



FLOOD RISK ASSESSMENT AND SUSTAINABLE DRAINAGE STRATEGY

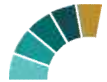
Westfield Energy Conservation Park Hertfordshire

Reference	6437-JPG-XX-XX-RP-D-0620-S2-P09
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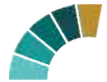
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CONFIDENTIALITY STATEMENT

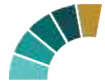
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This report has been prepared for the sole use and reliance of the above-named party. This report shall not be relied upon or transferred to any other parties without the express written authorisation of JPG (Leeds) Limited. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

DOCUMENT HISTORY

Revision	Date	Revision Details	Status	Author(s)	Approved
P01	07.03.2025	First Issue	Information	ETR	JDM
P02	01.04.2025	Second Issue	Information	ETR	JDM
P03	03.07.2025	Third Issue	Information	JDM	RMR
P04	14.07.2025	Forth Issue	Information	JDM	RMR
P05	25.07.2025	Fifth Issue	Information	JDM	RMR
P06	29.07.2025	Sixth Issue	Information	JDM	RMR
P07	31.07.2025	Seventh Issue	Information	JBW	RMR
P08	02.07.2026	Eighth Issue	Information	JDM	RMR
P09	26.08.2026	Ninth Issue	Information	EY	JDM



1.0 INTRODUCTION

JPG (Leeds) Limited (JPG) has been instructed by Lanpro Services Limited (Lanpro) on behalf of Lightrock Power Limited (the 'Applicant') to prepare a Flood Risk Assessment and Sustainable Drainage Strategy to accompany the planning application for Westfield energy Conservation Park, which incorporates a Battery Energy Storage System (BESS), co-located ground-mounted solar farm, associated infrastructure, access, biodiversity enhancements and landscaping (the 'Proposed Development') on land south of A507 at Westfield Common, Hertfordshire ('the Site'). The Site is within the jurisdiction of North Hertfordshire District Council ('the Council').

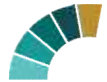
The report will review the flood risk issues associated with the Proposed Development and recommend any mitigation which should take place as part of the development.

This document is prepared in accordance with the requirements of the Overarching National Policy Statement for energy, the National Policy Statement for renewable energy infrastructure and the Planning Practice Guidance & National Planning Policy Framework (NPPF), which states that a site-specific flood risk assessment should be carried out by (or on behalf of) the developer or those proposing development.

The assessment should demonstrate to the decision-maker how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users.

The objectives of a site-specific flood risk assessment are to establish:

- Whether a proposed development is likely to be affected by current or future flooding from any source.
- Whether it will increase flood risk elsewhere.
- Whether the measures proposed to deal with these effects and risks are appropriate.
- The evidence for the local planning authority to apply (if necessary) the Sequential Test.
- Whether the development will be safe and pass the Exception Test, if applicable.
- Satisfying the local planning authority that any flood risk to the development or additional risk arising from the proposal will be successfully managed with the minimum environmental effect, to ensure that the Site can be developed and occupied safely.



The NPPF defines flood zones as follows:

- Zone 1 – Low Probability – Land having less than 1 in 1000-annual probability (< 0.1%) of river or sea flooding in any year.
- Zone 2 – Medium Probability – Land having between a 1 in 100 and 1 in 1000-annual probability (1% - 0.1%) of river flooding or land having between a 1 in 200 and 1 in 1000-annual probability of sea flooding (0.5% - 0.1%) in any year.
- Zone 3a – High Probability – Land having a 1 in 100 or greater annual probability (> 1%) of river flooding or land having a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
- Zone 3b – The Functional Floodplain – This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:
 - Land having a 1 in 30 or greater annual probability of flooding (3.3%), with any existing flood risk management infrastructure operating effectively; or
 - Land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 1 in 1000 (0.1%) annual probability of flooding).

The local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Note Zone 3b is not separately distinguished from Zone 3a on the Flood Map).

A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a Strategic Flood Risk Assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

The NPPF Annex 3 splits development into five "Flood Risk Vulnerability Classifications" as follows:

- Essential Infrastructure.
- Highly Vulnerable.
- More Vulnerable.
- Less Vulnerable.
- Water Compatible Development.

Note the Sequential Test and Exception Test are not covered in this flood risk Assessment report and are addressed within Section 6.12 of the Planning, Design and Access Statement.



Table 2 in the NPPF guidance document details which development vulnerability classifications are incompatible with the different flood zones.

Where developments contain different elements of vulnerability, the highest vulnerability category should be used for assessment, unless the development is considered in its component parts.

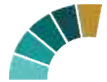
Table 2 is below:

Table 2: Flood risk vulnerability and flood zone 'incompatibility'					
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 †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓ *
Key: ✓ Exception test is not required X Development should not be permitted					

“†” 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.
- Not impede water flows and not increase flood risk elsewhere.



Other documents that have been reviewed and referred to in compiling this Flood Risk Assessment and Sustainable Drainage Strategy are detailed below.

These include both technical, nontechnical, legislation, codes, and guidance documents at both national and local level:

- National Planning Policy Framework 2024.
- Overarching National Policy Statement for energy (EN-1) 2024.
- National Policy Statement for renewable energy infrastructure (EN-3) 2024.
- National Policy Statement for electricity networks infrastructure (EN-5) 2024.
- Planning Practice Guidance Flood Risk and Coastal Change 2022.
- Flood and Water Management Act 2010.
- Water Industry Act 1991.
- DEFRA's Non-Statutory Technical Standards for SuDS.
- CIRIA C753 SUDS Manual and various other CIRIA guidance.
- Building Regulations: Approved Document H - Drainage and Waste Disposal (2015 edition).
- BS 8582:2013 Code of Practice for Surface Water Management for Development Sites.
- BS 8533:2017 Assessing and managing flood risk in development. Code of practice.
- BS EN 752:2017 Drain and sewer systems outside buildings - sewer system management.
- Hertfordshire County Council PFRA Report (2017).
- Hertfordshire County Council Level 1 SFRA Report (2022).
- Hertfordshire County Council LFRMS 2 (2019-2029).
- North Hertfordshire District Council Level 1 and 2 SRFA Report (2017).
- Thames Water Foul and Surface Water Drainage Policies.
- Sewers for Adoption 6th and 7th Edition (*now superseded*).
- Design and Construction Guidance (DCG) version 2.0, March 2020.

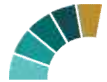
2.0 THE SITE

2.1 Location

The Site is located to the south of the A507 between Clothall and Cumberlow at Westfield Common, Hertfordshire.

The approximate centre of the Site is located at NGR 529060, 230372.

A location plan is provided in Appendix A.



2.2 Site Description

The Site is irregular in shape with an overall area of approximately 187.3 hectares. The Site currently comprises agricultural fields separated by hedgerows, land drains and trees with isolated areas of woodland.

The Site has been separated into a series of field numbers for ease of reference, as shown on the Site Layout Plan referenced below and presented in Appendix C of this report.

- Lanpro Drawing 5686-LAN-XX-XX-DR-L-1002 Rev P09.

A Site walkover of readily accessible areas was carried out by a JPG engineer on 10 February 2025. Pertinent information is described within the Geoenvironmental Desk Study Report Reference 6437-JPG-XX-XX-RP-G-0601.

Two areas of named woodland, Coldash Wood and Rydals Wood, are located adjacent to Fields 16 and 11 respectively. A further copse is located between Fields 4 and 10.

There are two public rights of way (PRoW) running through the Site. One running north to south adjacent to the unnamed watercourse reference Clothall 019 and bisects the Site. A second PRoW runs from Cumberlow Green in a southwesterly direction through the Site reference Clothall 020.

An existing pylon is located on Field 9 with 400kV overhead electricity lines (OHELs) aligned roughly east to west.

Site boundaries are generally formed by hedgelines, trees and/or adjacent agricultural land.

The Site is located in a rural setting with two areas of woodland present beyond the A507 with a further farm (Cumberlow Green) located on the eastern side of the A507 to the northeast of the Site. Residential properties are also present adjacent to the northwest (Field 1).

2.3 Site Topography

Ground levels generally fall to the PROW and watercourse at a ground level of approximately 108m AOD with the highest ground present in the west (Field 15) with ground levels at approximately 138m AOD. A series of hillsides and valleys is present in the eastern half with the topography rising and falling steadily.

A copy of the topographical survey is provided in Appendix B.



3.0 EXISTING DRAINAGE NETWORK

3.1 Watercourses and Land Drainage

The River Beane is located approximately 670m to the northeast and approximately 200m to the south of the Site at its closest point. Weston Tributary is located approximately 250m to the south of the Site and flows downstream to the River Beane at a confluence point adjacent to Newell Lane located approximately 600m to the south of the Site boundary.

There is a centrally located existing unnamed water course located within the Site boundary that flows south towards Weston Tributary.

There is direct access to the unnamed existing watercourse from within the Site boundary and it is likely that a gravity connection would be possible.

There is an extensive network of land drainage ditches located in Field 12 in the west of the Site which convey overland flows to the centrally located unnamed watercourse.

3.2 Public Sewer Network

The Proposed Development is situated in an area of arable farmland. Due to the agricultural nature of the Site, it is considered there are no public sewer mains in the vicinity and, therefore, Thames Water were not consulted as a part of the preparation of this report.

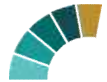
At the time of writing this report we have not obtained public sewer records from Thames Water (TW) due to the nature of the existing Site.

The law regarding responsibility for drains and sewers changed on the 1 October 2011. From this date the Government transferred the majority of drainage pipes that are either outside a property's boundary or are shared with other buildings to the Sewage/Water companies. The sewer records may not show all transferred sewers.

3.3 Private Drainage Systems/Network

There are existing land drains situated within Field 12 and along the field boundary that convey overland flows to the centrally located unnamed watercourse. The existing land drainage system has been desilted by the landowner prior to the development proposals detailed within this report. There are several inlet pipes recorded along the existing land drains suggesting that there are perforated pipes located underneath the existing ground conveying overland flows from surrounding arable land to the existing drainage ditches. There are two culverted sections recorded along the boundary of Field 12 of 200mm and 300mm diameter respectively.

The Proposed Development is situated in an area of arable farmland. Due to the agricultural nature of the Site, it is considered there are no existing private drainage networks within the development areas.



4.0 DEVELOPMENT PROPOSALS

Westfield Energy Conservation Park incorporates a Battery Energy Storage System (BESS), co-located ground mounted solar farm, associated infrastructure, access, biodiversity enhancement and landscaping.

No development is to take place in Fields 1, 2, 11, 16 and the northeast corner of Field 7. The BESS is proposed in the southern part of Field 9 to the south of the proposed substation compound and pre-existing 400kV OHEL. The remaining fields will be installed with solar panels, landscaping and biodiversity proposals.

The proposed Site layout plan reference 5686-LAN-XX-XX-DR-L-1002 produced by Lanpro is located in Appendix C.

5.0 FLOOD RISK ASSESSMENT

Flooding information was obtained from the Environment Agency (EA) website, which confirms that part of the Site lies within Flood Zone 2 and 3.

The Environment Agency Flood Mapping for surface water is in Appendix D.

Flood Zone 2 comprises land between Flood Zone 3 and the extent of the flooding from rivers or the sea with a 1 in 1,000 (0.1%) chance of flooding each year.

Flood Zone 3 comprises land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

NPPF Technical Guidance states that essential infrastructure is appropriate in Flood Zones 2 and 3, subject to Sequential and Exception testing.

NPPF Technical Guidance states that flood risk should be considered from all sources, including:

- Rivers and sea (Fluvial).
- Adjoining land (Pluvial).
- Groundwater.
- Flooding from sewers and drains.
- Flooding from reservoirs, canals and other artificial sources.

5.1 Flooding from Rivers and Sea (Fluvial)

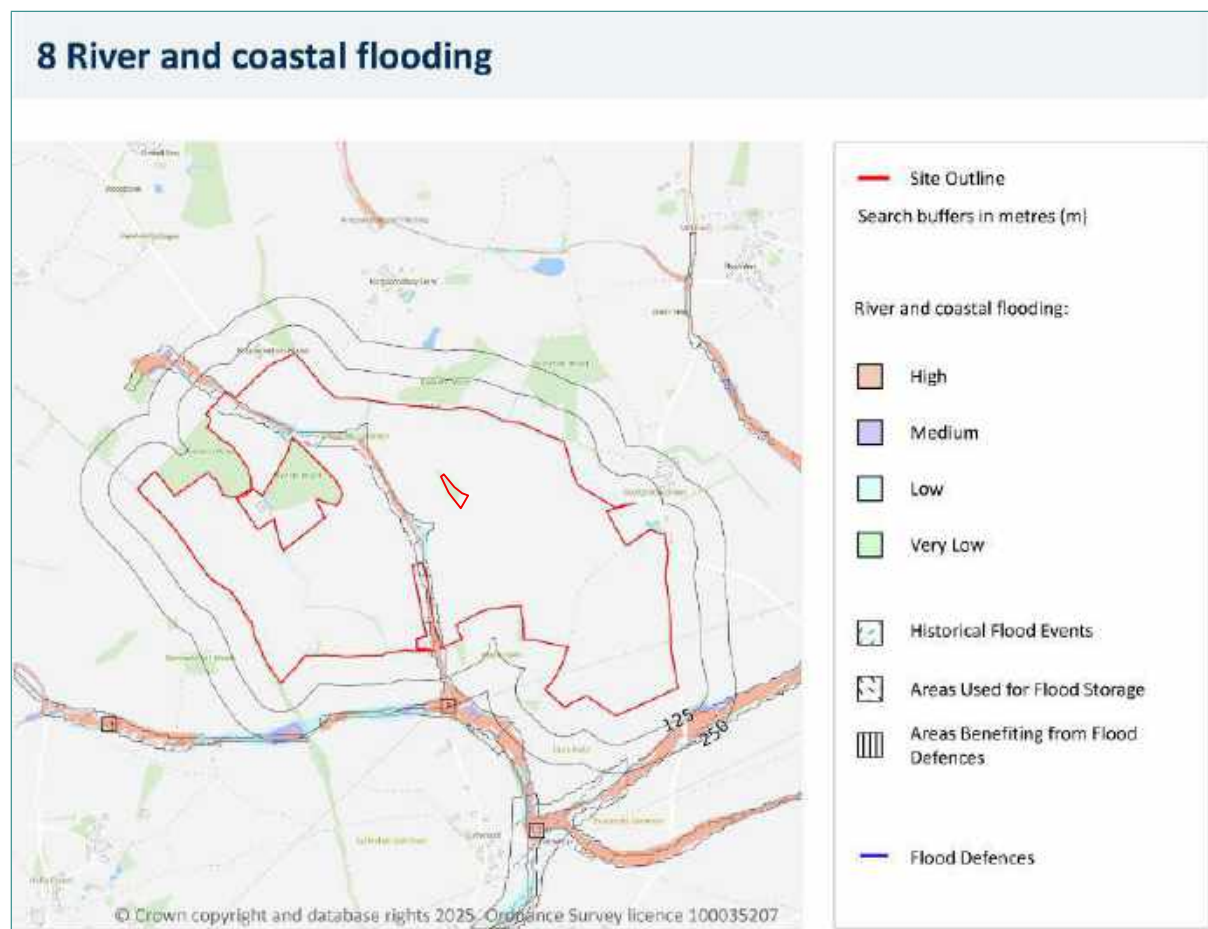
The River Beane is located approximately 670m to the northeast and approximately 200m to the south of the Site at its closest point. Weston Tributary is located approximately 250m to the south of the Site and flows downstream to the River Beane at a confluence point adjacent to Newell Lane located approximately 600m to the south of the Site boundary.



There is a centrally located existing unnamed water course located within the Site boundary that flows south towards Weston Tributary.

An excerpt of the mapping contained within the third-party Groundsure insight report showing the extent of flooding from rivers and the sea is shown below.

The Proposed Development areas are located outside of the high-risk flood extents, and due to the existing topography, are situated in an elevated position relative to the water courses and identified flood zones.



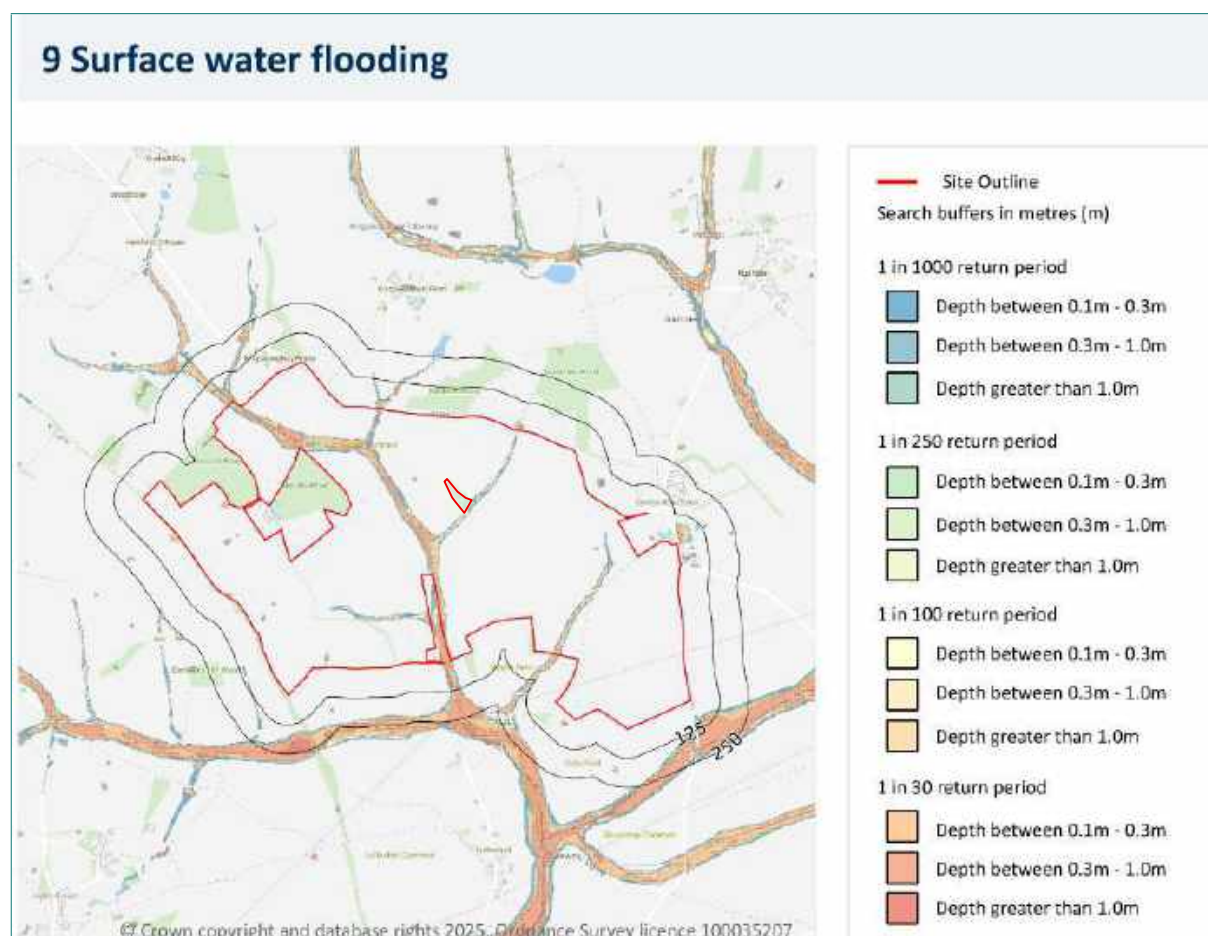
The risk to the Proposed Development from this potential flooding source is considered to be low to very low.

5.2 Flooding from Adjoining Land (Pluvial)

Overland flow/surface water flooding typically arises because of intense rainfall, often for a short duration. The runoff generated from this is unable to soak into the ground or enter drainage systems. It can run quickly off land and result in localised flooding.



An excerpt of the mapping contained within the third-party Groundsure insight report showing the extent of flooding from surface water is shown below.



As indicated on the above mapping, the majority of the Site falls within low to very low risk from surface flooding.

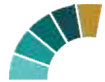
Where pluvial flood risk and overland flow routes have been identified on the mapping, these tend to follow the existing field boundaries.

The existing field boundaries are to be retained other than in two locations where a new access track is proposed with the existing hedgerow only removed locally.

The ground profile along the field boundaries tends to be lower than the adjacent land used for agricultural purposes. Shallow depressions/ditches form here either naturally or manmade for farming activities. These areas collect runoff from agricultural land and direct water to the watercourse located in the valley.

Areas identified to have pluvial flood risk and/or overland flows are as follows.

- Overland flow route within the Site boundary originates within the public highway adjacent to Field 4 (the A507) and traverses southwest through a valley within Fields 4 and 10 to the existing centrally located unnamed watercourse.



- Overland flow route traverses from the public highway along the southeast boundary of Field 6 (the A507, north of the Site) where it exits the Site boundary and conveys flows towards the Weston Tributary.
- There is an area at low to medium risk of flooding located within Field 12 denoting the existing land drainage network that conveys flows to the existing unnamed watercourse at the Site boundary to the south. It is understood that the existing land drainage ditches in this area have been de-silted.
- There are several areas at high risk of pluvial flooding identified adjacent to the centrally located unnamed watercourse. The proposed Solar development areas within Fields 3, 10, & 12 are situated outside of the identified high pluvial flood risk extents which are adjacent the existing unnamed watercourse.
- There are no areas of pluvial flood risk identified within both the proposed sub-station and BESS compound areas, however, there is an overland flow route identified between fields 7 and 9. The risk from this potential flooding source is, however, considered to be low and would not affect the sub-station and BESS compound areas.

In terms of depth of pluvial flood risk and overland flow routes these are also shown on the third-party Groundsure insight report (refer to the previous extract).

The depth of pluvial flood water as identified on the map could be in exceed 1.00m however, there are minimal areas within the Site boundary where the water reaches to this depth. These areas are restricted to the existing watercourse corridor and field boundaries passing through the Site and the overland flow path in field 6.

No solar panels are proposed immediately adjacent to the watercourse with the solar panel's installation starting higher up the valley side. In addition, the solar panels are constructed in an elevated position (minimum 0.80m above existing ground levels). The overland flow path indicated in field 6 indicated flow depths of significantly less than 1.0m and, as such, is able to pass beneath the panels unhindered.

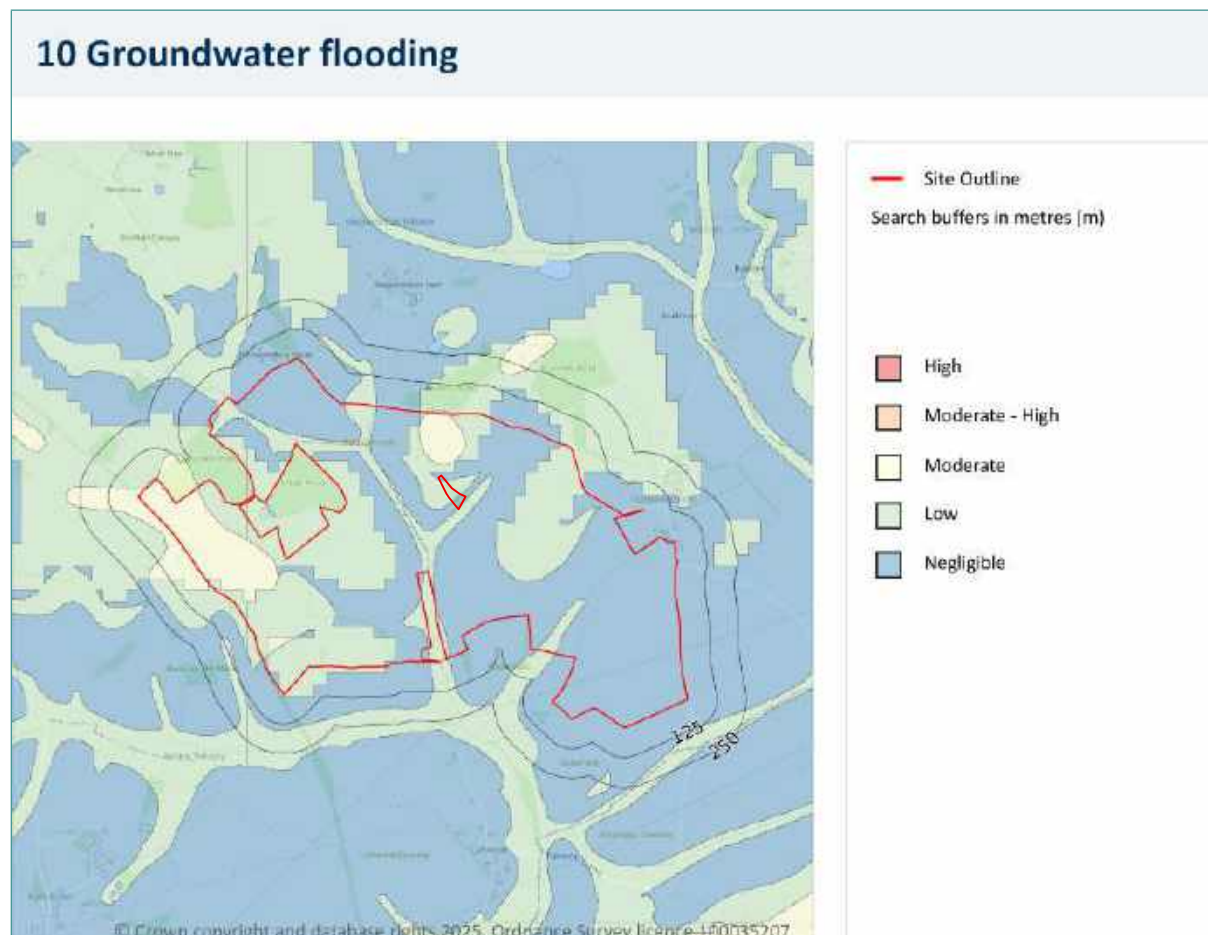
Existing levels are to be retained within the Solar development areas and, as such, the Proposed Development would have a negligible impact on the existing overland flow routes within the development boundary.

Based on the above assessment the risk to the Proposed Development areas from this potential flooding source is considered to be low.



5.3 Flooding from Groundwater

An excerpt of the mapping contained within the third party Groundsure insight report showing the extent of flooding from groundwater is below.



The Groundsure insight report indicates that the risk of groundwater flooding ranges from negligible to moderate.

The majority of the Site is located within areas at negligible to low risk with two localised areas at moderate risk of groundwater flooding adjacent to the Proposed Development in the north and east of the Site.

The proposed Sub-Station and BESS compound are both situated within an area of negligible groundwater flood risk.

Low risk extents are located adjacent to the existing unnamed watercourse and at existing field boundaries which are at a lower level than the proposed Solar development areas.

The moderate risk area is identified in the west within Field No. 15 and extends into the northern portion of Field No. 14a.

While this area is shown to be a moderate risk it only contains solar panels.



Existing ground levels are to be retained in the solar development areas and the proposed solar panels themselves are situated in an elevated position on legs, minimum 0.80m, above the existing ground levels, any flooding resulting from ground water would pass beneath the solar panels.

As such the risk to the development from groundwater flooding in the locality of fields 15 and 14a is considered to have a negligible impact.

A second area of moderate risk has been identified in the northern area of Field 3. Again, this is within the solar development area. The area at moderate risk corresponds with an area of superficial glacial deposits of sandy gravel denoted within the third-party Groundsure report. Existing ground levels are to be retained in the solar development areas with the proposed solar panels situated in an elevated position on legs minimum 0.80m above the existing ground levels. Any flooding resulting from ground water would pass beneath the solar panels.

As such the risk to the development from groundwater flooding in the locality of field 3 is considered to have a negligible impact.

A Phase 1 Geo-environment Desk Study has been undertaken on the Site by JPG reference 6437-JPG-XX-XX-RP-G-0601.

The Desk Study Report and the following geological publication have been consulted:

- British Geological Survey (BGS), Sheet 221, Hitchin, 1:50,000 Scale, Solid and Drift Edition, dated 1995.
- BGS, Onshore GeoIndex.
- BGS, Lexicon of Named Rock Units.

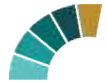
Historical borehole records have been obtained and reviewed from the BGS Onshore GeoIndex. There are five BGS borehole located on and within 250m of the Site, two of which are well records without any strata descriptions. The three borehole records containing strata descriptions are summarised in the desk study.

A summary of the historic borehole groundwater levels is provided in Table 1.0 below:

Table 1.0 – Summary of Historic Borehole Groundwater Levels

BGS Reference	Location	Recorded Water Level (m bgl)
TL23SE84	Field 15	41.5m
TL23SE9	47m northwest of the Site	Approx. 41m (137 ft)
TL23SE1	101m northwest of the Site	No Water Strike recorded

The historic borehole data indicates that the presence of shallow groundwater is not expected and, therefore, the risk of groundwater flooding occurring on the Site is negligible.



It should be noted that the groundwater conditions recorded are based on historic observations made by third parties. Groundwater levels are likely to vary owing to seasonal and weather-related effects and on-site testing is recommended as part of the detailed design phase.

The overall risk to the Proposed Development from this groundwater flooding is considered to be low.

5.4 Flooding from Sewers and Drains

The Proposed Development is situated in an area of arable farmland. Due to the agricultural nature of the Site locality, it is considered there is minimal to no existing private drainage infrastructure within the development areas. Should this exist it is not recorded on records or plans.

Likewise, it is considered unlikely that any substantial public sewers are situated within the Proposed Development boundary. Thames Water were not consulted as a part of the preparation of this report.

The overall risk to the Proposed Development from this potential flooding source is, therefore, considered to be low.

5.5 Flooding from Reservoirs, Canals and Other Artificial Sources

From review of the Environment Agency flood risk mapping from reservoir, canals and other artificial sources this confirmed that the Site is not in an area at risk from failure of a reservoir, canal or other artificial source.

The overall risk to the Proposed Development from reservoir, canal or other artificial source flooding is considered to be low to very low.

6.0 PROPOSED SURFACE WATER DRAINAGE

6.1 Proposed Surface Water Drainage & Disposal Hierarchy

The proposed on-site plot drainage will consist of a separate surface and foul water drainage system and will remain in private ownership.

SuDS features employed as part of the drainage infrastructure for the proposed development will be maintained by the Site owner or operator.

The Site owner or operator may wish to pass on maintenance of the on-site drainage infrastructure, including any SuDS feature, to a nominated management company or specialist facilities management contractor.

The following assessment summarises the disposal of surface water from the Site.



As detailed in DEFRA National Standards for Sustainable Drainage Systems the hierarchy for surface water drainage disposal is as follows:

- Discharge to ground (infiltration).
- Discharge to a surface water body (Land drainage Ditch, Water Body or Watercourse).
- Discharge to a surface water sewer.
- Discharge to a combined water sewer.
- Discharge to a foul water sewer.

All options for the disposal of the surface water have been considered in accordance with current legislation, recommendation, and good practice. Refer to Section 6.3 of this report for more details.

6.2 Sustainable Urban Drainage Systems (SuDS)

Sustainable Urban Drainage System (SuDS) may be used in conjunction with conventional drainage systems to improve water quality as well as manage surface water discharge. Incorporation of SuDS should be considered at the planning design stage of the project.

A third-party Groundsure report has been undertaken on the Site and surrounding area, document reference 'GS-645-QLI-Q3G-3ES'.

The third-party Groundsure report stated that there are Secondary aquifers located within the Site boundary. There are 'Secondary A' aquifers located on-site which have permeable layers capable of supporting water supplies. The third-party Groundsure report, therefore, concluded the underlaying existing ground conditions could be suitable for infiltration drainage methods.

National and local guidance require developers to consider the utilisation of SuDS features as part of new development. This is detailed in the Hertfordshire County Council Local Flood Risk Management Strategy. The suitability of SuDS at the development Site would be determined post planning approval and would require on-site ground investigation and permeability testing results which have already been undertaken and have provided assurance that the ground is therefore suitable for infiltration

On-site infiltration testing has been undertaken at four locations within the proposed substation and BEES field.

This testing confirmed that infiltration drainage methods would be suitable at the Site in these locations. Infiltration testing results are located in Appendix E.

Based on the requirements that SuDS drainage features should be considered and that infiltration drainage methods at the Site will be suitable based on the on-site infiltration testing, the following audit has been undertaken relating to suitability of SuDS features/systems at the Proposed Development.



While the audit outlines drainage features that could be considered, the detailed design stage (post planning determination) and the levels of the Site will dictate what can be reasonably incorporated.

Site specific SuDS Audit below:

Drainage Method	Description/Suitability	Proposal/Feasibility
1. Infiltration.	Site ground conditions suitable for infiltration subject to infiltration testing and groundwater monitoring on-site.	Applicable
2. Ponds and wetlands.	May be utilised – subject to detailed design.	Applicable (Infiltration)
3. Infiltration Basins.	Site ground conditions suitable for infiltration subject to infiltration testing and groundwater monitoring on-site.	Applicable
4. Detention Basins.	May be utilised – subject to detailed design.	Applicable (Infiltration)
5. Swale.	May be utilised – subject to detailed design.	Applicable (Infiltration)
6. French/Filter drain.	May be utilised to convey water.	Applicable (Infiltration)
7. Pervious/Permeable Pavement.	May be utilised - subject to detailed design.	Applicable (Infiltration)
8. Geocellular Systems/Tank systems.	May be utilised – subject to detailed design.	Applicable. (Infiltration)
9. Oversized pipes.	May be used as surface water attenuation.	Applicable.
10. Box culverts.	May be used as surface water attenuation.	Applicable.
11. Proprietary tanks systems.	May be used as surface water attenuation.	Applicable.

6.3 Surface Water Drainage

DEFRA National Standards for Sustainable Drainage Systems establishes a preferred hierarchy for the disposal of surface water. Consideration should firstly be given to soakaway, infiltration, watercourse, and sewer in that priority order.

On-site infiltration testing has been undertaken in the location of the proposed substation and BESS.

This testing confirmed that infiltration drainage methods would be suitable at the Site in this location. Infiltration testing result are located in Appendix E.

As such SuDS infiltration drainage is proposed for the Subs Station and BESS areas.

For the Solar areas, which primarily consist of solar panels and access tracks for infrequent use by maintenance workers it is assumed that the geology across the site is similar in these areas and as a result any run off from these areas would infiltrate into the ground as per the existing regime.



There is a centrally located existing unnamed water course located within the Site boundary that flows south towards Weston Tributary. For water that cannot infiltrate into the ground and is within the watercourse catchment it is likely that any residual flows would make their way naturally to the watercourse again as per the existing regime.

Due to the rural and agricultural nature of the Site, it is considered there are no public sewers located in the vicinity; therefore, Thames Water have not been consulted via their preplanning service, at the time of writing this report. Sewer record drawings have not been obtained based on this consideration.

Thus, the preferred method for disposal of surface water from the Proposed Development is via infiltration in line with recent on-site permeability testing. The permeability test did not prove that the ground is unsuitable for infiltration drainage therefore the ground is suitable for this preferred method of surface water disposal.

6.4 Runoff and Restricted Discharge

The Proposed Development is situated in an area of arable farmland. There is no existing impermeable area within the Solar Farm, BESS or Substation compounds.

As detailed in Section 6.3 above the proposal would be to drain the Site via infiltration. Should this prove not to be feasible then alternative methods for the disposal of surface water would need to be considered based on the hierarchy for disposal of surface water.

In the area of the substation and BESS onsite testing has confirmed that infiltration drainage method would be suitable.

As a result, the restricting discharge factor for the substation and BESS areas will be the permeability of the ground and the site confirmed infiltration rates.

Specific SuDS infiltration features are proposed for the substation and BESS areas only and are sized based on the site infiltration testing. For further details on the SuDS infiltration features refer to Section 6.6 of the report.

For the fields with proposed solar panels these will discharge at unrestricted rate due to the negligible impermeable area induced and the minimal impact on the existing greenfield regime.

Surface water runoff will fall between solar panels or drip from the face of the solar panels to the existing ground and soft landscaping.

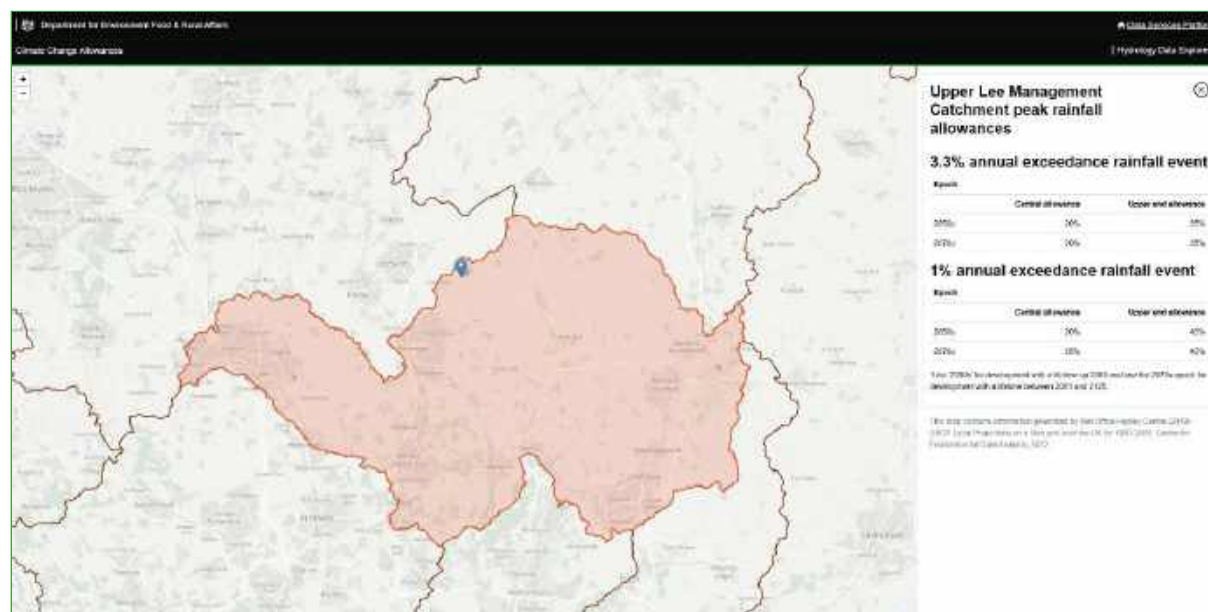
Surface water runoff will discharge as per the existing situation and topography, via infiltration or conveyance through existing overland flow routes and/or land drains to ultimately discharge to the existing unnamed watercourse.



6.5 Climate Change Allowance

As detailed in the EA guidance document for all new surface water systems the appropriate allowance for climate change should be adopted as set out within EA Guidance Peak Rainfall Allowance Table.

A copy of EA Guidance Peak Rainfall Allowance Table is shown below.



The table gives a range of uplift percentages for development based on the design life.

EA guidance states that both the central and upper allowances should be considered. For developments with a lifetime up to both 2060 and between 2060 and 2100, then the Central Allowance should be used.

The proposed lifespan of the development will fall within the time scales and, as such, the allowance for climate change for the Proposed Development would be 25%. However, consideration will be given to the upper allowance of 40%.

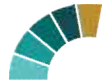
6.6 Surface Water Strategy Infiltration

On-site infiltration testing has been undertaken in the location of the proposed substation and BESS.

This testing confirmed that infiltration drainage methods would be suitable at the site in this location. Infiltration testing results are located in Appendix E.

As such, SuDS infiltration drainage is proposed for the substation and BESS areas.

Preliminary SuDS infiltration basin sizing along with supporting calculations have been undertaken using Info Drainage hydraulic design modelling software.



The Design Parameters for the Proposed BESS and Substation compounds are below:

- Rainfall FEH 2022.
- Uplift for climate change 40%.
- The 1 in 2, 1 in 30 and 1 in 100 plus climate change year storm events have been modelled.

Design calculations are located in Appendix F.

The proposed SuDS infiltration basins as indicated on the conceptual drainage strategy drawing 6437-JPG-ZZ-ZZ-DR-D-1400 are indicative and subject to detailed design for both levels and drainage.

The conceptual drainage strategy drawing is located in Appendix G.

The proposed on-site drainage system shall be designed in accordance with the relevant parts of national non-statutory technical SuDS standards, British Standards, Building Regulations and DEFRA National Standards for Sustainable Drainage Systems along with industry best practice and shall demonstrate that:

- No surcharge of pipes occurs in the 1 in 2-year rainfall event.
- No surface flooding occurs in 1 in 30-year rainfall event.
- No flooding to buildings and adjacent properties occurs in 1 in 100-year rainfall event (including an allowance of for the effects of future climate change), as defined in NPPF Technical Guidance. The climate change allowance shall be 40%.

The drainage system for the Solar areas, Substation and BESS compounds will consist of separate systems as detailed on the conceptual drainage strategy drawing 6437-JPG-ZZ-ZZ-DR-D-1400 and is located in Appendix G.

The typical drainage system features to be implemented for each development area are detailed on drawing 6437-JPG-ZZ-ZZ-DR-D-1410, which is located in Appendix G.

Solar Farms

The proposed solar farm areas comprise of elevated solar panels and access tracks for panel maintenance.

For the purposes of assessing a worst-case scenario, the access tracks are considered to comprise of impermeable hardstanding. For typical access track installation details refer to Lanpro drawing 5686-LAN-XX-XX-DR-L-3008, which is located in Appendix C.

Access tracks will be constructed with a crossfall to one side.

Surface water runoff from the access track will be intercepted by a filter drain or ditch located immediately adjacent to the access track (ideally to the low side).



The filter drains or drainage ditches will provide both short term storage and treatment for runoff induced by the access tracks prior to discharging via infiltration.

For typical details of the proposed access track drainage refer to the Typical Drainage Details drawing reference 6437-JPG-ZZ-ZZ-DR-C-1410 which is also located in Appendix G.

Precipitation is estimated to be intercepted by approximately 25% to 40% of the solar development areas. There is the potential risk of water “sheeting” off the solar panel surfaces; the uncontrolled flow of precipitation as a continuous thin layer across the surface of the panels could induce an increase of velocity and volume of runoff when it reaches ground level. Rainfall intercepted by the panels will either flow down their surfaces and drip onto the ground below or evaporate from the panel surfaces.

Without mitigation, there is a risk of soil erosion beneath the panels due to uncontrolled concentrated flows dripping onto the ground from the panel surface, which could lead to the formation of rivulets and increase runoff velocity across the solar farm areas, however, the risk of erosion induced by the water sheeting and dripping effect are mitigated by the intrinsic design of the solar farm as detailed below.

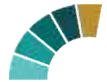
The solar panels will be installed with a pitch of 20 degrees, which will slow water flowing over their surface and reduce the likelihood of water sheeting. Solar panel installations typically incorporate offsets between individual panels or around 3.50m which allow water to disperse uniformly onto the vegetated ground below.

For typical solar panel installation details refer to Lanpro drawing 5686-LAN-XX-XX-DR-L-3019 which is located in Appendix C.

Offsets between panel rows will assist in reducing the velocity of runoff, allowing water to drip through gaps between panels rather than sheeting and dripping off the lower edges of the modules.

Solar panels are proposed to be installed in alignment with the existing topography along contours to increase the likelihood of infiltration to the existing ground which will prevent concentrated flows.

Proposed soft landscaping and vegetation will enhance surface water infiltration compared to the existing arable land use, where the ground is often bare following crop harvests. Soft landscaping and vegetated areas will be maintained in accordance with the Environmental Masterplan (5686-LAN-XX-XX-DR-L-1003) submitted with this planning application.



The land adjacent to the existing unnamed watercourse will be seeded with appropriate grass species and other flora, in accordance with the Environmental Masterplan. Vegetated ground adjacent to the panels will facilitate infiltration at the point where precipitation falls, and any excess runoff will be absorbed by soft landscaping areas beneath the panels. The implementation of vegetated areas adjacent to the watercourse will increase infiltration rates reducing the discharge volumes to the unnamed watercourse.

A comparable approach to managing runoff from solar panels has previously been accepted by Hertfordshire LLFA in relation to the neighbouring Beane Solar Farm (East Herts ref 3/24/2245/FUL)'.

Consequently, runoff reaching on-site watercourses via natural drainage pathways will not be increased.

Substation

The substation equipment is to be located within a compound area which will consist of a granular matrix with a minimum 30% porosity ratio.

The stone matrix will be contained within an impermeable liner system to contain any pollutants. For further details on pollution control refer to Section 6.7 of this report.

Areas of hardstanding will be laid to nominal falls to allow surface water to runoff into the granular subbase layers where it will be conveyed via a perforated piped land drainage system to the infiltration basin.

For typical details of the proposed subbase attenuation system and associated land drain refer to the typical detail in Appendix G.

Under normal operation, the primary treatment of the runoff will be provided via the granular matrix around the substation plant which will filtrate pollutants and slow down the runoff. Secondary treatment will be provided via the infiltration basin. Additional pollution prevention will be installed should a fire occur in the sub-station compound. For further details on pollution control refer to Section 6.7.

The proposed SuDs infiltration basins as indicated on the conceptual drainage strategy drawing 6437-JPG-ZZ-ZZ-DR-D-1400 are indicative and subject to detailed design for both levels and drainage.

BESS

The BESS compound drainage system will operate in a similar manor to the Substation compound. Electrical infrastructure within the BESS area will be sited on concrete pads located within the proposed granular matrix compound area.

This granular matrix shall consist of granular material which has a minimum 30% porosity ratio.



The stone matrix will be contained within an impermeable liner system to contain any pollutants. For further details on pollution control refer to Section 6.7 of this report.

A series of perforated land drains will convey the water to the infiltration swale/ditch.

For typical details of the proposed subbase attenuation system and associated land drain refer to the typical detail in Appendix G.

Under normal operation the primary treatment of the runoff will be provided via the granular matrix within the BESS compound which will filtrate pollutants and slow down the runoff. Secondary treatment will be provided via the infiltration swale/ditch.

Additional pollution prevention will be installed should a fire occur in the BESS compound. For further details on pollution control refer to Section 6.7.

The proposed SuDS infiltration basins as indicated on the conceptual drainage strategy drawing 6437-JPG-ZZ-ZZ-DR-D-1400 are indicative and subject to detailed design for both levels and drainage.

6.7 Water Quality and Pollution Control

It is a requirement to ensure that the quality of any receiving water body is not adversely affected by the Proposed Development.

Both SuDS and proprietary treatment systems can be incorporated into the drainage design to assist with cleaning of the surface water runoff.

Runoff from the impermeable areas will be routed through appropriately sized proprietary treatment systems and/or SuDS features to provide treatment of the runoff prior either infiltration or discharge off-site.

The pollution hazard level of surface water runoff from the Proposed Development is detailed in Chapter 26 of the SuDS Manual.

The Proposed Development is split into three different development areas; the Solar area, the BESS compound and the Substation compound.

The Solar areas primarily consist of solar panels and access tracks for maintenance workers. Maintenance is assumed to comprise of infrequent traffic; therefore, the proposed use of these areas aligns with the low pollution hazard level specified in Table 26.2 of the CIRIA SuDS Manual.

The BESS and Substation compounds fall outside of the defined categories for land use specified in Table 26.2 of the CIRIA SuDS Manual. The SuDS Manual recognises that, where a proposed land use does not fall within the defined categories, professional judgement should be applied in determining the appropriate pollution hazard level and that the relevant pollution mitigation indices should be agreed with the approving drainage body.



The LLFA has subsequently reviewed the proposed approach and, in point 3 of its consultation response, has advised that a site-specific water quality assessment is required for runoff from the BESS and Substation areas, on the basis that these areas cannot be adequately evaluated using the Simple Index Approach. The LLFA has also advised that road runoff, particularly during the construction phase, should be assessed and that consultation with the Environment Agency may be necessary.

Notwithstanding the LLFA's comments, it is considered that the Simple Index Approach provides an appropriate and proportionate basis for assessing the operational surface water runoff from the Proposed Development. The BESS and Substation compounds do not comprise activities involving the routine handling, storage or processing of significant quantities of pollutants, and the potential sources of pollution are limited and can be controlled through the drainage design and appropriate operational management measures. The areas are therefore not considered to represent a pollution risk materially greater than the land-use categories for which the Simple Index Approach is intended to be applied.

The pollution mitigation indices adopted for the BESS and Substation compounds have therefore been selected on a precautionary basis, having regard to the nature of the proposed activities, the potential pollutants associated with the development and the proposed surface water management strategy.

Whilst the Simple Index Approach is not specifically intended to provide a site-specific assessment for all forms of development, it provides a transparent and established methodology for assessing pollution hazard and treatment requirements. In this case, its application is considered appropriate when combined with the proposed treatment train, which provides multiple stages of treatment and therefore reduces the risk of pollutants being conveyed to the receiving water environment.

	TSS	Metals	Hydrocarbons
Hazard Indices Low	0.50	0.40	0.40



These figures have been taken from CIRIA SuDS manual table 26.2 and extract is below:

Table 26.3 of the CIRIA SuDS Manual details SuDS mitigation indices for Total Suspended Solids (TSS), Metals and Hydrocarbons for a range of SuDS devices. Extract of this table is below:

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters				
Type of SuDS component	Mitigation indices¹			
	TSS	Metals	Hydrocarbons	
Filter strip	0.4	0.4	0.5	
Filter drain	0.4 ²	0.4	0.4	
Swale	0.5	0.6	0.6	
Bioretention system	0.8	0.8	0.8	
Permeable pavement	0.7	0.6	0.7	
Detention basin	0.5	0.5	0.6	
Pond ⁴	0.7 ³	0.7	0.5	
Wetland	0.8 ³	0.8	0.8	
Proprietary treatment systems ^{5,6}	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.			

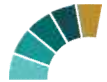
Notes

- 1 SuDS components only deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters.
- 2 Filter drains can remove coarse sediments, but their use for this purpose will have significant implications with respect to maintenance requirements, and this should be taken into account in the design and Maintenance Plan.
- 3 Ponds and wetlands can remove coarse sediments, but their use for this purpose will have significant implications with respect to the maintenance requirements and amenity value of the system. Sediment should normally be removed upstream, unless they are specifically designed to retain sediment in a separate part of the component, where it cannot easily migrate to the main body of water.
- 4 Where a wetland is not specifically designed to provide significantly enhanced treatment, it should be considered as having the same mitigation indices as a pond.
- 5 See **Chapter 14** for approaches to demonstrate product performance. A British Water/Environment Agency assessment code of practice is currently under development that will allow manufacturers to complete an agreed test protocol for systems intended to treat contaminated surface water runoff. Full details can be found at: <http://tinyurl.com/qf7yuj7>
- 6 SEPA only considers proprietary treatment systems as appropriate in exceptional circumstances where other types of SuDS component are not practicable. Proprietary treatment systems may also be considered appropriate for existing sites that are causing pollution where there is a requirement to retrofit treatment. SEPA (2014) also provides a flowchart with a summary of checks on suitability of a proprietary system.

Sufficient SuDS mitigation will need be provided in accordance with the pollution hazard indices for the Proposed Development through the incorporation of SuDS and/or proprietary treatment systems during the detailed design stage.

In addition to normal operation, consideration should be given to the unlikely event of a fire occurrence at the substation or BESS compounds. In this situation there would need to be a means of containing any contaminated fire water and stop this entering the infiltration basin and swales.

As the granular matrix below the substation and BESS compounds will be lined, fire water runoff could be contained within this area in the granular matrix.



To allow this to happen cut off valves or shut valves will be installed between the compound granular matrix and the SuDS infiltration and/or the attenuation features which would be activated as part of the fire alarm system/procedure at the Site.

Details of how this would operate and be controlled are outside the scope of this report and would be design and detailed by specialist fire consultants as part of discharging the relevant planning condition.

6.8 Volume Control

SuDS guidance advises that the runoff volume from the development Site for the 1 in 100-year, six-hour rainfall event should not exceed the greenfield runoff volume for the same event.

The predevelopment greenfield runoff volume for the 1 in 100-year, six-hour event has been calculated as 15383.78m³.

Volume calculations for the predevelopment Site are included in Appendix H.

The solar farm areas will discharge as per the existing greenfield runoff volume.

By nature of the development proposals, surface water restriction and attenuation of the Substation and BESS areas will result in the increase of the post development runoff volume for the 1 in 100-year, six-hour plus 40% climate change event.

As this extra runoff volume cannot be retained on-site it will be discharged from the Site via infiltration or at a maximum restricted discharge of 2 l/s/ha or QBAR, whichever is the higher value, as detailed in the SuDS Manual Chapter 24, Section 24.4.

The Site runoff will be restricted to QBAR for all events up to and including the 1 in 100-year event plus climate change and as such meets with the criteria.

6.9 Exceedance Event

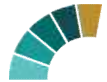
For storm events above the design event of 1 in 100-year event plus climate change runoff would be managed so that it would not affect the Proposed Development or any third party land or property.

The flood exceedance route would be applicable for storm events above the 1 in 100-year plus climate change event.

A Drainage Exceedance Plan drawing 6437-JPG-ZZ-ZZ-DR-D-1401 has been produced to demonstrate the exceedance event overland flow routes. A copy of the exceedance plan drawing is located in Appendix I.

6.10 Foul Water Drainage

No foul water drainage is proposed as part of the new development.



7.0 CONCLUSIONS

This assessment has looked at flood risk in relation to Proposed Development which incorporates a Battery Energy Storage System (BESS), co-located ground mounted solar farm, associated infrastructure, access, biodiversity enhancement and landscaping.

The report has been prepared to determine a conceptual drainage strategy and to assess the drainage impact for the Proposed Development.

Part of the Site is located within Flood Zones 2 and 3, and NPPF Technical Guidance states that solar farms as essential infrastructure are appropriate in Flood Zones 2 and 3, subject to Sequential and Exception testing.

This report has considered all potential sources of flood risk to the Proposed Development and can conclude that these are considered low from all sources.

Overall, this report demonstrates that flood risk to the Proposed Development is considered to be low.

The on-site private surface water drainage system will be designed and constructed in accordance with all national and local standards and best practice.

Hierarchy for discharge of surface water has been considered. Consideration should firstly be given to soakaway/infiltration, watercourse and then sewer in that priority order.

On-site infiltration testing has been undertaken in the location of the proposed substation and BESS.

This testing confirmed that infiltration drainage methods would be suitable at the Site in these locations.

SuDS infiltration features would be used for the Substation and BESS compounds. This would be in the form of infiltration basins and swales.

Proposed allowance for climate change for this Site is 40%.

The reports supporting calculations and drawings provide a robust case for justifying the means of surface water drainage and that the Site can be suitably, safely, and sustainably drained.

Overall, this report demonstrates that the recommended surface water drainage systems are reasonable and acceptable for the Proposed Development.



Appendix A Site Location Plan



SITE LOCATION PLAN
SCALE 1:5000

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DO NOT SCALE (A1)

NOTES

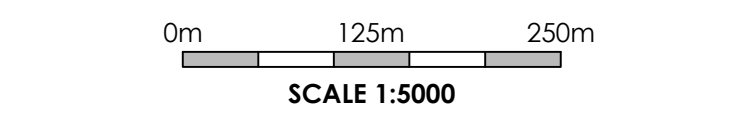
- GENERAL NOTES**
1. ALL MATERIALS AND WORKMANSHIP IS TO COMPLY WITH JPG CONSULTANTS STANDARD SPECIFICATION & ALL RELEVANT BRITISH & EUROPEAN STANDARDS.
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, M & E CONSULTANTS AND JPG CONSULTANTS DRAWINGS.
 3. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO COMMENCEMENT OF WORKS.

SITE INFORMATION

SITE ADDRESS
ADDRESS - HERTFORDSHIRE, CUMBERLOW GREEN, BUNTINGFORD, SG7 6RN
OS CO-ORDINATES - E529060, N230372

LEGEND

RED LINE BOUNDARY



P03	REDLINE BOUNDARY UPDATED.	21/07/25	RMR	JDM
P02	PROJECT TITLE AMENDED.	07/03/25	JDM	ETR
P01	PRELIMINARY ISSUE.	19/02/25	JBW	ETR
REV	DESCRIPTION	DATE	CHK	BY

Project - 6437
WESTFIELD ENERGY
CONSERVATION PARK,
HERTFORDSHIRE

Drawing Title
SITE LOCATION PLAN

INFORMATION



www.jpg.group
E admin@jpg.group | T +44 (0)113 263 1155



Appendix B Topographic Survey



Do not scale from this drawing.



SURVEY CONTROL CO-ORDINATES				
STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
G03	236868.105	200778.174	111.43	Peg 6.8 m
G04	236795.744	200808.658	111.50	Peg 6.8 m
G05	236747.747	200806.485	116.98	Peg 6.8 m
G06	236747.747	200806.485	116.98	Peg 6.8 m
G07	236674.899	200806.555	122.33	Peg 6.8 m
G08	236674.899	200806.555	122.33	Peg 6.8 m
RW02	236491.903	200800.354	126.07	Peg 6.8 m
RW01	236491.903	200800.354	126.07	Peg 6.8 m
G01	236388.199	200747.011	131.91	Peg 6.8 m
G02	236388.199	200747.011	131.91	Peg 6.8 m
G04	236335.509	200738.129	129.60	Peg 6.8 m
G05	236477.027	200738.129	129.60	Peg 6.8 m
G06	236500.707	200738.129	117.04	Peg 6.8 m
G07	236544.211	200738.129	117.04	Peg 6.8 m
G08	236500.707	200738.129	114.24	Peg 6.8 m
G09	236544.211	200738.129	114.24	Peg 6.8 m
G10	236500.707	200738.129	106.45	Peg 6.8 m
G11	236544.211	200738.129	106.45	Peg 6.8 m
R202	236838.305	200931.455	125.51	Peg 6.8 m
R203	236832.192	200931.455	125.51	Peg 6.8 m
R204	236838.305	200944.489	124.96	Peg 6.8 m
R205	236832.192	200944.489	124.96	Peg 6.8 m
R206	236838.305	200931.455	137.77	Peg 6.8 m
R207	236832.192	200931.455	137.77	Peg 6.8 m
J502	236846.312	200776.111	132.09	Peg 6.8 m
J503	236846.312	200776.111	132.09	Peg 6.8 m
J504	236846.312	200776.111	132.09	Peg 6.8 m
J505	236846.312	200776.111	132.09	Peg 6.8 m
J506	236846.312	200776.111	132.09	Peg 6.8 m
J507	236846.312	200776.111	132.09	Peg 6.8 m
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J510	236846.312	200776.111	132.09	Peg 6.8 m
J511	236846.312	200776.111	132.09	Peg 6.8 m
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J513	236846.312	200776.111	132.09	Peg 6.8 m
J514	236846.312	200776.111	132.09	Peg 6.8 m
J515	236846.312	200776.111	132.09	Peg 6.8 m
J516	236846.312	200776.111	132.09	Peg 6.8 m
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J521	236846.312	200776.111	132.09	Peg 6.8 m
J522	236846.312	200776.111	132.09	Peg 6.8 m
J523	236846.312	200776.111	132.09	Peg 6.8 m
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J528	236846.312	200776.111	132.09	Peg 6.8 m
J529	236846.312	200776.111	132.09	Peg 6.8 m
J530	236846.312	200776.111	132.09	Peg 6.8 m
J531	236846.312	200776.111	132.09	Peg 6.8 m
J532	236846.312	200776.111	132.09	Peg 6.8 m
J533	236846.312	200776.111	132.09	Peg 6.8 m

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	DATE
-----	-------------	-------	------	------



LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

0845 040 5969
survey-solutions.co.uk

IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH
NOTTINGHAM YEOVL

PROJECT TITLE
MUNCHES FARM, GUNBERLOW GREEN, BUNTINGFORD

DRAWING DETAIL
TOPOGRAPHICAL SURVEY
Sheet 1 of 14

SURVEYOR GF,JH,DP	SURVEY DATE 06/12/24	CHECKED BY BT	APPROVED BY DB	DWG STAT FINAL
DRAWING NUMBER 71226CVLS-01			REVISION	ISSUE DATE 11/12/20:





TOPOGRAPHICAL & MEASURED BUILDING SURVEYS					
ABBREVIATIONS & SYMBOLS					
AA	Arched headings	ER	East End	ESD	Roofed Staircase
AB	Architrave	EW	East Window	HSZ	Household
AC	Asphalt Roads	FB	Flow Band	HS	High Spot
AD	Asphalt Driveway	FL	Flow Line	IS	Iron Staircase
AE	Asphalt Driveway	FR	Free Runway	ISL	Iron Staircase
AF	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AR	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AS	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AT	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AV	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AW	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AX	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AY	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
AZ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BA	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BB	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BC	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BD	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BE	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BF	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BH	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BI	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BJ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BK	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BQ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BR	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BS	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BT	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BU	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BV	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BW	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BX	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BY	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
BZ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CA	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CB	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CC	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CD	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CE	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CF	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CH	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CI	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CJ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CK	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CQ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CR	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CS	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CT	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CU	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CV	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CW	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CX	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CY	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
CZ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DA	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DB	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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DD	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DE	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DF	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DH	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DI	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DJ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DK	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DQ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DR	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DS	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DT	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DU	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DV	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DW	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DX	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DY	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
DZ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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EB	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EC	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
ED	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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EF	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EH	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EI	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EJ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EK	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EQ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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ES	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
ET	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EU	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EV	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EW	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EX	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EY	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
EZ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FA	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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FG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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FI	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FJ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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FL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FR	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FS	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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FW	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
FX	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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FZ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GA	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GB	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GC	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
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GF	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GH	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GI	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GJ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GK	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GR	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GS	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GT	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GU	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GV	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GW	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GX	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GY	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
GZ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HA	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HB	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HC	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HD	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HE	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HF	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HH	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HI	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HJ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HK	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HR	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HS	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HT	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HU	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HV	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HW	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HX	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HY	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
HZ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IA	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IB	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IC	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
ID	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IE	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IF	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IH	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
II	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IJ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IK	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IR	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IS	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IT	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IU	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IV	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IW	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IX	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IY	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IZ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JA	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JB	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JC	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JD	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JE	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JF	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JG	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JH	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JI	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IJ	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JK	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
IL	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JM	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JN	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JP	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JO	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JR	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase
JS	Asphalt Driveway	FS	Free Runway	ISL	Iron Staircase

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Description heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type including roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including: sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to start of work.

Detail, services and features may not have been surveyed if obstructed or reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal boundary.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

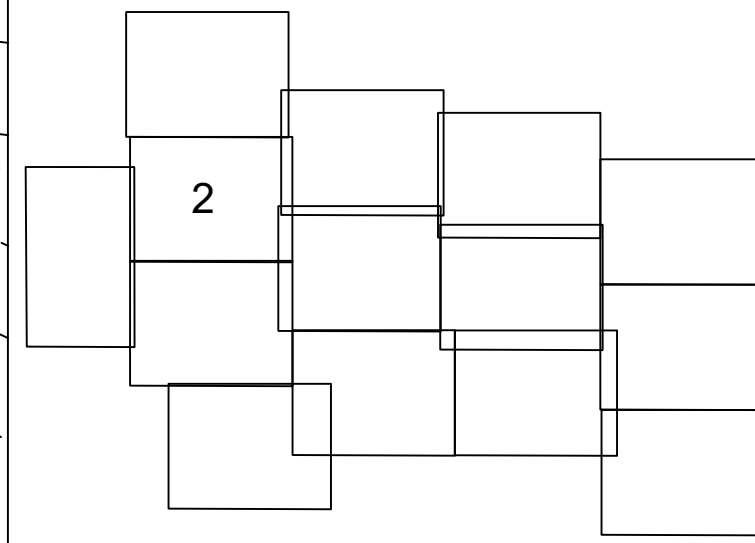
General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

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Do not scale from this drawing.



SHEET LAYOUT

SURVEY CONTROL CO-ORDINATES				
STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
G00	528668.05	220779.74	111.043	Peg & Nail
G01	528735.94	220800.66	116.164	Peg & Nail
G02	528730.41	220801.61	116.164	Peg & Nail
G03	528737.07	220800.46	116.174	Peg & Nail
G04	528737.07	220800.46	116.174	Peg & Nail
RW05	528731.93	220797.891	121.32	Peg & Nail
RW06	528731.93	220797.891	121.32	Peg & Nail
RW07	528731.93	220797.891	121.32	Peg & Nail
RW08	528430.17	220472.082	131.910	Peg & Nail
RW09	528731.93	220797.891	121.32	Peg & Nail
RW10	528430.17	220472.082	131.910	Peg & Nail
RW11	528430.17	220472.082	131.910	Peg & Nail
RW12	528430.17	220472.082	131.910	Peg & Nail
RW13	528430.17	220472.082	131.910	Peg & Nail
RW14	528430.17	220472.082	131.910	Peg & Nail
RW15	528430.17	220472.082	131.910	Peg & Nail
RW16	528430.17	220472.082	131.910	Peg & Nail
RW17	528430.17	220472.082	131.910	Peg & Nail
RW18	528430.17	220472.082	131.910	Peg & Nail
RW19	528430.17	220472.082	131.910	Peg & Nail
RW20	528430.17	220472.082	131.910	Peg & Nail
RW21	528430.17	220472.082	131.910	Peg & Nail
RW22	528430.17	220472.082	131.910	Peg & Nail
RW23	528430.17	220472.082	131.910	Peg & Nail
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RW26	528430.17	220472.082	131.910	Peg & Nail
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RW39	528430.17	220472.082	131.910	Peg & Nail
RW40	528430.17	220472.082	131.910	Peg & Nail
RW41	528430.17	220472.082	131.910	Peg & Nail
RW42	528430.17	220472.082	131.910	Peg & Nail
RW43	528430.17	220472.082	131.910	Peg & Nail
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RW47	528430.17	220472.082	131.910	Peg & Nail
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RW49	528430.17	220472.082	131.910	Peg & Nail
RW50	528430.17	220472.082	131.910	Peg & Nail
RW51	528430.17	220472.082	131.910	Peg & Nail
RW52	528430.17	220472.082	131.910	Peg & Nail
RW53	528430.17	220472.082	131.910	Peg & Nail
RW54	528430.17	220472.082	131.910	Peg & Nail
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RW57	528430.17	220472.082	131.910	Peg & Nail
RW58	528430.17	220472.082	131.910	Peg & Nail
RW59	528430.17	220472.082	131.910	Peg & Nail
RW60	528430.17	220472.082	131.910	Peg & Nail
RW61	528430.17	220472.082	131.910	Peg & Nail
RW62	528430.17	220472.082	131.910	Peg & Nail
RW63	528430.17	220472.082	131.910	Peg & Nail
RW64	528430.17	220472.082	131.910	Peg & Nail
RW65	528430.17	220472.082	131.910	Peg & Nail
RW66	528430.17	220472.082	131.910	Peg & Nail
RW67	528430.17	220472.082	131.910	Peg & Nail
RW68	528430.17	220472.082	131.910	Peg & Nail
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RW71	528430.17	220472.082	131.910	Peg & Nail
RW72	528430.17	220472.082	131.910	Peg & Nail
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RW80	528430.17	220472.082	131.910	Peg & Nail
RW81	528430.17	220472.082	131.910	Peg & Nail
RW82	528430.17	220472.082	131.910	Peg & Nail
RW83	528430.17	220472.082	131.910	Peg & Nail
RW84	528430.17	220472.082	131.910	Peg & Nail
RW85	528430.17	220472.082	131.910	Peg & Nail
RW86	528430.17	220472.082	131.910	Peg & Nail
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RW88	528430.17	220472.082	131.910	Peg & Nail
RW89	528430.17	220472.082	131.910	Peg & Nail
RW90	528430.17	220472.082	131.910	Peg & Nail
RW91	528430.17	220472.082	131.910	Peg & Nail
RW92	528430.17	220472.082	131.910	Peg & Nail
RW93	528430.17	220472.082	131.910	Peg & Nail
RW94	528430.17	220472.082	131.910	Peg & Nail
RW95	528430.17	220472.082	131.910	Peg & Nail
RW96	528430.17	220472.082	131.910	Peg & Nail
RW97	528430.17	220472.082	131.910	Peg & Nail
RW98	528430.17	220472.082	131.910	Peg & Nail
RW99	528430.17	220472.082	131.910	Peg & Nail
RW100	528430.17	220472.082	131.910	Peg & Nail

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	CHECKED
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LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

0845 040 5969
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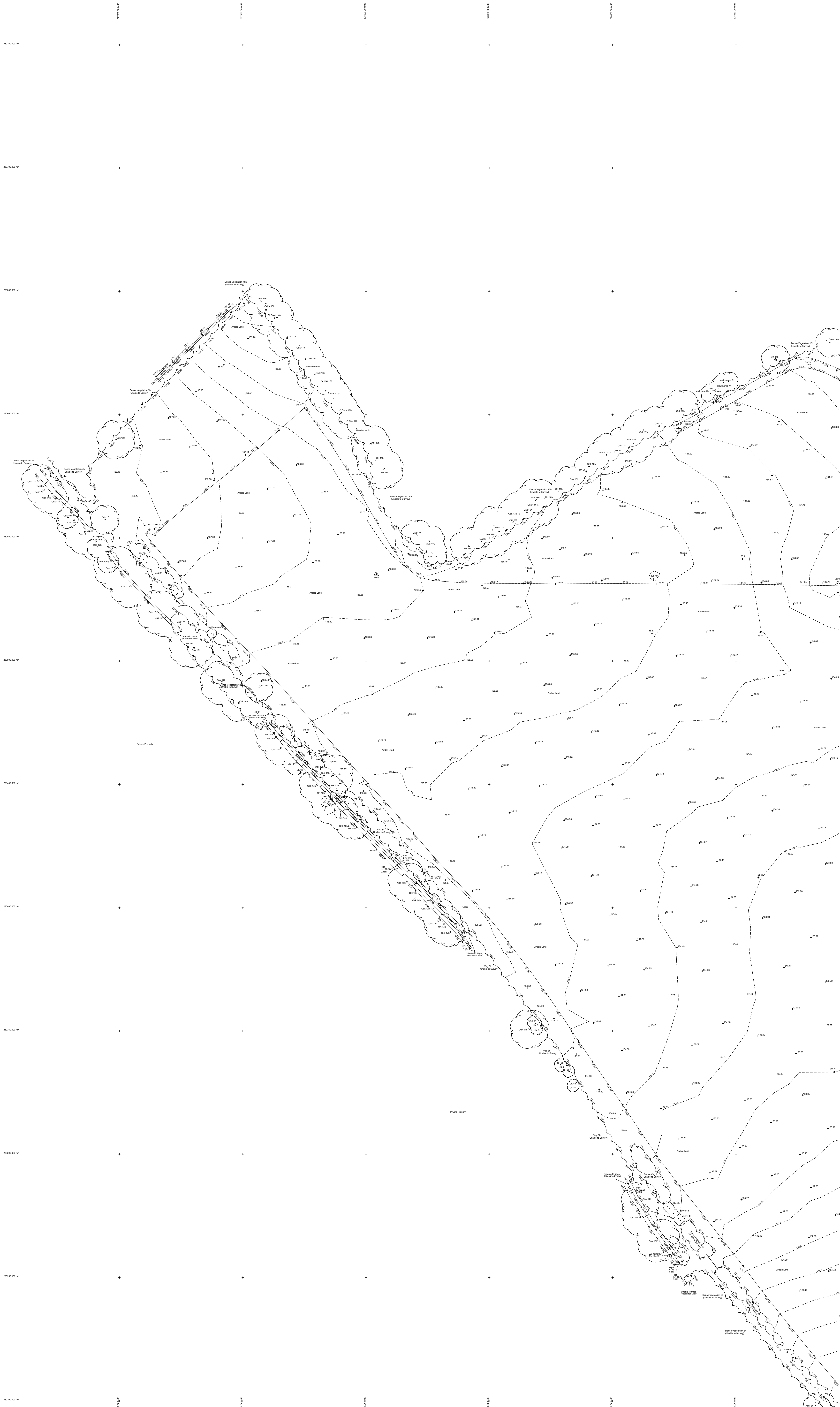
IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORMAN
NOTTINGHAM YORK

PROJECT TITLE
MUNCHES FARM, CUNBERLOW GREEN, BUNTINGFORD
SG7 6BN

DRAWING DETAIL
TOPOGRAPHICAL SURVEY

CLIENT LANPRO				SCALE 1:500
SURVEYOR GF,JH,DP	SURVEY DATE 06/12/24	CHECKED BY BT	APPROVED BY DB	DWG ST FINAL
DRAWING NUMBER 71226CVLS-02			REVISION	ISSUE D 11/12/24





SHEET LAYOUT

TOPOGRAPHICAL & MEASURED BUILDING SURVEYS
ABBREVIATIONS & SYMBOLS

[illegible]

Topographical Surveys

All building names, descriptions, number of storeys, construction type included

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features

including: sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to starting work.

Detail, services and features may not have been surveyed if obstructed or not reasonably visible at the time of the survey.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The survey control listed is only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

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Do not scale from this drawing.

SURVEY CONTROL CO-ORDINATES

STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
G03	528658.105	230779.174	111.143	Peg & Nail
G04	528735.794	230668.656	116.604	Peg & Nail
G05	528751.747	230685.846	116.608	Peg & Nail

G05	528797.167	2300420.466	119.374	Peg & Nail
G06	528797.167	2300420.466	119.374	Peg & Nail
G07	528674.899	230058.535	122.333	Peg & Nail
RW05	528731.963	230277.891	121.532	Peg & Nail
RW06	528481.933	230036.344	126.987	Peg & Nail

RW01	528450.917	230472.062	131.910	Peg & Nail
JH05	528386.109	230627.071	132.507	PK Nail
JH04	528433.509	230683.029	129.040	PK Nail
JH03	528477.607	230655.061	121.991	PK Nail

JH22	528505.092	230706.473	117.984	PK Nail
JH21	528545.511	230603.980	113.036	PK Nail
G601	528606.707	230353.539	114.294	Peg & Nail
G602	528684.834	230197.449	107.957	Peg & Nail

G603	528934.432	230077.853	198.415	Peg & Nail
R201	528586.490	230080.806	119.562	Peg & Nail
R202	528636.305	229961.406	120.541	Peg & Nail
RW04	528832.192	230124.550	112.416	Peg & Nail
R303	528440.848	229964.480	134.048	Peg & Nail

J101	528551.230	230073.757	113.777	PK Nail
J102	528290.121	230024.219	134.098	Peg & Nail
J501	528427.841	230001.615	132.291	Peg & Nail
J502	528434.312	230477.711	132.209	PK Nail

JH27	528191.354	220031.507	133.891	Peg & Nail
JH38	528004.125	220035.210	136.747	Peg & Nail

SURVEY GRID AND LEVEL DATUM
The coordinate system established for this survey is related to Ordnance Survey

The level datum established for this survey is related to Ordnance Survey (OS)

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

DEU	INDONESIA	INDONESIA	Armenia	INDONESIA
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REV	DESCRIPTION FROM	DATE	REPLY	DATE



IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH
NOTTINGHAM YEOVIL

PROJECT TITLE
MUNCHES FARM, CUMBERLOW GREEN, BUNTINGFORD
SG7 6RN

DRAWING DETAIL
TOPOGRAPHICAL SURVEY
Sheet 2 of 14

CLIENT	SCALE
LANPRO	1:500

SURVEYOR GF,JH,DP	SURVEY DATE 05/12/24	CHECKED BY BT	APPROVED BY DB	DWG STATUS FINAL
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DRAWING NUMBER 71226CVLS-03	REVISION	ISSUE DATE 11/12/20
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All building names, descriptions, number of storeys, construction type including roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these feature including: sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to starting work.

Detail, services and features may not have been surveyed if obstructed or not reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal boundary line.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The survey control listed is only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

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Do not scale from this drawing.



SURVEY CONTROL CO-ORDINATES				
STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
G03	528668.05	200779.74	111.63	Peg & Nail
G04	528688.00	200808.00	111.63	Peg & Nail
G05	528719.17	200781.46	116.98	Peg & Nail
G06	528707.07	200662.46	118.74	Peg & Nail
G07	528707.07	200662.46	118.74	Peg & Nail
RW03	528733.63	200700.33	110.52	Peg & Nail
RW05	528733.63	200727.89	110.52	Peg & Nail
RW06	528733.63	200755.45	110.52	Peg & Nail
RW07	528640.07	200725.02	110.90	Peg & Nail
RW08	528686.08	200755.02	110.90	Peg & Nail
JR04	528433.59	200629.00	109.40	PK Nail
JR05	528433.59	200656.00	109.40	PK Nail
JR06	528502.00	200677.00	117.94	PK Nail
JR07	528502.00	200704.00	117.94	PK Nail
JR08	528600.07	200703.59	114.24	PK Nail
JR09	528600.07	200744.00	114.24	PK Nail
JR10	528600.07	200778.53	106.45	Peg & Nail
JR11	528600.07	200813.00	106.45	Peg & Nail
R202	528638.30	200655.45	105.41	Peg & Nail
R203	528638.30	200682.51	105.41	Peg & Nail
R204	528638.30	200709.57	105.41	Peg & Nail
R205	528638.30	200736.63	105.41	Peg & Nail
R206	528638.30	200763.69	105.41	Peg & Nail
R207	528638.30	200790.75	105.41	Peg & Nail
R208	528638.30	200817.81	105.41	Peg & Nail
R209	528638.30	200844.88	105.41	Peg & Nail
R210	528638.30	200871.94	105.41	Peg & Nail
R211	528638.30	200899.00	105.41	Peg & Nail
R212	528638.30	200926.06	105.41	Peg & Nail
R213	528638.30	200953.11	105.41	Peg & Nail
R214	528638.30	200980.18	105.41	Peg & Nail
R215	528638.30	201007.24	105.41	Peg & Nail
R216	528638.30	201034.30	105.41	Peg & Nail
R217	528638.30	201061.37	105.41	Peg & Nail
R218	528638.30	201088.43	105.41	Peg & Nail
R219	528638.30	201115.49	105.41	Peg & Nail
R220	528638.30	201142.56	105.41	Peg & Nail
R221	528638.30	201169.62	105.41	Peg & Nail
R222	528638.30	201196.68	105.41	Peg & Nail
R223	528638.30	201223.75	105.41	Peg & Nail
R224	528638.30	201250.81	105.41	Peg & Nail
R225	528638.30	201277.87	105.41	Peg & Nail
R226	528638.30	201304.94	105.41	Peg & Nail
R227	528638.30	201332.00	105.41	Peg & Nail
R228	528638.30	201359.06	105.41	Peg & Nail
R229	528638.30	201386.13	105.41	Peg & Nail
R230	528638.30	201413.19	105.41	Peg & Nail
R231	528638.30	201440.25	105.41	Peg & Nail
R232	528638.30	201467.32	105.41	Peg & Nail
R233	528638.30	201494.38	105.41	Peg & Nail
R234	528638.30	201521.44	105.41	Peg & Nail
R235	528638.30	201548.51	105.41	Peg & Nail
R236	528638.30	201575.57	105.41	Peg & Nail
R237	528638.30	201602.63	105.41	Peg & Nail
R238	528638.30	201629.70	105.41	Peg & Nail
R239	528638.30	201656.76	105.41	Peg & Nail
R240	528638.30	201683.82	105.41	Peg & Nail
R241	528638.30	201710.89	105.41	Peg & Nail
R242	528638.30	201737.95	105.41	Peg & Nail
R243	528638.30	201765.02	105.41	Peg & Nail
R244	528638.30	201792.08	105.41	Peg & Nail
R245	528638.30	201819.15	105.41	Peg & Nail
R246	528638.30	201846.21	105.41	Peg & Nail
R247	528638.30	201873.28	105.41	Peg & Nail
R248	528638.30	201900.34	105.41	Peg & Nail
R249	528638.30	201927.41	105.41	Peg & Nail
R250	528638.30	201954.47	105.41	Peg & Nail
R251	528638.30	201981.54	105.41	Peg & Nail
R252	528638.30	202008.60	105.41	Peg & Nail
R253	528638.30	202035.67	105.41	Peg & Nail
R254	528638.30	202062.73	105.41	Peg & Nail
R255	528638.30	202089.80	105.41	Peg & Nail
R256	528638.30	202116.86	105.41	Peg & Nail
R257	528638.30	202143.93	105.41	Peg & Nail
R258	528638.30	202170.99	105.41	Peg & Nail
R259	528638.30	202198.06	105.41	Peg & Nail
R260	528638.30	202225.12	105.41	Peg & Nail
R261	528638.30	202252.19	105.41	Peg & Nail
R262	528638.30	202279.25	105.41	Peg & Nail
R263	528638.30	202306.32	105.41	Peg & Nail
R264	528638.30	202333.38	105.41	Peg & Nail
R265	528638.30	202360.45	105.41	Peg & Nail
R266	528638.30	202387.51	105.41	Peg & Nail
R267	528638.30	202414.58	105.41	Peg & Nail
R268	528638.30	202441.64	105.41	Peg & Nail
R269	528638.30	202468.71	105.41	Peg & Nail
R270	528638.30	202495.77	105.41	Peg & Nail
R271	528638.30	202522.84	105.41	Peg & Nail
R272	528638.30	202549.90	105.41	Peg & Nail
R273	528638.30	202576.97	105.41	Peg & Nail
R274	528638.30	202604.03	105.41	Peg & Nail
R275	528638.30	202631.10	105.41	Peg & Nail
R276	528638.30	202658.16	105.41	Peg & Nail
R277	528638.30	202685.23	105.41	Peg & Nail
R278	528638.30	202712.29	105.41	Peg & Nail
R279	528638.30	202739.36	105.41	Peg & Nail
R280	528638.30	202766.42	105.41	Peg & Nail
R281	528638.30	202793.49	105.41	Peg & Nail
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R286	528638.30	202928.81	105.41	Peg & Nail
R287	528638.30	202955.88	105.41	Peg & Nail
R288	528638.30	202982.94	105.41	Peg & Nail
R289	528638.30	203010.01	105.41	Peg & Nail
R290	528638.30	203037.07	105.41	Peg & Nail
R291	528638.30	203064.14	105.41	Peg & Nail
R292	528638.30	203091.20	105.41	Peg & Nail
R293	528638.30	203118.27	105.41	Peg & Nail
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R295	528638.30	203172.40	105.41	Peg & Nail
R296	528638.30	203199.46	105.41	Peg & Nail
R297	528638.30	203226.53	105.41	Peg & Nail
R298	528638.30	203253.59	105.41	Peg & Nail
R299	528638.30	203280.66	105.41	Peg & Nail
R300	528638.30	203307.72	105.41	Peg & Nail

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	DATE
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LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

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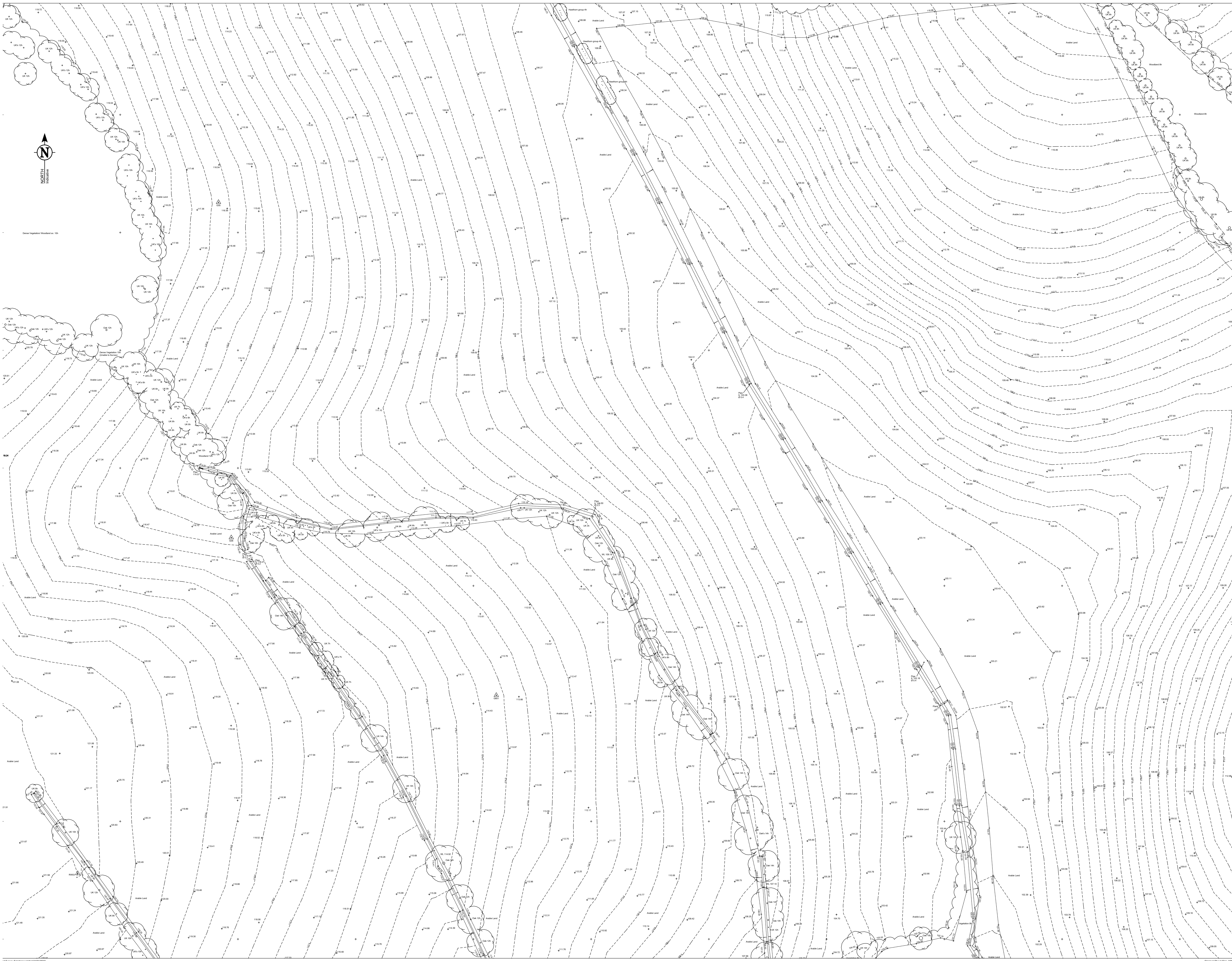
IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH
NOTTINGHAM YEOVIL

PROJECT TITLE
MUNCHES FARM, CUNBERLOW GREEN, BUNTINGFORD
SG7 6BN

DRAWING DETAIL
TOPOGRAPHICAL SURVEY
Sheet 5 of 14

LANPRO				1:500
SURVEYOR GF,JH,DP	SURVEY DATE 05/12/24	CHECKED BY BT	APPROVED BY DB	DWG STA FINAL
DRAWING NUMBER 71226C/VLS-05			REVISION	ISSUE DA 11/12/24





TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

[illegible]

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions and heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type including roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these feature including: sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to starting work.

Detail, services and features may not have been surveyed if obstructed or not reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal boundary line.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

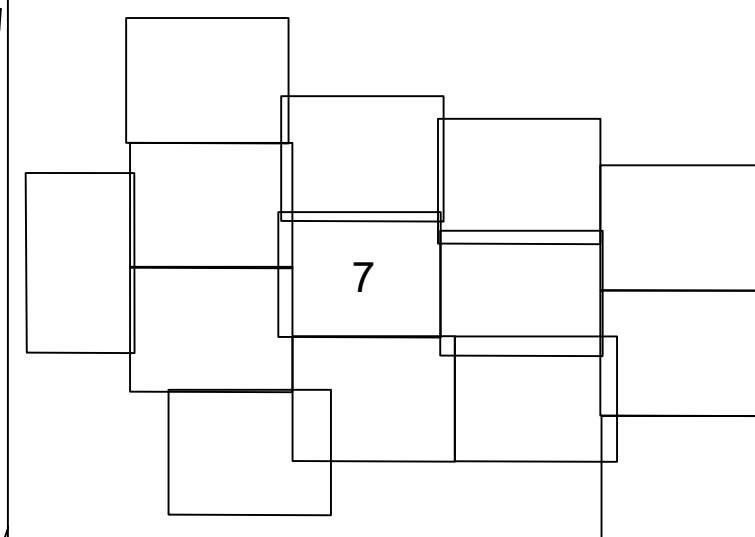
General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

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Do not scale from this drawing.



SHEET LAYOUT

SURVEY CONTROL CO-ORDINATES					
STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION	
G03	528688.05	520779.174	111.143	Peg & Nail	
G04	528688.05	520808.05	111.143	Peg & Nail	
G05	528719.747	520779.174	111.968	Peg & Nail	
G06	528719.747	520808.05	111.968	Peg & Nail	
G07	528674.889	520808.05	123.333	Peg & Nail	
R001	528674.889	520779.174	123.333	Peg & Nail	
R002	528687.031	520779.174	123.201	Peg & Nail	
R003	528687.031	520779.174	123.201	Peg & Nail	
R004	528687.031	520779.174	123.201	Peg & Nail	
R005	528687.031	520779.174	123.201	Peg & Nail	
R006	528687.031	520779.174	123.201	Peg & Nail	
R007	528687.031	520779.174	123.201	Peg & Nail	
R008	528687.031	520779.174	123.201	Peg & Nail	
R009	528687.031	520779.174	123.201	Peg & Nail	
R010	528687.031	520779.174	123.201	Peg & Nail	
R011	528687.031	520779.174	123.201	Peg & Nail	
R012	528687.031	520779.174	123.201	Peg & Nail	
R013	528687.031	520779.174	123.201	Peg & Nail	
R014	528687.031	520779.174	123.201	Peg & Nail	
R015	528687.031	520779.174	123.201	Peg & Nail	
R016	528687.031	520779.174	123.201	Peg & Nail	
R017	528687.031	520779.174	123.201	Peg & Nail	
R018	528687.031	520779.174	123.201	Peg & Nail	
R019	528687.031	520779.174	123.201	Peg & Nail	
R020	528687.031	520779.174	123.201	Peg & Nail	
R021	528687.031	520779.174	123.201	Peg & Nail	
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R028	528687.031	520779.174	123.201	Peg & Nail	
R029	528687.031	520779.174	123.201	Peg & Nail	
R030	528687.031	520779.174	123.201	Peg & Nail	
R031	528687.031	520779.174	123.201	Peg & Nail	
R032	528687.031	520779.174	123.201	Peg & Nail	
R033	528687.031	520779.174	123.201	Peg & Nail	
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R035	528687.031	520779.174	123.201	Peg & Nail	
R036	528687.031	520779.174	123.201	Peg & Nail	
R037	528687.031	520779.174	123.201	Peg & Nail	
R038	528687.031	520779.174	123.201	Peg & Nail	
R039	528687.031	520779.174	123.201	Peg & Nail	
R040	528687.031	520779.174	123.201	Peg & Nail	
R041	528687.031	520779.174	123.201	Peg & Nail	
R042	528687.031	520779.174	123.201	Peg & Nail	
R043	528687.031	520779.174	123.201	Peg & Nail	
R044	528687.031	520779.174	123.201	Peg & Nail	
R045	528687.031	520779.174	123.201	Peg & Nail	
R046	528687.031	520779.174	123.201	Peg & Nail	
R047	528687.031	520779.174	123.201	Peg & Nail	
R048	528687.031	520779.174	123.201	Peg & Nail	
R049	528687.031	520779.174	123.201	Peg & Nail	
R050	528687.031	520779.174	123.201	Peg & Nail	
R051	528687.031	520779.174	123.201	Peg & Nail	
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R056	528687.031	520779.174	123.201	Peg & Nail	
R057	528687.031	520779.174	123.201	Peg & Nail	
R058	528687.031	520779.174	123.201	Peg & Nail	
R059	528687.031	520779.174	123.201	Peg & Nail	
R060	528687.031	520779.174	123.201	Peg & Nail	
R061	528687.031	520779.174	123.201	Peg & Nail	
R062	528687.031	520779.174	123.201	Peg & Nail	
R063	528687.031	520779.174	123.201	Peg & Nail	
R064	528687.031	520779.174	123.201	Peg & Nail	
R065	528687.031	520779.174	123.201	Peg & Nail	
R066	528687.031	520779.174	123.201	Peg & Nail	
R067	528687.031	520779.174	123.201	Peg & Nail	
R068	528687.031	520779.174	123.201	Peg & Nail	
R069	528687.031	520779.174	123.201	Peg & Nail	
R070	528687.031	520779.174	123.201	Peg & Nail	
R071	528687.031	520779.174	123.201	Peg & Nail	
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SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	DATE
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LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING

0845 040 5969
survey-solutions.co.uk

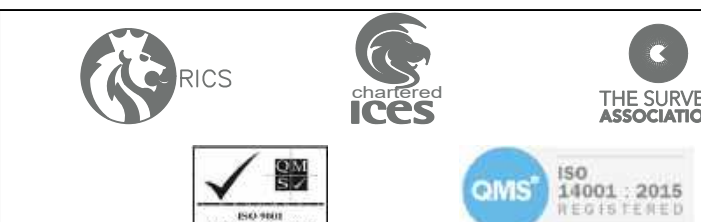
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NOTTINGHAM YEOVIL

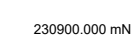
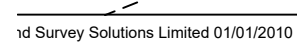
PROJECT TITLE
MUNCHES FARM, CLINBERLOW GREEN, BUNTINGFORD

MONSIEUR FARM, SONDET
SG7 6RN

DRAWING DETAIL
TOPOGRAPHICAL SURVEY
Sheet 7 of 14

CLIENT LANPRO				SCALE 1:500
SURVEYOR GF,JH,DP	SURVEY DATE 06/12/24	CHECKED BY BT	APPROVED BY DB	DWG STAT FINAL
DRAWING NUMBER 71226CVLS-07			REVISION	ISSUE DATE 11/12/20





TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

ABBREVIATIONS & SYMBOLS						
AB	Arms	Head	ER	East Road	RSD	Roller Shave Door
AC	Arms	Head	ES	East Street	RS	Roller Shave
AD	Arms	Head	FS	Front Street	SI	Sign Post
AE	Arms	Head	FP	Front Path	SP	Sign Post
AF	Arms	Head	FR	Front Road	SP	Sign Post
AG	Arms	Head	FR	Front Road	SP	Sign Post
AL	Arms	Head	FR	Front Road	SP	Sign Post
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JY	Arms	Head	FR	Front Road	SP	Sign Post
JZ						

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Description heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type incl roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including: sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to start work.

Detail, services and features may not have been surveyed if obstructed or reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal boundary line.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

General

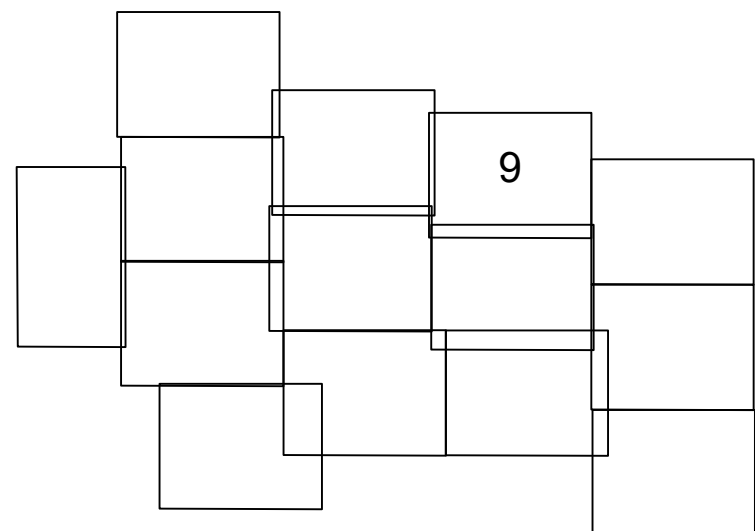
The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. All errors or discrepancies must be notified to Survey Solutions immediately.

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Do not scale from this drawing.



SHEET LAYOUT

SURVEY CONTROL CO-ORDINATES				
STATIONS	EASTINGS	NORTHINGS	DESCRIPTION	
G03	208866.105	208771.714	111.143	Flag & Nail
G04	208868.065	208771.674	110.604	Flag & Nail
G05	208868.065	208720.845	108.885	Flag & Nail
G06	208868.065	208720.845	108.885	Flag & Nail
G07	208874.986	208720.555	123.233	Flag & Nail
G08	208874.986	208720.555	123.233	Flag & Nail
RW02	208841.903	208720.344	108.207	Flag & Nail
RW03	208841.903	208720.344	108.207	Flag & Nail
JH05	208308.109	208720.071	121.267	Pin Nail
JH06	208308.109	208720.071	121.267	Pin Nail
JH07	208307.607	208720.061	121.001	Pin Nail
JH08	208302.052	208720.071	111.194	Pin Nail
JH09	208302.052	208720.071	111.194	Pin Nail
G01	208852.002	208733.539	114.264	Flag & Nail
G02	208852.002	208733.539	114.264	Flag & Nail
R01	208844.441	208733.539	109.441	Flag & Nail
R02	208844.441	208733.539	109.441	Flag & Nail
R03	208840.402	208737.833	105.413	Flag & Nail
R04	208840.402	208737.833	105.413	Flag & Nail
R05	208836.363	208737.833	105.161	Flag & Nail
R06	208836.363	208737.833	105.161	Flag & Nail
R07	208832.324	208740.405	102.415	Flag & Nail
R08	208832.324	208740.405	102.415	Flag & Nail
R203	208840.402	208744.441	104.441	Flag & Nail
R204	208840.402	208744.441	104.441	Flag & Nail
R205	208836.363	208744.441	104.189	Flag & Nail
R206	208836.363	208744.441	104.189	Flag & Nail
R207	208832.324	208744.441	103.937	Flag & Nail
R208	208832.324	208744.441	103.937	Flag & Nail
R209	208828.285	208744.441	103.685	Flag & Nail
R210	208828.285	208744.441	103.685	Flag & Nail
R211	208824.246	208744.441	103.433	Flag & Nail
R212	208824.246	208744.441	103.433	Flag & Nail
R213	208820.207	208744.441	103.181	Flag & Nail
R214	208820.207	208744.441	103.181	Flag & Nail
R215	208816.168	208744.441	102.929	Flag & Nail
R216	208816.168	208744.441	102.929	Flag & Nail
R217	208812.129	208744.441	102.677	Flag & Nail
R218	208812.129	208744.441	102.677	Flag & Nail
R219	208808.090	208744.441	102.425	Flag & Nail
R220	208808.090	208744.441	102.425	Flag & Nail

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this schedule must be derived directly from this control data.



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BUILDING SURVEYING
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IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORMAN
NOTTINGHAM YORK

0845 040 5969

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PROJECT TITLE
MUNCHES FARM, CUNBERLOW GREEN, BUNTINGFORD

SG7 BRN

DRAWING DETAIL

TOPOGRAPHY
Sheet 9 of 14

CLIENT

LANPRO

SUPERVISOR

GE, JH, DP

DRAWING NUMBER

71226CVL





TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

[illegible]

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type included roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including; sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to starting work.

Detail, services and features may not have been surveyed if obstructed or not reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal boundary line.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx. 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

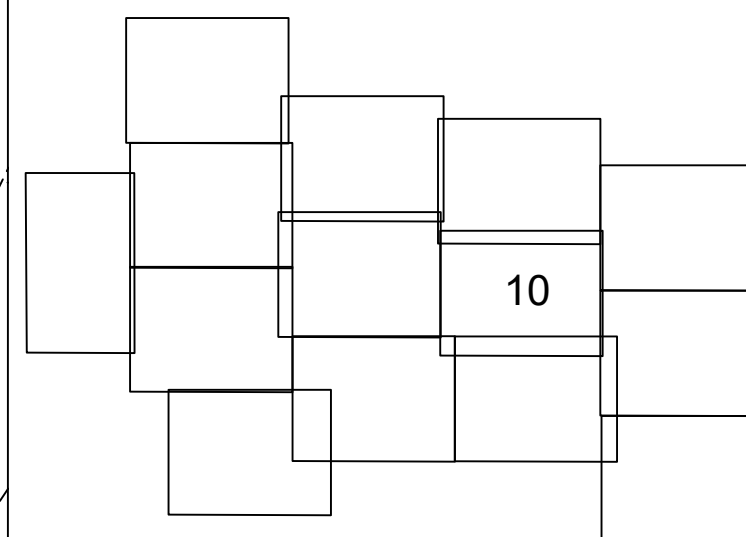
General

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Do not scale from this drawing.



SHEET LAYOUT

SURVEY CONTROL CO-ORDINATES				
STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
GG3	526849.55	526778.74	111.43	Engg. Nt. Nail
GG4	526850.55	526780.56	111.43	Engg. Nt. Nail
GG5	526851.55	526782.38	111.43	Engg. Nt. Nail
GG6	526852.55	526784.20	111.43	Engg. Nt. Nail
GG7	526853.55	526786.02	111.43	Engg. Nt. Nail
GG8	526854.55	526787.84	111.43	Engg. Nt. Nail
GG9	526855.55	526789.66	111.43	Engg. Nt. Nail
GG10	526856.55	526791.48	111.43	Engg. Nt. Nail
GG11	526857.55	526793.30	111.43	Engg. Nt. Nail
GG12	526858.55	526795.12	111.43	Engg. Nt. Nail
GG13	526859.55	526796.94	111.43	Engg. Nt. Nail
GG14	526860.55	526798.76	111.43	Engg. Nt. Nail
GG15	526861.55	526800.58	111.43	Engg. Nt. Nail
GG16	526862.55	526802.40	111.43	Engg. Nt. Nail
GG17	526863.55	526804.22	111.43	Engg. Nt. Nail
GG18	526864.55	526806.04	111.43	Engg. Nt. Nail
GG19	526865.55	526807.86	111.43	Engg. Nt. Nail
GG20	526866.55	526809.68	111.43	Engg. Nt. Nail
GG21	526867.55	526811.50	111.43	Engg. Nt. Nail
GG22	526868.55	526813.32	111.43	Engg. Nt. Nail
GG23	526869.55	526815.14	111.43	Engg. Nt. Nail
GG24	526870.55	526816.96	111.43	Engg. Nt. Nail
GG25	526871.55	526818.78	111.43	Engg. Nt. Nail
GG26	526872.55	526820.60	111.43	Engg. Nt. Nail
GG27	526873.55	526822.42	111.43	Engg. Nt. Nail
GG28	526874.55	526824.24	111.43	Engg. Nt. Nail
GG29	526875.55	526826.06	111.43	Engg. Nt. Nail
GG30	526876.55	526827.88	111.43	Engg. Nt. Nail
GG31	526877.55	526829.70	111.43	Engg. Nt. Nail
GG32	526878.55	526831.52	111.43	Engg. Nt. Nail
GG33	526879.55	526833.34	111.43	Engg. Nt. Nail
GG34	526880.55	526835.16	111.43	Engg. Nt. Nail
GG35	526881.55	526836.98	111.43	Engg. Nt. Nail
GG36	526882.55	526838.80	111.43	Engg. Nt. Nail
GG37	526883.55	526840.62	111.43	Engg. Nt. Nail
GG38	526884.55	526842.44	111.43	Engg. Nt. Nail
GG39	526885.55	526844.26	111.43	Engg. Nt. Nail
GG40	526886.55	526846.08	111.43	Engg. Nt. Nail
GG41	526887.55	526847.90	111.43	Engg. Nt. Nail
GG42	526888.55	526849.72	111.43	Engg. Nt. Nail
GG43	526889.55	526851.54	111.43	Engg. Nt. Nail
GG44	526890.55	526853.36	111.43	Engg. Nt. Nail
GG45	526891.55	526855.18	111.43	Engg. Nt. Nail
GG46	526892.55	526857.00	111.43	Engg. Nt. Nail
GG47	526893.55	526858.82	111.43	Engg. Nt. Nail
GG48	526894.55	526860.64	111.43	Engg. Nt. Nail
GG49	526895.55	526862.46	111.43	Engg. Nt. Nail
GG50	526896.55	526864.28	111.43	Engg. Nt. Nail
GG51	526897.55	526866.10	111.43	Engg. Nt. Nail
GG52	526898.55	526867.92	111.43	Engg. Nt. Nail
GG53	526899.55	526869.74	111.43	Engg. Nt. Nail
GG54	526900.55	526871.56	111.43	Engg. Nt. Nail
GG55	526901.55	526873.38	111.43	Engg. Nt. Nail
GG56	526902.55	526875.20	111.43	Engg. Nt. Nail
GG57	526903.55	526877.02	111.43	Engg. Nt. Nail
GG58	526904.55	526878.84	111.43	Engg. Nt. Nail
GG59	526905.55	526880.66	111.43	Engg. Nt. Nail
GG60	526906.55	526882.48	111.43	Engg. Nt. Nail
GG61	526907.55	526884.30	111.43	Engg. Nt. Nail
GG62	526908.55	526886.12	111.43	Engg. Nt. Nail
GG63	526909.55	526887.94	111.43	Engg. Nt. Nail
GG64	526910.55	526889.76	111.43	Engg. Nt. Nail
GG65	526911.55	526891.58	111.43	Engg. Nt. Nail
GG66	526912.55	526893.40	111.43	Engg. Nt. Nail
GG67	526913.55	526895.22	111.43	Engg. Nt. Nail
GG68	526914.55	526897.04	111.43	Engg. Nt. Nail
GG69	526915.55	526898.86	111.43	Engg. Nt. Nail
GG70	526916.55	526900.68	111.43	Engg. Nt. Nail
GG71	526917.55	526902.50	111.43	Engg. Nt. Nail
GG72	526918.55	526904.32	111.43	Engg. Nt. Nail
GG73	526919.55	526906.14	111.43	Engg. Nt. Nail
GG74	526920.55	526907.96	111.43	Engg. Nt. Nail
GG75	526921.55	526909.78	111.43	Engg. Nt. Nail
GG76	526922.55	526911.60	111.43	Engg. Nt. Nail
GG77	526923.55	526913.42	111.43	Engg. Nt. Nail
GG78	526924.55	526915.24	111.43	Engg. Nt. Nail
GG79	526925.55	526917.06	111.43	Engg. Nt. Nail
GG80	526926.55	526918.88	111.43	Engg. Nt. Nail
GG81	526927.55	526920.70	111.43	Engg. Nt. Nail
GG82	526928.55	526922.52	111.43	Engg. Nt. Nail
GG83	526929.55	526924.34	111.43	Engg. Nt. Nail
GG84	526930.55	526926.16	111.43	Engg. Nt. Nail
GG85	526931.55	526927.98	111.43	Engg. Nt. Nail
GG86	526932.55	526929.80	111.43	Engg. Nt. Nail
GG87	526933.55	526931.62	111.43	Engg. Nt. Nail
GG88	526934.55	526933.44	111.43	Engg. Nt. Nail
GG89	526935.55	526935.26	111.43	Engg. Nt. Nail
GG90	526936.55	526937.08	111.43	Engg. Nt. Nail
GG91	526937.55	526938.90	111.43	Engg. Nt. Nail
GG92	526938.55	526940.72	111.43	Engg. Nt. Nail
GG93	526939.55	526942.54	111.43	Engg. Nt. Nail
GG94	526940.55	526944.36	111.43	Engg. Nt. Nail
GG95	526941.55	526946.18	111.43	Engg. Nt. Nail
GG96	526942.55	526948.00	111.43	Engg. Nt. Nail
GG97	526943.55	526949.82	111.43	Engg. Nt. Nail
GG98	526944.55	526951.64	111.43	Engg. Nt. Nail
GG99	526945.55	526953.46	111.43	Engg. Nt. Nail
GG100	526946.55	526955.28	111.43	Engg. Nt. Nail

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

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[illegible]

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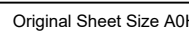
IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NOTTINGHAM
NOTTINGHAM VICE

PROJECT TITLE
MUNCHES FARM, CLUNBERLOW GREEN, BUNTINGFORD

DRAWING DETAIL
TOPOGRAPHICAL SURVEY
Sheet 10 of 14

CLIENT LANPRO				SCALE 1:500
SURVEYOR GF,JH,DP	SURVEY DATE 06/12/24	CHECKED BY BT	APPROVED BY DB	DWG STA FINAL
DRAWING NUMBER 71226CVLS-10			REVISION	ISSUE DATE 11/12/25



[illegible]

Trees are drawn to scale showing the average canopy spread. Description heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type incl roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including: sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to start work.

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Measurements to internal walls are taken to the wall finishes at approx. 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

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Do not scale from this drawing.



SURVEY CONTROL CO-ORDINATES				
STATIONS	EASTINGS	NORTHINGS		DESCRIPTION
G03	208866.105	208771.714	111.143	Flag & Nail
G04	208868.065	208771.474	110.604	Flag & Nail
G05	208868.065	208720.845	108.885	Flag & Nail
G06	208868.065	208720.845	108.885	Flag & Nail
G07	208874.986	208720.555	123.233	Flag & Nail
G08	208874.986	208720.555	123.233	Flag & Nail
RW02	208841.903	208720.344	108.207	Flag & Nail
RW03	208841.903	208720.344	108.207	Flag & Nail
JH05	208308.109	208720.071	121.267	Pin Nail
JH06	208308.109	208720.071	121.267	Pin Nail
JH07	208307.607	208720.061	121.261	Pin Nail
JH08	208302.052	208720.071	111.194	Pin Nail
JH09	208302.052	208720.071	111.194	Pin Nail
G01	208852.002	208733.539	114.264	Flag & Nail
G02	208852.002	208733.539	114.264	Flag & Nail
R01	208844.441	208733.539	105.411	Flag & Nail
R02	208844.441	208733.539	105.411	Flag & Nail
R03	208840.402	208737.833	105.413	Flag & Nail
R04	208840.402	208737.833	105.413	Flag & Nail
R05	208836.361	208737.833	105.413	Flag & Nail
R06	208836.361	208737.833	105.413	Flag & Nail
R07	208832.320	208740.405	121.418	Flag & Nail
R08	208832.320	208740.405	121.418	Flag & Nail
R203	208420.815	208648.489	124.048	Flag & Nail
R204	208420.815	208648.489	124.048	Flag & Nail
R205	208420.815	208648.489	124.048	Flag & Nail
R206	208420.815	208648.489	124.048	Flag & Nail
R207	208420.815	208648.489	124.048	Flag & Nail
R208	208420.815	208648.489	124.048	Flag & Nail
R209	208420.815	208648.489	124.048	Flag & Nail
R210	208420.815	208648.489	124.048	Flag & Nail
R211	208420.815	208648.489	124.048	Flag & Nail
R212	208420.815	208648.489	124.048	Flag & Nail
R213	208420.815	208648.489	124.048	Flag & Nail
R214	208420.815	208648.489	124.048	Flag & Nail
R215	208420.815	208648.489	124.048	Flag & Nail
R216	208420.815	208648.489	124.048	Flag & Nail
R217	208420.815	208648.489	124.048	Flag & Nail
R218	208420.815	208648.489	124.048	Flag & Nail
R219	208420.815	208648.489	124.048	Flag & Nail
R220	208420.815	208648.489	124.048	Flag & Nail
R221	208420.815	208648.489	124.048	Flag & Nail
R222	208420.815	208648.489	124.048	Flag & Nail
R223	208420.815	208648.489	124.048	Flag & Nail
R224	208420.815	208648.489	124.048	Flag & Nail
R225	208420.815	208648.489	124.048	Flag & Nail
R226	208420.815	208648.489	124.048	Flag & Nail
R227	208420.815	208648.489	124.048	Flag & Nail
R228	208420.815	208648.489	124.048	Flag & Nail
R229	208420.815	208648.489	124.048	Flag & Nail
R230	208420.815	208648.489	124.048	Flag & Nail
R231	208420.815	208648.489	124.048	Flag & Nail
R232	208420.815	208648.489	124.048	Flag & Nail
R233	208420.815	208648.489	124.048	Flag & Nail
R234	208420.815	208648.489	124.048	Flag & Nail
R235	208420.815	208648.489	124.048	Flag & Nail
R236				

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	DATE
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PROJECT TITLE
MUNCHES FARM, CUNBERLOW GREEN, BUNTINGFORD

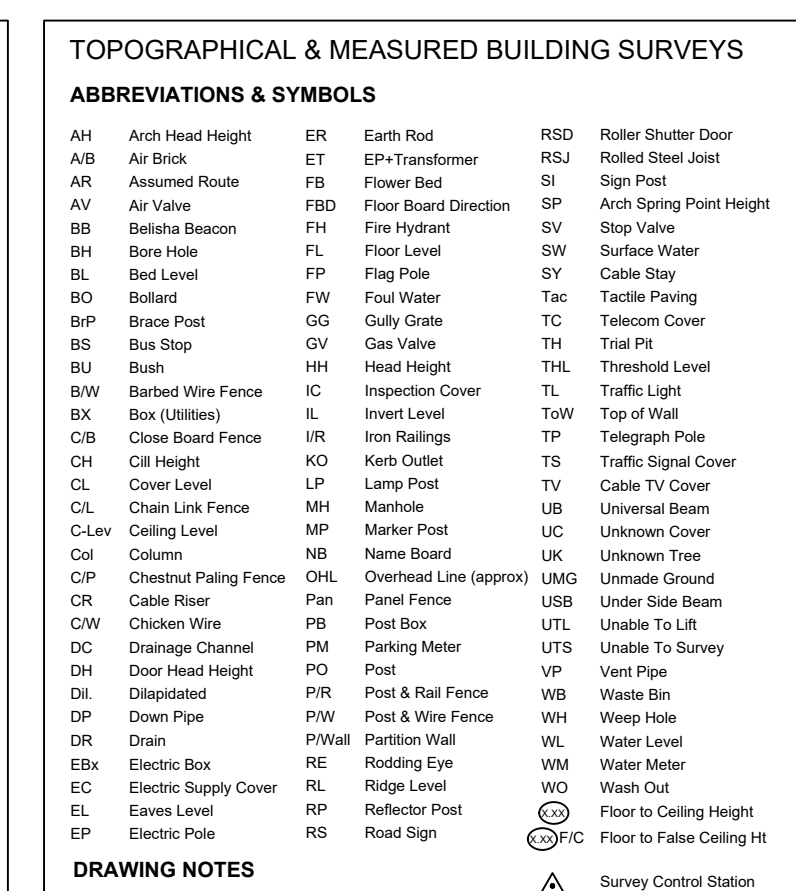
SG7 6RN

DRAWING DETAIL
TOPOGRAPHICAL SURVEY
Sheet 11 of 14

CLIENT LANPRO	SCALE 1:500
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SURVEYOR GF,JH,DP	SURVEY DATE 06/12/24	CHECKED BY BT	APPROVED BY DB	DWG ST FINAL
DRAWING NUMBER 71226CVLS-11			REVISION	ISSUE D 11/12/





Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions a heights should be used as a guide only.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these feature including: sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to starting work.

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General

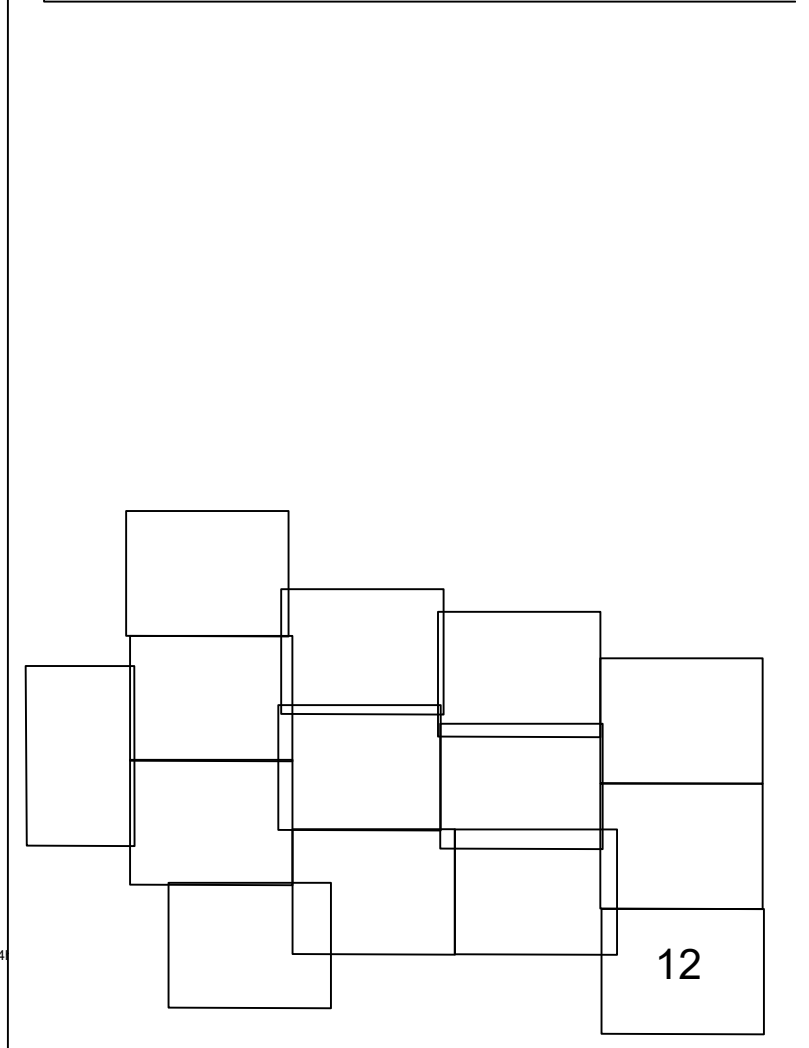
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Do not scale from this drawing.



SHEET LAYOUT

SURVEY COORDINATES				
STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
GA1	528588.10	200779.71	111.141	Flag & Nail
GA4	528739.734	200698.654	110.604	Flag & Nail
GA5	528719.167	200752.545	110.568	Flag & Nail
GA6	528707.87	200630.486	110.374	Flag & Nail
GA7	528697.898	200620.326	112.433	Flag & Nail
RW00	52773.983	200277.891	107.152	Flag & Nail
RW1	52649.853	200309.344	107.087	Flag & Nail
HA4	52413.013	200310.549	106.949	Flag & Nail
HA5	52438.08	200327.071	107.507	FW Nail
HA6	52443.03	200331.04	107.549	Flag & Nail
HA7	52447.067	200335.061	107.561	Flag & Nail
GA2	528592.052	200783.473	111.248	Flag & Nail
HA1	52645.511	200360.180	110.326	FW Nail
GA3	528592.052	200370.529	110.389	Flag & Nail
GE03	528394.402	20077.833	104.016	Flag & Nail
GA2	528592.052	20077.833	104.016	Flag & Nail
R02	528394.402	20077.833	104.016	Flag & Nail
R03	528394.365	20065.405	105.451	Flag & Nail
GA04	52863.126	200670.270	110.377	Flag & Nail
R00	528489.815	20064.428	124.340	Flag & Nail
J173	528533.228	20067.771	110.377	Flag & Nail
GA5	528626.511	200624.216	124.089	Flag & Nail
HA1	52642.841	200670.771	110.389	Flag & Nail
GA7	528719.394	20071.507	110.891	Flag & Nail
HA2	52606.125	200670.128	107.147	Flag & Nail

SURVEY GRID AND LEVEL DATUM

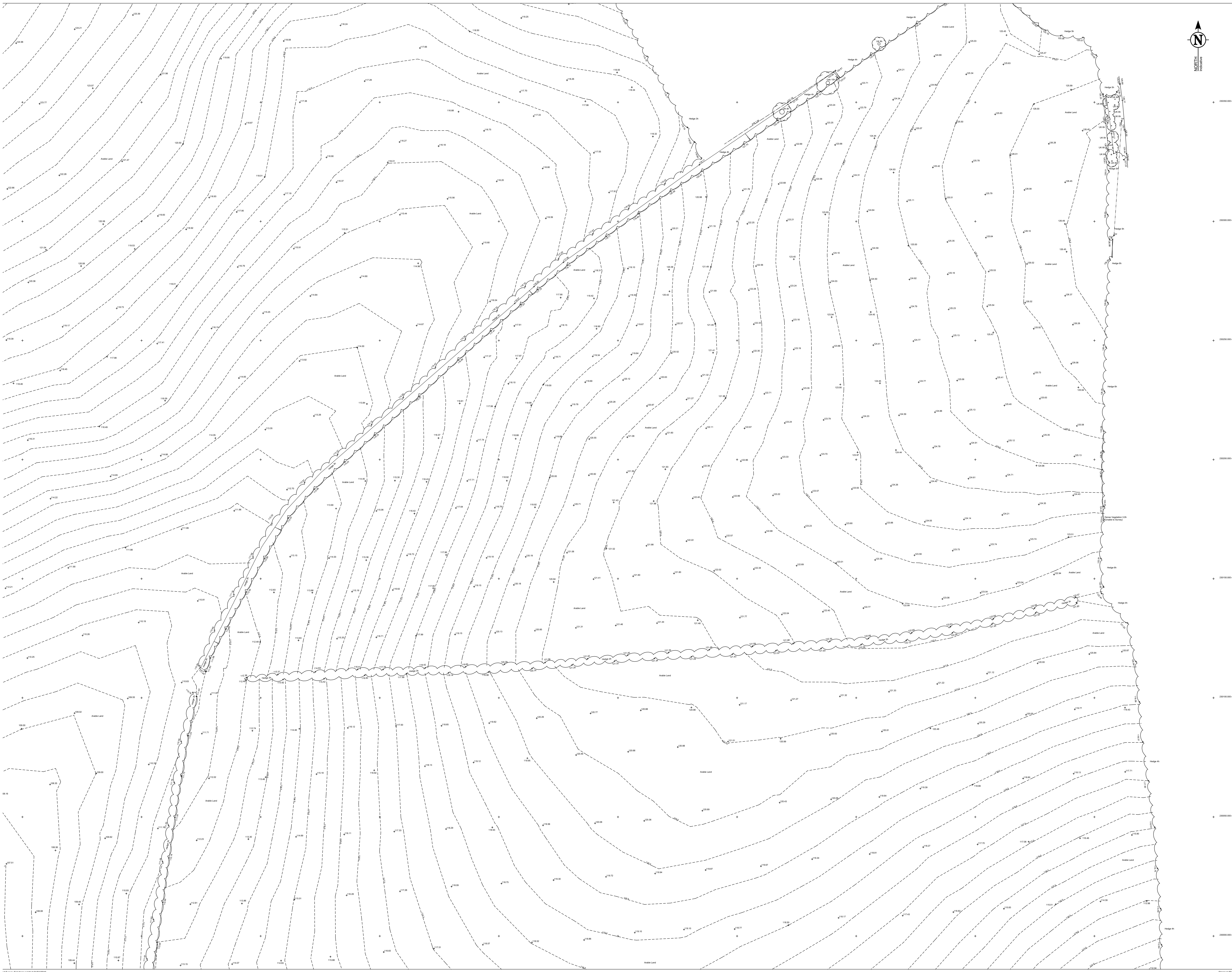
The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	DATE
-----	-------------	-------	------	------

 SURVEY SOLUTIONS			
		0845 400 5969 survey-solutions.co.uk	
LAND SURVEYING BUILDING SURVEYING UNDERGROUND SURVEYING SITE INVESTIGATION MONITORING			
PERKINS BEXFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH NOTTINGHAM YORK			
PROJECT TITLE MUNCHES FARM, CUNBERLOW GREEN, BUNTINGFORD SG7 6RN			
DRAWING DETAIL TOPOGRAPHICAL SURVEY Sheet 12 of 14			
CLIENT LANIFRO			
SURVEYOR GF,JH,DP	SURVEY DATE 06/12/24	CHECKED BY BT	APPROVED BY DWG STATUS FINAL
DRAWING NUMBER 71226CVLS-12		REVISION ISSUE DATE 11/12/2020	
			
			
		ISO 9001:2015 CERTIFIED	



TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

[illegible]

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Description heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type incl. roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including: sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to start work.

Detail, services and features may not have been surveyed if obstructed or reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal boundary line.

Measured Building Success

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

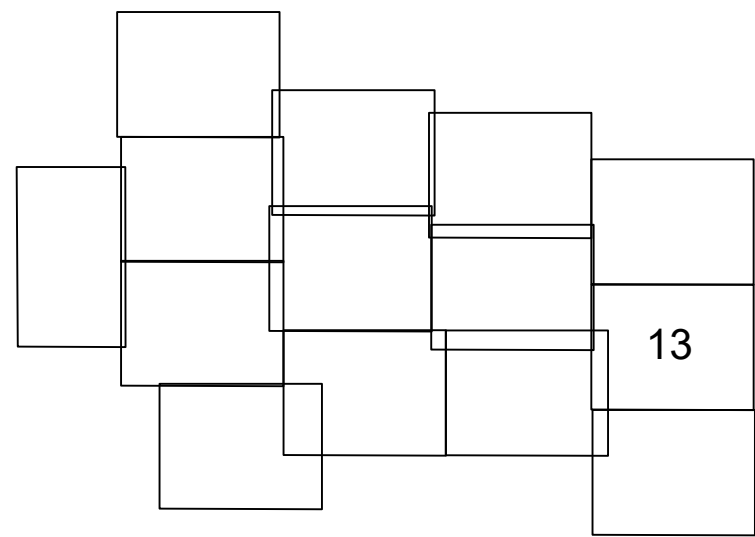
General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

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Do not scale from this drawing.



SHEET LAYOUT

SURVEY CONTROL CO-ORDINATES				
STATIONS	EASTINGS	NORTHINGS		DESCRIPTION
G03	208866.105	208771.714	111.143	Flag & Nail
G04	208868.065	208781.474	116.604	Flag & Nail
G05	208870.020	208791.235	122.064	Flag & Nail
G06	208871.975	208800.995	127.525	Flag & Nail
G07	208873.930	208810.755	132.985	Flag & Nail
G08	208875.885	208820.515	138.445	Flag & Nail
G09	208877.840	208830.275	143.905	Flag & Nail
G10	208879.795	208840.035	149.365	Flag & Nail
G11	208881.750	208849.795	154.825	Flag & Nail
G12	208883.705	208859.555	160.285	Flag & Nail
G13	208885.660	208869.315	165.745	Flag & Nail
G14	208887.615	208879.075	171.205	Flag & Nail
G15	208889.570	208888.835	176.665	Flag & Nail
G16	208891.525	208898.595	182.125	Flag & Nail
G17	208893.480	208908.355	187.585	Flag & Nail
G18	208895.435	208918.115	193.045	Flag & Nail
G19	208897.390	208927.875	198.505	Flag & Nail
G20	208899.345	208937.635	203.965	Flag & Nail
G21	208901.300	208947.395	209.425	Flag & Nail
G22	208903.255	208957.155	214.885	Flag & Nail
G23	208905.210	208966.915	220.345	Flag & Nail
G24	208907.165	208976.675	225.805	Flag & Nail
G25	208909.120	208986.435	231.265	Flag & Nail
G26	208911.075	208996.195	236.725	Flag & Nail
G27	208913.030	209005.955	242.185	Flag & Nail
G28	208914.985	209015.715	247.645	Flag & Nail
G29	208916.940	209025.475	253.105	Flag & Nail
G30	208918.895	209035.235	258.565	Flag & Nail
G31	208920.850	209044.995	264.025	Flag & Nail
G32	208922.805	209054.755	269.485	Flag & Nail
G33	208924.760	209064.515	274.945	Flag & Nail
G34	208926.715	209074.275	280.405	Flag & Nail
G35	208928.670	209084.035	285.865	Flag & Nail
G36	208930.625	209093.795	291.325	Flag & Nail
G37	208932.580	209103.555	296.785	Flag & Nail
G38	208934.535	209113.315	302.245	Flag & Nail
G39	208936.490	209123.075	307.705	Flag & Nail
G40	208938.445	209132.835	313.165	Flag & Nail
G41	208940.400	209142.595	318.625	Flag & Nail
G42	208942.355	209152.355	324.085	Flag & Nail
G43	208944.310	209162.115	329.545	Flag & Nail
G44	208946.265	209171.875	335.005	Flag & Nail
G45	208948.220	209181.635	340.465	Flag & Nail
G46	208950.175	209191.395	345.925	Flag & Nail
G47	208952.130	209201.155	351.385	Flag & Nail
G48	208954.085	209210.915	356.845	Flag & Nail
G49	208956.040	209220.675	362.305	Flag & Nail
G50	208957.995	209230.435	367.765	Flag & Nail
G51	208959.950	209240.195	373.225	Flag & Nail
G52	208961.905	209249.955	378.685	Flag & Nail
G53	208963.860	209259.715	384.145	Flag & Nail
G54	208965.815	209269.475	389.605	Flag & Nail
G55	208967.770	209279.235	395.065	Flag & Nail
G56	208969.725	209288.995	400.525	Flag & Nail
G57	208971.680	209298.755	405.985	Flag & Nail
G58	208973.635	209308.515	411.445	Flag & Nail
G59	208975.590	209318.275	416.905	Flag & Nail
G60	208977.545	209328.035	422.365	Flag & Nail
G61	208979.500	209337.795	427.825	Flag & Nail
G62	208981.455	209347.555	433.285	Flag & Nail
G63	208983.410	209357.315	438.745	Flag & Nail
G64	208985.365	209367.075	444.205	Flag & Nail
G65	208987.320	209376.835	449.665	Flag & Nail
G66	208989.275	209386.595	455.125	Flag & Nail
G67	208991.230	209396.355	460.585	Flag & Nail
G68	208993.185	209406.115	466.045	Flag & Nail
G69	208995.140	209415.875	471.505	Flag & Nail
G70	208997.095	209425.635	476.965	Flag & Nail
G71	208999.050	209435.395	482.425	Flag & Nail
G72	209001.005	209445.155	487.885	Flag & Nail
G73	209002.960	209454.915	493.345	Flag & Nail
G74	209004.915	209464.675	498.805	Flag & Nail
G75	209006.870	209474.435	504.265	Flag & Nail
G76	209008.825	209484.195	509.725	Flag & Nail
G77	209010.780	209493.955	515.185	Flag & Nail
G78	209012.735	209503.715	520.645	Flag & Nail
G79	209014.690	209513.475	526.105	Flag & Nail
G80	209016.645	209523.235	531.565	Flag & Nail
G81	209018.600	209532.995	537.025	Flag & Nail
G82	209020.555	209542.755	542.485	Flag & Nail
G83	209022.510	209552.515	547.945	Flag & Nail
G84	209024.465	209562.275	553.405	Flag & Nail
G85	209026.420	209572.035	558.865	Flag & Nail
G86	209028.375	209581.795	564.325	Flag & Nail
G87	209030.330	209591.555	569.785	Flag & Nail
G88	209032.285	209601.315	575.245	Flag & Nail
G89	209034.240	209611.075	580.705	Flag & Nail
G90	209036.195	209620.835	586.165	Flag & Nail
G91	209038.150	209630.595	591.625	Flag & Nail
G92	209040.105	209640.355	597.085	Flag & Nail
G93	209042.060	209650.115	602.545	Flag & Nail
G94	209044.015	209659.875	608.005	Flag & Nail
G95	209045.970	209669.635	613.465	Flag & Nail
G96	209047.925	209679.395	618.925	Flag & Nail
G97	209049.880	209689.155	624.385	Flag & Nail
G98	209051.835	209698.915	629.845	Flag & Nail
G99	209053.790	209708.675	635.305	Flag & Nail
G100	209055.745	209718.435	640.765	Flag & Nail

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	AFTER	E
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LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

0845 040 5969
survey-solutions.co.uk

IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORMAN
NOTTINGHAM YEOX

PROJECT TITLE
MUNCHES FARM, CUNBERLOW GREEN, BUNTINGFORD
SG7 6RN

DRAWING DETAIL
TOPOGRAPHICAL SURVEY
Sheet 13 of 14

CLIENT LANPRO				SCALE 1:500
SURVEYOR GF,JH,DP	SURVEY DATE 06/12/24	CHECKED BY BT	APPROVED BY DB	DWG ST FINAL
DRAWING NUMBER 71226CVLS-13			REVISION	ISSUE D 11/12/24



[illegible]

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type include roof line details are indicative only and taken externally from ground level.

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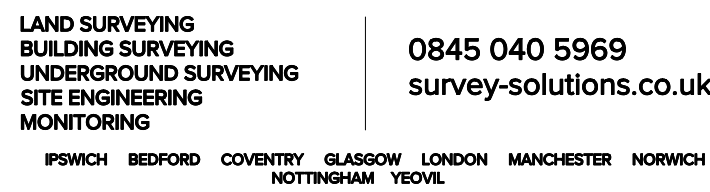
SURVEY CONTROL CO-ORDINATES				
STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
GG3	226866.105	2200778.174	111.143	Prg & Nail
GG4	226876.734	2200808.656	111.157	Prg & Nail
GG5	226877.747	2200817.465	111.168	Prg & Nail
GG6	226878.759	2200826.274	111.179	Prg & Nail
GG7	226879.769	2200830.558	111.233	Prg & Nail
GG8	226880.779	2200839.367	111.244	Prg & Nail
FW02	226941.903	2203024.354	120.087	Prg & Nail
FW03	226942.913	2203033.163	120.098	Prg & Nail
FW04	226943.923	2203039.972	120.109	Prg & Nail
FW05	226944.933	2203048.781	120.120	Prg & Nail
FW06	226945.943	2203057.590	120.131	Prg & Nail
FW07	226946.953	2203066.399	120.142	Prg & Nail
FW08	226947.963	2203075.208	120.153	Prg & Nail
FW09	226948.973	2203084.017	120.164	Prg & Nail
FW10	226949.983	2203089.826	120.175	Prg & Nail
FW11	226950.993	2203098.635	120.186	Prg & Nail
FW12	226951.003	2203107.444	120.197	Prg & Nail
FW13	226952.013	2203116.253	120.208	Prg & Nail
FW14	226953.023	2203125.062	120.219	Prg & Nail
FW15	226954.033	2203133.871	120.230	Prg & Nail
FW16	226955.043	2203142.680	120.241	Prg & Nail
FW17	226956.053	2203151.489	120.252	Prg & Nail
FW18	226957.063	2203160.298	120.263	Prg & Nail
FW19	226958.073	2203169.107	120.274	Prg & Nail
FW20	226959.083	2203177.916	120.285	Prg & Nail
FW21	226960.093	2203186.725	120.296	Prg & Nail
FW22	226961.103	2203195.534	120.307	Prg & Nail
FW23	226962.113	2203204.343	120.318	Prg & Nail
FW24	226963.123	2203213.152	120.329	Prg & Nail
FW25	226964.133	2203221.961	120.340	Prg & Nail
FW26	226965.143	2203230.770	120.351	Prg & Nail
FW27	226966.153	2203239.579	120.362	Prg & Nail
FW28	226967.163	2203248.388	120.373	Prg & Nail
FW29	226968.173	2203257.197	120.384	Prg & Nail
FW30	226969.183	2203265.006	120.395	Prg & Nail
FW31	226970.193	2203269.815	120.406	Prg & Nail
FW32	226971.203	2203278.624	120.417	Prg & Nail
FW33	226972.213	2203287.433	120.428	Prg & Nail
FW34	226973.223	2203296.242	120.439	Prg & Nail
FW35	226974.233	2203305.051	120.450	Prg & Nail
FW36	226975.243	2203313.860	120.461	Prg & Nail
FW37	226976.253	2203322.669	120.472	Prg & Nail
FW38	226977.263	2203331.478	120.483	Prg & Nail
FW39	226978.273	2203340.287	120.494	Prg & Nail
FW40	226979.283	2203350.096	120.505	Prg & Nail
FW41	226980.293	2203358.905	120.516	Prg & Nail
FW42	226981.303	2203367.714	120.527	Prg & Nail
FW43	226982.313	2203376.523	120.538	Prg & Nail
FW44	226983.323	2203385.332	120.549	Prg & Nail
FW45	226984.333	2203394.141	120.560	Prg & Nail
FW46	226985.343	2203402.950	120.571	Prg & Nail
FW47	226986.353	2203411.759	120.582	Prg & Nail
FW48	226987.363	2203420.568	120.593	Prg & Nail
FW49	226988.373	2203429.377	120.604	Prg & Nail
FW50	226989.383	2203438.186	120.615	Prg & Nail

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

DEU	DEUTSCHLAND	GERMANY	Germany	DE
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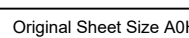


PROJECT TITLE
MUNCHES FARM, CUNBERLOW GREEN, BUNTINGFORD

SG7 6RN

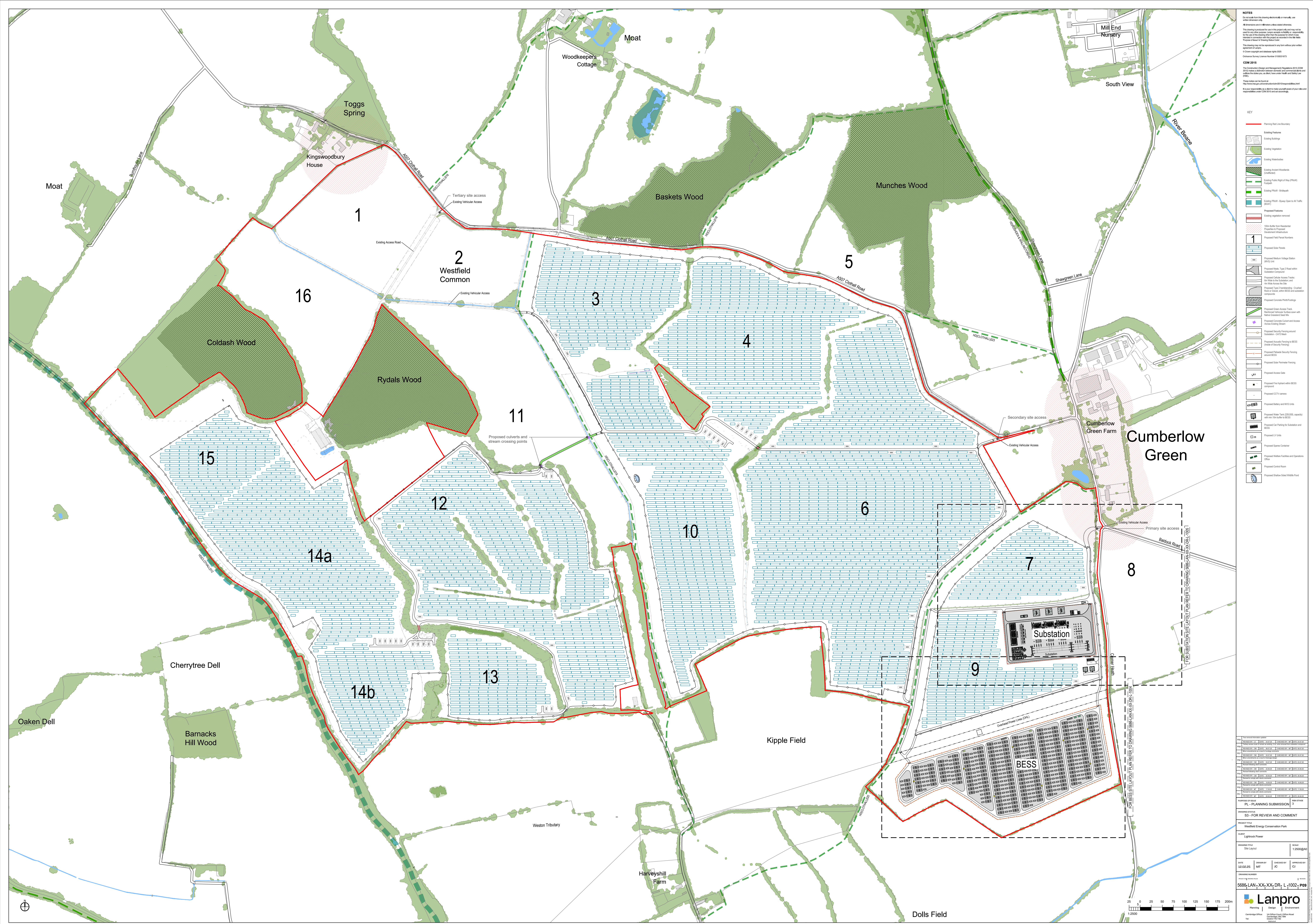
DRAWING DETAIL
TOPOGRAPHICAL SURVEY
Sheet 14 of 14

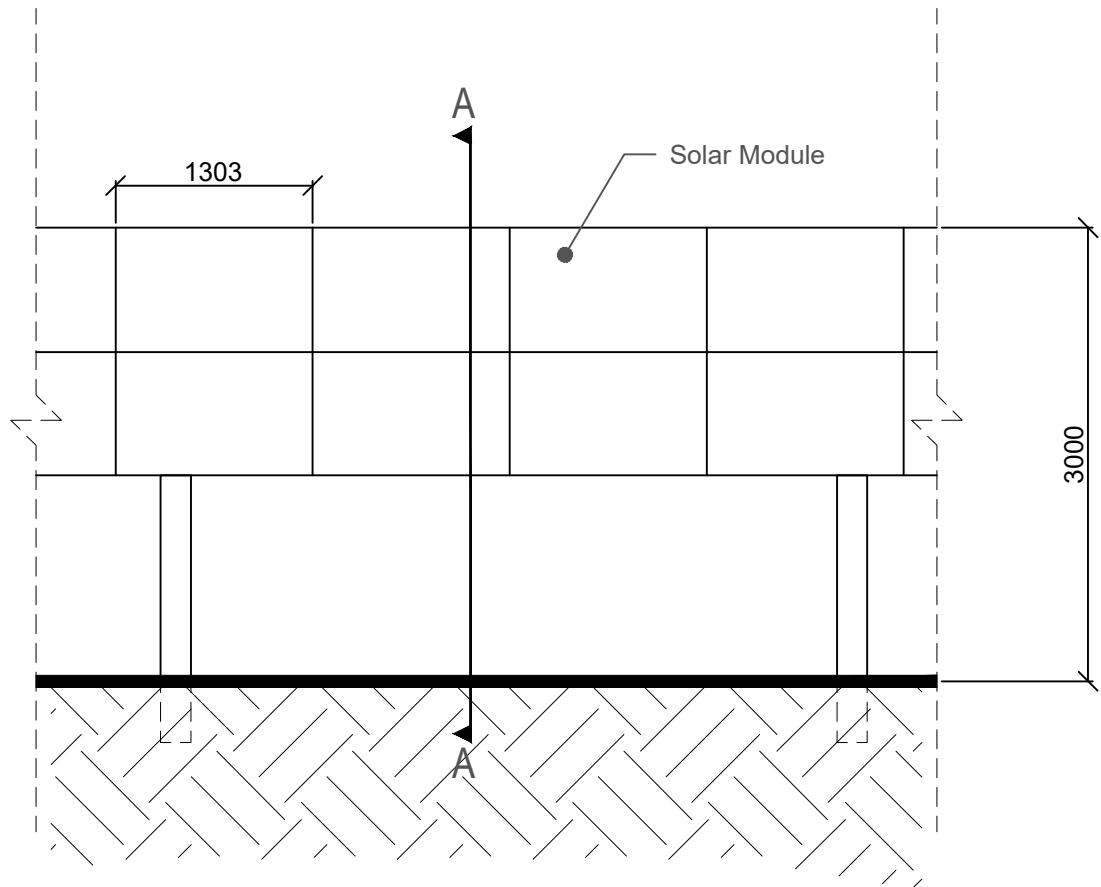
CLIENT LANPRO				SCALE 1:500
SURVEYOR GF,JH,DP	SURVEY DATE 06/12/24	CHECKED BY BT	APPROVED BY DB	DWG STA/ FINAL
DRAWING NUMBER 71226CVLS-14			REVISION	ISSUE DA/ 11/12/24



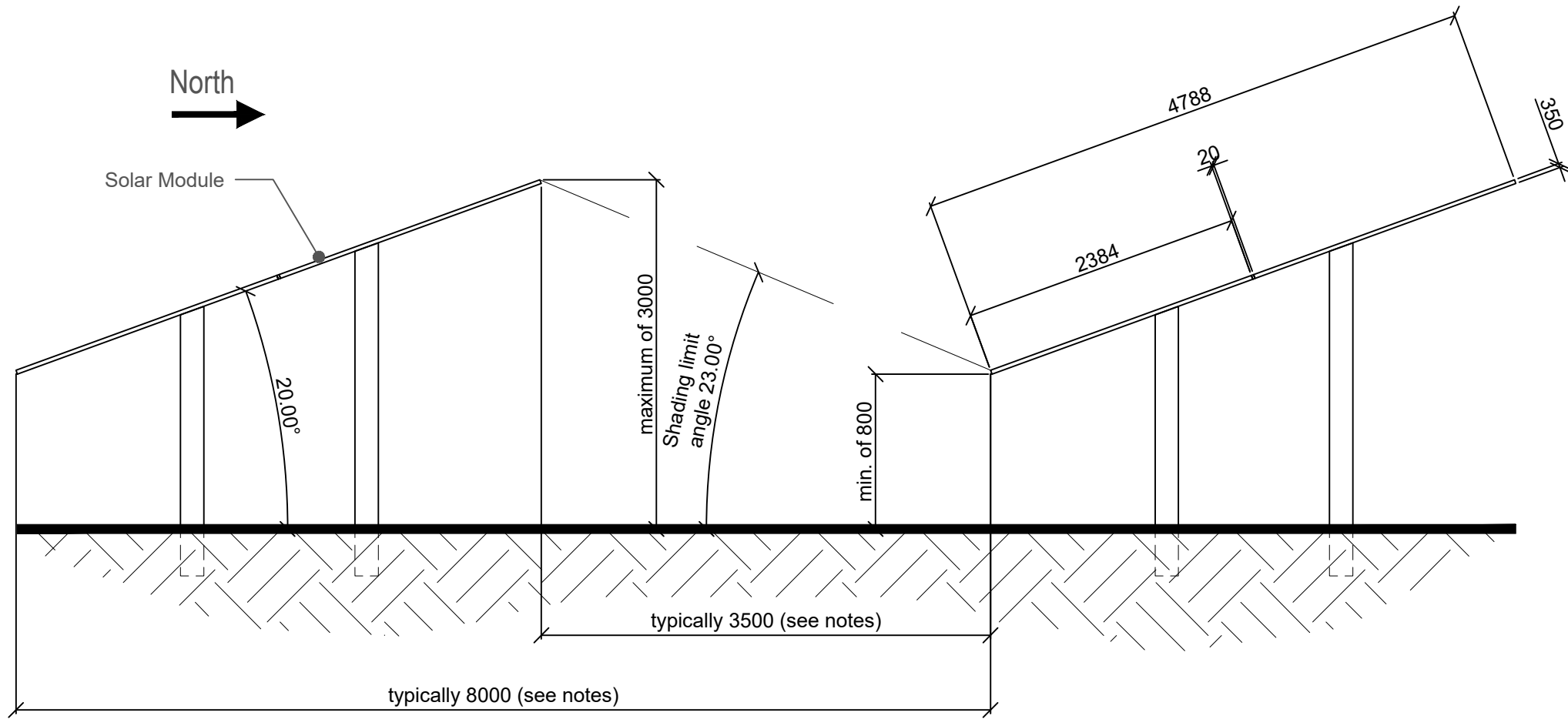


Appendix C Proposed Site Layout Plan and Typical Details

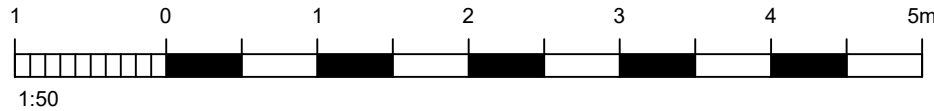




PARTIAL FRONT ELEVATION OF ARRAY



SECTION A-A



NOTES

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CDM 2015

The Construction (Design and Management) Regulations 2015 (CDM 2015) makes a distinction between domestic and commercial clients and outlines the duties you, as client, have under Health and Safety Law (HSE).

These duties can be found at:
<http://www.hse.gov.uk/construction/cdm2015/responsibilities.html>

It is your responsibility as a client to make yourself aware of your roles and responsibilities under CDM 2015 and act accordingly.

- Notes:
- The panels are fixed facing south at a tilt angle between 10 and 35 degrees.
 - Depending on the final panel dimensions and tilt angle, the panels could be mounted as low as 0.8m to the ground rising to 3m at the highest point.
 - Spacing would typically be 3.5m but could vary between 2m – 6m which is determined by topography and aspect parameters.
 - Panel mounting structure can vary depending on ground conditions and will be confirmed following detailed design prior to construction.

P02 Revised following client comments				
REVISED BY: CW		DATE: 02.07.25	CHECKED BY: MT	DATE: 02.07.25
First Issue				
P01 REVISED BY: CW		DATE: 01.07.25	CHECKED BY: MT	DATE: 01.07.25
PURPOSE OF ISSUE			RIBA STAGE	
PL - PLANNING SUBMISSION			3	
DRAWING STATUS				
S2 - Suitable for Information				
PROJECT TITLE				
Westfield Energy Conservation Park				
CLIENT				
Lightrock Power				
DRAWING TITLE			SCALE	
Solar Panels			1:50 @ A2	
DATE	DRAWN BY	CHECKED BY	APPROVED BY	
01.07.25	CW	MT	MT	
DRAWING NUMBER				
PROJECT NO DRAWING FIELD			REVISION	
5686-LAN-XX-XX-DR- L-3019- P02				



Lanpro

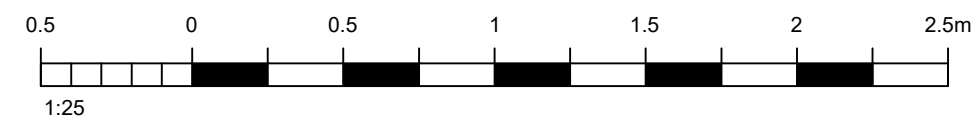
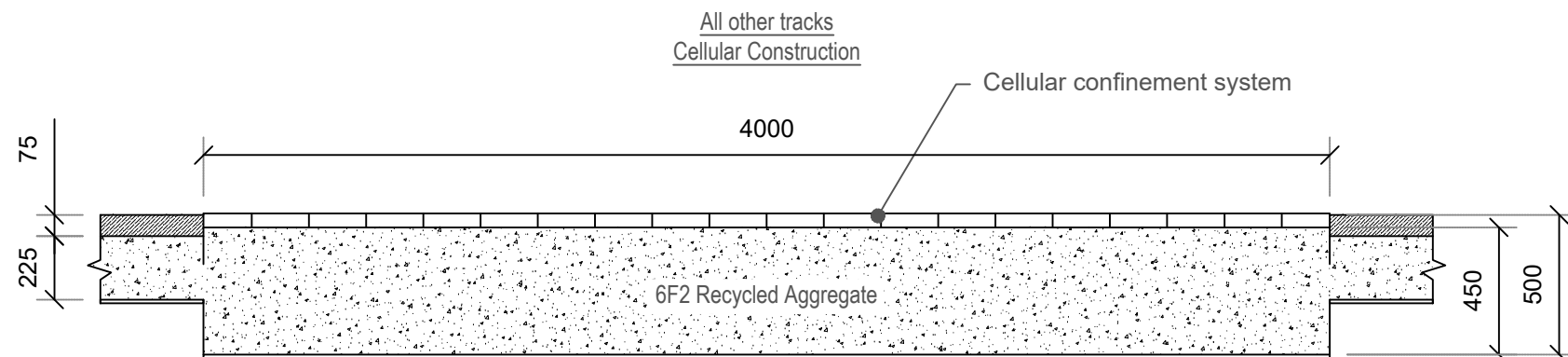
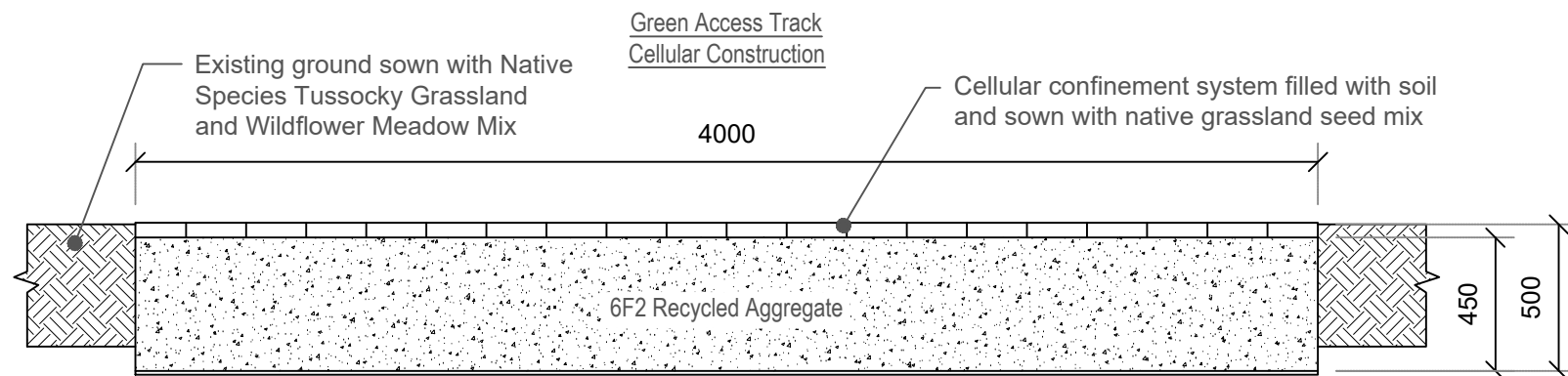
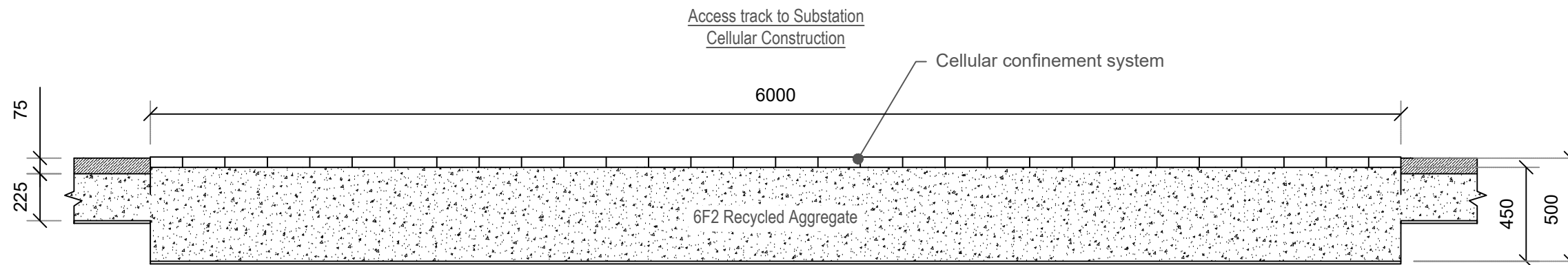
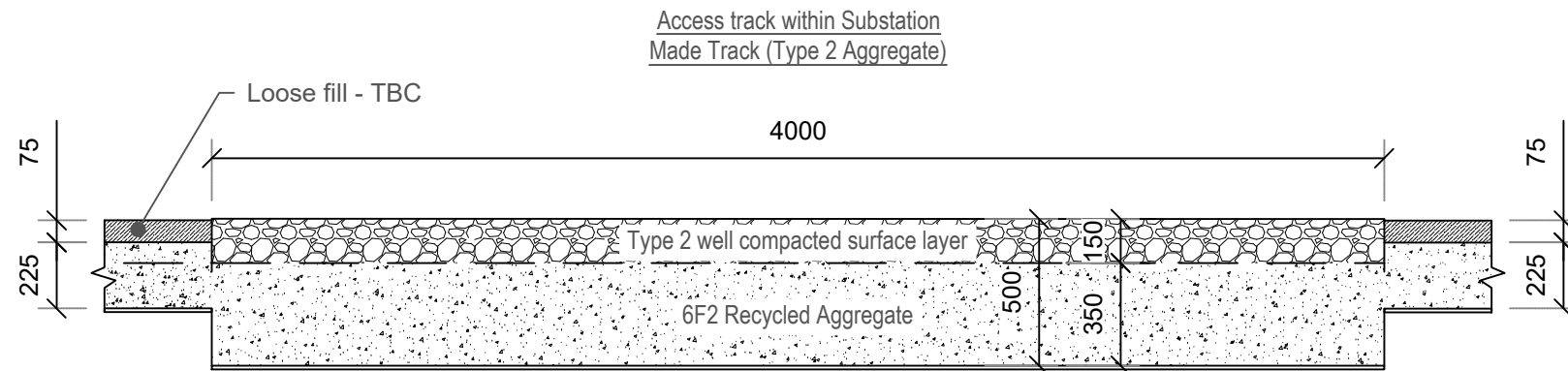
Planning

Design

Environment

Cambridge Office:

1A Clifton Court, Clifton Road
Cambridge, CB3 7BN
Tel: 01223 776 740
lanpro.co.uk



NOTES

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P03	Revised to include Green Access Track		
	REVISED BY: CW	DATE: 03.07.25	CHECKED BY: MT DATE:03.07.25
P02	Revised to reflect client comments		
	REVISED BY: CW	DATE: 11.06.25	CHECKED BY: MT DATE:11.06.25
P01	First Issue		
	REVISED BY: CW	DATE: 14.03.25	CHECKED BY: MT DATE:14.03.25
PURPOSE OF ISSUE			RIBA STAGE
PL - PLANNING SUBMISSION			3
DRAWING STATUS			
S2 - Suitable for Information			
PROJECT TITLE			
Westfield Energy Conservation Park			
CLIENT			
Lightrock Power			
DRAWING TITLE			SCALE
Access Tracks			1:25@A3
DATE	DRAWN BY	CHECKED BY	APPROVED BY
12.03.25	CW	MT	MT
DRAWING NUMBER			
PROJECT NO DRAWING FIELDS			REVISION
5686-LAN-XX-XX-DR- L-3008- P03			
Lanpro Planning Design Environment			
Cambridge Office: 1A Clifton Court, Clifton Road Cambridge, CB1 7BN Tel: 01223 776 740 lanpro.co.uk			



Appendix D Environment Agency Flood Mapping

Flood map for planning

Your reference
6437

Location (easting/northing)
529065/230375

Created
9 July 2025 09:38

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see <https://www.gov.uk/guidance/flood-risk-assessment-standing-advice>)

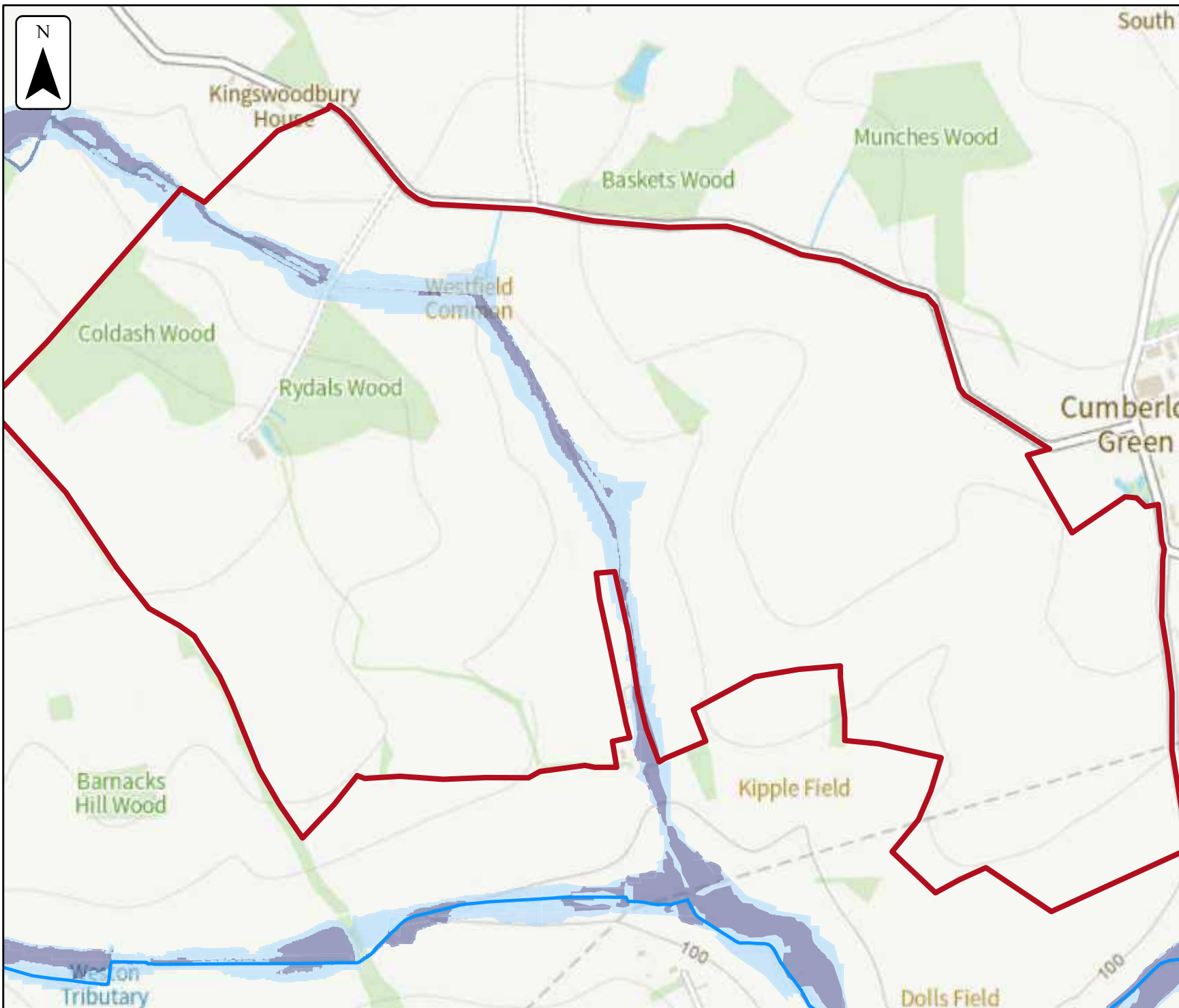
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2025 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference
6437

Location (easting/northing)
529065/230375

Scale
1:10,000

Created
9 Jul 2025 09:38

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area


0 100 200 300m



Appendix E Infiltration Testing Report



Geotechnical and
Geoenvironmental
Consultants

40 Home Close, Wootton, Abingdon, Oxon OX13 6DD

Tel 01865 326011

Web: www.gis-geotec.com

e-mail: info@gis-geotec.com

GROUND INVESTIGATION SERVICES (Southern) Ltd

Our Ref: S.6579

Your Ref:

06 May 2026

Aidan Van de Weyer
Lanpro

Dear Aidan

PERMEABILITY INVESTIGATION: LAND SOUTH OF A507 AND WEST OF CROMER HEATH, HERTFORDSHIRE SG9 0QD

We have completed the soil infiltration testing in respect of the above and accordingly enclose location plan, trial pit logs and infiltration test results.

It was required to undertake a permeability investigation to establish ground and groundwater conditions underlying the site in order to determine the suitability of the ground for local soakaways drainage.

Reference to the geological map for the area indicates the site is immediately underlain by superficial Deposits Clay with Flints Formation underlain by bedrock represented by Kensworth Nodular Chalk Member in the south and Lewes Nodular Chalk Formation in the north of the site characterised by chalk rock.

PERMEABILITY SURVEY

GIS personnel attended site on the 27 and 28 April 2026 and conducted a permeability survey which comprised the following works:

- Four trial pits were excavated to depths of 1.10m (SA1) 1.60m (SA2) and 1.10m (SA3) and 1.50m (SA4) which were subject to percolation testing in accordance with BRE Digest DG365 soakaway design.

The pits were inspected and described by a GIS representative and soil samples were obtained for description.

The weather was warm, dry and sunny.

All information pertaining to the excavation works above is presented in the Trial Pit Logs and with reference to the Notes and Abbreviations Sheet, presented to the rear of this report.

RESULTS OF PERMEABILITY INVESTIGATION

In summary, the results of the intrusive site work indicate the site is underlain by a capping of topsoil overlying superficial deposits underpinned by bedrock chalk.

Topsoil was exposed in each trial pit from ground level to depths ranging from 0.25m to 0.35m depths and consists of brown and dark brown clayey sand with some gravel.

This capping layer overlies the Clay with Flints Formation forming a thin mantle of firm to stiff rare desiccated brown sandy clay with some flint gravel extending down to depths between 0.50m and 0.90m. It was not present in SA1.

The bedrock consists of the Kensworth Nodular Chalk Member and Lewes Nodular Chalk Formation which are lithologically similar comprising gravelly chalk with some chalk sand. The gravel component is high, occasionally medium, density.

Groundwater was not encountered.

Potable water was introduced into the pits via a 1000L water bowser and allowed to fall while measurements of the water surface were recorded over the period of two days. Three repeat tests were completed in SA1, SA2 and SA3 but only two tests completed in SA4.

The results indicate the following infiltration rates:

SA1 1.10 depth – Three repeat tests conducted - F Value = 9.10×10^{-5} m/sec (based on slowest of the 3 tests)

SA2 1.60m depth – Three repeat tests conducted - F Value = 1.49×10^{-5} m/sec (based on slowest of the 3 tests)

SA3 1.10m depth – Three repeat tests conducted - F Value = 5.61×10^{-6} m/sec (based on slowest of the 3 tests)

SA4 1.50m depth – Two repeat tests conducted - F Value = 7.99×10^{-6} m/sec (based on slowest of the 2 tests)

PERMEABILITY ASSESSMENT AND SOAKAWAY DESIGN

Ground conditions in general are suitable for discharge of surface drainage water within both the superficial deposits and the bedrock chalk rock.

The test data has revealed that local soakaways are practicable over the site for cubiform or elongate shape aggregate filled chambers (30% free volume), subject to a minimum freeboard of 1.00m between chamber base and groundwater level, measured during the winter period.

Local soakaways should be sited at least 5.00m distance from foundations in order to mitigate risk of erosion of soils from beneath and around proposed shallow foundations

In order determine a stand-off distance from proposed new foundations and site boundaries soakaway chambers should be sited at a minimum distance based on criteria set out in CIRIA C574: Engineering in Chalk (2002).

The potential effects of soakaways, leaking drains, run off, etc. on the chalk will need to be considered and addressed in the design.

In areas where dissolution features are known to be prevalent, soakaways should be avoided if at all possible but, if unavoidable, should be sited at least 20m away from any foundations. Where the chalk is of low density, or its density is not known, soakaways should be sited at least 10m away from any foundations.

Should you have any queries with regard to the report, please do not hesitate to contact the undersigned.

For and on behalf of
Ground Investigation Services (Southern) Ltd
Yours sincerely

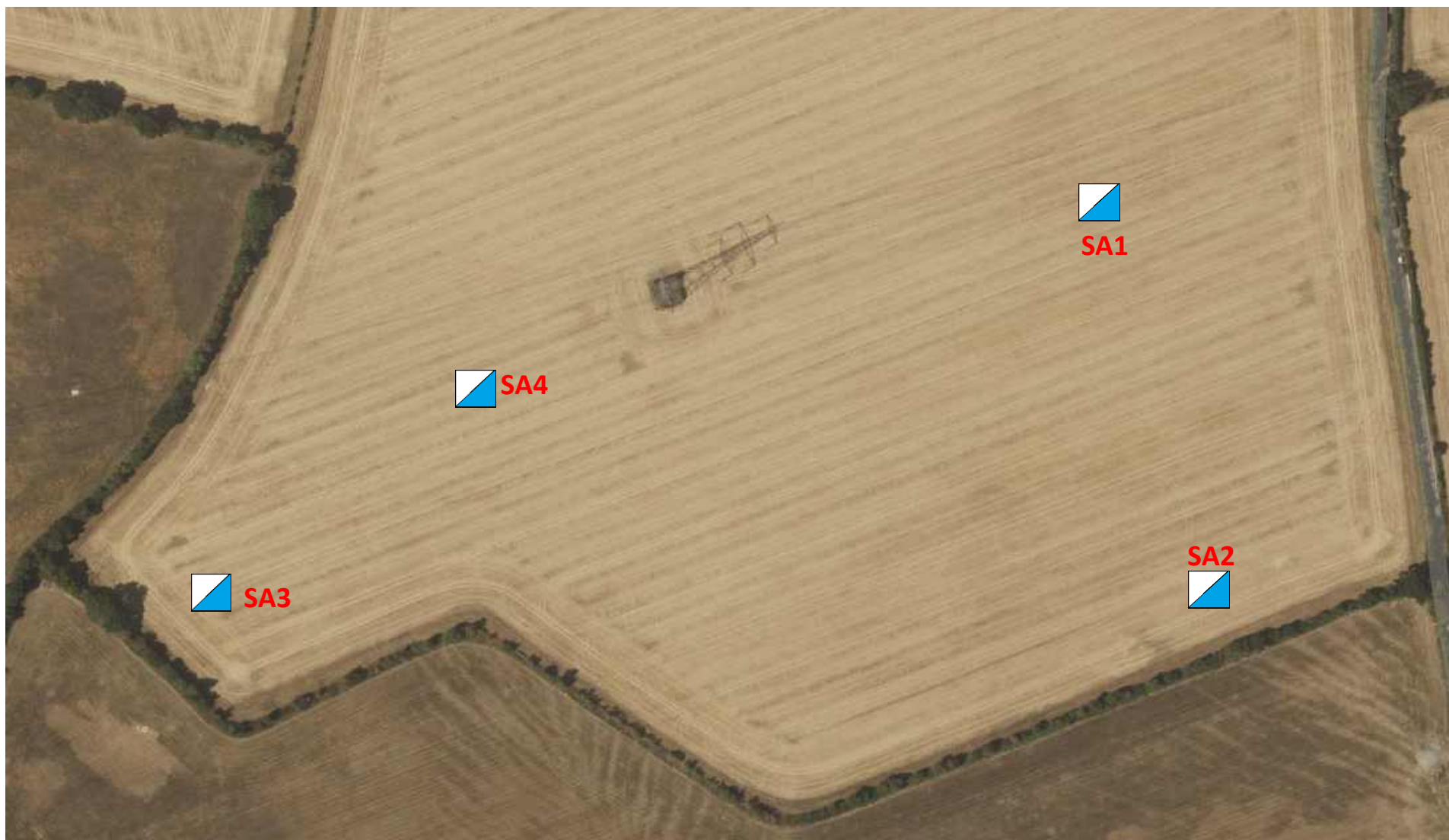


Martyn P Boughton (Director)

Email: martyn@gis-geotec.com

enc

Trial Pit Location Plan
Trial Pit Logs and Infiltration Test data



Client: LANPRO

Site: Land South of A507 and West of Cromer Heath SG9 0QD

Date: May 2026

 Trial Pit and Infiltration Test

Ground Investigation
Services (Southern) Ltd
40 Home Close, Wootton OX13 6DD
Tel 01865 326011

TRIAL PIT LOCATION PLAN

Report No.
S.6579

Fig
1

NOTES ON EXPLORATORY HOLE RECORDS

GENERAL NOTES

1 OPERATING PROCEDURES

The procedure used for cable percussion boring, rotary drilling, trial pitting, sampling, in situ and laboratory testing and sample descriptions are generally in accordance with BS5930:2015+A1:2020 'Code of practice for ground investigations', BS EN ISO 14688-1:2018 'Geotechnical investigation and testing – Identification and classification of soil – Part 1 Identification and description', BS EN ISO 14689-1:2018 'Geotechnical investigation and testing – Identification and classification of rock – Part 1 Identification and description' as appropriate, and BS1377:1990 'Methods of test for soils for civil engineering purposes', unless stated otherwise.

2 GROUNDWATER

Exploratory hole water levels are recorded together with the depths at which seepages or inflows of water are detected. These observations are noted on the Records, but may be misleading for the following reasons:

- a) The exploratory hole is rarely left open at the relevant depth for a sufficient time for the water level to reach equilibrium.
- b) A permeable stratum may have been sealed off by the borehole casing.
- c) Water may have been added to the borehole to facilitate progress.
- d) The permeability may have been altered by the excavation/boring/drilling process.

Standpipes or piezometers should be installed when an accurate record of groundwater level is required, however, it should be noted that groundwater levels may vary significantly due to seasonal, climatic or man made effects. Water levels recorded during the investigation and any advice or comment made accordingly may, therefore, not be appropriate to particular foundation, geotechnical design, or temporary works solutions. Long term monitoring of standpipes or piezometers is always recommended when water levels are likely to have a significant effect on design.

3 CHISELLING

The remarks in the Borehole Records contain information on the time spent advancing the borehole by 'Chiselling Techniques', and the depth of borehole over which it was required. Such information may be affected by a wide range of variable factors, unrelated to the geotechnical properties of the strata. Such factors include, but are not restricted to: plant, equipment and operator. The data should, therefore, only be used subjectively and with extreme caution.

4 IDENTIFICATION AND DESCRIPTION OF SOILS - SEE SEPARATE SHEET

The identification system follows the Company's Engineering: Geotechnical Procedures Manual which is based on BS EN ISO 14688-1:2018 and appropriate clarifications in the National Foreword, BS 5930:2015 and BS EN ISO 14689-1:2018

Relative density terms are given where supported by SPT N values, with the exception of Made Ground. The field assessment of compactness or relative density for coarse grained soils is only given on trial pit records where appropriate assessment of the soils has been undertaken.

Where the terms 'soft to firm', 'firm to stiff' etc. are used they indicate a strength which is close to the borderline between the two terms and cannot be precisely defined by inspection only, and/or which is indicated as borderline or ranging between the two terms after consideration also of in situ and laboratory test results. Consistencies may have been amended in the light of test results

Where 'to' links two terms, as in 'slightly sandy to sandy' this again represents a borderline case or a range, where the precise proportions cannot be determined as outlined previously.

The name of the geological formation is only given where this has been requested and can be determined with confidence (see Clause 41.5 of BS 5930:1999).

5 INTERPRETATION OF THE RESULTS OF THE INVESTIGATION

The description of ground conditions encountered and any engineering interpretation included in the report are based on the results of the boreholes and trial pits and the field and laboratory testing carried out. There may be ground conditions at the site which have not been revealed by the investigation and consequently have not been taken into account.

Any interpolation or extrapolation of strata between exploratory holes shown on any cross sections or site plans is an estimate only of the likely stratification based on general experience of the ground conditions and is subject to the interpretation of the reader.

The term "TOPSOIL" is used in this report to describe the surface, usually organic rich, layer including turf, subsoil and weathered material with roots. The use of this term may not imply that the soil satisfies the requirements of Clause 3 of BS 3882:2007, 'Specification for topsoil', or is suitable for general horticultural and agricultural purposes.

Laboratory test results in this report give the soil properties of individual specimens tested under specified conditions. Individual results or groups of results may not be appropriate for use as design parameters for some geotechnical analyses. The samples may be non-representative, disturbed internally, or prepared and tested under conditions suited for different geotechnical applications. Unless the selection of design parameters is discussed in this report, it is recommended that the advice of a Geotechnical Specialist is sought.

NOTES ON EXPLORATORY HOLE RECORDS

IN SITU TESTING AND SAMPLING

STANDARD PENETRATION TESTS

- S() Standard Penetration Test (SPT). A 50mm diameter split barrel sampler is driven 450mm into the soil using a 63.6kg hammer with a 760mm drop. The penetration resistance (also known as the 'N' value) is expressed as the number of blows required to obtain 300mm penetration below an initial seating drive of 150mm which is taken through any ground which may be disturbed at the base of the borehole. The test is usually completed when the number of blows recorded during the test drive only reaches 50 in soils or 100 in weak rock. If a sample is not recovered in the sampler, a disturbed sample is taken on completion of the test and given the same depth as the top of the Standard Penetration Test drive.
- C() Standard Penetration Test carried out with a 60 degree cone. The test is usually conducted in coarse granular soils or weak rock using the same procedure as for the SPT, but with a 50mm diameter, 60 degree apex, solid cone fitted to the split barrel. A bulk disturbed sample is taken and given the same depth as the top of the test drive.
- The depth on the borehole record at the left hand side of the 'depth' column is that at the start of the normal 450mm penetration. Where the full penetration of 300mm for the test drive is obtained, the penetration resistance ('N' value) is reported in the 'SPT Blows/N' column. If the full penetration of 300mm in the test drive is not obtained, then the length of drive (test length in mm) and the penetration resistance (number of blows) are both reported. Blows through the initial seating drive (normally 150mm) are not reported. Both tests are based on BS EN ISO 22476-3 (2005) Geotechnical Investigation and Testing – Field Testing Part 3 Standard Penetration Test and BS5930:2015+A1:2020 'Code of practice for ground investigations'
- * in the 'Test Length' column denotes that the blows and penetration were all in the initial Seating Drive section.

OTHER IN SITU TESTS

The following in situ tests are reported on the **Exploratory Hole Records**, in the 'Test' or 'Type' and 'Results' columns where appropriate.

- k In situ Permeability Test - refer to detailed test results for permeability values
- PMT Pressuremeter Test - refer to detailed test results for modulus values, etc.
- VN/R() Borehole Shear Vane Test (undrained shear strength - c_u - in kPa) - refer also to detailed test results, N - 'Natural' or peak shear strength, R - Remoulded shear strength
- V() Hand Shear Vane Test (Direct reading of undrained shear strength in kPa). 'N' and 'R' as above. The values are indicative and should not be taken as being equivalent to laboratory test results. The Pilcon vane results have a factor varying from about a sixth for the 33mm vane to a third for the 19mm vane which reduces the BS1377 shear vane value. The values presented are therefore approximate and should be treated with great caution if used for design purposes
- PP() Pocket Penetrometer. Unconfined Strength (UCS) reported in kg/cm^2 to the nearest 0.25 kg/cm^2 or kPa with the same accuracy. Equivalent c_u in kPa is very approximately $\text{UCS} \times 50$. Pocket Penetrometers are an aid to logging of cohesive soils, the results are indicative and should not be relied upon. The equipment used is not calibrated
- CBR() California Bearing Ratio Test (CBR%) - refer also to detailed test results
- PID() Photo-Ionisation Detector Readings in headspace of small disturbed chemical samples. Result given in ppm by volume

SAMPLES

- U General purpose open tube sample. Sample normally taken with open tube sampler approximately 0.1m diameter and 0.45m long and driven with 80kg sinker bar and 56kg sliding hammer, unless noted otherwise. "XX" in U100 blows column denotes the number of hammer blows. The height of hammer drop can be variable depending on operator technique. Depths are given to the top of the sample if full penetration and recovery are achieved, otherwise actual lengths of penetration and recovery are given in the appropriate columns.
- U(X) General purpose open tube sample (X) mm diameter
- TW(X) Thin wall (push) sample (X) mm diameter
- P(X) Piston sample (X) mm diameter
- CBR Sample taken in CBR Mould
- D Small disturbed sample (plastic tub or jar with air tight lid)
- B Bulk disturbed sample (polythene bag, tied at neck - size dependent on purpose)
- W Water sample
- # Sample not recovered
- C Core sample (CS – short core, generally about 100mm; CL – long core, generally 200mm to 300mm)
- CD Sample for chemical analysis in a plastic tub K Sample for chemical analysis in an amber glass jar
- V Sample for chemical analysis in a glass vial CDKV Set of samples for chemical analysis as above
- WAC Sample for Waste Acceptance Criteria
- ES Environmental Sample EW Environmental Water Sample
-

Recommended symbols for soils and rocks – BS 5930:2015+A1:2020

	Made ground		Chalk
	Topsoil		Limestone
	Boulders and Cobbles		Conglomerate
	Gravel		Brecia
	Sand		Coal
	Silt		Shale
	Clay		Siltstone
	Peat		Sandstone
Composite soil types may signified By combined symbols, e.g.			Mudstone/Claystone
	Sandy CLAY with a trace of fine medium gravel		
	Silty slightly clayey SAND		

IDENTIFICATION AND DESCRIPTION OF SOILS

NOTES Identification and descriptive method and descriptions, generally in accordance with BS5930:2015 Section 6 clauses 41, and 43 and BS EN ISO 14688-1:2002. Additional notes relating to BS EN ISO 14688-2:2004 – modified terms for content of secondary fraction given in Annex B Table B1 are not comparable to 5930 and are not be used.

Organic Content :- Low - 2 to 6%; Medium - 6 to 20%; High - >20%. Terms not used on borehole records

Carbonate content :- Only noted if field test with dilute HCl undertaken – Carbonate free if no effervescence; Calcareous if slight effervescence; Highly calcareous if strong reaction

Undrained shear strength :- terms from laboratory or in situ tests not given on borehole records.

Very Coarse Soils – described by initially removing very coarse materials and describing residue before adding back the very coarse soils. If residue is cohesive then described as ' (COBBLES / BOULDERS) with low (cobble / boulder) content with (some / much etc) matrix of ' If residue is granular then described as ' with matrix of ' or as a coarse soil. **Cobbles** :- <10% - low cobble content; 10 to 20% - medium content; >20% - high content; **Boulders** -<5% - low boulder content; 5 to 20% - medium content; >20% - high content



GROUND INVESTIGATION SERVICES (Southern) Ltd

40 Home Close, Wootton, Abingdon, Oxon OX13 6DD Tel 01865 326011

CLIENT

LANPRO

SITE LOCATION

Land South of A507 and West of Cromer Heath SG9 0QD

Date: April 2026

Ground Level :

Orientation: East-west

Co-Ordinates (NGR):

TRIAL PIT

SA1

Sheet 1 of 1

Report No.

S.6579

SAMPLES AND TESTS						water	Reduced	Depth	Legend	STRATA AND DESCRIPTION
Depth	No.	Type	PID	Hand	HSV	depth	Level	(thickness)		
metres			% v/v	pen' kN/m2	kN/m2	m	m (AOD)	metres		
0.50		D						0.35		Firm brown sandy CLAY with some fine medium gravel TOPSOIL
								(0.75)		Firm white weakly stained brown CHALK rock composed of high density angular chalk GRAVEL with a little chalk sand and occasional cobble sized flints
1.00		D						1.10		Firm white CHALK rock composed of high density angular chalk GRAVEL with a little chalk sand and occasional cobble sized flints
										LEWES NODULAR CHALK FORMATION



Trial Pit Dimensions		Date of logging: 27 April 2026 Excavation plant: 3T excavator Pit stability: Stable Weather: Warm dry and sunny Groundwater (strike): dry Groundwater (standing): dry Logged by: SD Checked by: MPB
		General Remarks: Infiltration test conducted in accordance with BRE DG365

Scale 1:15

For explanation of symbols and abbreviations see preface to Borehole records. All depths in metres. Logged in accordance with BS5930:2015+A1:2020

**Ground Investigation
Services (Southern) Ltd**

40 Home Close, Wootton OX13 6DD
Tel 01865 326011

TRIAL PIT LOG

Report No.

S.6579

Figure

2



GROUND INVESTIGATION SERVICES (Southern) Ltd

40 Home Close, Wootton, Abingdon, Oxon OX13 6DD Tel 01865 326011

CLIENT

LANPRO

SITE LOCATION

Land South of A507 and West of Cromer Heath SG9 0QD

Date: April 2026

Ground Level :

Orientation: East-west

Co-Ordinates (NGR):

TRIAL PIT

SA2

Sheet 1 of 1

Report No.

S.6579

SAMPLES AND TESTS						water	Reduced	Depth	Legend	STRATA AND DESCRIPTION
Depth metres	No.	Type	PID % v/v	Hand pen' kN/m2	HSV kN/m2	depth m	Level m (AOD)	(thickness) metres		
0.50		D						0.25		Firm brown sandy CLAY with some fine medium gravel
								(0.65)		TOPSOIL Firm light brown/brown sandy CLAY with a little fine medium gravel
1.00		D						0.90		SUPERFICIAL DEPOSITS Light brown and cream calcareous fine SAND with some fine medium coarse angular flint gravel
1.50		D						1.10		Firm white CHALK rock composed of high density angular chalk
								(0.50)		GRAVEL with a little chalk sand and occasional cobble sized flints
								1.60		KENSWORTH NODULAR CHALK MEMBER



Trial Pit Dimensions 		Date of logging: 27 April 2026 Excavation plant: 3T excavator Pit stability: Stable Weather: Warm dry and sunny Groundwater (strike): dry Groundwater (standing): dry Logged by: SD Checked by: MPB
		General Remarks: <i>Infiltration test conducted in accordance with BRE DG365</i>

Scale 1:15

For explanation of symbols and abbreviations see preface to Borehole records. All depths in metres. Logged in accordance with BS5930:2015+A1:2020

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Services (Southern) Ltd**

40 Home Close, Wootton OX13 6DD
Tel 01865 326011

TRIAL PIT LOG

Report No.

S.6579

Figure

3



GROUND INVESTIGATION SERVICES (Southern) Ltd

40 Home Close, Wootton, Abingdon, Oxon OX13 6DD Tel 01865 326011

CLIENT

LANPRO

SITE LOCATION

Land South of A507 and West of Cromer Heath SG9 0QD

Date: April 2026

Ground Level :

Orientation: East-west

Co-Ordinates (NGR):

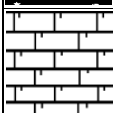
TRIAL PIT

SA3

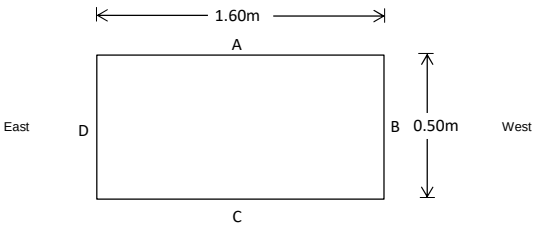
Sheet 1 of 1

Report No.

S.6579

SAMPLES AND TESTS						water depth m	Reduced Level m (AOD)	Depth (thickness) metres	Legend	STRATA AND DESCRIPTION
Depth metres	No.	Type	PID % v/v	Hand pen' kN/m2	HSV kN/m2					
0.50		D						0.25 (0.35)		Firm brown sandy CLAY with some fine medium gravel TOPSOIL
								0.60		Firm light brown/brown sandy CLAY with some fine medium chalk and flint gravel SUPERFICIAL DEPOSITS
1.00		D						(0.50)		Firm white stained brown CHALK rock composed of high density angular chalk GRAVEL with a little chalk sand and occasional cobble sized flints and pockets of brown silty sand LEWES NODULAR CHALK FORMATION
								1.10		



Trial Pit Dimensions 		Date of logging: 27 April 2026 Excavation plant: 3T excavator Pit stability: Stable Weather: Warm dry and sunny Groundwater (strike): dry Groundwater (standing): dry Logged by: SD Checked by: MPB
		General Remarks: Infiltration test conducted in accordance with BRE DG365

Scale 1:15

For explanation of symbols and abbreviations see preface to Borehole records. All depths in metres. Logged in accordance with BS5930:2015+A1:2020

Ground Investigation
Services (Southern) Ltd

40 Home Close, Wootton OX13 6DD
Tel 01865 326011

TRIAL PIT LOG

Report No.

S.6579

Figure

4



GROUND INVESTIGATION SERVICES (Southern) Ltd

40 Home Close, Wootton, Abingdon, Oxon OX13 6DD Tel 01865 326011

CLIENT

LANPRO

SITE LOCATION

Land South of A507 and West of Cromer Heath SG9 0QD

Date: April 2026

Ground Level :

Orientation: East-west

Co-Ordinates (NGR):

TRIAL PIT

SA4

Sheet 1 of 1

Report No.

S.6579

SAMPLES AND TESTS						water	Reduced	Depth	Legend	STRATA AND DESCRIPTION
Depth metres	No.	Type	PID % v/v	Hand pen' kN/m2	HSV kN/m2	depth m	Level m (AOD)	(thickness) metres		
0.50		D						0.30 (0.20)		Firm brown sandy CLAY with some fine medium gravel
								0.50 (0.30)		TOPSOIL Stiff desiccated light brown sandy CLAY with some flint GRAVEL
								0.80 (0.70)		SUPERFICIAL DEPOSITS Desiccated white stained brown CHALK rock composed of medium to high density angular chalk GRAVEL with some white chalk sand
1.00		D						1.50		Firm white CHALK rock composed of high density angular chalk GRAVEL with a little chalk sand
1.50		D								LEWES NODULAR CHALK FORMATION



Trial Pit Dimensions		Date of logging: 27 April 2026 Excavation plant: 3T excavator Pit stability: Stable Weather: Warm dry and sunny Groundwater (strike): dry Groundwater (standing): dry Logged by: SD Checked by: MPB General Remarks: Infiltration test conducted in accordance with BRE DG365
------------------------------------	--	---

Scale 1:15

For explanation of symbols and abbreviations see preface to Borehole records. All depths in metres. Logged in accordance with BS5930:2015+A1:2020

**Ground Investigation
Services (Southern) Ltd**

40 Home Close, Wootton OX13 6DD
Tel 01865 326011

TRIAL PIT LOG

Report No.

S.6579

Figure

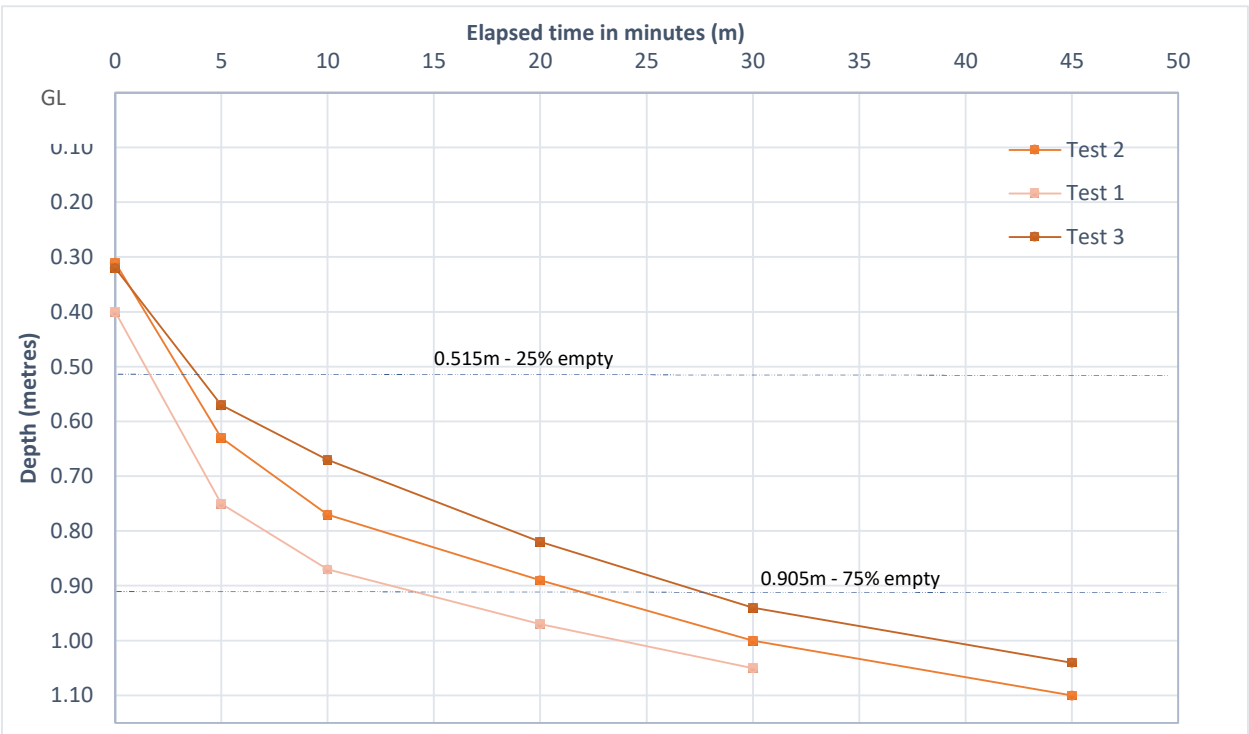
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CALCULATION OF SOIL INFILTRATION RATE

[illegible]

TRIAL PIT	SA1	Logged by:	S Dodd
Test No.	3	Checked by:	M Boughton
Groundwater Strike: Standing:	dry dry	Date of test	27 and 28 April 2026
Weather	Warm, dry and sunny		

Soakage Trial Pit Width W_t (m) =	0.50
Soakage Trial Pit Length L_t (m) =	1.50
Total Depth from ground level D_{tb} (m) =	1.10
Internal Surface Area of trial pit a_{p50} (m) =	2.31
Storage Volume between 75-25% V_p (m) =	0.29
Time for water to fall from 75-25% t_p (minutes) =	23.18
Allowance for infiltration through soakaway base	NO/YES
Free volume in aggregate (%) =	100
SOIL INFILTRATION RATE* (f) = 9.10×10^{-5} m/sec	



COMMENTS:

CLIENT: LANPRO

**SITE : Land South of A507 and West of
Cromer Heath SG9 0QD**

Date: April 2026

BRE DIGEST DG365: 2016

SOAKAWAY DESIGN

**Ground Investigation
Services (Southern) Ltd**
40 Home Close, Wootton, Abingdon OX13 6DD
Tel 01865 326011

INFILTRATION TEST DATA

Report No.
S.6579

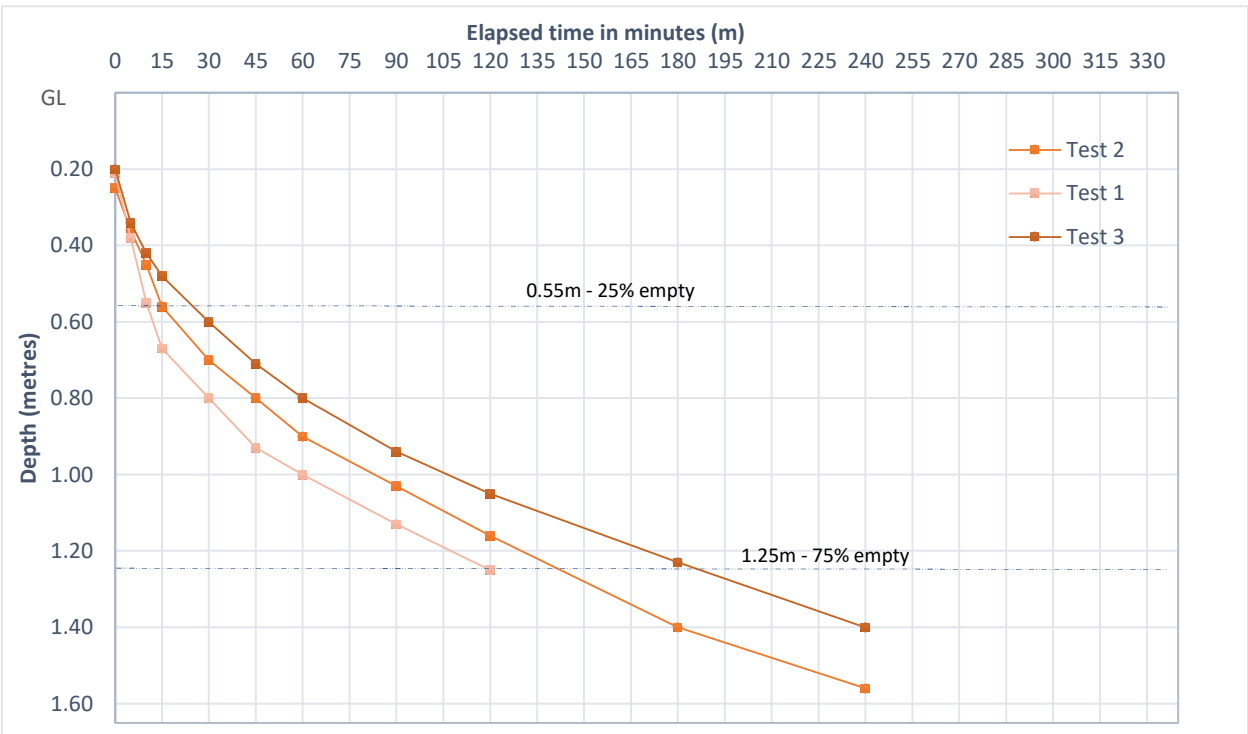
Fig.
6

CALCULATION OF SOIL INFILTRATION RATE

[illegible]

TRIAL PIT	SA2	Logged by:	S Dodd
Test No.	3	Checked by:	M Boughton
Groundwater	dry dry	Date of test	27 and 28 April 2026
Strike: Standing:			
Weather	Warm, dry and sunny		

Soakage Trial Pit Width W_t (m) =	0.50
Soakage Trial Pit Length L_t (m) =	1.40
Total Depth from ground level D_{tb} (m) =	1.60
Internal Surface Area of trial pit a_{p50} (m) =	3.36
Storage Volume between 75-25% V_p (m) =	0.49
Time for water to fall from 75-25% t_p (minutes) =	163.3
Allowance for infiltration through soakaway base	NO/YES
Free volume in aggregate (%) =	100
SOIL INFILTRATION RATE* (f) =	1.49×10^{-5} m/sec



COMMENTS:

CLIENT: LANPRO

**SITE : Land South of A507 and West of
Cromer Heath SG9 0QD**

Date: April 2026

BRE DIGEST DG365: 2016

SOAKAWAY DESIGN

**Ground Investigation
Services (Southern) Ltd**
40 Home Close, Wootton, Abingdon OX13 6DD
Tel 01865 326011

INFILTRATION TEST DATA

Report No.
S.6579

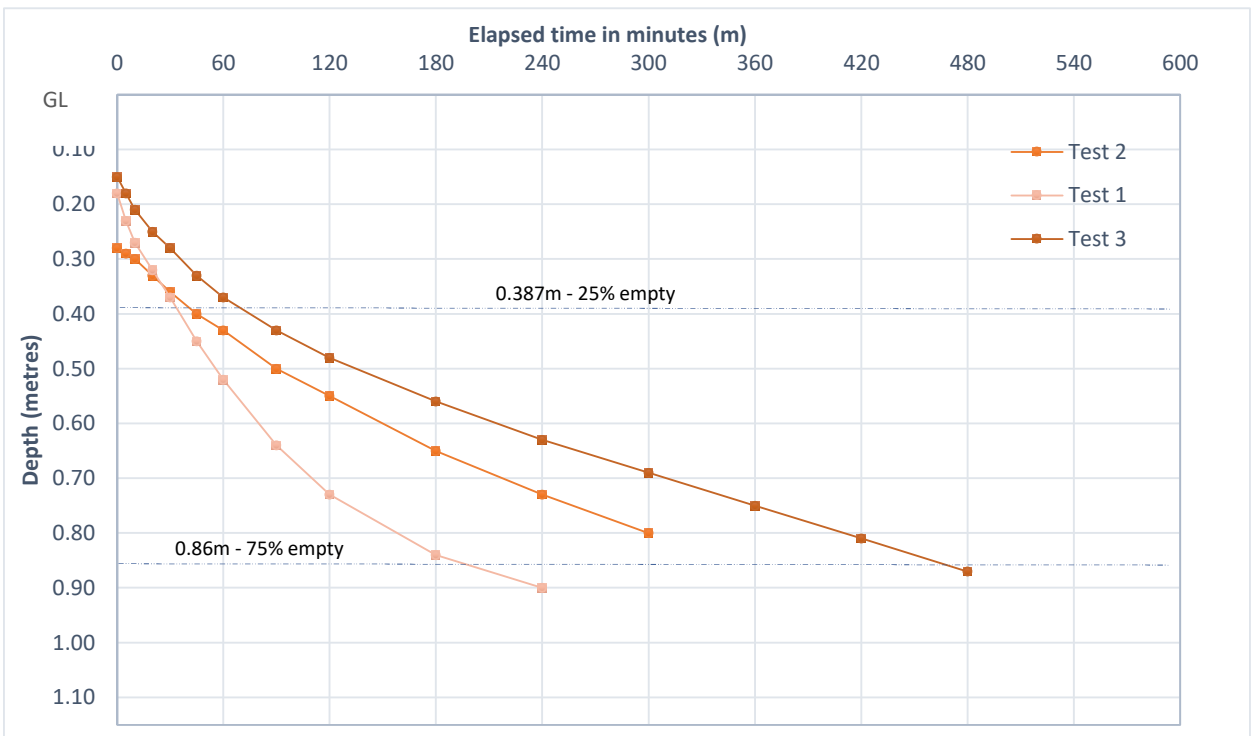
Fig.
7

CALCULATION OF SOIL INFILTRATION RATE

[illegible]

TRIAL PIT Test No. Groundwater Strike: Standing:	SA3	Logged by:	S Dodd
	3	Checked by:	M Boughton
	dry dry	Date of test	27 and 28 April 2026
	Weather	Warm, dry and sunny	

Soakage Trial Pit Width W_t (m) =	0.50
Soakage Trial Pit Length L_t (m) =	1.60
Total Depth from ground level D_{tb} (m) =	1.10
Internal Surface Area of trial pit a_{p50} (m) =	2.80
Storage Volume between 75-25% V_p (m) =	0.38
Time for water to fall from 75-25% t_p (minutes) =	403.7
Allowance for infiltration through soakaway base	NO/YES
Free volume in aggregate (%) =	100
SOIL INFILTRATION RATE* (f) = 5.61×10^{-6} m/sec	



COMMENTS:

CLIENT: LANPRO

**SITE : Land South of A507 and West of
Cromer Heath SG9 0QD**

Date: April 2026

BRE DIGEST DG365: 2016

SOAKAWAY DESIGN

**Ground Investigation
Services (Southern) Ltd**
40 Home Close, Wootton, Abingdon OX13 6DD
Tel 01865 326011

INFILTRATION TEST DATA

Report No.
S.6579

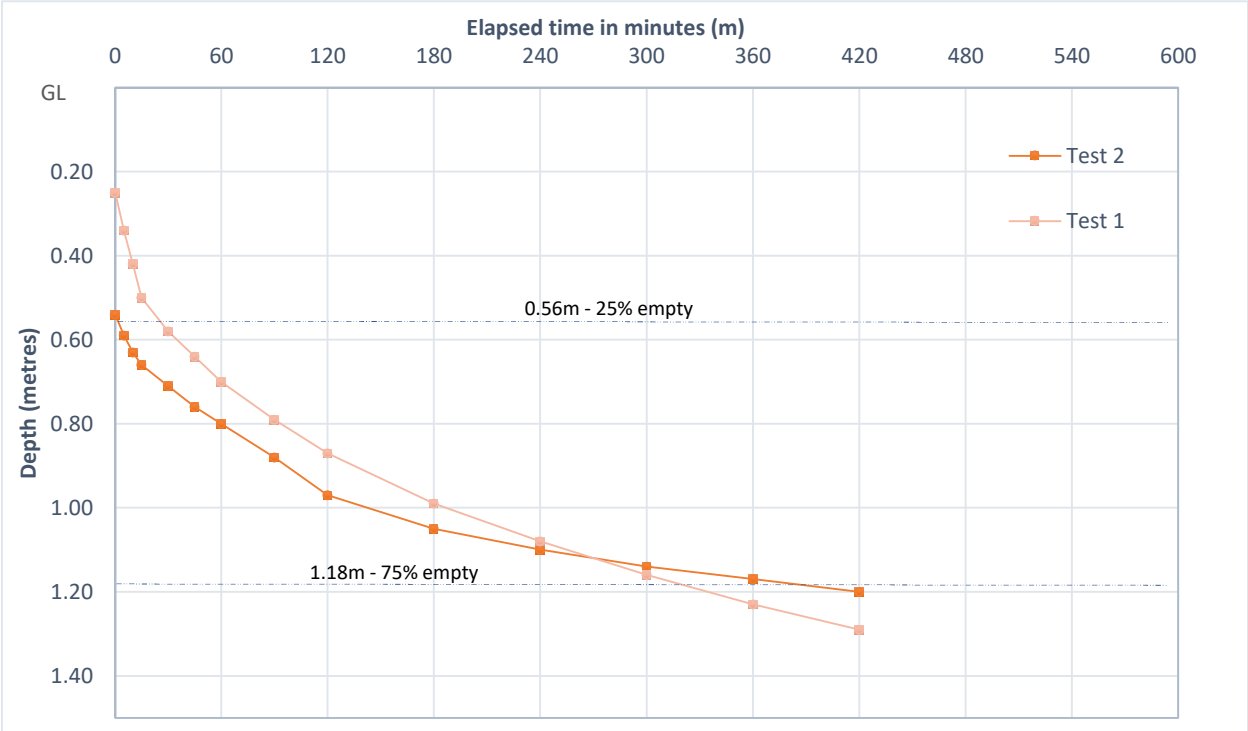
Fig.
8

CALCULATION OF SOIL INFILTRATION RATE

[illegible]

TRIAL PIT	SA4	Logged by:	S Dodd
Test No.	1	Checked by:	M Boughton
Groundwater	dry	Date of test	27 and 28 April 2026
Strike:	dry		
Standing:			
Weather	Warm, dry and sunny		

Soakage Trial Pit Width W_t (m) =	0.50
Soakage Trial Pit Length L_t (m) =	1.40
Total Depth from ground level D_{tb} (m) =	1.50
Internal Surface Area of trial pit a_{p50} (m) =	3.08
Storage Volume between 75-25% V_p (m) =	0.44
Time for water to fall from 75-25% t_p (minutes) =	296.8
Allowance for infiltration through soakaway base	NO/YES
Free volume in aggregate (%) =	100
SOIL INFILTRATION RATE* (f) = 7.99×10^{-6} m/sec	



COMMENTS:

CLIENT: LANPRO

**SITE : Land South of A507 and West of
Cromer Heath SG9 0QD**

Date: April 2026

BRE DIGEST DG365: 2016

SOAKAWAY DESIGN

**Ground Investigation
Services (Southern) Ltd**
40 Home Close, Wootton, Abingdon OX13 6DD
Tel 01865 326011

INFILTRATION TEST DATA

Report No.
S.6579

Fig.
9



Appendix F Infiltration Drainage Calculations

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by: RMR	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



PN1.000

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599



PN1.001

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599



PN2.000

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by: RMR	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



PN2.001

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599



BASIN

Type : Catchment Area

Area (ha)	0.226
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.113
10	0.113

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by: RMR		Approved By:
Report Details: Type: Junctions Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Sump Depth (m)	Chamber Shape
103	Manhole	530139.882	230113.086	120.674	0.924	119.750	0.500	Circular
101	Manhole	529971.252	229986.468	118.617	0.917	117.700	0.500	Circular
102	Manhole	530060.843	229995.032	117.191	1.066	116.125	0.500	Circular
104	Manhole	530145.591	230053.358	117.174	1.074	116.100	0.500	Circular
105	Manhole	530150.435	230003.593	113.842	0.717	113.125	0.500	Circular
106	Manhole	530159.316	229991.505	112.995	0.745	112.250	0.500	Circular
107	Manhole	530162.101	229929.568	110.234	0.684	109.550	0.500	Circular

Name	Diameter (m)	Lock	Part Family
103	1.500	All	Type B
101	1.500	All	Type B
102	1.500	All	Type B
104	1.500	All	Type B
105	1.800	All	Type B
106	1.800	All	Type B
107	1.800	All	Type B

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by: RMR	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Dry Swale

Type : Swale

Swale

Exceedance Level (m)	110.500
Depth (m)	2.000
Base Level (m)	108.500
Top Width (m)	19.000
Side Slope (1:X)	3.00
Base Width (m)	7.000
Freeboard (mm)	500
Length (m)	85.000
Long. Slope (1:X)	9999.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	1466.250

Inlets

Inlet (1)

Inlet Type	Lateral Inflow
Incoming Item(s)	1.004
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.328
Side Infiltration Rate (m/hr)	0.328
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by: RMR	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Prefill Manhole Sumps	☐
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Designed by: JDM	Checked by: RMR		Approved By:
		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
PN1.000	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.60	74.0	64.314
PN1.001	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.60	74.0	64.314
PN2.000	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.60	74.0	64.314
PN2.001	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.60	74.0	64.314
BASIN	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.23	27.9	24.270

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
Report Details: Type: Junctions Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Designed by: JDM	Checked by: RMR		Approved By:
		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Flooded Volume

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
103	6437-FEH: 2 years: +0 %: 15 mins: Summer	120.6 74	119.7 50	119.85 7	0.107	70.6	0.189	0.000	70.6	50.039	OK
101	6437-FEH: 2 years: +0 %: 15 mins: Summer	118.6 17	117.7 00	117.83 6	0.136	70.6	0.241	0.000	70.6	49.969	OK
102	6437-FEH: 2 years: +0 %: 15 mins: Summer	117.1 91	116.1 25	116.28 0	0.155	141.3	0.273	0.000	141.3	99.892	OK
104	6437-FEH: 2 years: +0 %: 15 mins: Summer	117.1 74	116.1 00	116.23 4	0.134	141.3	0.237	0.000	141.3	100.064	OK
105	6437-FEH: 2 years: +0 %: 15 mins: Summer	113.8 42	113.1 25	113.31 5	0.190	282.6	0.483	0.000	282.6	199.912	OK
106	6437-FEH: 2 years: +0 %: 15 mins: Summer	112.9 95	112.2 50	112.42 9	0.179	282.6	0.456	0.000	282.6	199.773	OK
107	6437-FEH: 2 years: +0 %: 15 mins: Summer	110.2 34	109.5 50	109.77 9	0.229	282.6	0.582	0.000	282.6	199.588	OK

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by: RMR		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
Dry Swale	6437-FEH: 2 years: +0 %: 180 mins: Summer	108.884	108.880	0.376	0.380	176.7	263.005	0.000	540.623	0.0	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by: RMR	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
82.063	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by: RMR	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



PN1.000

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599



PN1.001

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599



PN2.000

Type : Catchment Area

Area (ha)	0.599
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by: RMR	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



PN2.001

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599



BASIN

Type : Catchment Area

Area (ha)	0.226
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.113
10	0.113

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by: RMR		Approved By:
Report Details: Type: Junctions Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Sump Depth (m)	Chamber Shape
103	Manhole	530139.882	230113.086	120.674	0.924	119.750	0.500	Circular
101	Manhole	529971.252	229986.468	118.617	0.917	117.700	0.500	Circular
102	Manhole	530060.843	229995.032	117.191	1.066	116.125	0.500	Circular
104	Manhole	530145.591	230053.358	117.174	1.074	116.100	0.500	Circular
105	Manhole	530150.435	230003.593	113.842	0.717	113.125	0.500	Circular
106	Manhole	530159.316	229991.505	112.995	0.745	112.250	0.500	Circular
107	Manhole	530162.101	229929.568	110.234	0.684	109.550	0.500	Circular

Name	Diameter (m)	Lock	Part Family
103	1.500	All	Type B
101	1.500	All	Type B
102	1.500	All	Type B
104	1.500	All	Type B
105	1.800	All	Type B
106	1.800	All	Type B
107	1.800	All	Type B

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by: RMR	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Dry Swale

Type : Swale

Swale

Exceedance Level (m)	110.500
Depth (m)	2.000
Base Level (m)	108.500
Top Width (m)	19.000
Side Slope (1:X)	3.00
Base Width (m)	7.000
Freeboard (mm)	500
Length (m)	85.000
Long. Slope (1:X)	9999.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	1466.250

Inlets

Inlet (1)

Inlet Type	Lateral Inflow
Incoming Item(s)	1.004
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.328
Side Infiltration Rate (m/hr)	0.328
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by: RMR	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Prefill Manhole Sumps	☐
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026		
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Designed by: JDM	Checked by: RMR	
		Approved By:		
		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
PN1.000	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.60	173.6	150.730
PN1.001	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.60	173.6	150.730
PN2.000	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.60	173.6	150.730
PN2.001	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.60	173.6	150.730
BASIN	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.23	65.5	56.879

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
Report Details: Type: Junctions Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Designed by: JDM	Checked by: RMR		Approved By:
		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Flooded Volume

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
103	6437-FEH: 30 years: +0 %: 15 mins: Summer	120.674	119.750	119.927	0.177	163.6	0.312	0.000	163.6	115.909	OK
101	6437-FEH: 30 years: +0 %: 15 mins: Summer	118.617	117.700	117.926	0.226	163.6	0.399	0.000	163.6	115.819	OK
102	6437-FEH: 30 years: +0 %: 15 mins: Summer	117.191	116.125	116.379	0.254	327.2	0.449	0.000	327.2	231.578	OK
104	6437-FEH: 30 years: +0 %: 15 mins: Summer	117.174	116.100	116.318	0.218	327.2	0.385	0.000	327.2	231.800	OK
105	6437-FEH: 30 years: +0 %: 15 mins: Summer	113.842	113.125	113.448	0.323	654.4	0.821	0.000	654.4	463.323	OK
106	6437-FEH: 30 years: +0 %: 15 mins: Summer	112.995	112.250	112.542	0.292	654.4	0.742	0.000	654.4	463.136	OK
107	6437-FEH: 30 years: +0 %: 15 mins: Summer	110.234	109.550	109.944	0.394	654.4	1.002	0.000	654.4	462.790	Flood Risk

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by: RMR		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
Dry Swale	6437-FEH: 30 years: +0 %: 120 mins: Winter	109.342	109.338	0.833	0.838	319.9	677.428	0.000	571.231	0.0	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by: RMR	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
53.799	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by: RMR	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



PN1.000

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599



PN1.001

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599



PN2.000

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by: RMR	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



PN2.001

Type : Catchment Area

Area (ha)	0.599
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.599



BASIN

Type : Catchment Area

Area (ha)	0.226
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.113
10	0.113

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by: RMR		Approved By:
Report Details: Type: Junctions Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Sump Depth (m)	Chamber Shape
103	Manhole	530139.882	230113.086	120.674	0.924	119.750	0.500	Circular
101	Manhole	529971.252	229986.468	118.617	0.917	117.700	0.500	Circular
102	Manhole	530060.843	229995.032	117.191	1.066	116.125	0.500	Circular
104	Manhole	530145.591	230053.358	117.174	1.074	116.100	0.500	Circular
105	Manhole	530150.435	230003.593	113.842	0.717	113.125	0.500	Circular
106	Manhole	530159.316	229991.505	112.995	0.745	112.250	0.500	Circular
107	Manhole	530162.101	229929.568	110.234	0.684	109.550	0.500	Circular

Name	Diameter (m)	Lock	Part Family
103	1.500	All	Type B
101	1.500	All	Type B
102	1.500	All	Type B
104	1.500	All	Type B
105	1.800	All	Type B
106	1.800	All	Type B
107	1.800	All	Type B

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by: RMR	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Dry Swale

Type : Swale

Swale

Exceedance Level (m)	110.500
Depth (m)	2.000
Base Level (m)	108.500
Top Width (m)	19.000
Side Slope (1:X)	3.00
Base Width (m)	7.000
Freeboard (mm)	500
Length (m)	85.000
Long. Slope (1:X)	9999.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	1466.250

Inlets

Inlet (1)

Inlet Type	Lateral Inflow
Incoming Item(s)	1.004
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.328
Side Infiltration Rate (m/hr)	0.328
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by: RMR	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Prefill Manhole Sumps	☐
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by: RMR		Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
PN1.000	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.60	308.7	267.873
PN1.001	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.60	308.7	267.873
PN2.000	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.60	308.7	267.873
PN2.001	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.60	308.7	267.873
BASIN	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.23	116.5	101.085

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026		
Report Details: Type: Junctions Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Designed by: JDM	Checked by: RMR	
		Approved By:		
		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Flooded Volume

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
103	6437-FEH: 100 years: +40 %: 15 mins: Summer	120.674	119.750	120.675	0.925	286.8	2.553	0.920	282.0	203.254	Flood
101	6437-FEH: 100 years: +40 %: 15 mins: Summer	118.617	117.700	118.517	0.817	286.8	1.443	0.000	286.6	203.441	Flood Risk
102	6437-FEH: 100 years: +40 %: 15 mins: Summer	117.191	116.125	116.563	0.438	573.5	0.773	0.000	567.0	406.453	OK
104	6437-FEH: 100 years: +40 %: 15 mins: Summer	117.174	116.100	116.409	0.309	568.8	0.546	0.000	568.7	405.904	OK
105	6437-FEH: 100 years: +40 %: 15 mins: Summer	113.842	113.125	113.627	0.502	1135.8	1.278	0.000	1136.5	812.649	Flood Risk
106	6437-FEH: 100 years: +40 %: 15 mins: Summer	112.995	112.250	112.687	0.437	1136.5	1.113	0.000	1137.5	812.021	OK
107	6437-FEH: 100 years: +40 %: 15 mins: Summer	110.234	109.550	110.253	0.703	1137.5	20.447	18.707	1063.3	810.378	Flood

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026		
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Designed by: JDM	Checked by: RMR	
		Approved By:		
		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
Dry Swale	6437-FEH: 100 years: +40 %: 180 mins: Winter	109.918	109.914	1.410	1.414	423.3	1351.637	0.000	1080.501	0.0	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by: RMR	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
7.817	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-01

Type : Catchment Area

Area (ha)	0.281
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.281

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



DRY BASIN A

Type : Swale

Swale

Exceedance Level (m)	109.100
Depth (m)	2.000
Base Level (m)	107.100
Top Width (m)	12.000
Side Slope (1:X)	1.69
Base Width (m)	5.225
Freeboard (mm)	500
Length (m)	34.735
Long. Slope (1:X)	45.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	404.611

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-01
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0202
Side Infiltration Rate (m/hr)	0.0202
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-01	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.28	34.6	30.114

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
DRY BASIN A	6437-FEH: 2 years: +0 %: 600 mins: Winter	107.879	107.421	0.007	0.321	6.2	68.054	0.000	38.678	0.2	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
	Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		
Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			

Percentage Available (%)	Status
83.180	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-01

Type : Catchment Area

Area (ha)	0.281
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100

Time (mins)	Area (ha)
10	0.281

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



DRY BASIN A

Type : Swale

Swale

Exceedance Level (m)	109.100
Depth (m)	2.000
Base Level (m)	107.100
Top Width (m)	12.000
Side Slope (1:X)	1.69
Base Width (m)	5.225
Freeboard (mm)	500
Length (m)	34.735
Long. Slope (1:X)	45.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	404.611

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-01
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0202
Side Infiltration Rate (m/hr)	0.0202
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-01	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.28	81.1	70.590

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
DRY BASIN A	6437-FEH: 30 years: +0 %: 720 mins: Winter	108.094	107.708	0.222	0.608	9.5	136.458	0.000	57.797	0.2	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
66.274	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-01

Type : Catchment Area

Area (ha)	0.281
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.281

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



DRY BASIN A

Type : Swale

Swale

Exceedance Level (m)	109.100
Depth (m)	2.000
Base Level (m)	107.100
Top Width (m)	12.000
Side Slope (1:X)	1.69
Base Width (m)	5.225
Freeboard (mm)	500
Length (m)	34.735
Long. Slope (1:X)	45.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	404.611

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-01
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0202
Side Infiltration Rate (m/hr)	0.0202
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-01	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.28	144.4	125.492

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
DRY BASIN A	6437-FEH: 100 years: +40 %: 960 mins: Winter	108.511	108.125	0.639	1.025	12.9	252.197	0.000	90.908	0.2	0.0	0.000	965

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
37.669	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area

Type : Catchment Area

Area (ha)	0.527
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.527



Catchment Area-02

Type : Catchment Area

Area (ha)	0.469
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.469

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-B

Type : Swale

Swale

Exceedance Level (m)	109.600
Depth (m)	2.000
Base Level (m)	107.600
Top Width (m)	14.000
Side Slope (1:X)	3.00
Base Width (m)	2.000
Freeboard (mm)	500
Length (m)	130.009
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	1267.589

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-02
	Catchment Area
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.53	64.1	56.598
Catchment Area-02	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.47	57.1	50.367

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-B	6437-FEH: 2 years: +0 %: 600 mins: Winter	108.249	108.119	0.389	0.519	21.9	243.145	0.000	159.514	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
80.818	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area

Type : Catchment Area

Area (ha)	0.527
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.527



Catchment Area-02

Type : Catchment Area

Area (ha)	0.469
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.469

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



SWALE-B

Type : Swale

Swale

Exceedance Level (m)	109.600
Depth (m)	2.000
Base Level (m)	107.600
Top Width (m)	14.000
Side Slope (1:X)	3.00
Base Width (m)	2.000
Freeboard (mm)	500
Length (m)	130.009
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	1267.589

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-02
	Catchment Area
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.53	150.5	132.529
Catchment Area-02	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.47	134.0	117.940

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026		
		Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-B	6437-FEH: 30 years: +0 %: 600 mins: Winter	108.543	108.413	0.683	0.813	39.5	472.855	0.000	214.945	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
62.696	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area

Type : Catchment Area

Area (ha)	0.527
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.527



Catchment Area-02

Type : Catchment Area

Area (ha)	0.469
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
10	0.469

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-B

Type : Swale

Swale

Exceedance Level (m)	109.600
Depth (m)	2.000
Base Level (m)	107.600
Top Width (m)	14.000
Side Slope (1:X)	3.00
Base Width (m)	2.000
Freeboard (mm)	500
Length (m)	130.009
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	1267.589

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-02
Bypass Destination	Catchment Area
Inlet Destination	(None)
Capacity Type	Ponding Area
	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.53	268.1	235.397
Catchment Area-02	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.47	238.6	209.487

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-B	6437-FEH: 100 years: +40 %: 720 mins: Winter	108.915	108.785	1.055	1.185	58.5	859.428	0.000	340.694	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
32.200	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-E

Type : Catchment Area

Area (ha)	1.074
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.574
10	0.500



Catchment Area-D

Type : Catchment Area

Area (ha)	0.86
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.46
10	0.40

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



SWALE-C

Type : Swale

Swale

Exceedance Level (m)	108.000
Depth (m)	2.000
Base Level (m)	106.000
Top Width (m)	17.000
Side Slope (1:X)	3.00
Base Width (m)	5.000
Freeboard (mm)	500
Length (m)	154.500
Long. Slope (1:X)	80.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	2201.628

Inlets

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-D Catchment Area-E
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-E	6437-FEH: 2 years: +0 %: 30 mins: Summer	1.07	130.9	115.339
Catchment Area-D	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.86	104.8	92.360

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-C	6437-FEH: 2 years: +0 %: 600 mins: Winter	107.957	106.397	0.026	0.397	42.5	470.661	0.000	252.793	0.3	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
78.622	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-E

Type : Catchment Area

Area (ha)	1.074
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.574
10	0.500



Catchment Area-D

Type : Catchment Area

Area (ha)	0.86
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.46
10	0.40

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-C

Type : Swale

Swale

Exceedance Level (m)	108.000
Depth (m)	2.000
Base Level (m)	106.000
Top Width (m)	17.000
Side Slope (1:X)	3.00
Base Width (m)	5.000
Freeboard (mm)	500
Length (m)	154.500
Long. Slope (1:X)	80.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	2201.628

Inlets

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-D Catchment Area-E
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-E	6437-FEH: 30 years: +0 %: 30 mins: Summer	1.07	306.7	270.148
Catchment Area-D	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.86	245.6	216.322

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-C	6437-FEH: 30 years: +0 %: 600 mins: Winter	107.968	106.701	0.037	0.701	76.7	932.715	0.000	339.020	0.4	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
57.635	Flood Risk

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-E

Type : Catchment Area

Area (ha)	1.074
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.574
10	0.500



Catchment Area-D

Type : Catchment Area

Area (ha)	0.86
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.46
10	0.40

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
	Designed by: JDM	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-C

Type : Swale

Swale

Exceedance Level (m)	108.000
Depth (m)	2.000
Base Level (m)	106.000
Top Width (m)	17.000
Side Slope (1:X)	3.00
Base Width (m)	5.000
Freeboard (mm)	500
Length (m)	154.500
Long. Slope (1:X)	80.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	2201.628

Inlets

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-D Catchment Area-E
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-E	6437-FEH: 100 years: +40 %: 30 mins: Summer	1.07	546.8	479.744
Catchment Area-D	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.86	437.8	384.156

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-C	6437-FEH: 100 years: +40 %: 720 mins: Winter	108.110	107.145	0.179	1.145	113.6	1707.547	58.972	542.512	0.5	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
22.442	Flood

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-F

Type : Catchment Area

Area (ha)	1.075
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100

Time (mins)	Area (ha)
5	0.575
10	0.500

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



SWALE-D

Type : Swale

Swale

Exceedance Level (m)	106.300
Depth (m)	2.000
Base Level (m)	104.300
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	47.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	881.250

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-F
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-F	6437-FEH: 2 years: +0 %: 30 mins: Summer	1.08	132.2	115.130

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-D	6437-FEH: 2 years: +0 %: 600 mins: Winter	104.938	104.891	0.544	0.591	23.6	271.605	0.000	141.307	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
69.180	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-F

Type : Catchment Area

Area (ha)	1.075
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100

Time (mins)	Area (ha)
5	0.575
10	0.500

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-D

Type : Swale

Swale

Exceedance Level (m)	106.300
Depth (m)	2.000
Base Level (m)	104.300
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	47.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	881.250

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-F
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-F	6437-FEH: 30 years: +0 %: 30 mins: Summer	1.08	310.5	269.977

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-D	6437-FEH: 30 years: +0 %: 720 mins: Winter	105.371	105.324	0.977	1.024	36.5	532.991	0.000	203.637	0.1	0.0	0.000	590

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
39.519	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-F

Type : Catchment Area

Area (ha)	1.075
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100

Time (mins)	Area (ha)
5	0.575
10	0.500

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



SWALE-D

Type : Swale

Swale

Exceedance Level (m)	106.300
Depth (m)	2.000
Base Level (m)	104.300
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	47.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	881.250

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-F
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-F	6437-FEH: 100 years: +40 %: 30 mins: Summer	1.08	552.5	479.916

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-D	6437-FEH: 100 years: +40 %: 960 mins: Winter	105.964	105.917	1.570	1.617	49.2	976.547	0.000	333.438	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
-10.814	Flood Risk

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-F

Type : Catchment Area

Area (ha)	1.026
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.526
10	0.500

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



SWALE-E

Type : Swale

Swale

Exceedance Level (m)	105.000
Depth (m)	2.000
Base Level (m)	103.000
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	47.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	881.250

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-F
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-F	6437-FEH: 2 years: +0 %: 30 mins: Summer	1.03	126.1	109.877

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026		
		Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-E	6437-FEH: 2 years: +0 %: 600 mins: Winter	103.611	103.564	0.517	0.564	22.6	256.961	0.000	139.478	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
70.841	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-F

Type : Catchment Area

Area (ha)	1.026
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100

Time (mins)	Area (ha)
5	0.526
10	0.500

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-E

Type : Swale

Swale

Exceedance Level (m)	105.000
Depth (m)	2.000
Base Level (m)	103.000
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	47.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	881.250

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-F
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-F	6437-FEH: 30 years: +0 %: 30 mins: Summer	1.03	296.3	257.656

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-E	6437-FEH: 30 years: +0 %: 720 mins: Winter	104.030	103.983	0.936	0.983	34.8	505.833	0.000	200.319	0.1	0.0	0.000	420

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
42.601	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-F

Type : Catchment Area

Area (ha)	1.026
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.526
10	0.500

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-E

Type : Swale

Swale

Exceedance Level (m)	105.000
Depth (m)	2.000
Base Level (m)	103.000
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	47.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	881.250

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-F
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-F	6437-FEH: 100 years: +40 %: 30 mins: Summer	1.03	527.1	457.979

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Designed by: JDM	Checked by:		Approved By:
		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-E	6437-FEH: 100 years: +40 %: 960 mins: Winter	104.604	104.557	1.510	1.557	47.0	927.677	0.000	327.036	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
-5.268	Flood Risk

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-G

Type : Catchment Area

Area (ha)	0.978
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100

Time (mins)	Area (ha)
5	0.500
10	0.478

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-F

Type : Swale

Swale

Exceedance Level (m)	103.400
Depth (m)	2.000
Base Level (m)	101.400
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	47.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	881.250

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-G
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-G	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.98	120.2	104.731

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-F	6437-FEH: 2 years: +0 %: 600 mins: Winter	101.984	101.937	0.490	0.537	21.5	242.614	0.000	137.668	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
72.469	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-G

Type : Catchment Area

Area (ha)	0.978
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Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.500
10	0.478

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



SWALE-F

Type : Swale

Swale

Exceedance Level (m)	103.400
Depth (m)	2.000
Base Level (m)	101.400
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	47.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	881.250

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-G
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
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Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-G	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.98	282.4	245.602

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026		
		Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-F	6437-FEH: 30 years: +0 %: 720 mins: Winter	102.389	102.342	0.895	0.942	33.2	479.202	0.000	197.023	0.1	0.0	0.000	255

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
45.622	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-G

Type : Catchment Area

Area (ha)	0.978
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.500
10	0.478

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-F

Type : Swale

Swale

Exceedance Level (m)	103.400
Depth (m)	2.000
Base Level (m)	101.400
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	47.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	881.250

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-G
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
---------------	-----

Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-G	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.98	502.4	436.595

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-F	6437-FEH: 100 years: +40 %: 960 mins: Winter	102.945	102.898	1.451	1.498	44.8	880.235	0.000	320.712	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
0.115	Flood Risk

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-i

Type : Catchment Area

Area (ha)	0.642
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.342
10	0.300

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



SWALE-G

Type : Swale

Swale

Exceedance Level (m)	102.600
Depth (m)	2.000
Base Level (m)	100.600
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	36.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	675.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-i
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
---------------	-----

Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-i	6437-FEH: 2 years: +0 %: 30 mins: Summer	0.64	79.0	68.771

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-G	6437-FEH: 2 years: +0 %: 480 mins: Winter	101.092	101.056	0.420	0.456	16.8	153.859	0.000	81.418	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
77.206	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-i

Type : Catchment Area

Area (ha)	0.642
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.342
10	0.300

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



SWALE-G

Type : Swale

Swale

Exceedance Level (m)	102.600
Depth (m)	2.000
Base Level (m)	100.600
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	36.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	675.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-i
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
---------------	-----

Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-i	6437-FEH: 30 years: +0 %: 30 mins: Summer	0.64	185.6	161.248

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026		
		Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-G	6437-FEH: 30 years: +0 %: 600 mins: Winter	101.455	101.419	0.783	0.819	25.5	308.373	0.000	119.955	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Percentage Available (%)	Status
54.315	OK

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Catchment Area-i

Type : Catchment Area

Area (ha)	0.642
-----------	-------

Dynamic Sizing

Runoff Method	Time Area Diagram
Summer Volumetric Runoff Coefficient	1.000
Winter Volumetric Runoff Coefficient	1.000
Percentage Impervious (%)	100
Time (mins)	Area (ha)
5	0.342
10	0.300

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



SWALE-G

Type : Swale

Swale

Exceedance Level (m)	102.600
Depth (m)	2.000
Base Level (m)	100.600
Top Width (m)	20.000
Side Slope (1:X)	3.00
Base Width (m)	8.000
Freeboard (mm)	500
Length (m)	36.000
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	0.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	675.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area-i
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Advanced

Safety Factor	2.0
---------------	-----

Swale

Base Infiltration Rate (m/hr)	0.0287
Side Infiltration Rate (m/hr)	0.0287
Porosity (%)	100

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026			
Report Details: Type: Inflows Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Designed by: JDM	Checked by:	Approved By:	
	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area-i	6437-FEH: 100 years: +40 %: 30 mins: Summer	0.64	330.2	286.659

Project: 6437 CLOTHALL HERTFORDSHIRE		Date: 25/06/2026			
		Designed by: JDM	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION		Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA			



Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. Avg. Level (m)	Max. US Depth (m)	Max. Avg. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)
SWALE-G	6437-FEH: 100 years: +40 %: 960 mins: Winter	101.955	101.919	1.283	1.319	29.4	567.958	0.000	230.984	0.1	0.0	0.000	

Project: 6437 CLOTHALL HERTFORDSHIRE	Date: 25/06/2026		
	Designed by: JDM	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: 6437-SW-NETWORK-SUBSTATION	Company Address: 5 JOHN CHARLES WAY LEEDS LS12 6QA		

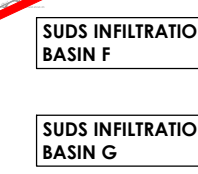


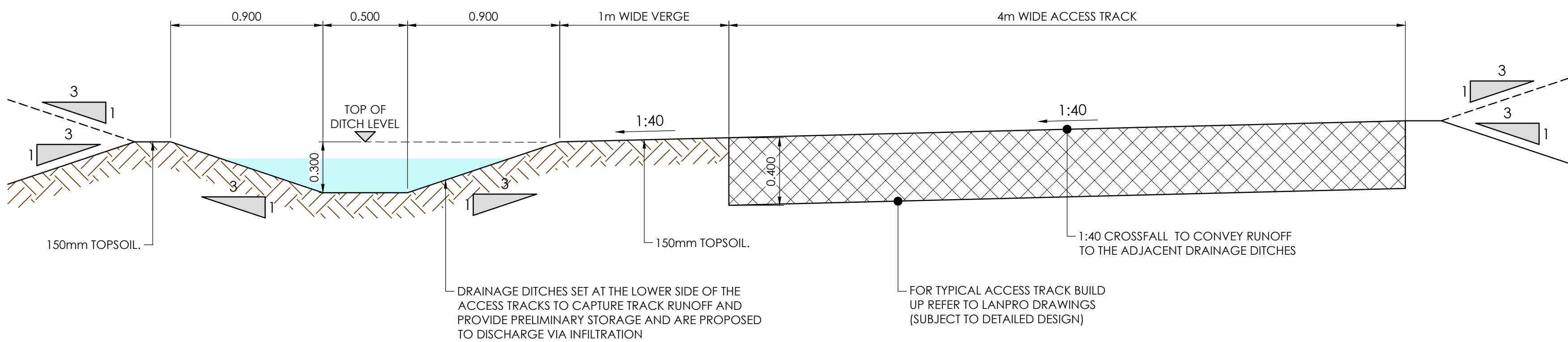
Percentage Available (%)	Status
15.858	OK



Appendix G Conceptual Drainage Strategy

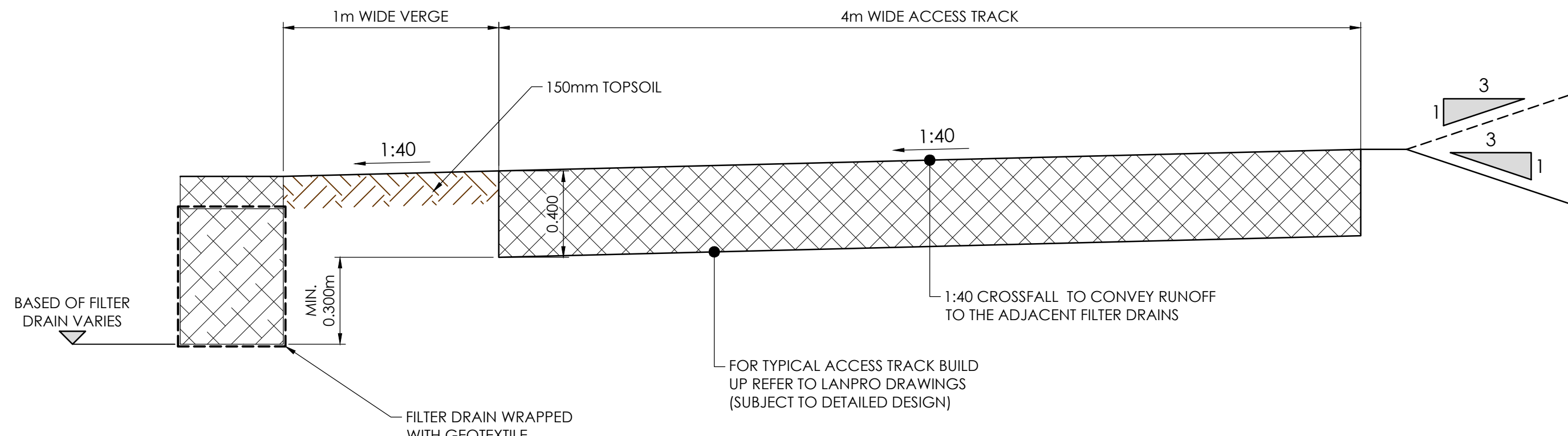
INFILTRATION SUDS FEATURES ARE SUBJECT TO DETAILED DESIGN AND ON SITE INFILTRATION TESTING
(NOTE SHOULD PERMEABILITY BE LOW THEN ADDITIONAL AREAS FOR INFILTRATION IN THE FORM OF DRY INFILTRATION BASINS MAYBE REQUIRED. THESE WILL BE IN ACCORDANCE WITH PREVIOUS ON SITE INFILTRATION TESTING





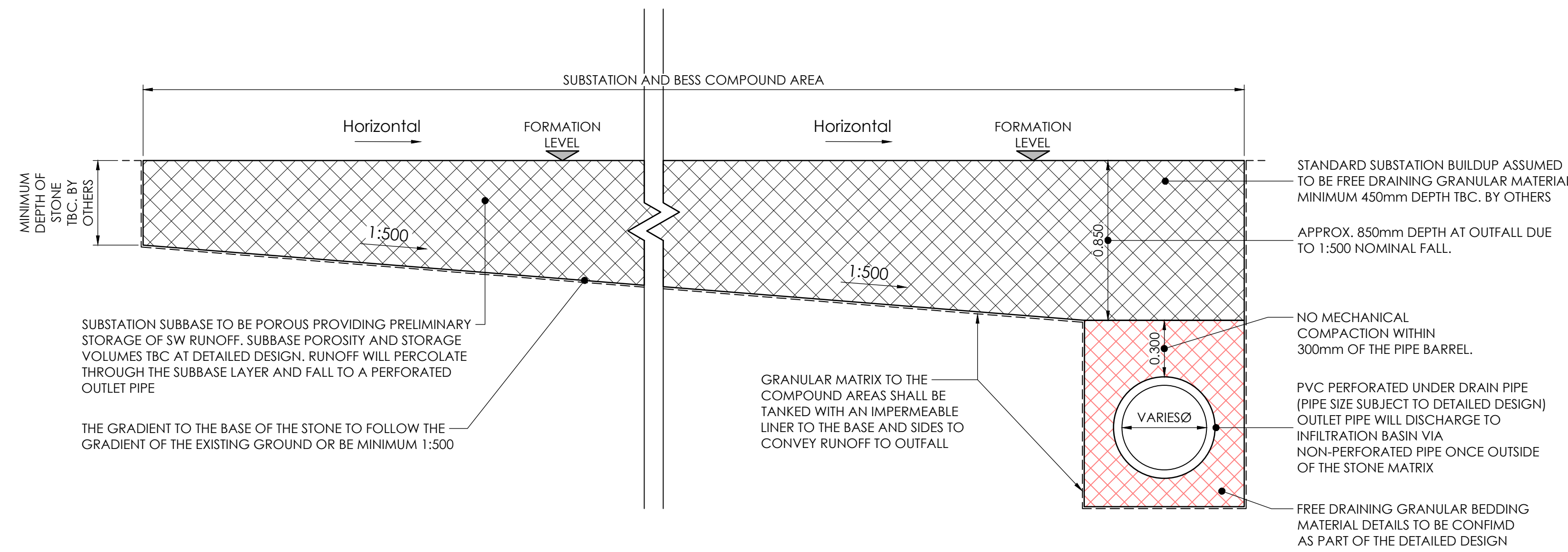
TYPICAL SECTION THROUGH SOLAR FARM ACCESS TRACK WITH SWALE/DITCH (SECTION A-A)

SCALE 1:25



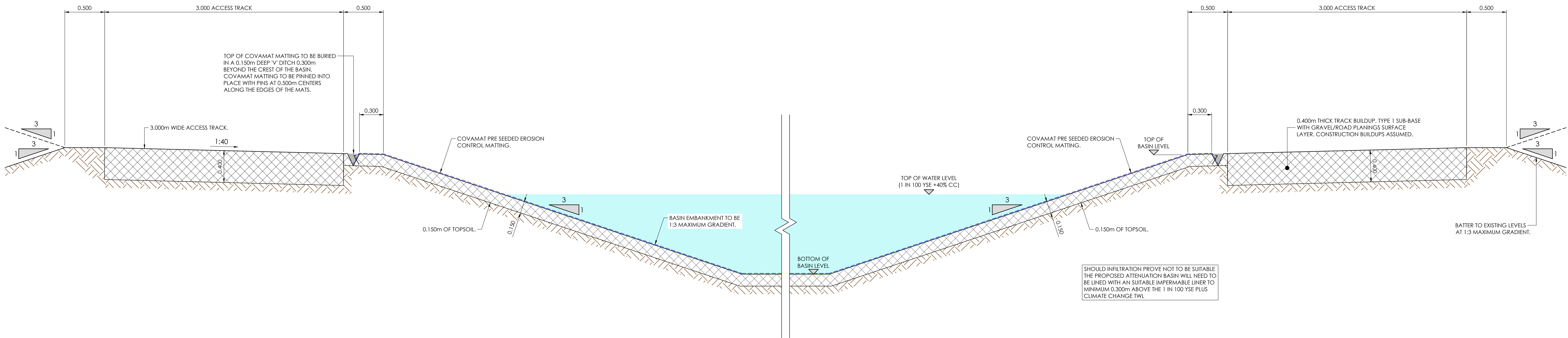
TYPICAL SECTION THROUGH SOLAR FARM ACCESS TRACK WITH FILTER DRAIN (SECTION B-B)

SCALE 1:25



TYPICAL SECTION THROUGH SUBSTATION AND BESS COMPOUND

SCALE 1:25



TYPICAL SECTION THROUGH INFILTRATION BASIN

SCALE 1:25

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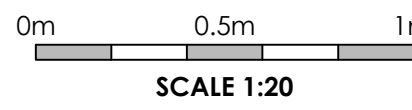
DO NOT SCALE (A0)

NOTES

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP IS TO COMPLY WITH JPG CONSULTANTS STANDARD SPECIFICATION & ALL RELEVANT BRITISH & EUROPEAN STANDARDS.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, M&E CONSULTANTS AND JPG CONSULTANTS DRAWINGS.
3. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO COMMENCEMENT OF WORKS.

FOR PLAN DETAILS REFER TO JPG DRAWING REF. 6437-JPG-ZZ-ZZ-DR-C-1400.



P03	REVISED IN LINE WITH LATEST PROPOSAL AND DETAILS	12/07/25	RMR	JDM
P02	DETAILS GENERALLY UPDATED	02/06/25	RMR	JDM
P01	FIRST ISSUE	01/04/25	JDM	ETR

REV	DESCRIPTION	DATE	CHK	BY
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Project
WESTFIELD ENERGY CONSERVATION PARK, HERTFORDSHIRE

Drawing Title
DRAINAGE TYPICAL DETAILS

INFORMATION





Appendix H Existing Greenfield Runoff Volume Calculations



5 John Charles Way
LEEDS LS12 6QA
Tel: 0113 263 1155

admin@jpg.group
www.jpg.group

Project No 6437

Sheet No 1

Made By ETR

Date 07/03/2025

Project WESTFIELD ENERGY CONSERVATION PARK, HERTFORDSHIRE

GREENFIELD RUN OFF VOLUME CALCULATION
INFODRAINAGE GREENFIELD RUN OFF VOLUME

GREENFIELD RUNOFF VOLUME = **15383.783 m³**



Appendix I Drainage Exceedance Plan

5 John Charles Way
LEEDS
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