



ENGINEERING

**Flood Risk Assessment
for the Erection of 3 Residential Dwellings
on Land Consented for Residential Development
Under Extant Planning Permission 05/00627/RMA
at 32 Black Horse Drove, Littleport**

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1816- FRA Dec 2016

Flood Risk Assessment
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at 32 Black Horse Drove, Littleport

1 Introduction

- 1.1 MTC Engineering (Cambridge) Ltd. has been asked to provide a Flood Risk Assessment in respect of the proposed erection of a three residential dwelling on land at 32 Black Horse Drove, Littleport, on behalf of A. C Gillett & Sons Limited.
- 1.2 This Flood Risk Assessment is based on the following information:-
 - 1.2.1 Environment Agency Modelled and Historical Flood Data.
 - 1.2.2 Site Layout by Andrew Fleet MCIAT.
 - 1.2.3 East Cambridgeshire District Council Strategic Flood Risk Assessment.
 - 1.2.4 Ordnance Survey Mapping.
 - 1.2.5 British Geological Survey information.

- 1.3 All the comments and opinions contained in this report including any conclusions are based on the information available to MTC Engineering (Cambridge) Ltd. during our investigations. The conclusions drawn could therefore differ if the information is found to be inaccurate, incomplete or misleading. MTC Engineering (Cambridge) Ltd. accept no liability should this prove to be the case, nor if additional information exists or becomes available with respect to this Site.
- 1.4 MTC Engineering (Cambridge) Ltd. makes no representation whatsoever concerning the legal significance of its findings or any other matters referred to in the following report. Except as otherwise requested by the client, MTC Engineering (Cambridge) Ltd. are not obliged and disclaim any obligation to update the report for events taking place after the Assessment was undertaken.
- 1.5 This report is a Flood Risk Assessment of flooding issues associated with the proposed development. The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. This report provides no guarantee against flooding of the study Site or elsewhere, nor as to the absolute accuracy of water levels, flow rates and associated probabilities quoted.

2 Site Description

- 2.1 The site is located on the northeastern side of Black Horse Drove, approximately 425m northwest of the junction with Ten Mile Bank to the north of the main body of Littleport.
- 2.2 To the northwest and southeast the site is bound by linear residential development fronting onto Black Horse Drove.
- 2.3 To the northeast the site is bound by open agricultural land.
- 2.4 To the southwest the site is bound by Black Horse Drove, past which lies a drain running alongside the road and then open agricultural land.
- 2.5 Aside from the residential development along Black Horse Drove, all land in the vicinity of the site is agricultural land that is relatively flat and with levels of about 0 metres above Ordnance Datum (AOD).
- 2.6 The site itself is currently an undeveloped, overgrown area of land with some rubble/spoil heaps present.
- 2.7 The site has an extant consent for development with four 2 bedroom and one 4 bedroom cottage along with associated garaging, parking, access, roads and associated site works (05/00627/RMA) with a copy of the consented layout provided in Appendix 2.
- 2.8 The site lies within the Littleport and Downham Internal Drainage Board (IDB) area, with the IDB responsible for maintaining the main drains through the area to which the network of smaller drains in the vicinity of the site and surrounding agricultural land drain.
- 2.9 Other than the network of small drains in the area, there are two significant surface water features in the vicinity of the site with the first of these being the River Great Ouse and second being the Ouse Washes.

- 2.10 The River Great Ouse runs in a northwesterly direction approximately 425m southeast of the site at its closest point to the site. There are existing Environment Agency Flood Defences present along the western bank of the River Great Ouse (Ten Mile Bank) which are designed to defend the lower lying areas of land in the vicinity of Littleport against a 1 in 100 year fluvial event.
- 2.11 The Ouse Washes (the area between the New Bedford River and Old Bedford River/Hundred Foot Drain) are located about 6.1 km northwest of the site at their closest point and run in a northeasterly direction.
- 2.12 There are no further significant surface water features in the vicinity of the site.
- 2.13 British Geological Survey Mapping indicates that the site is underlain by the Kimmeridge Clay formation, with an overlying superficial geology of Peat present in the vicinity of the site.

3 Sources of Potential Flood Risk

- 3.1 In accordance with The National Planning Policy Framework all forms of flood risk need to be considered in relation to any development.
- 3.2 The first form of flood risk to be considered in respect of The National Planning Policy Framework is fluvial flooding, whilst the second form of flood risk is tidal flooding. As the River Great Ouse and Ouse Washes are fluvial and tidal systems it is considered appropriate to consider both types of flooding together in this instance.
- 3.3 The Environment Agency Flood Risk Map (Appendix 3) indicates that the site lies in Defended Flood Zone 3, with the Strategic Flood Risk Assessment indicating a similar risk of flooding but without indicating the impact of defences.
- 3.4 The main source of fluvial flood risk to the site is flooding from the River Great Ouse which is approximately 425m southeast of the site and is a statutory Main River of the Environment Agency.
- 3.5 The River Great Ouse is embanked at this point, with the Ten Mile Bank on the western side providing a level of protection exceeding a 1 in 100 year event, as confirmed by Figure 7 of the East Cambridge District Council Strategic Flood Risk Assessment.
- 3.6 Modelled Flood Data has been obtained from the Environment Agency, with a copy provided in Appendix 4. In channel water levels at node EA052356FEN0129 to the east of the site indicate an in channel water level of 2.24m AOD in a 1 in 100 year event and 2.77m AOD in a 1 in 1000 year event.
- 3.7 The only climate change level supplied is a 20% climate change level of 2.35m AOD, at a flow of 107.17cumecs, 7.75cumecs above the 1 in 100 year flow of 99.42 cumecs. This indicates an increase in flow of approximately 0.3975 cumecs per percent climate change, thus flows in a 1 in 100 year plus 35% and 65% climate change allowances are estimated at 112.98 cumecs and 124.61 cumecs respectively.

- 3.8 As the 1 in 1000 year flow is 116.81 cumecs and the 1 in 100 year plus 35% climate change flow is below this at 112.98 cumecs the modelled 1 in 1000 year water level of 2.77m AOD is considered to represent a reasonable yet slightly conservative estimate of the water level during this event.
- 3.9 The 1 in 100 year plus 65% climate change water level will be higher than the 1 in 1000 year level, however given that the 1 in 1000 year level is 2.77 metres whereas the defence crest levels in the vicinity of the site are in excess of 4 metres above Ordnance Datum it is not considered that even with a 65% allowance for climate change water the 1 in 100 year water levels would increase by more than a metre and be at risk of overtopping the Ten Mile Bank.
- 3.10 The only significant risk of flooding from the River Great Ouse is therefore considered to be in the unlikely event that the Ten Mile Bank is breached in the vicinity of the site during a an extreme fluvial or tidal flood event on the River Great Ouse.
- 3.11 It is also considered that the Ouse Washes to the northwest, which provide tidal storage for the River Great Ouse by creating a storage reservoir, pose a flood risk to the site in the event of a breach occurring during an extreme fluvial or tidal event. However as the Ouse Washes are a controlled system it is not considered that they would pose a significant risk of flooding in a 1 in 100 year event unless a breach occurs.
- 3.12 The Environment Agency have modelled breach events at various locations in the River Great Ouse and Ouse Washes system, with a copy of the data provided in Appendix 5.
- 3.13 Given the large area of low lying fenland which would begin to pond with water in the event of a breach it is considered that there would be relatively little difference in water levels between the various extreme return period events, thus whilst the modelling supplied is for a 1 in 100 year event it is unlikely that water depths and velocities or the resultant hazard rating would vary significantly.
- 3.14 Breach mapping indicates that at the site the western part of the site would be subject

to a depth of flooding of up to 250mm, with the central area subject to flooding of a depth of between 250mm and 500mm, and the eastern corner possibly subject to slightly deeper flooding of between 500mm and 1m. The maximum velocity across the whole site would be low, at between 0 and 0.3 metres per second.

- 3.15 Considering the depth and velocity of flooding at the site in the unlikely event of a breach, flood water would pose only a very low hazard (0 to 0.75) in the northern part of the site thus unlikely to pose a significant danger to anyone, with danger to some (children, the elderly, and the infirm) across the remainder of the site (0.75 to 1.25).
- 3.16 As such the overall the risk of flooding to the site from either the River Great Ouse or Ouse Washes during an extreme fluvial or tidal event is considered to be low with the only significant risk being in the event that defences are breached. Even in the unlikely event that a breach of defences were to occur then flood water at the site would be unlikely to pose a danger to most residents, whilst it should also be noted that the dwellings themselves will be designed to ensure that safe refuge is provided for all occupants in the event of a breach as detailed in Section 4.
- 3.17 The only other fluvial or tidal flood risk to the site is a minor fluvial flood risk associated with the network of drains in the area and the Littleport and Downham IDB system.
- 3.18 The Littleport and Downham IDB maintain their system in order to prevent flooding of low lying land in their area, and it is considered that the standard of defence offered exceeds a 1 in 100 year event.
- 3.19 Even in the event that a blockage of the IDB system occurred or failure of pumps then there are significant areas of surrounding fenland that are at lower levels than the site and which would need to fill with water before the site became effected and it is not considered that the surrounding drains would supply a sufficient volume of flood water for this to occur.

- 3.20 It is considered that the site is not at a significant risk of flooding from the IDB systems under any circumstances.
- 3.21 The third form of flood risk to be considered in respect of The National Planning Policy Framework is flooding from land.
- 3.22 Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can quickly run off land and result in local flooding. In developed areas, this flood water can be polluted with domestic sewage with foul sewer surcharge and overflow. Local topography and built form can have a strong influence on the direction and depth of flow. The design of development down to a micro level can influence or exacerbate this. Overland flow paths need to be taken into account in development to minimise the risk of flooding from overland flow.
- 3.23 Surrounding land is relatively flat permeable agricultural land, whilst Black Horse Drove and the site are higher than agricultural land to the north and south thus it is not considered that flows would come onto the site from the north or south.
- 3.24 This is confirmed by Environment Agency mapping which does not indicate any significant risk of flooding to the site and the risk of flooding due to overland flow is considered to be low.
- 3.25 The fourth form of flood risk to be considered in accordance with The National Planning Policy Framework is flooding from rising groundwater.
- 3.26 Groundwater flooding occurs when water levels in the ground rise above surface elevations. It is most likely to occur in low lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands and river gravels in valley bottoms underlain by less permeable rocks. Water levels below the ground rise during wet winter months, and fall again in the summer as water flows out into rivers. In very wet winters, rising water levels may

lead to the flooding of normally dry land.

- 3.27 British Geological Survey Mapping indicates that the site is underlain by the Kimmeridge Clay formation, with an overlying superficial geology of Peat present in the vicinity of the site.
- 3.28 The underlying geology would not have any significant groundwater present thus the site is not considered to be at a significant risk of flooding
- 3.29 The fifth form of flood risk to be considered in accordance with the National Planning Policy Framework is the risk of flooding from blocked, overloaded, or burst sewers and water mains.
- 3.30 Should any sewer or water main become blocked, overloaded or burst on Black Horse Drove, any water that did come onto the site would simply flow off the site in a northerly direction onto the adjacent agricultural land.
- 3.31 The last form of flood risk to be considered in accordance with the National Planning Policy Framework is flooding from reservoirs, canals or other artificial sources.
- 3.32 The only source of flood risk that could be considered an artificial source of flood risk is the Ouse Washes as these are an artificial tidal/fluvial flood storage reservoir for the River Great Ouse.
- 3.33 However the risk of the site from the Ouse Washes in a breach has already been detailed in relation to fluvial and tidal flooding, and it is not considered that there are any further sources of artificial flood risk to the site.

4 The Proposal

4.1 The proposal involves erection of three residential dwellings at the site as shown on the proposed site layout provided in Appendix 6.

4.2 The site survey levels are not to Ordnance Datum, however with the Environment Agency breach mapping indicating that water depths on the site frontage are between 0 and 0.25m in the northwestern part and 0.25m and 0.5 metres in the southeastern part of the site frontage, which indicates a water level of approximately 10.6 metres survey datum. The minimum floor level of the ground floor of the dwellings will therefore be set at 10.6 metres survey datum.

4.3 Whilst 300mm freeboard would usually be provided in this instance it is considered appropriate to provide less freeboard for several reasons, being;

- Firstly, as shown on the site layout no ground floor bedroom accommodation is proposed thus there is no risk to sleeping occupants.
- Secondly, refuge will be provided at first floor level for all occupants.
- Thirdly this is equivalent to a 150mm betterment compared with the extant consented dwellings.
- Fourthly, it would be impracticable to achieve a higher floor level given existing site levels.
- Finally, it is considered the only significant risk of flooding to the site would occur in the event that Environment Agency maintained defences are breached during an extreme fluvial/tidal flood event which is considered unlikely.

4.4 To provide further protection in the unlikely event that a flood exceeding the 1 in 1000 year level occurs the proposed dwellings will also be made flood resilient in accordance with guidance from the Department of Communities and Local Government. The measures used will include:

- All electrical sockets and incoming service meters will be located at least 600mm above the ground floor level.

- The walls will be constructed using materials which keep their shape in the event of a flood to 600mm above the finished floor level and either a waterproof render/plaster or a sacrificial section of plasterboard used for at least 600mm above floor level to minimise the impact of any flooding that does occur.
- 4.5 The above measures will ensure that the dwellings are flood resilient to a height of 11.2 metres above survey datum, and are considered to provide adequate protection to the dwellings in the unlikely event that defences are breached on the River Great Ouse or Ouse Washes in an extreme fluvial or tidal flood event.
- 4.6 The site is defended against flooding and therefore safe access will be maintained along Black Horse Drove in a 1 in 100 year event unless defences are breached in which case the dwellings will provide occupants with safe refuge.
- 4.7 As the site is defended against flooding no compensatory flood storage is required at the site.
- 4.8 Surface water drainage from the site will be to the Littleport and Downham Internal Drainage Board (IDB) system, most likely via the drain on the opposite side of Black Horse Drove to the site.
- 4.9 Either discharge will be restricted to existing greenfield rates by means of attenuation provided beneath access and parking areas which are to be permeably surfaced or a fee paid to the Internal Drainage Board for any increase in discharge rates from the site. Full surface water drainage design will only be completed at the detailed design phase once conditional approval has been granted.

5 Assessment

5.1 The proposal involves the development of three residential dwelling on land at 32 Black Horse Drove, Littleport, as shown on the site layout provided in Appendix 6.

5.2 In accordance with the National Planning Policy Framework residential development is considered to be a “more vulnerable” type of development. This is appropriate in defended Flood Zone 3 in accordance with the Planning Practice Guidance, however the Sequential Test and Exception Test may be required.

5.3 Sequential Test

5.3.1 The Local Planning Authority are responsible for applying the Sequential Test, with the aim being to where possible locate development in areas at the lowest probability of flooding as stated in Paragraph 101 of the National Planning Policy Framework.

5.3.2 The site lies in a block of existing linear residential development, and as such is considered to constitute infill development, and current planning policies support the intensification of use of existing residential sites and infill development.

5.3.3 The site already has valid planning consent for residential development of five dwellings (reference 05/00627/RMA), thus demonstrating that the site has already been allocated in development plans and requires no further Sequential Testing to be carried out.

5.3.4 It is considered that the Sequential Test is passed on the above grounds.

5.4 Exception Test

5.4.1 The aim of the Exception Test is to demonstrate that potential development gives rise to wider sustainability benefits to the local community that outweigh the risk of flooding, and that the proposed development will be safe and not increase the risk of flooding elsewhere as set out in Paragraph 102 of the National Planning Policy

Framework.

- 5.4.2 The proposed development offers the opportunity to provide additional housing in the area by means of infill development which is considered to offer a sustainability benefit to the local community that outweighs the flood risk at the defended site.
- 5.4.3 The existing extant planning consent for residential development of the site demonstrates this benefit and that the proposal therefore passes the first part of the Exception Test.
- 5.4.4 This Flood Risk Assessment takes into account the vulnerability of users, demonstrates that the development will be safe for its lifetime, and that the proposal will not increase the off-site risk of flooding. The proposed development therefore passes the second part of the Exception Test.
- 5.4.5 Both parts of the Exception Test are therefore passed by the proposed development thus the Exception Test is passed.
- 5.5 To ensure the dwellings is adequately protected against flooding in the unlikely event that defences on the River Great Ouse or Ouse Washes are breached during an extreme flood event, the minimum floor level will be set at 10.6 metres above survey datum. This is 150mm above the floor level of the consented dwellings.
- 5.6 The dwellings will also be made flood resilient in accordance with guidance from the Department of Communities and Local Government for 600mm above finished floor level to reduce reconstruction costs should water levels at the site exceed those predicted during an extreme fluvial/tidal event on the River Great Ouse or Ouse Washes in which defences are breached. The measures to be used will include using materials that keep their shape in the event of a flood, use of either a waterproof render/plaster or a sacrificial section of plasterboard, and locating all electrical sockets and incoming service meters at least 600mm above the ground floor level.

- 5.7 All sleeping accommodation will be at first floor level thus there will be no risk to sleeping occupants, and first floor refuse will be available to all occupants.
- 5.8 Safe access will be maintained during a 1 in 100 year event via Black Horse Drove unless defences are breached in which case safe refuge will be provided at the dwellings.
- 5.9 Surface water drainage from the proposed development will be to the IDB systems with discharge rates either attenuated to greenfield run off rates by the provision of attenuation beneath permeable driveway and access areas or the necessary fee paid to the IDB to accommodate any increase in discharge rates from the site. Surface water drainage design will be completed at the detailed design phase once conditional planning approval has been granted.

6 Conclusion

- 6.1 The proposal involves the development of three new dwelling on land off Black Horse Drove, Littleport.
- 6.2 The site is shown as lying in defended Flood Zone 3 according to Environment Agency mapping.
- 6.3 If required, both the Sequential Test and Exception Test are passed as detailed in Sections 5.3 and 5.4 respectively.
- 6.4 The minimum floor level of the proposed dwellings will be set at 10.6m above Survey Datum which is 150mm above the floor level of the five dwellings consented at the site under extant planning permission 05/00627/RMA.
- 6.5 To ensure the dwellings are flood resilient to at least 600mm above ground floor level the walls will be constructed using materials which keep their shape in the event of a flood to 600mm above the finished floor level with either a waterproof render/plaster or a sacrificial section of plasterboard used, and all electrical sockets and incoming service meters located at least 600mm above ground floor level.
- 6.6 No ground floor sleeping accommodation is to be provided in any dwelling.
- 6.7 Safe access to and from the development will be maintained in all cases other than defences being breached, in which case safe refuge will be provided at each dwelling.
- 6.8 Surface water drainage will be to the IDB systems with discharge rates either restricted to pre development greenfield rates or a fee paid to the IDB to accommodate any increase in discharge rates.
- 6.9 There are no flood risk or drainage related grounds under The National Planning Policy Framework on which to object to the proposed erection of three new residential dwellings on land at 32 Black Horse Drove, Littleport.

APPENDIX 1

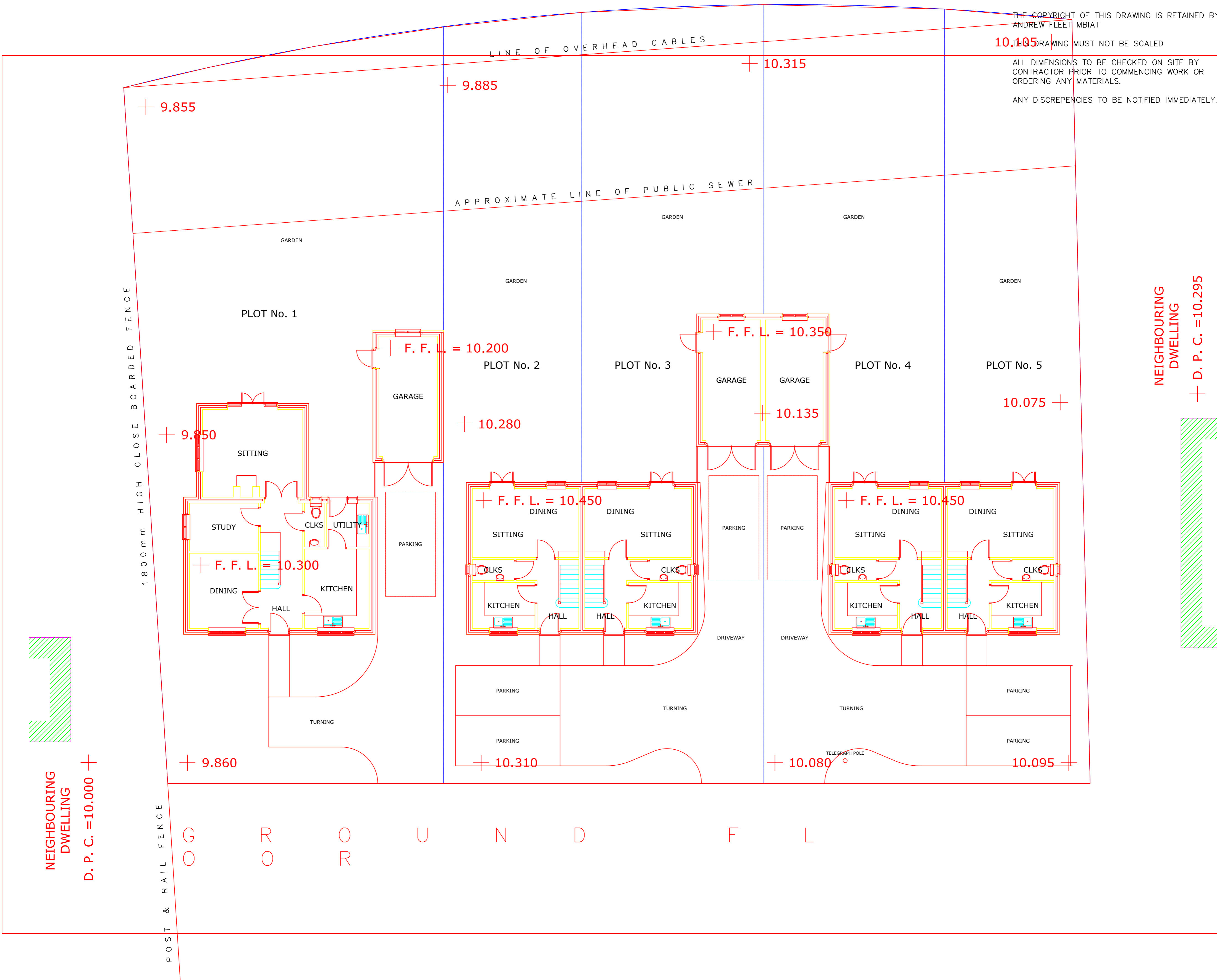
SITE LOCATION PLAN

APPENDIX 2

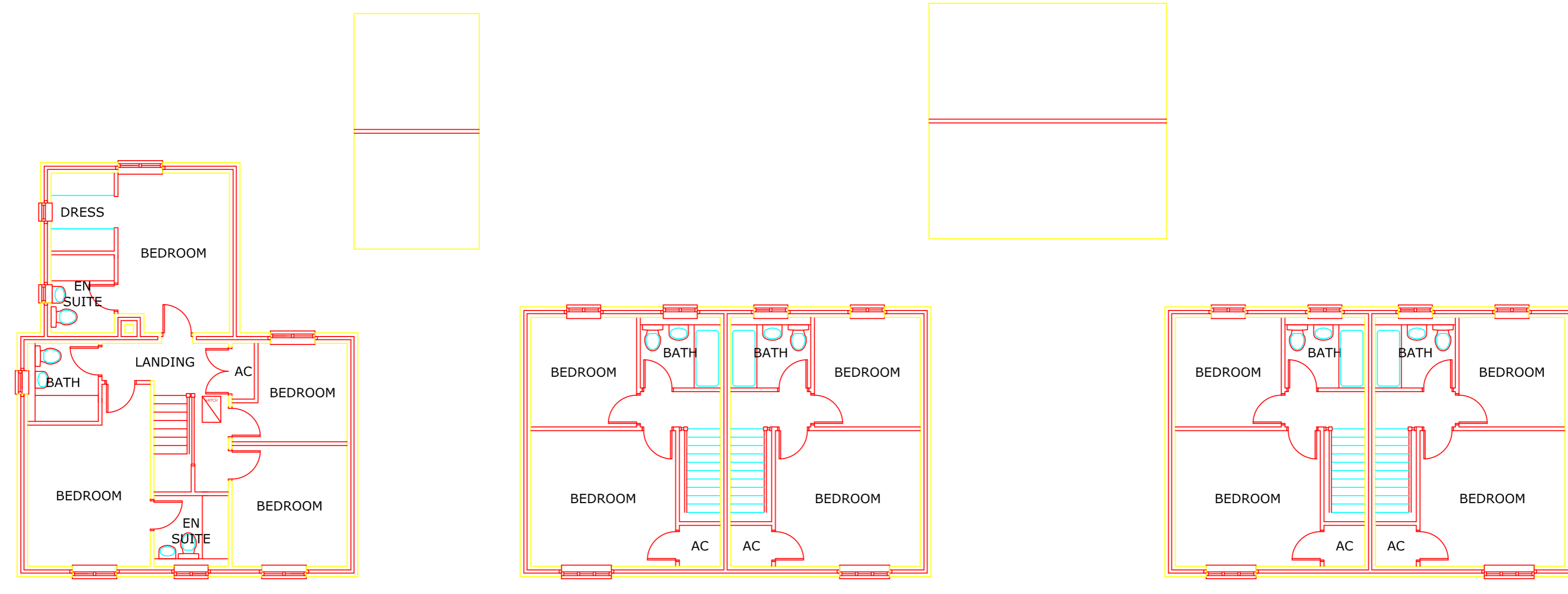
CONSENTED SITE LAYOUT (REFERENCE 05/00627/RMA)

NOTES:

THE COPYRIGHT OF THIS DRAWING IS RETAINED BY ANDREW FLEET MBIAT
 10.105 DRAWING MUST NOT BE SCALED
 ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO COMMENCING WORK OR ORDERING ANY MATERIALS.
 ANY DISCREPANCIES TO BE NOTIFIED IMMEDIATELY.



G O R O R U N D F L



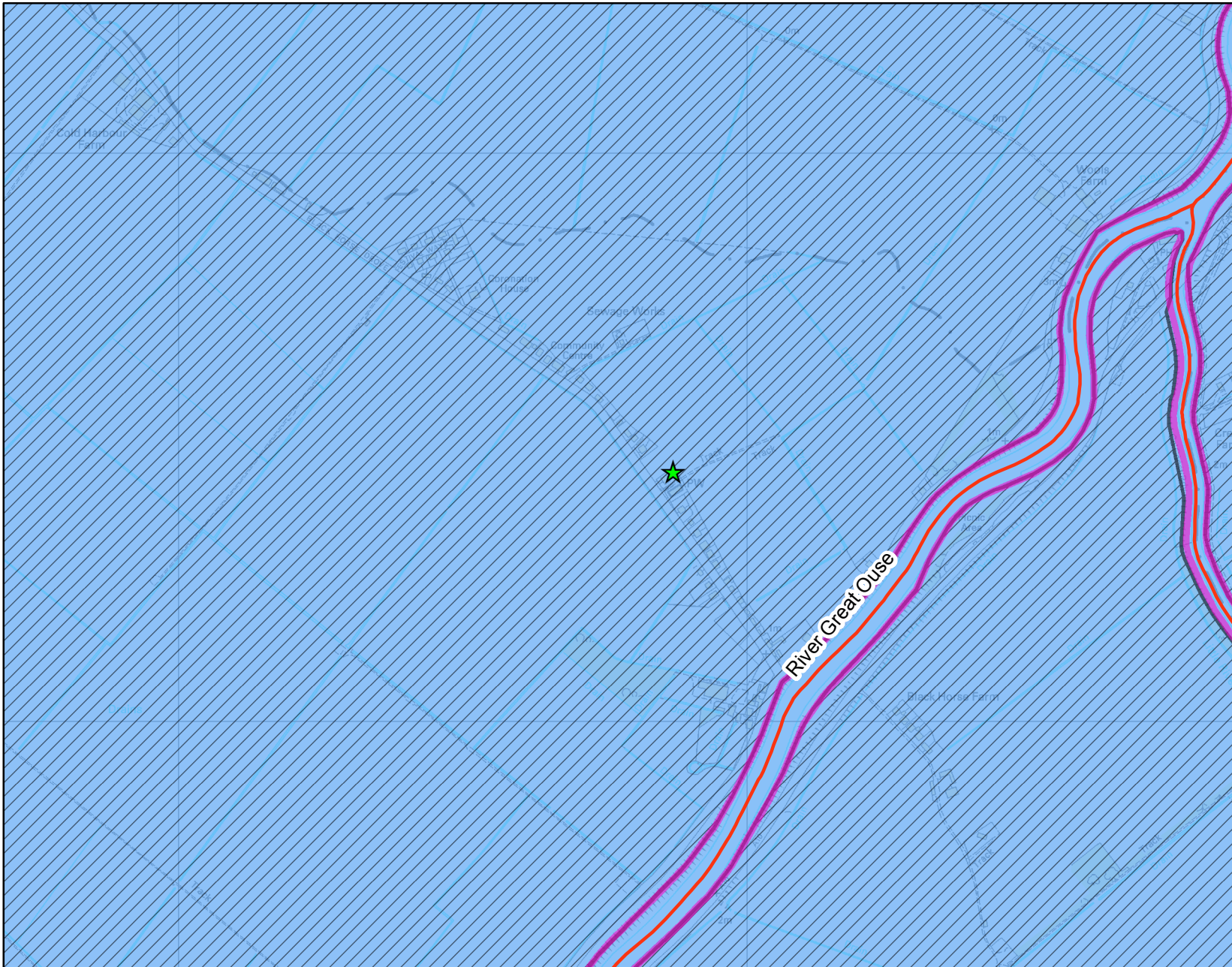
F I R O S O T R
 F L O O R

PROPOSED DEVELOPMENT AT 32 BLACK HORSE DRIVE LITTLEPORT ELY CAMBRIDGESHIRE FOR A. C. GILLETT & SON	FLOOR PLANS	
	SCALE: 1: 100	05:054 -1
Architectural Technician ANDREW FLEET MBIAT British Institute of Architectural Technologists 6 Regent Place, Soham, Ely, Cambs, CB7 5RL Tel: (01353) 720651 Fax: (01353) 720651		

APPENDIX 3

ENVIRONMENT AGENCY FLOOD RISK MAP

Flood Map for Planning (Rivers and Sea) centred on 32 Black Horse Drive, Littleport NGR TL 59597 91689. Ref 23731. Created on 23 September 2016.



Scale 1:10,000



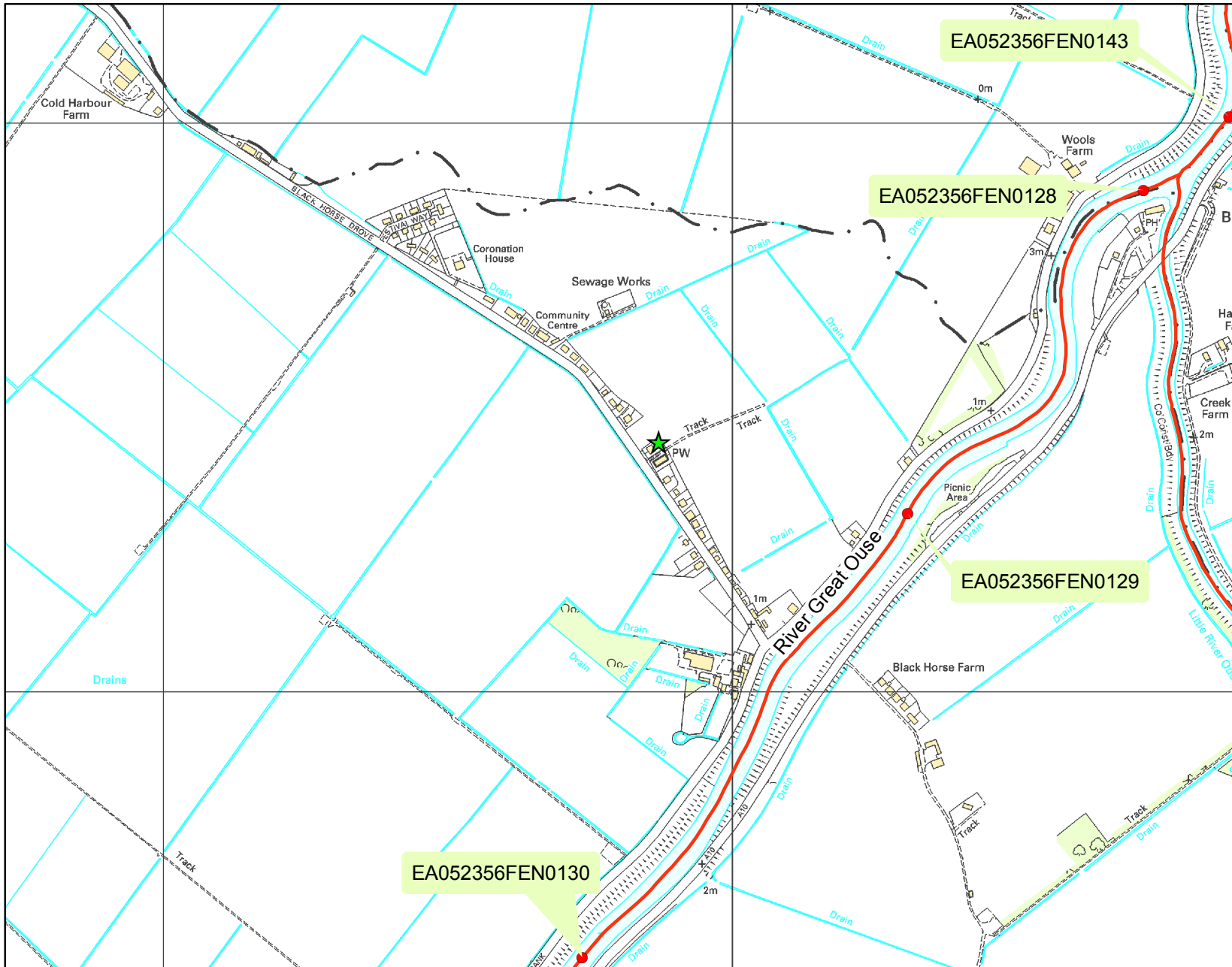
Legend

- Main River
- Flood Zone 2
- Flood Zone 3
- Areas Benefiting From Defences
- Flood Map Defences
- ★ Site

APPENDIX 4

ENVIRONMENT AGENCY MODELLED FLOOD DATA

**Modelled Node Points centred on 32 Black Horse Drive, Littleport NGR TL 59597 91689.
Ref 23731. Created on 30 September 2016.**



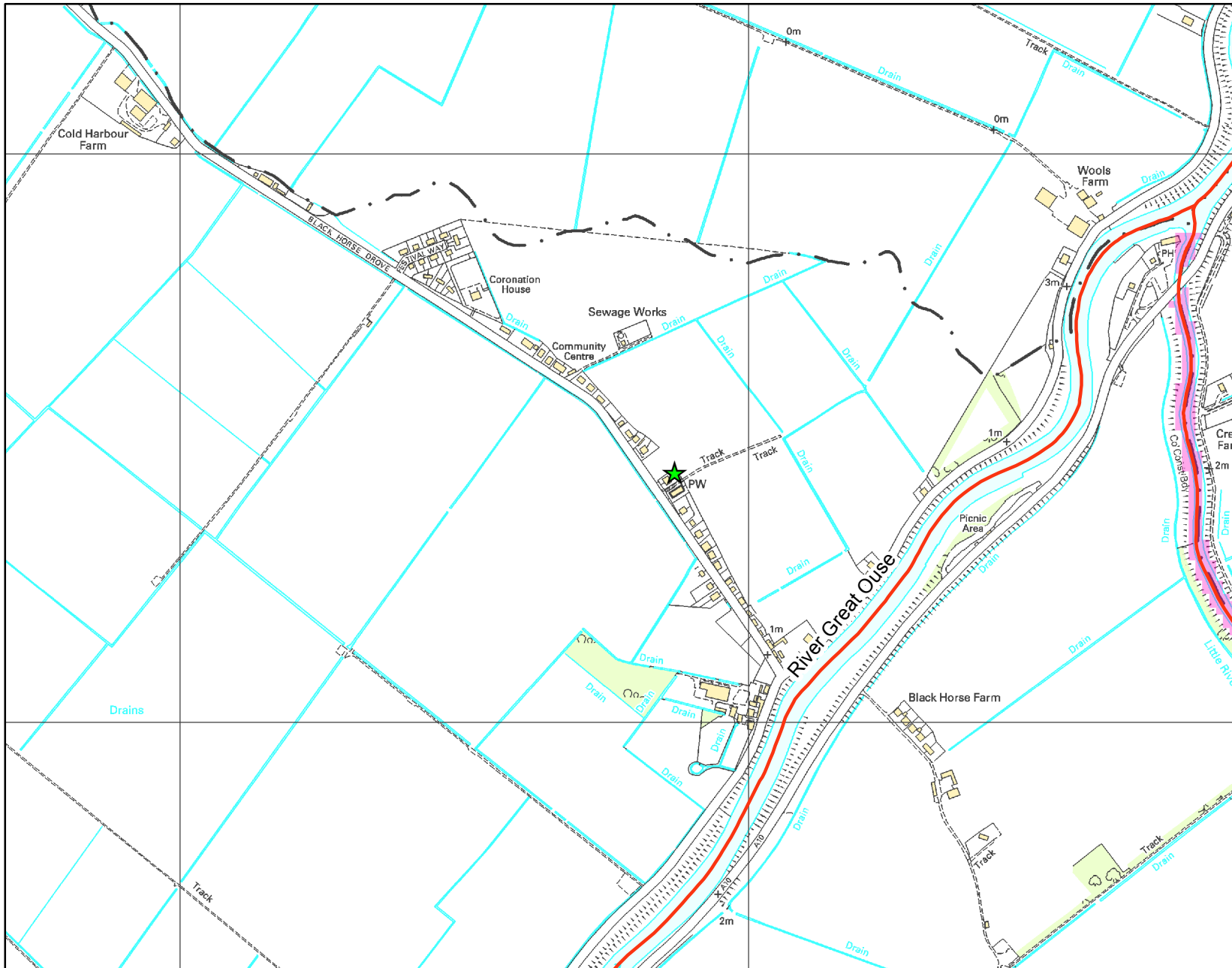
Scale 1:10,000



Legend

- Modelled Node Points
- Main River
- ★ Site

Defended Model Flood Outlines centred on 32 Black Horse Drove, Littleport NGR TL 59597 91689. Ref 23731. Created on 23 September 2016.



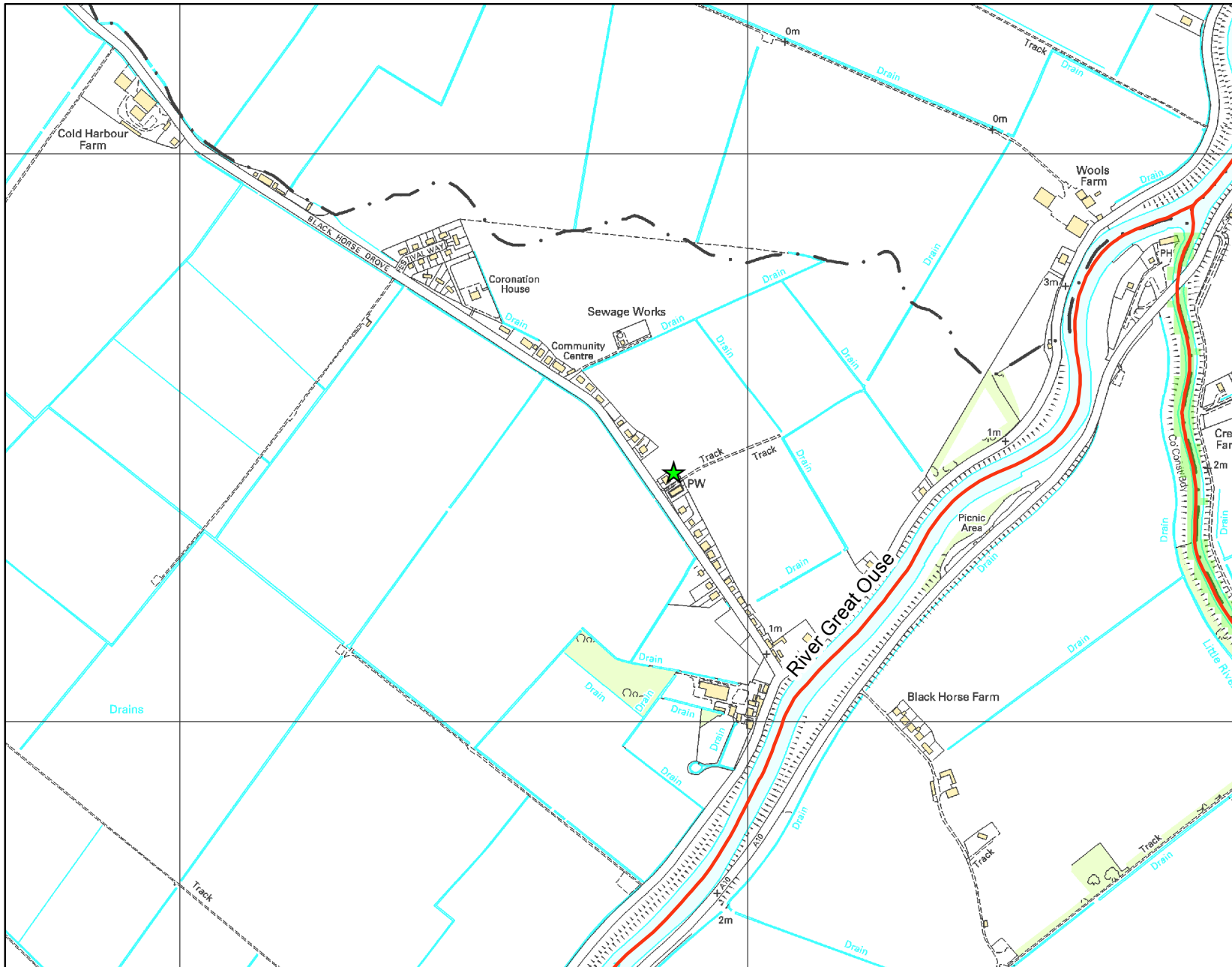
Scale 1:10,000



Legend

- Main River
- 0.1% AEP defended flood outline
- ★ Site

**Defended Climate Change Model Flood Outlines centred on 32 Black Horse Drove, Littleport
 NGR TL 59597 91689. Ref 23731. Created on 23 September 2016.**



Scale 1:10,000



Legend

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

Product Four – Datasheet

Our Reference	Enquirer	Site	Grid Reference
23731	Emily Fell	32 Black Horse Drove, Littleport	TL5959791689

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
EA052356	Fenland Flood Risk Mapping defended scenario	01/06/2016

Level Information

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

Node	Model	Easting	Northing	5% AEP	4% AEP	1.33% AEP	1% AEP	1%cc AEP	0.5% AEP	0.1% AEP
EA052356FEN0130	EA052356_D_FEN	559736	290532	1.96	2.01	2.21	2.27	2.38	2.41	2.79
EA052356FEN0129	EA052356_D_FEN	560307	291313	1.96	2	2.19	2.24	2.35	2.38	2.77
EA052356FEN0128	EA052356_D_FEN	560722	291881	1.95	1.99	2.17	2.22	2.33	2.37	2.76
EA052356FEN0143	EA052356_D_FEN	560873	292011	1.95	1.99	2.17	2.22	2.33	2.37	2.76

Flow Information

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

Node	Model	Easting	Northing	5% AEP	4% AEP	1.33% AEP	1% AEP	1%cc AEP	0.5% AEP	0.1% AEP
EA052356FEN0130	EA052356_D_FEN	559736	290532	79.48	81.15	95.98	98.32	105.65	103.43	116.19
EA052356FEN0129	EA052356_D_FEN	560307	291313	80.75	82.31	97.05	99.42	107.17	104.57	116.81
EA052356FEN0128	EA052356_D_FEN	560722	291881	81.75	83.36	97.98	100.39	108.32	105.5	117.31
EA052356FEN0143	EA052356_D_FEN	560873	292011	88.56	89.53	105.08	108.19	117.82	115.81	131.04

Asset Data

Unique ID	Easting	Northing	SOP	Condition	Stat Defence Level	Up Crest Level	Down Crest Level	Watercourse
0520121140201L31	559328	290030	1 in 100 (1%)	3	Not Known	4.29	4.48	
0520121140201L30	559920	290783	1 in 100 (1%)	3	Not Known	4.48	4.48	
0520121140201L29	559929	290795	1 in 100 (1%)	3	Not Known	4.48	4.51	
0520121140201L28	559943	290814	1 in 100 (1%)	3	Not Known	4.51	4.32	
0520121140201L27	559975	290870	1 in 100 (1%)	3	Not Known	4.32	4.14	
0520121140201L26	560026	290977	1 in 100 (1%)	3	Not Known	4.14	4.35	
0520121140201L25	560033	290996	1 in 100 (1%)	3	Not Known	4.35	4.53	
0520121140201L24	560362	291423	1 in 100 (1%)	3	Not Known	4.53	4.4	
0520121140201L23	560436	291470	1 in 100 (1%)	3	Not Known	4.4	4.44	
0520121140201L22	560479	291493	1 in 100 (1%)	2	Not Known	4.44	3.98	
0520121140201L21	560554	291616	1 in 100 (1%)	3	Not Known	3.98	3.55	
0520121140201L20	560552	291707	1 in 100 (1%)	3	Not Known	3.55	4.51	

Historic Flooding Information

Informatives

Internal Drainage Boards

Please note that some of the watercourses in this area are Internal Drainage Board (IDB) watercourses. Please contact Littleport & Downham IDB for more information on these. (Contact: Jean Heading ; e-mail: jean@elydrainageboards.co.uk)

No Historic Flooding Information

There is no historic flood information available for this area.

Use of Environment Agency Information for Flood Risk / Flood Consequence Assessments

Important

If you have requested this information to help inform a development proposal, then we recommend that you undertake a formal pre-application enquiry using the form available from our website:-

<http://www.environment-agency.gov.uk/research/planning/33580.aspx>

Depending on the enquiry, we may also provide advice on other issues related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

In **England**, you should refer to the Environment Agency's Flood Risk Standing Advice, the technical guidance to the National Planning Policy Framework and the existing PPS25 Practice Guide for information about what flood risk assessment is needed for new development in the different Flood Zones. These documents can be accessed via:

<http://www.environment-agency.gov.uk/research/planning/82587.aspx>

<http://www.communities.gov.uk/publications/planningandbuilding/nppftechnicalguidance>

<http://www.communities.gov.uk/publications/planningandbuilding/pps25guideupdate>

You should also consult the Strategic Flood Risk Assessment produced by your local planning authority.

In **Wales**, you should refer to TAN15 for information about what flood consequence assessment is needed for new development in the different flood zones

<http://new.wales.gov.uk/splash;jsessionid=8ylGTfGZthmB0t2vhp6hS1GcB1LXvZzB3Ylczf20Xn7LK3zK0nMk!981825250?orig=/topics/planning/policy/tans/tan15/>

You should also consult the Strategic Flood Consequence Assessment if one has been produced by your local planning authority.

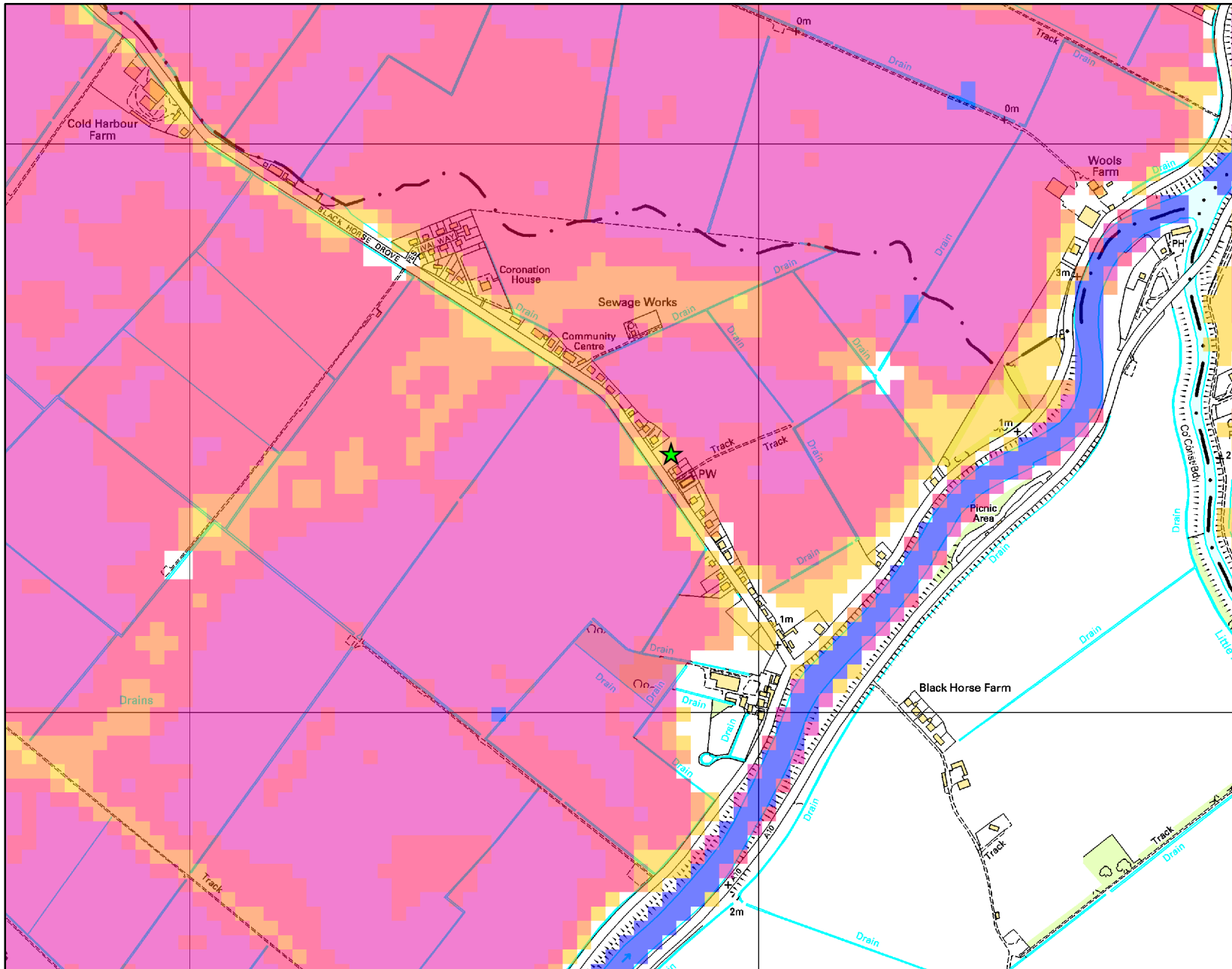
In both **England and Wales** you should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk / Consequence Assessment (FRA / FCA) where one is required, but does not constitute such an assessment on its own.
2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or overland runoff. The information produced by the local planning authority referred to above may assist here.
3. Where a planning application requires a FRA / FCA and this is not submitted or deficient, the Environment Agency may well raise an objection.
4. For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your local planning authority.

APPENDIX 5

ENVIRONMENT AGENCY BREACH MODELLING

Map Showing the Maximum Flood Depth (combined breach) centred on 32 Black Horse Drove, Littleport. NGR TL 59597 91689. Ref 23731. Created on 23 September 2016.



Scale 1:10,000

Legend

Max Depth 100

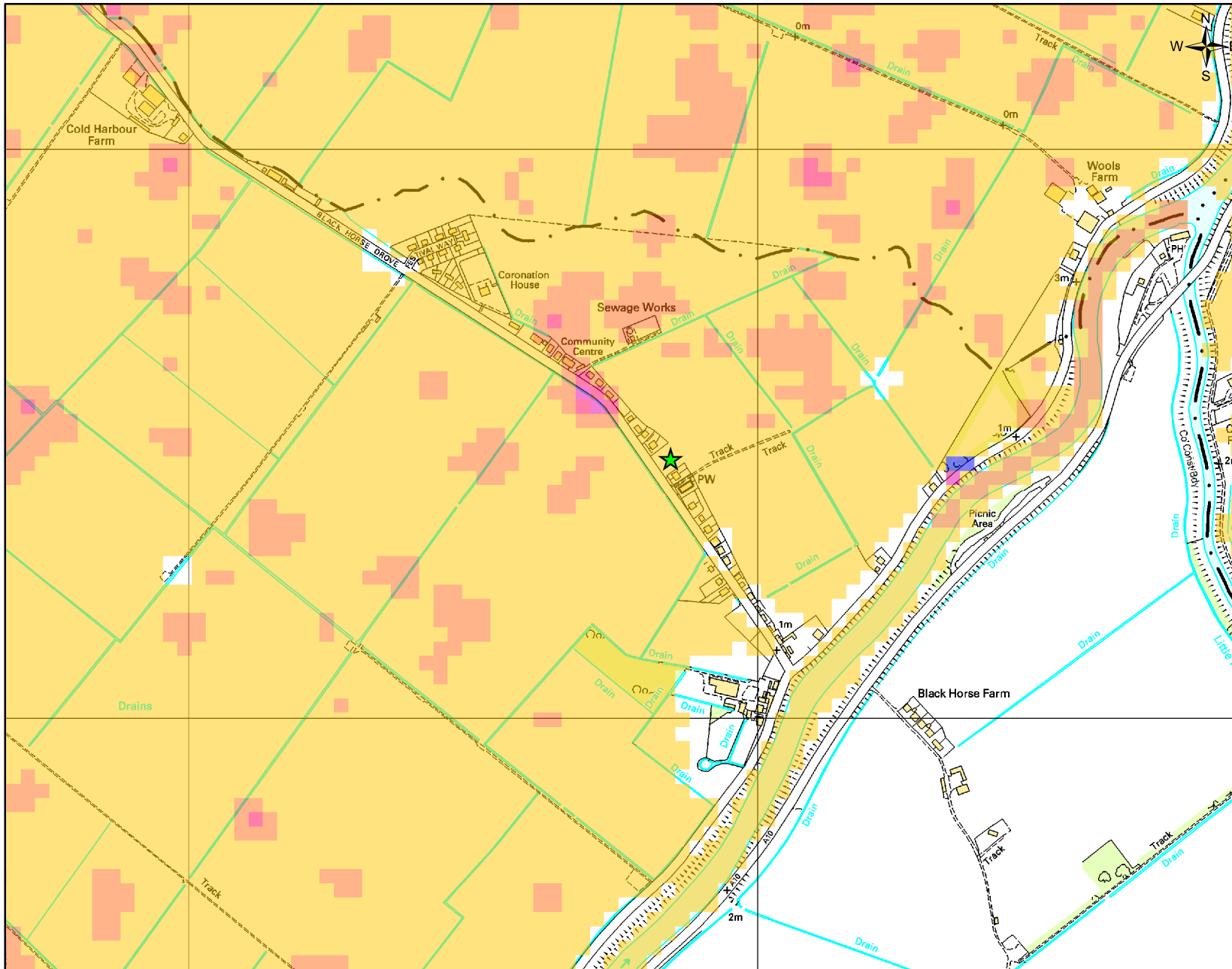
Metres

- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- 1 - 2
- >2
- Site



1. The map is based on computer modelling of simulated breaches at specific locations and a failure of Earth Sluice for the 1% AEP event. Each breach/failure has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, or different flood flows may all give different results.
2. The map only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring.
3. An allowance for climate change has only been incorporated into the modelling for a limited number of breaches. If available, these outlines have been provided, but are based on a 20% increase in flows to account for climate change impacts. We have recently released updated guidance on climate change allowances for flood risk assessments.

Map Showing the Maximum Water Velocity (combined breach) centred on 32 Black Horse Drive, Littleport. NGR TL 59597 91689. Ref 23731. Created on 23 September 2016.



Scale 1:10,000

Legend

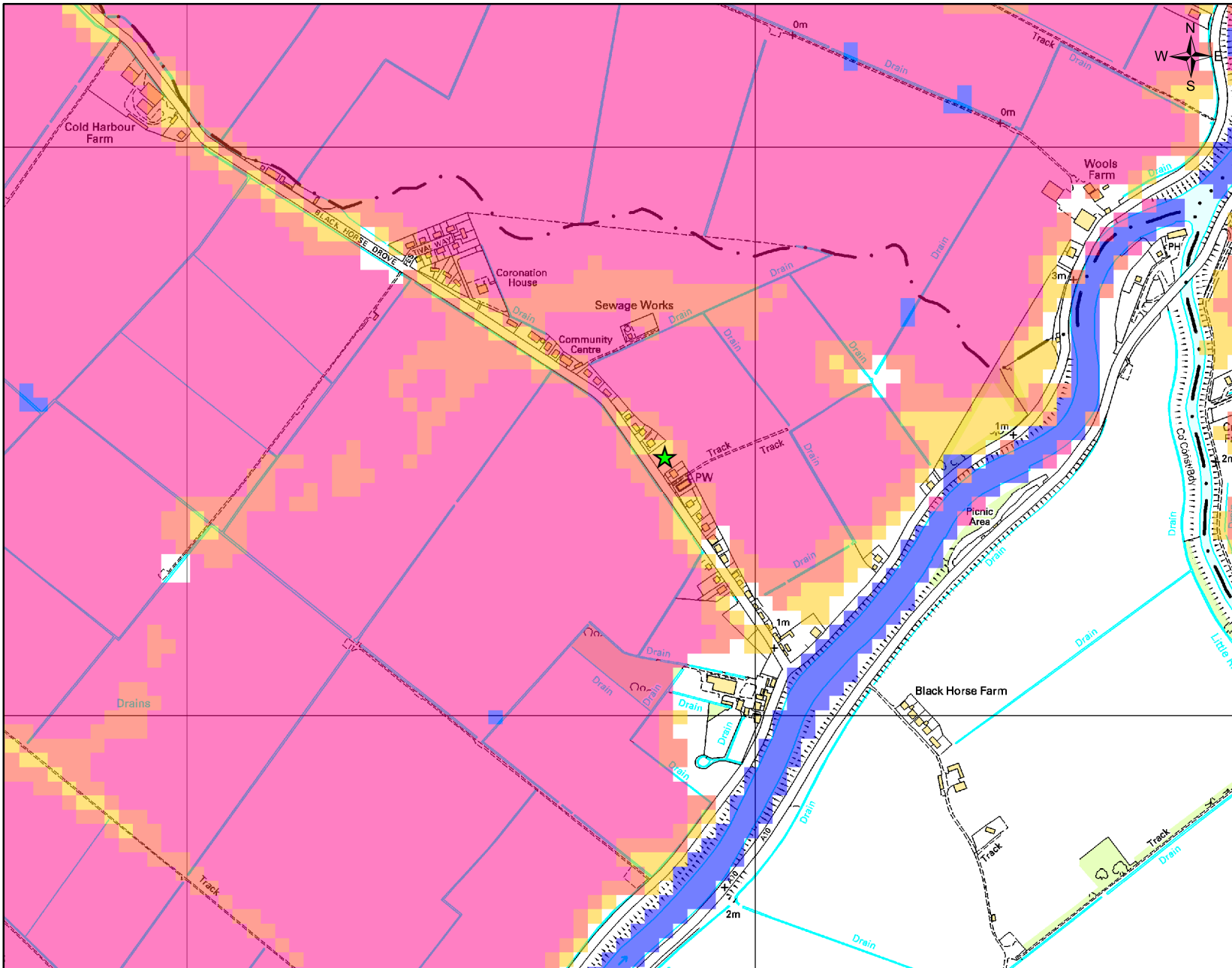
Max Velocity 100

m/s

- 0 - 0.3
- 0.3 - 1
- 1 - 1.5
- 1.5 - 2.5
- >2.5
- Site

1. The map is based on computer modelling of simulated breaches at specific locations. Each breach has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, or different flood flows may all give different results.
2. The map only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring.
3. An allowance for climate change has only been incorporated into the modelling for a limited number of breaches. If available, these outlines have been provided, but are based on a 20% increase in flows to account for climate change impacts. We have recently released updated guidance on climate change allowances for flood risk assessments.

Map Showing the Maximum Hazard Rating (combined breach) centred on 32 Black Horse Drove, Littleport. NGR TL 59597 91689. Ref 23731. Created on 23 September 2016.



Scale 1:10,000

Legend

Max Hazard Rating 100

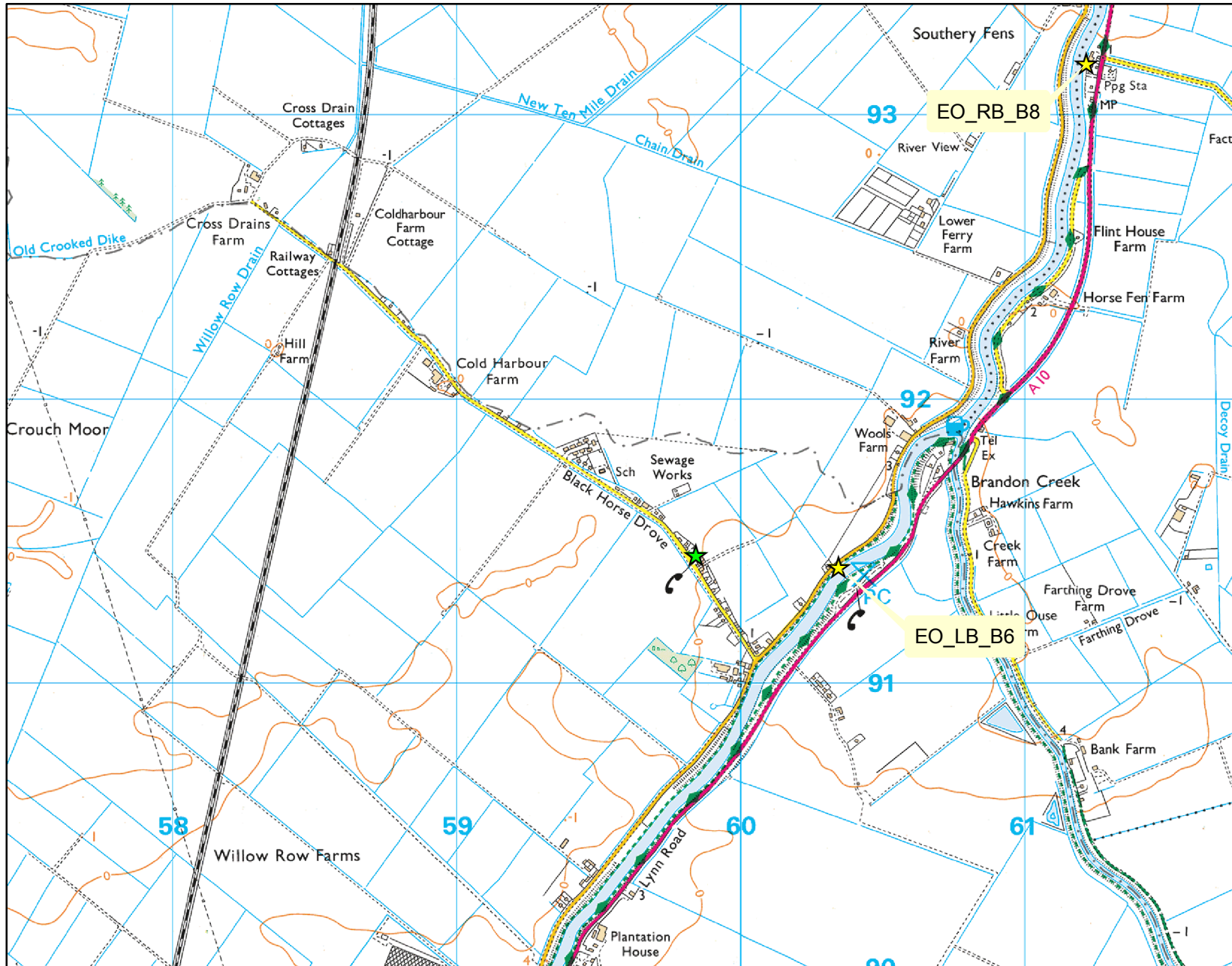
<VALUE>

- 0 - 0.75 - Very Low Hazard
- 0.75 - 1.25 - Danger to Some
- 1.25 - 2 - Danger to Most
- >2 - Danger to All

★ Site

1. This map shows the level of flood hazard to people (hazard rating) if our flood defences are breached at certain locations and a failure of Earith Sluice. The hazard rating depends on the depth and velocity of floodwater and maximum values of these are also mapped.
2. The map is based on computer modelling of simulated breaches at specific locations. Each breach has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, or different flood flows may all give different results
3. The map only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring.
4. An allowance for climate change has only been incorporated into the modelling for a limited number of breaches. If available, these out-lines have been provided, but are based on a 20% increase in flows to account for climate change impacts. We have recently released updated guidance on climate change allowances for flood risk assessments.

**Modelled Breach Locations centred on 32 Black Horse Drove, Littleport. NGR TL 59597 91689.
Ref 23731. Created on 22 September 2016.**



Scale 1:20,000



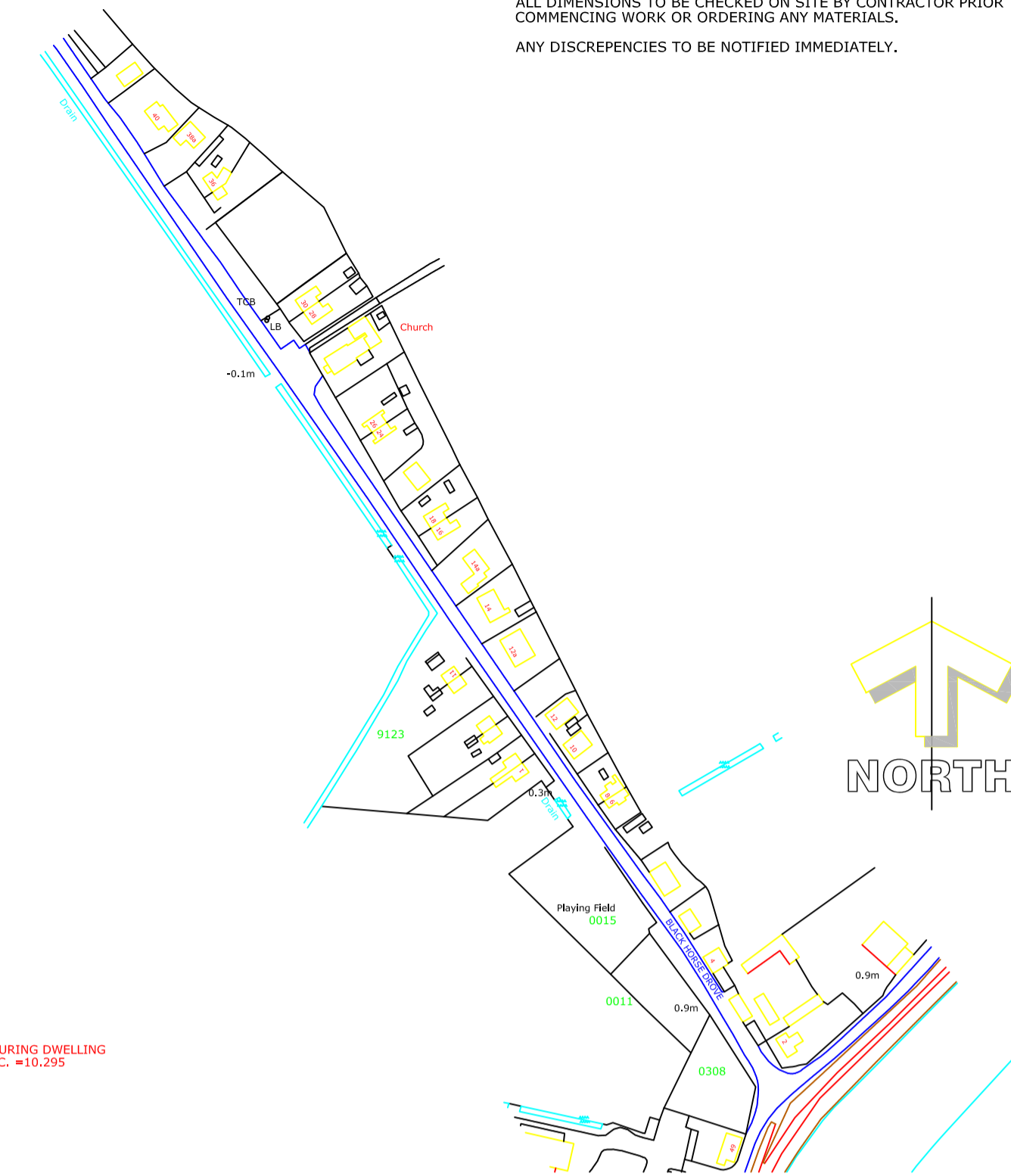
Legend

- ★ Breach Locations 100yr
- ★ Site

APPENDIX 6

PROPOSED DEVELOPMENT LAYOUT

NOTES:
 THE COPYRIGHT OF THIS DRAWING IS RETAINED BY ANDREW FLEET MCIAT
 THIS DRAWING MUST NOT BE SCALED
 ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO COMMENCING WORK OR ORDERING ANY MATERIALS.
 ANY DISCREPANCIES TO BE NOTIFIED IMMEDIATELY.



LOCATION

Scale ; 1 : 1250

REPRODUCED FROM THE 1:2500 ORDNANCE SURVEY MAP WITH THE PERMISSION OF
 ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE.
 CROWN COPYRIGHT; ANDREW FLEET MBIAT, 6 REGENT PLACE, SOHAM,
 CAMBRIDGESHIRE, CB7 5RL
 LICENCE No. AR 100033546

BUILDING FOOTPRINT APPROVED UNDER
 EXTANT APPLICATION Nos.
 05 / 00627 / RMA, 95 / 0607 / O and
 04 / 00408 / FUL

DWELLINGS; 244.90 Ss Metres
 GARAGING; 61.20 Sq Metres
TOTAL 306.10 Sq Metres

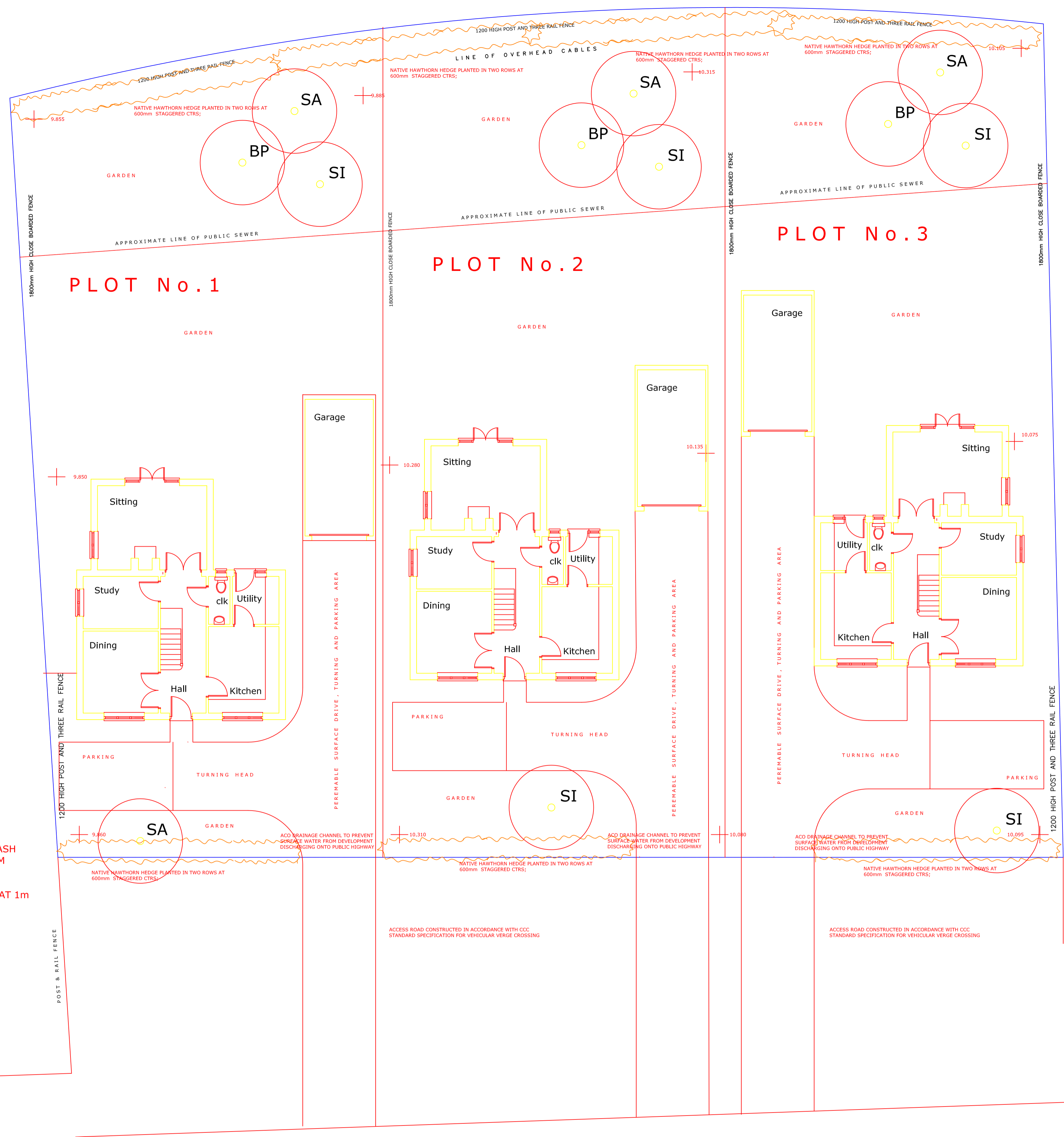
BUILDING FOOTPRINT PROPOSED BY
 THIS APPLICATION

DWELLINGS; 244.23 Sq Metres
 GARAGING; 61.44 Sq Metres
TOTAL 305.67 Sq Metres

- TREES
- BP BETULA PENDULA; SILVER BIRCH
 - SA SORBUS AUCUPARIA; MOUNTAIN ASH
 - SI SORBUS INTERMEDIA; WHITEBEAM

SIZE; SELECTED STANDARDS 10 - 12cm AT 1m

1:2500	0	25m	50m	100m	200m
1:1250	0	12.5m	25m	50m	100m
1:625	0	6.25m	12.5m	25m	50m
1:312	0	3.12m	6.25m	12.5m	25m
1:156	0	1.56m	3.12m	6.25m	12.5m
1:78	0	0.78m	1.56m	3.12m	6.25m
1:39	0	0.39m	0.78m	1.56m	3.12m
1:19	0	0.19m	0.39m	0.78m	1.56m



BLACK HORSE DROVE

S I T E L A Y O U T

Revision	Notes	Date	Drawn	Chkd
Client				
A. C. GILLET & SONS				
Project				
RESIDENTIAL DEVELOPMENT				
Address				
32 BLACK HORSE DROVE LITTLEPORT ELY CAMBRIDGESHIRE				
Drawing				
SITE LAYOUT				
Drawing No.		14:074 - 1		Revision
				-
Scale	Paper Size	Drawn	Checked	
1 : 100	A1	APF		

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 charteredarchitecturaltechnologist

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