



Technical drawing of the solar panel mounting system showing two views: a side elevation and a perspective view. The side elevation shows a panel tilted at 26° with dimensions 10500 (length), 6156 (width), and 2718 (height). The perspective view shows the panel's dimensions 4703 and 2384, and the 26° tilt angle. An inverter is shown on the ground next to the panel.

SOUTH ELEVATION
(Front)



Scale 1:50 @A3

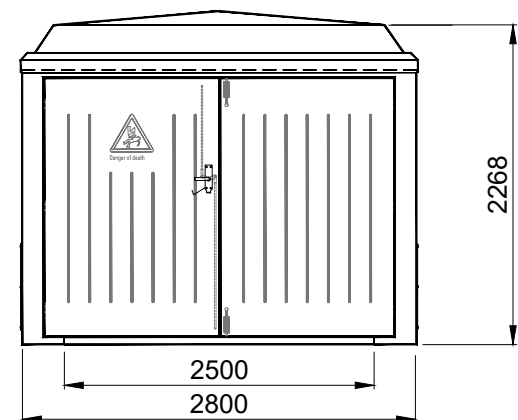
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	RevA		AMS		05/12/2022										TITLE: Section views	
															DRAWING No.: P.NailcoteFarm_06_SectionViews	
															REV: Rev A	
						Scale:	Drawn by:	Checked by:	Signed by PM:	Date checked:	Page:	Sheet size:				
						N/A	AMS				1 of 1	A3				



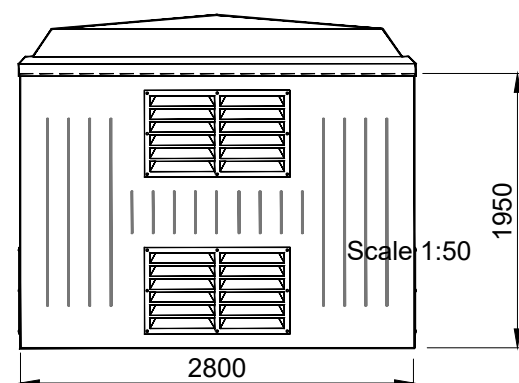
ADDRESS:
Enviromena Project Management UK Ltd
Tel: +44 330 107 1415
15 Diddenham Court, Grazeley
Reading, RG7 1JQ, United Kingdom



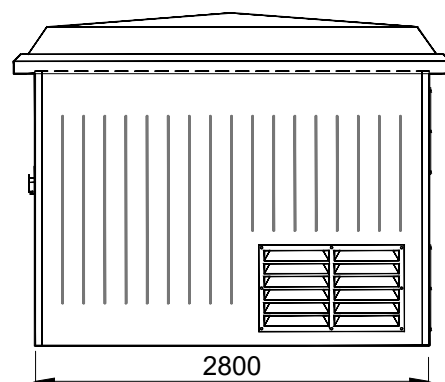
ADDRESS:
Enviromena Project Management UK Ltd
Tel: +44 330 107 1415
15 Diddenham Court, Grazeley
Reading, RG7 1JQ, United Kingdom



FRONT ELEVATION

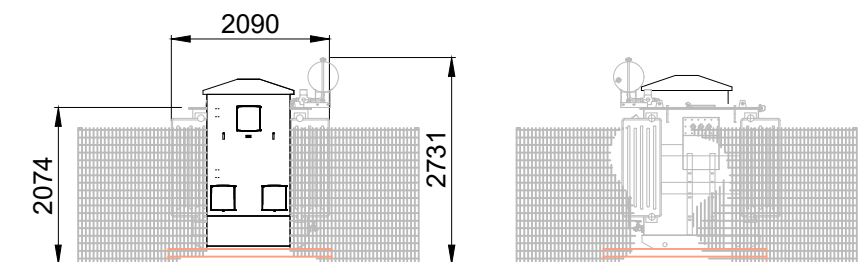


REAR ELEVATION



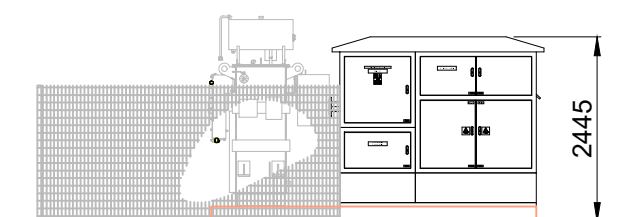
SIDE ELEVATION

CUSTOMER SWITCHGEAR ENCLOSURE

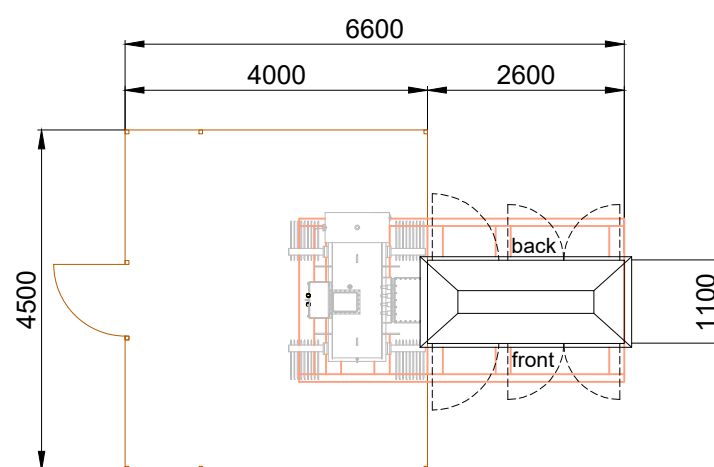


SIDE ELEVATION

SIDE ELEVATION

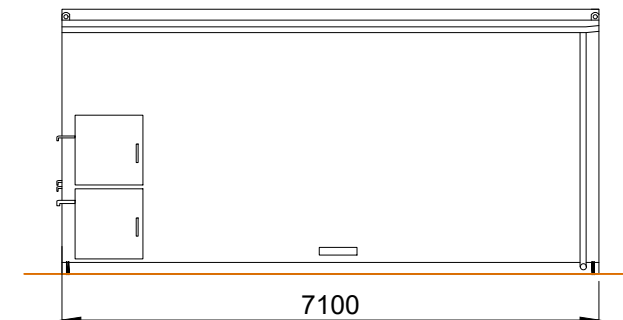


FRONT ELEVATION

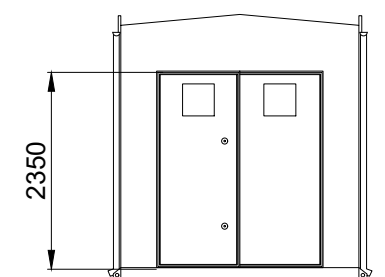


PLAN

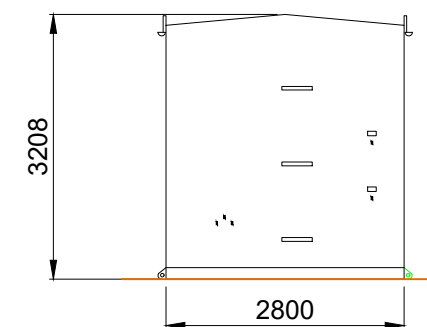
TYPICAL LV STATION



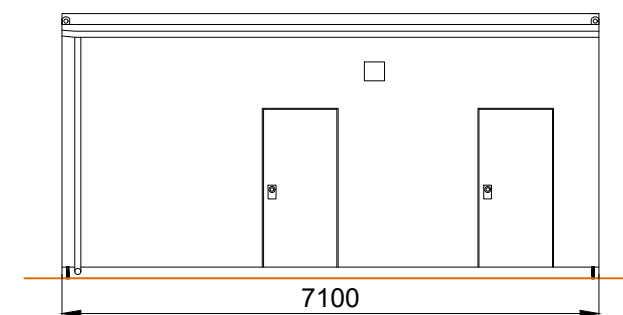
BACK ELEVATION



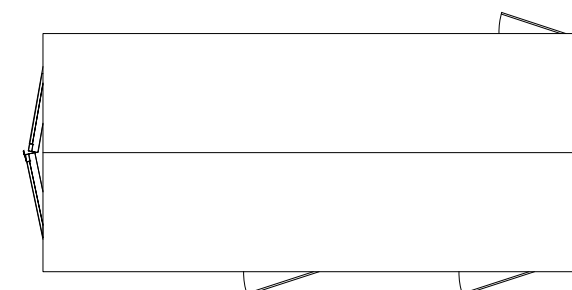
SIDE ELEVATION



SIDE ELEVATION



FRONT ELEVATION



PLAN

TYPICAL DNO SUBSTATION ENCLOSURE

COMMENTS:
Units in mm.

REVISION:	DESCRIPTION:	REVISED BY:	APPROVED BY:	DATE:
RevA		AMS		05/12/2022

REVISION:	DESCRIPTION:	REVISED BY:	APPROVED BY:	DATE:

SITE ADDRESS:
Nailcote Farm
Nialcote Lane
Berkswell, Coventry
CV7 7DE

PROJECT NAME: Nailcote Farm	
TITLE: Building Sections view	
DRAWING No.: P.NailcoteFarm_07_BuildingSectionViews	REV: Rev A



ADDRESS:
Enviromena Project Management UK Ltd
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Reading, RG7 1JQ, United Kingdom

Appendix 3: NPPF Flood risk Vulnerability and Flood Zone Compatibility

Flood Risk Vulnerability Classifications (recreated from the NPPF Planning Practise Guidance)

Vulnerability Classification	Description
Essential infrastructure	• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including infrastructure for electricity supply including generation, storage and distribution systems; including electricity generating power stations, grid and primary substations storage; and water treatment works that need to remain operational in times of flood. • Wind turbines. • Solar farms.
Highly Vulnerable	• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure'.)
More Vulnerable	• Hospitals • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Landfill* and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable	• Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill* and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place. • Car parks.
Water-Compatible Development	• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Flood Zone Compatibility (recreated from the NPPF Planning Practise Guidance)

Flood Zone	Vulnerability Classification				
	Essential infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone 1 (Low Probability)	Development is appropriate	Development is appropriate	Development is appropriate	Development is appropriate	Development is appropriate
Flood Zone 2 (Medium Probability)	Development is appropriate	To be deemed appropriate an exception test is required to demonstrate: - The development will be safe for its life time without increasing flood risk elsewhere, and where possible reduce overall flood risk - the sustainability benefits of the development to the community outweigh the flood risk.	Development is appropriate	Development is appropriate	Development is appropriate
Flood Zone 3a (High Probability)	To be deemed appropriate an exception test is required to demonstrate: The development will be safe for its life time without increasing flood risk elsewhere, and where possible reduce overall flood risk the sustainability benefits of the development to the community outweigh the flood risk. Additionally, essential infrastructure should be designed and constructed to remain operational and safe in times of flood.	Development should not be permitted	To be deemed appropriate an exception test is required to demonstrate: - The development will be safe for its life time without increasing flood risk elsewhere, and where possible reduce overall flood risk - the sustainability benefits of the development to the community outweigh the flood risk.	Development is appropriate	Development is appropriate

Flood Zone	Vulnerability Classification				
	Essential infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone 3b (The Functional Floodplain)	To be deemed appropriate an exception test is required to demonstrate: - The development will be safe for its life time without increasing flood risk elsewhere, and where possible reduce overall flood risk - the sustainability benefits of the development to the community outweigh the flood risk. Additionally, development should be designed and constructed to: - remain operational and safe for users in times of flood; - result in no net loss of floodplain storage; - not impede water flows and not increase flood risk elsewhere.	Development should not be permitted	Development should not be permitted	Development should not be permitted	Development is appropriate if designed and constructed to: - remain operational and safe for users in times of flood; - result in no net loss of floodplain storage; - not impede water flows and not increase flood risk elsewhere.

Appendix 4: Environment Agency's Response

Product 4 (Detailed Flood Risk Data) for site at Nailcote Farm, Warwickshire, CV7 8BP NGR: SP 27537 86018.

Reference number: 294712

Date of issue: 24/01/2023

We are unable to provide you with a full product 4 response because:

- There is no detailed modelled information available for this site because it is not close to a main river.
- In addition, we do not have any records of flooding and there are no EA operated / maintained flood defences in the immediate area.
- Please note however, the location of the site sits partially within flood zone 3 risk and is designated a “flood alert” area. The Alerts relate to Middle Tame area and affects low-lying land and roads between Water Orton and Tamworth.
- There are also flags for risks from surface water on the site and as such, we would suggest that you contact your lead local flood authority- Warwickshire County Council. They should be able to provide you with further guidance on the risks from ordinary water courses and surface water flood risks in your specific area.

Flood Map for Planning (Rivers and Sea)

The Flood Map for planning (Rivers and Sea) indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood event with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring for fluvial (river) flooding (flood zone 3). It also shows the extent of the Extreme Flood Outlines (Flood zone 2) which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater. The flood zones refer to the land at risk of flooding and **does not** refer to individual properties. It is possible for properties to be built at a level above the floodplain but still fall within the risk area.

The Flood Map only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered that flooding may occur from other sources such as surface water sewers, road drainage, etc. This map can be accessed via our website: <https://flood-map-for-planning.service.gov.uk/>

Recorded Flooding

With regards to the history of flooding I can advise that we do not have any records of flooding in this area. It is possible that other flooding may have occurred that we do not have records for, and other organisations, such as the Lead Local Flood Authority or Internal Drainage Boards (where relevant), may have records.

This information is provided subject to the [Open Government Licence](#), which you should read for details of permitted use.

Risk of Surface Water Flooding Map

Managing the risk of flooding from surface water is the responsibility of Lead Local Flood Authorities. The 'risk of flooding from surface water' map has been produced by the Environment Agency on behalf of government, using information and input from Lead Local Flood Authorities.

You may wish to contact your Local Authority who may be able to provide information on surface water.

It is not possible to say for certain what the flood risk is but we use the best information available to provide an indication so that people can make informed choices about living with or managing the risks. The information we supply does not provide an indicator of flood risk at an individual site level. Further information can be found on the Environment Agency's website, <https://flood-warning-information.service.gov.uk/long-term-flood-risk>

Definition of flood zones

- **Zone 1** - The area is within the lowest probability of flooding from rivers and the sea, where the chance of flooding in any one year is less than 0.1% (i.e. a 1000 to 1 chance).
- **Zone 2** - The area which falls between the extent of a flood with an annual probability of 0.1% (i.e. a 1000 to 1 chance) fluvial and tidal, or greatest recorded historic flood, whichever is greater, and the extent of a flood with an annual probability of 1% (i.e. a 100 to 1 chance) fluvial / 0.5% (i.e. a 200 to 1 chance) tidal. (Land shown in light blue on the Flood Map).
- **Zone 3** - The chance of flooding in any one year is greater than or equal to 1% (i.e. a 100 to 1 chance) for river flooding and greater than or equal to 0.5% (i.e. a 200 to 1 chance) for coastal and tidal flooding.

Note: The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the [Strategic Flood Risk Assessment](#) when considering location and potential future flood risks to developments and land uses.

Appendix 5: Severn Trent Water Sewer Asset Plans



GENERAL CONDITIONS AND PRECAUTIONS TO BE TAKEN WHEN CARRYING OUT WORK ADJACENT TO SEVERN TRENT WATER'S APPARATUS

Please ensure that a copy of these conditions is passed to your representative and/or your contractor on site. If any damage is caused to Severn Trent Water Limited (STW) apparatus (defined below), the person, contractor or subcontractor responsible must inform STW immediately on: **0800 783 4444 (24 hours)**

- a) These general conditions and precautions apply to the public sewerage, water distribution and cables in ducts including (but not limited to) sewers which are the subject of an Agreement under Section 104 of the Water Industry Act 1991(a legal agreement between a developer and STW, where a developer agrees to build sewers to an agreed standard, which STW will then adopt); mains installed in accordance with an agreement for the self-construction of water mains entered into with STW and the assets described at condition b) of these general conditions and precautions. Such apparatus is referred to as "STW Apparatus" in these general conditions and precautions.
- b) Please be aware that due to The Private Sewers Transfer Regulations June 2011, the number of public sewers has increased, but many of these are not shown on the public sewer record. However, some idea of their positions may be obtained from the position of inspection covers and their existence must be anticipated.
- c) On request, STW will issue a copy of the plan showing the approximate locations of STW Apparatus although in certain instances a charge will be made. The position of private drains, private sewers and water service pipes to properties are not normally shown but their presence must be anticipated. This plan and the information supplied with it is furnished as a general guide only and STW does not guarantee its accuracy.
- d) STW does not update these plans on a regular basis. Therefore the position and depth of STW Apparatus may change and this plan is issued subject to any such change. Before any works are carried out, you should confirm whether any changes to the plan have been made since it was issued.
- e) The plan must not be relied upon in the event of excavations or other works in the vicinity of STW Apparatus. It is your responsibility to ascertain the precise location of any STW Apparatus prior to undertaking any development or other works (including but not limited to excavations).
- f) No person or company shall be relieved from liability for loss and/or damage caused to STW Apparatus by reason of the actual position and/or depths of STW Apparatus being different from those shown on the plan.

In order to achieve safe working conditions adjacent to any STW Apparatus the following should be observed:

1. All STW Apparatus should be located by hand digging prior to the use of mechanical excavators.
2. All information set out in any plans received from us, or given by our staff at the site of the works, about the position and depth of the mains, is approximate. Every possible precaution should be taken to avoid damage to STW Apparatus. You or your contractor must ensure the safety of STW Apparatus and will be responsible for the cost of repairing any loss and/or damage caused (including without limitation replacement parts).
3. Water mains are normally laid at a depth of 900mm. No records are kept of customer service pipes which are normally laid at a depth of 750mm; but some idea of their positions may be obtained from the position of stop tap covers and their existence must be anticipated.
4. During construction work, where heavy plant will cross the line of STW Apparatus, specific crossing points must be agreed with STW and suitably reinforced where required. These crossing points should be clearly marked and crossing of the line of STW Apparatus at other locations must be prevented.
5. Where it is proposed to carry out piling or boring within 20 metres of any STW Apparatus, STW should be consulted to enable any affected STW Apparatus to be surveyed prior to the works commencing.
6. Where excavation of trenches adjacent to any STW Apparatus affects its support, the STW Apparatus must be supported to the satisfaction of STW. Water mains and some sewers are pressurised and can fail if excavation removes support to thrust blocks to bends and other fittings.
7. Where a trench is excavated crossing or parallel to the line of any STW Apparatus, the backfill should be adequately compacted to prevent any settlement which could subsequently cause damage to the STW Apparatus. In special cases, it may be necessary to provide permanent support to STW Apparatus which has been exposed over a length of the excavation before backfilling and reinstatement is carried out. There should be no concrete backfill in contact with the STW Apparatus.
8. No other apparatus should be laid along the line of STW Apparatus irrespective of clearance. Above ground apparatus must not be located within a minimum of 3 metres either side of the centre line of STW Apparatus for smaller sized pipes and 6 metres either side for larger sized pipes without prior approval. No manhole or chamber shall be built over or around any STW Apparatus.
9. A minimum radial clearance of 300 millimetres should be allowed between any plant or equipment being installed and existing STW Apparatus. We reserve the right to increase this distance where strategic assets are affected.
10. Where any STW Apparatus coated with a special wrapping is damaged, even to a minor extent, STW must be notified and the trench left open until the damage has been inspected and the necessary repairs have been carried out. In the case of any material damage to any STW Apparatus causing leakage, weakening of the mechanical strength of the pipe or corrosion-protection damage, the necessary remedial work will be recharged to you.
11. It may be necessary to adjust the finished level of any surface boxes which may fall within your proposed construction. Please ensure that these are not damaged, buried or otherwise rendered inaccessible as a result of the works and that all stop taps, valves, hydrants, etc. remain accessible and operable. Minor reduction in existing levels may result in conflict with STW Apparatus such as valve spindles or tops of hydrants housed under the surface boxes. Checks should be made during site investigations to ascertain the level of such STW Apparatus in order to determine any necessary alterations in advance of the works.
12. With regard to any proposed resurfacing works, you are required to contact STW on the number given above to arrange a site inspection to establish the condition of any STW Apparatus in the nature of surface boxes or manhole covers and frames affected by the works. STW will then advise on any measures to be taken, in the event of this a proportionate charge will be made.
13. You are advised that STW will not agree to either the erection of posts, directly over or within 1.0 metre of valves and hydrants.
14. No explosives are to be used in the vicinity of any STW Apparatus without prior consultation with STW.

TREE PLANTING RESTRICTIONS

There are many problems with the location of trees adjacent to sewers, water mains and other STW Apparatus and these can lead to the loss of trees and hence amenity to the area which many people may have become used to. It is best if the problem is not created in the first place. Set out below are the recommendations for tree planting in close proximity to public sewers, water mains and other STW Apparatus.

15. Please ensure that, in relation to STW Apparatus, the mature root systems and canopies of any tree planted do not and will not encroach within the recommended distances specified in the notes below.
16. Both Poplar and Willow trees have extensive root systems and should not be planted within 12 metres of a sewer, water main or other STW Apparatus.
17. The following trees and those of similar size, be they deciduous or evergreen, should not be planted within 6 metres of a sewer, water main or other STW Apparatus. E.g. Ash, Beech, Birch, most Conifers, Elm, Horse Chestnut, Lime, Oak, Sycamore, Apple and Pear. Asset Protection Statements Updated May 2014
18. STW personnel require a clear path to conduct surveys etc. No shrubs or bushes should be planted within 2 metre of the centre line of a sewer, water main or other STW Apparatus.
19. In certain circumstances, both STW and landowners may wish to plant shrubs/bushes in close proximity to a sewer, water main of other STW Apparatus for screening purposes. The following are shallow rooting and are suitable for this purpose: Blackthorn, Broom, Cotoneaster, Elder, Hazel, Laurel, Privet, Quickthorn, Snowberry, and most ornamental flowering shrubs.

