Sutherland Road, Longsdon

Flood Risk Assessment

October 2015



Waterco Ltd, Eden Court, Lon Parcwr Business Park, Ruthin, Denbighshire LL15 1NJ
tel: 01824 702220 email: enquiries@waterco.co.uk web: www.waterco.co.uk

w1949-151016-FRA

DOCUMENT VERIFICATION RECORD

CLIENT:

Mr Ian Salt

SCHEME:

Preliminary Flood Risk Study for a proposed touring caravan site at land off Sutherland Road, Longsdon, Staffordshire, ST9 9QB.

INSTRUCTION:

The instruction to carry out this Flood Risk Assessment was received from Mr Richard Gilman of Sammons Architectural Ltd acting on behalf of the client.

REPORT FORMAT:

This Flood Risk Assessment report has been prepared in accordance with the National Planning Policy Framework (NPPF) March 2012 and the associated Planning Practice Guidance (PPG) document: Flood Risk and Coastal Change.

ISSUE HISTORY:

Issue Date	Comment
16/10/2015	First issue

DOCUMENT REVIEW & APPROVAL

Prepared by Johanne Williams LLB (Hons)

Reviewed by Jordan Jones BSc (Hons)

Approved by Aled Williams BSc (Hons)

Waterco Document Reference Number.....w1949-151016-FRA

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Abbreviations

AEP	*Annual Exceedance Probability*
CCA	*Climate Change Allowance*
EA	*Environment Agency*
m AOD	*metres Above Ordnance Datum*
NPPF	*National Planning Policy Framework*
PPG	*Planning Practice Guidance*

1 Introduction

1.1 The proposed development is for a touring caravan site at land off Sutherland Road, Longsdon, Staffordshire, ST9 9QB (grid reference: 396060E, 353539N). A location plan and an aerial image are included in Appendix A.

1.2 The existing site is temporarily being used as a compound by the British Waterways Board whilst they repair canal embankments in the area. The site covers an area of approximately 5500m^2 and is bordered by a dismantled railway line, greenfield land and Endon Brook to the north, Sutherland Road to the east, Caldon Canal (Leek Branch) to the south and greenfield land and an unnamed tributary of Endon Brook to the west.

1.3 Site levels generally vary from 139m AOD to 139.5m AOD. Site levels rise to 140.4m AOD adjacent to Caldon Canal (Leek Branch) in the south and 143.94m AOD at the site access off Sutherland Road. A Topographical Survey is included in Appendix B.

1.4 This report has been prepared to assess the fluvial flood risk from Endon Brook and its tributary. The findings of the fluvial flood risk assessment will determine the viability of the proposal in accordance with the National Planning Policy Framework (NPPF) Planning Practice Guidance (PPG) document: Flood Risk and Coastal Change.

2 Development Vulnerability & Flood Zone Classification

2.1 The site is shown within Flood Zone 3 on the EA 'Flood Map for Planning (rivers and sea)' (Appendix C) – an area considered to be at flood risk with a 1% (1 in 100) probability or greater of flooding from rivers in any given year.

2.2 Sites used for caravans, mobile homes and park homes intended for permanent residential use are classified as 'highly vulnerable' development and in accordance with Table 3 of the NPPF PPG: Flood Risk and Coastal Change document, would not be permitted within Flood Zone 3.

2.3 Sites used for holiday or short-let caravans and camping are classified as 'more vulnerable' development and would be allowed within Flood Zone 3 (excluding areas of functional floodplain known as Zone 3b) subject to the NPPF 'Exception Test' being passed. For the Exception Test to be passed:

- it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared; and
- a site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

2.4 The following section will detail the fluvial flood risk in order to establish whether the development will be safe for its lifetime.

3 Fluvial Risk

3.1 The nearest watercourse is an unnamed tributary to Endon Brook which is located immediately west of the site. The unnamed watercourse flows north in this location and joins Endon Brook immediately north-west of the site. Endon Brook flows east in this location to its confluence with the River Churnet approximately 650m east of the site.

3.2 Flooding could occur if Endon Brook or its tributary overtopped their banks during or following an extreme rainfall event due to lack of channel capacity.

3.3 EA correspondence (Appendix C) states that 'there are no EA raised flood defences affecting this site' however there are proposals to create a flood attenuation scheme along Endon Brook by 2017.

3.4 The EA 'Historical Flooding Map' (Appendix C) shows that the western extent of the site was affected by flooding in 1959 and that land to the east of the site (downstream of Sutherland Road), was affected by flooding in 1964. EA correspondence (Appendix C) states that 'Endon Brook flooded in 1999 in the vicinity of the site but, we do not hold any records of the extent of this event'.

<u>EA Estimated Flood Levels</u>

3.5 Estimated flood levels for Endon Brook have been obtained from the EA and are included in Appendix C. The flood levels are taken from the River Churnet Hazard Mapping Study undertaken in 2013. A summary of the flood levels for the node points closest to the site is provided in Table 1 overleaf. The node points are shown on the EA 'Flood Map for Planning' (Appendix C).

Table 1 – EA Estimated Flood Levels

		Flood Levels (m AOD)			
Node	**Grid Ref**	**5% AEP**	**1% AEP***	**1% AEP + CC****	**0.1% AEP**
Endon_2	396000E 353500N	139.79	140.12	140.34	140.10
EB_883us	396002E 353563N	139.79	140.12	140.34	140.10
EB_691	396160E 353595N	139.68	140.03	140.26	140.05

*AEP – Annual Exceedance Probability

**CC – Climate Change

3.6 The Topographical Survey included in Appendix B shows that the site levels generally vary from 139m AOD to 139.5m AOD with levels rising sharply up to Caldon Canal (Leek Branch) and the site access off Sutherland Road. By comparing flood levels to site levels it can be seen that the flood depths across the majority of the site vary from 0.84m to 1.34m during the 1% AEP + CC event.

3.7 The majority of the site (land below 139.79m AOD) is shown at risk during the 5% AEP event. Land below 139.79m AOD constitutes functional floodplain (Zone 3b).

3.8 It can be concluded that the majority of the site is at high risk of fluvial flooding. In accordance with Table 3 of the NPPF PPG: Flood Risk and Coastal Change document, a touring caravan development would not be permitted within Flood Zone 3b (land below 139.79m AOD).

3.9 It should be noted that there is an area of high ground adjacent to the site access off Sutherland Road. Development could be situated in this location provided that it is situated on ground above 140.34m AOD (1% AEP + CC flood level). Sutherland Road is situated at approximately 144m AOD and is significantly above the 1% AEP + CC flood level. Sutherland Road would therefore provide a safe access / egress route.

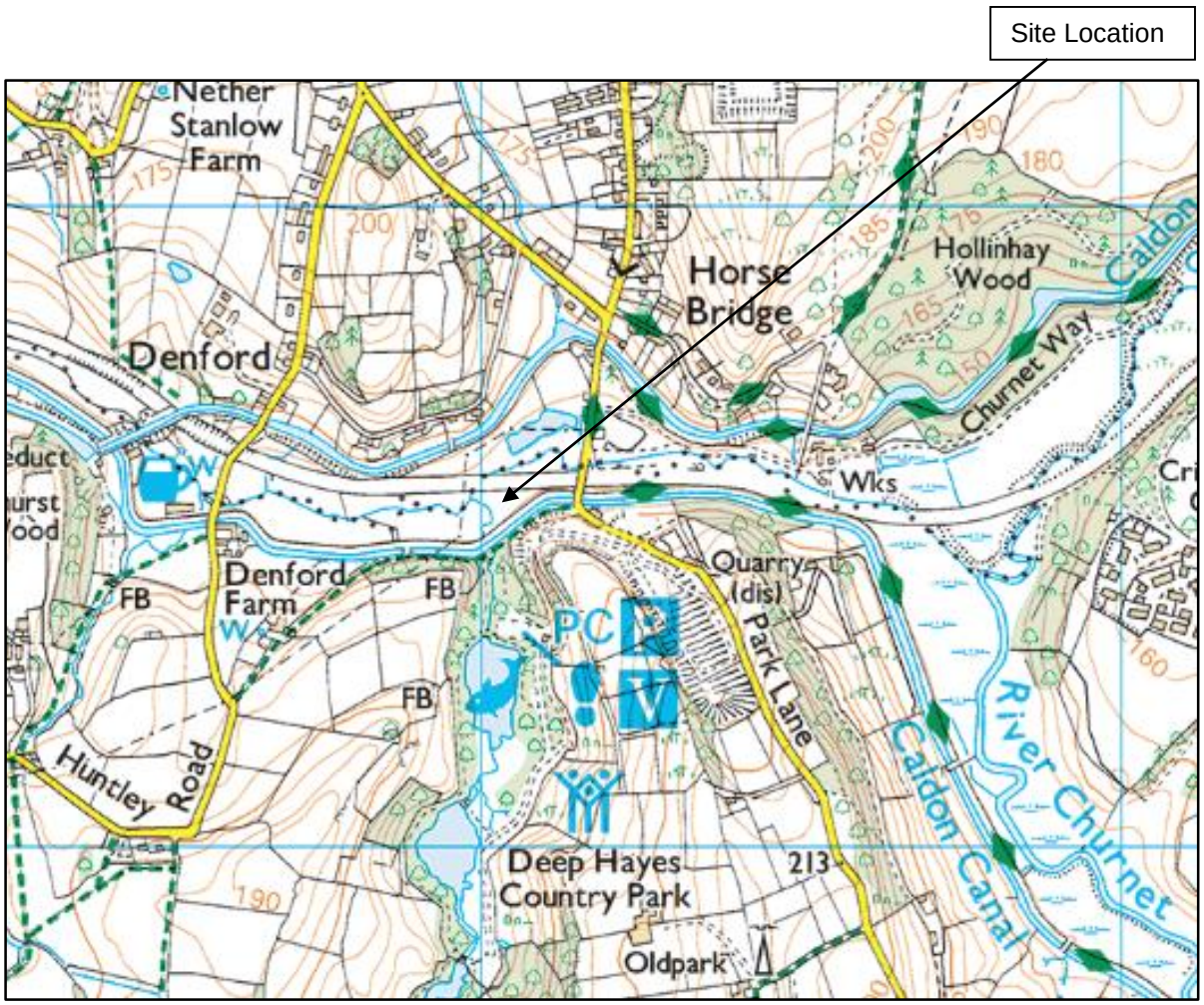
4 Summary and Conclusions

4.1 Sites used for caravans, mobile homes and park homes intended for permanent residential use are classified as 'highly vulnerable' and would not be permitted in Flood Zone 3 (on ground below 140.34m AOD).

4.2 Sites used for holiday or short-let caravans and camping are classified as 'more vulnerable' development and would be allowed within Flood Zone 3, however not in Flood Zone 3b. The majority of the site is shown at risk during the 5% AEP event and is therefore within Flood Zone 3b. The 5% AEP flood level is 139.79m AOD.

4.3 'More vulnerable' development would be permitted in a low risk area i.e. on ground above the 1% AEP + CC flood level (140.34m AOD). Safe access / egress would be available via Sutherland Road which is situated at 144m AOD.

Appendix A – Location Plan and Aerial Image



Site Location Plan

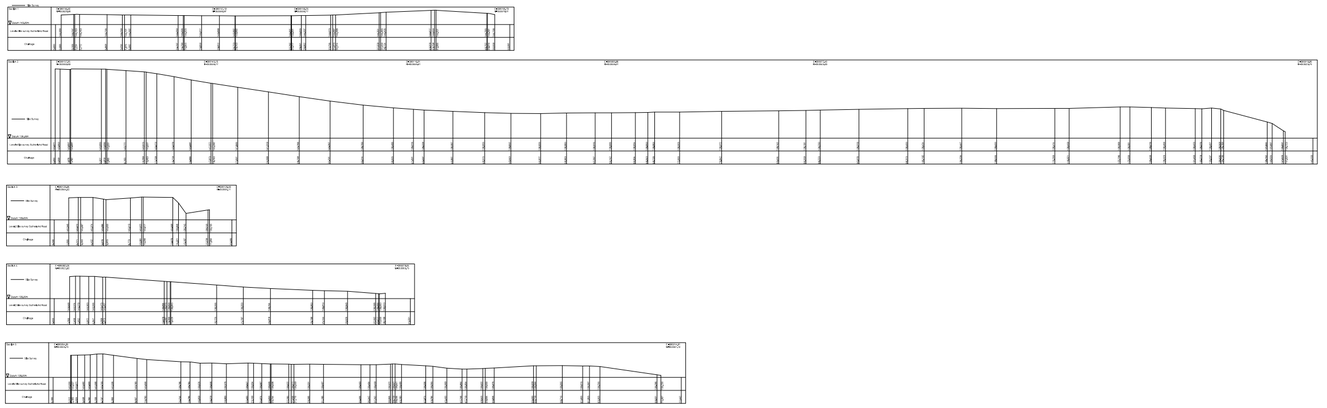
(Source: Streetmap)

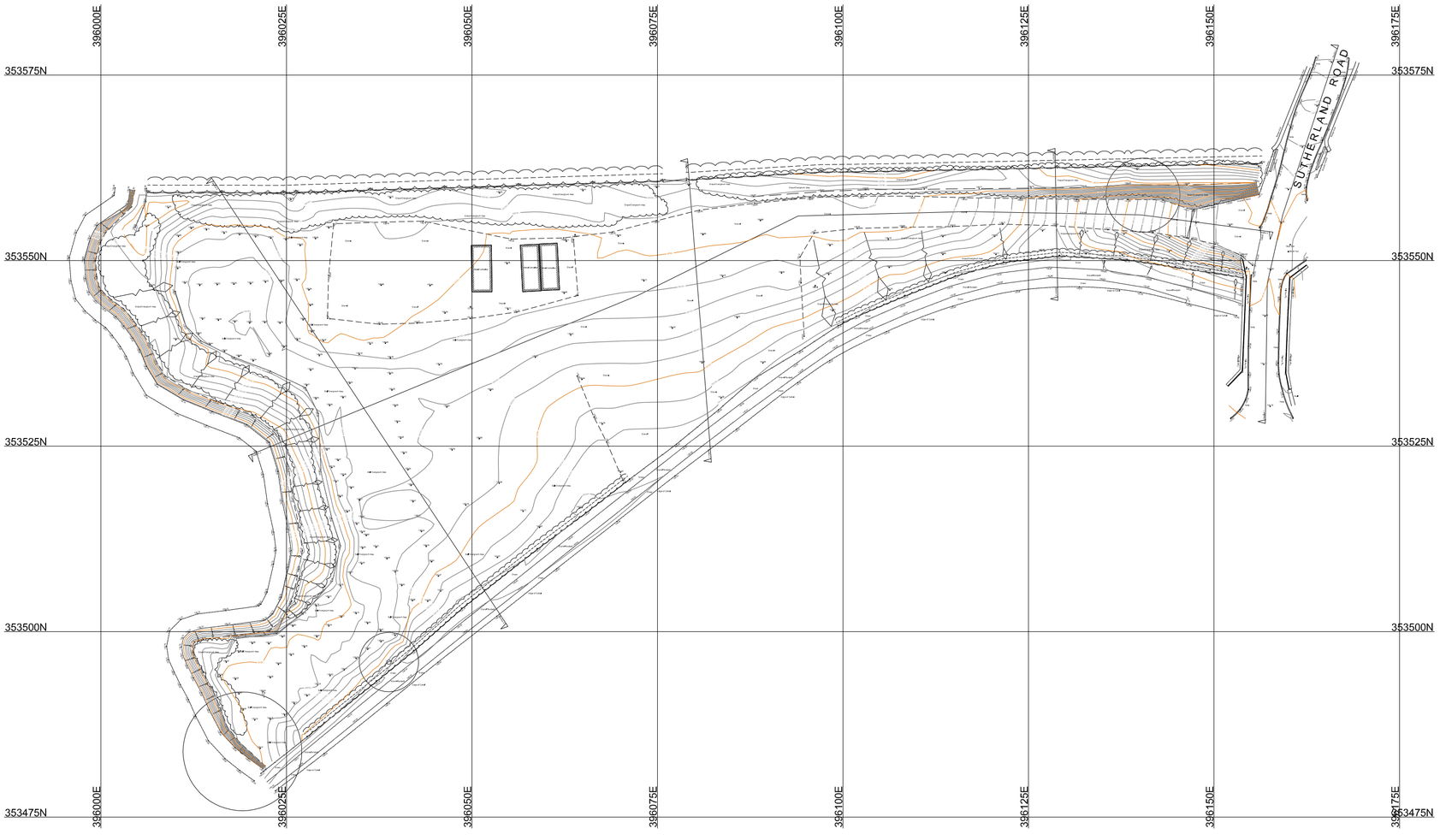


Aerial Photograph

(Source: Google Earth)

Appendix B – Topographical Survey





Additional Notes

GENERAL

NO ALLOWANCE HAS BEEN MADE FOR SUB SURFACE ENTRY INTO MANHOLES OR OTHER CHAMBERS OR VOIDS BELOW GROUND LEVEL, THEREFORE ANY DETAILS RELATING TO DEPTHS, SIZES ETC. ARE TAKEN FROM ABOVE GROUND AND AS SUCH WILL BE APPROXIMATE ONLY.

THE CONTRACTOR IS TO CHECK AND VERIFY ALL BUILDING AND SITE DIMENSIONS, LEVELS AND SEWER INVERT LEVELS AT CONNECTION POINTS BEFORE WORK STARTS.

SHOULD THERE BE ANY CONFLICT BETWEEN THE DETAILS INDICATED ON THIS DRAWING AND THOSE INDICATED ON OTHER DRAWINGS, THE ENGINEER SHOULD BE INFORMED PRIOR TO CONSTRUCTION ON SITE.

IT IS IMPORTANT TO NOTE THAT THE SAME ACCURACIES IMPLIED BY THE PLOTTING SCALE ARE EQUALLY APPLICABLE TO DIGITAL DATA SUPPLIED FOR CAD.

EVERY EFFORT IS MADE TO IDENTIFY ALL VISIBLE ABOVE GROUND FEATURES. HOWEVER, IT SHOULD BE BORNE IN MIND THAT THERE MAY BE ITEMS OBSCURED AT THE TIME OF SURVEY.

VISIBLE FEATURES IN THE VICINITY OF THE BOUNDARIES, AS SHOWN ON THIS SURVEY, MAY NOT REPRESENT THE EXTENT OF LEGALLY CONVEYED OWNERSHIP.

TREE NOTES

Notes:
1) Dia = APPROX. DIAMETER MEASURED AT 1.5M ABOVE GROUND LEVEL.
2) Spread = DIAMETER OF CANOPY (SEE NOTE 6)
3) THE TREE TYPES HAVE NOT BEEN IDENTIFIED BY AN ARBORICULTURIST AND HAVE THEREFORE BEEN ASSIGNED THEIR 'FAMILY' NAME RATHER THAN THEIR 'INDIVIDUAL' NAME
4) THIS TREE SURVEY HAS BEEN UNDERTAKEN FOR USE WITH NHBC STANDARDS CHAPTER 4.2 (AS OF APRIL 1997).
HOWEVER, IT MUST BE NOTED THAT ONLY THOSE TREES WITHIN THE SITE LIMITS HAVE BEEN SURVEYED.
5) ATTENTION SHOULD BE PAID TO THE ORIGINAL TOPOGRAPHICAL BRIEF AS TO WHAT TREES HAVE ACTUALLY BEEN SCHEDULED, I.E. THOSE TREES BELOW DIAMETER 'X' ONLY TREES WITHIN THE HEDGE RBH WILL BE DETAILED UNLESS OTHERWISE SPECIFIED.
6) TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE AVERAGE SPREAD. THIS MAY NOT REPRESENT THE TRUE OUTLINE. NOTE THAT TREE BOLE MAY NOT SIT CENTRALLY TO CANOPY. TRUNK SHOWN NOT TO SCALE - SEE SCHEDULE ABOVE.
7) UNLESS OTHERWISE STATED, TREES SHOWN HAVE NOT BEEN IDENTIFIED BY AN ARBORICULTURIST AND THEREFORE HAVE BEEN ASSIGNED THEIR "FAMILY" NAME RATHER THAN THEIR "INDIVIDUAL" NAME. IT MUST BE NOTED THAT ONLY THOSE TREES THAT FALL WITHIN THE SITE LIMITS HAVE BEEN SURVEYED UNLESS OTHERWISE SPECIFIED.

Legend:

Buildings	Overhead Cable	IC	Inspection chamber	Bol/	Bollard
Wall	Concrete edge	Pinv	Pipe invert	IB	Illuminated bollard
Kerb line	Tarmac edge	G / YG	Gully	Bin	Rubbish bin
Line marking	Grass verge	Bg	Back gully	VP	Vent pipe
Drop kerb	Canopy/Overhang	Dp	Down pipe	Gll	Ground light
Centre line	Verge	Pipe	Pipe above ground	Lbox	Letter box
1	Station and Name	MH	Manhole	Ldr	Ladder
100.000	Station Level	WL	Water level	Sty	Stile
	Tree / Bush / Sapling	FL	Flood light	IFL	Internal floor level
	Area of Undergrowth	LP	Lamp post	THL	Threshold level
	Woodland	TP	Telegraph post	Sp	Sign post
R:	Ridge Level	PP	Electricity post	TH	Trialhole
E:	Eaves Level	TL	Traffic light	BH	Borehole
F:	Flat Roof Level	Bus	Bus stop	ELC	Electric
	Gate	Wav	Stop valve	BTMH	British Telecom
Fence types:		Wst	Stop tap	C'box	Control box
IW	Interwoven	Earth	Earth rod	TT	Tactile
IR	Iron Railings	Wm	Water meter	BP	Brick paved
WM	Wire Mesh	Gas	Gas valve	CPS	Concrete paving slabs
PR	Post & Rail	Av	Air valve	CVR	Cover
PW	Post & Wire	ICU	Unidentified inspection	IC	Inspection chamber
CL	Chain Link	Wo	Wash out	R/wall	Retaining wall
WP	Wooden Panels	Re	Roodding eye	UTL	Unable to lift
CP	Concrete Panels	BB	Bellisha beacon	TCL	Tree canopy level
SP	Steel Palisade	CCTV	Cable tv	G:	Girth
		Mkr	Marker post	MS	Multi girth
		Gmkr	Gas marker post	Stmp	Tree Stump
		So	Soffit	CL:	Cover level
				IL:	Invert level

PSP SURVEYS

Title	Land at Sutherland Rd, Longsdon
	Nr. Cheddleton
Drawing	Survey of Site and Sections
Date	Sept 2015
Scale	1:500
Drawing No.	PSP 01-
Datum/Grid	

ORDNANCE SURVEY GPS LEVEL DATUM
ORDNANCE SURVEY GRID

N

A2 Sheet

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Contractors must advise the Architect / Contract Administrator of any
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Appendix C – EA Flood Maps and Correspondence

Waterco Ltd
Lon Parcwr Business Park
Ruthin
LL15 1NJ
Johanne.Williams@waterco.co.uk

Our Ref: SWWM-11073

Your Ref: w1949w1949

Date: 8 October 2015

Dear Johanne Williams

Request for information:- Product 4 - Caravan site at land off Sutherland Road, Longsdon, Staffordshire, ST9 9QB

Thank you for your enquiry which was received on 25 September 2015 and subsequent payment received on 28 September 2015.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

I enclose flood map and historic map.

Flood Map

According to our published Flood Map for Planning, which provides a general estimate of the likelihood of flooding across England & Wales, the site is shown to be within Flood Zone 3. This refers to land where the indicative probability of flooding from Rivers is 1% or more in any given year, disregarding the presence and effect of any defences. Please find enclosed a copy of the Flood Map for the area in the vicinity of the property.

Modelled Levels

The nearest main river is the Endon Brook. There are modelled levels enclosed for the nearest node points to the site (see the Flood Map). These are taken from the River Churnet Hazard Mapping Study 2013. This is a 1D2D linked ISIS-Tuflow model and represents the most up to date information available

The Bank Top ePlanning Tool

Local Authorities have the responsibility to consult the Environment Agency on any new development falling within 20 metres of the top of the bank of a Main River. The Bank Top Tool allows the Local Planning Authority to determine if new development falls within these areas and triggers the consultation.

Flood Defences

There are no Environment Agency raised flood defences affecting this site. You may wish to contact the Local Authority to obtain further information regarding localised flooding from drains, culverts and small watercourses, and regarding existing or planned flood defence measures.

Record of Flooding

Examination of our records of historical flooding (see explanation below) shows that the general area of the site was flooded in 1959 and the locality was flooded in 1964. The extent of these events are shown on the enclosed 'Historical flooding map'. We also have information that the Endon Brook flooded in 1999 in the vicinity of the site but, we do not hold any records of the extent of this event. Please note that these records show flooding to the land and do not necessarily indicate that properties within the historical flood extents were flooded internally. It is also possible that the pattern of flooding in this area has changed and that this area would now flood under different circumstances

You may also wish to contact your local authority or internal drainage board, to see if they have other relevant local flood information.

Our records of historical flooding show the extents of known flooding from rivers, the sea, and groundwater. It cannot show all the flooding that may ever have occurred – we can only show flooding where we have adequate records. As more data on historical flooding comes to light, and as flood incidents occur, then we will record this where we have adequate information to do so.

Surface Water Flood Map

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

It is not possible to say for certain what the flood risk is but we use the best information available to provide an indication so that people can make informed choices about living with or managing the risks. The information we supply does not provide an indicator of flood risk at an individual site level. Further information can be found on the Agency's website,
http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=ufmfsw#x=357683&y=355134&scale=2

Reservoir Flood Maps

Dam breach flooding happens when a dam impounding a reservoir breaches, causing water stored in the reservoir to be released through the breach and flooding areas downstream of the dam. The dam breach scenario simulated on the maps is a 'credible worst case' scenario. However there are other potential dam failure scenarios which could also happen. The maps do not in any way reflect the structural integrity of the dam or the chance of it failing, hence should not be used to assess likelihood or probability.

Further information can be found on the Agency's webpage http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?lang=_e&topic=reservoir&layer=default&scale=2&x=357683&y=355134#x=357683&y=355134&scale=2

For further information about local emergency plans for these reservoirs you should contact Staffordshire County Council.

I have attached our Standard Notice or licence which explains the permitted use of this information.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely

Diane Edwards
Customers & Engagement Officer
Staffordshire, Warwickshire & West Midlands

For further information please contact the Customers & Engagement team on 01543 404959/4971/4814
Direct e-mail:- SWWMcustomers@environment-agency.gov.uk

FAO: Johanne Williams
Waterco
Lon Parcwr Business Park
Ruthin
LL15 1NJ

Our ref: UT/2015/114762/01-L01
Your ref: 150925/ZW06 w1949

Date: 15 October 2015

Dear Madam

DEVELOPMENT OF A CARAVAN SITE

LAND OFF SUTHERLAND ROAD, LONGSDON, STAFFORDSHIRE, ST9 9QB

We refer to your e-mail and enclosures received on 25 September 2015.

The site of the proposed development is shown on our indicative Flood Maps to be located within Flood Zone 3. Flood Zone 3 is defined as an area of land with a 'high' probability of flooding. Part of the site is also believed to be within Flood Zone 3b (the functional floodplain). Paragraph 103 (footnote 20) of the National Planning Policy Framework (NPPF) requires applicants for planning permission to submit a Flood Risk Assessment (FRA) when development is proposed in such locations.

The Environment Agency has carried out detailed hydraulic modelling along the Endon Brook and a range of flood levels and extents can be obtained from our Customers and Engagement Team (SWWMcustomers@environment-agency.gov.uk). Please be aware that there may be cost for providing this information.

Table 2 Paragraph 066 and Table 3 Paragraph 067 of the Planning Practice Guidance classifies development types according to their vulnerability to flood risk and advises on which developments are appropriate in each Flood Zone. Sites used for 'caravans, mobile homes and park homes intended for permanent residential use' are classified as 'highly vulnerable' and should not be located in Flood Zone 3a. Sites used for 'holiday or short-let caravans and camping, subject to a specific warning and evacuation plan' are classified as 'more vulnerable' and would be allowed within Flood Zone 3a subject to the exception test being passed. Neither type of development would be allowed in Flood Zone 3b.

If this site is shown to be within the functional floodplain or an FRA is provided which fails to demonstrate that the proposed development will be safe we will object to any

planning application submitted.

Flood Defence Consent
Under the terms of the Water Resources Act 1991 and the Midlands Regional Byelaws, the prior written consent of the Environment Agency is required for any proposed works or structures, in, under, over or within 8 metres of the top of the bank of the Clay Mills Fleam, designated a 'main river'.

Please note that we have a 2 month statutory period in which to determine Flood Defence Consents and it should not be assumed that such consent will automatically be forthcoming. We would advise you to consult with us at the earliest opportunity in order to determine and secure formal consent for the proposed works as appropriate. Please contact SWWMFloodConsent@environment-agency.gov.uk for further advice.

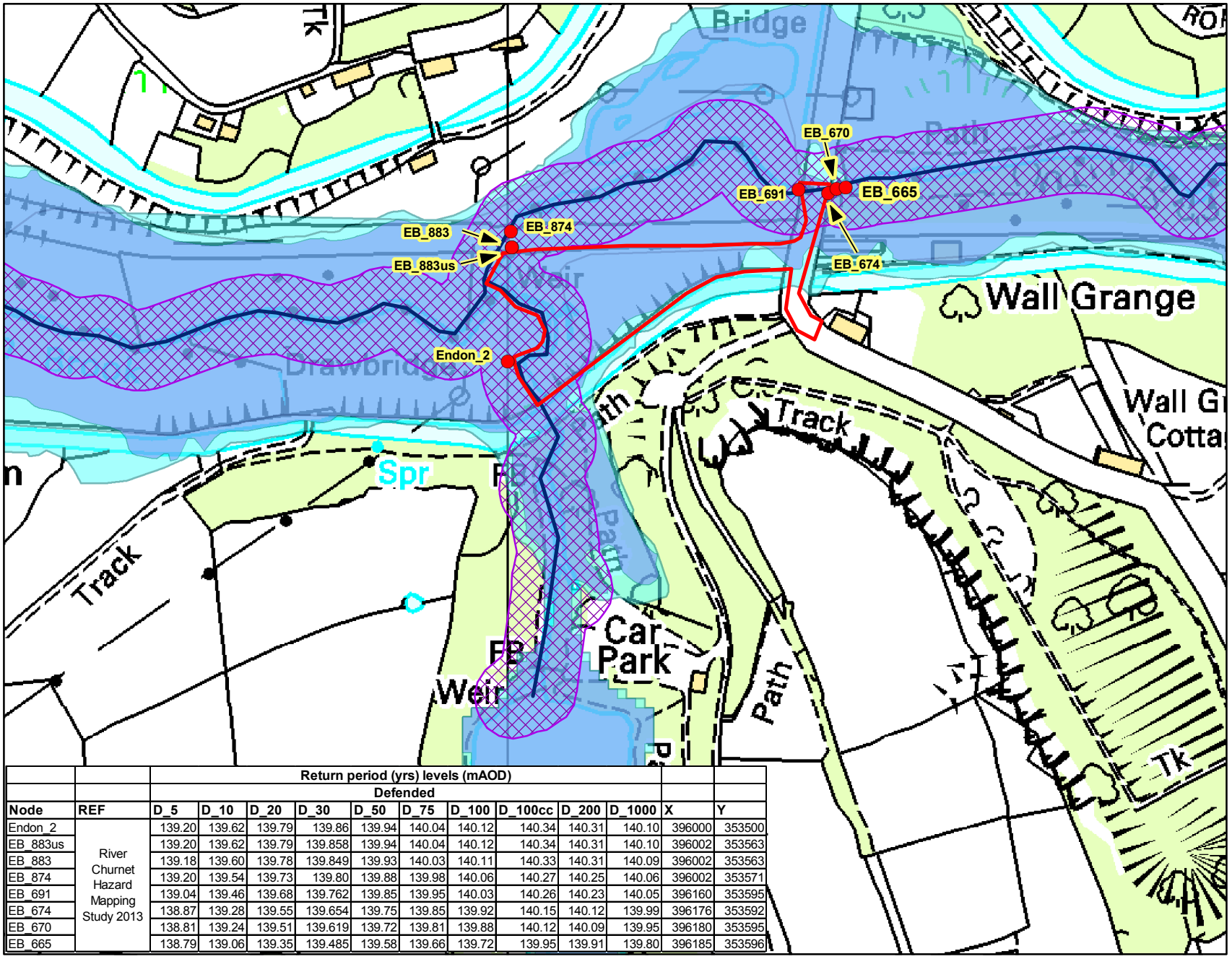
More information about consents can be found on our website at https://www.gov.uk/flood-defence-consent-england-wales

Yours faithfully

Mr John Dingley
Planning Advisor

Direct dial 01543 404941
Direct e-mail john.dingley@environment-agency.gov.uk

Flood Map for Planning centred on NGR: 396060, 353539
Created on 05 October. Ref: SWWM-11073



		Return period (yrs) levels (mAOD)											
		Defended											
Node	REF	D_5	D_10	D_20	D_30	D_50	D_75	D_100	D_100cc	D_200	D_1000	X	Y
Endon_2	River Churnet Hazard Mapping Study 2013	139.20	139.62	139.79	139.86	139.94	140.04	140.12	140.34	140.31	140.10	396000	353500
EB_883us		139.20	139.62	139.79	139.858	139.94	140.04	140.12	140.34	140.31	140.10	396002	353563
EB_883		139.18	139.60	139.78	139.849	139.93	140.03	140.11	140.33	140.31	140.09	396002	353563
EB_874		139.20	139.54	139.73	139.80	139.88	139.98	140.06	140.27	140.25	140.06	396002	353571
EB_691		139.04	139.46	139.68	139.762	139.85	139.95	140.03	140.26	140.23	140.05	396160	353595
EB_674		138.87	139.28	139.55	139.654	139.75	139.85	139.92	140.15	140.12	139.99	396176	353592
EB_670		138.81	139.24	139.51	139.619	139.72	139.81	139.88	140.12	140.09	139.95	396180	353595
EB_665		138.79	139.06	139.35	139.485	139.58	139.66	139.72	139.95	139.91	139.80	396185	353596

Environment Agency

Legend

- Nodepoint
- Approximate Site Area
- Main Rivers
- Bank Top ePlanning Tool
- Flood Zone 3
- Flood Zone 2

Flood Map Areas (assuming no defences)
Flood Zone 3 refers to land where the indicative annual probability of flooding is 1 in 100 years (1%) or less from river sources

Flood Zone 2 shows the extent of an extreme flood from rivers with up to a 1 in1000 (0.1% - 1%) chance of occurring each year

N W E S

Scale 1:3,000

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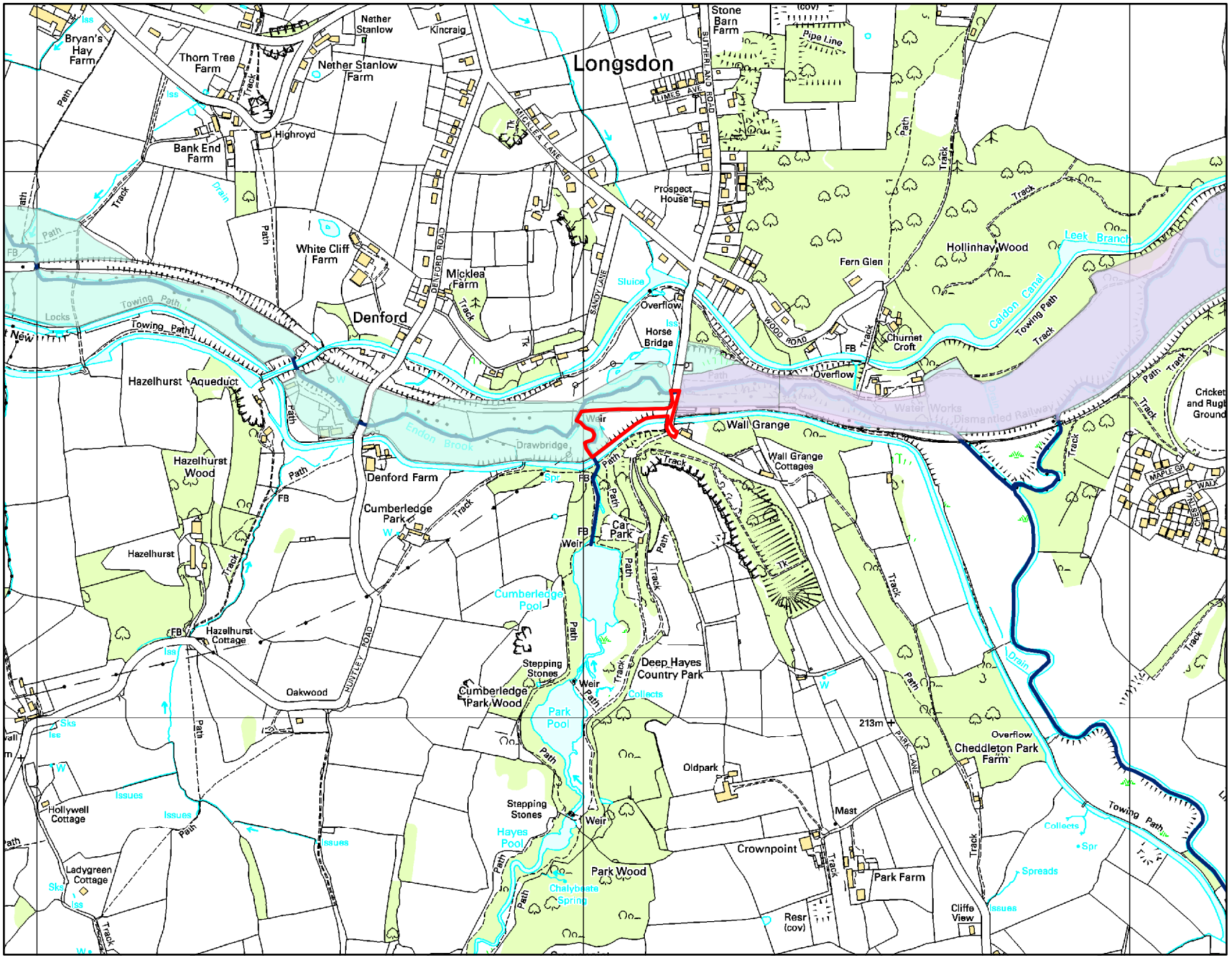
Historical flooding map centred on NGR: 396060, 353539
Created on 05 October. Ref: SWWM-11073



Legend

- Approximate Site Area
- 1964 flood
- 1959 flood
- Main Rivers

Flood Map Areas (assuming no defences)
Flood Zone 3 refers to land where the indicative annual probability of flooding is 1 in 100 years (1%) or less from river sources

Flood Zone 2 shows the extent of an extreme flood from rivers with up to a 1 in1000 (0.1% - 1%) chance of occurring each year

N W E S

Scale 1:10,000

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