



Land at Chapel Lane, Widnes

FLOOD RISK ASSESSMENT



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PREPARED BY John Marshall



Flood Risk Assessment

Prepared for Taylor Wimpey UK Ltd

Land at Chapel Lane, Widnes - Taylor Wimpey UK Ltd

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Alan Johnston Partnership Ltd.

Company No. 13204766

Land at Chapel Lane, Widnes

Flood Risk Assessment

1.0 Introduction

This Flood Risk Assessment (FRA) report has been prepared by AJP Ltd on behalf of Taylor Wimpey UK Ltd to assist the local planning authority's consideration of an outline planning application for a site at Chapel Lane, Widnes for:

Outline planning application (with all matters other than access reserved) (to be determined by Halton Borough Council only) for the development of up to 350 dwellings, public open space, landscaping and associated infrastructure works. Full details for site access arrangements via a new junction and emergency access on Chapel Lane (to be determined by Knowsley Borough Council only) and a secondary emergency access via Sandy Lane (to be determined by Halton Borough Council)

The proposed development site is located to the north-west of the Widnes urban area. The site is situated within the boundary of two separate allocations for residential development within the adopted Halton Delivery and Allocations Local Plan [DALP] (March 2022) under Policy RD1 (Residential Development Allocations). The allocations comprise two separate land parcels separated by Sandy Lane, (Site Ref. W4 to the west of Sandy Lane and Site Ref. W5 to the east). The application red line boundary does not extend to the full extent of the allocation.

The site has few notable features and currently comprises approximately 14 hectares (ha) of agricultural land in low intensity uses such as grazing and pasture.

The proposed application site is bounded to the:

- 1 North by Alder Brook which is marked by mature trees and a hedgerow. There is open countryside beyond the brook.
- 2 To the east by an area of young woodland situated adjacent to Queensbury Way;
- 3 The site is bounded to the south by the curtilage of residential properties along Old Upton Lane.
- 4 To the west by Chapel Lane and a group of modern and traditional farm buildings fronting onto Chapel Lane (Rose Farm).

This FRA has been prepared in accordance with the general requirements of the National Planning Policy Framework and the Technical Guidance to the National Planning Policy Framework, both published by the Department for Communities and Local Government. This involves the identification of flood risk to new development(s) on the site, the possible effect of this development on flood risk elsewhere and the investigation of the impact on the development as a result of increased sea levels, fluvial flows and larger pluvial events due to increased impermeable areas and climate change. This report is also written with consideration of the Halton Borough Council Strategic Flood Risk Assessment and its requirements.

The purpose of this report is to present a site-specific assessment of flood risk based on available information, to identify relevant flood levels affecting the site with respect to a particular probability of flooding. The flood levels identified are dependent on the correctness of the current conditions, as stated in this report and the prediction of future climatic conditions implicit in the National Planning Policy Framework.

For any size of storm event, the procedure will always yield a probability that the event will occur in any year, albeit the probability is smaller for larger events. The predicted storm event has a probability of occurrence in any year and the derived flood level has an associated probability of exceedance. This means that there is always a risk that property flooding could occur one or more times in any year.

Therefore, this report should not be interpreted or relied upon as providing a guarantee against flooding. There is always a residual risk that flooding will occur, and it is not possible to predict a zero risk of flooding.

In accordance with National Planning Policy Framework (NPPF) and the associated Technical Guidance document, flood risk must be assessed for all sources including tidal (from the sea), fluvial (from rivers), pluvial (from land), groundwater, sewer and artificial water bodies (e.g. reservoirs, canals, major water supply infrastructure etc.).

More specifically, the development of any site must be carried out in such a way as to mitigate any potential flood risk, both on and off site from all sources of flooding.

2.0 Site description

The proposed development site is located in Widnes, to the east Chapel Lane and Rose Farm and to the west of Queensbury Way at National Grid Reference SJ 500878. To the

south is existing housing, while the north of bounded by a tributary of Dog Clog Brook. The highway Sandy Road that is subject to a Traffic Regulation Order (TRO) bisects the site.

The red line for the development is shown within Appendix A.

The total site area available is 13.97ha with the boundaries being met by a heavily wooded areas, housing and highways. The site location and surroundings are as shown in Appendix A. The level has a general fall from east to west, with the eastern boundary being circa 37.3-38.0m AOD and the western boundary being 30.30m AOD at its lowest point.

An aerial photo is included in Appendix B to illustrate the site at the present day and the topographical survey is included in Appendix C.

2.1 Geology

The British Geological Survey (BGS) “Geology Viewer” is an open-source UK wide assessment of local geology. The information provided by the BGS shows that the development site is underlain superficial deposits comprising of Till Devensian Diamicton, which consists of Sandy gravelly cobbly deposits, the underlying bedrock is reported to be of Chester formation, comprising of Sandstone

A more explicit assessment of the site geology has been carried out by E3P as part of a Phase II Geotechnical Report (REF:13-759-R1-1) as shown in Appendix H. The geology summary from the report identifies the top soil to depths of 0.70m below ground level (bgl) with the Drift deposit underlying, comprising of clay.

Of the 44 trial pits and 36 window sample Boreholes, two had evidence of sands in place of clay, six soakaway tests were carried out to understand the infiltration potential of the ground, which was found to have no infiltration potential.

Bedrock was encountered at a minimum depth of 2m bgl for parts of the site and ground water was encountered at a minimum depth of 0.40m bgl.

2.2 Hydrogeology

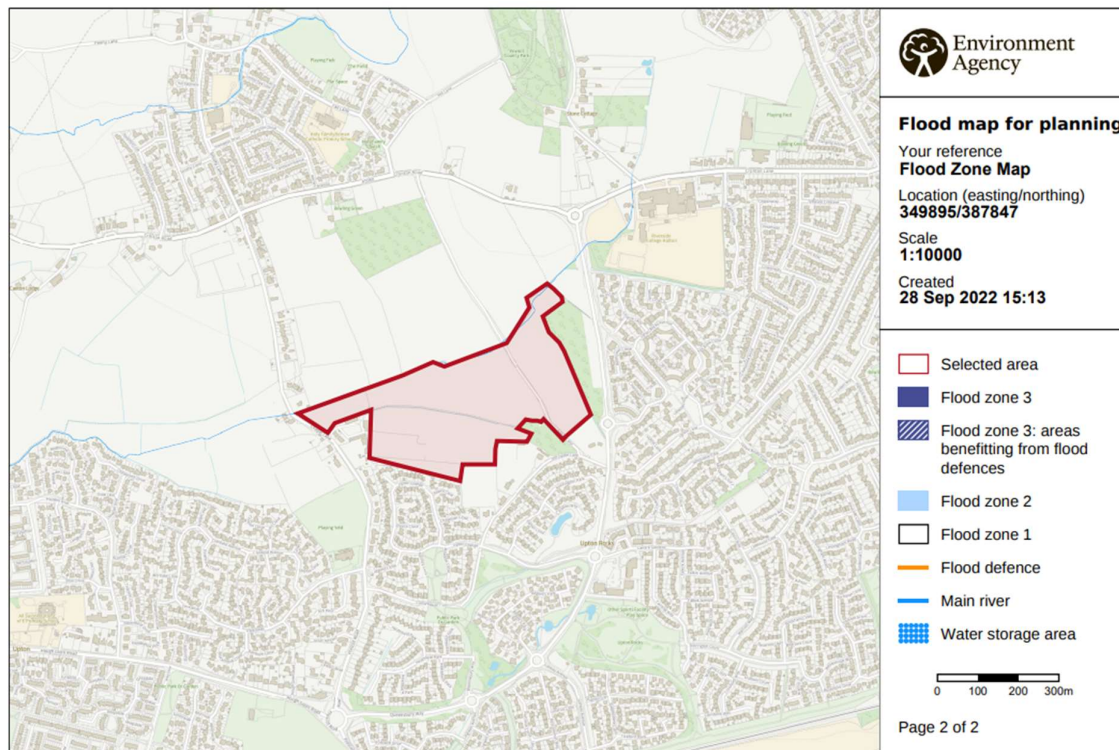
The DEFRA groundwater magic maps show that the Glacial Till superficial deposits are classified as a secondary undifferentiated aquifer, the groundwater maps also show that the underlying Chester Formation is classed as a Primary Aquifer and that the site area lies in a medium-low area of Groundwater vulnerability.

There are no recorded groundwater / potable water abstraction licenses within 500m of the site and the site is not recorded to be within a Groundwater Source Protection Zone.

The development site is shown to be within an area of low-medium Groundwater vulnerability,

The Phase II geotechnical report has determined that based on the local geology and six number percolation tests, that infiltration to ground is not viable within this development area. Cohesive clays and a high-water table, prevent the transmission of surface water to the local aquifers.

The nearest watercourse feature is on the northern boundary, identified as Dog Clog Brook on the northern boundary of the development area. The site is located in Flood Zone 1, as an area identified by the Environment Agency (EA) not at risk of flooding from rivers and streams.



3.0 Proposed development

The Outline planning application (with all matters other than access reserved) for the development of up to 350 dwellings, public open space, landscaping and associated infrastructure works. Site access proposals are situated within Knowsley Borough Council authority area (emergency access in Halton Borough Council authority area via Sandy Lane). Full planning permission for the access arrangements only, via a new junction on Chapel Lane (to be determined by Knowsley Borough Council only) and emergency access

via Sandy Lane (to be determined by Halton Borough Council). All of the outline proposals are situated within Halton Borough Council authority area and are to be determined by Halton Borough Council only.

The proposed development site covers a total area of approximately 13.97ha (App D), the development illustrative Masterplan is shown within Appendix D indicating the proposed highway network, areas of Public Open Space and SuDS features, including new ponds.

The total impermeable area from the proposed development is to be set 42% of the total site area at 5.78 Ha (See Appendix D), impermeable area that actively discharges surface water flows, encompasses, the proposed houses and apartment buildings, alongside the associated driveways and proposed highway to facilitate the development

Within the middle of the development area is an existing ditch, that shall be maintained during the development's lifespan.

To enable a viable scheme, the proposed site levels are constrained by the surrounding highways, housing estates and local farm lane.

4.0 Planning Policy

The National Planning Policy Framework (NPPF) sets out the Government's policy on meeting the challenges of climate change, flooding and coastal change. The NPPF states that:

"Planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impact of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development. Local planning authorities should adopt proactive strategies to mitigate and adapt to climate change taking full account of flood risk, coastal change and water supply and demand consideration."

This Flood Risk Assessment proposes recommendations to facilitate the proposed development so that it takes into account flood risk at all stages of the development.

4.1 Sequential Test

Based on the site's location in outside a flood zone, the development is deemed appropriate according to NPPF therefore the development is appropriately situated and the Sequential Test is not required.

4.2 Exception Test

NPPF classifies the residential element of the development as 'More Vulnerable' but as the site is located outside a flood zone the Exception Test is not required.

5.0 ASSESSMENT OF FLOOD RISK

The Technical Guidance to the National Planning Policy Framework requires all forms of flooding to be considered.

5.1 Flooding from Rivers

The Flood Risk map is included in Appendix E.

It can be seen from the map that the site is located in Flood Zone 1 with a chance of flooding of less than 0.1% (or 1 in 1000).

The nearest designated main river is Dog Clog Brook tributary to the northern boundary of the development, the brook is not identified as breaking its banks on the EA Flood Risk Maps, therefore the risk of flooding to the new development from river is considered to be low.

Correspondence from the LLFA included in Appendix E, also confirms that there are no records of flooding from this watercourse and the risk of flooding from Fluvial sources isn't present.

5.2 Flooding from the Sea

The site is not at risk of flooding from the sea. The lowest level of the site is approximately 30.820m AOD, i.e., well above tidal flood levels, as demonstrated in Appendix E.

5.3 Flooding from Land

Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can run quickly off land and result in local flooding.

The Surface Water Flooding map is included in Appendix E. It can be seen from the map that the site is classified as having a low risk of surface water flooding at various points within the site area.

Identified are the ponds at which existing ponds may produce localised S.W flood risk and a general flow path of S.W flows occurring from within the development area, running from east to west.

The Low risk identified within the site area shall be mitigated through the development, by actively draining 60% of the development area into an appropriate drainage system, which shall reduce the volume of S.W ponding. In tandem with creating a suitable flow path within the site's green buffer zone on the northern boundary to ensure any remaining S.W is kept away from the proposed developable area and shaped to discharge into the local watercourse.

The existing pond S.W flood risk shall be eliminated ensuring that surrounding developed areas are suitably drained.

5.4 Flooding from Groundwater

As set out within the Phase II Geotechnical report, ground water was encountered within the boreholes and the below ground strata was likely to contain perched water, with poor infiltration capacity.

As per the magic maps, the risk of groundwater flooding can be considered to be low to medium, the medium flood risk suggests that there is a risk of flooding to property where there are proposed basements and finished floor levels are set below the existing ground level.

To mitigate the flood risk from groundwater the development shall ensure that it has no proposals for basements and finished floor levels are to be set at or above existing ground levels, during detailed design the development, with adequate S.W drainage systems ensuring the surface run off from the development does not discharge to ground and end up perched in the local strata.

5.5 Flooding from Sewers

A record of Public Sewers surrounding and serving the development site has been obtained from United Utilities and this is included in Appendix F.

There are no S.W sewers within the development area and therefore their flood risk is to be not considered.

The only local sewers within the site area are a 225 mm diameter Foul Water (FW) crossing the north west corner of the development. As a F.W sewer it is considered to be of low flood risk.

Therefore, as a result of the public sewers being located outside the site itself, is considered to be at low risk of flooding from sewers.

5.6 Flooding from Reservoirs, Canals and Other Artificial Sources

The Reservoir Flood Risk map is included in Appendix E. It can be seen from the map that the site is at risk of flooding from reservoirs.

The reservoir flood maps are used to identify the extent of flooding caused in the event of a catastrophic failure event and therefore the site is considered to be at low risk of flooding from reservoirs.

6.0 DEVELOPMENT AND DRAINAGE STRATEGY

6.1 Effect of Proposed Development on Flood Risk

As previously outlined in Section 2.0, the existing site covers a total area of 13.97ha and is a Greenfield site. As the existing site is open space with no active drainage systems positively connecting to the UU sewer system, the new built development will lead to an increase in impermeable area.

For the proposed development, the changes to the existing site will increase the volume of impermeable areas and as such, the proposed development in these areas will lead to an increase in the;

- Volume of surface water ponding on the site
- Volume of surface water runoff leaving the site or discharging into surrounding areas
- Peak discharge rate from the site.

Accordingly, site-wide drainage systems are required to drain the foul and surface water flows arising from the proposed development. Where possible, any existing drainage networks should be utilised. Appropriate design and construction of these systems as set out in Section 6.3 should ensure that there is no increase in offsite flood risk that would otherwise impact downstream areas.

6.2 Existing Drainage Systems

As can be seen from the United Utilities maps, attached in Appendix F, there is an existing 225mm Foul Water sewer located within the north wester corner of the site. The sewer runs from MH 5703 to MH 5702 within the boundaries of the site. No invert information for the sewer is available on the UU records.

There are no local adopted surface water drainage systems or highway drains within the development.

6.3 Proposed Drainage Strategy

As outlined above in section 6.1, site-wide drainage systems are required to drain the foul and surface water flows arising from the proposed development. The proposed drainage systems must ensure that there is no increase in offsite flood risk, for all storms up to the 1:100-year event with an allowance for climate change; that would otherwise impact downstream areas.

6.3.1 Surface Water Drainage

The Building Regulations - Approved Document H (2002) details a hierarchy of potential methods for disposing of surface water as shown below in order of preference:

- Discharge via infiltration
- Discharge to watercourse
- Discharge to sewer

Considering the hierarchy above, the surface water network for the proposed site should infiltrate to ground where viable.

As laid out within section 2.2 the site investigation information and the British Geological Survey (BGS) information show that the site is underlain Till Devensian Diamicton of cohesive clays. Six number soakaways tests were carried out in accordance with BRE 365, which demonstrated that the ground has no viable infiltration rate for discharge of S.W flows to local aquifers.

Therefore, the discharge of S.W flows via infiltration is not considered for the development and its proposed drainage strategy and utilisation in any SuDS systems.

As the possibility of infiltration is ruled out, the intention for the development would be to discharge to watercourse/ waterbody. The nearest waterbody is the Dog Clog Brook tributary on the northern boundary of the site.

As this watercourse is accessible to the development under Riparian ownership and its level falls in accordance with the generalised site level, it should be utilised as a point of discharge for the surface water flows generated by the development, this is dependent upon determining a route down the bank to the reservoir that can be installed in accordance with safe working requirements and approval to discharge to the watercourse from the Environment Agency.

While every effort to utilise, any suitable existing systems should be made, the drainage systems should be designed to suit the proposed site layout and topography which aims to provide an efficient design.

In line with the Design & Construction Guidance (DCG) the requirements for the design of new surface water drainage systems are as follows:

Below ground piped drainage to be sized to accommodate the 1 in 2-year (50% AEP) design storm without surcharge.

System to be designed not to flood any part of the site in a 1 in 30-year (3% AEP) design storm.

For events in exceedance of the 1 in 30-year design storm and up to and including the 1 in 100-year event, site drainage and topography should be designed where practicable to route surface water run-off away from buildings to safe above-ground storage areas on site, thereby removing flood risk to properties and preventing this run-off from leaving the site and increasing flood risk elsewhere.

For each design case described above, the design storm is the critical storm duration for the site conditions. In the case of the 1 in 100-year design storm, a 45% increase in the peak rainfall intensity is applied to allow for the estimated worst-case impacts of climate change. This is in accordance with the DEFRA Climate Change Allowances map.

Suitable systems of below ground drainage will be required to contain as a minimum requirement, the 1 in 30-year event. Additionally, any surface water run-off from events that exceed the design capacity of the new drainage system, up to and including the 1 in 100-year (+45%) event, will be contained within the drainage network or retained on-site in safe storage areas.

Should they be required, measures to prevent oil and other contaminants being passed forward to the existing surface water sewer should also be incorporated into the design of the surface water system, through the use of appropriate oil separators or other appropriate pre-treatment methods.

In line with common practice and Halton Borough LLFA guidelines, it is proposed the surface water discharge from the proposed development should discharge at rates not in excess of a value equivalent to the Greenfield Qbar rate or the minimum practicable rate of discharge, whichever is the greater; for all respective storm periods.

An assessment of the existing Greenfield surface water run-off from the existing site area has been carried out and demonstrates that it is greater than the minimum practicable rate of 5l/s. Therefore, in accordance with reducing flood risk and compliance with Halton Borough LLFA requirements, a restricted flow rate equivalent to Qbar is recommended for the proposed development area for all storms up to and including the 1 in 100-year return period, with an allowance for climate change.

This value is equivalent to 44.7 l/s based upon the existing Greenfield Qbar run off rate, the calculations evidencing this rate of discharge being allowable into the local watercourse, can be seen in Appendix G.

Based on the above discharge limit, there shall be a new S.W network to serve the proposed development that shall discharge into the watercourse, at a point in the western extents of the development. Discharge into this watercourse shall be agreed under with the EA under an Environmental Permit.

As set out above the proposed S.W Network shall discharge no more than 44.7l/s, this network shall consist of oversized pipes and manholes with an online SuDS Pond providing additional attenuation.

The attenuation criteria for a SUDS pond are noted below based upon the Quick Storage Estimate as shown in Appendix G.

Impermeable Area (Ha)	Return Period	Lower end storage requirement m ³	Higher end storage requirement m ³
5.778	1 in 100 year + 45% Climate Change	3456	4706

Based on an effective storage depth of 1.2m, the SUDS pond shall be positioned within Brook Green occupying a plan area of a maximum plan area of 6200m², providing effective storage equivalent to the upper threshold level, to accommodate all storm events. This will be subject to control by a vortex flow control system prior to discharging to the watercourse via a newly constructed headwall at the standing water level and be subject to the UU SuDS adoption requirements.

The surface water drainage systems are to be designed to restrict the discharge to the required rate, up to and including a 1 in 100-year return period plus 45% climate change design storm, while ensuring that no flooding occurs within the 100-year return period and that any flood water for extreme events shall be appropriately accommodated away from proposed and existing dwellings.

The surface water drainage strategy and discharge rate should be confirmed via more detailed discussions with United Utilities, the EA and the Lead Local Flood Authority prior to the commencement of any works.

6.3.2 Foul Water Drainage

Foul water drainage disposal is set out in Part H of the Building Regulations in order of priority the preferred methods are;

- Public sewer
- Septic tank
- Cesspool.

The foul water system shall be designed in accordance with;

BS EN 752:2008 (Drain and sewer systems outside buildings)

The Design & Construction Guidance (DCG)

Technical Guidance to the National Planning Policy Framework document (Department for Communities and Local Government, March 2012).

BS EN 12056-2:2000 (Drainage systems inside buildings)

Building Regulations Approved Document H, Drainage and waste disposal. (Office of the Deputy Prime Minister, December 2010).

Foul water shall discharge to the existing F.W sewer to the north west corner of the development at existing manhole 5702, at an unrestricted rate.

Due to insufficient information available on the UU records, a CCTV survey of these sewers shall be carried out to ensure that the invert levels are sufficient for discharge of foul water flows by gravity.

The F.W shall discharge into the local F.W Sewer under a Section 104 Agreement, The foul water drainage strategy and discharge rate should be confirmed via more detailed discussions with United Utilities and the Lead Local Flood Authority prior to the commencement of any works.

6.3.3 Water Quality Assessment

Managing the water quality of the surface water runoff from the proposed development is important to ensure that the receiving surface waters or groundwater are well protected. Generally, this can be achieved through the use of well-designed SuDS systems which provide treatment and pollution removal to the surface water runoff.

Standard S3 of the Statutory National Standards for Sustainable Drainage Systems (2018) details the water quality management and addresses the drainage design requirements to minimise the potential pollution risk.

As the proposed development consists of roof areas, car park areas and low traffic roads, in accordance within Table G3.2 of the Statutory National Standards for Sustainable Drainage Systems (2018) the pollution hazard level is low and as such the simple index approach can be used to assess the treatment requirements for the low risk of pollution.

The simple index approach is outlined within Chapter 26 of CIRIA Report C753 - The SuDS Manual. Therefore, using Table 26.2 and applying the proposed site description above, results in a low pollution hazard level, with the pollution hazard indices being; **TSS - 0.5, Metals - 0.4 and Hydrocarbons - 0.4.**

Assessing this against Table 26.3 of CIRIA Report C753 - The SuDS Manual using the SuDS treatment train of a SUDS pond results in the mitigation indices outweighing the pollution hazard indices identified above. The use of a porous paving itself results in mitigation indices of; **TSS - 0.7, Metals - 0.7 and Hydrocarbons - 0.5**, which would be sufficient.

Therefore, as the mitigation indices are equal to or greater than each of the pollution hazard indices the use of permeable paving is deemed acceptable from a pollution mitigation perspective and as such complies with the water quality requirements of Standard S3 of the Statutory National Standards for Sustainable Drainage Systems (2018).

6.4 Compliance with LASOO Non-Statutory Technical Standards for SUDS

In compliance with the runoff destinations guidance within the LASOO Non-Statutory Technical Standards for Sustainable Drainage: Best Practice Guidance, infiltration is not feasible; therefore, the surface water runoff is designed to discharge to the public sewer.

S1. Where the drainage system discharges to a surface water body that can accommodate uncontrolled surface water discharges without any impact on flood risk from that surface

water body (e.g., the sea or a large estuary) the peak flow control Standards (S2 and S3) and volume control Standards (S4 to S5) need not apply.

The site does not discharge to a surface water body that can accommodate uncontrolled surface water discharges, as it has only previously received greenfield run off and the culvert has been sized appropriately; therefore, Standards S2 - S5 shall apply.

6.4.1 Peak Flow Control

S2. For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1-year rainfall event and the 1 in 100-year rainfall event should never exceed the peak greenfield runoff rate for the same event.

The sites considered greenfield and the discharge rate for the 1 in 100-year return period has been restricted to the existing greenfield Qbar discharge rate of 44.7l/s for a site this size, utilising a hydrobrake control unit.

S3. For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100-year rainfall event should be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

The site is Greenfield and this standard does not apply.

6.4.2 Volume Control

S4. Where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100-year, 6-hour rainfall event should never exceed the greenfield runoff volume for the same event.

S5. Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100-year, 6-hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.

S6. Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer or surface water body in accordance with S4 or S5 above, the runoff volume must be discharged at a rate that does not adversely affect flood risk.

SuDS components such as infiltration have not been confirmed as feasible due to the ground conditions. Other SUDS measures including green roofs or rainwater harvesting may

assist in constraining the volume of surface water runoff, these have not been feasible due to proposed construction methods and space considerations for the development, therefore S5 cannot be complied with.

As the system will be designed with a SuDS pond attenuating all flows for the up to and including the 1:100-year return period (including climate change), the volume discharge rate shall not adversely affect the flood risk, in compliance with S6

6.4.3 Flood Risk Within Development

S7. The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on part of the site for a 1 in 30-year rainfall event.

S8. The drainage system must be designed so that, unless an is designated to hold and/or convey as part of the design, flooding does not occur during a 1 in 100-year rainfall event in any part of: a building (including a basement) or in any utility plant susceptible to water (e.g., pumping station or electricity substation within the development)

S9. The design of the site must ensure that so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100-year rainfall event are managed in exceedance routes that minimise the risks to people or property.

The drainage system proposed in service of this development shall attenuate the Surface water flows for up to the 100-year storm event without any flooding occurring in compliance with S7 & S8.

The levels of the proposed highways and properties are such that flooding in excess of the 100-year storm event provide exceedance flow routes away from properties to proposed and existing highways; satisfying the requirements of S9.

6.5 Future Maintenance

It is proposed that the surface and foul water drainage systems and Surface water systems will be adopted, therefore the drainage elements will be the responsibility of United Utilities; in accordance with the CIRIA SUDS Manual C753.

Accordingly the S.W run off from the roofs and hard surfaces shall discharge by gravity to S.W sewers adopted and maintained by UU, prior to discharging to a SUDS Pond.

Accordingly, as stated in the SUDS Manual the operation and maintenance of the SuDS system shall be as the modified version of tables 22.1 below.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass - for spillways and access routes	Monthly (during growing season)
	Cut grass - meadow grass immediately surrounding basin	Half yearly (spring - before nesting season)
	Inspect inlets and outlets for blockages and clear if required	Every six months
	Inspect banksides and headwalls for evidence of physical damage	Every six months
	Inspect water body for signs of poor quality water	Monthly (May-October)
	Inspect silt accumulation rates in any forebay and in main body of pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half Yearly
	Check any mechanical devices e.g penstocks.	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above pond base ; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season	Annually
	Remove sediment from any forebay	Every 1-5 years / as required
Remedial Action	Repair inlets and outlets	As required
	Replant/ repair erosion when necessary	As required
	Aerate pond when signs of Eutrophication are detected.	As required
Monitoring/Occasional maintenance	Remove sediment from main body of pond when the pool volume is reduced by 20% of design value.	With effective treatment this should only be required every 25-30 years

The remaining drainage systems (Hydrobrake unit) will be maintained in accordance with manufacturer's requirements which will be provided within the O&M manual which will be issued as a compliance requirement to UU on completion of the works.

The hard surfaces proposed for the development that are not the responsibility of the householder shall be maintained accordingly with the appointed management company for the site. An annual inspection of control chamber, ACO channels and the inspection chambers shall be necessary to remove any silt build up and check the free flow use of the hydrobrake.

6.6 Managing Residual Flood Risk

With the impermeable area surface water run off explicitly considered and accommodated by the proposed drainage system a consideration must be given to the remaining permeable area within the bounds of the site, comprised of private garden areas. For the private garden areas surface water run-off will be mitigated by ensuring the top soil is freely draining and that at the lowest point of the garden a gravel trench should be in place to capture surface water for extreme events; with the surface water slowly dissipating post the storm event. Any P.O.S shall be shaped and appropriately banded to capture surface water runoff in extreme storm events, preventing discharge to the proposed dwellings, temporarily storing surface water run off prior to dissipating slowly to ground post the storm event or shaped appropriately to discharge to the local watercourse.

There is a finite risk that the design flood conditions required by current design standards are exceeded by an extreme and rare event. However, with the design measures reported such a risk is low and the exceedance flow path routes required to channel flows around the development buildings will be such that no specific flood risk management procedures are envisaged to be necessary.

7.0 CONCLUSIONS

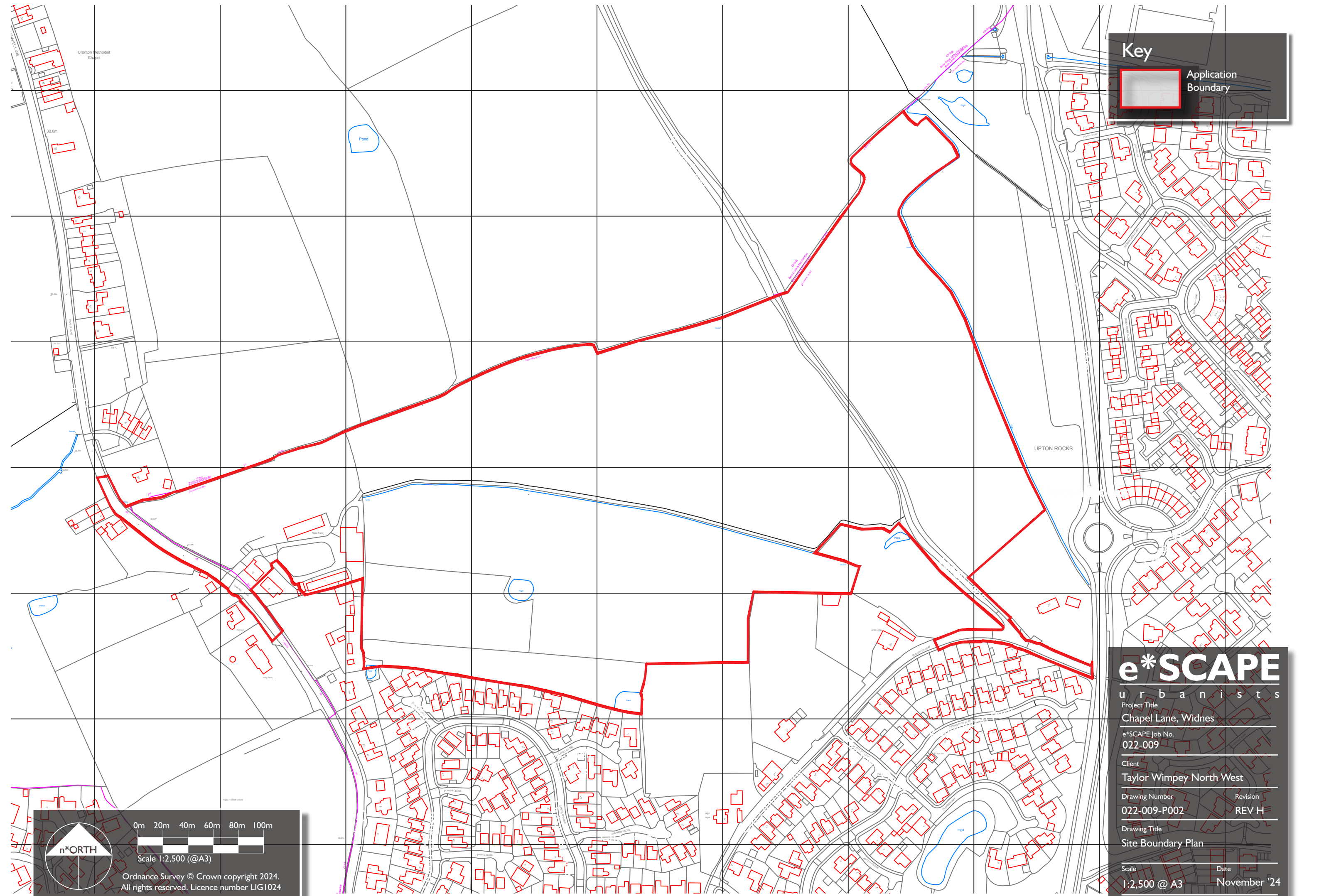
- The site is located within flood zone 1 and has been deemed to have a low risk of flooding from rivers.
- The site is at a low-medium risk of flooding from Groundwater at the surface.
- The site is at low risk of flooding from Surface water that's shall be mitigated through development.

- The ground conditions and infiltration testing in accordance with BRE 365, demonstrate that discharge to ground of pluvial flows is not viable.
- The surface water discharge from the proposed site should discharge at no more than the 44.7 l/s value for all storm events up to and including the 1 in 100-year event (+ CC)
- The Surface water shall be contained within the attenuation system for the 1 in 100-year return period (+ 45% climate Change), ensuring that no properties are at risk of flooding and all flows are contained on site.
- The S.W network shall discharge into the local watercourse, under an Environmental Permit.
- Foul water discharge from the proposed site should discharge, at unrestricted rate to the existing United Utilities Foul Water Sewer in Prescott Road via MH5703.
- The proposed drainage systems comply with Standards contained within the LASOO Non-Statutory Technical Standards for Sustainable Drainage: Best Practice Guidance.

8.0 RECOMMENDATIONS

- The development shall have a S.W network consisting of oversized pipes, manholes with a SUDS pond, a vortex flow control device should be utilised to restrict the surface water runoff and prevent any flooding for rainfall events up to and including the 1 in 100 year plus 45% climate change event.
- A CCTV survey of the existing F.W Sewer within the bounds of the site should be completed to confirm its depth and condition.
- The EA Should be contacted to obtain an Environmental Permit for discharge of S.W flows to the Local watercourse.
- The existing ditch bisecting the site shall be maintained except at highway crossing points, where a suitably sized culvert shall be installed. Subject to agreement with the LLFA.
- The external ground levels around the proposed buildings shall fall away from the proposed building with any new levels being designed to ensure overland flood routes, for events in excess of the 100 Year + 45% CC, exit towards the highway, allowing for surface water risk mitigation and groundwater risk mitigation.
- Specific and detailed mitigation measures shall be brought forward during design development and be subject to final review at Reserved Matters stage.

Appendix A Site Location Plan



Key

Application Boundary

n*ORTH

0m 20m 40m 60m 80m 100m

Scale 1:2,500 (@A3)

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e*SCAPE

u r b a n i s t s

Project Title

Chapel Lane, Widnes

e*SCAPE Job No.

022-009

Client

Taylor Wimpey North West

Drawing Number

022-009-P002

Revision

REV H

Drawing Title

Site Boundary Plan

Scale

1:2,500 @ A3

Date

November '24

Appendix B Aerial Photograph



REV	DATE	DESCRIPTION	BY	APP
PROJECT: CHAPEL LANE, WIDNES				
TITLE: SITE AERIAL PHOTOGRAPH				
STATUS: -	PROJECT No: 219-114	DRAWING No: APPENDIX B	REV: -	

SCALE @ A3: NTS	DESIGNED: -	DRAWN: -	CHECKED: -	APPROVED: -	DATE: MAY 2022
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consulting engineers

0151 227 1462 info@ajpltd.co.uk 1 Dale Street, Liverpool, L2 2ET

Appendix C Topographic Survey



SURVEY LEGEND

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OWNERSHIP.

SURVEY NOTES

ESTABLISHED AT SE1 USING THE LEICA SMARTNET GPS NETWORK

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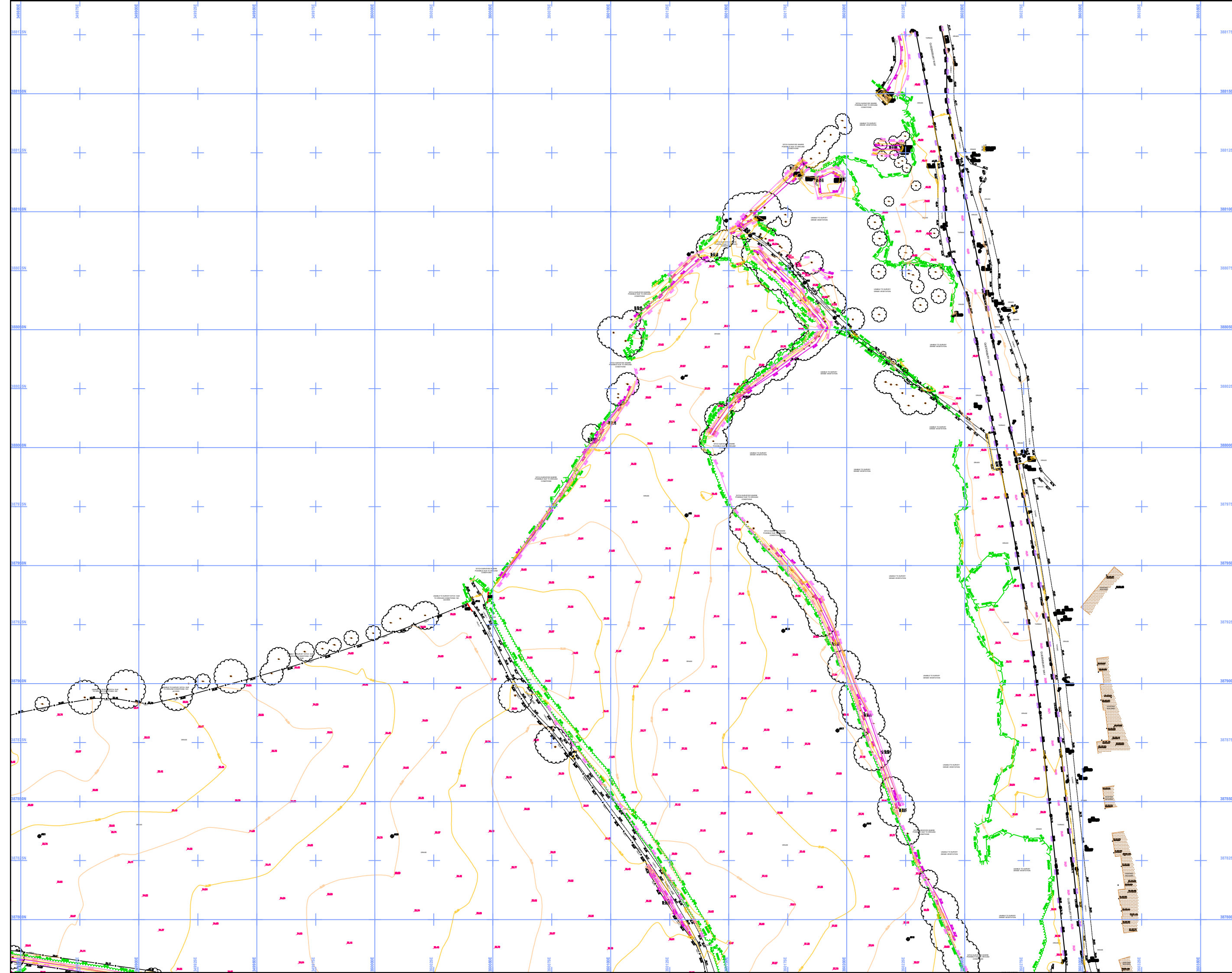
CLIENT
TAYLOR WIMPEY NORTH WEST

PROJECT TITLE
CHAPEL LANE, WIDNES

DRAWING DETAIL
TOPOGRAPHICAL LAND SURVEY
SHEET 1 OF 3

PROJECT ENGINEER	AS/JW/JLP	DATE	10.05.20
DRAWN	BM	SCALE	1:1000

DRAWING NUMBER	REV
TWNW TS 26	



SURVEY ORIENTATED TO OS GRID (OSGB36-15)

SURVEY LEGEND

[illegible]

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SURVEY NOTES

ALL LEVELS ARE RELATED TO O.S DATUM (OSGB36-15)
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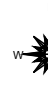
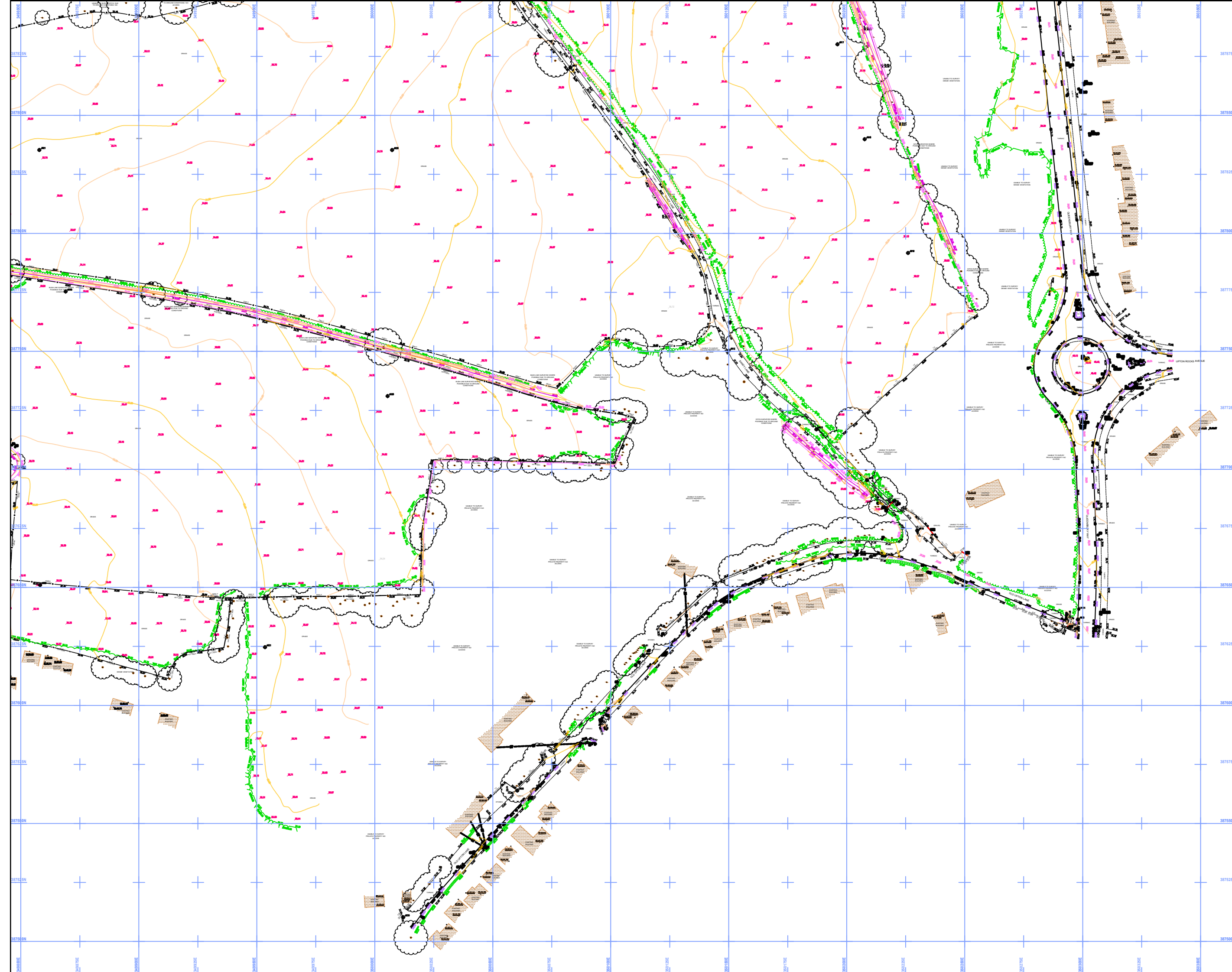
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CLIENT
TAYLOR WIMPEY NORTH WEST

PROJECT TITLE
CHAPEL LANE, WIDNES

DRAWING DETAIL
TOPOGRAPHICAL LAND SURVEY
SHEET 2 OF 3

PROJECT ENGINEER	AS/JW/JLP	DATE	10.05.2011
DRAWN	BM	SCALE	1:500@A
DRAWING NUMBER			REVIS
TWNW.TS.26			-



SURVEY ORIENTATED TO OS GRID (OSG)

SURVEY LEGEND

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ESTABLISHED AT SE1 USING THE LEICA SMARTNET GPS NETWORK

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CLIENT
TAYLOR WIMPEY NORTH WEST

PROJECT TITLE
CHAPEL LANE WIDNES

DRAWING DETAIL

TOPOGRAPHICAL LAND SURVEY
SHEET 3 OF 3

PROJECT ENGINEER	AS/JW/JLP	DATE	10.05.2019
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DRAWN	BM	SCALE	1:500@A0
DRAWING NUMBER		REV/SIG	

DRAWING NUMBER	REVISION
TWNW.TS.26	-

Appendix D Development Plan

Key

 Site Boundary

 n*ORTH

0m 20m 40m 60m 80m 100m

Scale 1:2,500 (@A3)

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e*SCAPE
urbanists

Project Title
Chapel Lane, Widnes

e*SCAPE Job No.
022-009

Client
Taylor Wimpey North West

Drawing Number
022-009-P005

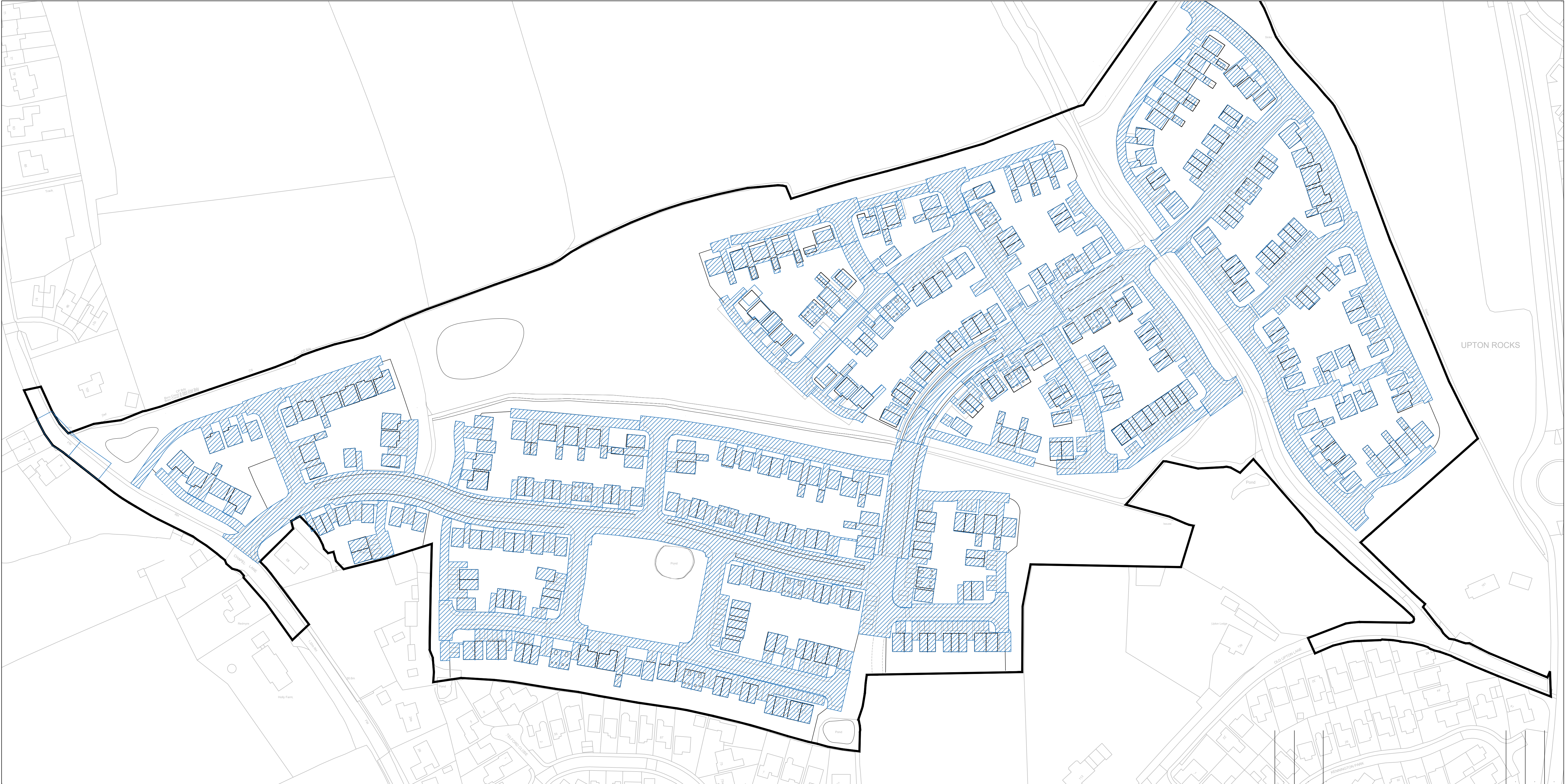
Revision
REV G

Drawing Title
Illustrative Masterplan

Scale
1:2,500 @ A3

Date
December '24





IMPERMEABLE AREA = 5.778HA

REV	DATE	DESCRIPTION	BY	CHK	APP
DRAWING STATUS:					
STAGE 2					
CLIENT:					
TAYLOR WIMPEY					
ARCHITECT:					
E'SCAPE					
PROJECT:					
CHAPEL LANE, WIDNES					
TITLE:					
S.W CATCHMENT PLAN					
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SCALE @ A1:	DESIGNED:	DRAWN:	CHECKED:	APPROVED:	DATE:
1:1000	JCM	JCM	KOB	KOB	JULY 2024
AJP consulting engineers					
0151 227 1462 info@ajp ltd.co.uk 01 Dale Street, Liverpool, L2 2ET					

Appendix E Flood Risk Maps

Flood map for planning

Your reference
Flood Zone Map

Location (easting/northing)
349895/387847

Created
28 Sep 2022 15:13

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following:**

- bigger than 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

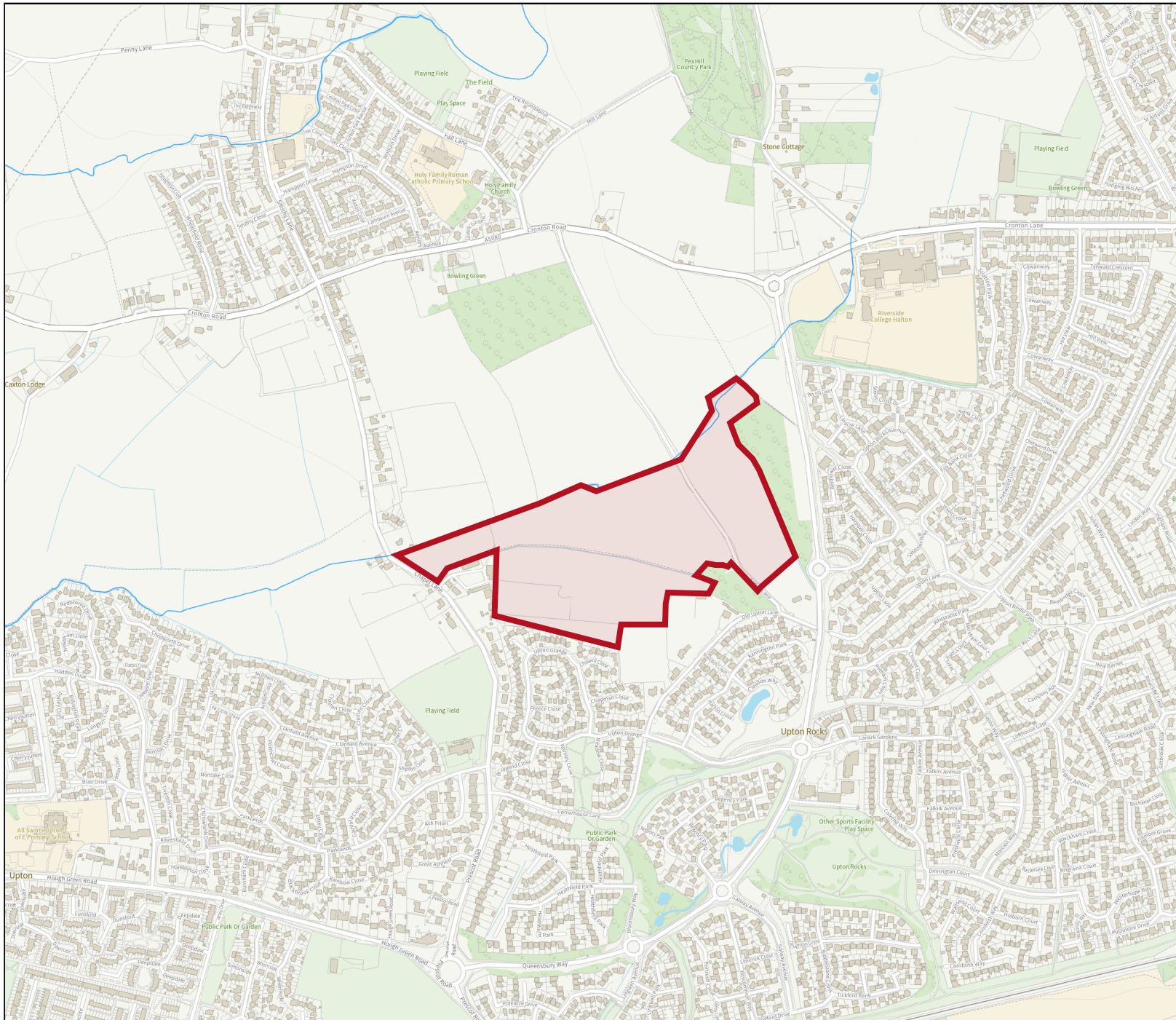
Notes

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 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference
Flood Zone Map

Location (easting/northing)
349895/387847

Scale
1:10000

Created
28 Sep 2022 15:13

-  Selected area
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area

0 100 200 300m

Flood risk

Location

Extent of flooding



Enter a place or postcode



Extent of flooding from surface water

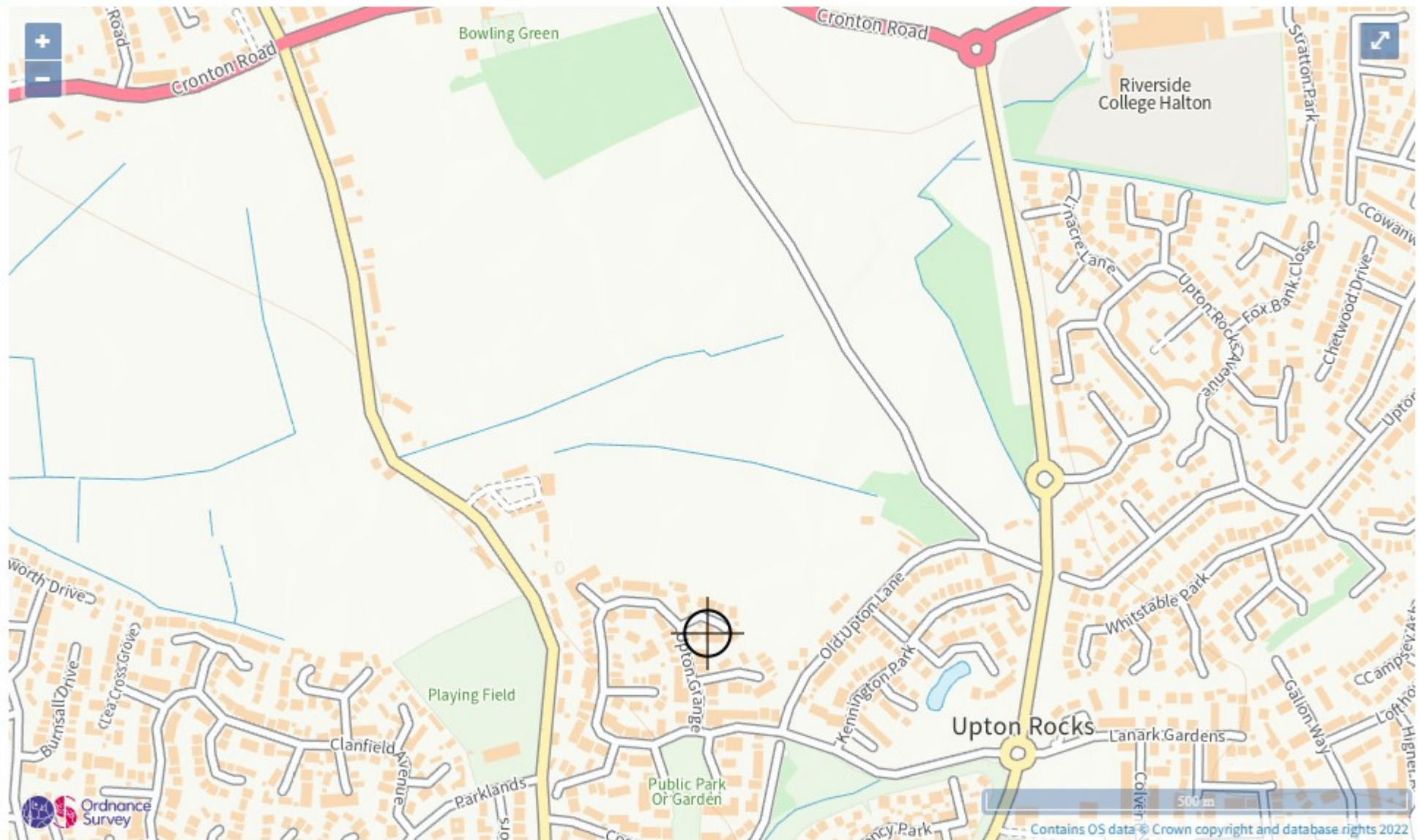
● High ● Medium ● Low ○ Very low ⊕ Location you selected

Flood risk

Location

Extent of flooding

Enter a place or postcode



Extent of flooding from rivers or the sea

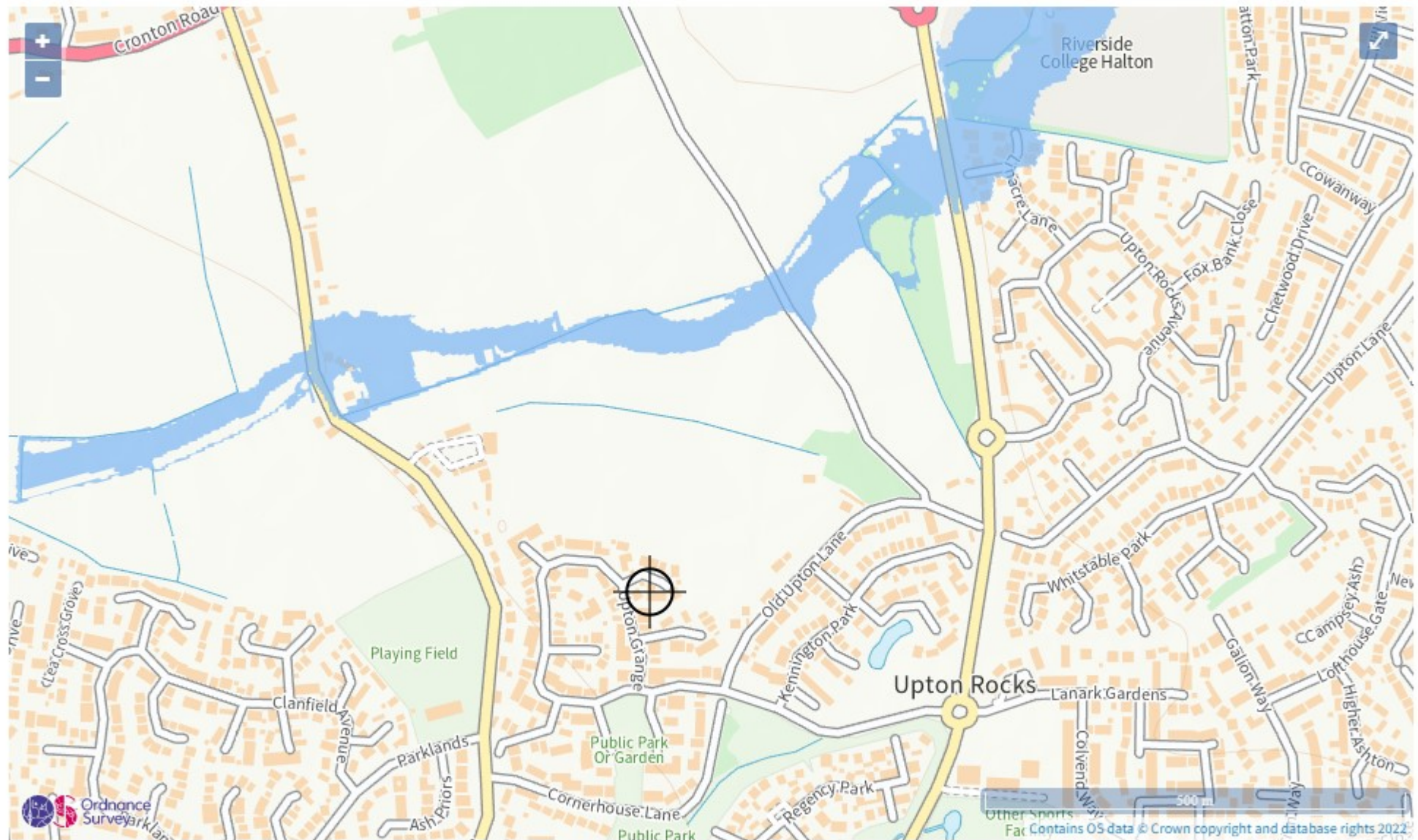
● High ● Medium ● Low ● Very low ⊕ Location you selected

Flood risk

Location

Extent of flooding

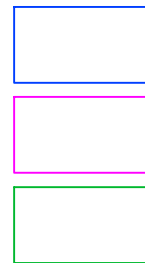
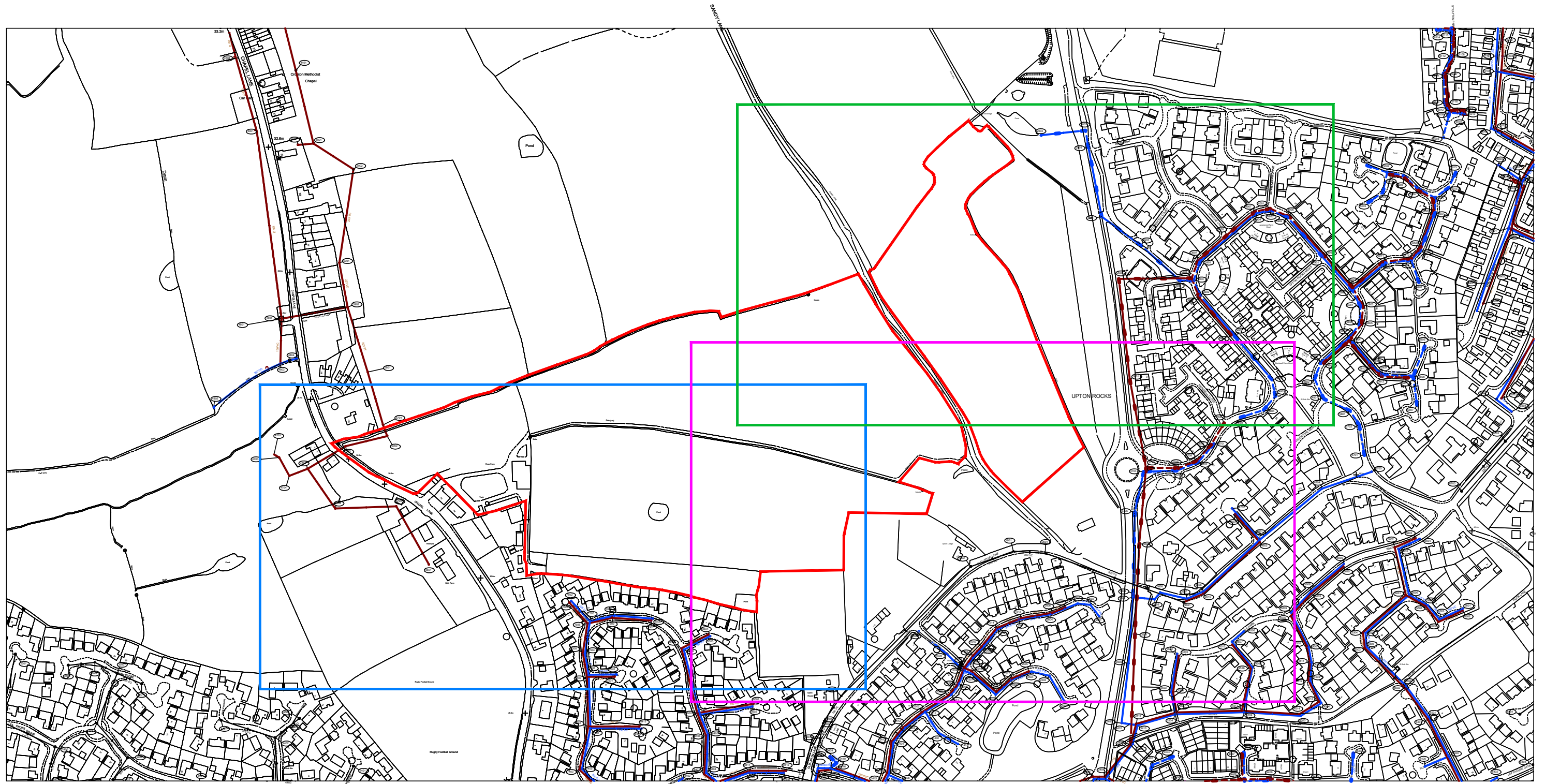
Enter a place or postcode



Maximum extent of flooding from reservoirs:

● when river levels are normal ■ when there is also flooding from rivers ⊕ Location you selected

Appendix F UU Maps & Correspondence

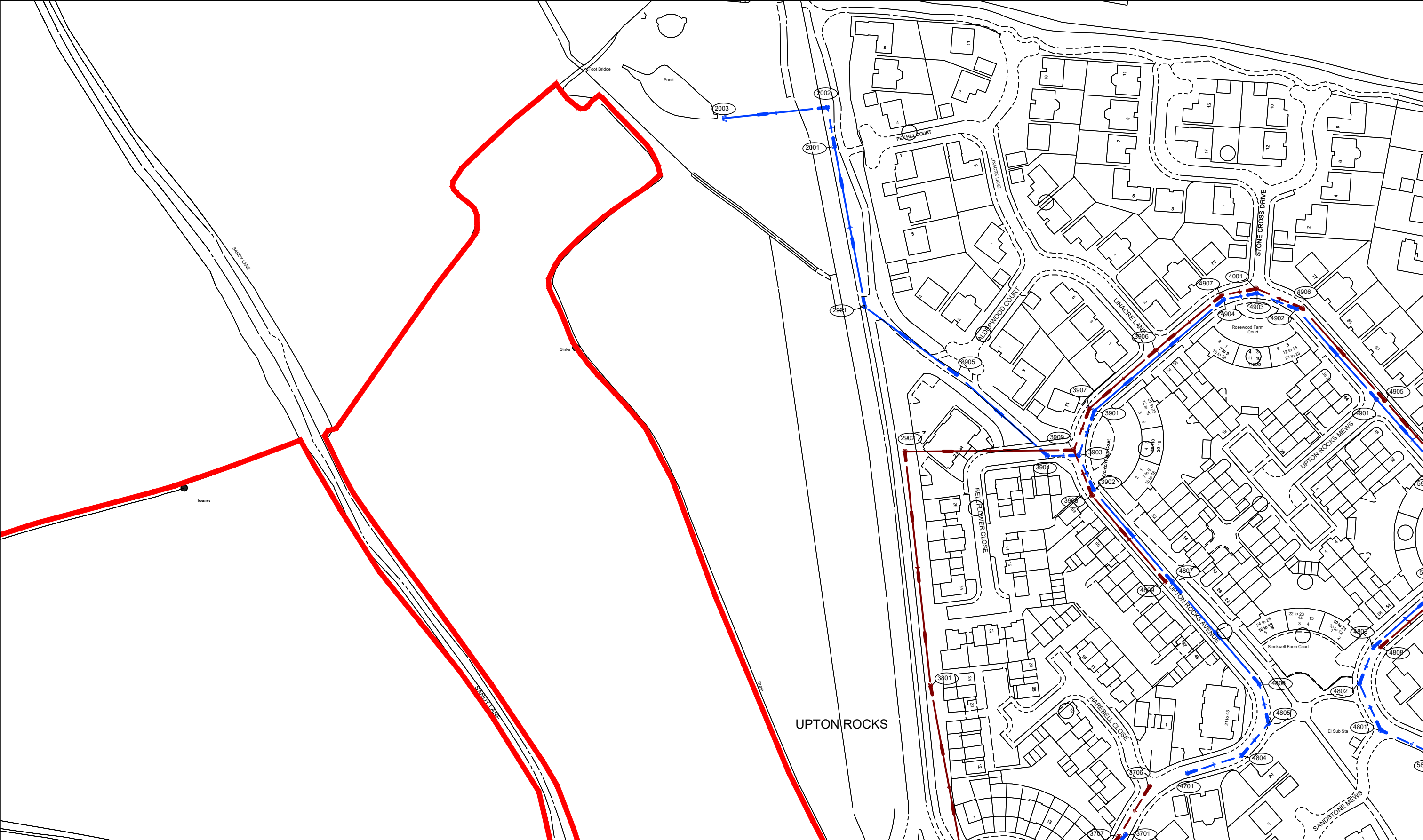


APPENDIX F-1

APPENDIX F-2

APPENDIX F-3

REV	DATE	DESCRIPTION	BY	APP	SCALE @ A3:	DESIGNED:	DRAWN:	CHECKED:	APPROVED:	DATE:
PROJECT: CHAPEL LANE, WIDNES					NTS	-	-	-	-	MAY 2022
TITLE: EXISTING UU RECORDS - MASTER					AJP est. 1978 consulting engineers ☎0151 227 1462 ✉info@ajpltd.co.uk 📍1 Dale Street, Liverpool, L2 2ET					
STATUS:	PROJECT No:	DRAWING No:	REV:							
-	219-114	APPENDIX F	-							



REV	DATE	DESCRIPTION	BY	APP
PROJECT: CHAPEL LANE, WIDNES				
TITLE: EXISTING UU RECORDS				
STATUS: -		PROJECT No: 219-114	DRAWING No: APPENDIX F-3	REV: -

SCALE @ A3: NTS	DESIGNED: -	DRAWN: -	CHECKED: -	APPROVED: -	DATE: MAY 2022
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AJP

est. 1978

consulting engineers

0151 227 1462 info@ajpltd.co.uk 1 Dale Street, Liverpool, L2 2ET

Appendix G Proposed Hydraulic Calculations

Alan Wood & Partners		Page 1
1 Dale Street Liverpool L2 2ET	219-114 Chapel lane Widnes Greenfield Run off Rev A	
Date 22/01/2024 15:35 File	Designed by JCM Checked by JLS	
Innovyze		
Source Control 2020.1.3		
ICP SUDS Mean Annual Flood Input Return Period (years) 2 Soil 0.450 Area (ha) 8.380 Urban 0.000 SAAR (mm) 826 Region Number Region 10 Results 1/s QBAR Rural 44.7 QBAR Urban 44.7 Q2 years 41.6 Q1 year 38.9 Q30 years 75.8 Q100 years 92.9		
©1982-2020 Innovyze		

Results

Quick Storage Estimate variables require approximate storage of between 3456m³ - 4706m³.

These values are estimates only and should not be used for final design purposes.

Input

Results

2D Graph

OK

Cancel

Create New

 Help

Appendix H Phase II Geotechnical Report



Phase II Geoenvironmental Site Assessment
Chapel Lane, Widnes

Reference:13-759-R1-1
Date: December 2020



PHASE II GEOENVIRONMENTAL SITE ASSESSMENT

Land off Chapel Lane
Widnes
WA8 4NX

Prepared for:

Taylor
Wimpey

Report Ref: 13-759-R1-1
Date Issued: December 2020

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QUALITY ASSURANCE

PROJECT NUMBER	13-759-R1		
VERSION	Version 1		
REMARKS	Draft for Comment		
DATE	18 th December 2020		
PREPARED BY	V Wilkinson		
QUALIFICATIONS	MESci (Hons), FGS		
SIGNATURE			
CHECKED BY	J Sheridan		
QUALIFICATIONS	MeSci, FGS		
SIGNATURE			
AUTHORISED BY	S Cox		
QUALIFICATIONS	BSc (Hons), FGS, PIEMA, MIEEnvSci, CEnv		
SIGNATURE			

EXECUTIVE SUMMARY

Site Address	Land off Chapel Lane, Widnes, WA8 4NX	
Grid Reference	E 349898, N 387838	
Site Area	21.68 Ha.	
Current Site Use	The site is roughly divided into two areas; land to the east of Sandy Lane, which comprises a field with an area of overgrown vegetation along the east boundary; and, the land to the west of Sandy Lane which comprises fields and Rose Farm (active) in the far west, containing large silos, farming machinery and above ground storage tanks. A footpath orientated roughly East – West connects Rose Farm with Sandy Lane. The site is generally flat with the undulations/depressions in the southern field.	
Proposed Development	Taylor Wimpey NW intends to construct a low-rise residential development comprising residential dwellings with associated gardens, estate roads and infrastructure. The proposed layout has not yet been finalised.	
Environmental Setting	Drift Geology	Till (Devensian – CLAY) across the site.
	Bedrock Geology	Chester Formation - SANDSTONE
	Faults	Two faults present to the east of site.
	Hydrogeology	Secondary Undifferentiated aquifer (drift), underlain by a Principal aquifer (bedrock). There are no licenced water abstractions within 250 m of site.
	Hydrology	An unnamed brook is present adjacent to the northern boundary.
	Flood Risk	Unaffected by flooding from rivers.
Site History	Historically, the site is shown to be utilised as agricultural fields with several ponds and field boundaries present throughout. Sandy Lane (formerly known as Upton Lane) is present in the east, orientated roughly north-south, bisecting the site. A public footpath is also present oriented roughly east-west from Chapel Lane to Sandy Lane. No significant changes occurred on the site until Pre 1989 when Rose Farm is shown on mapping with associated farm buildings in the west, with all ponds now infilled with the exception of one located in the south.	
Previous Reports	E3P has been provided with a Phase 1 desk study 'Desk Study Report for Chapel Lane, Widnes' by Betts Geo Consulting Engineers (report number: 19TAY046/DS). A full summary is provided in Section 2.1, with the key contaminant sources, receptors and human health risk assessment summarised below: Possible Contamination Sources; Current/Historical Site Use Ponds Agricultural use Pathways and Receptors Aquifers – Significant Risk; Low probability. The Shropshire Union Canal is also listed as a potential receptor, however, on review of the surroundings, this is considered to be well outside of influencing distance. The qualitative risk assessment concludes a generally Low – Moderate (Localised) risk for contamination and ground gas.	



Utility Locations	Online plans show a sewer present in the western sector of site with a trunk main present though Chapel lane to the west of site. Anecdotal information from the agricultural tenant also indicates presence of the following: - Private water pipes in the west of site supplying all farm buildings. - Electricity in the farmyard creating a loop from the cattle shed, south, then back north towards the farm buildings. - A foul drainage pipe is also present in the west, orientated north-south, fed from the farm to a septic tank near the access track, then out falling at the northern boundary. - A surface water drain roughly orientated east-west is also present within the central and eastern field.
Landfill Sites and Ground Gases	There are no present or historical landfill sites located within 500 m of site.
Radon	Unaffected – no special precautions required.
Coal Mining/Land Stability	The site is located within a Coal Mining Reporting Area; however, it is not located within an area deemed as high risk.
Brine Workings	The proposed development is not located within the Cheshire Brine Compensation District; therefore, is unaffected by brine workings.
Hazardous Installations	No hazardous installations that could potentially prejudice the proposed construction of highly sensitive residential dwellings have been identified within influencing distance of the subject site.

SITE INVESTIGATION

Ground Investigation Works	E3P has completed an intrusive ground investigation comprising: 44 No Mechanically excavated trial pits 36 No Window sample boreholes 2 No Cable percussion boreholes 10 No Dynamic cone penetrometer tests 6 No BRE365 soakaway tests 1 No hand excavated pit to investigate existing surface water drain Selected window sample boreholes were fitted with environmental monitoring installations to enable gas and groundwater monitoring.
Ground Conditions	MADE GROUND – 0.00 m bgl to 1.80 m bgl Made Ground deposits were encountered within thirteen exploratory hole locations to depths of between 0.30 m and 1.80 m bgl although, in general, Made Ground was encountered to a depth of less than 0.80 m bgl. Made Ground deposits comprise a reworked topsoil of dark brown sandy clay with gravel of mudstone and sandstone with selected areas containing fragments of occasional brick and concrete. The majority of locations were underlain by a black sandy mudstone gravel (land drain bedding). A hand excavated pit was conducted to investigate existing surface water drain. The top of the drain was located 0.40 m bgl. The material above comprised of a reworked topsoil underlain by brown mottled grey slightly gravelly sandy clay.



	TOPSOIL – 0.00 m bgl to 0.70 m bgl Topsoil was encountered within the majority of location between 0.00 m bgl and 0.70 m bgl, comprising dark brown slightly gravelly sandy clay with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone. DRIFT – 0.30 m bgl to 16.95 m bgl Drift generally comprises firm brown mottled grey slightly gravelly sandy CLAY with gravel of mudstone, underlain by a stiff brown slightly gravelly sandy CLAY where gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Some locations encountered occasional cobbles of subrounded to rounded mudstone and sandstone. Low strength clays were encountered within 8 locations across the site. Seven locations were between a depth of 1.00 m and 1.65 m bgl (CP101, CP102, WS101, WS105, WS121, WS128 and WS132) with WS114 recording soft clays between 2.00 m and 3.45 m bgl. Medium dense SAND was encountered within two locations WS104 (0.30 m–0.40 m bgl) and WS136 (1.00 m–3.40 m bgl) Gravel with sand bands was encountered between 12.00 m and 13.10 m bgl within CP102.
	SOLID – 2.00 m bgl to 5.30 m bgl Weathered bedrock comprising reddish brown SANDSTONE was encountered within the east of the site between 2.00 m (WS101) and 5.30 m bgl (CP101). Bedrock was not encountered in the central or western areas of site, with one location (CP102) advancing to 16.95 m bgl in Clay drift deposits, indicating the bedrock is significantly deeper within these areas.
	GROUNDWATER – Groundwater was encountered between 0.40 m bgl and 12.00 m bgl during the site investigation with monitoring recording groundwater levels between ground level and 3.43 m bgl

CONTAMINATED LAND ASSESSMENT

Human Health	The Tier 1 human health risk assessment identified the concentrations of the following in exceedance of screening criteria relevant to a residential end use with plant uptake: ▪ Chromium VI – TP125 Made Ground at 0.1 m bgl; ▪ Lead – TP138 Made Ground at 0.1 m bgl; and, ▪ Asbestos (<0.001%) – TP145 Made Ground at 0.80 m bgl Which present unacceptable degrees of theoretical risk to the identified receptors associated with ingestion of soils and inhalation of particulate, respectively. Delineation and segregation of this impacted material will be required to ensure it is placed in an area of reduced sensitivity such as: ▪ Beneath 600 mm clean cover within private gardens;
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	- Within POS – Material from TP125 and TP138 will be suitable for use as topsoil within areas of POS. However, asbestos impacted material would need to be placed below 300 mm clean cover); or, - Beneath plots/hardstanding/roads. With the exception of the locations noted above, topsoil and subsoil deposits on site are considered suitable for re-use, subject to further chemical validation testing. Further post-demolition investigations are required in the farmyard area in the west of the site to confirm the findings of this initial assessment as and when full and unrestricted access is available.
Controlled Waters	Exceedances of EQS and DWS values have been detected within leachate and water samples analysed including arsenic, copper, total cyanide, lead, nickel and zinc. M-BAT and Pb assessment has confirmed the determinands to be of low bioavailability and thus do not pose a risk to surface water courses. Soakaway testing undertaken at the site has confirmed that the infiltration rate is very low, and the low permeability of the material will therefore significantly reduce the potential for downward or lateral migration. Based on the above, there is considered to be no unacceptable level of risk to the controlled waters receptors.
Ground Gas	Current assessment based on initial monitoring visit confirms one area of the site (WS102) identifies levels of CO₂ that would require CS2/Amber 1 classification. The monitoring well is located within Made Ground strata; therefore, delineation of the Made Ground would remove the source of CO₂ decreasing the classification to CS1/Green. WS114 has encountered levels of methane that have been assessed as CS4/Red classification. This area was historically a pond; therefore, the infill material is thought to be the source of high methane levels, although the monitoring well was noted to be flooded on recent occasions and thus results be not be reflective of the true gassing regime. Completion of ground gas monitoring is required, ensuring water is removed from wells beforehand. If high concentrations persist, delineation and removal of the source of elevated carbon dioxide and methane (made ground/pond) within the vicinity of these locations may be required to mitigate the risk to end users.
Potable Water Infrastructure	Based on the assessment of current site conditions it is likely that PE pipe can be used at the proposed development. This will need to be confirmed following the completion of a UKWIR risk assessment. Post-remediation and enabling works ground conditions may be different from those identified during this site investigation.

GEOTECHNICAL ASSESSMENT

Underground Obstructions	No obstructions were encountered during site investigations; however, there is potential for obstructions to be present below current farm buildings and hard standing areas in the west. Further investigation will be required post-demolition.
---------------------------------	--



	During a phase of cut-and-fill enabling works to create a developable platform, all below-ground obstructions (if encountered) will require grubbing out to the base of the Made Ground to enable the construction of proposed plots.
Allowable Bearing Pressure	The underlying cohesive deposits generally comprise firm to very stiff brown slightly gravelly CLAY circa 0.5 m bgl – 4.0 m bgl which would provide a net ABP in the order of >100 kN/m². Localised areas of soft/firm (low strength) clays were encountered in 8 locations across site (CP101, CP102, WS101, WS105, WS115, WS121, WS128 and WS132) with an ABP of 10–40 kN/m² which will require removal and replacement with suitable engineered fill. The weathered SANDSTONE if encountered at foundation depth is anticipated to provide an ABP >400 kN/m².
Foundation Options	Based on existing levels is considered that the optimum foundation solution for the proposed residential development would be as follows: - Standard strip/trench foundations bearing onto firm/stiff CLAY or weathered SANDSTONE (suitably deepened in areas of tree influence and locally softer clays); - Piles in areas of soft/loose soils and in close proximity of trees. However, a programme of remediation and enabling works may be required to provide suitable development platform levels. Therefore, upon completion of these enabling works, it is possible that a deeper/abnormal foundation solution may be required in areas of the site where levels have been raised.
Building Floor Slabs	Suspended floor slabs considered most suitable.
Heave Precautions	Given that the underlying clay is of low volume change potential, heave precautions will not be required to the internal face of a foundation less than 1.5 m in depth. Heave precautions will be required to the underside of floor slabs (where there is no 200 mm void).
Soakaway Drainage	Soakaway tests indicate the underlying CLAY soils will not be suitable for soakaway drainage and alternative means of suitable surface water disposal will be required.
Sulphate Assessment	Concrete classification will be DS1 AC1s.
CBR Design %	Natural clay soils will provide a CBR in the order of 3–5% during drier climatic periods; however, if water is allowed to shed onto the formation, the CBR will reduce to < 2%, which will require specialist engineering of the subgrade.
Cut/Fill	A phase of cut-and-fill enabling works may be required in order to create a proposed development platform suitable for a residential development. Proposed levels are currently unknown but are expected to remain similar to current.
Civil Engineering Excavations	Shallow bedrock has been identified within the east at a minimum depth of 2.0 m bgl, which may impede foundations/service excavations if levels are to be reduced or deep installations are proposed.
Waste Characterisation	Any material that is to be disposed off-site should undergo assessment using Technical Guidance WM3: <i>Waste Classification – Guidance on the classification and assessment of waste</i> .

RECOMMENDATIONS

Based on the findings of the geoenvironmental site assessment, the following additional works are recommended to be completed in due course:



Further post-demolition investigation in the farmyard area in the west of the site;



-  Plot-specific foundation schedule (upon receipt of the final development levels and layout);
-  Arboricultural survey;
-  Materials management plan;
-  Geotechnical earthworks strategy (infrastructure);
-  Remediation and enabling works strategy; and,
-  Full three-dimensional earthworks cut/fill model.



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DRAWING LIST

13-759-R1-001 - Site Location Plan
13-759-R1-002 - Proposed Development Plan
13-759-R1-003 - Historical Features Plan
13-759-R1-004 - Site Features Plan
13-759-R1-005 - Exploratory Hole Location Plan
13-759-R1-007 - Depth of Topsoil Plan
13-759-R1-010 - Conceptual Site Model
13-759-R1-012 - Depth to Bedrock Plan
13-759-R1-015 - Development Constraints Plan



1. INTRODUCTION

1.1. BACKGROUND

E3P has been commissioned by Taylor Wimpey NW to undertake a detailed Phase II Geoenvironmental Site Assessment for a parcel of agricultural land to the east of Chapel Lane, Widnes.

This report is required to determine potential contaminated land liabilities, remediation requirements and geotechnical engineering works that will be required as part of the proposed low-rise residential development.

The scope of work includes the following elements:

- ✿ Detailed review of historic information;
- ✿ Design of suitable intrusive ground investigation;
- ✿ 36 no. window sample probeholes with 24 no. environmental monitoring installations;
- ✿ 2 no. deep cable percussive boreholes;
- ✿ 45 no. mechanically excavated trial pits;
- ✿ 6 no. BRE365 soakaway tests;
- ✿ 10 no. dynamic Cone Penetrometer (DCP) tests to determine in-situ CBR % using a TRL probe;
- ✿ 1 no. hand dig pit to confirm the location and condition of an existing surface water drain;
- ✿ Chemical and geotechnical laboratory analysis;
- ✿ Groundwater monitoring and sampling;
- ✿ Ground gas monitoring;
- ✿ Contamination risk assessment and conceptual site model;
- ✿ Geotechnical assessment and interpretation; and,
- ✿ Factual and interpretive reporting.

1.2. PROPOSED DEVELOPMENT

Taylor Wimpey NW intends to construct a low-rise residential development comprising residential dwellings with associated gardens, estate roads and infrastructure. Drawing 13-759-002 (Appendix III) presents the proposed development layout.

A snapshot of the proposed development layout is indicated in Figure 1.1.



FIGURE 1.1 SNAPSHOT OF PROPOSED DEVELOPMENT MASTERPLAN



1.3. OBJECTIVES

The objectives of the geoenvironmental assessment are as follows:

- ✳ Undertake a preliminary stage of sampling and analysis to provide an overview of environmental issues identified.
- ✳ Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors.
- ✳ Assess the geotechnical information and provide preliminary recommendations in relation to foundations, pavement construction and floor slabs.
- ✳ Provide recommendations regarding future works required.

1.4. LIMITATIONS

The limitations of this report are presented in Appendix I.

1.5. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from E3P; a charge may be levied against such approval.



2. GROUND INVESTIGATION

2.1. PHASE I DESK STUDY SUMMARY

E3P has been provided with a Phase 1 desk study 'Desk Study Report for Chapel Lane, Widnes' by Betts Geo Consulting Engineers (report number: 19TAY046/DS). A summary of the report is provided below.

CURRENT SITE

- ✳ The site is roughly divided into two areas, the first area lies to the East of Sandy lane and comprises a field with an area of overgrown vegetation along the east boundary. The second area lies to the west of Sandy lane and comprises the active Rose Farm in the far west of site containing large silos, potential fuel storage.
- ✳ A footpath orientated roughly East – West connects Rose Farm with Sandy Lane at an area of overgrown vegetation fronting Sandy Lane.
- ✳ Depressions were noted in the surface potentially indicating infilled ponds.
- ✳ Site is generally flat with the previously mentioned undulations/depressions in the southern field.

SITE HISTORY

- ✳ 1849-1850 – The site comprises agricultural fields. Two footpaths, five ponds and field boundaries are also shown across site. Upton Lane is present in the east oriented roughly north-south, dissecting the agricultural fields.
- ✳ 1891 – Many of the field boundaries are no longer present and Upton Lane is now marked as Sandy Lane.
- ✳ 1925-1926 – A watercourse is shown running along the north boundary of site from east to west. A possible watercourse/ditch line is also shown through the centre of site, possibly culverted to the west.
- ✳ 1985-1989 – Rose Farm is shown in the west of site with buildings and glasshouse. To the east of site, a watercourse is shown with Sinks. A pond in the centre of site is no longer shown.
- ✳ 2002 – Additional Issues and Sinks are marked along the north boundary of site. No further major changes occur on-site until the 2010 1:10,000 map when a new pond is also shown in the north east of site.

HYDROGEOLOGY AND HYDROLOGY

- ✳ The superficial deposits (Glacial Till) are designated as Secondary (Undifferentiated) aquifer.
- ✳ The bedrock deposits (Chester Sandstone Formation) are designated as Principal aquifer.
- ✳ The site lies within Groundwater Source Protection Zone 3 – Total Catchment as defined by the Environment Agency.
- ✳ There are no licenced water abstractions within 250 m of site.



RADON PROTECTION

- ✳ The site lies within a low risk area of radon less than 1% of homes are estimated to be above the action level, therefore no radon protection measures are required for new dwellings or extensions.

SUMMARY OF ENVIRONMENTAL DATA

- ✳ Possible Contamination Sources;
 - Current/Historical Site Use
 - Ponds
 - Agricultural use

PATHWAYS AND RECEPTORS

- ✳ Aquifers – Significant Risk; Low likelihood.
- ✳ *Shropshire Union Canal, Adjacent to Site – Significant Risk; Possible.

*The Shropshire Union Canal is listed as a potential receptor, however, on review of the surroundings, this is considered to be well outside of influencing distance and has therefore not been considered further.

QUALITATIVE RISK ASSESSMENT

- ✳ In this qualitative risk assessment, a generally Low - Moderate (Localised) risk for contamination.

2.2. GENERAL OVERVIEW

A ground investigation has been designed based on the findings of the desk study, with exploratory holes advanced to target specific potential contaminant sources summarised in Table 2.1. The investigation has also been used to collect geotechnical information to assist in the design and construction of the proposed development.

Exploratory fieldwork was completed between 24th August 2020 and 26th August 2020. The works are summarised in Table 2.1.



TABLE 2.1 SUMMARY OF FIELDWORK

POTENTIAL SOURCE/RATIONALE	LOCATION HOLE	TYPE	MAXIMUM DEPTH (m bgl)	MONITORING WELLS RESPONSE ZONE (m bgl)
General Ground Conditions Including the Presence/Nature of Obstructions	WS101	Window Sample Probehole	2.45	0.50–2.00
	WS102		2.30	0.50–1.50
	WS103		4.61	1.00–4.00
	WS105		3.30	N/A
	WS106		4.40	1.0–4.0
	WS107		4.45	N/A
	WS109		4.40	0.50–2.50
	WS110		5.45	N/A
	WS111		5.45	1.00–4.00
	WS112		5.45	1.00–4.00
	WS113		5.45	1.00–5.00
	WS115		5.45	1.00–5.00
	WS116		5.45	N/A
	WS117		5.45	1.00–5.00
	WS118		5.45	N/A
	WS119		5.45	1.00–4.00
	WS120		5.45	1.00–5.00
	WS121		5.45	1.00–5.00
	WS122		5.45	N/A
	WS124		5.45	1.00–5.00
	WS125		5.45	1.00–5.00
	WS126		5.45	1.00–4.00
	WS127		5.45	1.00–5.00
	WS128		5.45	1.00–5.00
	WS129		5.45	1.00–5.00
	WS130		3.40	1.00–3.00
	WS131		5.45	1.00–5.00
	WS132		5.45	1.00–5.00
	WS133		5.45	N/A
	WS134		5.45	N/A
	WS135		3.10	N/A
	WS136		3.40	N/A
	TP102	Mechanically Excavated Trial Pit	2.10	N/A
	TP109		2.00	N/A
	TP110		2.00	N/A
	TP111		2.10	N/A



POTENTIAL SOURCE/RATIONALE	LOCATION HOLE	TYPE	MAXIMUM DEPTH (m bgl)	MONITORING WELLS RESPONSE ZONE (m bgl)
General Ground Conditions Including the Presence/Nature of Obstructions	TP112	Mechanically Excavated Trial Pit	1.90	N/A
	TP113		2.20	N/A
	TP114		2.20	N/A
	TP115		2.10	N/A
	TP116		2.20	N/A
	TP117		2.00	N/A
	TP118		2.10	N/A
	TP119		2.40	N/A
	TP120		2.00	N/A
	TP121		2.40	N/A
	TP122		2.40	N/A
	TP123		2.20	N/A
	TP124		2.30	N/A
	TP125		2.20	N/A
	TP126		2.20	N/A
	TP127		2.10	N/A
	TP128		2.20	N/A
	TP129		2.30	N/A
	TP130		2.20	N/A
	TP131		2.30	N/A
	TP132		2.50	N/A
	TP133		2.40	N/A
	TP134		2.40	N/A
	TP135		1.70	N/A
	TP136		2.00	N/A
	TP137		2.80	N/A
	TP138		2.00	N/A
	TP139		0.90	N/A
	TP140		2.00	N/A
	TP141		0.90	N/A
	TP142		2.00	N/A
	TP143		0.80	N/A
	TP144		2.00	N/A
	TP145		1.00	N/A
Investigation of Historically Infilled Ponds	WS104	Window Sample Probehole	3.80	1.00–3.00



POTENTIAL SOURCE/RATIONALE	LOCATION HOLE	TYPE	MAXIMUM DEPTH (m bgl)	MONITORING WELLS RESPONSE ZONE (m bgl)
Investigation of Historically Infilled Ponds	WS108	Window Sample Probehole	2.70	0.50–1.50
	WS114		5.45	1.00–4.00
	TP103	Mechanically Excavated Trial Pit	2.30	N/A
	TP111		2.10	
Investigation of Above Ground Storage Tank and General Ground Conditions Including the Presence/Nature of Obstructions	WS123	Window Sample Probehole	5.45	1.00–5.00
General Deep Ground Conditions Including the Presence/Nature of Obstructions	CP101	Cable Percussive Boreholes	5.95	N/A
	CP102		16.95	N/A
Inspection of surface water drain	HP101	Hand Excavated Pit	0.40	N/A
General Ground Conditions /Investigation of Soakaway Potential	TP101/SA101	Mechanically Excavated Trial Pits	1.80	N/A
	TP104/SA102		1.80	
	TP105/SA103		1.80	
	TP106/SA104		1.70	
	TP107/SA105		1.90	
	TP108/SA106		1.80	

Mechanically excavated trial pits were advanced to investigate ground conditions and to retrieve environmental samples, spatially distributed to offer the maximum site coverage whilst also being advanced to target specific contaminant sources.

Soakaway tests were conducted within TP101/SA101, TP104/SA102, TP105/SA103, TP106/SA104, TP107/SA105 and TP108/SA106 generally in accordance with BRE365 methodology.

Window sample probeholes and cable percussive boreholes were advanced to undertake in-situ detailed geotechnical testing, obtain environmental samples and install groundwater and ground gas monitoring wells.

A hand excavated pit was conducted to investigate the existing surface water drain that is present in the central and eastern fields.

The sampling locations are illustrated in Drawing 13-759-005 (Appendix III). The ground conditions encountered are indicated on the logs, which are provided in Appendix V.

Return visits were made to monitor installations for groundwater level and gas concentrations. In addition, selected wells were purged and samples of groundwater recovered for chemical analysis.

2.3. IN-SITU STANDARD PENETRATION TESTING (SPT)

In-situ geotechnical testing was conducted using the standard penetration test (SPT) and, where the ground is granular, a 60° cone (SPT(C)) was used instead of the sampling tube.



The results are shown in the probehole logs in Appendix V and presented in Table 3.5 and discussed in Section 5.

2.4. IN-SITU CALIFORNIA BEARING RATIO (CBR)

In-situ CBR tests were undertaken at selected locations using a TRL probe. Tests were undertaken at depths of between 0.3 m and 1.0 m below ground level in order to intersect the likely pavement sub formation level.

The results are presented in Table 3.9 and test certificates are included within Appendix VIII.

2.5. PERMEABILITY TESTS

Six soakaway tests were undertaken (SA101–SA106) in order to assess the likely permeability of the underlying strata to determine the potential suitability for soakaway drainage within the proposed development.

The results are presented in Table 3.7 and the test certificates are included within Appendix IX.

2.6. LABORATORY ANALYSIS

Selected soil samples were submitted for a range of chemical analysis comprising:

- ✳ Metals;
- ✳ pH, total sulphate, water-soluble sulphate (2:1 extract);
- ✳ Sulphide;
- ✳ Cyanide;
- ✳ Phenols;
- ✳ Total and speciated polycyclic aromatic hydrocarbons (PAHs);
- ✳ Semi Volatile Organic Compounds (SVOC);
- ✳ Asbestos identification and quantification; and,
- ✳ Speciated and banded total petroleum hydrocarbon (TPH).

I2 Analytical undertook the analytical work and the testing results are included in Appendix VI and discussed in Section 4.

Selected samples were submitted to PSL Laboratory where the following geotechnical tests were undertaken:

- ✳ Atterberg limits determinations;
- ✳ Moisture content;
- ✳ Particle Size Density tests;
- ✳ 2.5kg Compaction Tests;
- ✳ One Dimensional Consolidation Test;



-  Multistage triaxial test; and,
-  Single-stage triaxial tests.

Laboratory analysis sheets are included in Appendix X and are summarised in Section 3.



3. GROUND AND GROUNDWATER CONDITIONS

3.1. SUMMARY OF GROUND CONDITIONS

The ground investigation generally confirms the published geology and identifies the strata set out in Table 3.1.

TABLE 3.1 SUMMARY OF STRATA

HOLE	DEPTH TO STRATUM (m bgl)						
	TOPSOIL	MADE GROUND	FIRM TO STIFF CLAY	VERY STIFF CLAY	SAND	VERY SOFT TO SOFT CLAY	BED ROCK
TP101	0.00–0.40	–	0.40–0.80	–	–	–	–
TP102	0.00–0.30	–	0.30–2.10	–	–	–	–
TP103	0.00–0.30	–	0.30–2.30	–	–	–	–
TP104	0.00–0.40	–	0.40–1.80	–	–	–	–
TP105	0.00–0.30	–	0.30–1.80	–	–	–	–
TP106	0.00–0.30	–	0.30–1.70	–	–	–	–
TP107	0.00–0.30	–	0.30–1.90	–	–	–	–
TP108	0.00–0.40	–	0.40–1.80	–	–	–	–
TP109	0.00–0.60	–	0.60–2.00	–	–	–	–
TP110	0.00–0.30	–	0.30–2.00	–	–	–	–
TP111	0.00–0.40	–	0.40–2.10	–	–	–	–
TP112	0.00–0.30	–	0.30–1.90	–	–	–	–
TP113	0.00–0.40	–	0.40–2.20	–	–	–	–
TP114	0.00–0.30	–	0.30–2.20	–	–	–	–
TP115	0.00–0.30	–	0.30–2.10	–	–	–	–
TP116	0.00–0.40	–	0.40–2.20	–	–	–	–
TP117	0.00–0.40	–	0.30–2.10	–	–	–	–
TP118	0.00–0.30	–	0.30–2.10	–	–	–	–
TP119	0.00–0.30	–	0.30–2.40	–	–	–	–
TP120	0.00–0.30	–	0.30–2.00	–	–	–	–
TP121	0.00–0.40	–	0.40–2.40	–	–	–	–
TP122	0.00–0.30	–	0.30–2.40	–	–	–	–
TP123	0.00–0.40	–	0.40–2.20	–	–	–	–
TP124	–	0.00–0.70	0.70–2.30	–	–	–	–
TP125	0.00–0.30	–	0.30–2.20	–	–	–	–
TP126	0.00–0.30	–	0.30–2.20	–	–	–	–
TP127	0.00–0.30	–	0.60–2.10	–	–	–	–
TP128	0.00–0.60	–	0.70–2.20	–	–	–	–
TP129	0.00–0.30	–	0.40–0.80	–	–	–	–
TP130	0.00–0.20	–	0.20–2.30	–	–	–	–
TP131	0.00–0.20	–	0.20–2.30	–	–	–	–



HOLE	DEPTH TO STRATUM (m bgl)						
	TOPSOIL	MADE GROUND	FIRM TO STIFF CLAY	VERY STIFF CLAY	SAND	VERY SOFT TO SOFT CLAY	BED ROCK
TP132	0.00–0.30	–	0.30–2.50	–	–	–	–
TP133	–	0.00–1.80	1.80–2.40	–	–	–	–
TP134	0.00–0.20	–	0.20–2.40	–	–	–	–
TP135	0.00–0.20	–	0.20–1.70	–	–	–	–
TP136	0.00–0.30	–	0.30–2.00	–	–	–	–
TP137	0.00–0.70	–	0.70–2.80	–	–	–	–
TP138	0.00–0.20	–	–	–	–	–	–
TP139	–	0.00–0.90 full depth not proven	–	–	–	–	–
TP140	0.00–0.30	–	0.30–2.00	–	–	–	–
TP141	–	0.00–0.90 full depth not proven	–	–	–	–	–
TP142	0.00–0.30	–	0.30–2.00	–	–	–	–
TP143	–	0.00–0.80 full depth not proven	–	–	–	–	–
TP144	0.00–0.30	–	0.30–2.00	–	–	–	–
TP145	–	0.00–1.00 full depth not proven	–	–	–	–	–
WS101	0.00–0.50	–	0.50–2.00	–	–	–	2.00–2.45
WS102	–	0.00–1.80	–	1.80–2.30	–	–	–
WS103	0.00–0.70	–	0.70–4.61	–	–	–	–
WS104	0.00–0.30	–	0.40–3.40	3.00–3.40	0.30–0.40	–	3.40–3.80
WS105	0.00–0.40	–	0.40–2.00	2.00–3.30	–	–	–
WS106	0.00–0.30	–	0.40–2.00	2.00–4.40	–	–	–
WS107	0.00–0.30	–	0.30–4.00	4.00–4.45	–	–	–
WS108	0.00–0.40	–	–	1.50–2.50	–	0.40 – 1.50	2.50–2.70
WS109	0.00–0.30	–	0.30–2.00	2.00–4.00	–	–	–
WS110	0.00–0.40	–	0.40–2.00	2.00–5.45	–	–	–
WS111	0.00–0.30	–	0.30–3.00	3.00–5.45	–	–	–
WS112	0.00–0.30	–	0.30–2.00	2.00–5.45	–	–	–
WS113	0.00–0.30	–	0.30–0.40 0.60–3.00	3.00–5.45	–	0.40–0.60	–
WS114	–	0.00–1.50	1.50–5.45	–	–	–	–
WS115	0.00–0.35	–	0.35–3.00	3.00–5.45	–	–	–
WS116	0.00–0.30	–	0.30–2.00	2.00–5.45	–	–	–
WS117	–	0.00–0.80	2.00–3.00	0.80–2.00 3.00–5.45	–	–	–
WS118	0.00–0.30	–	0.30–1.00	1.00–3.50	–	–	–



HOLE	DEPTH TO STRATUM (m bgl)						
	TOPSOIL	MADE GROUND	FIRM TO STIFF CLAY	VERY STIFF CLAY	SAND	VERY SOFT TO SOFT CLAY	BED ROCK
WS119	–	0.00–0.70	0.70–2.00	2.00–5.45	–	–	–
WS120	–	0.00–0.40	0.40–2.00	2.00–5.45	–	–	–
WS121	0.00–0.50	–	0.50–2.00	2.00–5.45	–	–	–
WS122	0.00–0.30	–	0.30–2.00	2.00–5.45	–	–	–
WS123	–	0.00–0.50	0.50–2.00	2.00–5.45	–	–	–
WS124	0.00–0.40	–	0.40–2.00	2.00–5.45	–	–	–
WS125	0.00–0.50	–	0.50–4.00	4.00–5.45	–	–	–
WS126	0.00–0.40	–	0.40–2.00	2.00–5.45	–	–	–
WS127	0.00–0.40	–	0.40–3.00	3.00–5.45	–	–	–
WS128	0.00–0.35	–	0.35–3.00	3.00–4.00	–	–	–
WS129	0.00–0.30	–	0.30–3.00	3.00–5.45	–	–	–
WS130	0.00–0.30	–	0.30–3.00	3.00–3.40	–	–	–
WS131	–	0.00–0.80	0.80–3.00	3.00–5.45	–	–	–
WS132	0.00–0.40	–	0.40–2.00 4.00–5.00	2.00–4.00 5.00–5.45	–	–	–
WS133	0.00–0.40	–	0.40–2.00 4.00–5.00	2.00–4.00 5.00–5.45	–	–	–
WS134	0.00–0.30	–	0.30–3.00	3.00–5.45	–	–	–
WS135	0.00–0.30	–	0.40–3.00	3.00–3.10	–	–	–
WS136	–	0.00–1.00	–	–	1.00–3.40	–	–
CP101	0.00–0.50	–	1.80–5.30	–	–	0.50–1.80	5.30–5.95
CP102	0.00–0.60	–	0.60–12.00	13.10–16.95	12.00–13.10	–	–
HP101		0.00–0.40					

3.2. MADE GROUND

Made Ground deposits were encountered within thirteen exploratory hole locations to depths of between 0.30 m and 1.80 m bgl although, in general, Made Ground was encountered to a depth of less than 0.80 m bgl.

Made Ground deposits comprise a reworked topsoil of dark brown sandy clay with gravel of mudstone and sandstone with selected areas containing fragments of occasional brick and concrete. The majority of locations were underlain by a black sandy mudstone gravel (land drain bedding).

A hand excavated pit was conducted to investigate existing surface water drain. The top of the drain was located 0.40 m bgl. The material above comprised of a reworked topsoil underlain by brown mottled grey slightly gravelly sandy clay.

A Depth of Made Ground Plan is presented as drawing no. 13-759-007 in Appendix III.



3.3. TOPSOIL

Topsoil was encountered within the majority of location between ground level and 0.70 m bgl, comprising dark brown slightly gravelly sandy clay with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.

A Depth of Topsoil Plan is presented as drawing no. 13-759-007 in Appendix III.

3.4. DRIFT DEPOSITS

Drift deposits were encountered within the majority of exploratory locations with the exception of four locations where the full depth of Made Ground could not be proven due to fast water ingress from land drains.

Drift generally comprises firm brown mottled grey slightly gravelly sandy CLAY with gravel of mudstone, underlain by a stiff brown slightly gravelly sandy CLAY where gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Some locations encountered occasional cobbles of subrounded to rounded mudstone and sandstone.

Low strength clays were encountered within 8 locations across the whole site. Seven locations were between a depth of 1.00 m and 1.65 m bgl (CP101, CP102, WS101, WS105, WS121, WS128 and WS132) with WS114 experiencing soft clays between 2.00 m and 3.45 m bgl.

Medium dense SAND was encountered within two locations WS104 (0.30 m–0.40 m bgl) and WS136 (1.00 m–3.40 m bgl)

Gravel with sand bands was encountered between 12.00 m and 13.10 m bgl within CP102.

3.5. SOLID GEOLOGY

Weathered bedrock comprising reddish brown SANDSTONE was encountered within the east of the site between 2.00 m within WS101 and 5.30 m bgl within CP101.

Bedrock was not encountered in the central or western areas of site, with one location (CP102) advancing to 16.95 m bgl in Clay drift deposits, indicating the bedrock is significantly deeper within these areas.

3.6. GROUNDWATER

Groundwater strikes were encountered as seepages. The depth of the seepages are shown on the exploratory hole records in Appendix V and are summarised in Table 3.2.

TABLE 3.2 SUMMARY GROUNDWATER STRIKES

LOCATION	DEPTH TO STRIKE (m)	NOTES
WS103	2	N/A
WS105	2.2	N/A
WS108	1	N/A
WS122	3.8	N/A
WS126	4	N/A
WS131	3.5	N/A
TP132	0.4	Steady seepage
TP139	0.9	Inflow from land drain



LOCATION	DEPTH TO STRIKE (m)	NOTES
TP141	0.9	Inflow from land drain
TP143	0.8	Inflow from land drain
CP102	11.8	N/A
CP102	12	N/A

Monitoring was undertaken using an electronic dip meter and interface probe to record the depth to groundwater and the thickness of any free-phase hydrocarbon product if present. These results are summarised in Table 3.12.

3.7. VISUAL AND OLFACTORY EVIDENCE OF CONTAMINATION

Visual and olfactory evidence of potential contamination has not been identified within exploratory hole locations on site; however, remains of a bonfire and burnt animal carcase were observed in the west of the site. The location of this is indicated on Drawing 13-759-004 in Appendix III.

There is a potential for animal burial to present elsewhere on-site; however, no evidence of this was identified during intrusive investigations.

3.8. SOIL CONSISTENCY

Undrained shear strength values were measured using both field hand shear vane tests and laboratory undrained triaxial tests. Results of the tests are presented in Table 3.3 and Table 3.4, which indicate the clay soils to vary between stiff and very stiff. Strength test data is generally consistent with the field descriptions of the aforementioned soils.

TABLE 3.3 SUMMARY OF HAND SHEAR VANE TESTS

LOCATION	DEPTH	SHEAR STRENGTH (kPA)	CALCULATED ALLOWABLE BEARING PRESSURE (kN/m ²)
TP102	1.50	74	170
TP110	1.00	140	322
TP110	1.50	64	147
TP112	1.20	83	191
TP115	1.00	64	147
TP115	1.50	70	161
TP116	1.00	45	104
TP117	1.20	64	147
TP122	1.20	83	191
TP124	1.50	64	147
TP124	2.00	70	161
TP125	1.20	108	248
TP125	1.60	83	191
TP126	1.00	95	219
TP126	1.50	83	191



LOCATION	DEPTH	SHEAR STRENGTH (kPA)	CALCULATED ALLOWABLE BEARING PRESSURE (kN/m ²)
TP126	1.80	76	175
TP128	1.20	70	161
TP128	1.50	76	175
TP129	0.40	105	242
TP129	1.00	101	232
TP133	2.00	64	147
TP129	0.40	105	242
TP129	2.00	101	232
TP133	2.00	64	147
TP142	1.20	103	237

Soils were noted to be soft at shallow depth (0.30 m bgl) in TP133.

TABLE 3.4 SUMMARY OF UNDRAINED SHEAR STRENGTH TEST RESULTS

LOCATION	SAMPLE DEPTH (m)	LAB DESCRIPTION	UNDRAINED SHEAR STRENGTH (kN/m ²)	CONSISTENCY
WS108	0.50–1.00	Stiff brown slightly gravelly sandy CLAY.	79	Stiff
WS125	2.50–3.00	Firm brown slightly gravelly sandy CLAY.	47	Firm
WS133	2.50–3.00	Very stiff brown slightly gravelly very sandy CLAY.	225	Very stiff
CP101	2.00–2.50	Soft brown slightly gravelly very sandy CLAY.	41	Soft

Results of the standard penetration tests, including undrained shear strengths derived from SPTs are included in Table 3.5.

3.9. SIDE STABILITY AND EASE OF EXCAVATION

The sides of the exploratory trial pit excavations appeared to be generally stable during excavation.

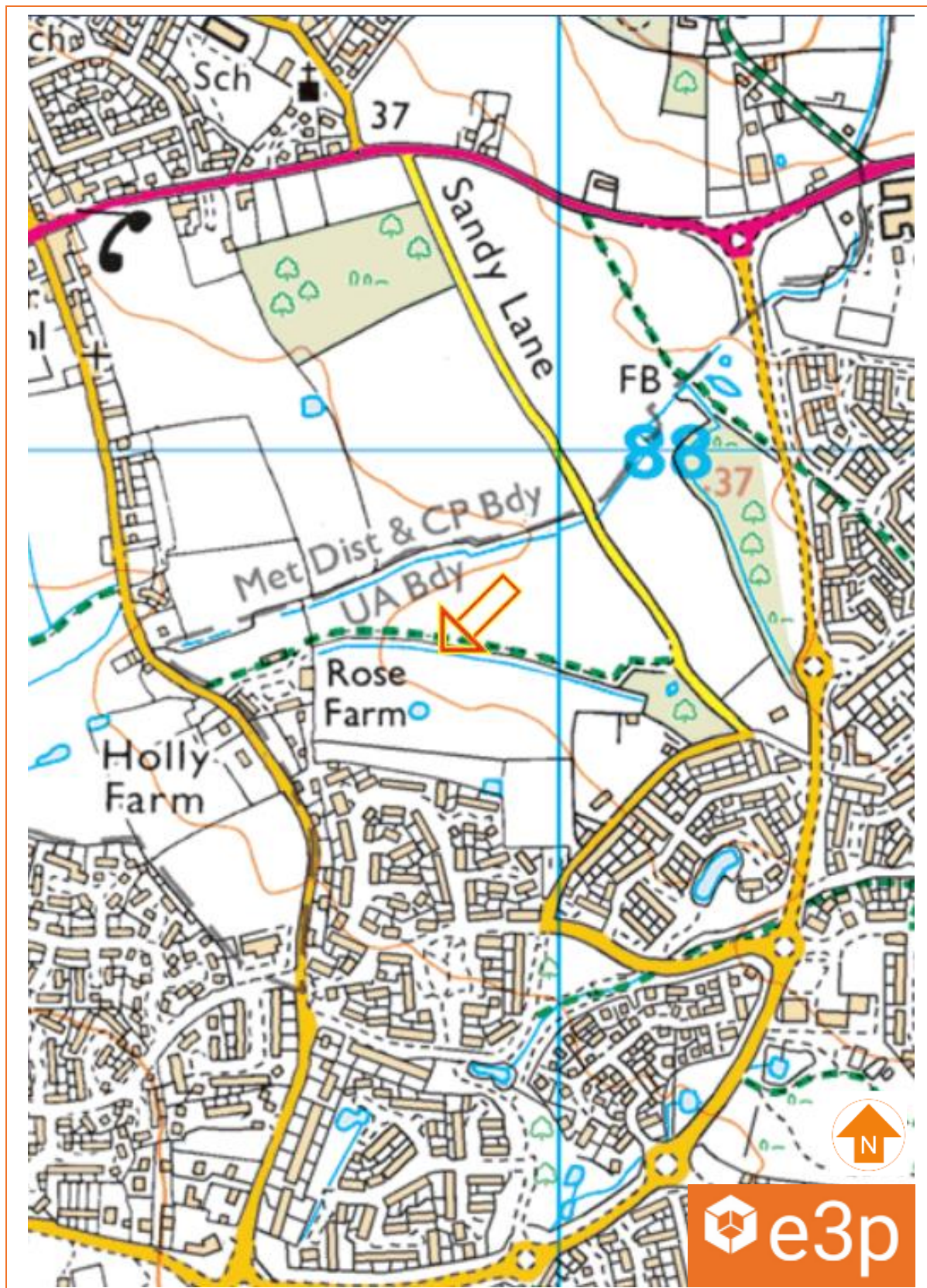
One trial pit (TP132) was observed to be unstable where the natural subsoils were saturated.



APPENDIX III

DRAWINGS

DRAWING 13-759-001 – SITE LOCATION PLAN





Notes:				
P1	REVA	25.09.2020	HM	VW
Phase	Issue	Date	Drawn	Checked

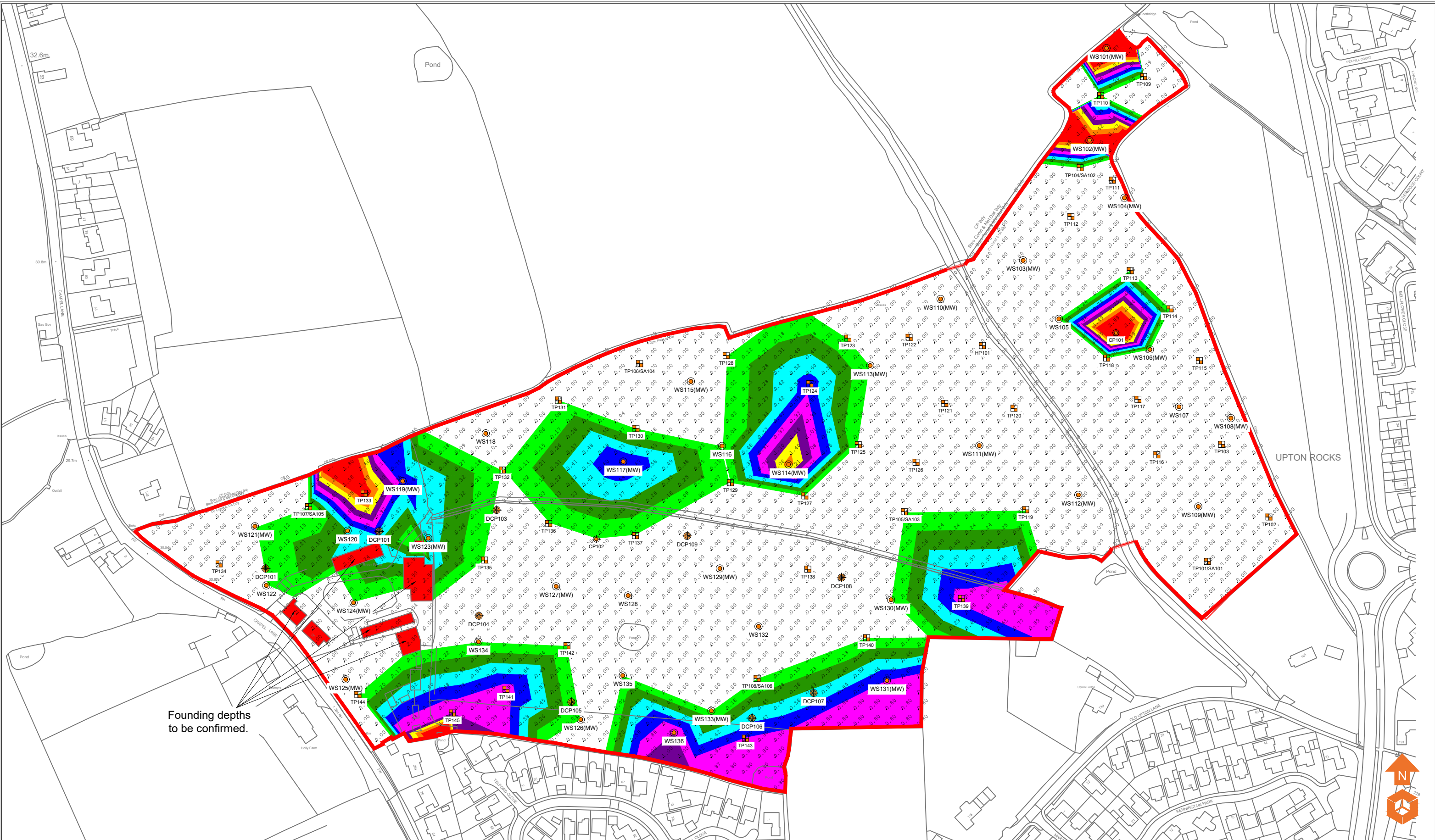
Client:	TWNW
Job Title:	Chapel Lane

Job No:	13-759	Date:	25.09.2020
Drawing No:	002	Scale:	NTS
Drawing Title:		Proposed Development Plan	



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Location Symbols

- Approximate Window Sample Probehole Location
- Approximate Window Sample Probehole Location with Install
- Approximate Trial Pit Location
- Approximate Soakaway Test Location
- Approximate Cable Percussive Borehole Location
- Approximate Hand Dug Pit Location

Made Ground Depth (m)

- Depth of Made Ground 0.00 - 0.19m
- Depth of Made Ground 0.20 - 0.39m
- Depth of Made Ground 0.40 - 0.59m
- Depth of Made Ground 0.60 - 0.79m
- Depth of Made Ground 0.80 - 0.99m
- Depth of Made Ground 1.00 - 1.19m
- Depth of Made Ground 1.20 - 1.39m
- Depth of Made Ground 1.40 - 1.59m
- Depth of Made Ground >1.60m

Notes:

P1	REVA	15.12.2020	LM	VW
Phase	Issue	Date	Drawn	Checked

Client:

TWNW

Job Title:

Chapel Lane

Job No:

13-759

Date:

15.12.2020

Drawing No:

006

Scale:

NTS

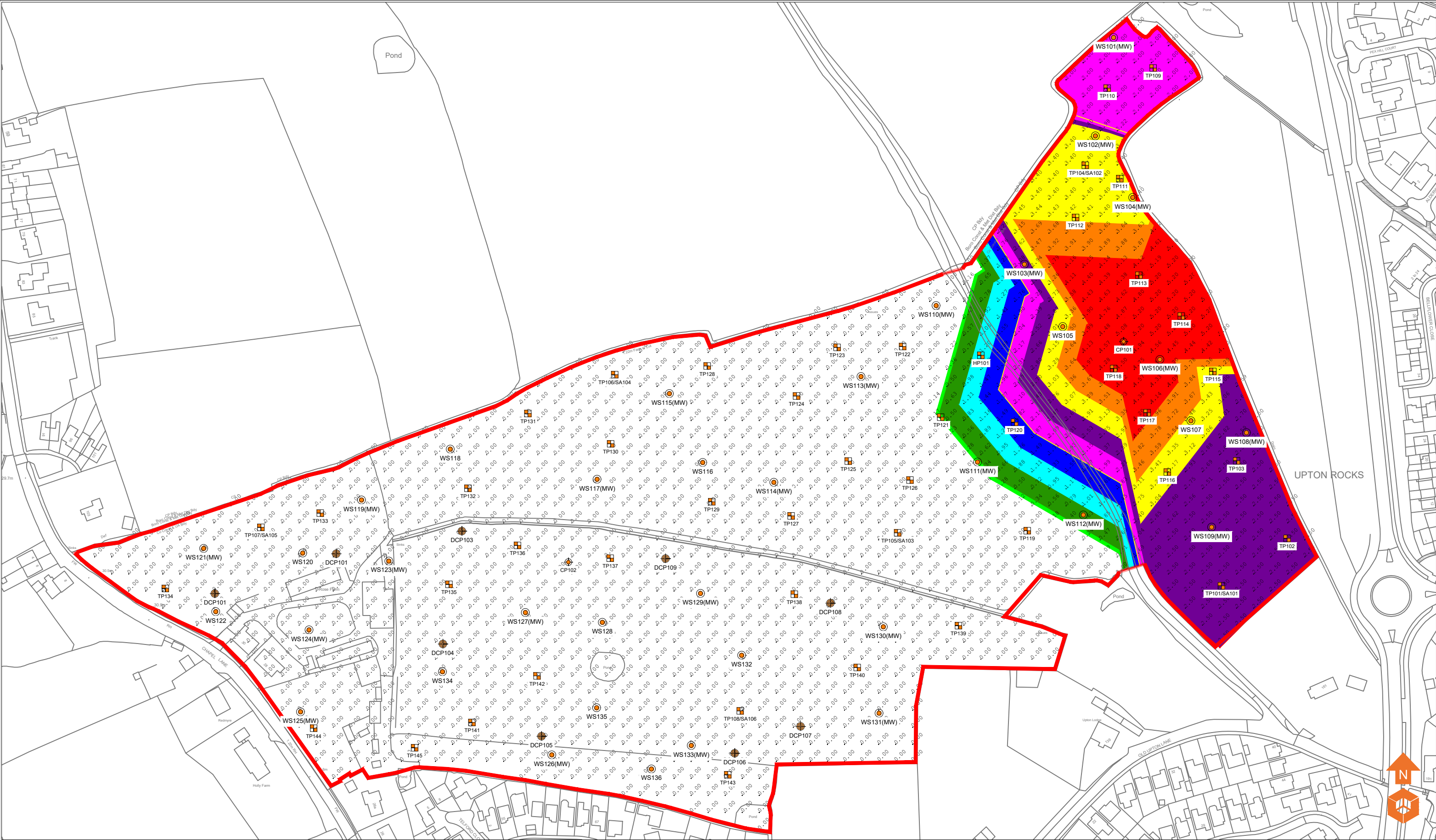
Drawing Title:

Depth of Made Ground Plan

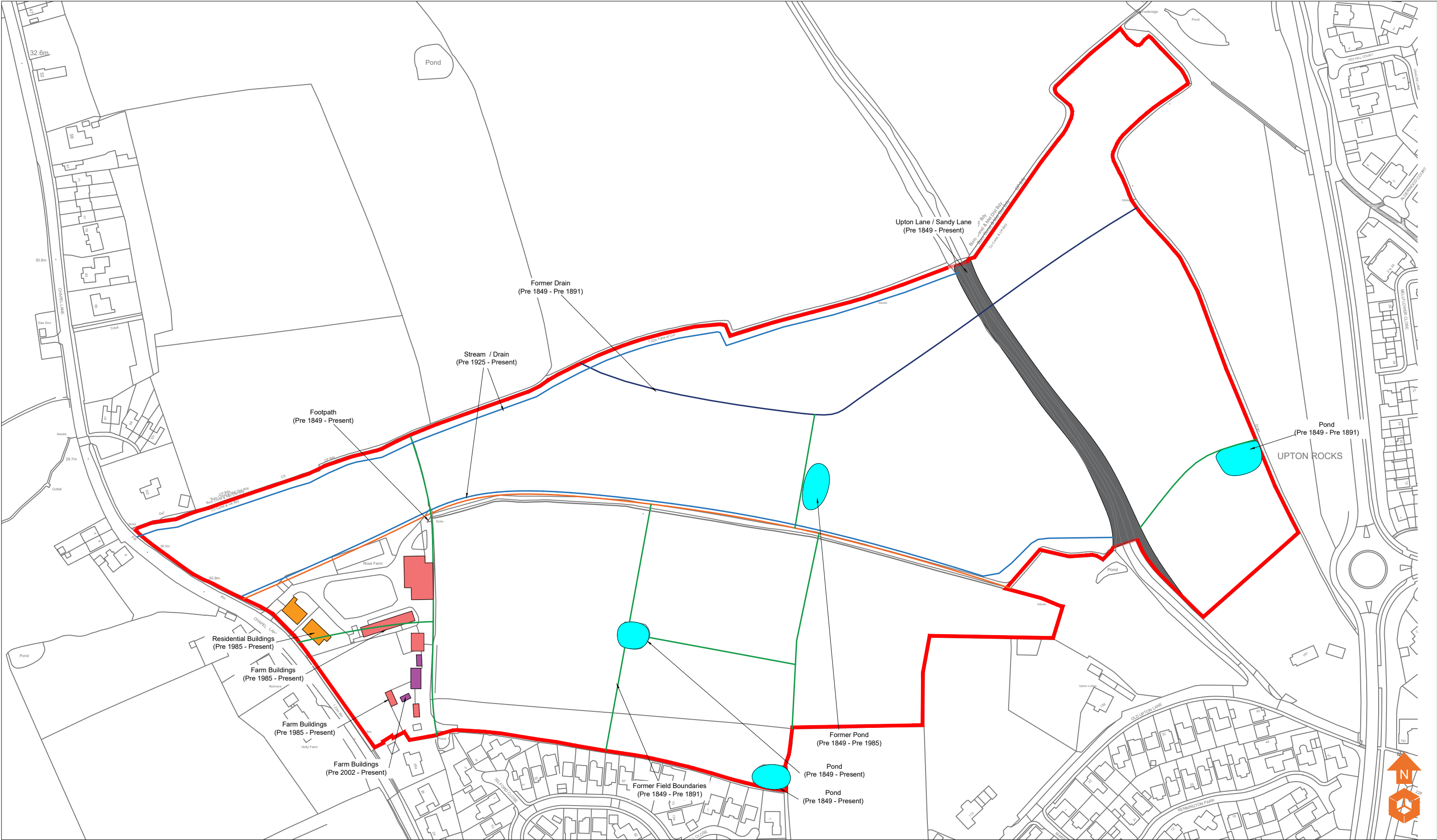


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Website: www.e3p.co.uk

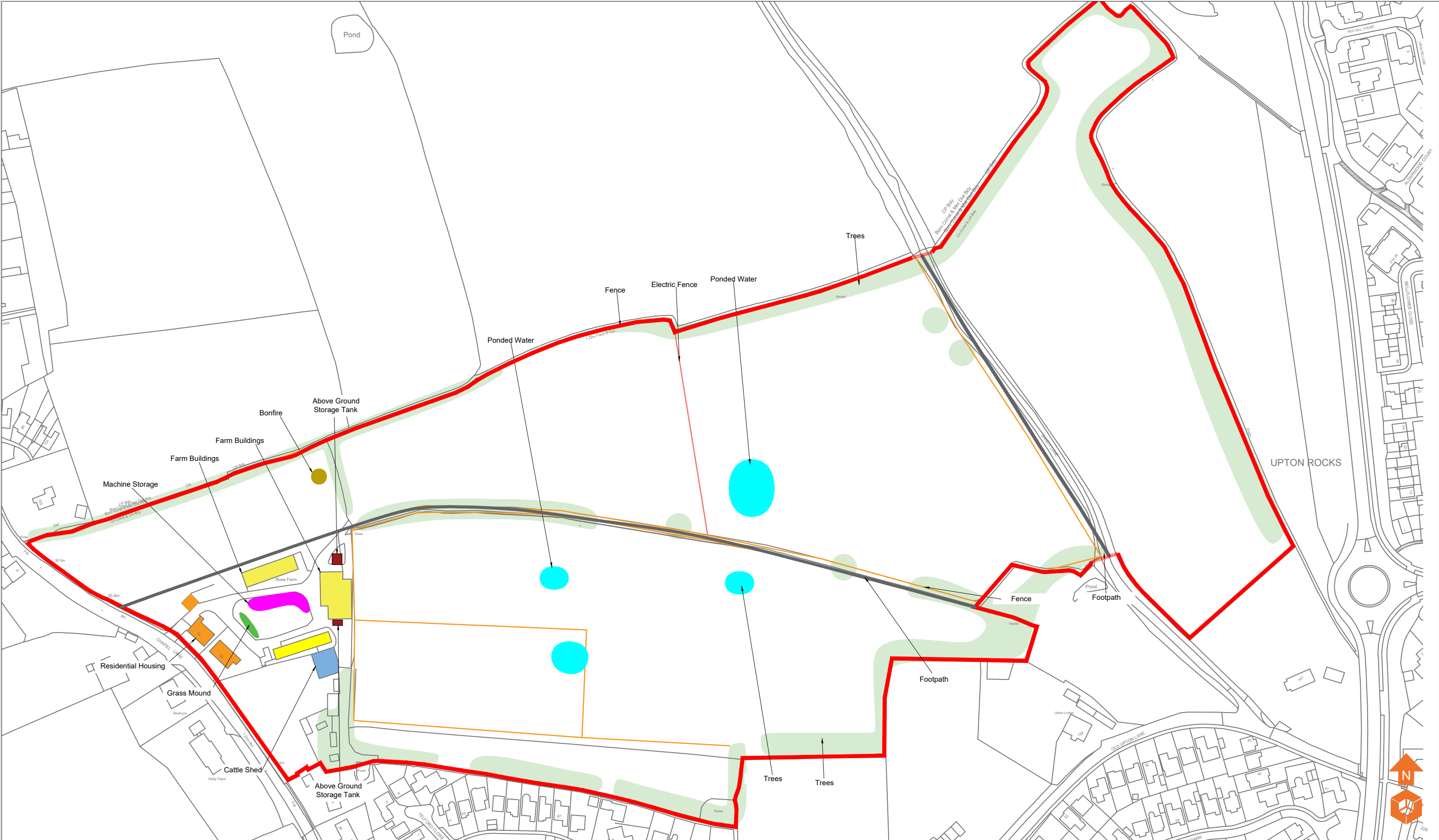
The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.



Location Symbols		Bedrock Depth (m)		Notes:		Client:		Job No:		Date:		Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk	
	Approximate Window Sample Probehole Location		Depth to Bedrock 0.00 - 0.49m			TWNW		13-759		03.11.2020			
	Approximate Window Sample Probehole Location with Install		Depth to Bedrock 0.50 - 0.99m					Drawing No:		Scale:			
	Approximate Trial Pit Location		Depth to Bedrock 1.00 - 1.49m			Chapel Lane		012		NTS		The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.	
	Approximate Soakaway Test Location		Depth to Bedrock 1.50 - 1.99m					Job Title:		Drawing Title:			
	Approximate Cable Percussive Borehole Location		Depth to Bedrock 2.00 - 2.49m	P1		REVB		03.11.2020		LM		VW	
	Approximate Hand Dug Pit Location		Depth to Bedrock 2.50 - 2.99m	P1		REVA		29.09.2020		HM		VW	
			Depth to Bedrock 3.00 - 3.49m	Phase		Issue		Date		Drawn		Checked	
			Depth to Bedrock 3.50 - 3.99m										
			Depth to Bedrock > 4.00m										



Historical Features Farm Buildings (Pre 1985 - Present) Farm Buildings (Pre 2002 - Present) Residential Buildings (Pre 1985 - Present) Field Boundaries (Pre 1849 - 1891) Former Ponds (Pre 1849 - Present) Upton Lane / Sandy Lane (Pre 1985 - Present) Stream / Drain (Pre 1925 - Present) Footpath (Pre 1849 - Present) Former Field Boundaries (Pre 1849 - 1891) Former Drain (Pre 1849 - 1891)	Notes:					Client: TWNW	Job No: 13-759	Date: 25.09.2020	e3p Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk		
	P1 REVA 25.09.2020 HM VW					Job Title: Chapel Lane	Drawing No: 003		Scale: NTS	The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.	
	Phase Issue Date Drawn Checked					Drawing Title: Historical Features Plan					



Site Features	
	Farm Buildings
	Residential Housing
	Machine Storage
	Cattle Shed
	Above Ground Storage Tank
	Bonfire
	Trees
	Ponded Water
	Grass Mound
	Electric Fence
	Fence
	Footpath

Notes:				
P1	REVB	03.11.2020	LM	VW
P1	REVA	25.09.2020	HM	VW
Phase	Issue	Date	Drawn	Checked

Client:
TWNW
Job Title:
Chapel Lane

Job No:
13-759
Drawing No:
004
Date:
03.11.2020
Scale:
NTS
Drawing Title:
Site Features Plan



Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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APPENDIX IV

PHOTOGRAPHS

PLATE 1 UNNAMED BROOK ADJACENT TO NORTHERN BOUNDARY



PLATE 2 FARM BUILDINGS AND EQUIPMENT



PLATE 3 ABOVE GROUND SOTRAGE TANK ADJACENT TO FARM BUILDING



PLATE 4 WATERLOGGED FIELD



PLATE 5 POOR DRAINAGE WITHIN CATTLE GRAZING FIELD (WEST)



PLATE 6 ACCESS TRACK WITH MACHINERY STORAGE IN THE BACKGROUND



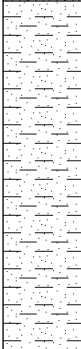
PLATE 7 HP101 LOCATING SURFACE WATER PIPE WITHIN CENTRAL FIELD



APPENDIX V

E3P EXPLORATORY HOLE LOGS

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350199.00 - 387739.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 1.80		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.00	ES		1.80			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
							End of Pit at 1.80m	2
								3
								4

Trial Pit Photographs



Trial Pit 101/ Soakaway 101

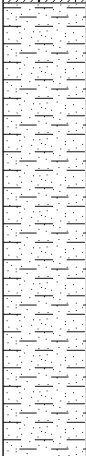


Trial Pit 101/ Soakaway 101 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350236.00 - 387771.00 Level:	Date 24/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 2.10	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.80	B					Firm medium strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
	1.50	HVP	74	2.10			End of Pit at 2.10m	2
								3
								4

Trial Pit Photographs



Trial Pit 102

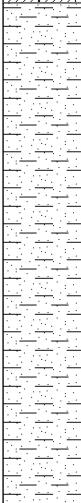


Trial Pit 102 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350212.00 - 387810.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.30		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.50	ES		2.30			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1 2 3 4
							End of Pit at 2.30m	

Trial Pit Photographs



Trial Pit 103

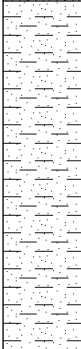


Trial Pit 103 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350121.00 - 387985.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 1.80		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES					Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.50	ES		0.40			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
				1.80			End of Pit at 1.80m	2
								3
								4

Trial Pit Photographs



Trial Pit 104/ Soakaway 102



Trial Pit 104/ Soakaway 102 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350006.00 - 387775.00 Level:	Date 24/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 1.80	Scale 1:30 Logged V. Wilkinson
Client: Taylor Wimpey North West			

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.60	ES		1.80			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
							End of Pit at 1.80m	2
								3
								4

Trial Pit Photographs



Trial Pit 105/ Soakaway 103



Trial Pit 105/ Soakaway 103 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349842.00 - 387867.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 1.70		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.00	ES					Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
	1.50	B		1.70			End of Pit at 1.70m	2
								3
								4

Trial Pit Photographs



Trial Pit 106/ Soakaway 104



Trial Pit 106/ Soakaway 104 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349632.00 - 387784.00
Level:

Date
24/08/2020

Location: Widnes

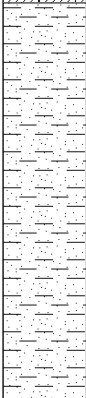
Dimensions (m): 2.50

Scale
1:30

Client: Taylor Wimpey North West

Depth
1.90

Logged
V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.80	B		1.90			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
							End of Pit at 1.90m	2
								3
								4

Trial Pit Photographs



Trial Pit 107/ Soakaway 105

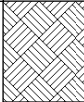


Trial Pit 107/ Soakaway 105 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349915.00 - 387664.00 Level:	Date 24/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 1.80	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	1
	0.60	ES (L)					Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	
	1.20	B						
				1.80			End of Pit at 1.80m	2
								3
								4

Trial Pit Photographs



Trial Pit 108/ Soakaway 106

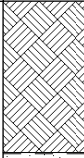
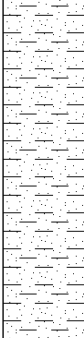


Trial Pit 108/ Soakaway 106 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350169.00 - 388046.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.00		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES					Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.80	ES		0.60			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
				2.00			End of Pit at 2.00m	2
								3
								4

Trial Pit Photographs



Trial Pit 109

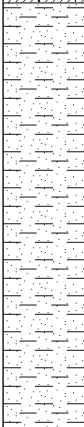


Trial Pit 109 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350133.00 - 388035.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.00		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.00	HVP	140				Stiff high strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone. Becoming firm medium strength at 1.50 m bgl.	1
	1.50	HVP	64					
				2.00			End of Pit at 2.00m	2
								3
								4

Trial Pit Photographs



Trial Pit 110

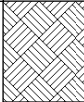


Trial Pit 110 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350145.00 - 387975.00 Level:	Date 24/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 2.10	Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				2.10			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
							End of Pit at 2.10m	2
								3
								4

Trial Pit Photographs



Trial Pit 111



Trial Pit 111 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350110.00 - 387955.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 1.90		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.20	HVP	83	1.90			Stiff high strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
							End of Pit at 1.90m	2
								3
								4

Trial Pit Photographs



Trial Pit 112

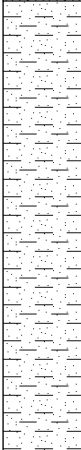


Trial Pit 112 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350148.00 - 387926.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.20		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.00	ES		2.20			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1 2 3 4
							End of Pit at 2.20m	

Trial Pit Photographs



Trial Pit 113

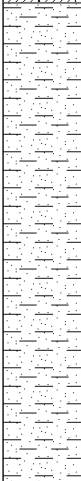


Trial Pit 113 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350178.00 - 387896.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.20		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.50	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
							Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1 2 3 4
				2.20			End of Pit at 2.20m	

Trial Pit Photographs



Trial Pit 114



Trial Pit 114 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350193.00 - 387868.00 Level:	Date 24/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 2.10	Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.00	HVP	64				Firm medium strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
	1.50	HVP	70					
				2.10			End of Pit at 2.10m	2
								3
								4

Trial Pit Photographs



Trial Pit 115

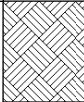


Trial Pit 115 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350164.00 - 387802.00 Level:	Date 24/08/2020
Location: Widnes		Dimensions (m): 2.50	Scale 1:30
Client: Taylor Wimpey North West		Depth 2.20	Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.00	HVP	45	2.20			Firm medium strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1 2 3 4
							End of Pit at 2.20m	

Trial Pit Photographs



Trial Pit 116

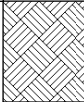
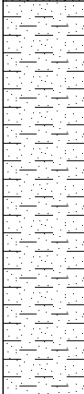


Trial Pit 116 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350146.00 - 387841.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.00		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.50	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.20	HVP	64				Firm medium strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
				2.00			End of Pit at 2.00m	2
								3
								4

Trial Pit Photographs



Trial Pit 117

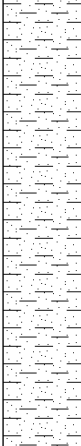


Trial Pit 117 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350132.00 - 387869.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.10		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				2.10			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1 2 3 4
							End of Pit at 2.10m	

Trial Pit Photographs



Trial pit 118

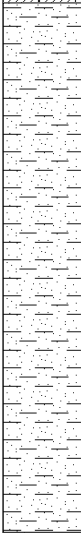


Trial Pit 118 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350080.00 - 387773.00 Level:	Date 24/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.40		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.50	ES					Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1 2
				2.40			End of Pit at 2.40m	3 4

Trial Pit Photographs



Trial Pit 119



Trial Pit 119 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350081.00 - 387831.00 Level:	Date 25/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 2.00	Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				2.00			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
							End of Pit at 2.00m	2
								3
								4

Trial Pit Photographs



Trial Pit 120

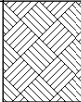


Trial Pit 120 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350030.00 - 387844.00 Level:	Date 25/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.40		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.60	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				2.40			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1 2 3 4
							End of Pit at 2.40m	

Trial Pit Photographs



Trial Pit 121

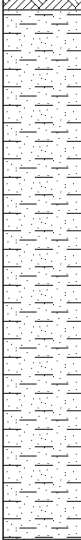


Trial Pit 121 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349999.00 - 387888.00 Level:	Date 25/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.40		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.20	HVP	83	2.40			Stiff high strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1 2 3 4
							End of Pit at 2.40m	

Trial Pit Photographs



Trial Pit 122



Trial Pit 122 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349957.00 - 387884.00 Level:	Date 25/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.20		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES					Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.50	B		0.40			Firm light brown slightly gravelly very sandy CLAY. Gravel is fine to medium sub-angular of mudstone and sandstone.	
				0.80			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
				2.20			End of Pit at 2.20m	2
								3
								4

Trial Pit Photographs



Trial Pit 123



Trial Pit 123 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349941.00 - 387847.00 Level:	Date 25/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.30		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES					MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.50	ES		0.50			MADE GROUND: Black sandy gravel. Gravel is fine sub-angular of mudstone, asphalt and concrete. (Red ceramic land drain pipe encountered at 0.55 m bgl)	
	1.00	ES		0.70			Firm medium strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
	1.50	HVP	64					
	2.00	HVP	70					2
				2.30			End of Pit at 2.30m	
								3
								4

Trial Pit Photographs



Trial Pit 124

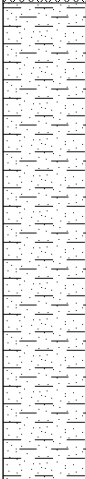


Trial Pit 124 Spoil

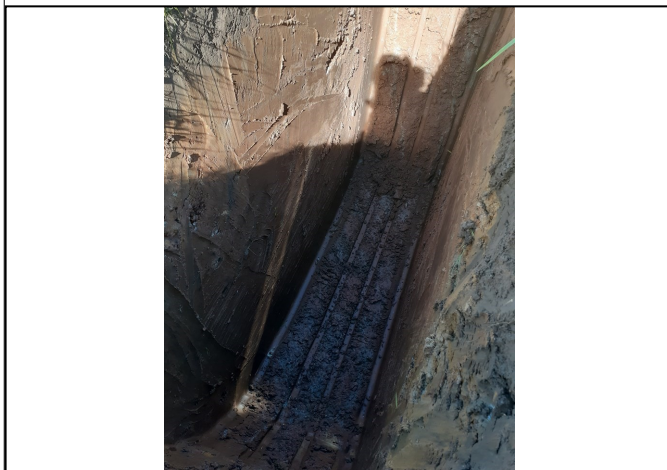
Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349976.00 - 387819.00 Level:	Date 25/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.20		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	1.20	HVP	108				Stiff medium strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
	1.60	HVP	83					2
				2.20			End of Pit at 2.20m	3
								4

Trial Pit Photographs



Trial Pit 125



Trial Pit 125 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350017.00 - 387800.00 Level:	Date 25/08/2020
Location: Widnes	Dimensions (m): 2.50 0.60		Scale 1:30
Client: Taylor Wimpey North West	Depth 2.20		Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
							Stiff high strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
	1.00	HVP	95					
	1.50	HVP	83					
	1.80	HVP	76					2
				2.20			End of Pit at 2.20m	3
								4

Trial Pit Photographs



Trial Pit 126

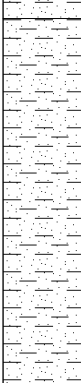


Trial Pit 126 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349952.00 - 387780.00 Level:	Date 25/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.10		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.80	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				0.60			Firm brown slightly gravelly very sandy CLAY. Gravel is fine to medium sub-angular of mudstone and sandstone.	
				2.10			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
							End of Pit at 2.10m	2
								3
								4

Trial Pit Photographs



Trial Pit 127

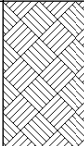


Trial Pit 127 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349886.00 - 387885.00 Level:	Date 25/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.20		Scale 1:30
Client: Taylor Wimpey North West			Logged J. Oliver

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES					Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				0.60 0.70			Light brown slightly gravelly very sandy CLAY. Gravel is fine to medium sub-angular of mudstone and sandstone.	
	0.90	ES					Firm medium strength brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone. Becoming stiff high strength 1.50 m bgl.	1
	1.20	HVP	70					
	1.50	HVP	76					
				2.20				2
							End of Pit at 2.20m	3
								4

Trial Pit Photographs



Trial Pit 128



Trial Pit 128 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349900.00 - 387792.00 Level:	Date 26/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.30		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.40 0.40	ES HVP	105	0.50			Stiff high strength light brown slightly gravelly very sandy CLAY. Gravel is fine to medium sub-angular of mudstone and sandstone. Stiff high strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
	2.00	HVP	101	2.30			End of Pit at 2.30m	2
								3
								4

Trial Pit Photographs



Trial Pit 129

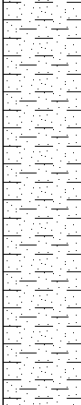


Trial Pit 129 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349835.00 - 387823.00 Level:	Date 26/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.20		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.40	ES		0.50			Light brown slightly gravelly very sandy CLAY. Gravel is fine to medium sub-angular of mudstone and sandstone.	
				2.20			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1 2 3 4
							End of Pit at 2.20m	

Trial Pit Photographs



Trial Pit 130

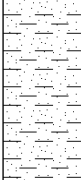
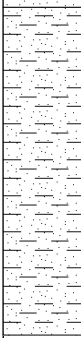


Trial Pit 130 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349788.00 - 387839.00 Level:	Date 26/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 2.30	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				1.00			Firm grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
	2.00	ES		2.30			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	2
							End of Pit at 2.30m	3
								4

Trial Pit Photographs



Trial Pit 131

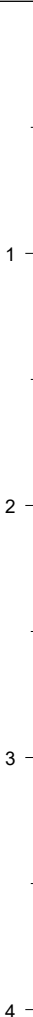
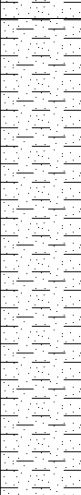


Trial Pit 131 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349751.00 - 387799.00 Level:	Date 26/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 2.50	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
 0.40	0.50	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				0.60			Firm grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
				2.50			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	
							End of Pit at 2.50m	

Trial Pit Photographs



Trial Pit 132



Trial Pit 132 Spoil

Remarks: 1. Complete. 2. Hand shear vane could not be obtained due to brittle CLAY. 3. Steady water seepage at 0.40 m bgl.

Stability: Unstable side walls from ground level to 2.50m bgl.

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349663.00 - 387795.00 Level:	Date 26/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.40		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05	ES		0.10			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of brick, mudstone and sandstone.	
				0.40			MADE GROUND: Soft grey mottled brown slightly gravelly sandy clay. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
	1.00	ES					MADE GROUND: Grey mottled brown slightly gravelly slightly silty sandy clay. Gravel is fine to coarse sub-angular to sub-rounded of timber, mudstone, coal and sandstone.	1
	2.00	HVP	64	1.80			Firm medium strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	2
				2.40			End of Pit at 2.40m	3
								4

Trial Pit Photographs



Trial Pit 133

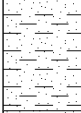


Trial Pit 133 Spoil

Remarks: 1. Complete .

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349586.00 - 387749.00 Level:	Date 26/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 2.40	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				0.70			Firm grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
	1.00	ES					Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
				2.40			End of Pit at 2.40m	2
								3
								4

Trial Pit Photographs



Trial Pit 134



Trial Pit 134 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349744.00 - 387749.00 Level:	Date 26/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 1.70	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
	0.30	ES		0.40			Firm grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
				1.70			Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
							End of Pit at 1.70m	2
								3
								4

Trial Pit Photographs



Trial Pit 135



Trial Pit 135 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349770.00 - 387770.00 Level:	Date 26/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.00		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				0.50			Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
							Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
				2.00			End of Pit at 2.00m	2
								3
								4

Trial Pit Photographs



Trial Pit 136



Trial Pit 136 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349835.00 - 387764.00 Level:	Date 26/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 2.80	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES					Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				0.70				
	1.10 1.10	B ES		1.20			Firm grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
							Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	2
				2.80			End of Pit at 2.80m	3
								4

Trial Pit Photographs



Trial Pit 137



Trial Pit 137 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349951.00 - 387741.00 Level:	Date 26/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 2.00	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				0.40			Firm grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
							Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
				2.00			End of Pit at 2.00m	2
								3
								4

Trial Pit Photographs



Trial Pit 138



Trial Pit 138 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 350040.00 - 387722.00 Level:	Date 26/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 0.90	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
 0.90	0.40	ES		0.30			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of brick, mudstone and sandstone.
				0.75			MADE GROUND: Grey mottled brown slightly gravelly sandy clay. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.
				0.90			MADE GROUND: Black slightly clayey sandy gravel. Gravel is fine to medium angular to sub-angular of mudstone. (Orange ceramic land drain encountered at 0.90m bgl)
							End of Pit at 0.90m

Trial Pit Photographs



Trial Pit 139



Trial Pit 139 Spoil

Remarks: 1. Incomplete. 2. Terminated due to land drain water inflow at 0.90 m bgl.

Stability: Stable

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349970.00 - 387699.00
Level:

Date
26/08/2020

Location: Widnes

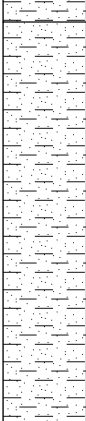
Dimensions (m): 2.50

Scale
1:30

Client: Taylor Wimpey North West

Depth
2.00

Logged
V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30 0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
							Firm grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Stiff grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
				2.00			End of Pit at 2.00m	2
								3
								4

Trial Pit Photographs



Trial Pit 140



Trial Pit 140 Spoil

Remarks: 1. Complete 2. Hand shear vane could not be obtained due to brittle CLAY.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349764.00 - 387669.00 Level:	Date 26/08/2020
Location: Widnes		Dimensions (m): 2.50 Depth 0.90	Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
 0.90	0.10	ES		0.30			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of brick, mudstone and sandstone.
	0.50	ES		0.80			MADE GROUND: Grey mottled brown slightly gravelly sandy clay. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.
				0.90			MADE GROUND: Black slightly clayey sandy gravel. Gravel is fine to medium angular to sub-angular of mudstone. (Orange ceramic land drain encountered at 0.90m bgl)
							End of Pit at 0.90m

Trial Pit Photographs



Trial Pit 141

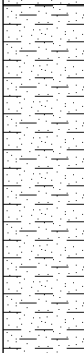


Trial Pit 141 Spoil

Remarks: 1. Incomplete. 2. Terminated due to land drain water inflow at 0.90 m bgl.

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349797.00 - 387694.00 Level:	Date 26/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 2.00		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
				0.60			Firm grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
	1.00	ES					Stiff high strength grey mottled brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Cobbles are sub-rounded to rounded of mudstone and sandstone.	1
	1.20	HVP	103					
				2.00			End of Pit at 2.00m	2
								3
								4

Trial Pit Photographs



Trial Pit 142



Trial Pit 142 Spoil

Remarks: 1. Complete

Stability: Stable

Project Name: Chapel Lane	Project No. 13759	Co-ords: 349913.00 - 387631.00 Level:	Date 26/08/2020
Location: Widnes	Dimensions (m): 2.50 Depth 0.80		Scale 1:30
Client: Taylor Wimpey North West			Logged V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
 0.80	0.20	ES		0.30			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of brick, mudstone and sandstone.	
				0.70			MADE GROUND: Grey mottled brown slightly gravelly sandy clay. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
				0.80			MADE GROUND: Black slightly clayey sandy gravel. Gravel is fine to medium angular to sub-angular of mudstone. (Orange ceramic land drain encountered at 0.90m bgl)	
							End of Pit at 0.80m	

Trial Pit Photographs



Trial Pit 143



Trial Pit 143 Spoil

Remarks: 1. Incomplete. 2. Terminated due to land drain water inflow at 0.80 m bgl.

Stability: Stable

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349674.00 - 387667.00
Level:

Date
26/08/2020

Location: Widnes

Dimensions (m): 2.50

Scale
1:30

Client: Taylor Wimpey North West

Depth
2.00

Logged
V. Wilkinson

[illegible]

Trial Pit Photographs



Trial Pit 144



Trial Pit 144 Spoil

Remarks: 1. Complete.

Stability:	Stable
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Project Name: Chapel Lane

Project No.
13759

Co-ords: 349733.00 - 387656.00
Level:

Date
26/08/2020

Location: Widnes

Dimensions (m): 2.50

Scale
1:30

Client: Taylor Wimpey North West

Depth
1.00

Logged
V. Wilkinson

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.80 0.90	ES B		0.30			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of brick, mudstone and sandstone. MADE GROUND: Brown gravelly fine to medium sand. Gravel is fine to coarse, angular to sub-angular of mudstone.
				1.00			End of Pit at 1.00m

Trial Pit Photographs



Trial Pit 145



Trial Pit 145 Spoil

Remarks: 1. Incomplete. 2.Terminated at 1.00 m bgl due to gravel indicative of service below.

Stability:	Stable
------------	--------

Borehole Log

Borehole No.

WS101

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 350151E - 388063N

Hole Type
WS

Location: Widnes

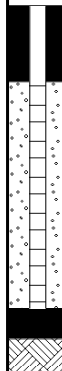
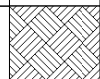
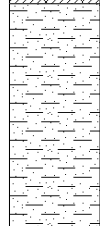
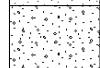
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.60	ES	N=4 (2,2/1,1,1,1)	0.50			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	1
		1.00 1.00	D SPT					Soft low strength grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		2.00 2.00	D SPT	N=50 (3,2/4,4,12,30)	2.00			Dense reddish brown gravelly fine to medium SAND. Gravel is fine to coarse sub-angular to sub-rounded of sandstone. (Weathered bedrock).	2
					2.45			End of Borehole at 2.45m	
									3
									4
									5
									6
									7
									8
									9
									10

Remarks

1. Complete. 2. Refused at 2.45 on weathered bedrock. 3. Monitoring well installed (Response zone between 0.50 m and 2.00 m bgl)

Borehole Log

Borehole No.

WS102

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 350128E - 388006N

Hole Type
WS

Location: Widnes

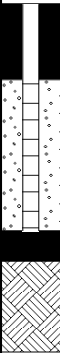
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.95	ES		0.90			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of brick, mudstone and sandstone.	
		1.00	SPT	N=11 (1,1/2,2,3,4)	1.10			MADE GROUND: Black slightly clayey sandy gravel. Gravel is fine to medium angular to sub-angular of mudstone. (Orange ceramic land drain encountered 1.00m bgl)	1
		2.00	D		1.80			MADE GROUND: Grey mottled brown slightly gravelly sandy clay. Gravel is fine to coarse sub-angular to sub-rounded of brick, mudstone, coal and sandstone.	2
		2.00	SPT	50 (2,12/50 for 155mm)	2.30			Very stiff very high strength grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
								End of Borehole at 2.30m	
									3
									4
									5
									6
									7
									8
									9
									10

Remarks

1. Complete 2. Refused on 2.30 m bgl on very stiff CLAY. 3. Monitoring well installed (response zone between 0.50 and 1.50 m bgl).

Borehole Log

Borehole No.

WS103

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 350086E - 387943N

Hole Type
WS

Location: Widnes

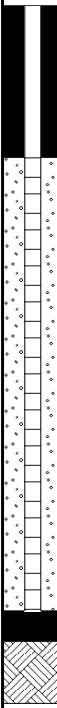
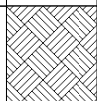
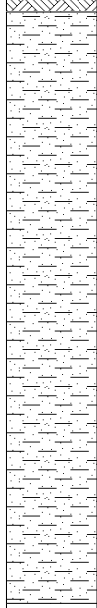
Level:

Scale
1:50

Client: Taylor Wimpey North West

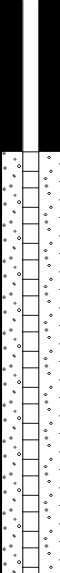
Dates: 25/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.70			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	1
		1.00 1.00	D SPT	N=7 (1,1/2,1,2,2)				Firm low strength grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00m bgl.	
		2.00 2.00 2.20	D SPT ES	N=20 (3,3/4,5,5,6)					2
		3.00 3.00	D SPT	N=28 (3,4/6,7,7,8)					3
		4.00	SPT	N=29 (4,6/7,6,8,8)					4
		4.60	SPT	50 (25 for 10mm/50 for 0mm)	4.61			End of Borehole at 4.61m	5
									6
									7
									8
									9
									10

Remarks

1. Complete. 2. Refused at 4.61 m bgl on very stiff CLAY. 3. Water strike at 2.00 m bgl. 4. Monitoring well installed (response zone between 1.00 m and 4.00 m bgl).

				Borehole Log				Borehole No. WS104 Sheet 1 of 1	
Project Name: Chapel Lane				Project No. 13759		Co-ords: 350153E - 387965N		Hole Type WS	
Location: Widnes				Level:		Scale 1:50			
Client: Taylor Wimpey North West				Dates: 25/08/2020		Logged By V. Wilkinson			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.30 0.40		 Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.		
		1.00	SPT	N=9 (2,2/2,2,2,3)			 Light brown fine to medium SAND.		
		1.20	D				 Stiff medium strength grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff very high strength at 3.00 m bgl.	1	
		1.50	U						
		2.00	SPT	N=15 (3,2/4,3,4,4)				2	
		3.00	SPT	N=24 (25 for 115mm/9,2,3,10)	3.40			3	
	3.80	SPT	50 (25 for 10mm/50 for 0mm)	3.80		 Dense reddish brown gravelly fine to medium SAND. Gravel is fine to coarse sub-angular to sub-rounded of sandstone. (Weathered bedrock). End of Borehole at 3.80m	4		
								5	
								6	
								7	
								8	
								9	
								10	
Remarks 1. Complete. 2. Refused at 3.80 m bgl on weathered SANDSTONE bedrock. 3. Monitoring well installed (response zone between 1.00m and 3.80m bgl).									

Borehole Log

Borehole No.

WS105

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 350099E - 387903N

Hole Type
WS

Location: Widnes

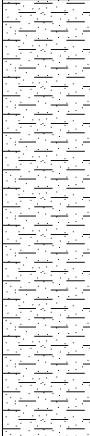
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	 2.20	0.20	ES	N=7 (1,2/2,1,2,2)	0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	1
		0.50	ES					Firm low strength grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. No recovery between 2.20 m and 2.40 m bgl. Becoming very stiff very high strength at 2.00 m bgl.	
		1.00 1.00	D SPT				N=40 (3,5/7,6,14,13)	3.30	
		2.00 2.00	D SPT	3					
		3.00 3.00	D SPT	50 (14,11/50 for 170mm)	4				
									5
									6
									7
									8
									9
									10

Remarks

1. Complete. 2. Refused at 3.30 m bgl on very stiff CLAY. 3. Water strike at 2.20 m bgl.

Borehole Log

Borehole No.

WS106

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 350164E - 387868N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D		1.00			Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		1.00	SPT	N=9 (1,2/2,2,2,3)					
		2.00	D					Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00 m bgl. Becoming very stiff very high strength at 3.00 m bgl.	2
		2.00	SPT	N=28 (2,4/5,5,9,9)					
		3.00	D						3
		3.00	SPT	N=37 (5,6/7,8,10,12)					
		4.00	ES		4.40				4
		4.00	SPT	50 (7,9/50 for 283mm)					
								End of Borehole at 4.40m	5
									6
									7
									8
									9
									10

Remarks

1. Complete. 2. Refused at 4.00 m bgl on very stiff CLAY. 3. Monitoring well installed (response zone between 1.00 m and 4.00 m bgl).

Borehole Log

Borehole No.

WS107

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 350179E - 387825N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D					Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		1.00	SPT	N=8 (1,2/2,1,2,3)	1.00				1
		2.00	D					Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 3.00 m bgl. Becoming very stiff very high strength at 4.00 m bgl.	2
		2.00	SPT	N=12 (2,2/2,2,4,4)					
		3.00	D						3
		3.00	SPT	N=21 (4,4/4,5,5,7)					
		4.00	SPT	N=50 (6,6/12,12,13,13)					4
					4.45			End of Borehole at 4.45m	5
									6
									7
									8
									9
									10

Remarks

1. Complete. 2. Refused at 4.45 m bgl on very stiff CLAY.

Project Name: Chapel Lane

Project No.
13759

Co-ords: 350222E - 387824N

Hole Type
WS

Location: Widnes

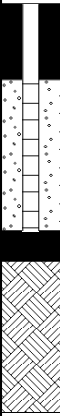
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	1
		0.50	U					Soft brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		1.00	SPT	N=0 (1,0/0,0,0,0)	1.10			Very soft extremely low strength brown very sandy CLAY with organic matter.	2
		1.50						Very stiff high strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		2.00 2.00	D SPT	N=33 (4,5/5,10,9,9)	2.50			Dense reddish brown gravelly fine to medium SAND. Gravel is fine to coarse sub-angular to sub-rounded of sandstone. (Weathered bedrock)	
		2.70	SPT	50 (25 for 20mm/50 for 10mm)	2.70			End of Borehole at 2.70m	3
									4
									5
									6
									7
									8
									9
									10

Remarks

1. Complete. 2. Refused at 2.70 m bgl on weathered bedrock. 3. Water strike at 1.00 m bgl. 4. Monitoring well installed (Response zone between 0.50 m and 1.50 m bgl).

Borehole Log

Borehole No.

WS109

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 350193E - 387774N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D					Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00 m bgl. Becoming very stiff very high strength at 4.00 m bgl.	1
		1.00	SPT	N=9 (1,1/2,2,2,3)					
		2.00	D						2
		2.00	SPT	N=25 (2,4/5,6,7,7)					
		2.50	ES						
		3.00	D						3
		3.00	SPT	N=23 (3,3/5,5,6,7)					
		4.00	SPT	50 (7,9/50 for 285mm)	4.40				4
								End of Borehole at 4.40m	5
									6
									7
									8
									9
									10

Remarks

1.Complete. 2. Refused at 4.40 m bgl on very stiff CLAY. 3. Monitoring well installed (response zone between 0.50 m and 2.50 m bgl).

Borehole Log

Borehole No.

WS110

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 350028E - 387907N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

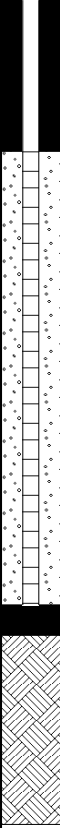
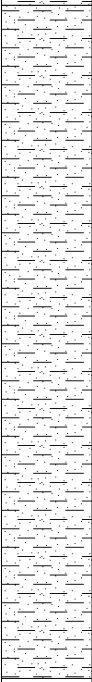
Dates: 25/08/2020

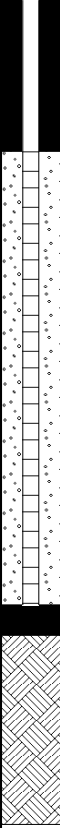
Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	1
		1.00 1.00	D SPT	N=9 (1,1/2,2,2,3)				Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00 m bgl. Becoming very stiff very high strength at 5.00 m bgl.	
		2.00 2.00	D SPT	N=17 (3,4/3,4,5,5)					
		3.00 3.00	D SPT	N=24 (4,4/5,6,6,7)					
		4.00 4.00	D SPT	N=24 (5,5/6,5,6,7)					
		5.00 5.00	D SPT	N=37 (6,6/8,10,8,11)	5.45			End of Borehole at 5.45m	5
									6
									7
									8
									9
									10

Remarks

1. Complete.

				Borehole Log				Borehole No. WS111 Sheet 1 of 1	
Project Name: Chapel Lane				Project No. 13759		Co-ords: 350054E - 387809N		Hole Type WS	
Location: Widnes				Level:		Scale 1:50			
Client: Taylor Wimpey North West				Dates: 25/08/2020		Logged By V. Wilkinson			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30			Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		0.60	ES					Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		1.00	D		1.00			Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 3.00 m bgl. Becoming very stiff very high strength at 4.00 m bgl. Becoming very stiff high strength at 5.00 m bgl.	
		1.00	SPT	N=9 (1,2/2,2,2,3)					2
		2.00	D						
		2.00	SPT	N=15 (2,2/3,3,4,5)					
		2.50	U						
	3.00	D							
	3.00	SPT	N=23 (5,4/5,5,6,7)						
		4.00	SPT	N=36 (4,5/7,9,10,10)				4	
		5.00	SPT	N=26 (4,5/5,6,7,8)				5	
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10
Remarks 1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 4.00 m bgl).									

				Borehole Log				Borehole No. WS112 Sheet 1 of 1	
Project Name: Chapel Lane				Project No. 13759		Co-ords: 350119E - 387773N		Hole Type WS	
Location: Widnes				Level:		Scale 1:50			
Client: Taylor Wimpey North West				Dates: 25/08/2020		Logged By V. Wilkinson			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D		1.00			Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		1.00	SPT	N=11 (1,2/2,3,3,3)				Stiff high strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Very stiff high strength at 2.00 m bgl. Becoming very stiff very high strength at 5.00 m bgl.	
		2.00	D						2
		2.00	SPT	N=18 (2,2/4,4,5,5)					
		3.00	D						3
	3.00	SPT	N=27 (5,5/5,6,7,9)						
	4.00	D						4	
	4.00	SPT	N=33 (6,6/7,8,9,9)						
	5.00	D						5	
	5.00	SPT	N=37 (6,6/8,9,10,10)						
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10
Remarks 1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 4.00 m bgl).									

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349973E - 387863N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30 0.40 0.60	ES					Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00 1.00	D SPT	N=9 (1,2/2,2,3,2)	1.00			Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		2.00 2.00	D SPT	N=16 (2,3/3,4,4,5)				Soft dark brown slightly gravelly sandy CLAY (Relict topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		3.00 3.00	D SPT	N=25 (3,3/5,6,6,8)				Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	2
		4.00 4.00	D SPT	N=19 (3,3/4,4,5,6)				Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 3.00 m bgl.	3
		5.00	SPT	N=24 (3,4/5,5,7,7)					4
					5.45			End of Borehole at 5.45m	5
									6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349942E - 387798N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.30			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		0.30	ES					MADE GROUND: Grey mottled brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		1.00	SPT	N=4 (1,1/2,1,0,1)	1.20			MADE GROUND: Black slightly gravelly very clayey fine to medium SAND. Gravel is fine to coarse angular to sub-angular of brick.	
					1.50			Firm low strength black slightly silty sandy CLAY. Becoming stiff medium strength at 4.00 m bgl.	2
		2.00	SPT	N=5 (1,4/2,1,1,1)					
		3.00	SPT	N=9 (2,1/2,2,2,3)					3
		4.00	SPT	N=17 (2,3/4,4,4,5)					4
					4.50			Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	5
		5.00	SPT	N=12 (2,3/2,3,3,4)					
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 4.00 m bgl).

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349876E - 387852N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

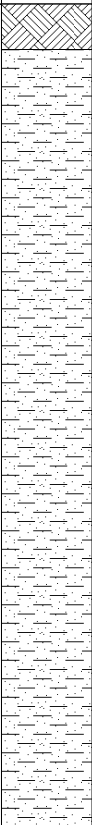
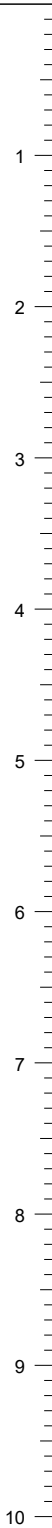
Dates: 25/08/2020

Logged By
J. Oliver

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.35			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	ES					Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 3.00 m bgl.	1
		1.00	SPT	N=13 (3,3/3,4,3,3)					
		1.50	U						
		2.00	D						2
		2.00	SPT	N=15 (3,3/3,4,4,4)					
		3.00	D						3
		3.00	SPT	N=20 (2,3/5,4,5,6)					
		4.00	D						4
		4.00	SPT	N=24 (4,3/5,5,7,7)					
					5.45			End of Borehole at 5.45m	5
									6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

				Borehole Log				Borehole No. WS116 Sheet 1 of 1	
Project Name: Chapel Lane				Project No. 13759		Co-ords: 349894E - 387816N		Hole Type WS	
Location: Widnes						Level:		Scale 1:50	
Client: Taylor Wimpey North West						Dates: 25/08/2020		Logged By V. Wilkinson	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone. Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00 m bgl. Becoming very stiff very high strength at 5.00 m bgl.	
		1.00	D						
		1.00	SPT	N=13 (2,3/3,4,3,3)					
		2.00	D						
		2.00	SPT	N=18 (3,3/4,3,5,6)					
		3.00	D						
		3.00	SPT	N=19 (4,3/4,5,5,5)					
		4.00	SPT	N=23 (4,3/6,5,6,6)					
		5.00	SPT	N=37 (6,8/8,9,9,11)					
					5.45			End of Borehole at 5.45m	
Remarks 1. Complete.									

Borehole Log

Borehole No.

WS117

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349826E - 387802N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES					MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	SPT	N=16 (3,2/3,4,4,5)	0.70 0.80 1.00			MADE GROUND: Black slightly clayey sandy gravel. Gravel is fine sub-angular of mudstone. (orange ceramic land drain encountered at 0.75 m bgl) Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Very stiff high strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming stiff medium strength at 2.00 m bgl. Becoming very stiff high strength at 3.00 m bgl.	1
		2.00	SPT	N=14 (3,3/4,4,3,3)					2
		3.00	SPT	N=20 (3,4/4,5,4,7)					3
		4.00	SPT	N=20 (3,4/5,5,4,6)					4
		5.00	SPT	N=24 (3,4/5,6,6,7)					5
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).



Borehole Log

Borehole No.

WS118

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349747E - 387828N

Hole Type
WS

Location: Widnes

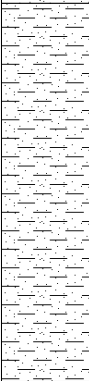
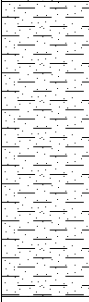
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		0.70	ES					Firm brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		1.00	D		1.00			Stiff Very stiff high strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		1.00	SPT	N=15 (2,2/3,4,4,4)					
		2.00	D						2
		2.00	SPT	N=32 (6,6/8,8,8,8)					
		3.00	D					Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 5.00 m bgl.	3
		3.00	SPT	N=20 (3,3/5,5,5,5)					
		4.00	D		3.50				4
		4.00	SPT	N=17 (2,3/3,4,5,5)					
		5.00	D				5		
		5.00	SPT	N=24 (5,5/6,6,6,6)					
			5.45				End of Borehole at 5.45m	6	
								7	
								8	
								9	
								10	

Remarks

1. Complete.



Borehole Log

Borehole No.

WS119

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349696E - 387795N

Hole Type
WS

Location: Widnes

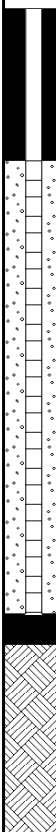
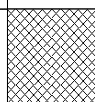
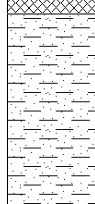
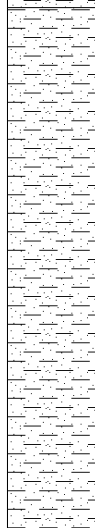
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.40	ES	N=11 (1,1/2,2,3,4)	0.70			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of brick, concrete, mudstone and sandstone.	1		
		1.00 1.00	ES SPT					Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.			
		2.00 2.00	ES SPT	N=19 (3,4/3,4,6,6)	2.00			Very stiff high strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	2		
		3.00 3.00	ES SPT	N=23 (2,3/4,5,7,7)						3	
		4.00	SPT	N=23 (3,3/5,5,6,7)							4
		5.00	SPT	N=24 (6,6/6,6,6,6)							
				5.45			End of Borehole at 5.45m	6			
								7			
								8			
								9			
								10			

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 4.00 m bgl).

Borehole Log

Borehole No.

WS120

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349664E - 387769N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		0.30	ES	N=13 (2,2/2,4,3,4)	0.40			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of charcoal, mudstone and sandstone.	1			
		0.50	ES									
		1.00	D		N=28 (3,5/5,7,7,9)		0.70			Firm brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	2	
		1.00	SPT									
		2.00	D		N=21 (4,4/4,5,6,6)						3	
		2.00	SPT									
		3.00	D		N=15 (3,3/3,4,4,4)						4	
		3.00	SPT									
		4.00	D		N=15 (3,3/3,3,4,5)						5	
		4.00	SPT									
		5.00	D								6	
		5.00	SPT									
		5.45							End of Borehole at 5.45m	7		
										8		
										9		
										10		

Remarks

1. Complete.

Borehole Log

Borehole No.

WS121

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349591E - 387769N

Hole Type
WS

Location: Widnes

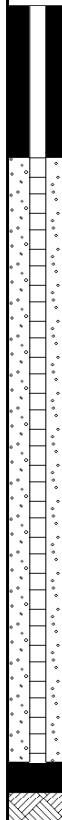
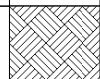
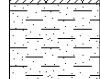
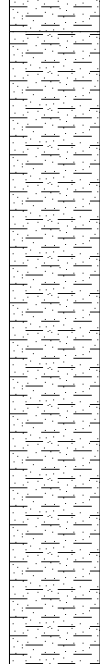
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.50			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D					Firm low strength brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		1.00	SPT	N=7 (1,1/1,1,2,3)	1.20				
		1.50	U						
		2.00	D					Very stiff high strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. SAND band encountered between 3.00 m and 3.20 m bgl.	2
		2.00	SPT	N=31 (5,6/7,7,7,10)					
		3.00	D						3
		3.00	SPT	N=22 (3,3/4,5,6,7)					
		4.00	ES						4
		4.00	SPT	N=22 (3,3/4,5,6,7)					
		5.00	SPT	N=23 (4,4/4,6,6,7)	5.45				5
								End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349613E - 387737N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
V. Wilkinson

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D		0.50			Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		1.00	SPT	N=13 (3,4/3,3,3,4)				Stiff medium strength brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. SAND band encountered between 3.80 m and 4.20 m bgl. Becoming very stiff high strength at 2.00 m bgl. Becoming stiff medium strength at 5.00 m bgl.	1
		2.00	D						2
		2.00	SPT	N=24 (5,4/5,5,7,7)					
		3.00	D						3
		3.00	SPT	N=24 (5,4/5,5,7,7)					
		3.90	ES						4
		4.00	D						
		4.00	SPT	N=27 (5,5/5,7,7,8)					
		5.00	SPT	N=16 (4,4/4,4,4,4)					5
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Water strike at 3.80 m bgl.

Borehole Log

Borehole No.

WS123

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349704E - 387762N

Hole Type
WS

Location: Widnes

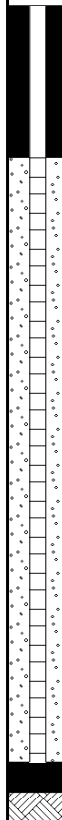
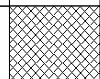
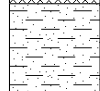
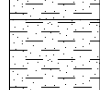
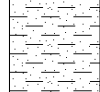
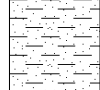
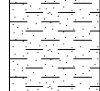
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.50			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of brick, concrete, mudstone and sandstone.	1
		1.00 1.00	D SPT	N=14 (2,1/2,3,4,5)	1.20			Stiff grey brown mottled slightly gravelly sandy CLAY with occasional layers of grey medium sand. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		2.00 2.00	D SPT	N=29 (4,5/7,7,7,8)				Stiff medium strength reddish brown mottled slightly gravelly sandy CLAY with occasional layers of grey medium sand. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00 m bgl.	2
		3.00 3.00	D SPT	N=23 (3,4/5,5,6,7)					3
		4.00 4.00	D SPT	N=15 (3,3/3,4,4,4)	4.00				4
		5.00 5.00	D SPT	N=27 (5,6/5,6,6,10)	5.45			Stiff medium strength reddish brown mottled slightly gravelly sandy CLAY with occasional layers of grey medium sand. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 5.00 m bgl.	5
								End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349662E - 387727N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D		1.00			Stiff brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		1.00	SPT	N=9 (1,1/1,2,3,3)					
		2.00	D					Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00 m bgl. Becoming stiff medium strength at 3.00 m bgl. Becoming very stiff very high strength at 4.00 m bgl.	2
		2.00	SPT	N=20 (2,3/5,5,5,5)					
		3.00	D						3
		3.00	SPT	N=15 (3,3/4,3,4,4)					
		4.00	D						4
		4.00	SPT	N=19 (4,3/4,5,4,6)					
		4.50	U						
		5.00	D						5
		5.00	SPT	N=22 (3,5/5,4,6,7)					
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349660E - 387680N

Hole Type
WS

Location: Widnes

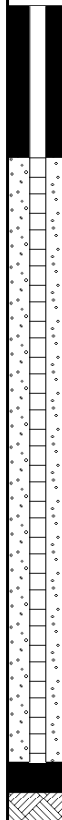
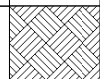
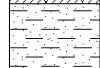
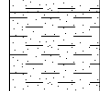
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.50			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D		1.00			Firm brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		1.00	SPT	N=8 (2,1/2,2,2,2)				Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 4.00 m bgl.	
		2.00	D						2
		2.00	SPT	N=16 (3,3/3,4,4,5)					
		2.50	U						
		3.00	D						3
		3.00	SPT	N=14 (2,3/3,4,4,3)					
		4.00	D						4
		4.00	SPT	N=19 (3,3/4,3,6,6)					
		5.00	D						5
		5.00	SPT	N=20 (3,4/4,4,5,7)					
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349801E - 387649N

Hole Type
WS

Location: Widnes

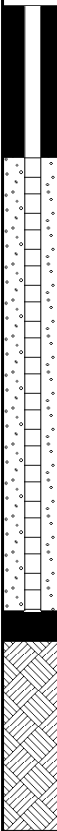
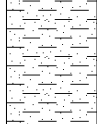
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D		0.70			Firm brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		1.00	SPT	N=11 (2,3/3,3,2,3)				Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00 m bgl. Becoming stiff medium strength at 3.00 m bgl. Becoming Very stiff high strength at 5.00 m bgl.	1
		1.50	U						
		2.00	D						2
		2.00	SPT	N=17 (3,3/4,4,4,5)					
		3.00	D						3
		3.00	SPT	N=15 (2,3/3,4,4,4)					
		4.00	D						4
		4.00	SPT	N=15 (3,4/4,3,3,5)					
		5.00	D		5.45				5
		5.00	SPT	N=20 (3,4/5,4,5,6)					
								End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Water strike at 4.00 m bgl. 3. Monitoring well installed (response zone between 1.00 m and 4.00 m bgl).

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349822E - 387731N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.35			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
					0.60			Firm brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		1.00	D					Stiff low strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Brown fine to medium SAND pockets encountered at 1.00 m and 2.60 m bgl. Becoming stiff medium strength at 2.00 m bgl. Becoming very stiff very high strength at 3.00 m bgl. Becoming stiff medium strength at 5.00 m bgl.	1
		1.00	SPT	N=6 (2,1/1,2,1,2)					
		2.00	D						2
		2.00	SPT	N=13 (3,4/4,3,3,3)					
		3.00	D						3
		3.00	SPT	N=20 (4,4/5,5,5,5)					
		4.00	D						4
		4.00	SPT	N=22 (3,3/5,6,5,6)					
		5.00	D						5
		5.00	SPT	N=17 (4,5/4,4,5,4)					
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

Borehole Log

Borehole No.

WS129

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349882E - 387748N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

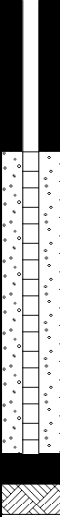
Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.30 0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone. Greyish brown fine to medium SAND. Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 3.00 m bgl.	
		1.00 1.00	D SPT	N=10 (3,3/3,2,3,2)					1
		2.00 2.00	D SPT	N=14 (3,4/3,3,4,4)					2
		3.00 3.00	D SPT	N=19 (4,5/5,4,5,5)					3
		3.50	U						
		4.00 4.00	D SPT	N=24 (6,7/6,6,6,6)					4
		5.00 5.00	D SPT	N=25 (7,6/7,6,6,6)					5
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

				Borehole Log				Borehole No. WS130 Sheet 1 of 1	
Project Name: Chapel Lane				Project No. 13759		Co-ords: 350002E - 387723N		Hole Type WS	
Location: Widnes				Level:		Scale 1:50			
Client: Taylor Wimpey North West				Dates: 26/08/2020		Logged By J. Sheridan			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.30		Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone. Stiff brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff very high strength at 3.00 m bgl.		
					0.60				
	1.00	ES						1	
	1.00	SPT	N=12 (4,3/3,3,3,3)						
	2.00	ES						2	
	2.00	SPT	N=16 (3,4/4,4,4,4)						
	3.00	ES						3	
	3.00	SPT	50 (8,10/50 for 275mm)						
					3.40				
									4
End of Borehole at 3.40m								5	
								6	
								7	
								8	
								9	
								10	

Remarks

1. Complete. 2. Refused at 3.40 m bgl on very stiff CLAY. 3. Monitoring well installed (response zone between 1.00 m and 3.00 m bgl).



Borehole Log

Borehole No.

WS131

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349993E - 387664N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		0.60	ES		0.70			MADE GROUND: Brown mottled grey slightly gravelly sandy clay. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		1.00	D		0.80			MADE GROUND: Black slightly clayey sandy gravel. Gravel is fine sub-angular of mudstone. (Orange ceramic land drain encountered at 0.75 m bgl)	1
		1.00	SPT	N=12 (2,3/3,2,3,4)				Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 3.00 m bgl. Becoming stiff medium strength at 4.00 m bgl.	
		2.00	D						2
		2.00	SPT	N=11 (4,3/3,3,2,3)					
		3.00	D						3
		3.00	ES						
		3.00	SPT	N=30 (6,7/7,7,8,8)					
		4.00	D						4
		4.00	SPT	N=17 (4,5/5,4,4,4)					
		5.00	D						5
		5.00	SPT	N=14 (3,4/4,3,4,3)					
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Water strike at 3.50 m bgl. 3. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349903E - 387707N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
		1.00	D SPT	N=7 (2,1/1,1,2,3)	1.00			Stiff brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	1
		2.00	D SPT	N=24 (3,4/5,5,7,7)				Firm low strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00 m bgl. Becoming stiff medium strength at 4.00 m bgl. Becoming very stiff very high strength at 5.00 m bgl.	2
		3.00	D SPT	N=24 (7,6/6,6,6,6)					3
		4.00	SPT	N=16 (4,3/4,4,4,4)					4
		5.00	SPT	N=19 (4,5/5,4,5,5)					5
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete. 2. Monitoring well installed (response zone between 1.00 m and 5.00 m bgl).

Borehole Log

Borehole No.

WS133

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349882E - 387656N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.40			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
					0.80			Stiff brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		1.00	D					Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 2.00 m bgl. Becoming stiff medium strength at 4.00 m bgl. Becoming very stiff high strength at 5.00 m bgl.	1
		1.00	SPT	N=10 (2,1/2,2,3,3)					
		2.00	D						2
		2.00	SPT	N=20 (5,6/5,4,6,5)					
		2.50	ES						
		3.00	D						3
		3.00	SPT	N=20 (4,5/5,5,5,5)					
		4.00	D						4
		4.00	SPT	N=15 (3,4/3,4,4,4)					
		5.00	D						5
		5.00	SPT	N=19 (5,4/5,5,5,4)					
					5.45			End of Borehole at 5.45m	6
									7
									8
									9
									10

Remarks

1. Complete.

Borehole Log

Borehole No.

WS134

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349737E - 387703N

Hole Type
WS

Location: Widnes

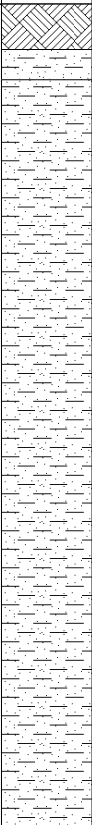
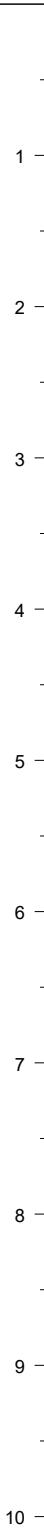
Level:

Scale
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Client: Taylor Wimpey North West

Dates: 26/08/2020

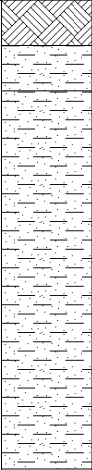
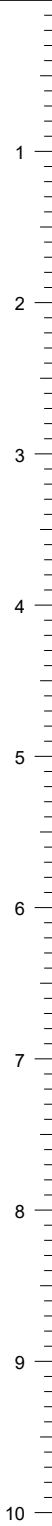
Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.30			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone. Stiff brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff high strength at 3.00 m bgl.	
		0.50	U		0.50				
		1.00	D						
		1.00	SPT	N=11 (2,1/3,2,2,4)					
		2.00	D						
		2.00	SPT	N=13 (2,3/3,4,3,3)					
		3.00	D						
		3.00	SPT	N=20 (3,4/4,5,5,6)					
		4.00	D						
		4.00	SPT	N=19 (3,4/4,5,5,5)					
		5.00	D						
		5.00	SPT	N=20 (3,4/4,5,5,6)					
					5.45			End of Borehole at 5.45m	

Remarks

1. Complete.

				Borehole Log				Borehole No. WS135 Sheet 1 of 1	
Project Name: Chapel Lane				Project No. 13759		Co-ords: 349835E - 387680N		Hole Type WS	
Location: Widnes				Level:		Scale 1:50			
Client: Taylor Wimpey North West				Dates: 26/08/2020		Logged By J. Sheridan			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30		 Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone. Stiff brown mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Stiff medium strength reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone. Becoming very stiff very high strength at 3.00 m bgl.		
					0.60				
		1.00	D	N=9 (1,2/2,2,2,3)					
		1.00	ES						
		1.00	SPT						
		1.50	U						
		2.00	D	N=11 (2,2/3,2,3,3)					
		2.00	SPT						
		3.00	D	50 (25 for 10mm/50 for 5mm)	3.10				
		3.00	SPT						
End of Borehole at 3.10m									

Remarks
 1. Complete. 2. Refused at 3.10 m bgl on dense SAND.



Borehole Log

Borehole No.

WS136

Sheet 1 of 1

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349862E - 387638N

Hole Type
WS

Location: Widnes

Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 26/08/2020

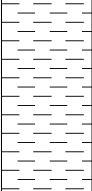
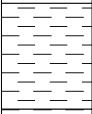
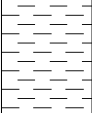
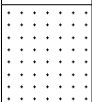
Logged By
J. Sheridan

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40			MADE GROUND: Dark brown slightly gravelly sandy clay (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	
					0.50				
		0.90	ES					MADE GROUND: Brown mottled grey slightly gravelly sandy clay. Gravel is fine to coarse sub-angular to sub-rounded of mudstone, coal and sandstone.	
		1.00	D		1.00			MADE GROUND: Black sandy gravel. Gravel is fine sub-angular of mudstone. (Land drain encountered at 1.00 m bgl)	1
		1.00	SPT	N=11 (2,2/2,3,3,3)				Medium dense yellowish grey slightly clayey fine to medium SAND.	
		2.00	D		1.90			Medium dense brown very clayey fine to medium SAND. Becoming dense at 3.00 m bgl.	2
		2.00	SPT	N=14 (2,3/4,4,3,3)					
		3.00	D						3
		3.00	SPT	50 (3,10/50 for 230mm)	3.40			End of Borehole at 3.40m	4
									5
									6
									7
									8
									9
									10

Remarks

1. Complete. 2. Refused at 3.40 m bgl on very stiff CLAY.

					Borehole Log			Borehole No. CP101 Sheet 1 of 1	
Project Name: Chapel Lane					Project No. 13759		Co-ords: 350156E - 387897N		Hole Type CP
Location: Widnes					Level:		Scale 1:50		Logged By PM Sampling
Client: Taylor Wimpey North West					Dates: 24/08/2020				

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50		 Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.	1	
							 Soft low strength brown mottled grey CLAY.		
		1.20	B	N=4 (1,0/1,1,0,2)	1.80	 Very stiff very high strength brown boulder CLAY.	2		
		1.20	D						
		1.20	SPT						
		1.80	B	N=35 (2,4/6,9,10,10)	2.50	 Very stiff very high strength brown boulder CLAY.	3		
		2.00	U						
		3.00	D	50 (8 for 0mm/50 for 10mm)	5.30	 Dense SANDSTONE.	5		
		3.00	SPT						
4.00	U	50 (25 for 0mm/50 for 10mm)	5.95	 End of Borehole at 5.95m	6				
5.00	D								
5.00	SPT								
								7	
								8	
								9	
								10	

Remarks
 1. Complete. 2. Refused at 5.95 m bgl on SANDSTONE bedrock.



				Borehole Log				Borehole No. CP102 Sheet 1 of 2	
Project Name: Chapel Lane				Project No. 13759		Co-ords: 349802E - 387765N		Hole Type CP	
Location: Widnes				Level:		Scale 1:50			
Client: Taylor Wimpey North West				Dates: 25/08/2020		Logged By PM Sampling			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.60			Dark brown slightly gravelly sandy CLAY (Topsoil) with frequent rootlets. Gravel is fine to medium angular to sub-rounded of mudstone and sandstone.		
		1.20	B	N=6 (1,1/1,2,1,2)			Firm low strength brown mottled grey CLAY.	1		
		1.20	D							
		1.20	SPT							
				2.00	U		2.00		Very stiff very high strength brown boulder CLAY.	2
				3.00	D	N=38 (1,5/7,10,10,11)				3
				3.00	SPT					
				4.00	U					4
				5.00	D	N=17 (2,2/4,4,4,5)				5
				5.00	SPT					
		6.00	U					6		
		6.50	B					7		
		7.50	D	N=22 (2,4/5,5,6,6)				8		
		7.50	SPT							
		9.00	U					9		
								10		

Remarks

1. Complete. 2. Refused at 16.95 m bgl on very stiff CLAY. 3. Water strikes encountered at 11.80 m bgl and 12.00 m bgl.



Borehole Log

Borehole No.

CP102

Sheet 2 of 2

Project Name: Chapel Lane

Project No.
13759

Co-ords: 349802E - 387765N

Hole Type
CP

Location: Widnes

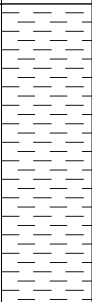
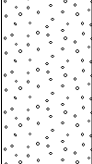
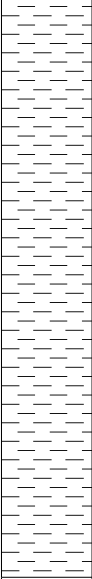
Level:

Scale
1:50

Client: Taylor Wimpey North West

Dates: 25/08/2020

Logged By
PM Sampling

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	 12.00	10.50 10.50	D SPT	N=16 (1,3/3,4,4,5)	12.00			Stiff medium strength CLAY. Becoming very stiff high strength at 7.50 m bgl. Becoming stiff medium strength at 10.50 m bgl. Becoming very stiff high strength at 13.50 m bgl. Becoming very stiff very high strength at 15.00 m bgl.	11
		12.00	U						12
		13.50 13.50	D SPT	N=30 (3,4/5,7,8,10)	13.10			Sparse GRAVEL with SAND bands.	13
		15.00 15.00	D SPT	50 (4,4/50 for 255mm)				Very stiff high strength brown boulder CLAY. Becoming very stiff very high strength at 15.00 m bgl.	14
		16.50 16.50	D SPT	50 (3,6/50 for 150mm)	16.95				15
								End of Borehole at 16.95m	16
									17
									18
									19
									20

Remarks

1. Complete. 2. Refused at 16.95 m bgl on very stiff CLAY. 3. Water strikes encountered at 11.80 m bgl and 12.00 m bgl.