

Asher, Marie

From: Gedney, David
Sent: 28 September 2015 10:30
To: _planningadvice
Subject: FW: H05-0586-15 SOVEREIGN HOMES UK LTD
Attachments: Flood Risk Assessment.pdf

Please scan – 6FRA

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From: grmerchant.arch.cons@gmail.com [<mailto:grmerchant.arch.cons@gmail.com>] **On Behalf Of** G R MERCHANT
Sent: 24 September 2015 11:35
To: Gedney, David
Subject: H05-0586-15 SOVEREIGN HOMES UK LTD

Dear David

With respect to your e.mail dated Fri July 24 with the objection letter from the Environment Agency, please find attached Flood Risk Assessment prepared by SM Hemmings.

Regards
Jenny M

PROPOSED DEVELOPMENT OF A HOUSE AT FLEET ROAD,
FLEET HARGATE, PE12 7HJ.
FLOOD RISK ASSESSMENT



View of site

S M Hemmings B Sc C Eng MICE MIWEM,
69 Charlotte Way,
Peterborough,
PE3 9ER.

This flood risk assessment has been prepared solely to support the planning application for a development at Fleet Road, Fleet Hargate. The author has made every effort to provide an accurate assessment of the flood risk but accepts no liability should the information be found to be incorrect or incomplete.

Introduction

A Planning application has been submitted to South Holland District Council to construct a four bedroomed house and a detached garage on a site on the north side of Fleet Road, Fleet Hargate, PE12 8LH.

The site is in Flood Zone 3 as shown on the Environment Agency's Flood Zone map. The flood zone maps do not take into account existing flood defences.

For the Planning Application to be valid a flood risk assessment needs to be carried out to conform with the requirements of the Technical Guidance to the National Planning Policy Framework Development and Flood Risk. The site is within a defended area as specified in the South Holland District Council's Strategic Flood Risk Assessment and is located in the South Holland Internal Drainage Board District.

Application Site

The site is located in the centre of Fleet Hargate which is 3 km east of the centre of Holbeach, 10.0km from the tidal defences of the River Nene, 12.0 km from the tidal defences of the River Welland north of Spalding, and at least 10km south of the tidal defences of the Wash.

The National Grid Reference of the site is 539510 325035, and the extent of the site is shown on the plan at the end of this document.

The proposed development is within Flood Zone 3(a) "High Probability" as detailed on the Environment Agency's flood zone maps without defences, as defined in Table 1 of the Technical Guidance.

Applying the flood risk vulnerability classification in Table 2 of the Guidance, residential development is classified as "more vulnerable". Table 3 of the Guidance states that more vulnerable development in Flood Zone 3(a) is only permitted after the sequential and exception test is followed.

Sequential Test

As the proposed development is located in Flood Zone 3(a) the NPPF requires the sequential test to be applied to determine if there are any reasonably available and suitable alternative sites in a lower flood risk zone for this type of development. This development can be classed as a windfall site within the village of Fleet Hargate. The development complies with the South Holland District Council's policy on these types of sites. The central area of Fleet Hargate is at a higher level than most areas of the village and the surrounding agricultural land. It is a similar level to the central area of Holbeach, and therefore it can be considered at the lower risk of flooding compared with most of the area around Holbeach and Fleet Hargate.

Exception Test

The Sequential Test has demonstrated that it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower

probability of flooding. Therefore the Exception Test must be applied and for this to be passed:

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

Both parts of this test must be satisfied in order for the development to be considered appropriate in terms of flood risk. There must be robust evidence in support of every part of the test.

The first section will be demonstrated by the Supporting Planning Statement and compliance with South Holland District Council's planning policies.

This flood risk assessment will demonstrate that the development will be safe for its lifetime and it will not increase flood risk elsewhere.

Strategic Flood Risk Assessment

The following information about the flood risk in the location of this development has been sourced from the maps and reports in the South Holland District Council's Strategic Flood Risk Assessment (SHDC SFRA).

Report Maps

Map 3 shows that the site is within flood zone 3.

Map 5 shows that the site is at low or medium risk, but reliant on flood defences for this standard.

Map 6 indicates the peak depth is zero for the present day 1% fluvial and 0.5% tidal event probability.

Map 7 indicates the peak velocity is zero for the present day 1% fluvial and 0.5% tidal event probability.

Map 12 indicates the actual risk is low or medium for the year 2055 1% fluvial and 0.5% tidal event probability.

Map 13 indicates the actual risk is low or medium for the year 2115 1% fluvial and 0.5% tidal event probability.

Map 16 shows that the site is not within a rapid inundation zone.

Flood Maps Table D1

The actual flood hazard for the present day and 2115 is as follows:

Depth of flooding.....	zero
Extent of flooding.....	low or medium, reliant on flood defences
Velocity	nil

The residual flood hazard for the present day and 2115 is as follows:

Depth of flooding..... zero

Extent of flooding..... low or medium, reliant on flood defences

Velocity nil

Maximum flood level and bank levels in the River Welland

The maximum levels in this tidal section of the River Welland 8 km west of the site are as follows:

	2007	2115
Peak 1 in 200 year level	5.98	7.12
Peak 1 in 1000 year level	6.27	7.41

The lowest levels of the east bank of the River Welland around chainage 18km are 7.50m OD, with average levels between 7.60m and 7.70m OD.

Environment Agency Tidal Breach Hazard Mapping

The Environment Agency has published mapping which predicts the depths, velocities and hazard following a breach in the tidal defences for a 1 in 200 and 1 in 1000 year event in 2115. The maps have been produced by modelling breaches along the whole length of the tidal defences and combining these into one map.

The map for the 1 in 200 year event shows no flooding will occur in the area north of the site. Flooding only occurs to the area north of the A17 and to a small area around Lowgate to the north west of the site. The maps show the hazard rating of the site to be zero.

The map for the 1 in 1000 year event shows flooding extending south of the A17 as far as the northern boundary of the site. However no flooding is shown on the actual site and the hazard is again shown as zero.

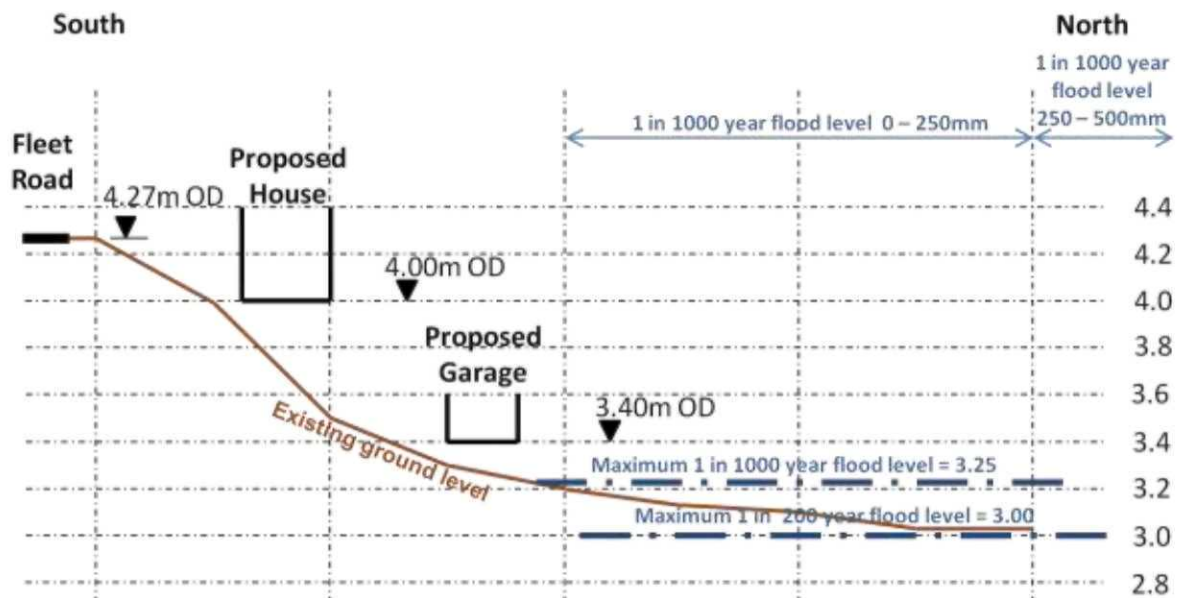
A cross section has been drawn, which is shown below, using levels taken on the site and in the field to the north. This shows that the level of the site falls rapidly from the road, where the level is 4.27m OD, to 3.20m OD at the rear of the site and nearly to 3.00m OD in the field north of the site.

The flood maps show that the 1 in 1000 year flood outline extends to the edge of the site, with the 1 in 200 year flood outline only extending to the edge of the field. Therefore the levels of this flooding can be estimated to be:

1 in 200 year flood depth in 2115 3.00m OD

1 in 1000 year flood depth in 2115 3.25m OD

Therefore the house at a 4.00m OD is 750mm above the predicted 1 in 1000 year flood level in 2115.



Existing Flood Alleviation Measures

The site is within a defended flood plain, as defined in Appendix 1 of the Environment Agency's "Policy and Practice for the Protection of Flood Plains", which is considered to be passive until such time that a flood greater than the defences can withstand occurs. The likelihood of flooding occurring due to overtopping or failures of the defences is considered to be very low.

The site is located approximately 12.0 km from the tidal section of the River Welland, 10.0km from the tidal defences of the River Nene and 10.0 km from the Wash defences at the nearest point. The tidal defence banks to all of these are maintained by the Environment Agency.

The major watercourses in the area are maintained by South Holland IDB, which has carried out improvement schemes so that IDB watercourses generally provide a standard of 1 in 100 years with a freeboard of 300mm in urban areas.

Existing Ground Levels and Proposed Levels of Buildings

The level of Fleet Road in front of the site is approximately 4.30m OD. The site slopes down from the road and the level at the rear of the site is 3.20m OD. A detailed plan has been produced of all the levels in the area and levels of the site and the location of the proposed house is shown on sheet 10.

Potential Sources of Flooding

The potential sources of flooding to the site are:-

1. Failure or overtopping of tidal defences of the Wash, River Nene or the River Welland.
2. High water levels in IDB drainage channels.
3. Localised flooding in the area.

1. Failure or overtopping of tidal defences of the River Welland, River Nene or the Wash

The tidal sea banks to the the east bank of the River Welland, which is approximately 12.0 km from the site, provides at a 1 in 200 year standard of protection in 2115.

The flood banks of the River Nene provide a 1 in 200 year standard of protection for the present day, and the Environment Agency has stated that they will increase the management of the banks as required to continue to provide this level of protection in the future.

The levels of the banks of the Wash are generally higher than the predicted 1 in 200 year tide level in 2115, but in many areas these banks do not provide the required freeboards to ensure that the banks will not be overtopped with wave action driven by high winds.

The Environment Agency has produced maps showing predicted depths of flooding due to a breach in a tidal event. The limit of this flooding in a 1 in 1000 year event in 2115 is shown at the northern boundary of site of the house and garage approximately 40 metres north of Fleet Road. From this the maximum level of flood water following a breach of a tidal bank in a 1 in 1000 year event in 2115 can be estimated to be 3.25m OD. As the house will be constructed with a ground floor level of 4.00m OD the risk of flooding to the property can be assessed as extremely low.

2. High Water Levels in IDB drains

Although the whole of this area is below high tide level and levels in the rivers, the retained water levels in the drainage channels ensure that the risk of flooding is extremely low. South Holland IDB maintains a system of sluices, pumping stations, and drainage channels which convey surface water into the River Nene, the Wash and the River Welland and control water levels throughout the South Holland IDB area.

The development site is located on the north side of Fleet Road which is in the Lutton Leam catchment. Drainage of this area flows northwards to the Priestfields Drain north of the A17 road. The water then flows eastwards through the Gedney Drain and into Lutton Leam, and the water then discharges through a sluice into the tidal River Nene north of Sutton Bridge.

The channels maintained by South Holland IDB in urban areas are classified as high priority watercourses and as such receive a higher maintenance priority.

There are possibilities of failure of outfall sluices, but these are mitigated by the high level of maintenance given to these structures by the IDB. If a failure did occur the IDB would immediately be warned of the problem by their telemetry system and take

action to repair the fault or to bring in temporary pumps to reduce the risk of any flooding in the area. Similarly any failures of culverts or other blockages would be dealt with immediately.

IDB systems are designed to provide a freeboard of between 600mm and 1000mm to all land in a 1 in 10 year return period rainfall event. South Holland IDB watercourses generally state that their watercourses provide a standard of 1 in 100 years with a freeboard of 300mm in urban areas. In an extreme event water levels will rise but this will be a slow process and it would be at least 24 hours before levels were high enough to begin to flood low land in the area, and after this the level of the flood water would need to rise another 1.0 metre before the proposed house would be affected.

Therefore the risk of flooding from IDB drainage channels can be considered to be extremely low.

3. Localised Flooding in the area

There is a possibility that surface water from Fleet Road could flow onto the site. However any large accumulations of surface water would flow through the site onto the field to the north. The level of the house is above the immediate surrounding ground and therefore would be unaffected by this. All soakaways should be placed north of the house to prevent any waterlogging problems between the house and the road.

Extent of known Flooding

During the preparation of this assessment, no evidence was discovered of the existing house or garden or any of the adjoining properties having been flooded in the past.

Probabilities and Trends of Flooding

The probability of this development flooding from Environment Agency main river is very low. In an extreme event any effect on this location would not be sudden and there would be time for residents to take precautionary measures to limit the impact of any flooding that may occur.

Residual Risk – Extreme Events

The residual risk from extreme events is very low on this site. The major risk to the site is from a breach or overtopping of the tidal defences

The risk of this happening in this case is low and the hazard from any flooding is also low.

Conclusions

The section on page 5 of this report shows that the the proposed ground level of the house is 750mm above the maximum predicted 1 in 1000 year flood level in 2115. This flood level is taken from the most recent EA mapping.

The EA have indicated that they will maintain the tidal banks to ensure a 1 in 200 year standard of defence is continued in the future.

The risk of flooding to the building from IDB drains can be considered low, especially as the proposed floor level is 1.0 metres higher than the level of the field north of the site. In this area discharge of water into the Tidal Welland is controlled by sluices which operate automatically. It is also possible to operate these by hand in an emergency.

The IDB have adequate arrangements to bring in contractors and use their own staff if a failure of any part of the sluices occurred. If drains become full any flooding that occurs would happen very slowly and affect land at levels of around 3.0m OD before the development site. It would be very unlikely to reach a level of 4.00m OD and enter the proposed building.

The proposed development is not in a functional flood plain as defined by PPS 25.

Although the site is in flood zone 3, and the actual risk of the site flooding from any Environment Agency or IDB watercourse is extremely low.

If any flooding were occur it would happen very slowly and residents would have adequate time to prepare themselves for the event.

Recommendations

In any area at risk of flooding it is preferable that new dwellings should be of two story construction with all bedrooms at first floor level. This is to provide a refuge for residents if the building becomes flooded after a major breach of the tidal bank, and ensure there is no danger to residents when they are asleep

The ground floor level of the proposed building should be at a level of 4.00m OD and all bedrooms should be at first floor level.

Occupiers of the property should register with the Environment Agency's Floodline Warnings Direct Service.

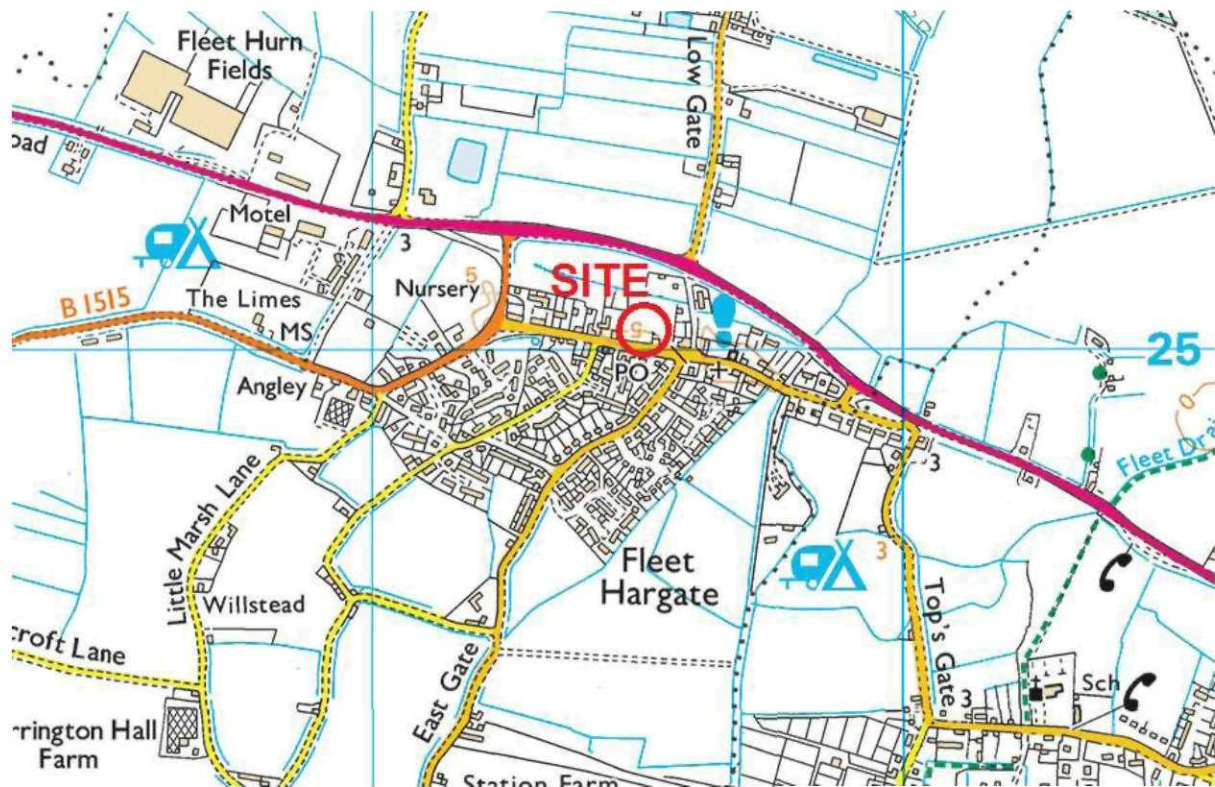
On site surface water drainage should be discharged into soakaways and these should be designed to BRE Digest 365 and approved under Building regulations.

S M HEMMINGS B Sc C Eng MICE MIWEM

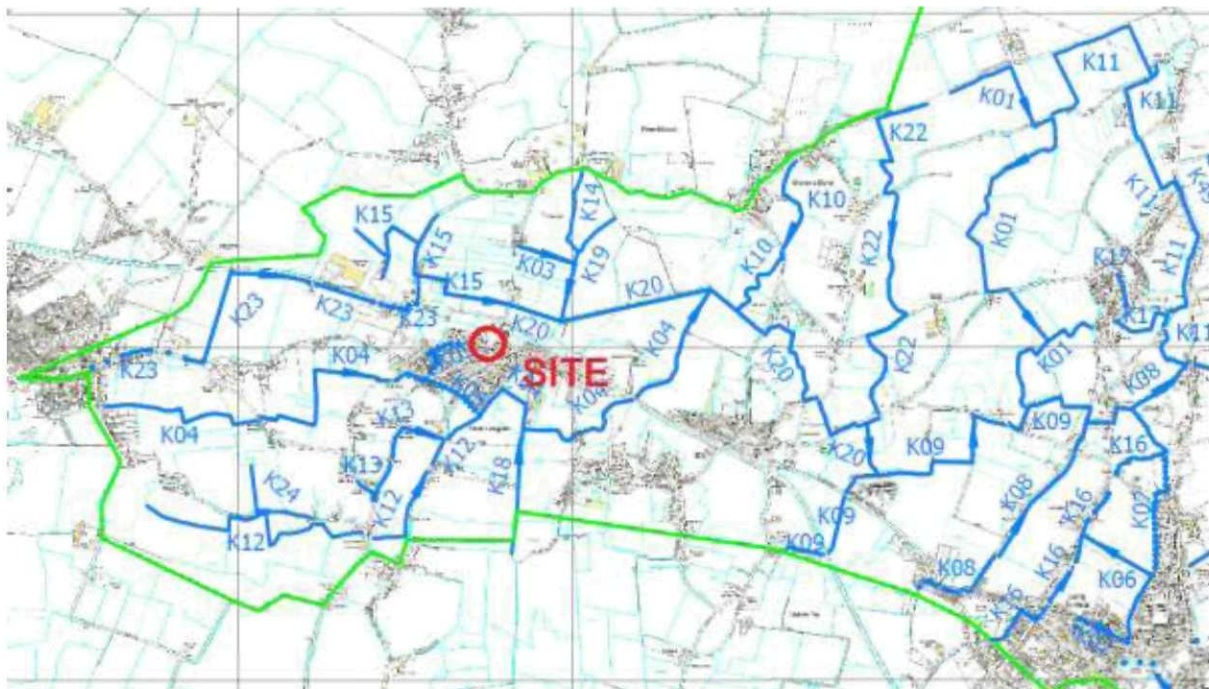
stuart.hemmings@btinternet.com

22nd September 2015

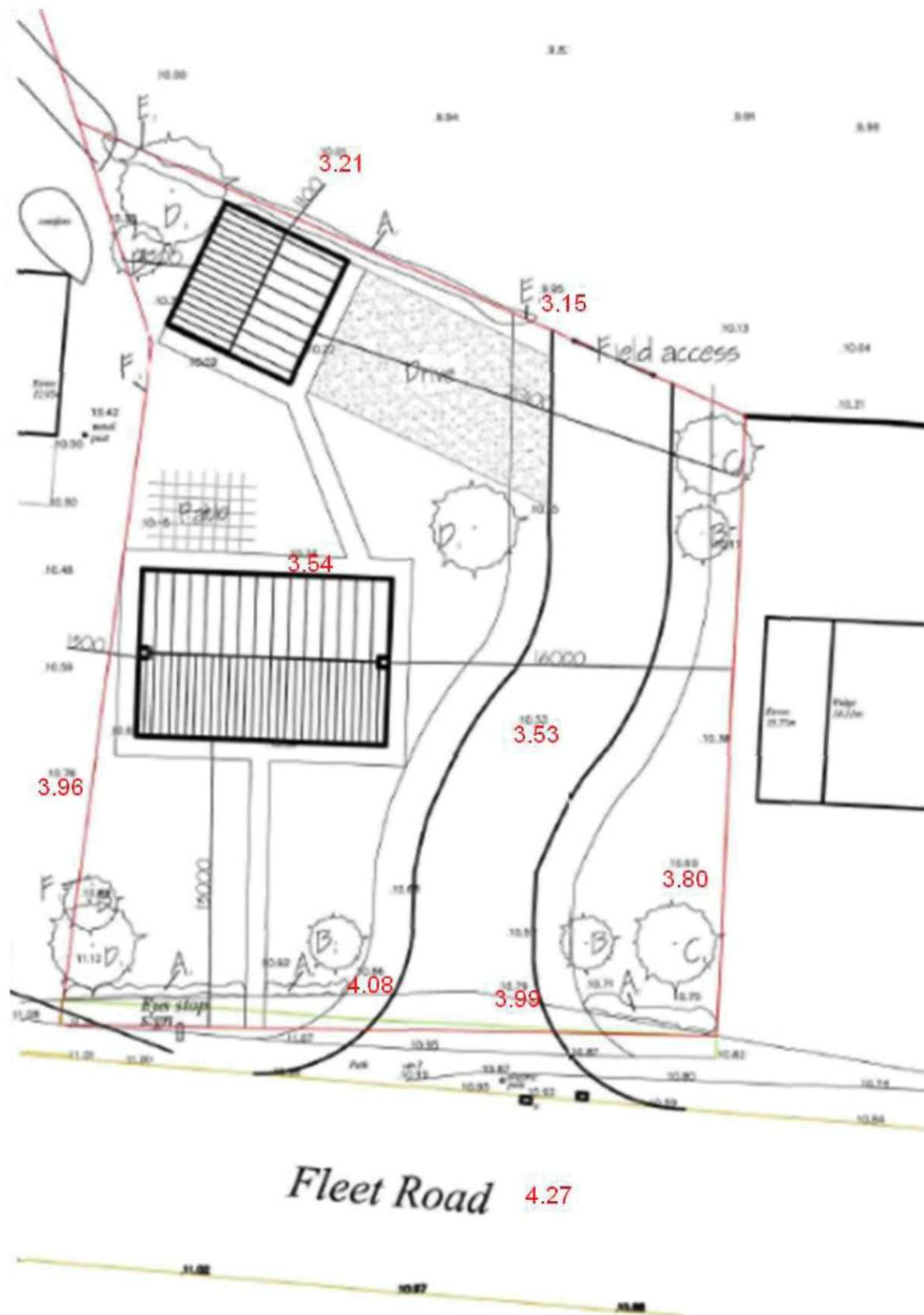
LOCATION PLAN



PLAN OF AREA SHOWING IDB WATERCOURSES



PLAN OF SITE SHOWING LEVELS AND PROPOSED HOUSE AND GARAGE



Levels shown black are to an arbitrary datum
Levels shown in red are to ordnance datum