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Consulting Development Engineers

PROPOSED DEVELOPMENT SITE, WEST ROAD, COMBERTON
OUR REF: 24939/03-19/TN 02
FLOOD RISK FEASIBILITY NOTE – MARCH 2019

Introduction

Mewies Engineering Consultants Ltd (M-EC) has been commissioned by Davidsons Developments Ltd to produce a Flood Risk Note (TFN) in support of a proposed residential development at Land south of West Street and west of South Street Comberton, Cambridgeshire.

It is understood that the site is being promoted through the Greater Cambridge Local Plan for residential purposes. The wider site comprises an area of 29.537ha and has the potential to deliver around 600 dwellings (see Figure 1a below). A smaller site area, referred to as 'Land south of West Street' (as shown coloured red in Figure 1b) of 8.5 ha, is likely to yield a development quantum of 150 dwellings. A copy of illustrative masterplans for both site areas is included in Appendix A.

The purpose of this report is to summarise the flood risk to the site from all sources as well as any mitigation that will be required to manage this flood risk.

Site Location

The site, which is irregular in shape, is located along the western edge of Comberton, to the south of the B1046. The site is bound to the north and south by agricultural land, with Comberton Sports and Arts College along with residential dwellings forming the eastern boundary of the site. Cambridge Meridian Golf Club forms the immediate western boundary. Figure 1 below outlines the site location.

Figure 1a: Wider Site Location

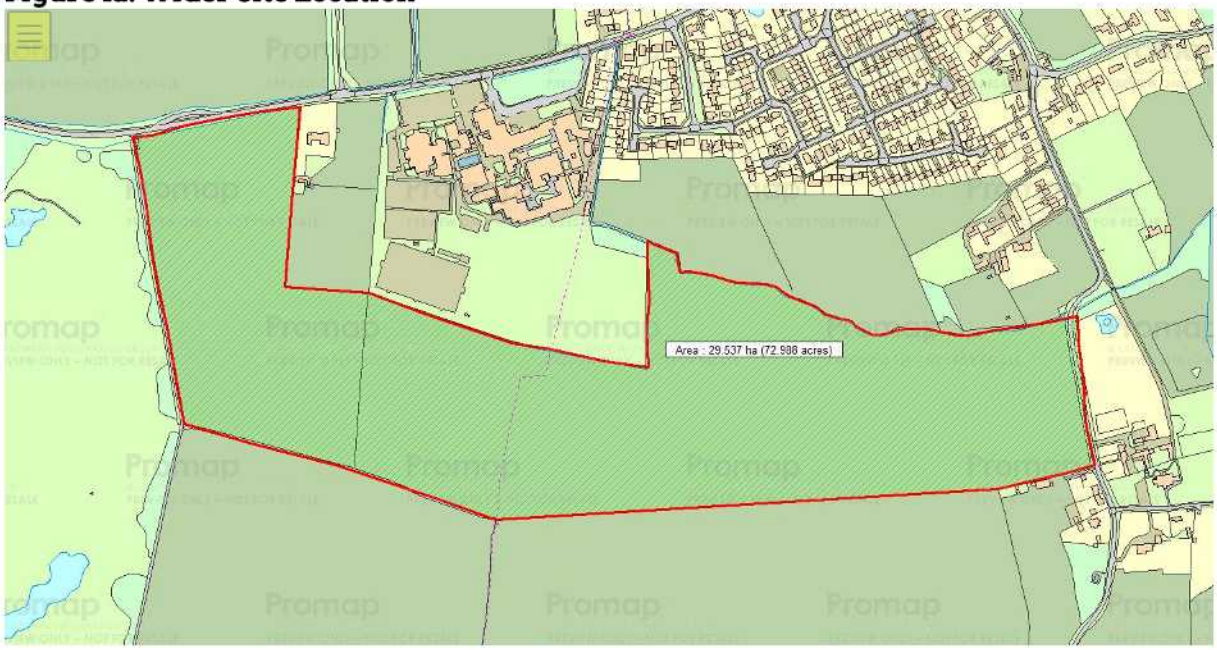


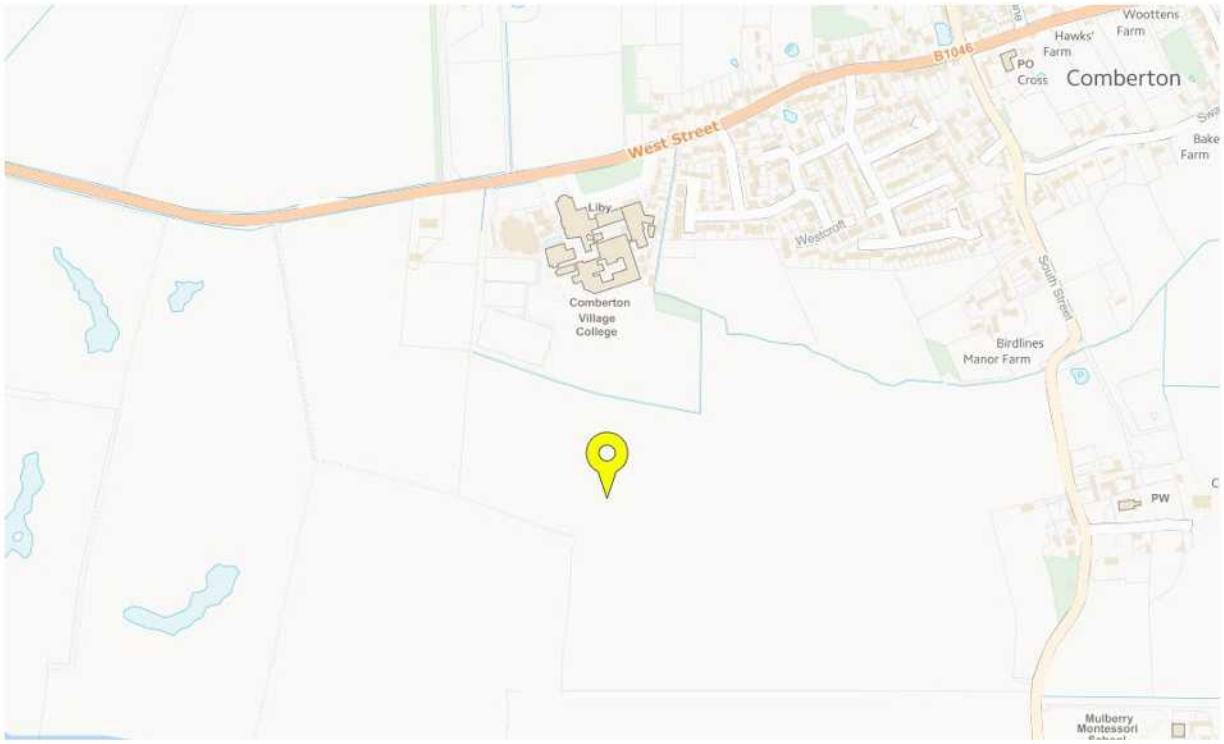
Figure 1b: Phase 1 site area

At this stage there is no Topographical Survey of the site area available but available mapping shows the site has an approximate level difference of circa 2 – 3m for the phase 1 land area (from north to south), whereas the remainder of the site area has a slight fall (circa 2m) between the southern boundary and a watercourse along the northern boundary.

Flood Risk

The Environment Agency flood zone map is shown in Figure 2. The map shows the entirety of the site is within Flood Zone 1 and development is therefore sequentially acceptable in accordance with the National Planning Practice Framework.

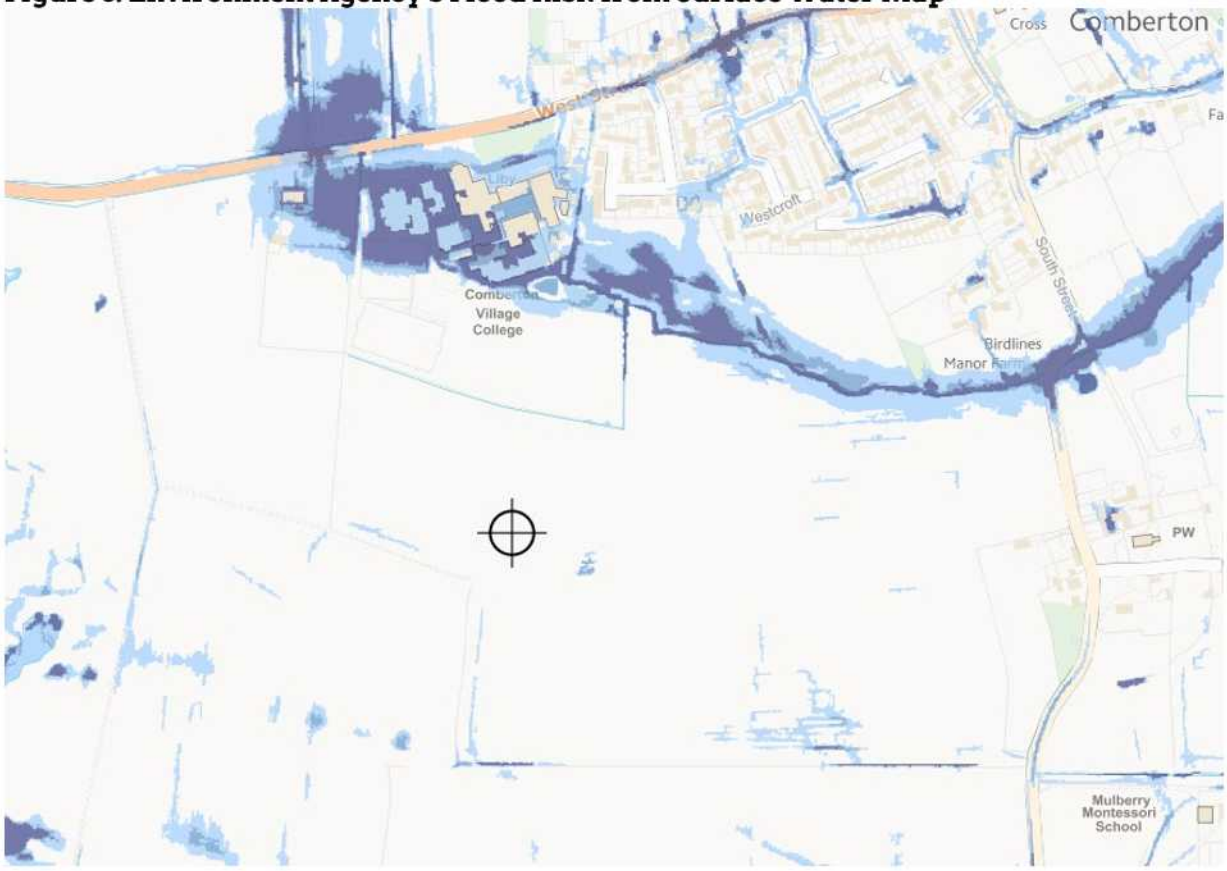
Figure 2: Environment Agency's Flood Map for Planning (Rivers and Seas)



The surface water flood map (Figure 3) shows there is no significant risk of surface water flooding within the site, with the majority of the site at a very low risk. A linear area of medium risk has been identified along the northern boundary of the wider site area along the length of the watercourse. A modern surface water drainage network and Sustainable Drainage System (SuDS) on site will ensure that any runoff does not represent a flood risk,

Surface water flood risk in the surrounding area is generally limited to the alignments of existing highways or waterways, which are not expected to affect the site.

Figure 3: Environment Agency's Flood Risk from Surface Water Map



British Geological Survey (BGS) maps show the site is directly underlain by The Gault Formation Mudstone. Isolated areas of the site are shown to be underlain by the West Melbury Marly Chalk Formation.

There are no sewers that run through the site. The closest sewer is a 6in foul sewer located within South Street to the east, and a separate pipe located within a field north of the wider site area but south of the existing residential development on The Kentings. Public sewer records can be found attached.

The Environment Agency's Flood Risk from Reservoirs mapping shows that the site is not at risk of being inundated due to failure of any reservoirs.

Surface Water Drainage Strategy

It is essential that the proposed development does not increase flood risk to adjacent land or downstream of the site, as well as protecting the development from flooding itself. To ensure that the flood risk is minimised, the drainage design will incorporate the following flood mitigation measures:

- Finished floor levels will be designed to retain and direct all overland surface water flows away from the dwellings following the natural topography of the land.

- The proposed development will include a surface water drainage system that will intercept runoff generated within the development. This will minimise the risk to the new buildings and also reduce the incidence of overland flows.

- The surface water drainage system will convey flows to an attenuation system. This will store surface water flows generated from the development up to and including a 1 in 100-year return period, plus 40% climate change, and release runoff at reduced rates. This will ensure there is no increase in runoff from the site and provide betterment during critical storm events.

The surface water runoff discharge hierarchy in Part H of the Building Regulations 2015 recommends that surface water run-off shall discharge to one of the following, listed in order of priority:

a) an adequate soakaway or some other adequate infiltration system, or where that is not reasonably practicable
b) a watercourse, or, where that is not reasonably practicable,

c) a sewer

The site may have areas that are likely to infiltrate due to underlying Chalk geology. However, until soakage testing is undertaken to confirm the underlying ground conditions, it has been assumed that the surface water from the proposed development will outfall into the adjacent network of ditches and watercourse along the northern side of the wider site area.

The phase 1 site area falls to the south and therefore it is likely a detention basin located in the south western corner would be appropriate to attenuate flows on site before discharging to the adjacent ditch and watercourse network. This is shown on the masterplan in Appendix A. The wider site area falls to the north towards the existing watercourse and therefore two separate basins will be required to attenuate flows on site before discharging into the watercourse. Land drainage consent from Cambridgeshire County Council as Lead Local Flood Authority (LLFA) will be required and it is recommended discussions with the LLFA are undertaken in due course to discuss the proposed surface water strategy.

The SuDS Manual CIRIA document C753 indicates the minimum treatment indices appropriate for contributing pollution hazards for different land use classifications. Mitigation in the form of a correctly designed detention basin along with some at source treatment in the form of permeable paving will provide adequate mitigation for the low to medium pollution hazard posed by the development.

Maintenance and Management

Private drainage systems will be maintained by the land owner or property manager. The infiltration basins will first be offered to local bodies such as the Local Authority for adoption and future maintenance. Should this not be taken up, a management company will be employed.

Table 1: Proposed Maintenance Regime

Drainage Asset	Responsible Organisation	Maintenance Work	Frequency
Pipework / Manholes	Private Ownership / Management Company / Thames Water	Inspect pipe work and clear blockages	Annually or after severe storms.
		Inspect manholes and clear blockages	
		Repair any defects in network	

Headwalls	Local Authority/ Management Company	Inspect structure and remove any debris/litter on structure	Monthly or after severe storms.
Infiltration Basin	Local Authority/ Management Company	Amenity grass cutting of surrounding green spaces	As required
		Litter and debris removal	Monthly
		Inspect and clear inlets and overflows	6 Monthly

Foul Water Drainage
No existing foul water sewerage is present within the site boundaries. It is proposed that foul flows from the proposed development site will be outfall to the existing sewers in South Street and within West Road to the north. An early review of available level data shows foul pumping stations are likely to be required and additional discussions will be required with Anglian Water in due course in relation to capacity of the existing sewerage treatment works and local sewer network. It is recommended a developer enquiry is lodged with Anglian Water in due course.

Summary
To summarise the key points outlined above:

- All development will be contained in Flood Zone 1 and is therefore sequentially acceptable.
- All sources of flood risk are considered to be low to very low for this development.
- The site's ground conditions indicate that disposal of surface water via infiltration is unlikely to be viable, however, due to pockets of underlying Chalk infiltration testing is recommended at the site in due course to determine whether infiltration would be possible.
- Surface Water will outfall to existing adjacent watercourse and ditch networks, at a Qbar restricted rate of discharge.
- The foul water drainage network will collect flows and discharge to a public foul sewer located within South Street and West Road, it is likely these flows will be pumped due to existing levels and discussions with Anglian Water are recommended at the earliest opportunity via submission of a developer enquiry.

Report Prepared By:

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Tim Rose, BA(Hons) MCIHT MTPS
Director

APPENDIX A

0 50 100 m

Drain

30m

35m

View into feature plot

Liby

Hall

Comberton Village College

Leisur Centr

village green

buffer planting

Outward looking edges

main avenue

Tree/hedgerow corridor parrallel to the PROW which buffers development.

edge green

edge green

edge lane

visual links to countryside

suds

play area

"edge greens" permeate the built edge creating a greater sense of openess and softening the edge.

Outward looking edges creating attractive frontage.

DAVIDSONS HOMES

Key

- Application site boundary
- Other land under control of applicant
- Existing (retained) trees & hedgerow
- Indicative proposed planting
- Open space
- Indicative surface water attenuation basin
- Existing Public Right of Way
- Potential for equipped play/LEAP
- Key Views
- Visual links to the countryside
- Indicative development cell
- Potential locations of landmark buildings

Land Budget

Site Area 8.5ha

Net Residential Area 5.0ha

approx 150 dwellings

nineteen47

CHARTERED TOWN PLANNERS & URBAN DESIGNERS

Project

Land South of West Street, Comberton

Drawing Title

Masterplan

Project Code	Drawing Nr	Rev	Drawing Scale
n1260	005-01	-	1:2000 @ A3

Key

- Application site boundary
- Other land under control of applicant
- Existing (retained) trees & hedgerow
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- Open space
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- Key Views
- Visual links to the countryside
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- Potential locations of landmark buildings

nineteen47
CHARTERED TOWN PLANNERS & URBAN DESIGNERS

Project
Land south of West Street and west of South Street, Comberton

Drawing Title
Masterplan

Project Code	Drawing Nr	Rev	Drawing Scale
n1260	005-03	A	1: 2,500 @ A2

Civil Engineering

Transport

Road Safety

Flood Risk & Drainage

Structures

Geo-environmental

M-EC Acoustic Air

Utilities

M-EC Geomatics

Street Lighting

Expert Witness

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