

Land at Long Lane, Chapel-en-le-Frith

Flood Risk Assessment & Drainage Strategy

May 2021



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Introduction

Waterco has been commissioned to undertake a Flood Risk Assessment and Drainage Strategy in relation to a glamping development at land at Long Lane, Chapel-en-le-Frith, High Peak, Derbyshire, SK23 0TA.

The purpose of this report is to outline the potential flood risk to the site, the impact of the proposed development on flood risk elsewhere, and the proposed measures which could be incorporated to mitigate the identified risk. This report has been prepared in accordance with the guidance contained in the National Planning Policy Framework (NPPF) and the National Planning Practice Guidance (NPPG): Flood Risk and Coastal Change.

Derbyshire Council as Lead Local Flood Authority (LLFA) is a statutory consultee for major planning applications in relation to surface water drainage, requiring that all planning applications are accompanied by a Sustainable Drainage Strategy. The aim of the Sustainable Drainage Strategy is to identify water management measures, including Sustainable Drainage Systems (SuDS), to provide surface water runoff reduction and treatment.

Existing Conditions

The application site covers an area of approximately 2.45 hectares (ha) and is located at National Grid Reference: 405277, 379929. Development will be restricted to land in the eastern extent of the site covering an area of approximately 1.2ha. Land also owned by the applicant is located immediately west of the application site. A location plan and an aerial image are included in Appendix A.

Online mapping (including Google Maps / Google Streetview imagery, accessed May 2021) shows that the site comprises agricultural land. The site is bordered by Chapel-en-le-Frith High School to the north, Bank Hall Drive to the east, agricultural land and a residential dwelling to the south, and residential dwellings and Marsh Hall Lane to the west. Access to the site is provided from Bank Hall Drive to the east.

Local Topography

A topographical survey has been undertaken by Survey Systems in November 2014. The topographical survey shows that site levels in the location of the proposed development slope from 241.33 metres Above Ordnance Datum (m AOD) in the south-east to 236.84m AOD in the north.

Topographic levels to m AOD have also been derived from a 2m resolution Environment Agency (EA) composite 'Light Detecting and Ranging' (LiDAR) Digital Terrain Model (DTM). The LiDAR levels generally reflect those on the topographical survey.

Topographical information is provided as Appendix B.

Ground Conditions

Published Geology

Reference to the British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the site is

underlain by superficial deposits of Devensian Till generally comprising diamicton. The superficial deposits are identified as being underlain by Kinderscout Grit consisting of sandstone.

The geological mapping is available at a scale of 1:50,000 and as such may not be accurate on a site-specific basis.

Hydrogeology

According to the EA's Aquifer Designation data, obtained from MAGIC's online mapping [accessed May 2021], the Devensian Till is classified as a Secondary Undifferentiated Aquifer.

Secondary Undifferentiated Aquifers are assigned in 'cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type'.

The underlying Kinderscout Grit is described as a Secondary A Aquifer. Secondary A Aquifers are 'permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers'.

The EA's 'Source Protection Zones' data, obtained from MAGIC's online mapping [accessed May 2021], indicates that the site is not located within a Groundwater Source Protection Zone.

The Cranfield University 'Soilscapes' map [accessed May 2021] indicates that the site is underlain by '*slowly permeable seasonally wet...loamy and clayey soils*'.

Anecdotal Information

A site walkover was undertaken by a Waterco representative on 24th November 2014 to identify surface water courses and drainage features on the site in order to support a former planning application for a large residential development. Given the time which has passed since the site walkover was undertaken, the information obtained serves as a useful guide but cannot be fully relied upon and is included as anecdotal information only.

The site walkover identified a number of surface water drainage features within and adjacent to the site. Unnamed watercourses were identified at the northern site boundary and at the south-western corner of the site. The watercourses are shown on the local 'Existing Drainage Sketch' included in Appendix C.

The watercourses are spring fed and originate on or adjacent to the site. The watercourses flow south-west and merge approximately 370m south-west the site before draining into Combs Reservoir (SSSI) approximately 1.1km south-east of the site. A photographic record is also included in Appendix C for reference.

Local Drainage

Public sewer records have been obtained from United Utilities and are included in Appendix D. The United Utilities sewer records show that there are no public sewers within the immediate vicinity of the site. The

nearest public foul sewer is a 225mm public foul sewer located in Marsh Hall Lane (Private Road), approximately 400m west of the site. There is a 150mm public foul sewer and 150mm public surface water sewer in Alston Road beyond the railway line approximately 240m east of the site.

Development Proposals

The proposed development is for 15 No. glamping units, 5 No. motorcaravan pitches and associated facilities. A proposed layout plan is included in Appendix E. Approximately 1.2ha of the site will be developed. The remaining land will be allocated for amenity areas, outdoor activities and sustainable drainage features.

The proposed development will introduce hardstanding areas in the form of glamping units, motorcaravan pitches, activity yurts and the access road. Hardstanding will comprise 2,975m² or 24% of the developable site area. The remaining permeable, amenity and outdoor activity areas will occupy 21,025m² or 76% of the developable site area. It is noted that the access road and motorcaravan pitches will be formed from a permeable surface, however, have been included as 'hardstanding' for the purpose of the above measurements.

Hardstanding areas have been measured from a .dwg version of the Proposed Site Layout (DRG no: LPD/0320/HPSBLP4A).

Flood Zone Classification and Policy Context

The Environment Agency (EA) 'Flood Map for Planning', included in Appendix F, shows that the site is located within an area outside of the extreme flood extent (Flood Zone 1), meaning it has a less than 0.1% annual probability of flooding.

In accordance with Table 2 of the NPPG: Flood Risk and Coastal Change, sites used for holiday or short-let caravans and camping are considered to be 'more vulnerable'. Table 3 of the NPPG: Flood Risk and Coastal Change, states that 'more vulnerable' development is considered appropriate in Flood Zone 1. Therefore, the NPPF Exception Test does not need to be applied and the Sequential Test is passed.

Local Policy

The Adopted High Peak Local Plan (April 2016) contains the following policy relating to flood risk and drainage:

'Policy EQ 11 - Flood Risk Management'

The Council will support development proposals that avoid areas of current or future flood risk and which do not increase the risk of flooding elsewhere, where this is viable and compatible with other policies aimed at achieving a sustainable pattern of development. When considering planning applications the Council will also have regard to all relevant Catchment Flood Management Plans and the Local Flood Risk Management Strategy.

Management of flood risk will be achieved by:

Only permitting development within areas at risk from flooding as defined by the Environment Agency if:

- a sequential test as set out in the technical guidance to the NPPF demonstrates that this is the only site where the development can be located;*
- on a site which has passed the sequential test but where flood risk still exists, the sequential approach has been used to locate the most vulnerable parts of the development in the areas of lowest flood risk;*
- where necessary an exception test as set out in the technical guidance to the NPPF demonstrates that the proposed development can be accommodated with an acceptable degree of safety;*
- a site specific flood risk assessment shows that the site is protected adequately from flooding, or the scheme includes adequate flood defences or flood risk management measures;*
- it does not damage or inhibit existing flood defence and flood risk management structures or measures; and*
- it will not cause or worsen flooding on the site or elsewhere and will reduce flood risk elsewhere where possible.*

Development proposals should consider opportunities to contribute towards the objectives of the relevant Catchment Flood Management Plan. Wherever possible, development should promote the reduction of flood risk by seeking to reinstate the natural floodplain, the de-culverting of watercourses and the limiting of surface water runoff to Greenfield rates via the use of sustainable drainage techniques.

Where a watercourse is present on a development site, it should be retained or restored into a natural state and enhanced where possible. The culverting of any watercourse will not normally be permitted, and development should wherever possible remove any existing culverts and increase on-site flood storage. Development should be laid out to enable maintenance of the watercourse.

Wherever possible SuDS will be expected to contribute towards wider sustainability considerations, including amenity, recreation, conservation of biodiversity and landscape character, making use of the role that trees, woodland and other green infrastructure can play in flood alleviation and water quality control.'

Local guidance documents including the High Peak Borough Council Level 2 Strategic Flood Risk Assessment (SFRA) (April 2014) - and the Derbyshire County Council Preliminary Flood Risk Assessment (PFRA) (May 2011) have been reviewed and inform this report.

Consultation

A consultation request was submitted to the LLFA in April 2021. A response is awaited. The LLFA have provided formal comments to a residential application at this site in March 2015 (Planning Reference: HPK/2015/0058 – Outline). The formal comments relating to flood risk and drainage from the residential

application inform this report and are included in Appendix G.

'Surface Water

A review of Derbyshire County Council (DCC) surface water model outputs indicate that the proposed site is likely to be subject to surface water flooding along the north west boundary of the site, during the critical storm duration in the 1 in 100 year return period event in its current land use.

When considering designing drainage systems for exceedence, the developer should consider rainfall events in excess of the 1 in 100 year return period to allow for extreme events. An analysis of the DCC surface water model outputs for the 1 in 1000 year critical storm duration rainfall event indicates that the site may be susceptible to further areas of surface water flooding along the north west boundary of the proposed development site.

DCC strongly promote Sustainable Drainage Systems (SuDS) to be incorporated within the design of a drainage strategy for any proposed development, applying the SuDS management train. The applicant is advised to contact the DCC Flood Team should any guidance on the drainage strategy for the proposed development be required. DCC encourages that site surface water drainage is designed in line with the current draft National SuDS Standards, including restricting developed discharge of surface water to greenfield runoff rates making suitable allowances for climate change and urban creep, managing surface water as close to the surface as possible and prioritising infiltration as a means of surface water disposal where possible. Regardless of the site's status as greenfield or brownfield land, DCC encourages that surface water discharge from the developed site should be as close to the greenfield runoff rate as is reasonably practicable. Prior to designing the site surface water drainage, a full ground investigation should be implemented to fully explore the option of ground infiltration to manage the surface water in preference to discharging to a surface water body or public sewer system.

It should be noted that DCC Flood Risk Management Team are not currently responsible for stipulating a surface water discharge rate for developments further to the advice given above. This should be agreed with the relevant Local Planning Authority (LPA).

Historical Data

According to DCC held datasets, there are no records of historical flooding within the site boundary. However there are reported incidents of flooding approx. 300m to the north of the site, with anecdotal information indicating the source of flooding as surface water. Long Lane is understood to be impacted by this flooding. However, it is believed DCC Highways have historically undertaken works on Long Lane to alleviate surface water flooding. No further information is available on DCC records to confirm the frequency of this issue.

Fluvial Data

DCC do not generally undertake or hold any data relating to modelling on specific ordinary watercourses. The applicant is advised to contact the Environment Agency (EA) who hold modelling data for Main Rivers and some ordinary watercourses.

The EA Detailed River Network indicates that a network of ordinary watercourses are located within close proximity to the proposed site boundary which eventually outfall into Combs Reservoir. DCC have no specific data relating to flow characteristics or capacity and are therefore unable to confirm the suitability of discharge into these watercourses.

Due to the historic mining and mineral extraction operations in Derbyshire, networks of old stone soughs (drainage channels, sometimes known as adits) may exist beneath the ground surface in parts

of the County (particularly North East Derbyshire District, High Peak Borough, Derbyshire Dales District and the Peak District National Park area). The applicant is therefore advised to investigate the potential for hidden watercourses existing on the land prior to any works being undertaken.

Water Framework Directive/Water Environment Data:

The network of unnamed ordinary watercourses located around the site are not currently assessed under the WFD (Water Framework Directive, 2000). No activities or works should deteriorate the status of this watercourse as the main objectives for the WFD is to prevent deterioration in 'status' for all waterbodies. All waterbodies should reach 'good ecological status' by 2015 according to the directive. The ecological condition of any receiving watercourse can be protected by the implementation of a SuDS scheme with an appropriate number of treatment stages that are appropriately maintained.

The proposed site is immediately upstream of Combs reservoir which is understood to be a SSSI site. It is recommended that Natural England is consulted to understand the impact of the development on Combs reservoir.

A brief review of the county ecological information shows that there have been one reported sighting of bats. It is noted an extended phase 1 habitat survey has been undertaken to support the application.

Groundwater Data:

An analysis of the British Geological Survey (BGS) data is summarised below:

- *The groundwater may be vulnerable to contamination therefore infiltrating water should be free of contaminants,*
- *Groundwater is likely to be less than 3 m below the ground surface for at least part of the year,*
- *The scope for subsurface infiltration SuDS varies throughout the site, and*
- *Increased infiltration is unlikely to result in ground instability.*

It is recommended that a site specific ground investigation is undertaken for the site based on the review of the BGS data.'

A pre-development enquiry request was submitted to United Utilities in April 2021. In their response (Appendix D), United Utilities have stated 'UU would have no objection to the foul water from this site being

drained to the foul sewer network. The connection to the public sewer can be at a point convenient to yourself.'

Sources of Flooding and Probability

Fluvial

As described above, unnamed watercourses are located at the northern boundary and south-western corner of the site. The watercourses flow south-west and merge approximately 370m south-west of the site before draining into Combs Reservoir (SSSI) approximately 1.1km south-east of the site.

Fluvial flooding could occur if the unnamed watercourses overtopped their banks during or following an extreme rainfall event.

The EA 'Historical Flood Map' (Appendix F) indicates that there are no historical records of fluvial flooding at or in the immediate vicinity of the site. DCC have also stated that *'there are no records of historical flooding within the site boundary'*.

The EA 'Flood Map for Planning' (Appendix F) shows that the site is located within Flood Zone 1 - an area outside of the extreme flood extent, considered to have a less than 0.1% annual probability of flooding from rivers or the sea.

The SFRA and PFRA contain no records of fluvial flooding at or near to the site. As shown on the topographical survey (Appendix B), site levels rise above watercourse levels and given that the watercourses originate on or adjacent to the site, it is considered unlikely that any out of channel flooding would occur. All watercourses convey minimal flow arising from springs located on or adjacent to the site. It can therefore be concluded that the risk of fluvial flooding is very low.

Tidal

The developable area of the site is situated at a minimum of 236.84m AOD and is significantly above sea level. Therefore, there is no risk from tidal flooding.

Surface Water

Surface water flooding occurs when rainwater does not drain away through the normal drainage system or soak into the ground. It is usually associated with high intensity rainfall events but can also occur with lower intensity rainfall or melting snow where the ground is saturated, frozen or developed, resulting in overland flow and ponding in depressions in topography. Surface water flooding can occur anywhere without warning. However, flow paths can be determined by consideration of contours and relative levels.

The EA 'Flood Risk from Surface Water' map (Appendix F) indicates that the majority of the site is at very low risk of surface water flooding, meaning it has a less than 0.1% annual probability of flooding.

An area with a 'low risk' of surface water flooding (with between a 1% and 0.1% annual probability) is identified immediately north of the location of the proposed development. The risk is associated with the

unnamed watercourse which originates at the northern site boundary. The flood extent is constrained to the channel of the watercourse.

The SFRA and PFRA contain no records of surface water flooding at the site. Any potential surface water flooding arising at or near to the site would be directed west, away from the site, following the local topography.

It can therefore be concluded that risk of surface water flooding is very low.

Sewer

Flooding from sewers can occur when a sewer is overwhelmed by heavy rainfall, becomes blocked, is damaged, or is of inadequate capacity. Flooding is mostly applicable to combined and surface water sewers.

The United Utilities (UU) sewer plan (Appendix D) indicates that there are no public sewers crossing through the site. There are no public sewers in the immediate vicinity of the site which pose a flood risk. It can therefore be concluded that the risk of sewer flooding is very low.

Groundwater

Groundwater flooding occurs when water levels underneath the ground rise above normal levels. Prolonged heavy rainfall soaks into the ground and can cause the ground to become saturated. This results in rising groundwater levels which leads to flooding above ground.

BGS groundwater flooding data, extracted from an Envirocheck report (dated December 2014), provided as Appendix H, indicates that the proposed development is situated in an area with 'limited potential for groundwater flooding to occur'.

There are no records of groundwater flooding at or near to the site. It can therefore be concluded that the risk of groundwater flooding is very low.

Artificial Sources

There are no canals within the vicinity of the site. The EA 'Flood Risk from Reservoirs' map (Appendix F) shows that the site is not at risk of flooding from reservoirs.

It can therefore be concluded that the risk of flooding from artificial sources is very low.

Summary of Potential Flooding

It can be concluded that the risk of flooding from all sources is very low. Therefore, no site-specific mitigation measures are considered necessary.

Surface Water Management

The site currently comprises undeveloped land which is not formally drained and is therefore considered to be 100% permeable.

The development will introduce approximately 2,975m² of hardstanding in the form of glamping pods, motorcaravan pitches, shepherd's huts, yurts, and an access road.

The introduction of hardstanding area will result in an increase in surface water runoff rates and volumes. In order to ensure the proposed development will not increase flood risk elsewhere, surface water discharge from the site will be controlled.

In accordance with Policy 'EQ 11 Flood Risk Management' of the Adopted High Peak Local Plan (April 2016), *'Wherever possible, development should promote the reduction of flood risk by seeking to reinstate the natural floodplain, the de-culverting of watercourses and the limiting of surface water runoff to Greenfield rates via the use of sustainable drainage techniques'*.

The existing greenfield runoff rates have been estimated using the Revitalised Flood Hydrograph Model (ReFH2) method. A summary of the greenfield runoff rates for a range of events is provided as Appendix I. Greenfield runoff rates have been estimated for the 1.2 ha developable area of the site. The existing 1 in 1 year greenfield runoff rate is 6.5 l/s. The existing 1 in 100 year greenfield runoff rate is 23.4 l/s.

Based on the site topography, approximately 0.4ha (34%) of the developable site area drains towards the watercourse in the northern extent of the site. Approximately 0.8ha (66%) of the developable site area drains towards the watercourse at the southern boundary of the site.

A discharge rate of 6.5 l/s (1 in 1 year greenfield runoff rate) is proposed for this site however will be split pro-rata accounting for the topographical variance of the site. A discharge rate of 2.2 l/s will be applied for discharge to the watercourse north of the site. A discharge rate of 4.3 l/s will be applied for discharge to the watercourse in the south-western corner of the site.

Attenuation Storage

In order to achieve a limited discharge rate, attenuation storage will be required. Attenuation storage estimates have been provided using MicroDrainage and are included in Appendix J.

Northern Catchment

Approximately 34% of the developable site area will drain to the watercourse in the northern extent of the site. This equates to a contributing impermeable drainage area of 1,011m². An estimated storage volume of 48m³ will be required to accommodate the 1 in 100 year plus 40% CC event. The storage estimate is based on a discharge rate of 2.2 l/s, storage within a tank or pond structure, an impermeable drainage area of 1,011m², a design head of 1m and hydro brake flow control.

Southern Catchment

Approximately 66% of the developable site area will drain to the watercourse in the northern extent of the site. This equates to a contributing impermeable drainage area of 1,964m². An estimated storage volume of

94m³ will be required to accommodate the 1 in 100 year plus 40% CC event. The storage estimate is based on a discharge rate of 4.3 l/s, storage within a tank or pond structure, an impermeable drainage area of 1,964m², a design head of 1m and hydro brake flow control.

The attenuation volumes are provided for indicative purposes only and should be verified at the detailed design stage.

Discharge Method

Paragraph 080 of the NPPG: Flood Risk and Coastal Change sets out the following hierarchy of drainage options: into the ground (infiltration); to a surface water body; to a surface water sewer, highway drain or another drainage system; to a combined sewer.

Infiltration

The first consideration for the disposal of surface water is infiltration (soakaways and permeable surfaces). As described above, the site is underlain by superficial deposits of Devensian Till comprising diamicton. A high water table and boggy ground was encountered during the site walkover. Therefore, the use of infiltration techniques is not considered to be a feasible option for the site.

It is noted that the motorcaravan pitches and access road will be formed from a permeable surface. However, given the ground conditions, the permeable surfaces will be lined and formally drained (with perforated pipework). This will ensure the permeable surfaces do not become waterlogged in winter months. The attenuation volumes provided in this report make allowance for formal drainage from the motorcaravan pitches and access road.

Watercourse

As infiltration techniques are not suitable a connection to watercourse is the next consideration.

Watercourses originate at the northern boundary and in the south-western extent of the site. Discharge to the watercourses is proposed at a limited greenfield discharge rate of 6.5 l/s (split as 2.2 l/s and 4.3 l/s between 2no. discharge points). A gravity connection can be achieved. Both watercourses are within land under Client ownership.

Sustainable Drainage Systems

Attenuation storage should be provided in the form of Sustainable Drainage Systems (SuDS) where practical.

There is potential to accommodate attenuation storage within a pond or basin. To facilitate gravity drainage, 2no. attenuation ponds / basins would be required, one in the northern extent of the site and one in the south-western extent of the site.

Northern Catchment

A 1m deep pond / basin with a base area (at the invert level) of 15m², 1 in 3 side slopes and a total land take (at the top water level) of 85m² would provide up to 49m³ of attenuation storage, sufficient to accommodate the 1 in 100 year plus 40% CC event for the northern drainage sub-catchment.

Southern Catchment

A 1m deep pond / basin with a base area (at the invert level) of 45m², 1 in 3 side slopes and a total land take (at the top water level) of 145m² would provide up to 94.8m³ of attenuation storage, sufficient to accommodate the 1 in 100 year plus 40% CC event for the southern drainage sub-catchment.

Concept Surface Water Drainage Scheme

Surface water runoff will be discharged to the watercourses in the northern and south-western extents of the site. Discharge will be made at the 1 in 1 year greenfield runoff rate, equating to a total of 6.5 l/s (split as 2.2 l/s and 4.3 l/s between the 2no. discharge points).

Surface water runoff up to the 1 in 100 year plus 40% climate change allowance event will be attenuated on site. There is potential to accommodate the full balance of attenuation storage within ponds or basins located in the amenity area.

The proposed surface water drainage scheme will ensure no increase in runoff over the lifetime of the development.

A Concept Drainage Sketch is included in Appendix K.

Exceedance Event

Storage will be provided for the 1 in 100 year plus 30% CC event. Storm events in excess of the 1 in 100 year plus 30% CC event should be permitted to produce temporary shallow depth flooding within the amenity and outdoor activity areas.

Surface Water Treatment

In accordance with the CIRIA C753 publication 'The SuDS Manual' (2015), residential roofs (applicable to glamping pods, motorcaravan pitches, shepherd's huts and yurts), have a 'very low' pollution hazard level, with low traffic roads classified as having a 'low' pollution hazard level. Table 1 shows the pollution hazard indices for each land use.

Table 1 – Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential Roofs	Very Low	0.2	0.2	0.05
Low Traffic Roads	Low	0.5	0.4	0.4

Table extract taken from the CIRIA C753 publication 'The SuDS Manual' – Table 26.2

* Indices values range from 0-1.

Table 2 demonstrates that a pond / basin will provide sufficient treatment for runoff from roofs and low traffic roads.

Table 2 – SuDS Mitigation Indices

Type of SuDS	Mitigation Indices		
	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Pond	0.7	0.7	0.5
Basin	0.5	0.5	0.6

Table extract taken from the CIRIA C753 publication 'The SuDS Manual' – Table 26.3

Maintenance

Maintenance of communal drainage features such as ponds and basins will be the responsibility of the site owner. Maintenance of shared surface water drainage systems can be arranged through appointment of a site management company. Maintenance schedules for ponds and basins are included in Appendix L.

Foul Drainage

The site is separated from public sewers by a watercourse and a railway line. A connection to the public sewer would entail a pumped solution and significant engineering works. As such, it is intended to utilise a private sewage treatment plant. A 'Biodisc' treatment plant (or similar) would be a suitable option and would provide sufficient treatment for foul flows. The treatment plant could be located in the vicinity of the reception pod, facilitating gravity drainage.

Treated effluent should be discharged to watercourse. The sewerage treatment plant should be placed a minimum of 7m from glamping pods and a minimum of 10m from watercourses. As described above, *'the proposed site is immediately upstream of Combs reservoir which is understood to be a SSSI site'* therefore a suitably designed and accredited sewage treatment plant will be used for treatment prior to discharge to watercourse.

Conclusions

The proposed development is for 15 No. glamping units, 5 No. motorcaravan pitches and associated facilities.

Flood Risk

The Environment Agency 'Flood Map for Planning' shows that the site is located within Flood Zone 1, meaning it has a less than 0.1% annual probability of flooding.

The risk of flooding from all sources has been assessed and the flood risk to the site is considered to be very low.

Drainage Strategy

Approximately 1.2ha of the site will be developed. The development will introduce 2,975m² of hardstanding in the form of glamping pods, motorcaravan pitches, shepherd's huts, yurts and an access road. In order to ensure the introduction of hardstanding will not lead to an increase in flood risk elsewhere, sustainable drainage systems will be used.

All methods of surface water discharge have been assessed. Infiltration techniques are not considered viable due to the impermeable nature of the superficial deposits. Surface water runoff will be discharged to the watercourses in the northern and south-western extents of the site. Discharge will be made at the 1 in 1 year greenfield runoff rate of 6.5 l/s, split pro rata between 2no. discharge points.

Attenuation storage will be required to achieve a limited discharge rate. Attenuation could be provided within ponds / basins located within the amenity areas. Due to split site topography, a pond / basin will be required in the northern and south-western extents of the site.

Foul flows will be dealt with via a suitably accredited private sewage treatment plant. Treated effluent will discharge to watercourse.

A Concept Designer's Risk Assessment (cDRA) has been prepared to inform future designers of any identified hazards associated with the scheme. The cDRA has been included in Appendix M.

Recommendations

1. Submit this Flood Risk Assessment and Drainage Strategy to the Planning Authority in support of the Planning Application.
2. Verify the attenuation volumes included in this report when undertaking detailed drainage design.
3. Make provision for sustainable drainage features in the northern and south-western extents of the site.
4. Make provision for a private package treatment plant located a minimum of 7m from glamping pods and a minimum of 10m from watercourses.

Appendix A Location Plan and Aerial Image



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Site Boundary
- Land in Client Ownership
- Watercourses / Water Bodies

CLIENT:

HIGH PEAK RETREAT

www.waterco.co.uk

SCHEME:

LAND AT LONG LANE, CHAPEL-EN-LE-FRITH

PLOT TITLE:

LOCATION PLAN

PLOT STATUS:			DATE:
FINAL			10/05/2021
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
VJ	AW	VG	1:5,000 (UNLESS STATED OTHERWISE)

PLOT NAME:		REV:
13756-Location_Plan		-



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

Site Boundary

Land in Client Ownership

CLIENT:

HIGH PEAK RETREAT

www.waterco.co.uk

SCHEME:

**LAND AT LONG LANE,
CHAPEL-EN-LE-FRITH**

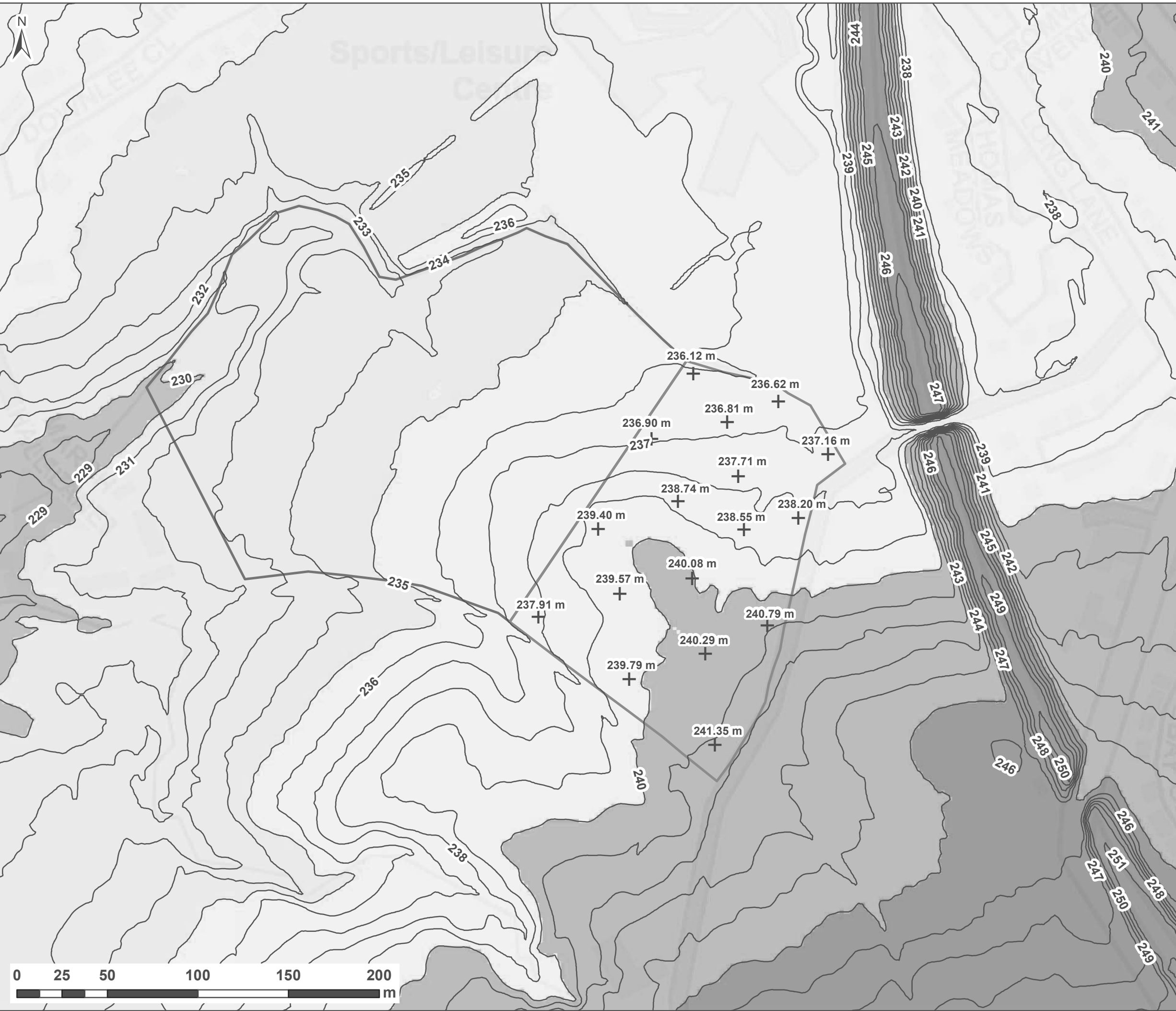
PLOT TITLE:

AERIAL PLAN

PLOT STATUS:			DATE:
FINAL			11/05/2021
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
VJ	AW	VG	1:5,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
13756-Aerial_Plan	-

Appendix B Topographical Information



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

Site Boundary

Land in Client Ownership

+

 Site Levels

Ground Elevation (m AOD)

<225

225-230

230-235

235-240

240-245

>245

CLIENT:

HIGH PEAK RETREAT

waterco

www.waterco.co.uk

SCHEME:

**LAND AT LONG LANE,
CHAPEL-EN-LE-FRITH**

PLOT TITLE:

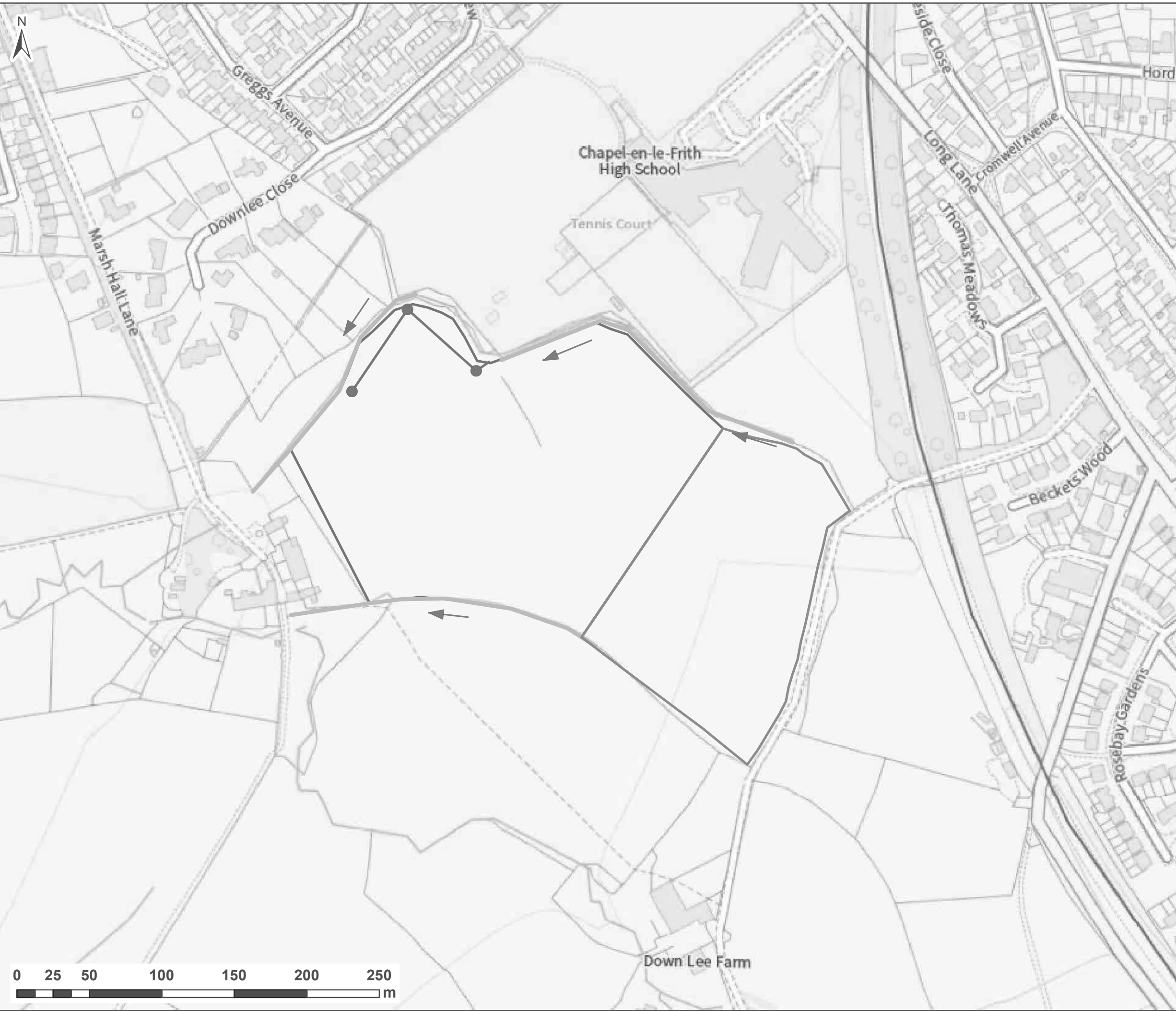
LIDAR ELEVATIONS
2m RESOLUTION

PLOT STATUS:			DATE:
FINAL			11/05/2021

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
VJ	AW	VG	1:2,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
13756-Lidar	-

Appendix C Existing Drainage Sketch and Photographs



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Site Boundary
- Land in Client Ownership
- Land Drain
- Manholes
- Assumed Location of Drain

CLIENT:

HIGH PEAK RETREAT

www.waterco.co.uk

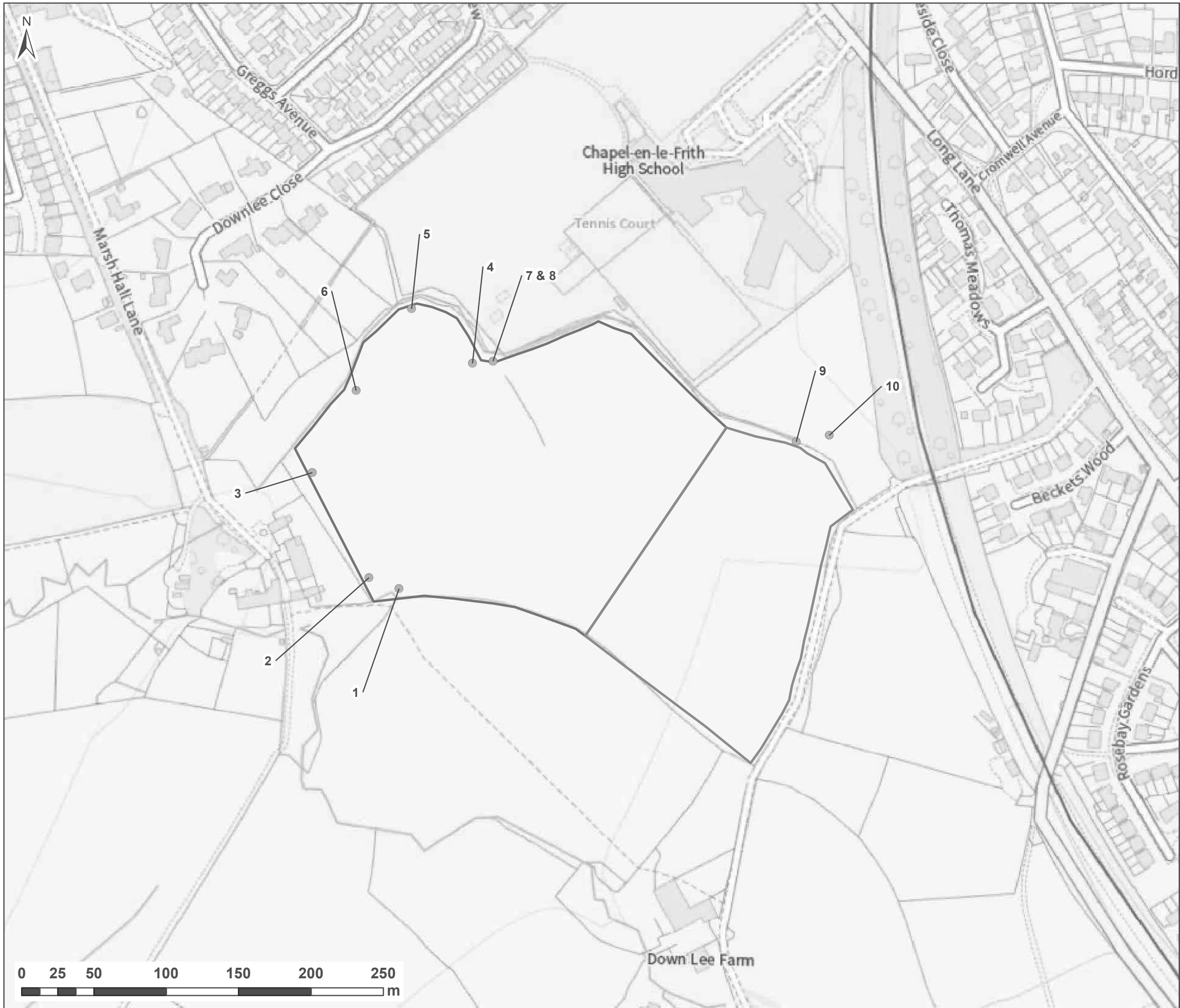
SCHEME:

**LAND AT LONG LANE,
CHAPEL-EN-LE-FRITH**

PLOT TITLE:

EXISTING DRAINAGE SKETCH

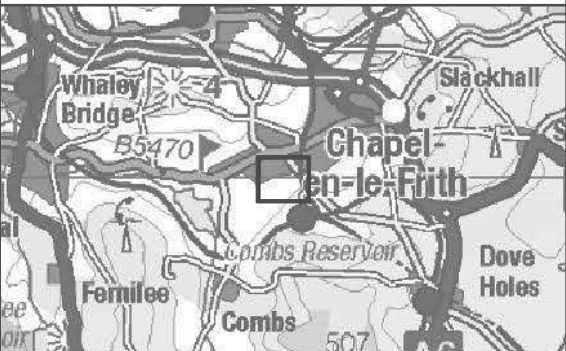
PLOT STATUS:			DATE:
FINAL			11/05/2021
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
VJ	AW	VG	1:2,500 (UNLESS STATED OTHERWISE)
PLOT NAME:			REV:
13756-Existing_Drainage_Sketch			-



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

-  Site Boundary
-  Land in Client Ownership
-  Location of Photographs



CLIENT:

HIGH PEAK RETREAT



www.waterco.co.uk

SCHEME:

**LAND AT LONG LANE,
CHAPEL-EN-LE-FRITH**

PLOT TITLE:

PHOTO LOCATION PLAN

PLOT STATUS:

FINAL

DATE:

11/05/2021

DRAWN:

VJ

CHECKED:

AW

APPROVED:

VG

PLOT SCALE @ A3:

1:2,500

(UNLESS STATED OTHERWISE)

PLOT NAME:

13756-Photo_Location_Plan

REV:

-

Photo No.1	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith	
Date: 24 th November 2014		
Description: Watercourse along southern boundary		

Photo No. 2	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith	
Date: 24 th November 2014		
Description: Surface water ponding at south-western boundary of site		

Photo No.3	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith	
Date: 24 th November 2014		
Description: Surface water ponding at western boundary of site		

Photo No. 4	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith	
Date: 24 th November 2014		
Description: Manhole 1 on 'Existing Drainage Sketch'		

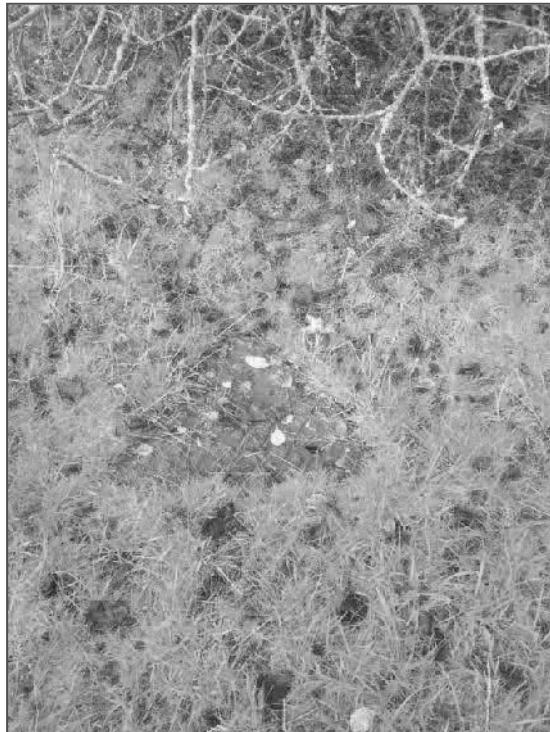
Photo No.5	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith	
Date: 24 th November 2014		
Description: Manhole 2 on 'Existing Drainage Sketch'		

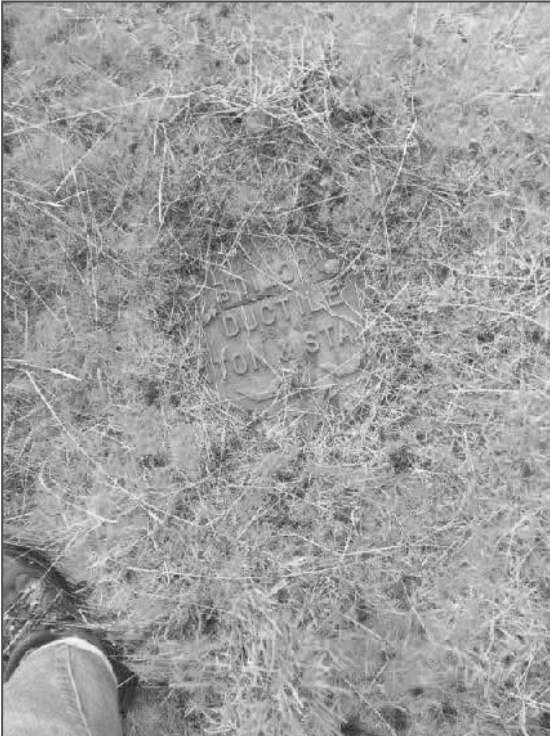
Photo No. 6	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith	
Date: 24 th November 2014		
Description: Manhole 3 on 'Existing Drainage Sketch'		

Photo No.7	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith		
Date: 24 th November 2014			
Description: Surface water outfall from Chapel-en-le-Frith High School			

Photo No. 8	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith		
Date: 24 th November 2014			
Description: Location where ditch becomes piped beneath the site			

Photo No.9	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith	
Date: 24th November 2014		
Description: Spring in north-eastern extent of the site – source of watercourse		

Photo No. 10	Job Reference & Number: 13756-Land at Long Lane, Chapel-en-le-Frith	
Date: 24th November 2014		
Description: North-eastern extent of the site. Photograph taken looking south, Bank Hall Drive shown.		

Appendix D United Utilities Sewer Plan and Correspondence

Waterco Ltd

**Eden Court
Lon Parcwr Business Park
Ruthin
LL15 1NJ**

FAO:

Dear Sirs

Location: X405132 Y379973

I acknowledge with thanks your request dated 24/11/14 for information on the location of our services.

Please find enclosed plans showing the approximate position of our apparatus known to be in the vicinity of this site.

I attach General Condition Information sheets, which details contact numbers for additional services (i.e. new supplies, connections, diversions) which we are unable to deal with at this office. In addition you should ensure they are made available to anyone carrying out any works which may affect our apparatus.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please telephone us on 0870 7510101.

Yours Faithfully,



Sue McManus
Operations Manager
Property Searches

United Utilities Water PLC

Property Searches
Ground Floor Grasmere House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

DX 715568 Warrington
Telephone 0870 751 0101
Fax Number 0870 7510102

Property.searches@uuplc.co.uk

Your Ref: W1738-141124
Our Ref: 14/ 1068547
Date: 26/11/2014

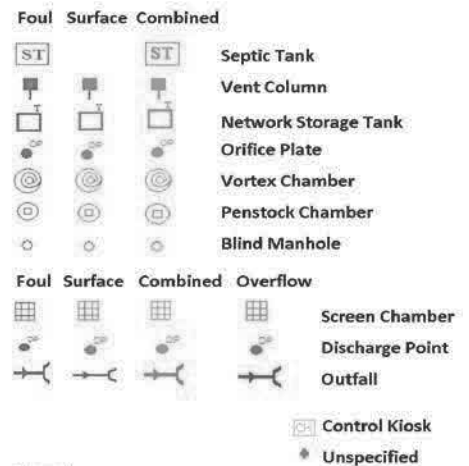
TERMS AND CONDITIONS - WASTERWATER & WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UW apparatus) of United Utilities Water PLC ("UW").

TERMS AND CONDITIONS:

1. This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
2. This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
3. In particular, the position and depth of any UW apparatus shown on the Map are approximate only. UW strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UW apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
4. The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
5. The position and depth of UW apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
6. This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UW apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
7. No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UW apparatus by reason of the actual position and/or depths of UW apparatus being different from those shown on the Map and any information supplied with it.

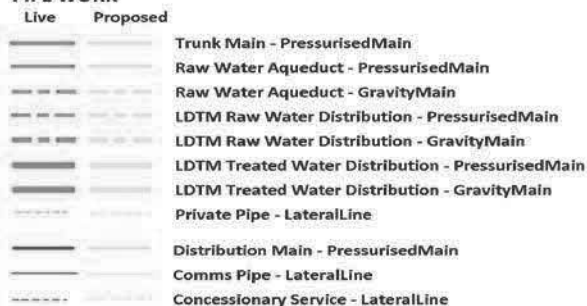
WASTE WATER SYMBOLOGY



Legend			
MANHOLE FUNCTION		SEWER SHAPE	
FO	Foul	CI	Circular
SW	Surface Water	EQ	Egg
CO	Combined	OV	Oval
OV	Overflow	FT	Flat Top
		RE	Rectangular
		SQ	Square
		TR	Trapezoidal
		AR	Arch
		BA	Barrel
		HO	HorseShoe
		UN	Unspecified
SEWER MATERIAL			
AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	VC	Vitrified Clay
CO	Concrete	PP	Polypropylene
CSB	Concrete Segment	PF	Pitched Fibre
CSU	Concrete Segment	MA	Masonry, Coursed
CC	Concrete Box Culverted	MA	Masonry, Random
PSC	Plastic / Steel	RP	Reinforced Plastic
GR	Glass Reinforced	CI	Cast Iron
GRP	Glass Reinforced	SI	Spun Iron
PVC	Polyvinyl Chloride	ST	Steel
PE	Polyethylene	U	Unspecified

CLEAN WATER SYMBOLOGY

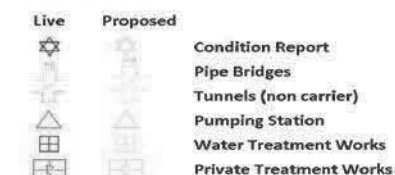
PIPE WORK



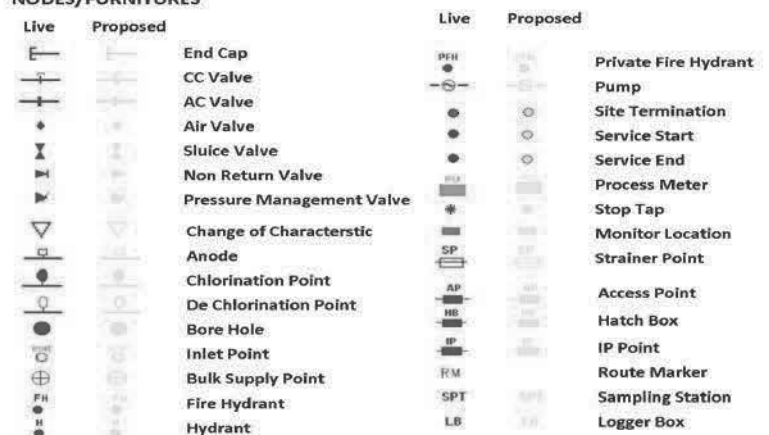
ABANDONED PIPE



PROPERTY TYPES



NODES/FURNITURES



Legend	
MATERIAL TYPES	LINING TYPES
AC ASBESTOS CEMENT	CL CEMENT LINING
CI CAST IRON	TB TAR OR BITUMEN
CU COPPER	ERL EPOXY RESIN
CO CONCRETE	
DI DUCTILE IRON	INSERTION TYPES
GI GALVANISED IRON	DD DIE DRAWN
GR GREY IRON	DR DIRECTIONAL DRILLING
OT OTHERS	MO MOLING
PB LEAD	PI PIPELINE
PV UPVC	SL SLIP LINED
SI SPUN IRON	
ST STEEL	
UN UNKNOWN	
PE POLYETHYLENE	

Conditions and Information regarding wastewater network

These general conditions and precautions apply to the wastewater network of United Utilities

Please ensure that a copy of these conditions is passed to your representative and contractor on site.

1 United Utilities provides the approximate locations of its sewers according to its records. These records are not necessarily accurate or complete nor do they normally show the positions of every sewer culvert or drain, private connections from properties to the public sewers or the particulars of any private system. No person or company shall be relieved from liability for any damage caused by reason of the actual positions and/or depths being different from those indicated. The records do indicate the position of the nearest known public sewer from which the likely length of private connections can be estimated together with the need for any off site drainage rights or easements.

2 Special requirements relative to our sewers may be indicated. United Utilities employees or its contractors will visit any site at reasonable notice to assist in the location of its underground sewers and advise any precautions that may be required to obviate any damage. To arrange a visit or for further information regarding new supplies, connections, diversions, costing, or any notification required under these General Conditions, please call us on **0845 746 2200**.

1 Where public sewers are within a site which is to be developed and do not take any drainage from outside the area, they are from an operational viewpoint redundant. The developer must identify all redundant sewers affected by the development and apply to United Utilities in writing for these sewers to be formally closed. The developer shall bear all related costs of the physical abandonment work.

2 Public sewers within the site that are still live outside the area will be subject to a "Restricted Building zone". This would normally be a surface area equivalent to the depth of the sewer measured from the centre line of the sewer on either side. No construction will be permitted within that zone. The developer should also note that deep and wide rooted trees must not be planted in close proximity to live sewers. Access to public sewers must be maintained at all times and no interference to manholes will be permitted during construction work.

1. Where there is a public sewer along the line of a proposed development/building, arrangements shall be made by the developer at his cost to divert the sewer around the development. Where this is not possible and as a last resort, a "Building Over Agreement" will need to be completed under section 18 of the Building Act 1984. The developer shall design building foundations to ensure that no additional loading is transferred to the sewer and submit such details both to the Local Authority's Building Control Officer and to United Utilities for approval/acceptance. United Utilities on a rechargeable basis would normally undertake all aspects of design work associated with the diversion of any part of the operational wastewater network. For further advice please email wastewaterdeveloperservices@uuplc.co.uk
2. Where there is a non-main river watercourse/culvert passing through the site, the landowner has the responsibility of a riparian owner for the watercourse/culvert and is responsible for the maintenance of the fabric of the culvert and for all works involved in maintaining the unrestricted flow through it. Building over the watercourse/culvert is not recommended. The developer must contact the local authority before any works are carried out on the watercourse/culvert. Where it is necessary to discharge surface water from the site into the watercourse/culvert the developer shall make an assessment of the available capacity of the watercourse/culvert (based on a 1 in 50 year event) and ensure that the additional flow to be discharged into the watercourse/culvert will not cause any flooding. In appropriate cases, flooding may be prevented by on-site storage. The developer shall submit the relevant details required to substantiate his development proposals. Details of any outfall proposed shall also be submitted to the Environment Agency, PO Box 12, Richard Fairclough House, Knutsford Road, Warrington, Cheshire, WA4 1HT for their approval.
3. Where there is a main river watercourse/culvert passing through the site, the developer shall submit all proposals affecting the river to the Environment Agency at the address stated in paragraph 6 for approval/acceptance.

8. Your attention is drawn also to the following:

- **Private drains or sewers which may be within the site.**

On 1 October 2011 all privately owned sewers and lateral drains which communicate with (that is drain to) an existing public sewer as at 1 July 2011 will become the responsibility of the sewerage undertaker. This includes private sewers upstream of pumping stations that have yet to transfer, but excludes lengths of sewer or drain that are the subject of an on-going appeal or which have been excluded from transfer as a result of an appeal or which are on or under land opted-out by a Crown body. The transfer specifically excludes sewers and lateral drains owned by a railway undertaker. Sewers upstream of such assets, however, are transferred. Such assets may not be recorded on the public sewer record currently as it was not a requirement to keep records of previously private sewers and drains.

- **Applications to make connections to the public sewer.**

The developer must write to United Utilities requesting an application form that must be duly completed and returned. No works on the public sewer shall be carried out until a letter of consent is received from United Utilities.

- **Sewers for adoption.** If an agreement for the adoption of sewers under Section 104 of the Water Industry Act 1991 is being contemplated, a submission in accordance with "Sewers for Adoption", Seventh Edition, published by the Water Research Centre (2001) Plc, Henley Road, Medmenham, PO Box 16, Marlow, Buckinghamshire, SL7 2HD will be required, taking into consideration any departures from the general guide stipulated by United Utilities.

Further consultation with United Utilities.

Developers wishing to seek advice or clarification regarding sewer record information provided should contact United Utilities to arrange an appointment. A consultation fee may be charged, details of which will be made available at the time of making an appointment.

9. Combined sewers, foul sewers, surface water sewers, and pumped mains. These are shown separately in a range of colours or markings to distinguish them on our drawings, which are extracts from the statutory regional sewer map. A legend and key is provided on each extract for general use, although not all types of sewer will be shown on every extract.

Combined sewers shown coloured red carries both surface water and foul sewage, especially in areas where there is no separate surface water sewerage system.

Foul sewers coloured brown may also carry surface water and there may be no separate surface water system indicated in the immediate area. Both combined and foul sewers carry wastewater to our treatment works before it can safely be returned to the environment.

Surface water sewers coloured blue on our drawings are intended only to carry uncontaminated surface water (e.g. rainfall from roofs, etc) and they usually discharge into local watercourses. It is important for the protection of the environment and water quality that only uncontaminated surface water is connected to the surface water sewers. Improper connections to surface water sewers from sink wastes, washing machines and other domestic use of water can cause significant pollution of watercourses.

Pumped mains, rising mains and sludge mains will all be subject to pumping pressures and are neither suitable nor available for making new connections.

Highway drains, when included, show as blue and black dashed lines. Highway drains are not assets belonging to United Utilities and are the responsibility of local authorities.

1. For information regarding future proposals for construction of company apparatus please write to United Utilities, PO Box 453, Warrington, WA5 3QN.
2. For information regarding easements, deeds, grants or wayleaves please write to United Utilities Property Solutions, Coniston Buildings, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3UU (Tel: 01925 731 365)



Extract from Map of Public Sewers

The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available.

The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded.

United Utilities will not accept any liability for any damage caused by the actual positions being different from those shown.

United Utilities Water Limited 2014.
The plan is based upon the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office.Crown and United Utilities copyrights are reserved. Unauthorised reproduction will infringe these copyrights.

LEGEND

				Water Course
				Overflow Pipe
				Sludge Main
				Highway Drain
Combined	Surface Water	Foul	Abandoned	
				Public Sewer
				Private Sewer
				Section 104
				Rising Main

X405132 Y379973

Printed By : Angela Gall Date: 26/11/2014

DO NOT SCALE
Approximate Scale: 1:5000



Anthony Jones

From: Bailey, Dafydd <Dafydd.Bailey@uuplc.co.uk>
Sent: 28 April 2021 17:22
To: Anthony Jones
Cc: Wastewater Developer Services
Subject: PDE 4200039150 (13756-Developer Enquiry) - High Peak Retreat [Filed 29 Apr 2021 09:58]

Categories: Info

Hi Anthony,

Many thanks for your e-mail. Please find our response below for convenience

Pre Development Enquiry for: 15 Glamping Units and 5 Motorcaravan Pitches on land off Long Lane, Chapel-en-le-Frith UU Reference Number: 4200039150

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.

If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 3723223 or refer to the link below:

<https://www.unitedutilities.com/builders-developers/working-near-our-assets/>

Foul Water

We have no objection to your preferred foul connection point (to the 150mm foul sewer crossing Marsh Hall Lane located to the North West of proposed development site) in principle, subject to agreeing the pumped foul discharge rates.

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

Surface Water

We note surface water runoff is proposed to discharge into a land drain. On this basis, we would advise contacting the LLFA to discuss the proposed surface water drainage arrangements.

Levels

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore do not accept land drainage, overland flows or track drainage into the public sewerage network under any circumstances

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address:

DeveloperServicesWater@uuplc.co.uk. Further information for this service can be found on our website via the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/>

Connection Application

Although we may discuss and agree discharge points and rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-connections/>

We recommend that the detailed design should confirm the locations of all utilities in the area and ensure that any proposed drainage solution considers routing and clash checks where required.

If we can be of any further assistance please don't hesitate to contact us further.

Kind regards,
Dafydd



Dafydd Bailey
Developer Engineer
Developer Services & Metering
Customer Services
M: 07464907595
unitedutilities.com

From: Anthony Jones [<mailto:anthony.jones@waterco.co.uk>]

To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>

Subject: 13756-Developer Enquiry

Proposed Glamping Development at Land off Long Lane, Chapel-en-le-Frith, Derbyshire, SK23 0TQ.

Dear Sir/ Madam,

Please find attached the completed pre-development enquiry form, development plan, topographical survey and drainage survey for the above site.

The proposed development will comprise 15 glamping units, 5 motorcaravan pitches and associated facilities. Please see attached development plans for reference.

For background, we have previously contacted you in December 2014 to discuss this site for an earlier residential proposal. This new proposal is for a luxury glamping development described above. For surface water, discharge to the adjacent land drain is proposed in line with the drainage hierarchy. For foul flows, the 150mm public foul sewer that flows west crossing Marsh Hall Lane (private road) to the west of the site appears to be the only alternative (requiring a pumped solution and significant engineering works). In 2014, your response to our previous enquiry was

that 'UU would have no objection to the foul water from this site being drained to the foul sewer network. The connection to the public sewer can be at a point convenient to yourself.'

If you need any further information, please don't hesitate to contact me.

Kind regards,

Anthony Jones BSc (Hons) MSc
Assistant Environmental Consultant

DDI: 01244 986027

Office: 01824 702220

Teams: anthony.jones@waterco.co.uk

For 2021 we've been included in the CIWEM Consultant & Contractor File, which is available [here](#)



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EMGateway3.uuplc.co.uk made the following annotations

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Business Park, Lingley Green Avenue, Great Sankey,
Warrington, WA5 3LP
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www.unitedutilities.com
www.unitedutilities.com/subsidiaries

Appendix E Proposed Layout Plan