JPC Environmental Services

(A Division of JP Chick & Partners Ltd)

28 – 30 Long Lane,
Feltwell,
Thetford,
IP26 4BJ

LEVEL 2 SCOPING STUDY FLOOD RISK ASSESSMENT

SUFFOLK: Registered Office: 7 Museum Street Ipswich Suffolk IP1 1HQ **T** 01473 280699 **F** 01473 280701 **E** ipswich@chick.co.uk (Registered No: 4806356)
ESSEX: 8 Atlantic Square Station Road Witham Essex CM8 2TL T 01376 503020 E witham@chick.co.uk
NORFOLK: 23 St Stephens Road Norwich NR1 3SP T 01603619093 **F** 01603 619840 E **norwich@chick.co.uk**

DOCUMENT CONTROL

Report prepared by:	*Report reviewed by:*
H C Purkis (BSc Hons) On behalf of JPC Environmental Services A Division of JP Chick & Partners Limited	**R M Crowther PIEMA** On behalf of JPC Environmental Services A Division of JP Chick & Partners Limited
JPC Issuing Office:	***7 Museum Street, Ipswich, IP1 1HQ***

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1.0 EXECUTIVE SUMMARY

Site Name:	Proposed development of 25 No. dwellings
Site Address:	28 – 30 Long Lane, Feltwell, Thetford, IP26 4BJ
Client:	Helen Kean & Christine Barrett
Architect:	SKI Property Management
Local Planning Authority	Kings Lynn & West Norfolk Borough Council
Present Site Use:	Curtilage and garden of an existing domestic property
Proposed Site Use:	25 No. detached, semi-detached & terraced domestic dwellings

Objectives:

- To identify the main potential sources of flooding and the associated level of risk
- To explore the potential impact of the planned development, particularly in respect of fluvial/pluvial flooding
- To determine whether any aspects may need to be explored further within a Level 3 'Detailed Study'

Findings:

- There are three principal sources of flood risk: groundwater, pluvial and reservoir;
- The EA mapping initially defines the site to be partially within Flood Zones 1, 2 & 3b but careful analysis of the modelled flood levels and topographical survey identifies the site to be in Flood Zone 1 only;
- There are no records of historic flood events onsite, but several are recorded within Feltwell;

Key Modelled Flood Levels: (Node CO22000U)

1 in 100 yr	1 in 100 yr +CC *(max allowance of 65%)*	1 in 1,000 yr	1 in 1,000 yr + CC (max allowance of 65%)
2.26m AOD	**3.01m AOD**	**2.59m AOD**	**3.80m AOD**

Climate Change

- Although the Environment Agency guidance normally does not stipulate that climate change be taken into account for sites in Flood Zone 1, due to the complex nature of the fluvial flood risk

at this site we have analysed the effect of the worst-case scenario in order to ensure we have taken the most conservative approach.

- Therefore, for a residential development in the Anglian catchment area the upper end climate change allowance of 65% has been employed to allow for the 100-year design life of the development. The resultant design flood level is the 1% AEP (1 in 100) plus 65% cc.

Risk Assessment:

- In the event of a 0.1% AEP + cc fluvial flood, the site would remain dry, however there is a risk of onsite flooding from pluvial, groundwater & reservoir sources;
- Access and egress to the site would remain safe and available at all times so long as the road height is set no lower than the current level of the site;
- The flood risk associated with pluvial, groundwater & reservoir can be effectively mitigated (see section 4.06 for further details);

Sequential Test:

- In terms of sensitivity, the residential development proposal is classified as **'More Vulnerable'**;
- According to the Environment Agency's indicative flood mapping and our detailed assessment, the site is located within Fluvial Flood Zone 1.
- It is our considered opinion that the site passes the Sequential Test (See section 5.01 for further details) and that the Exception Test is not required.

Recommendations:

Based on the information gathered as part of this Level 2 Scoping Study, JPC Environmental Services would make the following recommendations: -

- A finished floor level of no lower than 300mm above adjacent ground levels. This is protective against surface water, groundwater and reservoir based flood risk;
- Bearing in mind the nearby surface water flood risk we would recommend the use of a SuDS based drainage system to further reduce the existing risk to site and adjacent properties;
- The properties should be registered with Floodline Warnings Direct (FWD) prior to occupation.

2.0 INTRODUCTION

2.01 Brief

2.01.1 JPC Environmental Services were appointed by Kazimierz Swierdzewski of SKI Property Management to undertake a Level 2 Flood Scoping Study in relation to the developing of 25No. detached, semi-detached and terraced properties on land at 28-30 Long Lane. Hereafter 28–30 Long Lane, Feltwell will be referred to as 'the site'.

2.01.2 The purpose of this desk based research was to:

- Identify potential sources and the probable extent of flooding, and determine the likely risk of such events occurring;
- To determine the extent of the flood zones within the site by evaluating a topographical survey and the outputs from a 1-D hydraulic model held by the Environment Agency;
- Determine whether the site is appropriate for residential use;
- Establish whether the proposed residential properties will remain safe.

2.01.3 This Flood Risk Assessment has been written in accordance with, and meeting the requirements of, planning policy currently guided by the National Planning Policy Framework (NPPF) and the associated Technical Guidance document relating to flood risk, published in March 2012. We have also consulted the Practice Guide written in support of the previous planning policy, PPS25 which is still current.

2.01.4 This report shall be for the private and confidential use of Helen Kean & Christine Barnett, for whom it was undertaken, and for their architect SKI Property Management. It should not be reproduced in whole or in part, or relied upon by a third party for any use without the express written authority of JPC Environmental Services.

2.02 Scope

2.02.1 FRA Assessment Criteria

• Is the development commercial or residential?	Residential	
• Is the development/change of use within a flood zone on Environment Agency flood maps?	✓ Flood zones 1, 2 & 3b	Level 2
• If the development is in flood zone 1 is the development more than 1 hectare?	× No	
• If less than 1 ha in flood zone 1, including a change of use in development type to a more vulnerable class (eg from commercial to residential), where they could be affected by sources of flooding other than rivers and the sea (eg, surface water drains, reservoirs)	× Level 2 FRA	
• If in an area within flood zone 1 which has critical drainage problems as notified by the Environment Agency	× No	
• If Flood zone 2 or 3 and it is residential	✓ Level 2 FRA	

2.02.2 Based on the above criteria, the main elements of this assessment were as follows: -

- The sourcing of modelled flood levels from the Environment Agency;
- A comparison of the modelled flood levels against a detailed GPS based topographical survey of the site, to establish the potential extent of flood zones;
- Research of local incidents of flooding;
- To make recommendations in respect of any flood mitigation measures or drainage improvements that might be required to minimise the impact of the planned development;
- To determine the scope of any additional investigations or hydraulic modelling that might be required in order to fully establish the degree of potential flood risk.

2.02.3 Data reports purchased/sourced for this flood risk assessment:

- Environment Agency flood levels – Product 4;
- Landmark Flood Report;
- Anglian Water CON29DW.

2.03 Location

2.03.1	Address:		28 – 30 Long Lane, Feltwell, Thetford, IP26 4BJ		
2.03.2	Grid References:	Easting:	571058m	Northing:	290679m
	Ordnance Survey Tile:		TL710906		
	National Grid Reference:		TL7190NW		

2.03.3 A detailed map of the location is presented within Appendix A.

2.04 Development Proposal

2.04.1 The proposed development will comprise 25 No. detached, semi-detached & terraced residential dwellings arranged either side of a new access road which runs through the centre of the site from Long Lane. The development also provides garages for many of the properties, alongside turning areas and parking spaces for both residents and visitors.

2.04.2 Each dwelling benefits from an individual rear garden which vary in size dependant on the plot's location within the development.

2.04.3 See below for an extract from the Architect's drawings (full version presented in Appendix B).

Figure 1- Proposed site layout

2.05 Flood Risk Vulnerability Classification

2.05.1 Developments are classified based on their sensitivity to flood risk, the vulnerability of this development is shown below.

• Essential Infrastructure	☐	No
• Highly Vulnerable	☐	No
• More Vulnerable	✓	Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
• Less Vulnerable	☐	No
• Water compatible Development	☐	No

3.0 BACKGROUND TO FLOOD RISK AND REGULATORY CONTEXT

3.01 Current Guidance

3.01.1 In relation to flood risk, planning policy in England is currently guided by the National Planning Policy Framework (NPPF) and the associated guidance relating to flood risk, published in March 2012, replacing Planning Policy Statement 25: 'Development and Flood Risk' (PPS 25).

3.01.2 The purpose of this planning framework is to ensure that flood risk issues are taken in to account at every stage of the planning process and that new residential and commercial developments are steered towards less vulnerable locations (zone 1) in preference to higher risk areas (zone 3).

3.01.3 At a district or county level this takes the form of a Strategic Flood Risk Assessment, which seeks to inform local government development strategies. At this level potential development sites are classified in terms of their suitability for various types of future use. Where land in flood zone 1 is not available this is based on the identified level of risk, coupled with the sensitivity of the end use.

3.01.4 At all levels this policy relies on a series of predicted flood zones, which are defined by the Environment Agency. These zones are: -

- Zone 3b – Functional flood plain – annual probability of flooding >5%, or affected by flood events having a return period of up to 1 in 20 years

- Zone 3a – area affected by floods with an annual probability of >1% fluvial flooding or >0.5% tidal. Return periods of up to 1 in 100 year fluvial or 1 in 200 year tidal flooding.
- Zone 2 – Extreme flood plain – with an annual probability of between 1% - 0.1% fluvial or 0.5% - 0.1% tidal. Return periods of up to 1 in 100 and 1 in 1000 for fluvial flooding or between a 1 in 200 and 1 in 1000 for tidal flooding.
- Zone 1 – Outside the flood plain – Land with <0.1% probability of tidal or fluvial flooding. Return periods greater than 1 in every 1,000 years.

3.01.5 In addition to exploring the potential risk and impact of flooding on the development, the site specific FRAs are required to assess the potential impact of the development on existing sites and the local hydrology. This is designed to ensure that new developments, which typically include extensive areas of impermeable surfacing, do not exacerbate flooding elsewhere.

4.0 DESK STUDY

4.01 Sources of Information

4.01.1 As part of the desk based research, JPC Environmental Services consulted the following sources of information:

- Environment Agency's flood mapping and extracts from 1-D hydraulic modelling;
- Kings Lynn & West Norfolk Strategic Flood Risk Assessment: Faber Maunsell (2007/8 revision);
- Kings Lynn & West Norfolk Settlements Surface Water Management Plan (2012);
- Great Ouse Catchment Flood Management Plan (2011);
- Landmark Flood Report;
- OS Map 1:25,000;
- Anglian Water CON29DW;
- Planning Permission for 15-million-gallon irrigation storage reservoir (2/97/0773/F);
- EA's Owners Guide to Reservoir Safety (2010);
- GPS based topographical survey (ALS, September 2017).

4.02 Site Description

4.02.1 The site (which extends to 0.71 hectares) is a broadly rectangular in shape strip of land and currently includes Nos. 28 -30 Long Lane. The curtilage of the site wraps around the existing takeaway outlet (which is outside the planning outline) and extends back to the watercourse which forms the northern boundary of the site.

4.02.2 The site is occupied by Nos 28 – 30, and associated garden areas while a ''coal yard'' makes up the central portion of the site. The southern half of the site is predominately laid to hardstanding and outbuildings while the northern half comprises a grassed area with mature trees along the boundaries.

4.02.3 The site is situated centrally within the village of Feltwell, 10 miles west of Thetford in the Borough of Kings Lynn and West Norfolk. The site is bounded by residential development to the south, east and west, while to the north lies a partially culverted watercourse (west) with arable farmland beyond. See Figure 2 below.

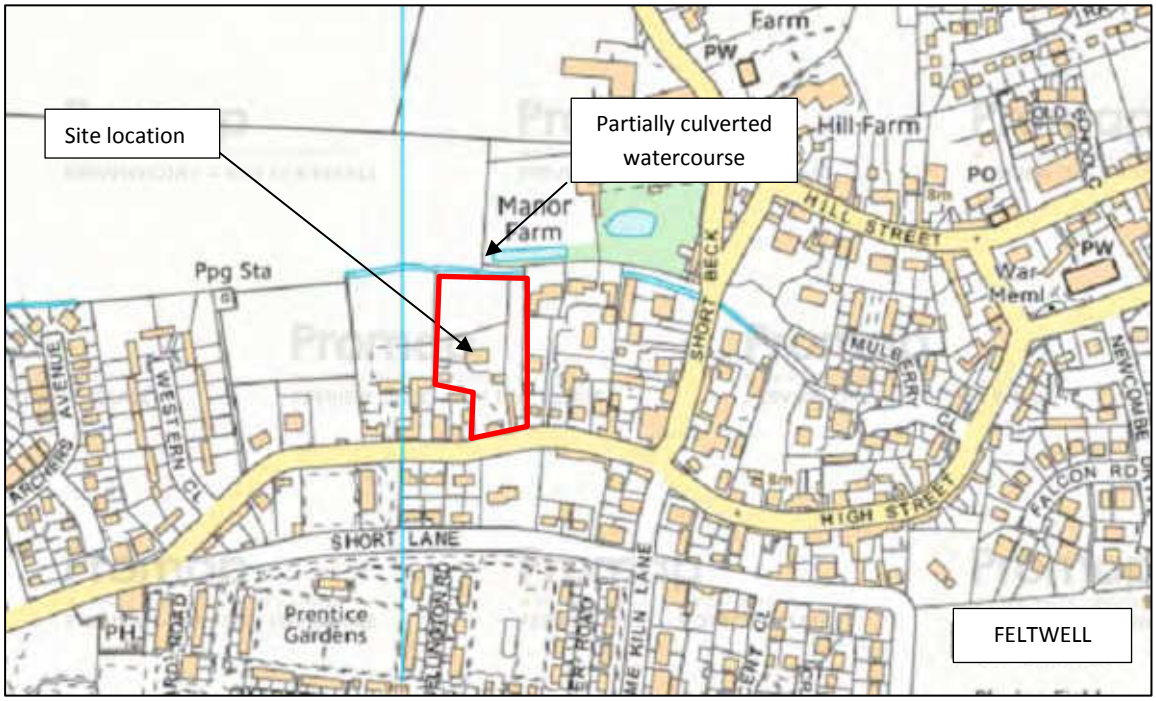


Figure 2 - Site location

4.03 Site Setting

Surrounding Area

4.03.1 The site is located within Feltwell, which comprises a mixture of residential dwellings, commercial premises and community facilities. The site is situated at approximately 5m AOD, with higher ground at 10m AOD within the centre of Feltwell (400m south-east).

4.03.2 The surrounding landscape is predominately rural with a few isolated areas of more urbanised development, with a combination of permeable and impermeable surfacing.

Geology

4.03.2 With reference to the British Geological Survey online referencing, the site is partially underlain by superficial deposits of 'Head' towards the north-western corner of the site while the remainder of the site has no superficial deposits recorded. This overlies Chalk of the Zig Zag Formation (formerly known as 'Grey Chalk').

Hydrogeology

4.03.3 With reference to the Environment Agency's groundwater maps, presented on their website, the site is not situated within a Groundwater Source Protection Zone.

4.03.4 Groundwater Vulnerability is identified as 'Major Aquifer High'. This is defined as an aquifer containing rock that can provide a significant quantity of water and can support water supply and/or baseflow to rivers, lakes and wetlands on a strategic scale in conjunction with overlying soils having good permeability.

4.03.5 Due to the proximity of the nearby watercourse, groundwater is likely to be fairly shallow. Although there are no BGS registered boreholes in close enough proximity to define the exact depth, the nearest borehole records a groundwater depth of 9.4m.

Hydrology

4.03.6 The nearest significant watercourse is a tributary (Ordinary Watercourse) of the Cut Off Channel (Main River) that bounds the site to the north. It comprises a partially culverted watercourse that flows east to west. The much larger Cut Off Channel is present approximately 1km west of the site. See section 4.04.2 for a more detailed description of the Cut Off Channel's layout and purpose.

Topography

4.03.7 A detailed Topographical Survey was undertaken in September 2017. The survey shows that the site rises gently from the western corner of the rear boundary to the south-eastern corner. The lowest point (4.67m AOD) was recorded in the north-western corner, while the highest part of the site (5.71m AOD), is located in the south-eastern corner.

4.03.8 A copy of the topographical survey is presented within Appendix C.

4.04 Potential Sources of Flooding Considered by this Assessment

4.04.1 In accordance with the NPPF technical guidance, we have explored the various potential sources of flooding which could impact the site both before and after the proposed

development. This assessment has identified and will go on to evaluate the following flood risk issues: -

- Tidal flooding (coastal flooding);
- Fluvial flooding – Cut Off Channel;
- Surface water flooding (pluvial flooding);
- Groundwater flooding – Chalk formation bedrock;
- Reservoir flooding – Agricultural irrigation reservoir;
- Historic flooding;
- Sewer flooding – Anglian Water.

4.04.2 In addition to Environment Agency searches JPC Environmental Services purchased a Landmark Flood Report. This report considers not only fluvial and tidal flooding but also the likelihood of surface water/groundwater flooding and contains a rating from JBA's insurability index. See Appendix D.

Tidal Flooding

4.04.3 While high spring tides can cause localised flooding, the most severe tidal flooding occurs when weather conditions combine to cause a surge of seawater, sometimes three or more metres in height, to progress down the North Sea funnelled by the adjacent landmasses. Such events produce substantially increased tide levels and threaten both coastal and inland areas.

4.04.4 The King's Lynn & West Norfolk Strategic Flood Risk Assessment states that Tidal flooding is a significant source of flood risk in the Great Ouse Estuary both downstream of Denver Sluice on the Tidal River and upstream of Denver in along the New Bedford River. As the site is located upstream of Denver Sluice and remote from the New Bedford River; tidal flood risk is not considered to be a significant source of flood risk onsite.

4.04.5 The flood mapping and flood levels sourced from the Environment Agency as part of this report confirm that the principal flood risk to the site is fluvial – therefore tidal flooding is not considered to be a viable source of flood risk to the site and will not be considered further within this report.

Fluvial Flooding

4.04.6 Fluvial flooding occurs when excessive rainfall takes place within a river's catchment resulting in high levels of run-off, which in turn causes water levels within the river to rise. This can occur over an extended period or, in the case of flash flooding, due to intense rainfall over a relatively short duration. When the level of surface water run-off exceeds the river's capacity this generally leads to localised overtopping or in some cases one or more breaches may occur.

4.04.2 The nearest significant watercourse is the Cut Off Channel which is located 1 km west of the site. The Cut Off Channel was constructed in 1950s and 1960s in response to the 1940 MacDonald report on Flood Protection following the severe flooding of the Fens in 1939. The Channel was designed to act as part of flood defence measures and carries the headwaters of the River Wissey, River Lark and River Little Ouse in times of flood, delivering them to Denver Sluice.

4.04.3 During the 1980s, the Ely-Ouse to Essex Water Transfer Scheme (water supply scheme for drinking water in Essex) was developed. This comprised a seasonal reversal of the Channel's direction of flow during drier periods to take surplus fresh water southwards from the Great Ouse and deliver it to Essex Reservoirs. Existing watercourses were utilised for approximately two-thirds of the distance, while a new tunnel, pipelines and storage tanks all had to be constructed for the remainder of the conveyance route.

4.04.4 Taken together these two different uses of the Cut Off Channel serve to keep Ely dry in the winter (when flowing north in flood protection mode) and keep Essex Reservoirs supplied during the summer (when flowing south in water transfer mode). This results in a very carefully managed water level throughout the length of the watercourse.

4.04.5 The Environment Agency Catchment Data explorer reports the length of the Cut Off Channel between Mildenhall and where it joins the Ouse (sub catchment within which the site sits) to be 151.7km, with a catchment area of 45km^2. See figure 3 below.

Figure 3 - Environment Agency Catchment Area Map, with the site marked in red

4.04.6 The Environment Agency's Thames Catchment Flood Management Plan (CFMP) (2009), identifies this area as having **Low** to **Moderate** flood risk where the Environment Agency are considered to be generally managing flood risk effectively.

4.04.7 The Environment Agency is responsible for the maintenance of all Main Rivers, for keeping records of significant fluvial and tidal flood events, and for establishing an indicative flood map, which displays the extent of anticipated flooding in four distinct probability zones. These zones were previously described in section 3, paragraph 3.01.4.

4.04.8 To confirm the extent of the fluvial flood zone JPC Environmental Services submitted a data request to the Environment Agency, for both modelled flood levels and more detailed mapping.

4.04.9 The 'Flood Map for Planning' provided by the Environment Agency, shows the extent of the fluvial flood zones in both the defended and undefended scenarios (see figures 4 & 5). The site is shown to be located within Fluvial Flood Zone 1.

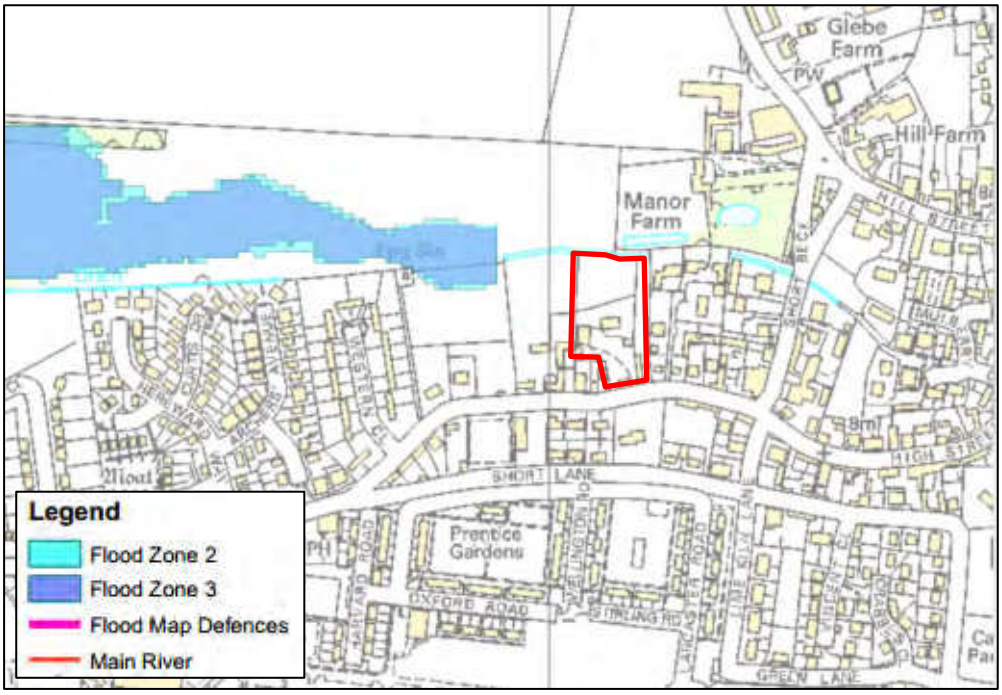


Figure 4 - Detailed undefended flood outline map (Environment Agency)

4.04.10 In the undefended scenario the site is shown to be wholly located in Flood Zone 1. The EA model used to produce the above flood map calculates flood levels and flow rates and compares them with the surrounding topography to assess the depth and extent of flood water.

4.04.11 The embankment that bounds the Cut Off Channel to the east is recorded by the Environment Agency to have a condition score of 3. This is defined as 'Fair – defects that could reduce the performance'. The crest height at the point nearest the site is recorded as 3.65m AOD and hence prevents of any out of channel flooding during the design flood event.

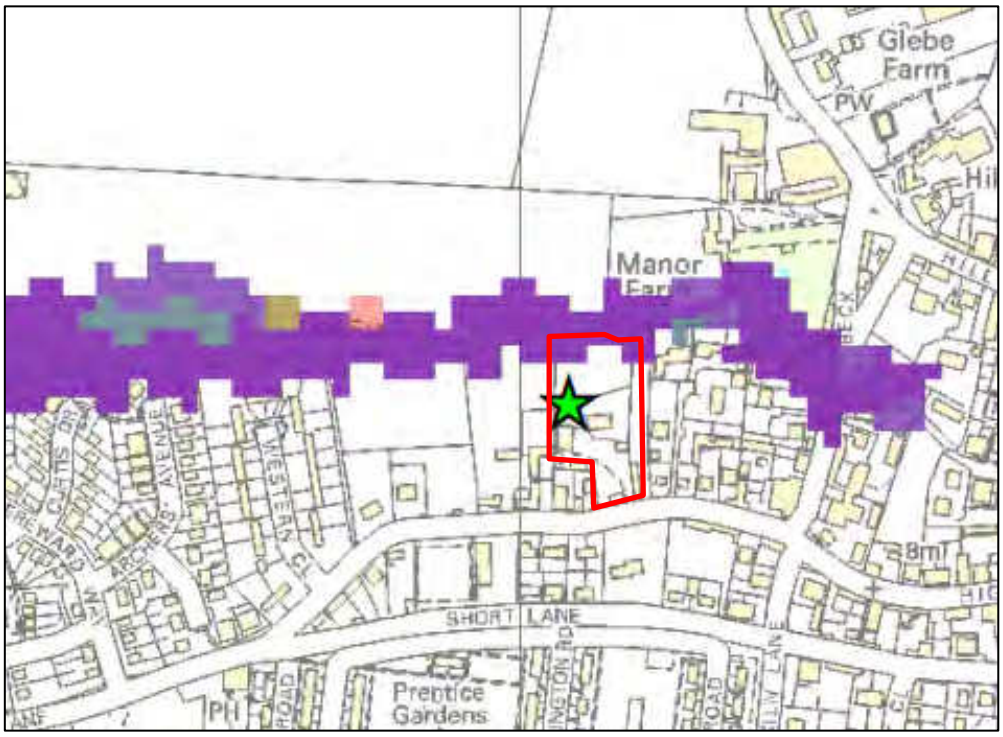


Figure 5 - Detailed defended flood outline map (Environment Agency)

4.04.12 During the defended scenario; part of the site is now shown to be located within the modelled extent of Flood Zone 3b (i.e. may flood during the 20% AEP storm). The defended outline mapping takes into account both low points which may be overtopped during peak flow conditions and potential breach locations where flood waters could break through defences.

4.04.13 The point at which the sewage works discharges into the Cut Off Channel provides a potential route for flood waters to access the lower lying land beyond. Once flood water has breached the earth embanked defences at this point it travels along the natural river valley of the now partially culverted watercourse towards the centre of Feltwell. This route takes flood waters past the rear boundary of the site.

4.04.14 However, due to the intensive management of the Cut Off Channel's water level the likelihood of this happening is much lower and because the area is defended, it cannot be classified as 3a. The Denver Sluice is used to control water levels within the channel and dependant on the season (see sections 4.04.2 to 4.04.4) it is reported to hold the water level at between -1.0m and -0.2m AOD (Ouse Washes Water Level Management Plan).

4.04.15 The King's Lynn & West Norfolk Strategic Flood Risk Assessment shows a slight variation on the predicted extent of the fluvial flood zones, although as the EA modelled data and mapping supplied as part of the Product 4 information postdates the SFRA mapping it is considered to be more accurate.

4.04.16 The nodes to which the modelled levels relate, are shown in figure 6 below.

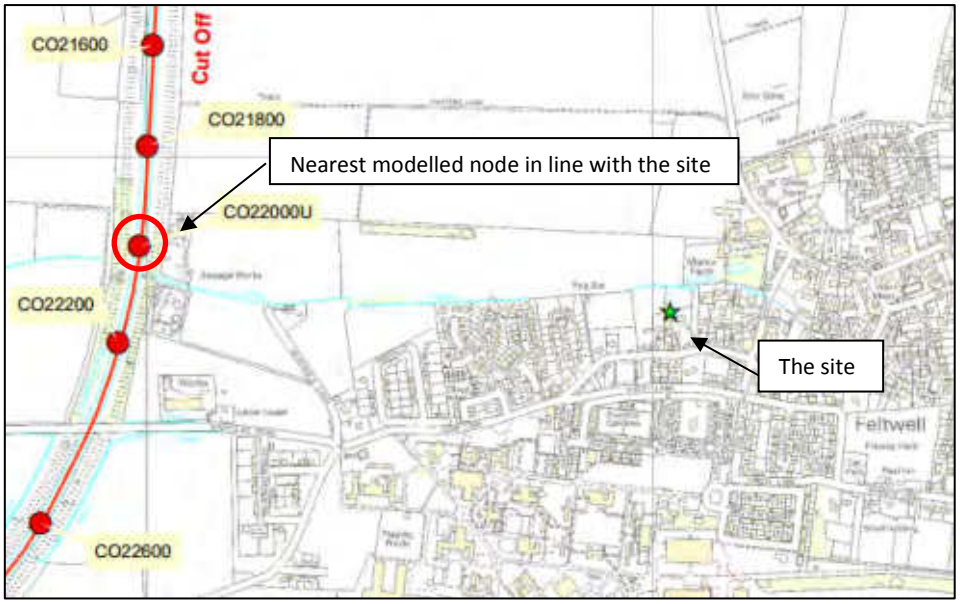


Figure 6 - Modelled Flood Nodes (Environment Agency)

4.04.17 The modelled flood levels associated with Node CO22000U which have been used as the basis of our FRA are shown in the extracts below (Figures 7 & 8).

Node	20% AEP	10% AEP	5% AEP	4% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
CO22600	1.62	1.76	1.9	1.94	2.12	2.2	2.26	2.35	2.6
CO22200	1.62	1.76	1.9	1.94	2.11	2.2	2.26	2.34	2.59
CO21800	1.62	1.76	1.9	1.93	2.11	2.19	2.26	2.34	2.59
CO21600	1.62	1.76	1.9	1.93	2.11	2.19	2.26	2.34	2.59
CO21400	1.62	1.75	1.9	1.93	2.11	2.19	2.26	2.34	2.58
CO22000U	1.62	1.76	1.9	1.93	2.11	2.2	2.26	2.34	2.59

Figure 7 - Flood data nodes and levels without cc (mAOD)

Node	1%(25%cc) AEP	1%(35%cc) AEP	1%(65%cc) AEP	1%(20%cc) AEP
CO22600	-9999.99	-9999.99	-9999.99	2.68
CO22200	-9999.99	-9999.99	-9999.99	2.68
CO21800	-9999.99	-9999.99	-9999.99	2.68
CO21600	-9999.99	-9999.99	-9999.99	2.68
CO21400	-9999.99	-9999.99	-9999.99	2.67
CO22000U	-9999.99	-9999.99	-9999.99	2.68

Figure 8 - Flood data nodes and levels with cc (mAOD)

4.04.18 Where the above table reads '-9999.99' no level or flow information for that particular AEP is held by the EA; i.e. the model used in the Eastern Rivers Modelling Project (EA052372) has not covered this flood event due to the recent nature of the new climate change allowances (Feb 2016).

4.04.19 For watercourses where Basic Climate Change Allowances have been calculated the design flood level is typically taken as the 1% AEP + cc. In this instance, Basic Allowances have not been calculated for the Great Ouse Cut Off Channel, therefore, local guidance requires an intermediate assessment using modelled flow data and flood levels obtained as part of the Product 4 request (see guidance from the Environment Agency included in Appendix E).

Climate Change

4.04.20 The Environment Agency advises that a precautionary allowance be made for potential climate change impacts on peak design fluvial flood level. Although a site located in Fluvial Flood Zone 1 would not normally require the addition of these allowances, the defence breach mapping identifies part of the site to be located in Fluvial Flood Zone 3, therefore this will be taken as the basis on which to calculate climate change allowances. This method has been taken in order to ensure the most conservative approach is used, with the highest resultant factor of safety.

4.04.21 For a residential 'more vulnerable' development in the Anglian region this is the higher central and upper end allowances of 35% and 65% respectively for the 100-year design life of the development - see extract overleaf (Figure 9).

Flood Zone	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
2	higher central and upper end allowances	higher central and upper end allowances	central and higher central allowances	central allowance	none of the allowances
3a	upper end allowance	X	higher central and upper end	central and higher central	central allowance
3b	upper end allowance	X	X	X	central allowance

River basin district	Allowance category	Total potential change anticipated for '2020s' (2015 to 39)	Total potential change anticipated for '2050s' (2040 to 2069)	Total potential change anticipated for '2080s' (2070 to 2115)
Anglian	Upper end	25%	35%	65%
	Higher central	15%	20%	35%

Figure 9 - Extract from EA guidance on fluvial flood levels for the East Anglian area.

4.04.22 We have been advised by the Environment Agency to utilise the 'flow' data, which accompanied the modelled flood levels to establish the relationship between flow and flood level. This is because the basic allowances for climate change that are usually calculated specifically for each river basin have not been completed for the Cut Off Channel at the time of writing this report. This relationship is plotted on the graph below.

4.04.23 We have then extrapolated a 'trendline' from the data provided, to enable us to extract a predicted flood level for the 1% AEP design flood level plus 65% cc allowance in order to account for the worst-case scenario. This process satisfies the 'intermediate assessment' requested by the Environment Agency in situations where the basic allowances are not available. The resulting flood level is likely to be in the region of **3.01m AOD**.

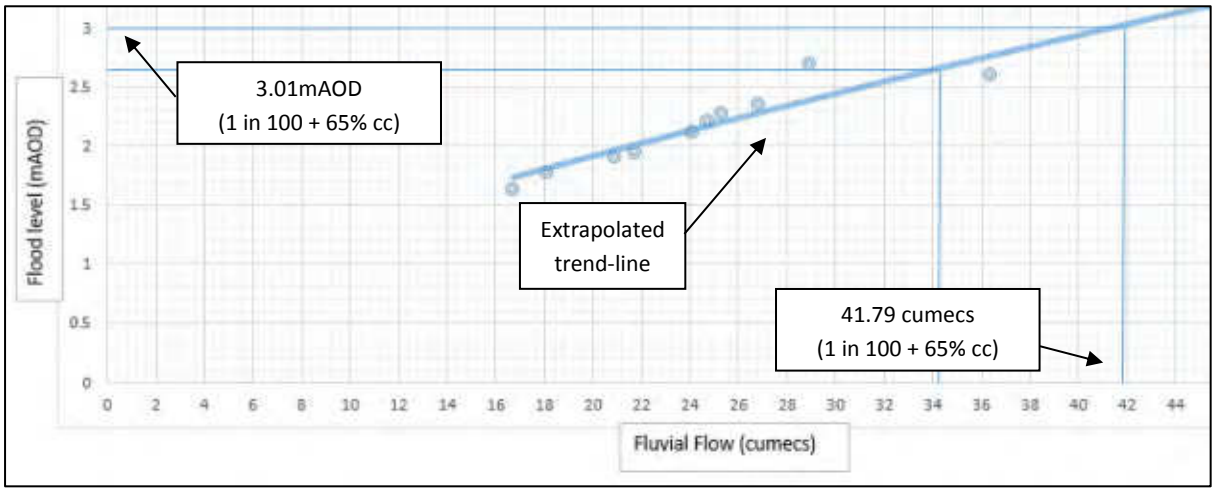


Figure 10 - Relationship between fluvial flow & flow levels

4.04.24 The EA typically apply a freeboard allowance of 300mm to modelled flood levels to act as factor of safety and account for wind driven action. In this situation based on the extrapolated nature of the 'with climate change' flood level we have doubled the freeboard allowance to 600mm resulting a design flood level of 3.61m AOD.

4.04.25 To establish the impact of such flooding on the site, we have referred to the recent topographical survey. As the lowest point of the site is 4.67m AOD, it is clear that fluvial flooding even given the most extreme climate change allowance for the design flood event (1% AEP + cc) will not inundate the site.

4.04.26 Copies of the Environment Agency correspondence, the flood maps and 'Product 4' information are presented within Appendix E.

Surface Water (Pluvial) Flooding

4.04.27 Pluvial flooding is closely related to fluvial flooding, in that it typically occurs when excessive rainfall occurs within a catchment to such an extent that it is unable to be absorbed by the underlying soils. Water that is unable to soak in to the soil accumulates and migrates in line with the local topography, eventually making its way to the nearest watercourse or more usually in built up areas the nearest surface water sewer.

4.04.28 Pluvial flooding typically becomes a problem, when run-off exceeds the capacity of surface water drainage systems and flows over land. Due to the anticipated effects this is considered to be a more frequent and increasing source of flood risk in the future, particularly in built up areas.

4.04.29 The site is currently laid to a combination of surfacing; the southern third is laid to mainly impermeable surfacing – concrete, outbuildings and a bungalow. The remaining two thirds of the site is laid to grass with various mature trees and saplings. The land surrounding the site is predominantly residential to the east, west and south while to the north lies mainly agricultural farmland.

4.04.30 The proposed residential development onsite has the potential to increase the extent of impermeable surfacing. This is due to the current surfacing mainly consisting of permeable grass and vegetation, with limited impermeable areas. Therefore, it is likely there will be an impact on the existing rate of surface water run-off.

4.04.31 The surface water flood maps hosted on the GOV.UK website, show that surface water generally flows in a westerly direction, along the watercourse to the rear of the site and additionally along the highway past the front of the site. An area of ponding is also shown to the rear of the existing takeaway facility. See figure 11 below.

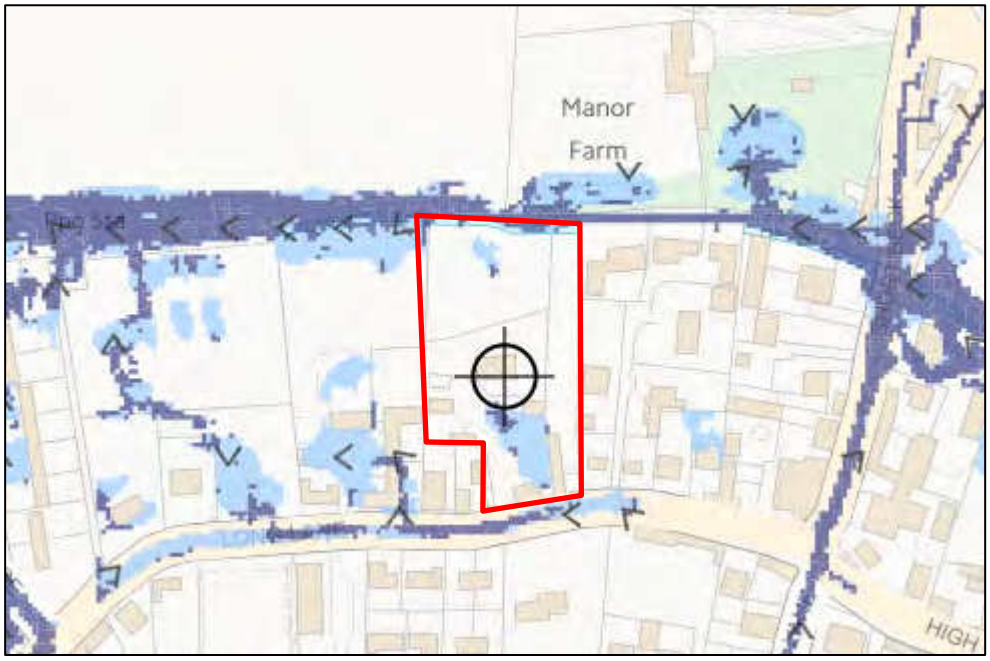


Figure 11 - Environment Agency low risk velocity

4.04.32 During high risk (3.3%) events the site is unaffected by pluvial flooding (Figure 12). However, during medium (1%) risk events, some flooding may be experienced onsite to the rear of the existing takeaway food outlet, where there a slight drop in levels (from around 5.15m AOD to 4.90mAOD). During low (0.5%) risk events the flooding to the rear of the takeaway outlet increases in depth while a small second area of flooding appears to the rear of the site. See figures overleaf.

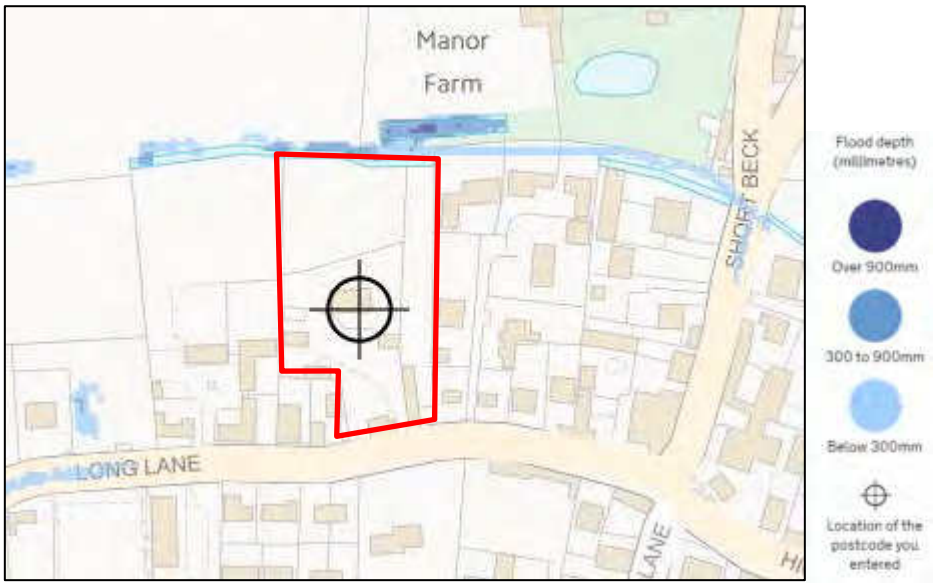


Figure 12 - Environment Agency High Risk flood depth

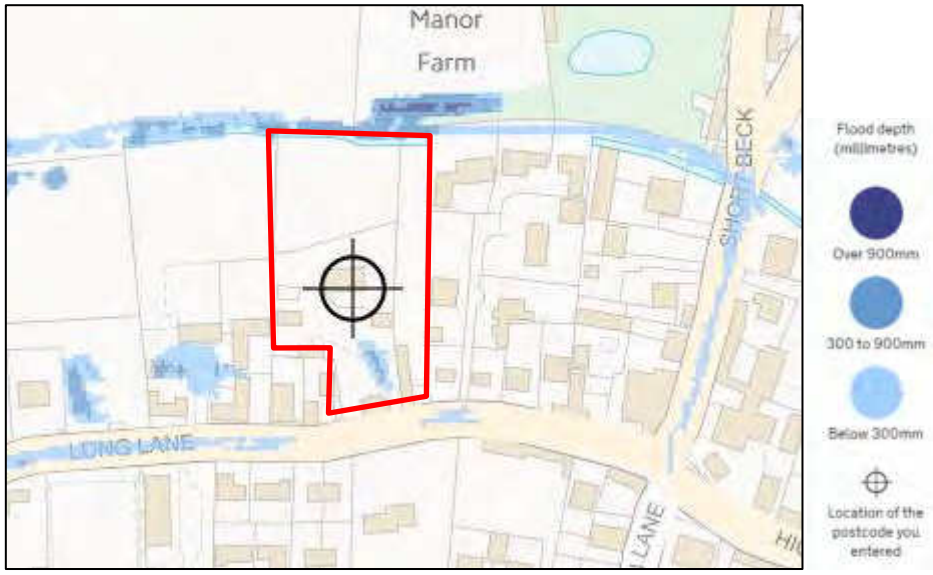


Figure 13 - Environment Agency Medium Risk flood depth

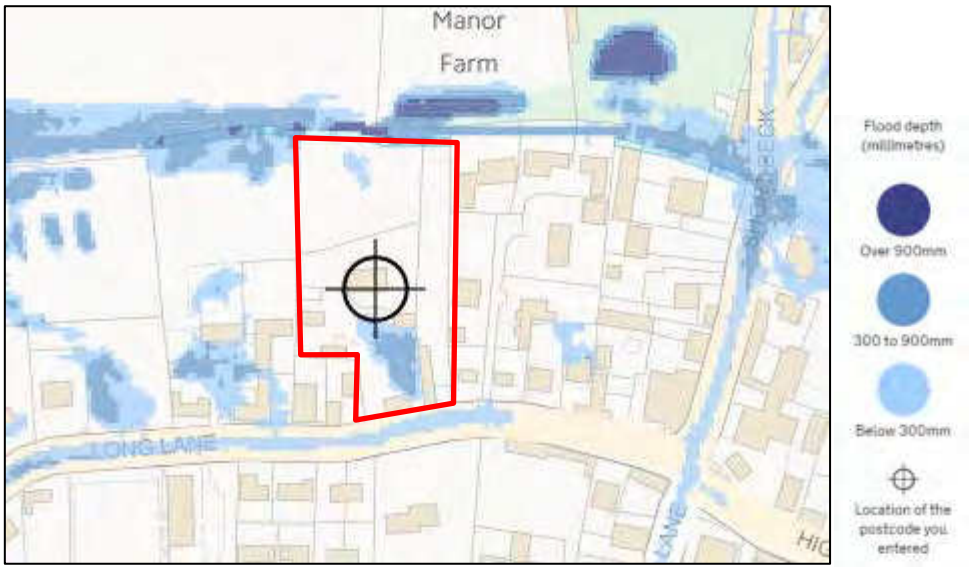


Figure 14 - Environment Agency Low Risk Flood Depth

4.04.33 To summarise, pluvial flooding is only a risk onsite during medium and low risk events although site levels suggest it will be towards the bottom end of this range. During the worst-case scenario (low risk event) flooding may reach depths of between 300-900mm with an estimated velocity in places of over 0.25 m/s. This is associated with a low spot identified by the topographical survey which is likely to be removed during the construction works associated with redevelopment of the site. To deal with the residual risk, mitigation techniques are further described in section 4.06.

Groundwater Flooding

4.04.34 Groundwater flooding is closely associated with heavy rainfall events and pluvial flooding. Depending on the nature of the underlying geology and the seasonal depth of groundwater, periods of abnormally high rainfall can result in groundwater flooding of basements and the emergence of groundwater at ground level, causing damage to property and infrastructure.

4.04.35 The Landmark Flood Report utilises data from the BGS Susceptibility to Groundwater Flooding hazard dataset. This indicates that there is a moderate risk of groundwater flooding onsite.

4.04.36 It is recommended that other relevant information should be considered to further establish the risk to the proposed property. There are no recorded previous incidents of groundwater flooding on the site or within 25m as recorded by the Environment Agency.

4.04.37 To better define the risk of groundwater flooding we have reviewed geological mapping hosted by the BGS website. These clearly show the site is likely to be underlain by Head of varying thickness (absent in places) with Chalk beneath. Groundwater has been recorded at a depth of approximately 9.4m BGL in a nearby borehole.

4.04.38 While the mapping suggests the area is susceptible to groundwater flooding, the local rise of groundwater is heavily controlled by local geological features and artificial influences (structures). Groundwater is unlikely to emerge uniformly or in sufficient volume to fill the topography to a level which would put the development at risk. Groundwater emerging at the surface is likely to runoff to pool in lower areas – the watercourse to the rear of the site.

4.04.39 The potential risk to the development is further mitigated by the absence of any underground structures such as basements. Groundwater ingress may however be an issue during construction, depending on the depth/type of foundations chosen. Some short term de-watering may be required. Over all, we consider it unlikely that groundwater flooding represents a significant source of flood risk to the site. In order to mitigate the residual risks however, management methods have been further detailed in section 4.06.

Reservoir Flooding

4.04.40 The GOV.UK reservoir flood risk mapping shows that both the site and Feltwell are located in an area which could be affected by a reservoir failure (see Figure 15 below). There is a single small reservoir located 2.2km north-east of the site. Topographical mapping for the area shows the site is at a lower elevation than the reservoir and therefore at risk if the reservoir breached.

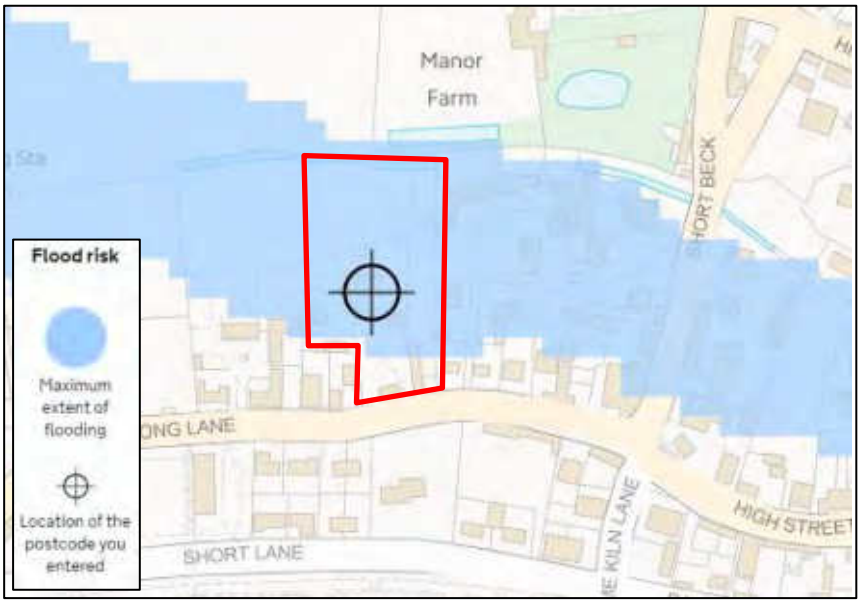


Figure 15 - Environment Agency Reservoir Flooding Map

4.04.41 According to records held by the planning department of King's Lynn and West Norfolk Borough Council the reservoir has the capacity to store approximately 15 million gallons within earth embankments and is used for the purpose of summer irrigation (See Appendix F for further details).

4.04.42 The flood map shows the consequences of a full breach of the reservoir whilst it is at full capacity, and therefore represents the worst-case scenario. During this worst-case scenario the maximum depth of flooding onsite is predicted to be 0.3m with the exception of a very small isolated area of ponding to the rear of the site where water has the potential to reach a maximum of 2m. The maximum velocity of this flood water is up to 2m/s. However, the flood maps do not consider the probability of such a failure.

4.04.43 Under current legislation, all reservoirs with a capacity of 25,000 cubic meters or more (this reservoir measures approximately 68,200 cubic meters) that could escape in the event of a dam failure must be registered with the EA. Once registered, the EA will determine whether or not a reservoir is 'high risk', it will continue to be fully regulated which comprises having a supervising engineer appointed and a 10-yearly inspection.

4.04.44 The reservoir, with embankment slopes not exceeding 1 in 4 and 0.6m freeboard, represents a robustly designed structure with low probability of failure with regular supervision. We therefore do not consider the reservoir to represent a significant source of actual flood risk to the site.

Historic Flooding

4.04.45 Within the Landmark Flood Report data is provided on historical flood events. The report advises that whilst the site is within an area with some risk of flooding, insurance should remain available and affordable provided the site hasn't experienced flooding in the past.

4.04.46 There is no historic flood information available for the site within the Environment Agency's records. This does not indicate that no historic flooding has occurred in the area although none has been recorded which suggests if flooding has occurred it is likely to be small scale with limited effects.

4.04.47 Further review of the King's Lynn & West Norfolk SFRA identified three historic records of flooding within Feltwell relating to surface water. Two of these are recorded to have occurred within natural topographic flow paths, with the third occurring in a low-lying spot on Short Beck. No specific locations where this flooding occurred was identified in the SFRA however.

4.04.48 A review of the Environment Agency flood warning areas confirms that the proposed development is not within an area where Flood Warnings (immediate action required) are issued by the EA. Although the site is partially within an area where Flood Alerts (prepare to take action) are issued. It would therefore be possible to register the new dwellings with

Floodline Warnings Direct, to receive advanced notification of impending flood events, so that residents can monitor the situation.

Sewer Flooding

4.04.49 In order to assess the risk posed from sewer flooding, an Anglian Water CON29DW was obtained. This gives an overview of surface and foul drainage within the surrounding area. Such details include whether the property is connected to the public sewers, details of the sewerage and water undertaker and an overview of the drainage network.

4.04.50 The report confirms that both foul and surface water from the site drain to a public sewer. The map extract below provided by Anglian Water indicates that a foul water sewer runs along the highway past the front of the site (southern boundary). See figure 16 below.

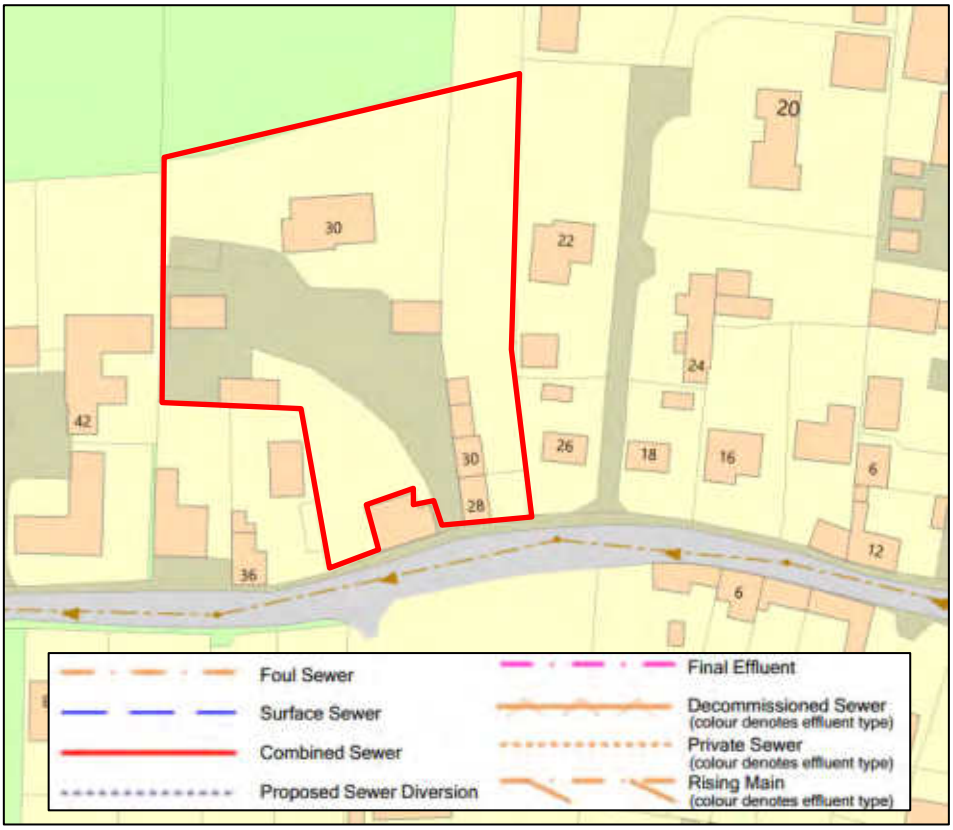


Figure 16 – Anglian Water Foul Sewer Asset Plan

4.04.51 Question 2.8 of the report asks '' Is the building which forms part of the property, at risk of internal flooding due to overloaded public sewers?''. The response advises that the property is ''NOT recorded as being at risk''.

4.04.52 A copy of the Anglian Water CON29DW is included within Appendix G.

4.05 Summary

4.05.1 A summary of the overall risk of flooding from each source is provided in Figure 17 below.

Source of flooding	Initial level of risk	Appraisal method
Fluvial	Low – Moderate	GOV.UK flood zone mapping
Tidal	Low – overridden by fluvial	GOV.UK flood zone mapping
Pluvial	Low - Moderate	GOV.UK surface water mapping
Groundwater	Low	BGS groundwater maps, OS mapping
Artificial	Moderate	OS mapping, EA 'Risk of flooding from reservoirs map'
Sewer	Negligible	OS mapping, Anglian Water asset data & historic sewer records in East Suffolk SFRA

Figure 17 - Summary of flood sources & risks

4.06 Proposed Mitigation Measures

4.06.1 The key objectives of flood risk mitigation are:

- To reduce the risk of the development being flooded;
- To ensure safety during flood events;
- To ensure that the flood risk downstream of the site is not influenced by increased runoff;
- To ensure the development doesn't have an adverse impact on flood risk elsewhere;

4.06.2 Up to this point in the report the risk of flooding to the site has been analysed and the consequences from each source has been considered. The following section of this report examines ways in which flood risk can be mitigated (Figure 18 overleaf).

Mitigation Measure	Appropriate?	Comment
Careful location of development within site boundaries (Sequential approach)	Yes	Refer to Section 4.06.3
Land raising	No	Not required
Raising floor levels	Yes	Refer to Section 4.06.4
Compensatory floodplain storage	No	Not required, in Flood Zone 1
Flood resistance & resilience	Yes	Refer to Section 4.06.5 & 4.06.6
Alterations/improvements to channels and hydraulic structures	No	Not required
Flood defences	No	Not required
Flood warning	Yes	Refer to Sections 4.06.7 & 4.06.8
Management of development runoff	Yes	Refer to Section 6.03

Figure 18 - Appropriateness of mitigation measures

4.06.3 The sequential approach to flood risk management can also be adopted on a site based scale and this can often be the most effective form of mitigation. In this instance, the proposed site layout has been designed to maximise the inherent benefits offered by the site levels. The attenuation basins have been located within the lower area of the site while the new dwellings are predominately located on higher aspects of the site. Less vulnerable garden areas are located to the rear northern boundary where levels are lower and therefore more susceptible to flooding.

4.06.4 Finished floor levels on the ground floor will be set to a minimum of 300mm above surrounding ground levels to mitigate surface water flooding. This further reduces the maximum depth of flood water from a potential reservoir breach and the mitigates the risk of a groundwater flood event. All bedroom accommodation will be located at first floor level or above.

4.06.5 Since the above measures will only manage the risk of flooding rather than eliminate it completely, flood resilience and resistance measures are desirable in the design of the proposed properties. It has been shown that despite increasing finished floor levels a flood event may still impact the properties. By incorporating flood resilience into the design of the buildings throughout the ground floors it will be possible to increase their resilience to flooding and thereby reduce the impact of such an event without compromising the structural integrity of the buildings. These measures which could be adopted include but are not limited to:

- Raising all gas and electricity meters;

- Raising the electric supply;
- Orientating plasterboard horizontally;
- Using corrosion resistant materials;
- Solid stone/concrete floors with no voids space beneath;
- One-way valves within the sewer systems;

4.06.6 Details of flood resilience and flood resilient construction techniques can be found in the document 'Improving the Flood Performance of New Buildings; Flood Resilient Construction', which can be downloaded from the Communities and Local Government Website.

4.06.7 As the development site is near to a flood risk zone, it is recommended that all future occupants sign up to the flood warning system (Floodline Warnings Direct) operated by the Environment Agency in order to ensure they receive the latest flood alerts in sufficient time to permit evacuation/preparation.

4.06.8 Additionally, the future occupants of the proposed dwellings should adopt Flood Response Plans to ensure they have sufficient knowledge and awareness to deal with a flood event should it occur.

5.0 PLANNING POLICY

5.01 Sequential Test

5.01.1 The NPPF directs local authorities, developers and consultants to follow a sequential, risk based approach to identifying land suitable for development.

5.01.2 At the strategic level local authorities 'zone' areas for appropriate development, for example 'More Vulnerable' uses such as residential development are preferred in flood zone 1, while 'Less Vulnerable' development such as commercial premises may be appropriate in flood zone 2, where zone 1 sites are not available. Flood zone 3 is typically reserved for 'Water Compatible' activities.

5.01.3 Planning guidance advises that *"When seeking planning permission for individual developments on sites allocated in development plans through the application of the Sequential Test, informed by a SFRA, developers need not apply the Sequential Test, but should apply the sequential approach to locating development within the site."*

5.01.4 In the case of 'windfall sites', which have not been considered as part of the wider SFRA process, it may be necessary for developers and consultants to provide evidence that the

sequential test has been undertaken. Such evidence must demonstrate that the type of development selected is appropriate to the level of potential flood risk pursuant to the site, and that alternative 'available' sites have been considered.

5.01.5 King's Lynn & West Norfolk Borough Council have completed an SFRA, which has been approved by the Environment Agency. However, the SFRA does not provide any assessment of development sites within Feltwell, as such the developer should ensure the sequential test is satisfied.

5.01.6 In this instance, the Level 2 Site Specific Flood Risk Assessment has established that the site is located in Flood Zone 1. Thus, planning guidance confirms that more vulnerable 'development is appropriate'. See figure 19 overleaf.

Table 3: Flood risk vulnerability and flood zone 'compatibility'

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	×	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	×	×	×

Key: ✓ Development is appropriate.
× Development should not be permitted.

Figure 19 - Extract from the NPPF Technical Guide

5.02 Exception Test

5.02.1 In the event that lower risk sites are not available then the Exception Test must be satisfied. This test provides a method for managing flood risk while still allowing necessary development to take place. There are three elements to the Exception Test, all of which must be satisfied.

5.02.2 These are:

a. Sustainability – it must be proven that the development confers wider benefits to community at large that outweigh the potential flood risk;
b. Brownfield land – the site should be developable, previously developed land or alternatively there are no reasonable alternative previously developed sites available;

c. Safe – a site specific FRA must demonstrate that the development will be safe, without increasing flood risk elsewhere and where possible will reduce flood risk overall;

5.02.3 In this instance, the Exception Test is not required as although a small proportion of the site was shown to be in Flood Zone 3b by flood mapping, a more detailed analysis of modelled flood levels revealed that the whole site is in fact in Flood Zone 1.

6.0 SURFACE WATER DRAINAGE

6.01 Current Drainage Strategy

6.01.1 The site is served by a foul water public sewer. Evidence from Anglian Water shows a foul water sewer runs along the highway immediately in front of the site. See extract from the CON29DW in Figure 16 (Section 4.04.48).

6.01.2 The presence of guttering and downpipes on the existing property and the outbuildings indicate that surface water runoff is already positively managed via an established drainage system. A series of manholes have been also identified by the topographical survey which support this conclusion. According to the CON29DW information, both surface and foul water discharge into the public sewer system.

6.02 Pre & Post Development Run-off Rates

6.02.1 The site is currently laid to a combination of surfaces; the rear two-thirds of the site are laid to grass and a mixture of mature trees and saplings, while the southern third of the site is laid to hardstanding with several outbuildings and a dwelling are also located there.

6.02.2 The proposed development comprises a higher proportion of impermeable surfacing due to the proposed dwellings, access routes and associated carparking areas. Runoff rates are thus expected to be increased following the redevelopment of the site. We have undertaken a preliminary assessment based on the following assumptions:

- The removal of the outbuildings/existing dwellings will reduce the existing impermeable surfacing by 480m^2;
- The removal of the hardstanding will reduce the existing impermeable surfacing by 1445m^2;
- The roof area of the proposed dwellings will add 1965m^2;
- The car parking spaces and access routes will add 1705m^2;
- The total increase in impermeable surfacing is therefore $1{,}745\text{m}^2$.

6.02.3 To establish the potential impact of the planned development we have utilised the topographical survey and architect's proposed layout drawing to calculate the rate and volume of surface water run-off leaving the site.

6.02.4 The Pre-development runoff rate for the 1 in 1, 1 in 30 and 1 in 100 year return periods have been calculated as follows:

- 1 in 1 year = 28.7 l/s
- 1 in 30 year = 70.5 l/s
- 1 in 100 year = 92.0 l/s based on 0.19 ha of existing impermeable surfacing.

6.02.5 The Post development runoff rates have been calculated as follows (based on a 15-min storm):

- 1 in 1 year = 55.0 l/s
- 1 in 30 year = 134.9 l/s
- 1 in 100 year = 175.5 l/s based on 0.37 ha of proposed impermeable surfacing.

6.02.6 The development will result in a net increase in the overall area of impermeable surfacing, which will cause a resultant increase in the modelled post development surface water discharge rate prior to mitigation.

6.02.7 The detailed calculations for pre & post development runoff rates are included in Appendix H.

7.0 RESIDUAL RISK

7.01 General

7.01.1 Evidence reviewed as part of this assessment has shown that the proposed dwellings are to be located within Flood Zone 1. The risk of internal flooding can be reduced further by ensuring that finished floor levels are set 300mm above surrounding ground levels to mitigate against surface water flooding, groundwater flooding and flooding from a potential breach in the nearby reservoir.

7.02 Compensatory Storage

7.02.1 As the new dwellings will be built in Flood Zone 1, there will be no loss of storage during the 1% AEP or 1% AEP +CC event and therefore, no compensatory storage is required.

7.03 Safe Access & Egress

7.03.1 In the event of a flood, occupants of the dwellings would be safe both onsite and within the individual houses, although lower lying areas of the garden land has the potential to flood up to a depth of between 300-900mm in the worst-case scenario. During a flood event, safe access and egress would still be possible from the site via Long Lane which sits at approximately 0.5m above the level of the site and therefore at less risk of flooding (see figure 20 below).

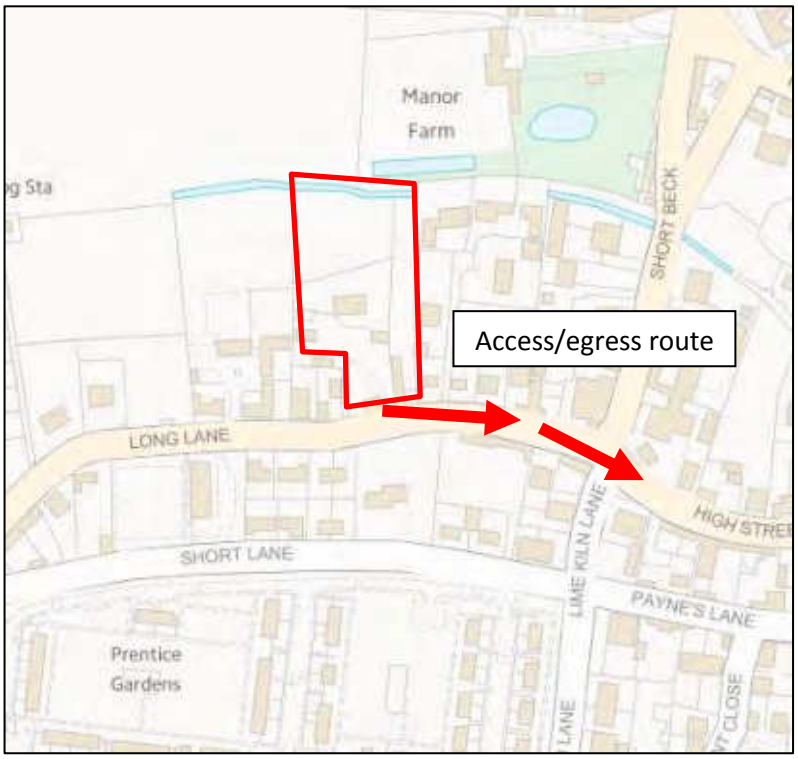


Figure 20 - Evacuation route

7.04 Residual Reservoir Flood Risk

7.04.1 Evidence reviewed as part of this assessment which included the design details of the agricultural irrigation reservoir and Environment Agency flood risk mapping has identified that a risk of flooding from a potential breach of the upstream reservoir exists. However, due to the proximity of the reservoir from the site, the robust design of the reservoir and the predicted flood depth/velocity it is considered that the residual risk of significant flooding onsite from a reservoir breach is Low.

8.0 SUMMARY / RECOMMENDATIONS

8.01 Summary of Potential Flood Risk

- There are three different principal sources of flooding onsite. These are Pluvial, Groundwater and Reservoir. The pluvial risk stems from the watercourse to the rear of the site. The groundwater flood risk originates from the underlying chalk bedrock, while the reservoir flood risk is associated with an irrigation reservoir located north-east of the site.
- The pluvial risk is Low – Moderate over the site but can be mitigated by SuDS compliant drainage techniques and careful removal of low spots during construction.
- The risk of groundwater flooding is higher but again can be mitigated through the use of flood resilient techniques and restricting onsite infiltration to ensure the risk is not exacerbated.
- The risk of reservoir flooding is Very Low due to the robust construction of the reservoir, its function and it proximity to the site.
- The risk of internal flooding can be mitigated by setting floor levels above the design flood level and ensuring all accommodation is at first floor level or above;
- There is no viable risk of Tidal, Fluvial or Sewer flooding.

8.02 Recommendations

8.02.1 Based on the information gathered as part of this desk based screening study JPC Environmental Services would recommend the following:

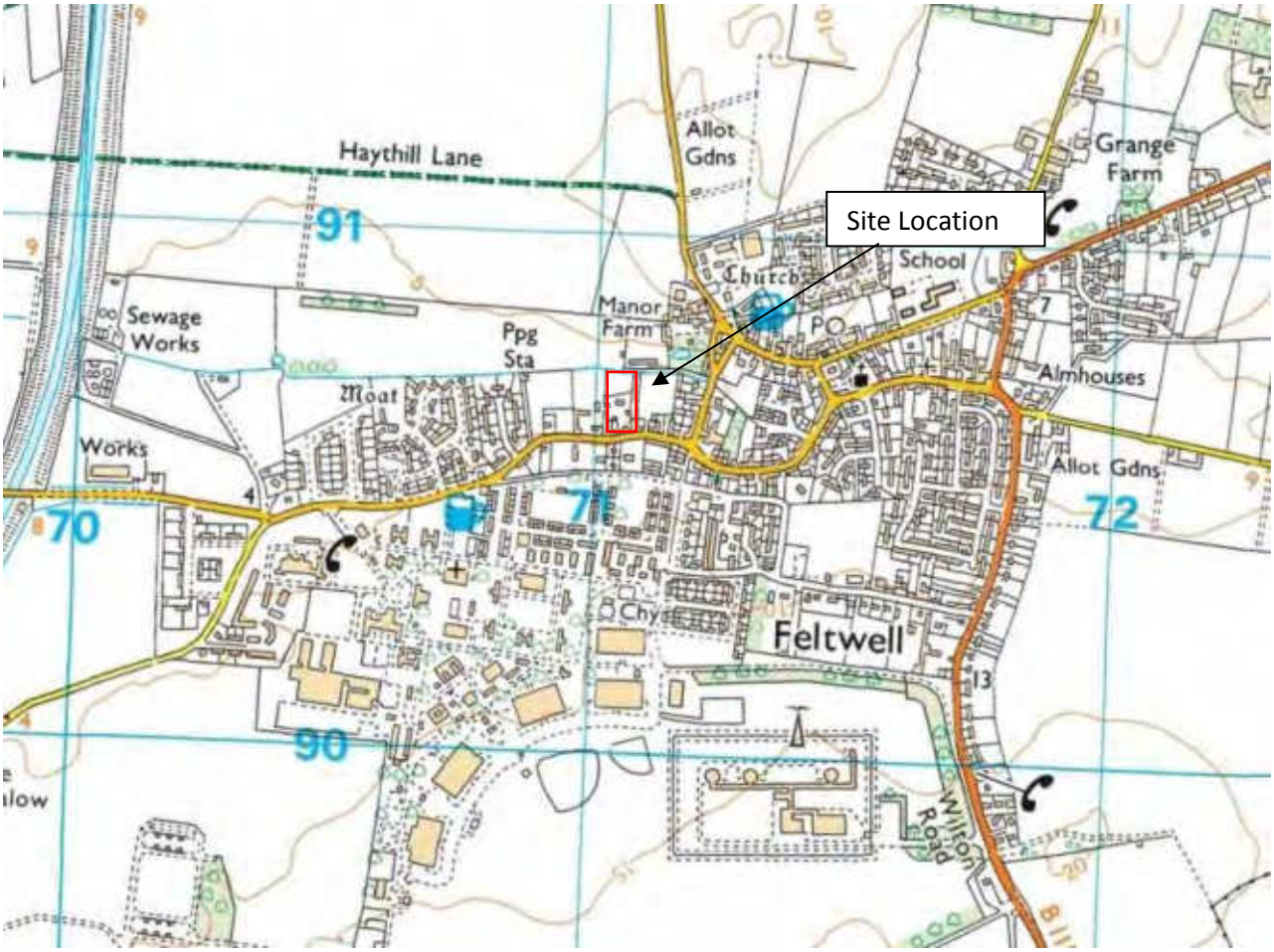
- A finished floor level of no lower than 300mm above adjacent ground levels. This is protective against surface water, groundwater and reservoir based flood risk;
- Bearing in mind the nearby surface water flood risk we would recommend the use of a SuDS based drainage system to further reduce the existing risk to site and adjacent properties;
- The properties should be registered with Floodline Warnings Direct (FWD) prior to occupation.

8.02.2 The opinions and recommendations expressed within this report are based on the results of desk based research and information provided by third party agencies. No additional hydraulic modelling has been undertaken.

APPENDIX A

Site Location Plan

JPC Environmental Services
(A division of JP Chick & Partners Ltd)



JPC Environmental Services (A division of J P Chick & Partners Limited) 7 Museum Street Ipswich IP1 1HQ	Project: 28 – 30 Long Lane, Feltwell, Thetford, IP26 4BJ
	Job Number: IE17/063
Date: 26/10/2017	**Drawing Title:**
Drawing Number: 1	Site Location Plan
Scale: NTS	

APPENDIX B

Architects Proposed Layout Drawings

NORTH

plot 6
plot 7
plot 8
plot 9
plot 10
plot 11
plot 12
plot 13
plot 14
plot 15
plot 16
plot 17
plot 18
plot 19
plot 20
plot 21
plot 22
plot 23
plot 24
plot 25
plot 1
plot 2
plot 3
plot 4
plot 5

turning area
turning area
turning area
turning area

1
2
3
4

v/p 1
v/p 2
v/p 3

46.8m best distance over highway/foot path

fast food outlet

Play area with banking and 'Swale basin'. 3No. visitors parking spaces constructed using Grassgaurd paving system

new access

2.4x43.00 visibility splay

6000

LONG LANE

junction with one way system and pedestrian crossing

site plan scale 1:250

location plan scale 1:1250

total site area 7,155m.sq.
total open landscape area 883.9m.sq.
play area within this area 297.1m.sq.
12.5% open space

plots 1 to 3 to be 3 bed dwellings

plots 4 to 7 to be 1 bed dwellings
plots 4 & 5 being within converted barn

plots 8 to 16 to be 3 bed dwellings

plots 17 4 bed dwellings

plots 18 to 22 to be 2 bed dwellings

plot 23, 24 3 bed dwellings

plot 25 4 bed dwellings

project
PROPOSED DEVELOPMENT OF 25 DWELLINGS
at No.30 Long Lane, Feltwell, Thetford. IP26 4BJ

SKI PROPERTY MANAGEMENT
Architectural Design, Planning Consultants & Surveyors
9 Park View, Weeting, Brandon, Suffolk. IP27 0QD - tel: 01842 813662 - kazskiprop@gmail.com

drawing no 352/5
rev'n
scale 1:250
date 20.05.2017
drawn Kaz

APPENDIX C

Topographical Survey

N

Grid North

SURVEY TO ORDNANCE SURVEY GPS DATUM AND GRID, OSGB36(02) TRANSLATED FROM ETRS89 USING OSGM02 AND OSTN02 MODELS

Co-Ordinates

J1	571079.253	290621.455	5.6980
J2	571060.098	290652.951	5.0920
J3	571040.934	290664.176	5.4166
J9	571087.320	290623.377	5.7091

FENCE TYPES

B/W	Barbed Wire	C/P	Chestnut Paling	P/S	Palisade
C/B	Close Boarded	I/R	Iron Railing	P/W	Post & Wire
C/I	Corrugated Iron	I/W	Interwoven		
C/L	Chainlink	P/R	Post & Rail		

LEGEND

AV	Air Valve	MH	Manhole
BD	Bollard	MK	Marker
BH	Borehole	NP	Street Name Plate
CB	Cable Box	O/H	Overhead
CHY	Chimney	OSBM	Ordnance Bench Mark
CL	Cover Level	P	Post Or Pillar
CONC	Concrete	PM	Parking Meter
CTV	Cable Television	RE	Rodding Eye
DK	Drop Kerb	RS	Road Sign
DP	Down Pipe	SAP	Sapling
DR	Drain	SC	Stop Cock
ELC	Electricity	SL	Sump Level
EP	Electricity Pole	ST	Stop Tap
ER	Earth Rod	SV	Sluice Valve
FB	Flower Bed	TAR	Tarmac
FH	Fire Hydrant	TCB	Telephone Call Box
FP	Flag Pole	TL	Traffic Lights
GY	Gully	TP	Telegraph Pole
GP	Gate Post	TV	Television Box
GV	Gas Valve	UTL	Unable to lift
IC	Inspection Cover	VP	Vent Pipe
IL	Invert Level	WL	Water Level
JB	Junction Box	WM	Water Meter
KO	Kerb Outlet	WO	Wash Out
LB	Letter Box		
LP	Lamp Post		

Banking, Hedge, Tree, Bush, Gate, O/H Electric, O/H Telecom, S1 Control Station

Drawn by:- JB Surveyed by:- JB Checked by:- JT

Date: September 2017

Scale:- 1:200

Drawing Number: ALS7966/200/01 Topographical

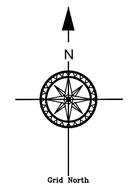
Client: SKI Property Management

Project: Feltwell, The Coal Yard

Surveyed By:-

Anglia Land Surveys Ltd
Bowthorpe Hall,
Bowthorpe Hall Road,
Norwich, NR5 9AA
Tel: (0)1603 749600
Fax: (0)1603 734798
e-mail: mail@als-surveys.com
Website: www.als-surveys.com

ISO 9001 REGISTERED FIRM



SURVEY TO ORDNANCE SURVEY GPS DATUM AND GRID, OSGB36(02) TRANSLATED FROM ETRS89 USING OSGM02 AND OSTN02 MODELS

Co-Ordinates

J1	571079.253	290621.455	5.6980
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J3	571040.934	290664.176	5.4166
J9	571087.320	290623.377	5.7091

FENCE TYPES

B/W	Barbed Wire	C/P	Chestnut Paling	P/S	Palisade
C/B	Close Boarded	I/R	Iron Railing	P/W	Post & Wire
C/I	Corrugated Iron	I/W	Interwoven		
C/L	Chainlink	P/R	Post & Rail		

LEGEND

AV	Air Valve	MH	Manhole
BD	Bollard	MK	Marker
BH	Borehole	NP	Street Name Plate
CB	Cable Box	O/H	Overhead
CHY	Chimney	OSBM	Ordnance Bench Mark
CL	Cover Level	P	Post Or Pillar
CONC	Concrete	PM	Parking Meter
CTV	Cable Television	RE	Rodding Eye
DK	Drop Kerb	RS	Road Sign
DP	Down Pipe	SAP	Sapling
DR	Drain	SC	Stop Cock
ELC	Electricity	SL	Sump Level
EP	Electricity Pole	ST	Stop Tap
ER	Earth Rod	SV	Sluice Valve
FB	Flower Bed	TAR	Tarmac
FH	Fire Hydrant	TCB	Telephone Call Box
FP	Flag Pole	TL	Traffic Lights
GY	Gully	TP	Telegraph Pole
GP	Gate Post	TV	Television Box
GV	Gas Valve	UTL	Unable to lift
IC	Inspection Cover	VP	Vent Pipe
IL	Invert Level	WL	Water Level
JB	Junction Box	WM	Water Meter
KO	Kerb Outlet	WO	Wash Out
LB	Letter Box		
LP	Lamp Post		

Banking, Hedge, Tree, Bush, Gate, O/H Electric, O/H Telecom, S1 Control Station

Drawn by:- JB Surveyed by:- JB Checked by:- JT

Date: September 2017

Scale:- 1:200

Drawing Number: ALS7966/200/02 Topographical

Client: SKI Property Management

Project: Feltwell, The Coal Yard

Surveyed By:-

Anglia Land Surveys Ltd

Bowthorpe Hall,
Bowthorpe Hall Road,
Norwich, NR5 9AA

Tel: (01603) 749600
Fax: (01603) 734798
e-mail: mail@als-surveys.com
Website: www.als-surveys.com

ISO 9001 REGISTERED FIRM

APPENDIX D

Landmark Flood Report

Homecheck Flood

Overall Flood Risk

PASSED MODERATE
CLICK TO VIEW ONLINE VIEWER

Although the property is in an area that is at some risk of flooding, considering the frequency and/or severity of the risk, we are able to issue a 'Passed'. However, it would be prudent for the home buyer to consider the recommendations detailed on page 1 and visit the online viewer to explore the risks further.

Insurability

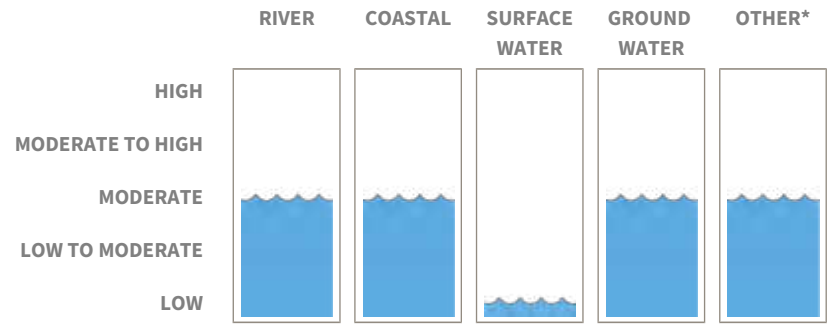
Whilst the property is within an area with some risk of flooding, in most cases insurance should remain available and affordable providing the property hasn't flooded in the past. We recommend obtaining buildings and contents insurance terms before exchange of contracts.

Flood Defences

Are there existing river/coastal flood defences that have been identified and taken into account in our overall risk assessment?	No

Individual Flood Risks

The gauges below detail the level and type of individual flood risks at the property.



* Includes historic flood events, proximity to surface water features and elevation above sea level

This report is issued for the property described as:
22, Long Lane, Feltwell, THETFORD, IP26 4BJ
Report Reference:
141222259

National Grid Reference:
571050 290680

Customer Reference:
IE17/063_HCF

Report Date:
29 September 2017

Click here to view the **online viewer or go to:**

http://landmark.ly/M5u9PZ

CONTACT DETAILS

If you require any assistance please contact our customer support team on:

0844 844 9966

or by email at:

helpdesk@landmark.co.uk

Professional Opinion and Recommendations

Please see below our recommendations and next steps with regards to the property.

Overall Flood Risk — **PASSED MODERATE** CLICK TO VIEW ONLINE VIEWER

Professional Opinion

Landmark Information Group have identified the property to be within an area that is at a moderate risk of flooding. This means that that although some indication of potential flooding has been identified, it is not considered significant or frequent enough for a Further Action to be issued. The property purchaser should be aware of Landmark's findings and recommendations below:

1. River and Coastal Flooding

   The property is within an area that is at a moderate risk of river and coastal flooding and no Environment Agency recorded flood defences have been identified within 500m of the property.

2. Groundwater Flooding

   The property is located within an area that is at some risk of groundwater flooding. During an extreme storm event, the water table could rise and cause flooding.

   This will be more of a problem if the property has a basement.

3. Other Flooding

   A water feature has been identified near the property. This does not present an immediate risk. However, you should be aware of the presence of this water feature and its proximity to the property. If the water feature is on site, it may require frequent upkeep and maintenance.

The homebuyer may wish to investigate any additional flood risks to the property highlighted on the flood gauges using the online viewer.

Recommendations

1. While the frequency and/or severity of the risk does not warrant installing flood protection measures, we suggest that the purchaser/owner of the property creates a Flood Action Plan to ensure that they are prepared in the event of a flood occurring. The plan should clearly list actions to carry out if a flood warning was issued. Appropriate steps should include:
   - Sign up to the Environment Agency's (EA's) Flood Warning and Flood Alert Service in order to receive updates on impending floods in your area;
   - Find out whether a local Flood Risk Community Group exists in your area who can provide a better localised account of where flooding has occurred;
   - Preparing a list of actions to do in the event of a flood including; switching off building services (gas, water and electricity), moving valuable items to safe places and putting up any flood protection measures if owned;
   - Prepare an emergency flood kit. This should include warm waterproof clothes, torches, batteries, medical kit and an evacuation plan.
2. Ask the seller and other nearby residents if flooding has historically occurred in the area. If it has, why did it occur, what was the impact and what areas were affected. If the property has recently flooded, you may wish to consider flood protection measures.
3. As a moderate risk of flooding has been identified, Landmark recommend the property purchaser/owner explores the viewer to understand the risks further.

Insurance

Whilst the property is within an area with some risk of flooding, in most cases insurance should remain available and affordable providing the property hasn't flooded in the past. We recommend obtaining buildings and contents insurance terms before exchange of contracts.

Flood Risk

Professional Opinion and Recommendations

Flood risk is based on probability; to understand more about flood and the information reviewed, including flood protection measures, please explore the online viewer or visit the 'Know Your Flood Risk Website at: www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForHomeowners.pdf

Useful Information:

No physical site inspection has been carried out or is proposed. This report highlights only the information which we have determined should be drawn to your attention however, other risks may be present. To review the complete information and for a full list of the data used for this report, please see the Useful Information section on the online viewer. Available at **http://landmark.ly/M5u9PZ**.

Next Steps:

If you require any assistance, please contact our customer service team **0844 844 9966** or **helpdesk@landmark.co.uk**

Property Location

Location Plan

The map below shows the location of the property

Property

Search Radii

Property Purchaser Guide

Understanding this report

The purpose of this report is to provide a professional opinion on the likelihood of flooding at the property. The front page provides an overall assessment, an indication of the availability of insurance, as well as a flood gauge which is broken down into River, Coastal, Surface, Groundwater and Other flood risks to help visualise the potential flood risks. Within the report, we provide recommendations and further detail of any risk requiring further attention.

Overall Flood Risk

The overall flood risk is an assessment of all the flood data which has been analysed. It may differ from the individual risks on the flood gauge as we consider the overall risk to the property.

Risk Rating

Landmark Information Group provide one of three possible responses for the Overall Flood Risk at the property. These are:

Passed: this means no risk of flooding has been identified.

Passed moderate: this means that while potential flood risks have been found, these are not considered significant or frequent enough for a Further Action to be issued. The property purchaser should refer to the online viewer to explore these potential issues further.

Further Action: this means a significant risk of flooding at the property has been identified. Further assessment will be required.

Insurability

Based on the data assessed within this report, an indication of whether buildings insurance is likely to be available and affordable is provided.

Flood Defences

If river/coastal flood defences are known to be present, these are assumed to be operational and are taken into consideration in our Overall Flood Risk analysis.

Individual Flood Risks

These enable you to easily identify your level of risk from the various causes of flooding. However, a residual risk of flooding may be present if flood defences fail. We therefore, provide on the Professional Opinion and Recommendation page the level of risk should any defences identified fail. It is important to note that flood defences do not usually protect the site against groundwater or surface water.

Flooding Types

There are several types of flooding taken into account when making our overall opinion. These are explained below. Where a risk is found, this is shown on the front page and further details are provided within the body of the report.

River Flooding

River flooding occurs when rivers and streams are unable to carry away floodwaters within their usual drainage channels. River flooding can cause widespread and extensive damage because of the sheer volume of water.

Coastal Flooding

Coastal flooding results from a combination of high tides, low lying land and sometimes stormy conditions. Coastal flooding can cause widespread and extensive damage because of the sheer volume of water.

Surface Water Flooding

Surface water flooding is common during prolonged or exceptionally heavy downpours, when rainwater does not drain away into the normal drainage systems or soak away into the ground.

Ground Water Flooding

Groundwater flooding generally occurs during long and intense rainfall when underground water levels rise above surface level. Groundwater flooding may last for weeks or several months.

Other Flooding

We analyse any historic flood events records, the proximity of the property to surface water features and the elevation of the property above sea level to enhance our overall analysis of the property.

Next Steps:

If you require any assistance, please contact our customer service team **0844 844 9966** or **helpdesk@landmark.co.uk**.

Preparation for a Flood Event

Understanding Flood Risk

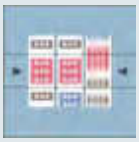
It is important to understand that flooding can happen anywhere, even if you don't live near to a watercourse or the sea. This is because in periods of very heavy rainfall, water can collect in many places where there may be a dip in the ground or a barrier blocking the water's path. Severe rainfall events can also lead to water rising from under the ground as the ground becomes saturated and water is unable to drain away naturally.

The impacts of flooding are not just financial as flooding can also devastate lives, causing both severe disruption at the time as well as continued disturbance through the drying out period in the months that follow. Therefore, it is important to consider any potential flood risk when purchasing a property.

Insurance may be expensive or difficult to obtain if your home is at risk, so it is vital to understand the risk of flooding of your home or before purchasing a property.

How is the Overall Flood Risk Calculated?

Impact: We consider the expected depths of flooding at your house. Low depths, for example, 10cm, are unlikely to put people at risk but water damage to buildings and contents may be significant without any flood protection. High water depths, for example 1m, may severely threaten the safety of people and may cause extensive damage to buildings. It may be dangerous to keep deep floods out of a building because of the large weight of water pressing against the wall.



Likelihood: Flood risk is based on probability and different approaches to flood protection may be needed depending upon how likely flooding is expected. A common way of expressing how likely a flood event is to occur is 'return period'. For example, a 1:100 year event has a 1% likelihood of occurring in any given year, whereas a 1:200 year event has a 0.5% likelihood of occurring in any given year. The 1:200 event would be expected to result in a greater extent of flooding than the 1:100 event, as it would be more severe, but the likelihood of it occurring is lower.

Useful Information

The Purpose and Scope of the Report

The Homecheck Flood report is a desktop flood risk screening report, designed to satisfy the concerns raised by the Law Society Practice Note and to enable home buyers and property professionals to assess the risk of flooding at residential sites. It examines two key areas: (1) the overall risk of flooding at a site taking into account any flood defences present (where these are identified within the vicinity of the property and based on the presence of flood defences registered by The Environment Agency). It should be noted that a residual risk of flooding may remain if such defences were to fail owing to extreme weather conditions, over-topping or poor maintenance. In addition, it should be noted that flood defences do not generally offer protection against groundwater or surface water flooding (2) how flood risk affects the availability of insurance for a site. Where no flood defences are present in the vicinity of the property the overall risk rating provides a worst case scenario which may be alleviated by smaller scale local flood defences or recently constructed flood defences not currently registered by The Environment Agency.

Where several flood risks have been identified, the report highlights the most risky and details the information Landmark consider should be drawn to your attention as part of the conveyancing transaction. However, other flood risks may be present. A home buyer may wish to review the complete information at and around the property using the online viewer.

The Homecheck Flood report is a general purpose indicative screening tool, and is intended to provide a useful initial analysis for a residential conveyancing transaction. It does not provide an alternative to a property specific assessment, such as the Flood Solutions Consult Report, which should be used when this report suggests 'Further Action'.

The Individual Flood Risks

The individual flood risk gauges on the front page highlight the individual river, coastal, surface water, ground water and other types of flooding risk at the property, taking into consideration any flood defences found. These risks are used to determine the overall flood risk to the property. The individual flood risks are demonstrated in the gauges as follows:

High **Moderate To High**	Landmark consider the individual flood risk to be significant. This is because there is a potential flood risk that would be likely to occur fairly frequently or the predicted depth of any flood event would result in significant impact and/or there is a flood water storage area on property and/or there is information to suggest a flood has happened in the past. It is recommended that you refer to the Overall Flood Risk and take note of the Professional Opinion and Recommendations as further action will be required.
Moderate	Landmark consider the individual flood risk to be moderate. This is either because of a potential flood that is likely to occur with moderate frequency, or because the predicted depth of potential flooding at the property is likely to be shallow and insufficient to cause a significant issue. It is recommended that you check the Overall Flood Risk result and refer to the Professional Opinion and Recommendations for guidance and next steps.
Low To Moderate	This describes areas that Landmark Information Group consider are at low to moderate risk flooding. These are areas where we have found some indication of potential flood risk, however any resulting flooding would be expected to be infrequent, or have a low predicted depth. It is recommended that you check the Overall Flood Risk to the property as this may differ from the individual flood risks.
Low	This describes areas that Landmark Information Group consider are at minimal or no risk of flooding. These are areas where there may be some indications of potential flood risk, however any flooding would be expected to be very infrequent, or have a very low predicted depth. It is recommended that you check the Overall Flood Risk to the property as this may differ from the individual flood risks.

Useful Information

Limitations and Terms & Conditions

This report has been published by Landmark Information Group Limited ("Landmark") and is supplied subject to our Terms and Conditions of Business, which can be found at www.landmarkinfo.co.uk/Terms/Show/515. It has been prepared on the understanding that it is to be used for an individual residential property transaction and should not be used or relied upon in a commercial property transaction. This report is neither a guarantee of the physical condition of the subject property nor a substitute for any physical investigation or inspection. Whilst every effort is made to ensure the details in the report are correct, Landmark cannot guarantee the accuracy or completeness of such information or data, nor identify all the factors that may be relevant. If you are a private individual using this report Landmark recommends that you discuss its contents in full with your professional advisor.

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Tel: 0844 844 9966
Fax: 0844 844 9980
Email: helpdesk@landmark.co.uk
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- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.

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- Ensure that products and services comply with industry registration rules and standards and relevant laws.
- Monitor their compliance with the Code.

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If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the ombudsman finds that you have suffered actual financial loss and/or aggravation , distress or inconvenience as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs Contact Details:
The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP

Tel: 01722 333306
Fax: 01722 332296
Website: www.tpos.co.uk
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk.

PLEASE ASK YOUR SEARCH PROVIDER IF YOU WOULD LIKE A COPY OF THE SEARCH CODE

APPENDIX E

Environment Agency:

Correspondence & Flood Mapping

Product Four – Datasheet

Our Reference	Enquirer	Site	Grid Reference
58715	Hannah Purkis	28-30 Long Lane, Feltwell, IP26 4BJ	TL7103490692

This datasheet provides all the information we hold relating to a Product 4, relevant to the above site. Where we have no relevant data for your site we will clearly state this.

Model Information

The following table shows a summary of all the model information relevant to the area of interest.

Model Code	Model Name	Release Date
EA052372	Eastern Rivers Modelling Project	02/11/2015

Level Information

The following table shows modelled level information from the above models.

Node	Model	Easting	Northing	20% AEP	10% AEP	5% AEP	4% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
CO22600	EA052372_001	569790	290273	1.62	1.76	1.9	1.94	2.12	2.2	2.26	2.35	2.6
CO22200	EA052372_001	569944	290631	1.62	1.76	1.9	1.94	2.11	2.2	2.26	2.34	2.59
CO21800	EA052372_001	570002	291020	1.62	1.76	1.9	1.93	2.11	2.19	2.26	2.34	2.59
CO21600	EA052372_001	570012	291218	1.62	1.76	1.9	1.93	2.11	2.19	2.26	2.34	2.59
CO21400	EA052372_001	570021	291416	1.62	1.75	1.9	1.93	2.11	2.19	2.26	2.34	2.58
CO22000U	EA052372_001	569986	290822	1.62	1.76	1.9	1.93	2.11	2.2	2.26	2.34	2.59

Levels Climate Change subform

The following table shows modelled level information from the above models.

Node	Model	Easting	Northing	1%(25%cc) AEP	1%(35%cc) AEP	1%(65%cc) AEP	1%(20%cc) AEP
CO22600	EA052372_001	569790	290273	-9999.99	-9999.99	-9999.99	2.68
CO22200	EA052372_001	569944	290631	-9999.99	-9999.99	-9999.99	2.68
CO21800	EA052372_001	570002	291020	-9999.99	-9999.99	-9999.99	2.68
CO21600	EA052372_001	570012	291218	-9999.99	-9999.99	-9999.99	2.68
CO21400	EA052372_001	570021	291416	-9999.99	-9999.99	-9999.99	2.67
CO22000U	EA052372_001	569986	290822	-9999.99	-9999.99	-9999.99	2.68

Flow Information

The following table shows modelled flow information from the above models.

Node	Model	Easting	Northing	20% AEP	10% AEP	5% AEP	4% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
CO22600	EA052372_001	569790	290273	16.46	17.9	21.1	21.92	24.16	24.44	25.11	26.82	36.18
CO22200	EA052372_001	569944	290631	17.14	18.62	21.71	22.5	24.58	24.88	25.51	27.14	36.32
CO21800	EA052372_001	570002	291020	17.09	18.58	21.43	22.18	24.64	25.24	25.81	27.31	36.89
CO21600	EA052372_001	570012	291218	17.42	18.93	22.04	22.84	24.99	25.31	26.14	27.77	36.96
CO21400	EA052372_001	570021	291416	17.41	18.97	22.04	22.74	25.08	25.45	26.21	27.5	37.04
CO22000U	EA052372_001	569986	290822	16.72	18.11	20.96	21.79	24.12	24.75	25.33	26.85	36.39

Flows Climate Change subform

The following table shows modelled flow information from the above models.

Node	Model	Easting	Northing	1%(25%cc) AEP	1%(35%cc) AEP	1%(65%cc) AEP	1%(20%cc) AEP
CO22600	EA052372_001	569790	290273	-9999.99	-9999.99	-9999.99	28.77
CO22200	EA052372_001	569944	290631	-9999.99	-9999.99	-9999.99	29.04
CO21800	EA052372_001	570002	291020	-9999.99	-9999.99	-9999.99	29.3
CO21600	EA052372_001	570012	291218	-9999.99	-9999.99	-9999.99	29.55
CO21400	EA052372_001	570021	291416	-9999.99	-9999.99	-9999.99	29.56
CO22000U	EA052372_001	569986	290822	-9999.99	-9999.99	-9999.99	28.97

Historic Flooding Information

Informatives

No Historic Flooding Information: There is no historic flood information available for this area.

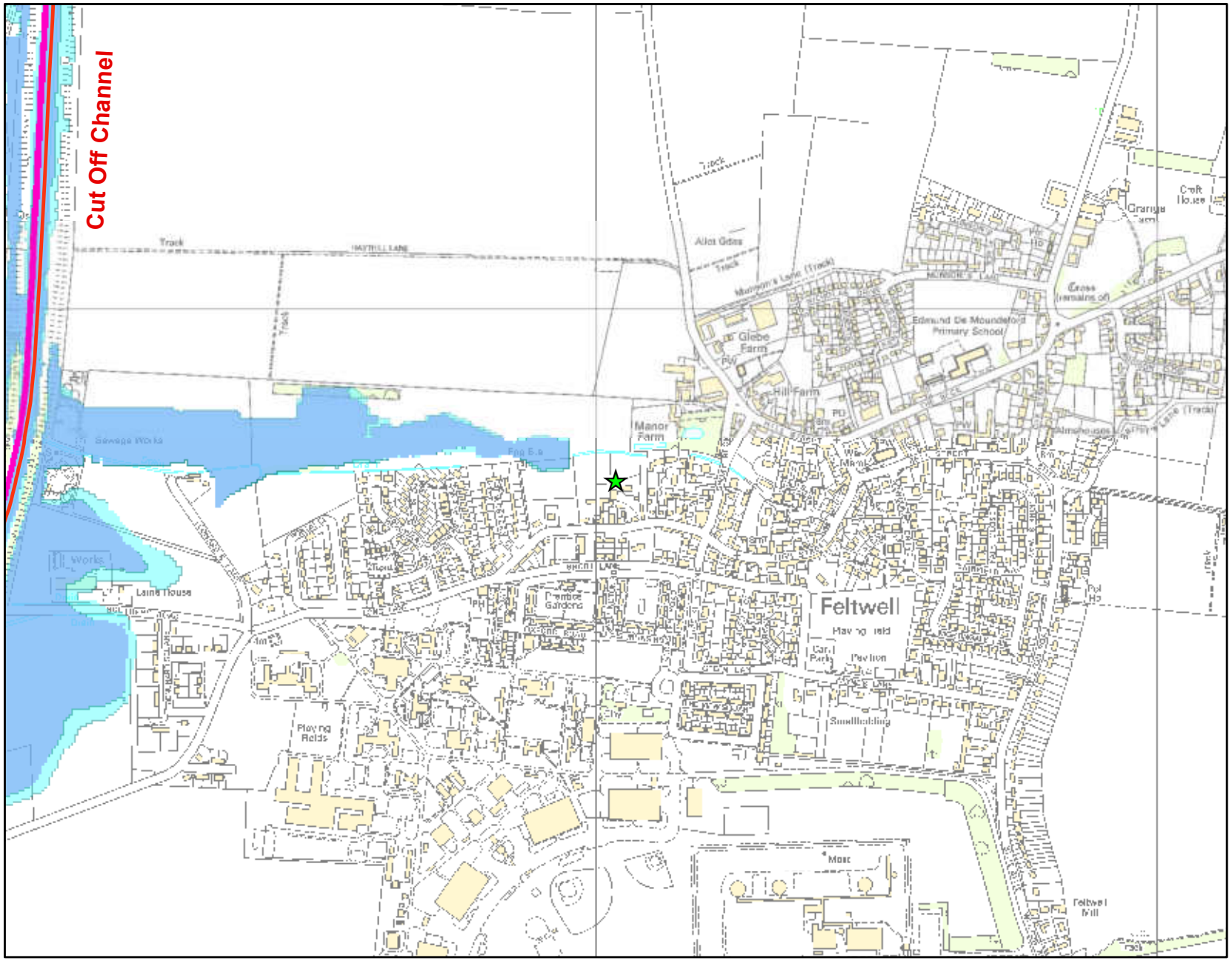
AEP - Annual Exceedance Probability: The probability of a given event to occur in any one year. Please note that this is not a return period.

IDBs: Please note that some of the watercourses in this area are Internal Drainage Board (IDB) watercourses. Please contact the relevant IDB for more information on these.

-9999.99 values: If the above tables show a value of -9999.99, this indicates we have no level or flow information for that particular AEP.

Asset Data: Please note that asset data for this product is attached to the response email as an excel file.

Flood Map for Planning (Rivers and Sea) centred on 28-30 Long Lane, Feltwell, IP26 4BJ. NGR TL7103490692. Ref 58715. Created on 07 September 2017.



Environment Agency

Scale 1:10,000

N
W E
S

Legend

- Flood Zone 2
- Flood Zone 3
- Flood Map Defences
- Main River
- Site

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Defended Model Flood Outlines centred on 28-30 Long Lane, Feltwell, IP26 4BJ. NGR TL7103490692. Ref 58715. Created on 07 September 2017.

Environment Agency

Scale 1:10,000

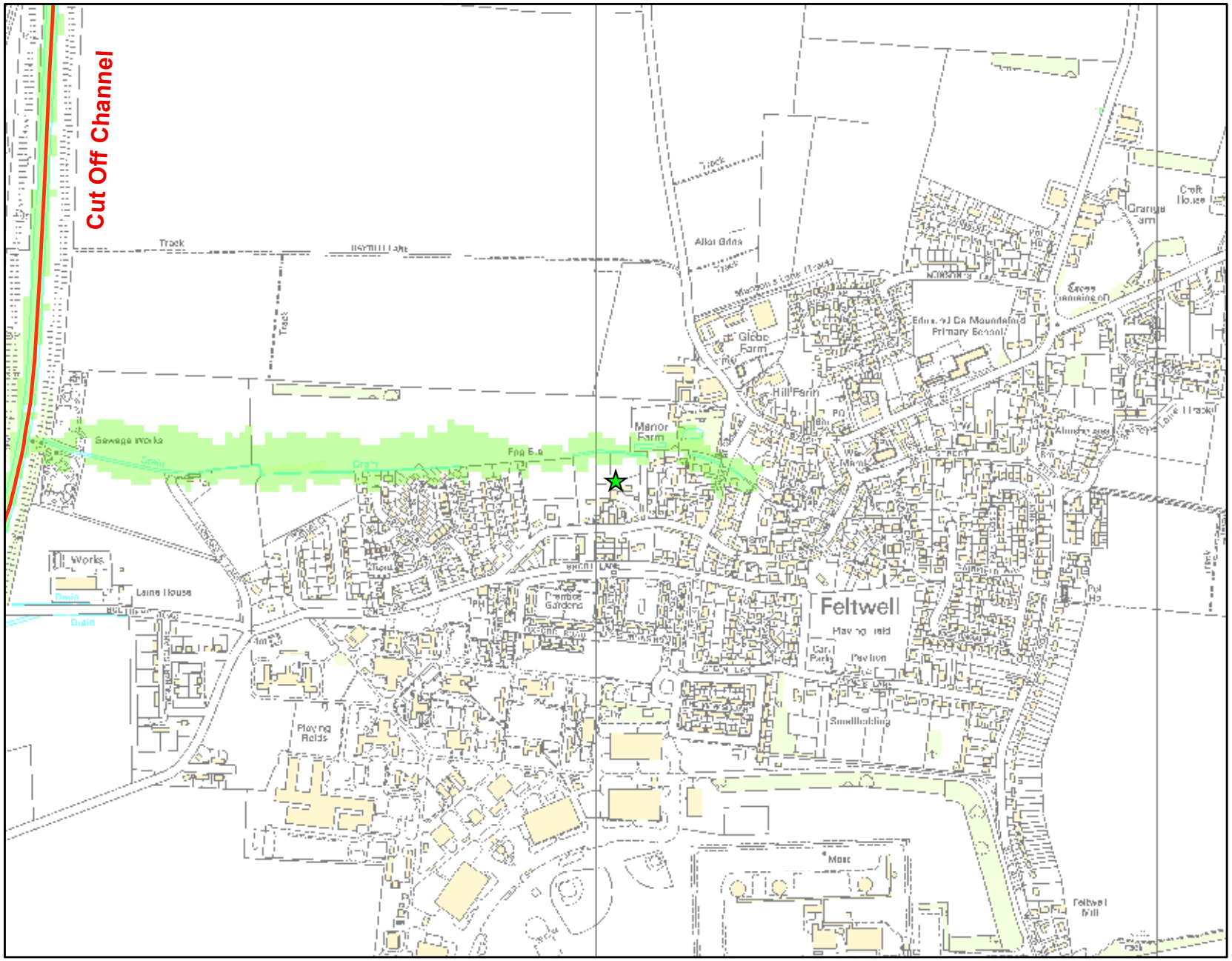
N W E S

Legend

- Main River
- 0.1% AEP defended flood outline
- 1% AEP defended flood outline
- 2% AEP defended flood outline
- 5% AEP defended flood outline
- 20% AEP defended flood outline
- Site

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Defended Climate Change Model Flood Outlines centred on 28-30 Long Lane, Feltwell, IP26 4BJ. NGR TL7103490692. Ref 58715. Created on 07 September 2017.



Environment Agency

Scale 1:10,000

N
W E
S

Legend

- Main River
- 1% AEP CC defended flood outline
- Site

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Map

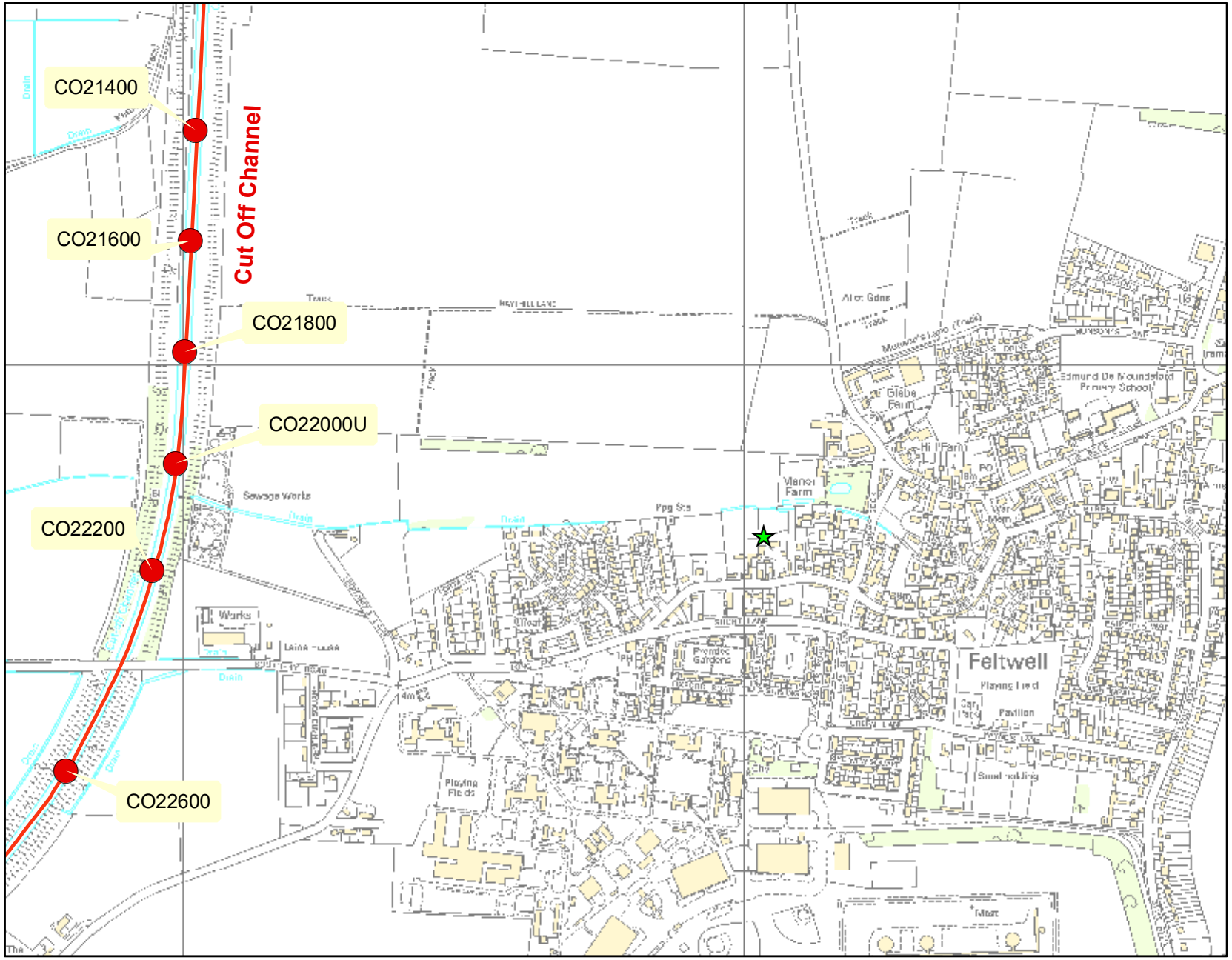
Environment Agency

Legend

N
W E
S

0 600 1200 1800 2400 m.

Modelled Node Point Locations centred on 28-30 Long Lane, Feltwell, IP26 4BJ. NGR TL7103490692. Ref 58715. Created on 07 September 2017.



Environment Agency

Scale 1:10,000

N W E S

Legend

- Node Points
- Main River
- Site

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Flood risk assessments: Climate change allowances

Application of the allowances and local considerations

East Anglia; Essex, Norfolk, Suffolk, Cambridgeshire and Bedfordshire

1) The climate change allowances

The National Planning Practice Guidance refers planners, developers and advisors to the Environment Agency guidance on considering climate change in Flood Risk Assessments (FRAs). This guidance was updated in February 2016 and is available on Gov.uk. The guidance can be used for planning applications, local plans, neighbourhood plans and other projects. It provides climate change allowances for peak river flow, peak rainfall, sea level rise, wind speed and wave height. The guidance provides a range of allowances to assess fluvial flooding, rather than a single national allowance. It advises on what allowances to use for assessment based on vulnerability classification, flood zone and development lifetime.

2) Assessment of climate change impacts on fluvial flooding

Table A below indicates the level of technical assessment of climate change impacts on fluvial flooding appropriate for new developments depending on their scale and location. This should be used as **a guide only**. Ultimately, the agreed approach should be based on expert local knowledge of flood risk conditions, local sensitivities and other influences. **For these reasons we recommend that applicants and / or their consultants should contact the Environment Agency at the pre-planning application stage to confirm the assessment approach, on a case by case basis**. **Table A** defines three possible approaches to account for flood risk impacts due to climate change, in new development proposals:

- **Basic:** Developer can add an allowance to the 'design flood' (i.e. 1% annual probability) peak levels to account for potential climate change impacts. The allowance should be derived and agreed locally by Environment Agency teams.
- **Intermediate:** Developer can use existing modelled flood and flow data to construct a stage-discharge rating curve, which can be used to interpolate a flood level based on the required peak flow allowance to apply to the 'design flood' flow.
- **Detailed:** Perform detailed hydraulic modelling, through either re-running Environment Agency hydraulic models (if available) or construction of a new model by the developer.

Table A – Indicative guide to assessment approach

VULNERABILITY CLASSIFICATION	FLOOD ZONE	DEVELOPMENT TYPE		
		MINOR	SMALL-MAJOR	LARGE-MAJOR
ESSENTIAL INFRASTRUCTURE	Zone 2	Detailed		
	Zone 3a	Detailed		
	Zone 3b	Detailed		
HIGHLY VULNERABLE	Zone 2	Intermediate/ Basic	Intermediate/ Basic	Detailed
	Zone 3a	Not appropriate development		
	Zone 3b	Not appropriate development		
MORE VULNERABLE	Zone 2	Basic	Basic	Intermediate/ Basic
	Zone 3a	Intermediate/ Basic	Detailed	Detailed
	Zone 3b	Not appropriate development		
LESS VULNERABLE	Zone 2	Basic	Basic	Intermediate/ Basic
	Zone 3a	Basic	Basic	Detailed
	Zone 3b	Not appropriate development		
WATER COMPATIBLE	Zone 2	None		
	Zone 3a	Intermediate/ Basic		
	Zone 3b	Detailed		

Note: Where the table states 'not appropriate development', this is in line with national planning policy. If in exceptional circumstances such development types are proposed in these locations, we would expect a detailed modelling approach to be used.

NOTES:

- Minor: 1-9 dwellings/ less than 0.5 ha | Office / light industrial under 1ha | General industrial under 1 ha | Retail under 1 ha | Gypsy/traveller site between 0 and 9 pitches
- Small-Major: 10 to 30 dwellings | Office / light industrial 1ha to 5ha | General industrial 1ha to 5ha | Retail over 1ha to 5ha | Gypsy/traveller site over 10 to 30 pitches
- Large-Major: 30+ dwellings | Office / light industrial 5ha+ | General industrial 5ha+ | Retail 5ha+ | Gypsy/traveller site over 30+ pitches | any other development that creates a non residential building or development over 1000 sq m.

The assessment approach should be agreed with the Environment Agency as part of pre-planning application discussions to avoid abortive work.

3) Specific local considerations

Where the Environment Agency and the applicant and / or their consultant has agreed that a '**basic**´ level of assessment is appropriate the figures in Table B below can be used as a precautionary allowance for potential climate change impacts on peak 'design' (i.e. 1% annual probability) fluvial flood level rather than undertaking detailed modelling.

Table B – Local precautionary allowances for potential climate change impacts

Essex, Norfolk and Suffolk

Hydraulic Model (Watercourse)	Central	Higher Central	Upper
Blackwater & Brain - Blackwater between TL7520925623 and TL7820324314 Brain between TL7373323312 and TL7683821321	500mm	600mm	900mm
Chelmer - between TL6872107082 and TL7161609422 and TL7436306592	350mm	450mm	750mm
Colne (Model Extent)	450mm	600mm	950mm
Gipping – Downstream of Needham Market	400mm	500mm	850mm
Gipping – Needham Market and upstream including Somersham W/C	200mm	250mm	400mm
Norwich Downstream of TG2332009072	450mm	600mm	950mm
Norwich Upstream of TG2332009072	600mm	800mm	1200mm
Wensum (Model Extent)	400mm	500mm	800mm
Yare (Model Extent)	200mm	250mm	450mm
Broads (2008 Model Extent) Bure and Ant (2012 Model Extent)	Please use the current 1 in 1000 (0.1%) annual probability including climate change allowance		
Other main rivers, tributaries and ordinary watercourses	For other main rivers, tributaries and ordinary watercourses that are not stated above, basic allowances have not been calculated. In this instance you can either: • If flow data is available you can request this data from us and can conduct an intermediate assessment yourself • Or alternatively, you can choose to undertake a Detailed Assessment and "perform detailed hydraulic modelling, through either re-running our hydraulic models (if available) or constructing a new model		

Cambridgeshire and Bedfordshire

Watercourse / Model	Central	Higher Central	Upper End
Alconbury Brook	600mm	700mm	900mm
River Kym			
Lower Ouse (Model Extent)	700mm	800mm	1100mm
Mid Ouse (Cold Brayfield to Bromham – between SP9156852223 and TL0132950919)	700mm	800mm	1100mm
Mid Ouse (East of Bedford to Roxton – between TL0791848903 and TL1618854543)	700mm	850mm	1200mm
River Hiz and River Purwell	400mm	450mm	550mm
River Ivel	500mm	600mm	750mm
Pix Brook	450mm	500mm	600mm
Potton Brook	500mm	600mm	700mm
River Cam and tributaries (excluding the Cam Lodes and the Slade System)	600mm	700mm	950mm
Great Barford (ordinary watercourses)	500mm	550mm	650mm
Bromham (ordinary watercourse)	550mm	650mm	850mm

NOTES:

Urban areas excluded from the 'basic' approach: St Ives, Holywell, Godmanchester, Swavesey, Over, Bedford, Newport Pagnell, Buckingham and Leighton Buzzard. More detailed assessment of climate change allowances will need to be undertaken in these locations.

Use of these allowances will only be accepted after discussion with the Environment Agency.

4) Fluvial food risk mitigation

For planning consultations where we are a statutory consultee and our Flood risk standing advice **does not** apply we use the following benchmarks to inform flood risk mitigation for different vulnerability classifications. **These are a guide only**. **We strongly recommend you contact us at the pre-planning application stage to confirm this on a case by case basis.** For planning consultations where we are not a statutory consultee or our Flood risk Standing advice applies we recommend local planning authorities and developers use these benchmarks but we do not expect to be consulted.

- For development classed as '**Essential Infrastructure**' our benchmark for flood risk mitigation is for it to be designed to the '**upper end**' climate change allowance for the epoch that most closely represents the lifetime of the development, including decommissioning.

- For **highly vulnerable** or **more vulnerable developments** in flood zone 2, the '**central**' climate change allowance is our minimum benchmark for flood risk mitigation, and in flood zone 3 the '**higher central**' climate change allowance is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **higher central** (in flood zone 2) and the **upper end** allowance (in flood zone 3).

- For **water compatible** or **less vulnerable** development (e.g. commercial), the '**central**' climate change allowance for the epoch that most closely represents the lifetime of the development is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **higher central** (particularly in flood zone 3) to inform built in resilience.

For a visual representation of the above, please see Tables 1 and 2 overleaf.

5) Development in Tidal Areas

There is no change to the way we respond to sites affected solely by tidal flood risk as the sea level allowances are unchanged.

6) Our Service

Non-chargeable service

We will give a free opinion on:

- What climate change allowance to apply to a particular development type
- Which technical approach is suitable in the FRA

Chargeable service:

- Review of climate change impacts using intermediate and detailed technical approaches (i.e. modelling review)
- Assessment and review of proposals for managed adaptation.

Table 1 peak river flow allowances by river basin district (use 1961 to 1990 baseline)				
River basin district	**Allowance category**	**Total potential change anticipated for '2020s'** **(2015 to 39)**	**Total potential change anticipated for '2050s'** **(2040 to 2069)**	**Total potential change anticipated for '2080s'** **(2070 to 2115)**
Anglian	**Upper end**	25%	35%	65%
	Higher central	15%	20%	35%
	Central	10%	15%	25%
Thames	**Upper end**	25%	35%	70%
	Higher central	15%	25%	35%
	Central	10%	15%	25%

Table 2: Using peak river flow allowances for flood risk assessments					
Flood Zone	**Essential Infrastructure**	**Highly Vulnerable**	**More Vulnerable**	**Less Vulnerable**	**Water Compatible**
2	higher central and upper end allowances	higher central and upper end allowances	central and higher central allowances	central allowance	none of the allowances
3a	upper end allowance	**X**	higher central and upper end	central and higher central	central allowance
3b	upper end allowance	**X**	**X**	**X**	central allowance

X – Development should not be permitted
If (exceptionally) development is considered appropriate when not in accordance with flood zone vulnerability categories, then it would be appropriate to use the upper end allowance.

There may be circumstances where local evidence supports the use of other data or allowances. Where you think this is the case we may want to check this data and how you propose to use it.

APPENDIX F

Irrigation Reservoir Details

BOROUGH COUNCIL OF KING'S LYNN AND WEST NORFOLK

Area	South	**Ref. No.**	2/97/0773/F
Applicant	E W Porter & Son Grange Farm Feltwell Thetford Norfolk IP26 4DH	**Received**	22-MAY-1997
		Expiring	17-JUL-1997
		Location	Grange Farm
Agent	Calvert, Brain & Fraulo 3 Portland Street King's Lynn Norfolk PE30 1PB		
		Parish	Feltwell
Details	Construction of 15 million gallon earth embankment winter storage reservoir for summer irrigation		
		Fee Paid	£ .00

REG'D ✓	PLOTTED ✓	CODED ✓	
APPEAL ALLOWED		DISMISSED	
APPEAL REG'D	APPEAL PLOTTED	APPEAL CODED	

2	97	0773	F

DATE OF RECEIPT	22	5	97

Documents correct	✓ Parish Co. consulted 30/5/97	C.P.A	
Expiry date	17/7/97	O.P.A.	27/6

Sheet No.	TF 7292 52/2	Grid Reference	7277 9209
Related Files.	97/0492,		

LAND USE ZONING/ALLOCATION:		WATER DRAINAGE CONSIDERATIONS:	
C.D.P.	✓/S	I.D.B. Area	—
Local Plan/Town Map	CIS, HLQ	Drainage Constraints	—
Provisions for site	—	Mains Drainage	IN FELTWELL
Village Guideline	—	DEV. CONTROL CONSTRAINTS:	
CONSERVATION CONSTRAINTS:		Enforcement Notice	—
Conservation Area	—	Area of Special Control	—
Listed Building	—	Article 4 Direction	—
Ancient Monument	—	SAFEGUARDING:	
H.A.C.	—	School Site	—
LANDSCAPE CONSTRAINTS:		Airfield	LAKENHEATH PLAN 5 CONSULT FOR RESERVOIRS
A.O.N.B.	—	H.S.E. Hazards	—
S.S.S.I.	—	Gas/Oil/Elec	—
RAMSAR Site	—	Mineral Zone	—
Habitat Survey Site	—	Waste Disposal Site	—
Tree Pres. Order	—	OTHER CONSTRAINTS:	
Heritage Coast	—	Ag. grading	—
HIGHWAY CONSIDERATIONS:		Common Land	—
Road Class	—	Village Green	—
Public Rt. of Way	—	Sandringham Est.	—
Road Improvements	—		

CONSULTATION	SENT	REPLY	COMMENTS
Anglian Water CA	3/6/5		
M.A.F.F.			
Reg. Controller			
C.P.O.			
Co. Surveyor	23/5/97		
Co. Education			
Countryside Comm.			
Norfolk Arch. Unit			
C.E.H.O.			
DIM 1DB	30/5	✓	
MoD	16/6	✓	

NOTES

NOTICE OF DECISION

Committee

Town & Country Planning Act 1990
Town & Country Planning (General Development Procedure) Order 1995

King's Court, Chapel Street
King's Lynn, Norfolk PE30 1EX
Tel: (01553) 692722
Fax: (01553) 691663
DX 57825 KING'S LYNN

Planning Permission

Part I - Particulars of application

Area	South	**Ref. No.**	2/97/0773 /F
Applicant	E W Porter & Son Grange Farm Feltwell Thetford Norfolk IP26 4DH	**Received**	22-MAY-1997
Agent	Calvert, Brain & Fraulo 3 Portland Street King's Lynn Norfolk PE30 1PB	**Location** **Parish**	Grange Farm Feltwell
Details	Construction of 15 million gallon earth embankment winter storage reservoir for summer irrigation		

Part II - Particulars of decision

The Council hereby give notice in pursuance of the Town and Country Planning Act 1990 that permission has been granted for the carrying out of the development referred to in Part I above in accordance with the application and plans submitted subject to compliance with the following conditions :

1 The development hereby permitted shall be begun within five years from the date of this permission.

The Reasons being:-

1 Required to be imposed pursuant to Section 91 of the Town and Country Planning Act 1990.

Borough Planning Officer
on behalf of the Council
01-SEP-1997

Proposals:
Construction of agricultural water storage reservoirs - various locations (see below)

Since the following seven proposals area ll for the same type of development and raise similar issues, one joint report has been proposed. The title, site descriptions and consultations are set out for each proposal followed by a joint policy and comment section and then the recommendation.

.....

(i) 2/97/0772/F

Applicant:	E W Porter & Son
Address:	Warren Lodge Farm, Methwold
Proposal:	Construction of 15 million gallon earth embankment plastic lined winter storage reservoir for summer irrigation
Site Description:	(TL 7558 9392) The proposed reservoir site is located to the south of Warren Lodge which is south of the Methwold - Mundford Road, approximately 2 km to the south east of the village of Methwold. The proposed reservoir is rectangular in form, measuring 150 m by 170 m between outside embankment edges.
Consultations:	**Parish Council** - Recommend approval on the proviso that perimeter fencing is a condition of consent **County Highways** - No objection subject to no material to be taken from or brought onto the site **Environment Agency** - No planning comment (a licence may be needed) **MoD** - See below

.....

(ii) 2/97/0773/F

Applicant:	E W Porter & Son
Address:	Grange Farm, Feltwell
Proposal:	Construction of 15 million gallon earth embankment winter storage reservoir for summer irrigation
Site Description:	(TF 7277 9209) The proposal site is located approximately 600 m north of the B1386 on the western side of the access track leading to the former Feltwell Airfield. The reservoir is square in shape, measuring 150 m by 150 m.
Consultations:	**Parish Council** - Recommend approval **County Highways** - No objection (all materials to remain on site) **Environment Agency** - No planning comment (a licence may be needed) **MoD** - See below

.....

(iii) 2/97/0825/F

Applicant:	O W Wortley & Sons Ltd
Address:	Spring Lodge Farm, Methwold
Proposal:	Construction of 25 million gallon earth embankment plastic lined winter storage reservoir for summer irrigation

Site Description: (TL 7505 9532) The proposed reservoir is located approximately 500 m north of the Methwold - Mundford Road approximately 1.5 km to the east of Methwold village. The reservoir site is located adjacent to a recently notified Site of Special Scientific Interest. (Northwold Meadow SSSI immediately to the north of the site). The dimensions of the proposed reservoir are roughly 180 m by 210 m (mean distance).

Consultations:
Parish Council - Recommend approval
County Highways - No objection subject to no material to be taken from or brought onto the site
Internal Drainage Board - No objection
English Nature - Require an environmental assessment of the impact of the proposals on the hydrology of the SSSI
Norfolk Wildlife Trust - Support the request for an environmental assessment
Environment Agency - No planning comment (a licence may be needed)
MoD - See below

.....

(iv) 2/97/0826/F

Applicant: O W Wortley & Sons Ltd
Address: Reaches Farm, Northwold
Proposal: Construction of 25 million gallon earth embankment plastic lined storage reservoir for summer irrigation

Site Description: (TL 7365 9909) The proposed reservoir is located approximately 500 m north of the A134, 2 km due east from the village of Whittington. The reservoir is square in shape, measuring 150 m by 150 m and would be accessed by a private farm track running from the A134 road.

Consultations:
Parish Council - Recommend approval
County Highways - No objection subject to no material to be taken from or brought onto the site
Environment Agency - No planning comment (a licence may be needed)
MoD - See below

.....

(v) 2/97/0844/F

Applicant: Mr C Brown
Address: Plantation Farm, Mildenhall Road, Hockwold cum Wilton
Proposal: Construction of 40 million gallon agricultural reservoir

Site Description: (TL 6489 8639) The proposed reservoir is located to the south of the Little Ouse River and straddles the Norfolk - Cambridgeshire border approximately 5 km to the south west of Feltwell village. The reservoir is roughly square in shape and measures 230 m by 250 m.
(Duplicate application with East Cambs District Council).

Consultations:
Parish Council - Recommend approval
County Highways - No objection subject to no material to be taken from or brought onto the site
Environment Agency - No planning comment (a licence may be needed)
MoD - See below

.....

(vi) 2/97/0878/AG2

Applicant:	W R Chapman & Son
Address:	Hall Farm Oxborough Road, Boughton, Stoke Ferry
Proposal:	Construction of 20 million gallon earth embankment clay lined winter storage reservoir for summer irrigation
Site Description:	(TF 7105 0137) The proposed reservoir is located between the A134 and Oxborough Road just over 1 km to the south east of Boughton village, and directly to the south east of Boughton Wood. The reservoir is rectangular in shape, measuring 100 m by 400 m, with a 10 m wide new tree planting strip proposed on its southern side.
Consultations:	**County Highways** - No objection subject to no material to be taken from or brought onto the site All other consultations outstanding

.....

(vii) 2/97/0871/AG2

Applicant:	Watlington Farms
Address:	Crimplesham Farm, Crimplesham
Proposal:	Construction of earth embankment 8 million gallon clay lined winter storage reservoir
Site Description:	(TF 6440 0302) The proposed reservoir is located on the northern side of Chestneys Wood on the access track leading to Coldham's Farm from Market Lane Crimplesham. The reservoirs dimensions are indicated to be 205 m by 105 m and incorporate 3 m high earth embankments.
Consultations:	All consultations outstanding

.....

The following comment has been received from Ministry of Defence Safeguarding for applications (i) to (v)

Ministry of Defence Safeguarding - No safeguarding objections subject to the following conditions:
Our Technical Adviser has requested that certain design features be implemented for applications within the 8 mile safeguarding circle of RAF Lakenheath.

In order to reduce the risk of wildfowl occupancy, any island features should be avoided, and steep, preferably vertical bankings should be created. This will help to reduce the development of marginal vegetation, (a source of food and cover), and stop birds from walking in and out of the water. Gull roosts are only likely to develop on sites within a distance of 100 m or more to the centre of the reservoir. All reservoirs should be less than 200 m across. No management for the benefit of birds should be undertaken in order to further help reduce any risk of birdstrike.

Similar responses are anticipated in respect of the outstanding consultations with Environment Agency and MoD Safeguarding an applications (vi) and (vii).

Policy:

(a) FOR ALL APPLICATIONS

Structure Plan

Policy C3 - The Countryside will be protected for its own sake

Local Plan As Modified

Policy 4/6 - Protection of areas of important landscape quality
Policy 8/6 - Development in the countryside will not be permitted unless it meets specified criteria

(b) ADDITIONAL POLICIES RELATING TO APPLICATIONS (iii) AND (vi)

Local Plan As Modified

Policy 4/4 - Protection of local habitats

(c) ADDITIONAL POLICY RELATING TO APPLICATION (iii)

Local Plan As Modified

Policy 4/1 - Protection of national and international nature conservation interests

Comment:

Members will recall that at the meeting of 4 August 1997 a report was presented for the proposal to construct a 40 million gallon reservoir at Rosedene Farm, Broad Drove, Methwold Common (Minutes P.56 refers). Although located beyond the safeguarding zone for military airfields, the Ministry of Defence Safeguarding raised no objection subject to a number of conditions relating to size of reservoir, design and form of construction.

The reservoirs subject of this current report are all located within the Safeguarding zone for military air bases and the MoD are a statutory consultee on these proposals.

The current proposals comprise the submission of full details on Agricultural Prior Notifications. Part 6 of the General Permitted Development Order 1995 gives deemed consent for such development comprising excavation or engineering operations which are reasonably necessary for the purpose of agriculture within that unit. The developer, before beginning the development, is required to apply to the Borough Planning Authority for a determination as to whether their prior approval is required on the siting (and only the siting) of the excavation. The Borough Planning Authority has 28 days in which to determine whether prior approval is required.

Given that all of the proposed reservoir sites are located within a Safeguarding Area and some have nature conservation implications, prior approval has been required in order that full consultations with statutory consultees can be carried out.

The Ministry of Defence have been advised of the GPDO provisions relating

. to agricultural development and that the principle of development is established with only siting being a matter for consideration under the prior approval procedure. No response to this letter has been received to date.

For members information, a map of the District has been produced to illustrate the number of submissions for agricultural reservoirs in the District. The map illustrates the proliferation of these schemes in the south east of the District.

The MoD's comments are copied verbatim earlier in this report. Their requirements include measures to discourage certain bird species from being attracted to the reservoirs and the overall aim is to prevent bird strikes within the 8 km airfield safeguarding zone. These measures include avoidance of island features within any reservoir scheme, steep preferably vertical bankings should be constructed to the reservoir sides and no reservoir should be more than 200 m across. The submission, numbered 'v' in this report, has been amended to omit an island feature and to cut down the size of the reservoir to meet the MoD's requirements. On the 'steep, preferably vertical bankings' to the reservoir, Members are advised that this could not be carried out without significant expense and time involved in reinforcing the sides of the reservoir in order to meet the MoD's requirements. Members are also respectfully requested to consider the public safety aspect of such a requirement given their concerns raised on this matter at the last Committee meeting.

Your officers have sought legal advice on the Ministry of Defence consultation response and this has been referred to Learned Counsel for legal interpretation.

It is Counsel's opinion that, notwithstanding the advice contained in PPG7 to the contrary, The Town and Country Planning General Permitted Development Order 1995 Schedule 2 Part 6 Class A (2) gives Local Authorities the power to accept or reject proposals as they stand but not to impose conditions. Those provisions also clearly state that in the case of an excavation only details of its siting are subject to the prior notification procedure.

Given Counsel's advice, the principle of development is established by the provisions of the General Permitted Development Order 1995, and only its siting can be considered by the Borough Planning Authority. In consequence approval of the submitted details should not be withheld on the basis of the MoD response as alternative sitings are likely to still be within the safeguarding zone.

The Methwold Parish Council have again voiced concern regarding public safety. Members are advised that the Parish Council has been advised that a duty of care exists and rests on the owners of a reservoir. Informal advice has been forthcoming from a developer, advising that most reservoirs involve 2 m high perimeter fencing to minimise danger to the public, and also to minimise damage to the reservoir through encroachment by wildlife and vandalism. The erection of 2 m high fences fall within the permitted development rights as conferred under the provisions of the General Permitted Development Order 1995.

RECOMMENDATION: (a) That notwithstanding the Ministry of Defence comments, the following prior notification applications be approved:

(i) 2/97/0772/F, (ii) 2/97/0773/F, (iv) 2/97/0826/F and (v) 2/97/0844/F

(b) That subject to no objections being received during the consultation period except for those issues raised in this report the following prior notification

applications be approved:

(vi) 2/97/0878/AG and (vii) 2/97/0871/AG

(c) That subject to no objection being raised by English Nature and Norfolk Wildlife Trust to an environmental assessment of the effects of the reservoir on the hydrology of the adjacent SSSI, or the receipt of satisfactory amended plans showing the relocation of the reservoir away from the SSSI, that the prior notification be approved in respect of (iii) 2/97/0825/F.

(d) It is also suggested that if Members wish to make representations on the wider issue of water extraction and the proliferation of irrigation reservoirs generally, which cannot be addressed in the context of these submissions of details, that they authorise officers to raise these concerns on their behalf with the Local Member of Parliament, and the Government Office for the Eastern Region, and the Environment Agency.

MEMORANDUM

To: Head of Legal and Committee Services
F.A.O. Joan Chapman

Date: 11/8/97

From: Borough Planning Officer

Ref: DG/EB

Planning Application 2/97 /0773/F
Background papers in addition to application documents

		Dates
☐	Front cover information	
☑	Previous planning decisions 2/97/0492/AG.	
☐	West Norfolk Conservation Committee	
☐	Planning Services Committee Minutes	
☐	File Notes	
☐	Applicant/Agent	received sent
☑	Parish/~~Town~~ Council	received 5/6/97 sent
☐	County Planning Officer	received sent
☑	County Highways	received 20/6/97 sent
☐	Chief Environmental Health Officer	received sent
☐	Anglian Water	received sent
☐	Ministry of Agriculture Fisheries and Food	received sent
☐	Highways Agency	received sent
☐	Norfolk Landscape Archaeology	received sent
☐	Third Parties	received sent
☑	~~National Rivers Authority~~ EA	received 14/7/97 sent
☑	MoD [Safeguarding]	rec'd 9/7/97 sent 16/6/97.

CALVERT BRAIN & FRAULO

CONSULTING STRUCTURAL & CIVIL ENGINEERS

3 PORTLAND STREET, KING'S LYNN, NORFOLK, PE30 1PB
TEL : 01553 766220/761771 FAX : 01553 766033

Borough Planning
Borough Council of King's Lynn and West Norfolk
King's Court
Chapel Street
King's Lynn
PE30 6BZ

Attn. Ms Julie Jaques

MNC/ELC

Dear Ms Jaques

Various Reservoir Planning Applications

We confirm that in all cases planning applications submitted to date by this practice on behalf of our clients with respect to new reservoir construction do not involve the removal of any soil or minerals from site.

Yours sincerely

M. N. Calvert
For CALVERT BRAIN & FRAULO

Copy

MEMORANDUM

To: Head of Legal and Committee Services

From: Borough Planning Officer

My Ref: **Your Ref:** **Date:** 4 August 1997

Submission of details seeking prior approval by the Borough Planning Authority for the construction of reservoirs for agricultural purposes

Please be advised that the Planning Department is currently dealing with a number of the above submission of details. All but one of the sites fall within the designated Safeguarding Area for military air bases within the south east of the district. The Ministry of Defence have responded to the proposals by stating it has no objection subject to a number of conditions regarding reservoir size and form of construction. The matter is complicated legally, the GPDO 1995 stating that only siting can be considered for agricultural development comprising excavations.

I need to ascertain the following in order to further progress the current submissions :-
1) Is it legitimate to impose conditions upon any subsequent grant of approval of submitted details on agricultural development?
2) If conditions can legitimately be imposed (under 1 above), could a condition seeking to control size, features and form of construction/design be said to meet the necessary tests, in particular relevance to planning when the intention of the condition ultimately is to minimise the risk of bird strikes to military aircraft within the safeguarding zone.
3) One applicant has also advised that he is not prepared to allow an extension of time beyond the standard 8 week time limit for consideration of the full details. Does this effectively 'stop' the consideration of the submitted full details and represent a deemed refusal and appeal, as it would for a 'normal' planning application?

I would be grateful to receive legal advice on this matter which raises a number of complex legal issues. Given this I would support your seeking Learned Counsel's view on the above matters in order that a consistent approach can be made throughout this department.

If you require any further information on this matter, please do not hesitate to contact Julie Jaques or Tony Stoneman.

SEE 97/0772

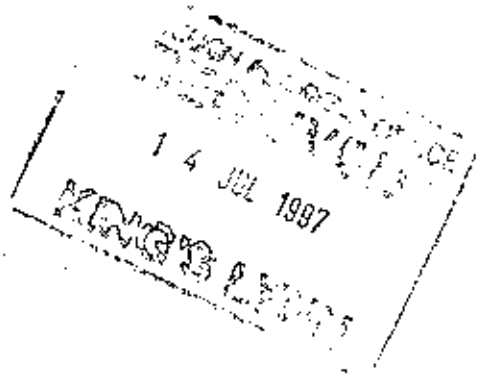
FOR COUNSELS OPINION

ENVIRONMENT AGENCY

Our Ref: 97/2/WN/0133

Date: 9 July 1997

The Chief Planning Officer
Kings Lynn & West Norfolk Borough Council
Kings Court
Chapel Street
KINGS LYNN
Norfolk PE30 1EX



Dear Sir

Planning Application No. 2/97/0773

PROPOSAL: **WINTER STORAGE RESERVOIR**
LOCATION: **GRANGE FARM FELTWELL**
APPLICANT: **E W PORTER & SON**

Thank you for referring the above application which was received on 5 June 1997.

The Environment Agency's water resources section are aware of this proposal.

We have inspected the application as submitted, and wish to make the following advisory comments.

Under the terms of the Water Resources Act 1991, an Abstraction Licence will be required from the Environment Agency for the abstraction of water from any inland water or underground strata. This is dependent on water resource availability and may not be granted.

An application for a licence will be viewed favourably subject to satisfactory technical assessment and justification of requirement.

Please find enclosed a copy of a FWAG leaflet that provides contact names, who can advise on the planning and design of reservoirs.

Cont/d...

Environment Agency
Bromholme Lane, Brampton, Huntingdon, PE18 8NE
Tel 01480 414581, Fax 01480 413381, GTN 7-50 X 4800

Please forward a copy of this letter to the applicant.

Yours faithfully

pp. BRIAN ELSDON
Planning & Cust.Serv. Manager

Enc

Please ask for Mick Dewsbury

ENVIRONMENT AGENCY

Our Ref: 97/2/WN/0133

Date: 9 July 1997

The Chief Planning Officer
Kings Lynn & West Norfolk Borough Council
Kings Court
Chapel Street
KINGS LYNN
Norfolk PE30 1EX

APPLICANT'S COPY

Dear Sir

Planning Application No. 2/97/0773

PROPOSAL: **WINTER STORAGE RESERVOIR**
LOCATION: **GRANGE FARM FELTWELL**
APPLICANT: **E W PORTER & SON**

Thank you for referring the above application which was received on 5 June 1997.

The Environment Agency's water resources section are aware of this proposal.

We have inspected the application as submitted, and wish to make the following advisory comments.

Under the terms of the Water Resources Act 1991, an Abstraction Licence will be required from the Environment Agency for the abstraction of water from any inland water or underground strata. This is dependent on water resource availability and may not be granted.

An application for a licence will be viewed favourably subject to satisfactory technical assessment and justification of requirement.

Please find enclosed a copy of a FWAG leaflet that provides contact names, who can advise on the planning and design of reservoirs.

Cont/d...

Environment Agency
Bromholme Lane, Brampton, Huntingdon, PE18 8NE
Tel 01480 414581, Fax 01480 413381, GTN 7-50 X 4800

Please forward a copy of this letter to the applicant.

Yours faithfully

pp. BRIAN ELSDON
Planning & Cust.Serv. Manager

Enc

Please ask for Mick Dewsbury

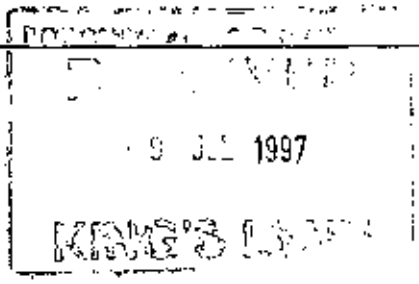
Ministry of Defence
DEFENCE ESTATE ORGANISATION
Blakemore Drive, Sutton Coldfield,
West Midlands, B75 7RL

Telephone : 0121 311 2010
Fax : 0121 311 2187

DEFENCE ESTATE ORGANISATION

King's Lynn & West Norfolk
King's Court
Chapel Street
King's Lynn
Norfolk PE30 1EX

Your reference
2/97/0773/F/JJ/MJC
Our reference
D/DEO(L)/43/48/1
Date
7 July 1997



FAO: Mrs J Jaques

Dear Mrs Jaques

SAFEGUARDING - LAKENHEATH

PROPOSAL: Construction of 15 Million Gallon Earth Embankment Winter Storage Reservoir for Summer Irrigation.

LOCATION: Grange Farm, Feltwell.

REFERENCE: As above.

GRID REFERENCE: 7277/9209

YOUR LETTER DATED: 16 June 1997

There are no Ministry of Defence safeguarding objections to the above proposal, subject to the following conditions:

Our Technical Adviser has requested that certain design features be implemented for applications within the 8 mile safeguarding circle of RAF Lakenheath.

In order to reduce the risk of wildfowl occupancy, any island features should be avoided, and steep, preferably vertical bankings should be created. This will help to reduce the development of marginal vegetation, (a source of food and cover), and stop birds from walking in and out of the water. Gull roosts are only likely to develop on sites within a distance of 100m or more to the centre of the reservoir. All reservoirs should be less than 200 metres across. No management for the benefit of birds should be undertaken in order to further help reduce any risk of birdstrike.

Yours sincerely,

MSlogan

M S LOGAN (Mrs)
DEO Safeguarding & Byelaws

(995)

Chief Executive:
ALAN PASK
Borough Planning Officer:
ADRIA ARKER

My Ref: 2/97/0773/F/JJ/MJC
Your Ref:
Please ask for: Mrs J Jaques
Ext: 2230

Borough Council of
KING'S LYNN & WEST NORFOLK

BOROUGH PLANNING

King's Court
Chapel Street
King's Lynn
Norfolk PE30 1EX
Tel: (01553) 692722
Minicom: (01553) 692138
Fax: (01553) 691663
DX 57825 KING'S LYNN

Ministry of Defence
Defence Lands Safeguarding and Byelaws
Room B4/3
Government Buildings
Leatherhead Road
Chessington
Surrey KT9 2LU
<u>Attention of Mr W Leworthy</u>

16 June 1997

DEFENCE ESTATE ORGANISATION (LANDS)
1. Jun [illegible]
DEO (L)

Dear Sirs

Construction of 15 Million Gallon Earth Embankment Winter Storage Reservoir for Summer Irrigation - Grange Farm, Feltwell

Please find enclosed details of the above proposal.

As you have been advised these details have been submitted in order to enable the Borough Planning Authority to consider detailed siting, design and appearance of the proposal. The principle of the proposed development is established under Part 6 of the Town and Country Planning (General Permitted Development) Order 1995.

I would be grateful to receive any comments you may wish to make on the submitted details within the next 21 days.

Yours faithfully

J L Jaques.

for Borough Planning Officer

Encs

<u>NO MOD SAFEGUARDING OBJECTIONS</u>

..........M Logan......SIGNATURE

11 July 1997 DATE

DEFENCE ESTATE ORGANISATION ~~(LANDS)~~
DEO(L)(S & B)
ROOM ~~B4/3~~, LEATHERHEAD ROAD,
CHESSINGTON, SURREY
KT9 2LU

Grid Ref.
E. 7244
N. 9209

DEFENCE ESTATE ORGANISATION (WORKS)
BLAKEMORE DRIVE
SUTTON COLDFIELD
WEST MIDLANDS B75 7QB

INVESTOR IN PEOPLE

NORFOLK
COUNTY COUNCIL
Planning & Transportation

Director
J Martin Shaw OBE

County Hall
Martineau Lane
Norwich
NR1 2SG

Tel: **Norwich (01603) 222143**
Fax: **Norwich (01603) 223219**
Email: p&t@norfolk.gov.uk

Your Ref: 97/0773
My Ref: PP/02/97/0773

Please ask for: Mr P Phenix
Direct Dialing Number: 01603 765033

Date: 17-6-97

Dear Sir

Location: Women Lodge Farm - Methwold

Proposal: 15 Million Gallon Reservoir

I refer to your recent consultation with respect to the above proposals.

I raise no objection to this application. (all material to remain on site).

Yours faithfully

for Director of Planning and Transportation

BOROUGH PLANNING OFFICE
RECEIVED
20 JUN 1997

The Chief Planning Officer
King's Lynn & West Norfolk
Borough Council
King's Court
Chapel Street
KING'S LYNN
Norfolk
PE30 1EX

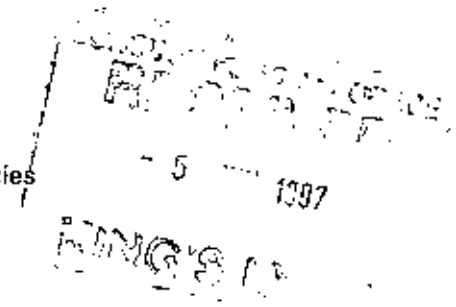
Application No. 2/97/0773/F Parish Feltwell

RECOMMENDATION. (Delete whichever does not apply)

APPROVE / ~~REFUSE~~

Please give reasons for any refusal, for example

1. Contrary to Structure Plan/Local Plan/Village guidelines policies
2. Object to details of the submitted plans (specify which)



ANY OTHER OBSERVATIONS

Signed: Headlam Parish Clerk Date 2/6/97

Borough Council of King's Lynn and West Norfolk - Site Survey Sheet.

Ref. No.	2/97/0773
Inspected	28/5/97

CONSULTEE	RECEIVED	COMMENTS
Town/Parish Council		
County Surveyor		
Dept. of Transport		
Nat. Rivers Authority		
Anglian Water		
C.E.H.O.		
N.L.A.		
Conservation Cttee		
M.A.F.F.		

EXISTING SITE USE: Ag

ADJOINING LAND USES(S) AND CHARACTER OF AREA: Ag

FEATURES ON SITE AND BOUNDARY: Woodland

MATERIALS ON SITE/ AREA GENERALLY: n/k

ANY CONSTRAINTS e.g. POWER LINES: n/a

OVERLOOKING/SHADOWING: n/k

ACCESS: Ok. adequate.

NOTICE POSTED/ ~~30/5/97~~ n/n.
NEIGHBOUR NOTIFIED

PRESS NOTICE PUBLISHED

COMMENTS: Fine. tot screen.

BOROUGH COUNCIL OF KING'S LYNN AND WEST NORFOLK

MEMORANDUM

To: Head of Legal and Committee Services(Attention of Mrs Joan Chapman)

From: Borough Planning Officer

Your Ref:
My Ref: 2/97/0773/F
Date: 22-MAY-1997
Grid Ref: (72779209)
Applicant: E W Porter & Son
Location: Grange Farm
Parish: Feltwell

Description: Construction of 15 million gallon earth embankment winter storage reservoir for summer irrigation

The above-mentioned application requires to be advertised for the following reasons:-

A	(i)	affects the character or appearance of a Conservation Area;	☐	
	(ii)	affects the setting of a listed building;	☐	
	(iii)	in addition the proposal is such as to require supporting information to be submitted (eg plans etc) to English Heritage (See Note 1);	☐	*
B	(i)	*is for Listed Building Consent (See Note 2);*	☐	
	(ii)	demolition or partial demolition is involved (See Note 3);	☐	+
	(iii)	the demolition works have already taken place (See Note 4);	☐	
	(iv)	partial demolition is involved and reference to the Secretary of State will be necessary prior to determination of the application in accordance with para 86 of Circular 8/87;	☐	
	(v)	in addition the proposal is such as to require supporting information to be submitted (eg plans etc) to English Heritage (See Note 5);	☐	*+
C		is for Conservation Area Consent;	☐	
D		is to vary or discharge conditions attached to a Listed Building Consent or Conservation Area Consent;	☐	
E		is an application accompanied by an Environmental Statement;	☐	
F		is a Departure from the Development Plan;	☐	
G		affects a public right of way;	☐	
H		is for a Major Development (See Note 6);	☐	
I		is not required to be advertised by statute but is of wider concern (See Note 7);	☐	
		The application should be placed on the agenda for the Conservation Areas Committee;	☐	
		Advertisement NOT required	☑	

(* additional information enclosed as required).
(+ bodies to be notified of decision - BPO).

971191

Application for planning permission

FORM 2

Town and Country Planning Act 1990

Please read the accompanying notes before completing any part of this form

BOROUGH PLANNING
King's Court, Chapel Street
King's Lynn, Norfolk PE30 1EX
Tel: (01553) 692722
Minicom: (01553) 692138
Fax: (01553) 691663

Borough Council of KING'S LYNN & WEST NORFOLK

SIX complete copies of this form and SIX copies of each plan should be sent to the Council.

For Office Use		
Ref. No.	97/2??3	F
Date received	22/5/97.	

Part 1 - to be completed by or on behalf of all applicants as far as applicable to the particular development.

1. Applicant (in block capitals)

Name E.W. PORTER & SON
Address GRANGE FARM, FELTWELL, THETFORD IP26 4DH
Tel. No. 01842 828215

Agent (if any) to whom correspondence should be sent (in block capitals)

Name CALVERT BRAIN & FRAULO
Address 3, PORTLAND STREET KINGS LYNN PE30 1PB
Tel. No. 01553 766220

2. Particulars of proposal for which permission or approval is sought

(a) Full address or location of the land to which this application relates. Land to be edged red on deposited plan

GRANGE FARM (AS ABOVE)

Site area:* .... m² 3.0 hectares (HOLDING AREA 322 HECTARES)
*delete as appropriate.

(b) Particulars of proposed development including the purpose(s) for which the land and/or buildings are to be used

CONSTRUCTION OF NEW 15 MILLION GALLON EARTH EMBANKMENT CLAY LINED WINTER STORAGE RESERVOIR FOR SUMMER IRRIGATION

(c) State whether applicant owns or controls any adjoining land and if so, give its location. Land to be edged blue on deposited plan

YES – TOTAL HOLDING 322 HA (SEE ABOVE)

(d) State whether the proposal involves:-

		State Yes or No	
(i) New building(s)		NO	If residential development, state number of dwelling units proposed and type, e.g. houses, bungalows, flats.
(ii) Alteration or extension		NO	
(iii) Change of use		NO	If "yes" 3(b) must be completed in the affirmative.
(iv) Construction of a new access to a highway	vehicular	NO	
	pedestrian	NO	
(v) Alteration of an existing acess to a highway	vehicular	NO	
	pedestrian	NO	
(vi) Demolition of existing buildings on the site		NO	If "yes", indicate them on the plan.

3. Particulars of application (see note 3)

State whether this application is for:-

	State Yes or No	
(a) Outline planning permission	NO	If "Yes", do any of the matters listed below (if shown on the deposited plan) form an integral part of the application
(b) Full planning permission	YES	

	Yes	No
1. siting	✓	
2. design		✓
3. external appearance	✓	
4. means of access		✓
5. landscaping	✓	

(c) Approval of reserved matters following the grant of outline permission — NO — If "Yes", state the date and number of outline permission
Date
Application number

BOROUGH PLANNING OFFICE 19 MAY 1997

(d) Renewal of a temporary permission or permission for retention of building(s) or continuance of use without complying with a condition subject to which planning permission has been granted — NO — If "Yes", state the date and number of permission and if appropriate identify the particular condition (see note 3(d)).
Date

(e) Renewal of an existing permission which has not yet expired — NO — Application number

4. Particulars of present and previous use of buildings or land

State
(a) Present use of buildings/land — (a) AGRICULTURAL

(b) If vacant, the last previous use and date when last used, (if known) — (b) N/A

5. Additional information

(a) State type and colour of external materials to be used — (a) N/A

(b) (i) Method of surface water disposal? — (b) (i) Buildings N/A

Roads N/A

(ii) Method of foul sewage disposal? — (ii) N/A

(c) Does the proposed development involve the felling of any trees? NO ► If yes indicate the position on block plan

(d) Is the application for industrial, office, warehousing, storage or shopping purposes? NO ► If yes, complete Part 2 of this form

6. Plans

List of drawings and plans submitted with the application.

971191/01

971191/02

Note: The proposed means of enclosure, the materials and colour of the walls and roof, landscaping details, etc, should be clearly shown on the submitted plans, unless the application is in outline only.

I/We hereby apply for

*(a) planning permission to carry out the development described in this application and the accompanying plans, and in accordance therewith,

or *(b) planning permission to retain buildings or works already constructed or carried out, or a use of land already instituted as described in this application and the accompanying plans.

or *(c) approval of details of such matters as were reserved in the outline permission specified herein and are described in this application and the accompanying plans.

** Delete whichever is not applicable.*

Date 16TH MAY 1997 Signed (Edward Calvert) (CALVERT BRAIN & FRAULO)

*On behalf of E.W. PORTER & SON

(insert applicant's name if signed by an agent)

Note: An appropriate certificate must accompany this application unless you are seeking approval of reserved matters - See Note 10. The following certificate will be appropriate if you are the sole owner of all the land and no part of the land constitutes or forms part of an agricultural holding.

Town and Country Planning Act 1990 - Town and Country Planning (General Development Procedure) Order 1995
Certificate under Article 7

Certificate A

I hereby certify that:-

1. on the day 21 days before the date of the accompanying application nobody, except the applicant, was the owner* of any part of the land to which the application relates.
2. None of the land to which the application relates is, or is part of an agricultural holding.

Signed N/A - LAND IS PART OF AN AGRICULTURAL HOLDING

* On behalf of .....

Date .....

**Delete as appropriate*

** "Owner" means a person having a freehold interest or a leasehold interest the unexpired term of which is not less than 7 years.*

97/191

LAND OWNERSHIP

FORM 2C

Town and Country Planning Act 1990
Town and Country Planning (General Development Procedure) Order 1995
Certificate under Article 7

BOROUGH PLANNING
King's Court, Chapel Street
King's Lynn, Norfolk PE30 1EX
Tel: (01553) 692722
Minicom: (01553) 692138
Fax: (01553) 691663

Borough Council of
KING'S LYNN & WEST NORFOLK

The application must be accompanied by a Certificate to satisfy the Borough Council that the owner(s) of the land concerned have been notified of the proposal . If you are the sole owner of the land and no part of it constitutes or forms part of an agricultural holding you can complete Certificate A set out on the foot of the reverse side of the application form. In other cases you will need to serve a notice on the owner(s) or tenant(s) and complete one of the following certificates.

Complete one certificate in Section 1 by deleting all other certificates and complete and sign Section 2.

Section 1

Certificate A# (THIS IS FOR USE WHEN APPLICANT OWNS ENTIRE APPLICATION SITE)

NOTE: "Owner" means a person having a freehold interest or a leasehold interest the unexpired term of which is not less than 7 years.

I hereby certify that:-

on the day 21 days before the date of the accompanying application nobody, except the applicant, was the owner of any part of the land to which the application relates.

NOW DELETE ALL OTHER CERTIFICATES AND GO TO SECTION 2 OVERLEAF.

---

or:-

Certificate B# (THIS IS FOR USE WHEN APPLICANT DOES NOT OWN APPLICATION SITE, OR OWNS ONLY PART OF IT)

NOTE: "Owner" means a person having a freehold interest or a leasehold interest the unexpired term of which is not less than 7 years.

I hereby certify that:-

I have/the applicant has# given the requisite notice to everyone else who, on the day 21 days before the date of the accompanying application, was the owner of any part of the land to which the application relates, as listed below.

Name of Owner .....

Address at which notice was served .....

Date of service of notice .....

NOW DELETE ALL OTHER CERTIFICATES AND GO TO SECTION 2 OVERLEAF

---

or:-

Certificate C# (THIS IS FOR USE WHEN SOME OF THE OWNERS OF THE SITE ARE UNKNOWN)

I hereby certify that:-

I/the applicant# cannot issue a Certificate A or B in respect of the accompanying application.

I have/the applicant has # given the requisite notice to the persons specified below, being persons who on the day 21 days before the date of the application, were owners(freehold or leasehold with at least 7 years unexpired term) of any part of the land to which the application relates.

Name of Owner .....

Address at which notice was served .....

Date of service of notice .....

I have/the applicant has # taken all reasonable steps open to me/him/her# to ascertain the names and addresses of the other owners of the land, or of a part of it, but have/has# been unable to do so.

These steps were as follows: .....

.....

Notice of the application as attached to this certificate has been published in the (local newspaper) .....

on (date) .....

NOW DELETE ALL OTHER CERTIFICATES AND GO TO SECTION 2 OVERLEAF

Cont.

or:-

Certificate D# (THIS IS FOR USE WHEN APPLICANT OWNS SOME OF THE SITE BUT OTHER OWNER(S) ARE UNKNOWN)

I hereby certify that:-

I/the applicant# cannot issue a Certificate A in respect of the accompanying application and have/has# taken all reasonable steps open to me/him/her# to find out the names and addresses of everyone else who on the day 21 days before the date of the application, was the owner (freehold or leasehold with at least 7 years unexpired term) of any part of the land to which the application relates but have/has# been unable to do so. These steps were as follows:

.....

Notice of the application as attached to this certificate has been published in the (local newspaper) .....

on (date) .....

NOW DELETE ALL OTHER CERTIFICATES AND GO TO SECTION 2 BELOW

SECTION 2

THIS SECTION MUST BE COMPLETED AND SIGNED.

~~#None of the land to which the application relates is, or is part of, an agricultural holding.~~
OR
I have/the applicant has# given the requisite notice to every person other than the applicant who on the day 21 days before the date of the application, was a tenant of any agricultural holding on all or part of the land to which the application relates, as follows:

Name of Tenant ..... } NO TENANTS OF AGRICULTURAL

Address at which notice was served ..... } HOLDINGS ON THE LAND

Date of service of notice ..... } INVOLVED

NOW SIGN HERE

Signed ..... (CANCELT BRAINE FRANCO) Date 16TH MAY 1997

On behalf of E.W. PORTER & SON

#Delete as appropriate

Form of Notice under Article 6 of application for planning permission for service on individuals or in the case of Certificates C & D for publication in a local newspaper.

Proposed development at (address) .....

I give notice that (applicant's name) .....

is applying to the Borough Council of King's Lynn & West Norfolk for planning permission to (description of development)

.....

Any owner of the land (namely a freeholder or a person entitled to an unexpired term of at least seven years under a lease) or agricultural tenant who wishes to make representations about this application should write to the Council at King's Court, Chapel Street, King's Lynn within 21 days of the date of service or 14 days beginning with the date of the publication, of the notice (as the case may be).

Signed .....

† On behalf of .....

Date .....

Statement of owners' rights
The grant of planning permission does not affect owners' rights to retain or dispose of their property, unless there is some provision to the contrary in an agreement or in a lease.

Statement of agricultural tenants' rights
The grant of planning permission for non-agricultural development may affect agricultural tenants' security of tenure.

† Delete as appropriate.

971191

FEES PAYABLE

RECEIPT NO:

Town and Country Planning (Fees for applications and deemed applications) (Amendment) Regulations 1997

BOROUGH PLANNING
King's Court, Chapel Street,
King's Lynn, Norfolk PE30 1EX
Tel: (01553) 692722
Minicom: (01553) 692138
Fax: (01553) 691663

Borough Council of
KING'S LYNN & WEST NORFOLK

Operative from 4th February 1997

This sheet must be completed to indicate how the submitted application fee has been calculated.

	Tick Where Appropriate	No. of Units/ Floorspace/ Area Involved	FEE
A Residential Applications			
1 Householder extensions and/or alterations @ £90 · where 2 or more dwellings affected @ £180			
2 Outline applications @ £180 per 0.1 ha (or part thereof) (Max. £4,500)			
3 Full applications (or reserved matters application) @ £180 per dwelling (Max. £9,000)			
4 Subdivision of Dwelling @ £180 per additional unit created (Max. £9,000)			
5 Change of non-residential building to dwelling(s) @ £180 per new unit created (Max. £9,000)			
B Agricultural			
The erection on land used for agricultural purposes of buildings required for agricultural purposes			
1 Outline application @ £180 per 0.1 ha (or part thereof) (Max. £4,500)			
2 Full application or approval of reserved matters £33 where gross floorspace created 465m² or less @ £180 per 75m² gross floorspace (or part thereof) created above 465m² (Max. £9,000)			
3 Full application or approval of reserved matters for the erection of glasshouses on agricultural land £33 where gross floorspace created 465m² or less @ £1,035 where gross floorspace in excess of 465m²			
4 Determination whether permission required for agricultural/forestry development @ £33			
C Others			
1 Outline application @ £180 per 0.1 ha (or part thereof) (Max. £4,500)			
2 Full application (or reserved matters application) (a) no floor space created £90 (b) 40m² or less new floorspace @ £90 (c) @ £180 per 75m² (or part thereof) (Max. £9,000)			
3 Installation of plant and machinery @ £180 per 0.1 ha (Max. £9,000)			
4 Access, car parks etc. for existing uses @ £90			
5 Minerals applications; disposal of refuse or waste material @ £90 per 0.1 ha (or part thereof) (Max. £13,500)			
6 Engineering or other operations @ £90 per 0.1 ha (Max. £900)	✓		NIL (SEE NOTE)
7 Change of use @ £180			
8 (a) Varying a condition (including renewal of temporary permission) @ £90 (b) Renewal of permission where development not begun and time limit not expired @ £90			
9 Exploratory drilling for oil or natural gas @ £180 per 0.1 ha (or part thereof) (Max. £13,500)			
10 Determination whether premission required for demolition or telecommunications installation @ £33			
Mixed Development Applications			
Indicate categories involved above. Appropriate Fee here.			
If exemption from fees (or a reduced fee) is being claimed in accordance with the Regulations please state here the reason for exemption ... PERMITTED DEVELOPMENT – AGRICULTURAL PRIOR NOTIFICATION APPLICATION FORM ALREADY SUBMITTED (26-3-97)			
TOTAL FEE ENCLOSED			NIL

BOROUGH ... OFFICE
19 MAY 1997
KING'S LYNN

Cheques payable to Borough Council of King's Lynn & West Norfolk

Fees for purchase of Ordnance Survey Map extracts - obtainable from Planning Department on request.

CALVERT BRAIN & FRAULO

CONSULTING STRUCTURAL & CIVIL ENGINEERS

3 PORTLAND STREET, KING'S LYNN, NORFOLK, PE30 1PB
TEL : 01553 766220/761771 FAX : 01553 766033

Borough Planning
Borough Council of King's Lynn & West Norfolk
Kings Court
Chapel Street
King's Lynn
Norfolk
PE30 1EX

16th May 1997

MNC/971191/ATC

Dear Sirs

Proposed 15 Million Gallon Reservoir at Grange Farm, Methwold,
for Messrs. E. W. Porter and Son - Planning Application

On behalf of our client we enclose the following documentation relating to the above Application in accordance with your letter dated 14th April 1997 reference 2/97/0492/AG:-

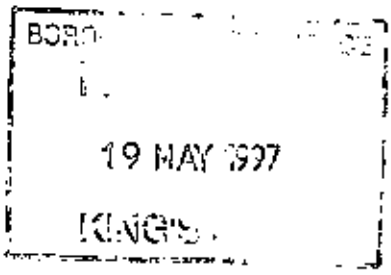
1. "Fees Payable" form duly completed.

2. 6 copies of "Application for Planning Permission" form duly completed.

3. "Land Ownership" form duly completed.

4. 6 copies of each drawing :

971191/01
971191/02

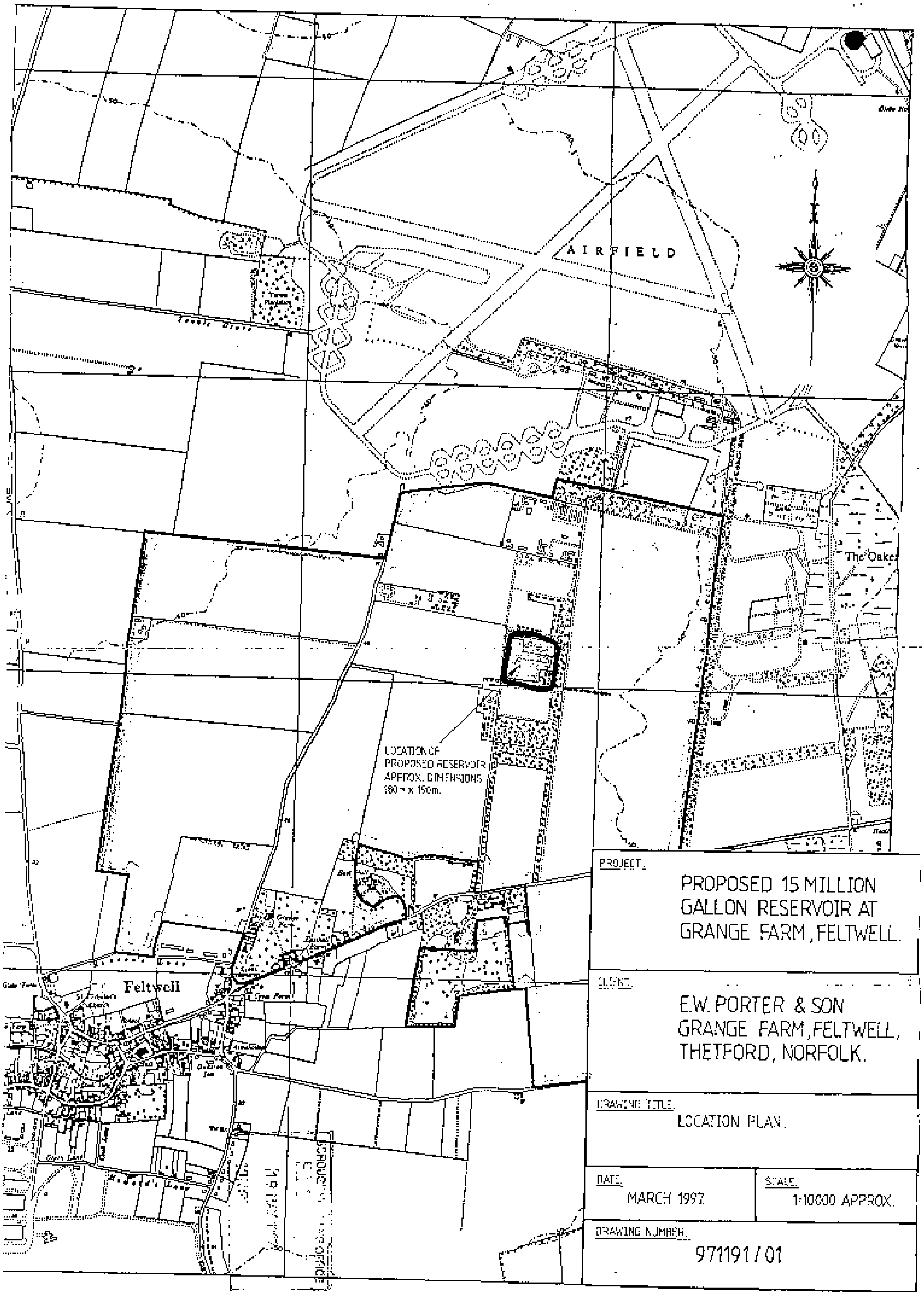


Yours faithfully

M. N. Calvert
For CALVERT BRAIN & FRAULO

Encs.

cc. E. W. Porter & Son. Attn: Mr Edwin Porter



PROJECT.

PROPOSED 15 MILLION GALLON RESERVOIR AT GRANGE FARM, FELTWELL.

CLIENT.

E.W. PORTER & SON
GRANGE FARM, FELTWELL,
THETFORD, NORFOLK.

DRAWING TITLE.

LOCATION PLAN.

DATE.	SCALE.
MARCH 1997	1:10000 APPROX.

DRAWING NUMBER.

971191/01

NOTES

1. DO NOT SCALE THIS DRAWING.
2. ALL MATERIALS, CONSTRUCTION AND DETAILS SHOWN OR IMPLIED BY THIS DRAWING MUST COMPLY WITH CURRENT BRITISH STANDARDS, CODES OF PRACTICE, PLANNING REQUIREMENTS, H & S E LEGISLATION AND CLIENTS PARTICULAR SPECIFICATIONS.
3. CONFLICTING INFORMATION SHOWN OR IMPLIED SHALL BE REFERRED TO CALVERT BRAIN & FRAULO.
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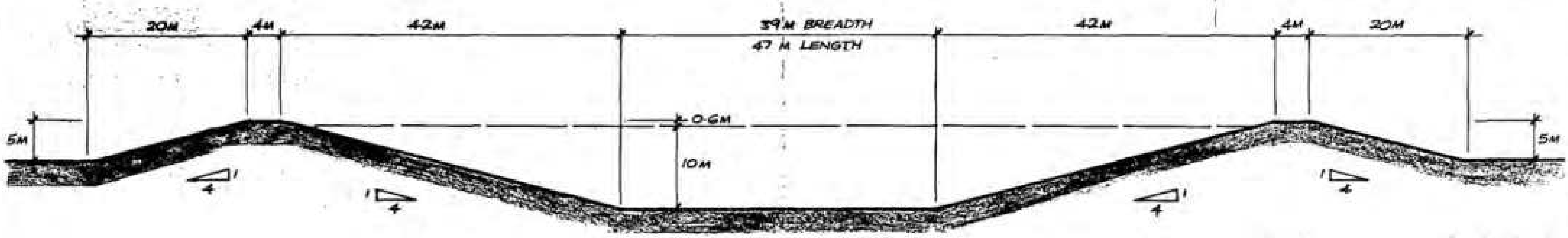

CROSS SECTION [ESTIMATED]

Rev	Description	App	Chk	Drwn	Date
—	First Issue	MHC	MHC	[illegible]	14/5/97

Scales: 1:500
Date: MAY 97

Client:
E.W. PORTER & SON,
GRANGE FARM, FELTWELL,
THETFORD, NORFOLK.

Project:
PROPOSED 15 MILLION
GALLON RESERVOIR AT
GRANGE FARM, FELTWELL.

Drawing Title:
CROSS SECTION [ESTIMATED].

Drawing Status:
PRELIMINARY

CALVERT BRAIN & FRAULO
CONSULTING STRUCTURAL & CIVIL ENGINEERS
3 PORTLAND STREET, KING'S LYNN, NORFOLK, PE30 1PB
TEL: 01553 768220/761771 FAX: 01553 768033

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Rev: —

APPENDIX G

Anglian Water CON29DW Report

CON29DW
DRAINAGE AND WATER ENQUIRY

15 YEARS OF EXPERTISE
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Produced on:02 October 2017
Date requested:29 September 2017

Your order reference is: G2263793-1
Your customer reference is: IE17/063

Drainage and Water Enquiry

Search address:

Long Lane
Feltwell
28 Long Lane
Feltwell
Thetford
IP26 4BJ

Search ordered by:

JP Chick & Partners Ltd
7 Museum Street
Ipswich
IP1 1HQ

For any queries please contact our dedicated customer service team on **0800 085 8050.**

Our standard terms and conditions for Residential Drainage and Water enquiries apply to this report. They are included in this search document and are available on our website, www.geodesys.com

The following records are searched in compiling drainage and water reports:

- The Map of Public Sewers.
- The Map of Waterworks.
- Water and sewer billing records.
- The Register of Properties subject to Internal Foul Flooding.
- The Register of Properties subject to Poor Water Pressure.
- And, where necessary; information from other water companies.

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Summary of Responses:

	Maps	
1.1	Where relevant, please include a copy of an extract from the public sewer map.	**Map Included**
1.2	Where relevant, please include a copy of an extract from the map of waterworks.	**Map Included**
	Drainage	
2.1	Does foul water from the property drain to a public sewer?	**Yes**
2.2	Does surface water from the property drain to a public sewer?	**Yes**
2.3	Is a surface water drainage charge payable?	**No**
2.4	Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	**No**
2.4.1	Does the public sewer map indicate any public pumping station or ancillary apparatus within the boundaries of the property?	**No**
2.5	Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?	**Yes**
2.5.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?	**No**
2.6	Are any sewers or lateral drains serving or which are proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?	**No**
2.7	Has any Sewerage Undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?	**Not Applicable**
2.8	Is the building which is, or forms part of the property, at risk of internal flooding due to overloaded public sewers?	**No**
2.9	Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.	**See Answer**
	Water	
3.1	Is the property connected to mains water supply?	**Yes**
3.2	Are there any water mains, resource mains or discharge pipes within the boundaries of the property?	**No**
3.3	Is any water main or service pipe serving, or which is proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	**No**
3.4	Is this property at risk of receiving low water pressure or flow?	**No**
3.5	What is the classification of the water supply for the property?	**See Answer**
3.6	Please include details of the location of any water meter serving the property.	**See Answer**
	Charging	
4.1.1	Who is responsible for providing the sewerage services for the property?	**Anglian Water Services Limited**
4.1.2	Who is responsible for providing the water services for the property?	**Anglian Water Services Limited**
4.2	Who bills the property for sewerage services?	**Anglian Water Services Limited**
4.3	Who bills the property for water services?	**Anglian Water Services Limited**
4.4	What is the current basis for charging for sewerage and/or water services at the property?	**Unmeasured**
4.5	Will the basis for charging for sewerage and water services at the property change as a consequence of a change of occupation?	**Measured**

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Did you know?

Geodesys is a trusted brand providing a full range of conveyancing searches for residential and commercial properties throughout England and Wales.

Geodesys, a trading name of Anglian Water Services Limited, is responsible in respect of the following:

(i) any negligent or incorrect entry in the records searched.
(ii) any negligent or incorrect interpretation of the records searched.
(iii) any negligent or incorrect recording of that interpretation in the search report.
(iv) compensation payments.

Professional Standards

CoPSO EXECUTIVE MEMBER

Geodesys is an executive member of CoPSO (Council of Property Search Organisations), the trade association working towards a more efficient and effective market for searches.

SearchCode™

We also comply with the rules set out in the PCCB (Property Codes Compliance Board) Search Code, a code of practice that ensures the delivery of high quality products across the property search industry. See Appendix 4 for more information.

The Property Ombudsman

Geodesys have a robust complaints procedure in place. If we cannot resolve your complaint or have failed to comply with our process, you may refer your complaint under The Property Ombudsman scheme (TPOs). Further information can be found in Appendix 4.

Geodesys is certified to ISO 9001 (Quality) and ISO 22301 (Business Continuity) management systems by LRQA. This helps ensure that we minimise any systems downtime by having plans in place for dealing with the unexpected and managing risk.

Private Sewer Transfer

On 1 October 2011 ownership of private sewers and lateral drains changed in accordance with The Water Industry (schemes for Adoption of Private Sewers) Regulations 2011. As part of this change of ownership, from 1 October 2016, many private pumping stations will also become the responsibility of Anglian Water. The contents of this search may not reflect these changes. Please visit www.anglianwater.co.uk/sewerswitchover for more details. Further information is also supplied in Appendix 3.

Mapping Services

Through our sister brand, digdat, we also offer an online mapping service providing:

1. Ordnance Survey maps (ideal for unregistered land);
2. Location plans of underground assets for various utilities including Anglian Water and Hartlepool Water.

digdat.co.uk

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Maps

Question 1.1 Where relevant, please include a copy of an extract from the public sewer map

Answer A copy of an extract of the public sewer map is included, showing the public sewers, disposal mains and lateral drains in the vicinity of the property.

Guidance Notes Public Sewers are defined as those for which Anglian Water Services Limited holds statutory responsibility under the Water Industry Act 1991.
Anglian Water Services Limited is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.
Assets other than public sewers may be shown on the copy extract for information.

Question 1.2 Where relevant, please include a copy of an extract from the map of waterworks

Answer A copy of an extract of the map of waterworks is included, showing water mains, resource mains or discharge pipes in the vicinity of the property.

Guidance Notes The map of the waterworks has been supplied by:
Anglian Water Services Limited
Lancaster House
Lancaster Way
Huntingdon
Cambs
PE29 6XU
Tel: 03457 145 145
www.anglianwater.co.uk
The 'water mains' in this context are those which are vested in and maintainable by the water company under statute.
Assets other than public water mains may be shown on the plan, for information only.
Water companies are not responsible for private supply pipes connecting the property to the public water main and do not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
The enclosed extract of the public water main record shows known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

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Drainage

Question 2.1 Does foul water from the property drain to a public sewer?

Answer Records indicate that foul water from the property drains to a public sewer.

Guidance Notes Anglian Water Services Limited is not responsible for any private drains and sewers that connect the property to the public sewerage system, and does not hold details of these. The property owner will normally have sole responsibility for private drains serving the property. An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

Question 2.2 Does surface water from the property drain to a public sewer?

Answer Records indicate that surface water from the property does drain to a public sewer.
If the property was constructed after 6 April 2015 the Surface Water drainage may be served by a Sustainable Drainage System. Further information may be available from the developer or question 3.3 of the CON29 from the local authority from 4 July 2016

Guidance Notes Anglian Water Services Limited is not responsible for private drains and sewers that connect the property to the public sewerage system, and do not hold details of these.
The property owner will normally have sole responsibility for private drains serving the property.
If on inspection the buyer finds that the property is not connected for surface water drainage, the property may be eligible for a rebate of the surface water drainage charge.
If surface water does not drain to the public sewerage system the property may have private facilities in the form of a soakaway or private connection to a watercourse.
Details can be obtained from Anglian Water Services Limited, telephone 0800 169 3271 or visit :
www.anglianwater.co.uk/household/your-account/bills-and-payments/tariffs/surface-water-drainage.aspx
For further information on surface water drainage, please visit the Ofwat website;
www.ofwat.gov.uk/households/your-water-bill/surfacewaterdrainage

Question 2.3 Is a surface water drainage charge payable?

Answer Records confirm that a surface water drainage charge is not payable for the property.
If the property was constructed after 6 April 2015 the Surface Water drainage may be served by a Sustainable Drainage System. Further information may be available from the developer or question 3.3 of the CON29 from the local authority from 4 July 2016

Guidance Notes Where surface water from a property does not drain to the public sewerage system no surface water drainage charges are payable.
Where surface water charges are payable but upon inspection the property owners believe that surface water does not drain to the public sewerage system, an application can be made to Anglian Water to end future surface water charges by contacting them on 0800 169 3271.
Further information can be found by visiting:
www.anglianwater.co.uk/household/your-account/bills-and-payments/tariffs/surface-water-drainage.aspx

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Question 2.4 Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?

Answer The public sewer map included indicates that there are no public sewers, disposal mains or lateral drains within the boundaries of the property. However, on 1 October 2011, private sewers that serve a single property and lie outside the boundary of that property, were transferred into public ownership. Therefore there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map but which may prevent or restrict development of the property.

Guidance Notes The boundary of the property has been determined by reference to the Ordnance Survey record.
The presence of a public sewer running within the boundary may restrict further development. Anglian Water Services Limited has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company or its contractors needing to enter the property to carry out work.
Sewers indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended that these details are checked with the developer.
Please note if the property was constructed after 1 July 2011 any sewers and/or lateral drain within the boundary of the property are the responsibility of the homeowner.

Question 2.4.1 Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the boundaries of the property?

Answer The public sewer map included indicates that there is no public pumping station within the boundaries of the property. Any other ancillary apparatus is shown on the public sewer map and referenced on the legend.

Guidance Notes Only private pumping stations installed before 1 July 2011 and servicing 2 or more properties will be transferred into the ownership of Anglian Water Services.
Pumping stations installed after 1 July 2011 will remain the responsibility of the homeowners unless they are the subject of an adoption agreement.
Anglian Water Services will have rights of access to maintain their assets which is anticipated to be completed on a 12 monthly basis which will be reviewed dependent on monitoring and performance.
Further information can be found on the pumping station adoption in the appendices of the CON29DW.

Question 2.5 Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?

Answer The public sewer map included indicates that there is a public sewer within 30.48 metres (100 feet) of a building within the property. (See supplied extract from the public sewer map). On 1 October 2011 private sewers were transferred into public ownership, therefore there may be additional lateral drains and/or public sewers which are not recorded on the public sewer map but are also within 30.48 metres (100 feet) of a building within the property.

Guidance Notes The presence of a public sewer within 30.48 metres (100 feet) of any building within the boundary of the property can result in the local authority requiring a property to be connected to the public sewer.
The measure is estimated from the Ordnance Survey record, between any building within the boundary of the property and the nearest public sewer.
Sewers indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended that these details are checked with the developer.

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Question 2.5.1 Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?

Answer The public sewer map included indicates that there is no public pumping station within 50 metres of any buildings within the property. Any other ancillary apparatus is shown on the public sewer map and referenced on the legend.

Guidance Notes Only private pumping stations installed before 1 July 2011 and servicing 2 or more properties will be transferred into the ownership of Anglian Water Services.
Pumping stations installed after 1 July 2011 will remain the responsibility of the homeowners unless they are the subject of an adoption agreement.
Anglian Water Services will have rights of access to maintain their assets which is anticipated to be completed on a 12 monthly basis which will be reviewed dependent on monitoring and performance.
Further information can be found on the pumping station adoption in the appendices of the CON29DW.

Question 2.6 Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?

Answer The property is part of an established development and is not subject to an adoption agreement.

Guidance Notes This enquiry is of interest to purchasers of new properties who will want to know whether or not the property will be linked to a public sewer. Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of public drains and sewers for which they will hold maintenance and renewal liabilities.
On 1 October 2011 all foul Section 104 sewers laid before 1 July 2011 were transferred into public ownership, excluding those that discharge to a privately owned sewage treatment or collection facility. All surface Section 104 sewers that do not discharge to a public watercourse were also transferred. Our mapping records are currently being reviewed and updated and may not yet reflect this change, therefore there may be additional public sewers, disposal mains or lateral drains which are not yet recorded on the public sewer map or public sewers that still show as Section 104 sewers.

Question 2.7 Has a Sewerage Undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?

Answer The company's records confirm that there is not a statutory agreement or consent in respect of building over/near a public sewer at this property. For historical reasons the company may not be aware of some agreements or consents which have been entered into by the local authority. Whilst an 'agreement' may not exist, current Building Regulation guidance permits building over/near sewers in certain circumstances. Consent without an agreement may have been issued by Anglian Water or independently by the Building Control Body. As long as the extension has a valid building regulations certificate then this should prove adequate assurance to the purchaser.

Guidance Notes Anglian Water Services Limited is obliged to maintain its sewers. If any problem was to arise, Anglian Water Services Limited would investigate the problem and has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company or its contractors needing to enter the property. In advance of any problem it is difficult to predict the effect the works would have on the property. Similarly, the position as to liability of both the property owner and Anglian Water Services Limited would need to be ascertained.
On 1 October 2011 private sewers were transferred into public ownership, therefore there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map but which may further prevent or restrict development of the property.

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Question 2.8 Is any building which is or forms part of the property, at risk of internal flooding due to overloaded public sewers?

Answer The property is not recorded as being at risk of internal flooding due to overloaded public sewers. On 1 October 2011 private sewers, disposal mains and lateral drains were transferred into public ownership. It is therefore possible that a property may be at risk of internal flooding due to an overloaded public sewer which Anglian Water may not be aware of. For further information it is recommended that enquiries are made of the vendor as to any previous flooding occurrences.

Guidance Notes A sewer is "overloaded" when the flow from a storm is unable to pass through it due to a permanent problem (eg. Flat gradient, small diameter). Flooding as a result of temporary problems such as blockage, siltation, collapses, and equipment or operational failures are excluded.
"Internal flooding" from public sewers is defined as flooding which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
"At Risk" properties are those that the water company has included in its Register of properties at risk of sewer flooding. These are defined as properties that have suffered flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company's reporting procedure.
Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the Flood Risk register.
Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the company.
Public sewers are defined as those for which the company holds statutory responsibility under the Water Industry Act 1991.
It should be noted that flooding can occur from private sewers and drains which are not the responsibility of Anglian Water Services Limited. This report excluded flooding from private sewers and drains and Anglian Water Services Limited makes no comment upon this matter.
For further information please visit www.anglianwater.co.uk or contact Anglian Water customer services on 03457 145 145.

Question 2.9 Please state the distance from the property to the nearest boundary of the nearest sewage treatment works

Answer The nearest sewage treatment works is 0.20 kilometres to the West of the property. The name of the sewage treatment works is FELTWELL STW (Anglian Water Services Ltd).

Guidance Notes The nearest sewage treatment works will not always be the sewage treatment works serving the catchment within which the property is situated.
The Sewerage Undertaker's records were inspected to determine the nearest sewage treatment works. It should be noted, therefore, that there may be a private sewage treatment works closer than the one detailed above that has not been identified.

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Water

Question 3.1 Is the property connected to mains water supply?

Answer Records indicate that the property is connected to mains water supply.

Question 3.2 Are there any water mains, resource mains or discharge pipes within the boundaries of the property?

Answer The map of waterworks does not indicate any water mains, resource mains or discharge pipes within the boundaries of the property.

Guidance Notes The boundary of the property has been determined by reference to the Ordnance Survey record.

Question 3.3 Is any water main or service pipe serving, or which is proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?

Answer Records confirm that water mains or service pipes serving the property are not the subject of an existing adoption agreement or an application for such an agreement.

Guidance Notes This enquiry is of interest to purchasers of new homes who will want to know whether or not the property will be linked to the mains water supply.
Please note this could relate to a piece of land and is not subject to an adoption agreement.

Question 3.4 Is the property at risk of receiving low water pressure or flow?

Answer Records confirm that the property is not recorded on a register kept by the water undertaker as being at risk of receiving low water pressure or flow.

Guidance Notes "Low water pressure" means water pressure below the reference level which is the minimum pressure when demand on the system is not abnormal. We maintain a Low Pressure Register of properties that are at risk of persistently receiving pressure below the reference level, provided that allowable exclusions do not apply. (i.e. events which can cause pressure to temporarily fall below the reference level).
The reference level of service is a flow of 9 litres/minute at a pressure of 10 metres head on the customer's side of the main stop tap (mst).
The reference level of service must be applied on the customer's side of a meter or any other company fittings that are on the customer's side of the main stop tap.
The reference level applies to a single property. Where more than one property is served by a common service pipe, the flow assumed in the reference level must be appropriately increased to take account of the total number of properties served. For two properties, a flow of 18 litres/minute at a pressure of 10 metres head on the customers' side of the mst is appropriate. For three or more properties the appropriate flow should be calculated from the standard loadings provided in BS6700 or Institute of Plumbing handbook.
Allowable exclusions: The Company includes in the Low Pressure Register properties receiving pressure below the reference level, provided that allowable exclusions listed below do not apply.
Abnormal demand: This exclusion is intended to cover abnormal peaks in demand and not the daily, weekly or monthly peaks in demand which are normally expected. We exclude properties which are affected by low pressure only on those days with the highest peak demands. During the report year we may exclude, for each property, up to five days of low pressure caused by peak demand.
Planned maintenance: We do not report low pressures caused by planned maintenance.
One-off incidents: This exclusion covers low pressure incidents caused by one-off events: mains bursts; failures of company equipment (such as PRVs or booster pumps); firefighting; and action by a third party.
Low pressure incident of a short duration: Properties affected by low pressure which only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur during the course of the year.

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Question 3.5 What is the classification of the water supply for the property?

Answer The water supplied to the property has an average water hardness of 95.000000mg/l which is defined as Hard by Anglian Water Services Limited.

Guidance Notes Water hardness can be expressed in various units for example the hardness settings for dishwashers are commonly expressed in Clark's degrees, but check with the manufacturer as there are also other units. The following table shows the normal ranges of hardness.

Classification	Calcium (mg/l or ppm)	Calcium Carbonate (mg/l or ppm)	Degrees Clark	Degrees French	Degrees German	mmol/l (Millimoles of ca/l)
Hard	95.000000	237.500000	16.500000	23.800000	13.500000	2.400000

Question 3.6 Please include details of the location of any water meter serving the property

Answer Records indicate that the property is served by a water meter, which is located not within the dwelling-house which is or forms part of the property, and in particular is located 0.2m rhs hse in fw.

Guidance Notes Anglian Water have put together a list of these abbreviations to help you interpret the location of your water meter. Please remember that it is not uncommon for Water Meter locations to be recorded using a combination of these abbreviations.
LHS 4M FNC - Left hand side 4 meters from fence
If you are still having difficulty interpreting these abbreviations, please visit: http://www.geodesys.com/water-meter-locations/

Charging

Question 4.1.1 Who is responsible for providing the sewerage services for the property?

Answer
Anglian Water Services Limited
Lancaster House
Lancaster Way
Huntingdon
Cambs
PE29 6XU
Tel: 03457 145 145
www.anglianwater.co.uk

Question 4.1.2 Who is responsible for providing the water services for the property?

Answer
Anglian Water Services Limited
Lancaster House
Lancaster Way
Huntingdon
Cambs
PE29 6XU
Tel: 03457 145 145
www.anglianwater.co.uk

Question 4.2 Who bills the property for sewerage services?

Answer The property is billed for sewerage services by:
Anglian Water Services Limited
Lancaster House
Lancaster Way
Huntingdon
Cambs
PE29 6XU
Tel: 03457 145 145
www.anglianwater.co.uk

Question 4.3 Who bills the property for water services?

Answer The property is billed for water services by:
Anglian Water Services Limited
Lancaster House
Lancaster Way
Huntingdon
Cambs
PE29 6XU
Tel: 03457 145 145
www.anglianwater.co.uk

Question 4.4 What is the current basis for charging for sewerage and/or water services at the property?

Answer The charges are based on the rateable value of the property of 0 and the charge for the current financial year is £517.91.

The property reference number is: 0013178990

Guidance Notes Water and sewerage companies full charges are set out in their charge schemes which are available from the company free of charge upon request.
On change of occupation, the Company may install a meter at the premises and base charges upon the measured tariff. The Company may install a meter at the premises where a buyer makes a change of use of the property or where the buyer uses water for: watering the garden, other than by hand (this includes the use of sprinklers) Automatically replenishing a pond or swimming pool with a capacity greater than 10,000 litres.

Question 4.5 Will the basis for charging for sewerage and water services at the property change as a consequence of a change of occupation?

Answer The basis for charges will be based on a metered supply.

Guidance Notes For properties in the Anglian Water region, where Anglian Water supply clean water and a meter is installed, all charges levied at the property will be based on a metered consumption.
Water and Sewerage companies full charges are set out in their charges schemes which are available from the company free of charge upon request.
On change of occupation, the Company may install a meter at the premises and base charges upon the measured tariff. The Company may install a meter at the premises where a buyer makes a change of use of the property or where the buyer uses water for: watering the garden, other than by hand (this includes the use of sprinklers) Automatically replenishing a pond or swimming pool with a capacity greater than 10,000 litres.
Where charges are levied to a third party, the occupier needs to contact the vendor to confirm charging arrangements.

APPENDIX 1: General Interpretation

(1)In this Schedule-
"the 1991 Act" means the Water Industry Act 1991(a);
"the 2000 Regulations" means the Water Supply (Water Quality) Regulations 2000(b);
"the 2001 Regulations" means the Water Supply (Water Quality) Regulations 2001(c);
"adoption agreement" means an agreement made or to be made under Section 51A(1) or 104(1) of the 1991 Act (d);
"bond" means a surety granted by a developer who is a party to an adoption agreement;
"bond waiver" means an agreement with a developer for the provision of a form of financial security as a substitute for a bond;
"calendar year" means the twelve months ending with 31st December;
"discharge pipe" means a pipe from which discharges are made or are to be made under Section 165(1) of the 1991 Act;
"disposal main" means (subject to Section 219(2) of the 1991 Act) any outfall pipe or other pipe which-
(a) is a pipe for the conveyance of effluent to or from any sewage disposal works, whether of a sewerage undertaker or of any other person; and
(b) is not a public sewer;
"drain" means (subject to Section 219(2) of the 1991 Act) a drain used for the drainage of one building or any buildings or yards appurtenant to buildings within the same curtilage;
"effluent" means any liquid, including particles of matter and other substances in suspension in the liquid;
"financial year" means the twelve months ending with 31st March;
"lateral drain" means-
(a) that part of a drain which runs from the curtilage of a building (or buildings or yards within the same curtilage) to the sewer with which the drain communicates or is to communicate; or
(b) (if different and the context so requires) the part of a drain identified in a declaration of vesting made under Section 102 of the 1991 Act or in an agreement made under Section 104 of that Act (e);
"licensed water supplier" means a company which is the holder for the time being of a water supply licence under Section 17A(1) of the 1991 Act(f);
"maintenance period" means the period so specified in an adoption agreement as a period of time-
(a) from the date of issue of a certificate by a sewerage undertaker to the effect that a developer has built (or substantially built) a private sewer or lateral drain to that undertaker's satisfaction; and
(b) until the date that private sewer or lateral drain is vested in the sewerage undertaker;
"map of waterworks" means the map made available under section 198(3) of the 1991 Act (g) in relation to the information specified in subsection (1A);
"private sewer" means a pipe or pipes which drain foul or surface water, or both, from premises, and are not vested in a sewerage undertaker;
"public sewer" means, subject to Section 106(1A) of the 1991 Act(h), a sewer for the time being vested in a sewerage undertaker in its capacity as such, whether vested in that undertaker-
(a) by virtue of a scheme under Schedule 2 to the Water Act 1989(i);
(b) by virtue of a scheme under Schedule 2 to the 1991 Act (j);
(c) under Section 179 of the 1991 Act (k); or
(d) otherwise;
"public sewer map" means the map made available under Section 199(5) of the 1991 Act (l);
"resource main" means (subject to Section 219(2) of the 1991 Act) any pipe, not being a trunk main, which is or is to be used for the purpose of-
(a) conveying water from one source of supply to another, from a source of supply to a regulating reservoir or from a regulating reservoir to a source of supply; or
(b) giving or taking a supply of water in bulk;
"sewerage services" includes the collection and disposal of foul and surface water and any other services which are required to be provided by a sewerage undertaker for the purpose of carrying out its functions;
"Sewerage Undertaker" means the Company appointed to be the sewerage undertaker under Section 6(1) of the 1991 Act for the area in which the property is or will be situated;
"surface water" includes water from roofs and other impermeable surfaces within the curtilage of the property;
"water main" means (subject to Section 219(2) of the 1991 Act) any pipe, not being a pipe for the time being vested in a person other than the water undertaker, which is used or to be used by a water undertaker or licensed water supplier for the purpose of making a general supply of water available to customers or potential customers of the undertaker or supplier, as distinct from for the purpose of providing a supply to particular customers;
"water meter" means any apparatus for measuring or showing the volume of water supplied to, or of effluent discharged from any premises;
"water supplier" means the Company supplying water in the water supply zone, whether a water undertaker or licensed water supplier;
"water supply zone" means the names and areas designated by a water undertaker within its area of supply that are to be its water supply zones for that year; and
"Water Undertaker" means the Company appointed to be the water undertaker under Section 6(1) of the 1991 Act for the area in which the property is or will be situated.

(2)In this Schedule, references to a pipe, including references to a main, a drain or a sewer, shall include references to a tunnel or conduit which serves or is to serve as the pipe in question and to any accessories for the pipe.
(a) 1991 c.56.
(b) S.I. 2000/3184. These Regulations apply in relation to England.
(c) S.I. 2001/3911. These Regulations apply in relation to Wales.
(d) Section 51A was inserted by Section 92(2) of the Water Act 2003 (c. 37). Section 104(1) was amended by Section 96(4) of that Act.
(e) Various amendments have been made to Sections 102 and 104 by section 96 of the Water Act 2003.
(f) Inserted by Section 56 of and Schedule 4 to the Water Act 2003.
(g) Subsection (1A) was inserted by Section 92(5) of the Water Act 2003.
(h) Section 106(1A) was inserted by Section 99 of the Water Act 2003.
(i) 1989 c.15.
(j) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.
(k) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.
(l) Section 199 was amended by Section 97(1) and (8) of the Water Act 2003.

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GEODESYS
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APPENDIX 2: Terms and Conditions

1) Introduction

a) These Terms (together with our General Terms) set out the terms which will apply in respect of any Orders you place with us for a residential drainage and water enquiry being (i) a CON29DW Report and / or (ii) a CON29DW Premium Report.

b) In addition to any defined terms in the General Terms (which shall apply to these Terms), the following words shall have the following meanings:
   i) "Residential Property" means the address/es or location(s) of a residential property provided by you when you place an Order in respect of which you request a Report.
   ii) The term "Report" for the purposes of these Terms, shall mean the report known as the "CON29DW" prepared by us providing drainage and water information in relation to an individual domestic property.

c) We provide a number of other products for commercial property or development land. It is your responsibility to select the Report that is most suitable for your needs.

2) Scope of the Report

a) We will prepare the Report using the Residential Property details you provide at the time you place your Order. The Report you receive will rely on the accuracy, completeness and legibility of the address and/or plans you supply with your Order.

b) The Report is produced only for use in relation to Residential Property which require the provision of drainage and water information and cannot be used for non-residential properties, development of land or any property used solely for carrying on a trade or business. Where you require a report for a non residential property, or for the development of land, you can order a different report from us, and different terms shall apply.

c) The Report provides information as to the indicative location and connection status of existing services and other information relating to drainage and water enquiries and should not be relied on for any other purpose. The Report may contain opinions or general advice. We cannot ensure that any such opinion or general advice is accurate, complete, valid or fit for your particular purpose, and neither you nor your Client should rely solely on this advice.

d) As you may expect, the information contained in the Report can change on a regular basis so we cannot be responsible to you or your Client for any change in the information contained in the Report after the date on which the Report was produced (as shown in the Report).

e) The Report does not give details about the actual state or condition of the Property nor should it be used or taken to indicate or exclude actual suitability or unsuitability of the Residential Property for any particular purpose, or be relied upon for determining saleability or value, or used as a substitute for any physical investigation or inspection. Further advice and information from appropriate experts and professionals should always be obtained by the Client.

f) In providing you with this Report, we will comply with .

g) The position and depth of apparatus shown on any Maps attached to the Report are approximate and are provided as a general guide only. Where you or your Client intend to carry out any excavation or other works at the Residential Property, the exact positions and depths of any apparatus should be obtained by excavation trial holes and the Maps must not be relied on in the event of excavation or other works made in the vicinity of our apparatus.

3) Additional Provisions relating to our Liability to you for the Report

a) The Maps attached to the Report are provided pursuant to our statutory duty to make such Maps available for inspection. Notwithstanding any other provisions of the Terms, your attention is drawn to the notices on the Map(s) attached to the Report which applies to the Map and its contents.

b) Where we provide a Report for a Residential Property which receives either water or drainage services from us, and another company provides the other service, then our total liability, whether for breach of contract, tort, negligence, breach of statutory duty, misrepresentation or otherwise, arising under or in connection with the supply of the information from the other service provider is limited to such sums as we are entitled to and able to recover from the other service provider

4) Additional Intellectual Property Right Provisions

a) The enquiries in the Report are protected by copyright by the Law Society of 113 Chancery Lane, London WC2A 1PL and must not be used for any purpose outside the context of the Report.

5) General

a) These Terms (and any documents referred to herein) are the only terms and conditions that shall apply to any order in respect of a CON29DW residential Report and shall constitute the entire agreement between you and us and supersede, replace and extinguish any previous arrangement, understanding or agreement between us relating to such Report.

b) Any dispute or claim arising out of or in connection with these terms and or their subject matter or formation (including non-contractual disputes or claims) shall be governed by the laws of England and Wales. Any dispute shall be subject to the exclusive jurisdiction of the courts of England and Wales.

c) If there is any conflict or inconsistency between the provisions of these Geodesys Terms and the General Terms, the provisions of these Geodesys Terms shall prevail.

d) In the event of any conflict of inconsistency between any information on the Website describing the features of the Report and the Terms, then the Terms shall prevail.

e) Where you are acting in the normal course of your business, your Client is entitled to the benefit of these Terms. No other person who is not a party to these Terms has any right to enforce their terms.

6) Customer Complaints Procedure

a) Geodesys offer a robust complaints procedure which can be found by visiting http://www.geodesys.com/complaints-process/

b) If your complaint has gone through our complaints procedure and you are dissatisfied with the response or it has exceeded our response timescales, you may refer your complaint for consideration under The Property Ombudsman Scheme (TPOs). You can obtain further information by visiting www.tpos.co.uk or email admin@tpos.co.uk

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APPENDIX 3: Some things you should know...

Private Sewer Transfer

In October 2011, Anglian Water became responsible for looking after many sewers and pipes that take used water from your toilets and sinks. This was due to a change in the law.

If your client's property is connected to the public sewer system, Anglian Water are now responsible for the pipes that are outside the boundary of the property and, depending on the property type, they may be responsible for pipes inside the boundary.

Simply put, Anglian Water became responsible for an estimated 23,500km of additional sewers and drains which were previously looked after and maintained by our customers. To put that in context, it is an increase of 60 percent on what Anglian Water already owned.

Previously if there was a blockage in a sewer outside the boundary of the homeowners property, but connecting to the main sewer, the homeowner was probably responsible for sorting it out

Now, the homeowner is only responsible for pipes that are inside the property boundary that take the used water for recycling. To find out more visit www.anglianwater.co.uk/sewerswitchover, or call 0845 026 5232.

Who should unblock or report a drain or sewer?

If there is a blockage or a repair is needed to a pipe, that is not connected to the sewers, or is within the boundary and only serves that property, then the homeowner is responsible for it.

If the problem is with a section of pipe that takes water from more than one property and connected to the public sewer system, it is the responsibility of Anglian Water. Please contact the team on 03457 145 145.

Sewers owned by Anglian Water

For sewers that have been adopted as a public sewer, or were built before 1 October 1937, then Anglian Water is responsible for sorting it out. Please call to report it on 03457 145 145.

More information about sewers and drains is available on the Anglian Water website.

The picture below shows examples of responsibility for different property types.

Terraced properties

It is common for terraced properties to have a public sewer passing within the property boundary. The only section of the sewer which would remain private is the end of the terrace where the run of the sewer would begin. Where the sewer is shared, the water company would be responsible for the maintenance. The property owner would only be responsible for the lateral drain leading to the public sewer.

Semi-detached

The majority of semi-detached properties will share a connection. The section of the sewer which serves both properties will have been transferred into the ownership of the water company.

Detached

These property types are most likely to connect directly to the public sewer. It is very unlikely that assets within the boundary of the property would be transferred into the ownership of the water company. The homeowner would be responsible for the connection up to the property boundary.

Apartment/Flats

Shared drainage systems within a property curtilage will remain private. Any drains and sewers outside the boundary will have been transferred.

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Pumping Stations

After 1 October 2016, many private pumping stations became the responsibility of Anglian Water.

Anglian Water are currently assessing each of these eligible pumping stations and carrying out detailed surveys and any necessary repairs. Details of power supply for the station will also be required to transfer the billing across to Anglian Water.

If the station serves two or more properties, then it is eligible to transfer. A pumping station which serves a single property is exempt from the transfer and will generally remain private unless it is situated on third-party land.

Once Anglian Water identify a station to adopt, they will write to the homeowner(s) to inform them of their intention to adopt which will include waivers of consent.

Many industrial or commercial pumping stations will remain privately owned too on the basis that they are situated on a single site in what is deemed to be a single curtilage.

Maintenance of pumping stations is anticipated to be completed on a 12 monthly basis which will be reviewed dependent on monitoring and performance.

For further information on the private sewer transfer and pumping station adoption, please visit:

https://anglianwater.co.uk/household/water-recycling-services/private-sewers-and-lateral-drains.aspx

SuDS (Sustainable Drainage Systems)

SuDS are an alternative way to manage surface water by reducing or delaying rainwater run-off.

SuDS manage rainfall by replicating what happens in nature. They prevent many of the problems caused by surface water run-off from development by reducing the impact of excessive quantities of water flow. They aim to mimic the way rainfall drains naturally rather than conventional piped methods, which cause problems such as flooding, pollution or damage to the environment.

Since April 2015, SuDS should be considered as part of the planning process on all major developments consisting of 10 or more properties. SuDS can be provided in a number of ways including swales, retention ponds and underground storage.

Ponds and detention basins provide areas for surface water to run off into, while permeable paving on driveways can absorb it, limiting the flow into nearby drains and easing the pressure on the sewer network. Swales are shallow, broad, vegetated channels designed to store surface water run-off and remove pollutants.

Further information in relation to the charging and maintenance of SuDS can be found in question 3.3 in the Local Authority search or the developer of your property.

Anglian Water promote the use of SuDS as a sustainable and natural way of controlling surface water run-off.

A guide on who looks after what...

Although it is often interconnected, our regions network of drains and sewers is managed and maintained by a number of different organisations and agencies.

Some useful contacts:

Anglian Water billing services

Website

03457 91 91 55
8am-8pm Mon-Fri, 9am-1pm Sat

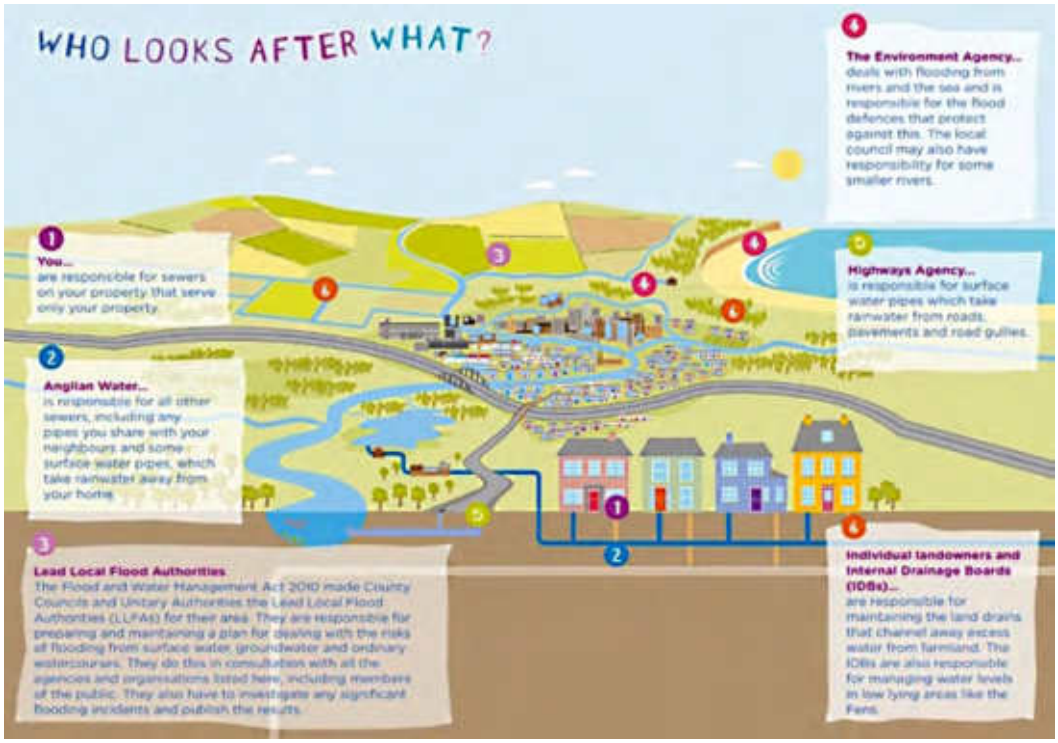
For supply queries

Water and sewerage queries, interruption to services and emergencies

03457 145 145
24/7 service

In Your Area

Select the link to get the latest updates on repairs, incidents or planned work in your area.



APPENDIX 4: Important Consumer Protection Information

This search has been produced by Geodesys, a trading name of Anglian Water Services Ltd. Our address is - Osprey House, 1 Percy Road, Huntingdon, Cambridgeshire, PE29 6SZ. To contact us - Tel 0800 085 8050 or email customer.services@geodesys.com. Geodesys is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

You can get more information about the PCCB from www.propertycodes.org.uk

The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential property and commercial property within the United Kingdom
- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practice and quality standards with the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the Code, their products and services

By giving you this information, Geodesys is confirming that they keep to the principles of the Code. This provides important protection to you.

The Code's core principles

Firms which subscribe to the Search Code will:

- display the Code logo prominently on their search reports
- act with integrity and carry out work with due skill, care and diligence
- at all times maintain adequate and appropriate insurance to protect consumers
- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that all search services comply with the law, registration rules and standards
- monitor their compliance with the Code

Please email customer.services@geodesys.com if you would like a copy of the Search Code

Complaints

Whilst we make every effort to ensure that all our searches are accurate and dispatched in a timely way, we understand that occasionally things may not go as planned. If you have a query or complaint about your search, you should raise it directly with us, and if appropriate ask for any complaint to be considered under our formal internal complaints procedure. We will always try to resolve a query or complaint immediately. If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman Scheme (TPOS). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of Geodesys failing to keep to the Code.

If it is not possible to resolve your complaint immediately, we will:

- take all of the details and investigate your complaint under our formal complaints procedure. If we do not contact you within 5 working days of you raising the complaint, you will be entitled to £50 compensation
- always aim to resolve a complaint fully and in writing within 5 working days, but no later than 20 working days of receipt
- keep you informed by letter, telephone or email as you prefer should we need more time to resolve the matter
- provide a final response, in writing, at the latest within 40 working days of receipt
- liaise, at your request, with anyone acting formally on your behalf

If we consider your complaint to be justified we will:

- refund your search fee
- provide you with a revised search
- take all action within our control to put things right

Complaints should be sent to: Customer Services, Geodesys, Osprey House, 1 Percy Road, Huntingdon, Cambridgeshire PE29 6SZ, Tel: 0800 085 8050, Email: customer.services@geodesys.com

If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman Scheme (TPOS).

TPOs Contact Details:

The Property Ombudsman scheme
Milford House
43-55
Milford Street
Salisbury
SP1 2BP

Telephone: 01722 333306
Fax: 01722 332296
Website: www.tpos.co.uk
Email: admin@tpos.co.uk

We will co-operate fully with the Ombudsman during an investigation and comply with his final decision.

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Title: G2263793-1 Date: 02/10/17 Scale: 1:1000 Map Centre: 571082,290626

Water Main (Potable)

Decommissioned Water

Water Main (Raw) Raw

Hydrant

Fitting

CON29DW
DRAINAGE AND WATER ENQUIRY

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Title: G2263793-1 Date: 02/10/17 Scale: 1:1000 Map Centre: 571082,290626

- Foul Sewer
- Surface Sewer
- Combined Sewer
- Final Effluent
- Decommissioned Sewer (colour denotes effluent type)
- Private Sewer (colour denotes effluent type)
- Rising Main (colour denotes effluent type)
- Manhole
- Public Pumping Station
- Private Pumping Station
- Decommissioned Pumping Station
- Public Sewage Treatment Works
- Private Sewage Treatment Works
- Outfall
- Inlet

APPENDIX H

Pre & Post Development Runoff Rates

Calculations

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.300
Area (ha)	0.520	Urban	0.000
SAAR (mm)	600	Region Number	Region 5

Results l/s

QBAR Rural	0.8
QBAR Urban	0.8
Q100 years	2.8
Q1 year	0.7
Q30 years	1.9
Q100 years	2.8

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.300
Area (ha)	0.340	Urban	0.000
SAAR (mm)	600	Region Number	Region 5

Results l/s

QBAR Rural	0.5
QBAR Urban	0.5
Q100 years	1.8
Q1 year	0.5
Q30 years	1.2
Q100 years	1.8

Run-off from Hard Standing Areas - Pre Development

Peak Discharge Q = 3.61 Cv i A Cv = 0.9

i = Rainfall Intensity From Micro Drainage

A = Area = 0.19 ha

1 Year Event

15 minute storm	=	3.61	x	0.9	x	45.30	x	0.19	=	27.964 l/s
30 minute storm	=	3.61	x	0.9	x	29.00	x	0.19	=	17.902 l/s
120 minute storm	=	3.61	x	0.9	x	10.80	x	0.19	=	6.667 l/s
6 hour storm	=	3.61	x	0.9	x	4.80	x	0.19	=	2.963 l/s

30 Year Event

15 minute storm	=	3.61	x	0.9	x	111.20	x	0.19	=	68.645 l/s
30 minute storm	=	3.61	x	0.9	x	70.90	x	0.19	=	43.767 l/s
120 minute storm	=	3.61	x	0.9	x	25.50	x	0.19	=	15.741 l/s
6 hour storm	=	3.61	x	0.9	x	10.70	x	0.19	=	6.605 l/s

100 Year Event

15 minute storm	=	3.61	x	0.9	x	144.50	x	0.19	=	89.201 l/s
30 minute storm	=	3.61	x	0.9	x	92.80	x	0.19	=	57.286 l/s
120 minute storm	=	3.61	x	0.9	x	33.50	x	0.19	=	20.680 l/s
6 hour storm	=	3.61	x	0.9	x	13.90	x	0.19	=	8.581 l/s

Volume of Run-off from Hard Standing 6 Hour Storm

1 Year Storm	=	2.963	x	60	x	60	x	6	=	64003 litres or	64.003 m^3
30 Year Storm	=	6.605	x	60	x	60	x	6	=	142673 litres or	142.673 m^3
100 Year Storm	=	8.581	x	60	x	60	x	6	=	185341 litres or	185.341 m^3

Project: Long Lane, Feltwell, Thetford

7 Museum Street
Ipswich
Suffolk
IP1 1HQ

Tel: (01473) 280699
Fax: (01473) 280701

JP Chick & Partners Ltd
Consulting Civil & Structural Engineers

www.chick.co.uk
ipswich@chick.co.uk

Designed	Checked	Date	Job No.
HP		20/10/2017	IE17/063

Calculation Sheet

Run-off from Hard Standing Areas - Post Development

Peak Discharge Q = 3.61 Cv i A Cv = 0.9

i = Rainfall Intensity From Micro Drainage

A = Area = 0.37 ha

1 Year Event

15 minute storm	=	3.61	x	0.9	x	45.30	x	0.37	=	54.46 l/s
30 minute storm	=	3.61	x	0.9	x	29.00	x	0.37	=	34.86 l/s
120 minute storm	=	3.61	x	0.9	x	10.80	x	0.37	=	12.98 l/s
6 hour storm	=	3.61	x	0.9	x	4.80	x	0.37	=	5.77 l/s

30 Year Event

15 minute storm	=	3.61	x	0.9	x	111.20	x	0.37	=	133.68 l/s
30 minute storm	=	3.61	x	0.9	x	70.90	x	0.37	=	85.23 l/s
120 minute storm	=	3.61	x	0.9	x	25.50	x	0.37	=	30.65 l/s
6 hour storm	=	3.61	x	0.9	x	10.70	x	0.37	=	12.86 l/s

100 Year Event

15 minute storm	=	3.61	x	0.9	x	144.50	x	0.37	=	173.71 l/s
30 minute storm	=	3.61	x	0.9	x	92.80	x	0.37	=	111.56 l/s
120 minute storm	=	3.61	x	0.9	x	33.50	x	0.37	=	40.27 l/s
6 hour storm	=	3.61	x	0.9	x	13.90	x	0.37	=	16.71 l/s

Volume of Run-off from Hard Standing 6 Hour Storm

1 Year Storm	=	5.77	x	60	x	60	x	6	=	124637 litres or	124.64 m^3
30 Year Storm	=	12.86	x	60	x	60	x	6	=	277836 litres or	277.84 m^3
100 Year Storm	=	16.71	x	60	x	60	x	6	=	360928 litres or	360.93 m^3

Project: Long Lane, Feltwell, Thetford

7 Museum Street
Ipswich
Suffolk
IP1 1HQ

Tel: (01473) 280699
Fax: (01473) 280701

JP Chick & Partners Ltd
Consulting Civil & Structural Engineers

www.chick.co.uk
ipswich@chick.co.uk

Designed	Checked	Date	Job No.
HP		20/10/2017	IE17/063

Calculation Sheet