FLOOD RISK ASSESSMENT FOR PROPOSED RESIDENTIAL DEVELOPMENT AT 58 SEAS END ROAD, MOULTON SEAS END, SPALDING, LINCS

FINAL REPORT

GEOFF BEEL CONSULTANCY

MAY 2017

GCB/MERCHANT

DISCLAIMER

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Fig 1 - Location & Site Layout Plans (Existing) – G R Merchant Ltd drg.no. 3148-17.01

Fig 2 - Location & Site Layout Plans (Proposed) – G R Merchant Ltd drg.no. 3148-17.02

Fig 3 - Environment Agency Flood Map for Planning

Fig 4 - South Holland Updated Strategic Flood Risk Assessment Map – Residual Flood Depths (2115)

Fig 5 - South Holland Internal Drainage Board district plan

1.0 INTRODUCTION

1.1 A full planning application is to be submitted by G R Merchant Ltd on behalf of Mr & Mrs P Whiting for proposed residential development at Cassini Lodge, 58 Seas End Road, Moulton Seas End, Spalding, Lincs.

1.2 A Flood Risk Assessment is required to accompany the planning application and meet the requirements and general principles contained in the Planning Practice Guidance to the National Planning Policy Framework (NPPF) and for approval by the Environment Agency.

The site, as situated, is located within Flood Zone 3 of the Environment Agency's Flood Map for Planning. The latest Agency Flood Maps have been created as a tool to raise awareness of flood risk with the public and our partner organisations, such as Local Authorities, Emergency Services and Drainage Authorities. The Maps do not take into account any flood defences.

The site is also shown in Flood Zone 3 of the South Holland District Council's Updated Strategic Flood Risk Assessment Maps.

The site is also located in the South Holland IDB drainage district.

1.3 Geoff Beel Consultancy was appointed on 17th May 2017 to undertake a Flood Risk Assessment.

2.0 LOCATION

2.1 The development site is located at Cassini Lodge 58 Seas End Road, Moulton Seas End. The National Grid Reference of the central point of the development is TF 32052695.

2.2 The position and extent of the site is shown on Fig 1 – Location & Site Layout Plans at the end of the document.

2.3 The site, located within the South Holland Internal Drainage Board district is shown within Flood Zone 3 as detailed on both the Environment Agency Flood Map for Planning and the Council's Updated Strategic Flood Risk Assessment Map.

3.0 THE SITE AND SEQUENTIAL TEST

3.1 The site is currently a grass paddock and outbuildings to the existing property.

3.2 The area of development is approximately 0.48 hectare.

3.3 The proposed site layout consists the construction of 5 two-storey dwellings off shared cul-de-sac from Seas End Road. Land levels are generally at 4.00 m aOD.

3.4 The Sequential Test and Exception Test will require to be applied by the Local Planning Authority but the development may be permitted as the site is protected against both the 1 in 200 year return period tidal event and the 1 in 100 year return period fluvial event. There is no other land available for development in Moulton Seas End at a lower risk of flooding.

4.0 EXISTING FLOOD ALLEVIATION MEASURES

4.1 The site is within a defended floodplain, as defined in Appendix 1 of the Environment Agency's 'Policy for the Protection of Floodplains' and is considered to be passive until such time as a flood greater than that for which the defences were designed occurs. The likelihood of flooding due to overtopping or failure of a flood defence embankment is considered to be small.

The development site within the South Holland Internal Drainage Board is protected by the River Welland tidal defences between Spalding and Fosdyke Bridge with embankment levels of a minimum of 7.00m aOD.

4.2 The site and the surrounding land drains by gravity to Board drains to the west of the site and hence to the Lords Sluice Outfall and hence to the tidal River Welland.

4.3 The existing standard of drainage for the South Holland Internal Drainage Board is 1 in 50 years return period, compatible with the Department of the Environment, Food and Rural Affairs target level of service for rural drainage and flood defence works. Freeboard of 900mm is provided to the lowest land levels.

4.4 Current maintenance standards within the South Holland Internal Drainage Board and of the Environment Agency defences are generally very good.

During the operation and maintenance of its pumping stations, associated structures and channel systems, particularly those that could affect property, the Board seeks to maintain a general standard capable of providing flood protection to its district. A routine maintenance programme is in place to ensure that the Boards assets are commensurate with the standard of protection that is sought. However, bank slips, blocked culverts etc may occur from time to time and these matters are usually dealt with promptly.

5.0 POTENTIAL SOURCES OF FLOODING

5.1 Four potential sources of flooding have been identified as a result of this assessment:

a) local blockages to soakaways
b) local blockages to IDB main drain system.
c) storm return period of 1 in 50 years being exceeded
d) overtopping and breaching of defences of the tidal River Welland

5.2 The probability of flooding from source a) is low due to the maintenance standards by the future owners and the design requirements of BRE36.

The probability of flooding from b) is also low due to the South Holland IDB main drain design standard incorporating a minimum 900mm freeboard to the lowest land level which provides adequate storage in events greater than 1 in 50 years.

Previous historic rainfall events of 1968 and 1978, estimated to be greater than 1 in 100 year events, caused no flooding to any residential properties at the time and the Boards policy is to provide a standard of drainage which satisfies NPPF requirements of a 1 in 100 year return period for fluvial protection inclusive of the effects of climate change and developments to the arterial system enables a flexible approach to be adopted and meet the criteria for "sustainable urban drainage".

5.3 The flood embankments to the tidal River Welland provide a 1 in 200 year return period level of protection.

The 1 in 200 year River Welland tidal event at Fosdyke Bridge in 2069 is estimated to be 6.41m aOD as against existing embankment levels of a minimum of 7.00m aOD.

There is a low risk during such an event for wave and wind action to cause overtopping and/or breaching of the first line defences parallel with the River Welland. However, the site is located 4.25 kms from the River Welland defences and any overtopping/breaching would be minimal.

The South Holland District Council Updated Strategic Flood Risk Assessment of 2016 has produced tidal hazard mapping similar to that available from the Environment Agency. The site is shown as affected by floodwaters of between 0.00 -0.25m as a result of a breach to the River Welland tidal defences.

The Environment Agency require the following mitigation measures to be incorporated into the development:
For areas where flood depths are 0 – 0.25m.
Finished floor levels should be set a minimum of 300mm above ground level with a further 300 mm of flood resilient construction above finished floor level.

5.4 Surface water drainage from the development site will be to soakaways to BRE365 design requirements and Building Regulations approval.

6.0 EXTENT OF KNOWN FLOODING

6.1 During the preparation of this assessment, no evidence was discovered of the site being flooded or of any adjoining properties.

7.0 PROBABILITIES AND TRENDS OF FLOODING

7.1 The probability of this development flooding from localised drainage systems is very low.

7.2 The probability of the site flooding with water from any South Holland IDB main drain is less than 1% because of the standards of the existing flood defence systems, storage within existing drainage channels and the location of the site.

7.3 The probability of the site flooding with tidal waters from any main river system is less than 1% because of the standards of the existing flood defences and the location of the site.

7.4 If under very extreme events, levels of floodwater from the South Holland IDB main drains or arterial systems rose to such an extent that the site was affected, the situation would not be sudden. It is very probable that sufficient time would be available to take precautionary actions to limit the extent and potential impact of flooding.

7.5 The water levels in the drainage channels will tend to rise as a result of the impacts of climate change. However the existing systems and defences together with the proposed floor levels 300mm above existing surrounding ground level with a further 300 mm of flood resilient construction above finished floor level will be appropriate for the design life of the development (i.e. 100 years).

7.6 Safe access and egress is readily available onto Seas End Road and hence in a generally southerly direction to the A151 road and the town of Holbeach.

8.0 IMPACTS OF FLOODING

8.1 No significant impacts of flooding are anticipated.

8.2 Floor levels of the development will be at 300mm above existing surrounding ground levels with a further 300 mm of flood resilient construction above finished floor level which together with the proposed soakaway drainage system will offer additional protection against impacts arising from any extreme short duration, localised events.

8.3 The general location of the site within the catchment is such that if flooding occurred from any of the South Holland IDB main drain systems, then probably 2 to 3 days warning time would be available.

8.4 No displacement of water from the site will affect any adjoining properties as a soakaway drainage system will be designed to BRE365 requirements and Building Regulations approval.

9.0 RESIDUAL RISK – EXTREME EVENTS

9.1 The residual risk from extreme events is very low on this site, because of its location, within the South Holland IDB area and its location 4.25kms from the River Welland tidal defences.

9.2 Although within Flood Zone 3 according to NPPF classification, the site actually has a very low risk of flooding due to the current standards of drainage and flood defence and land levels. The site is not located within a Functional Flood Plain of any 'main river' or 'main drain'. The Environment Agency Flood Map for Planning has been produced irrespective of existing flood defences and standards of protection.

9.3 South Holland District Council in conjunction with the Environment Agency and the local IDB's within the Council area have carried out an Updated Strategic Flood Risk Assessment of the whole District by appointed Consulting Engineers.

The Updated Strategic Flood Risk Assessment has produced more definitive Flood Risk Maps similar to those available from the Environment Agency and at the same time has analysed flood return periods of all tidal and fluvial defences to account for the effects of climate change.

Breach scenarios of embankments failing and/or being overtopped have also been carried out to establish Flood Risk Zones. As a result of the Updated Strategic Flood Risk Assessment for the site is outside any Rapid Inundation Zone and defended by tidal defences and tidal doors.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 As a result of the assessment, the following conclusions have been reached:-

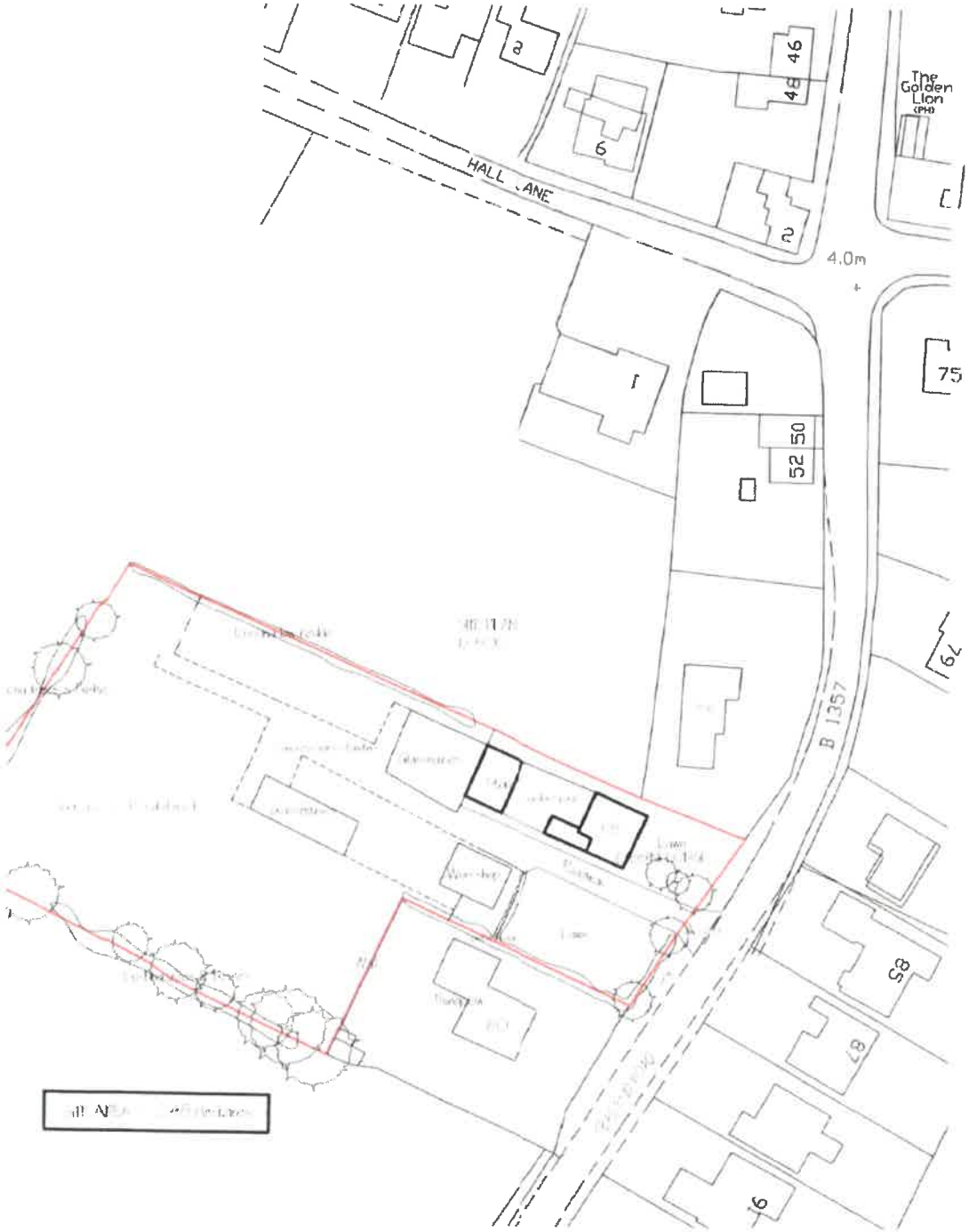
- The proposed development is not in a Functional Floodplain. It is located in the Passive Floodplain protected by River Welland tidal defences to a 1 in 200 year return period, (1.0%)

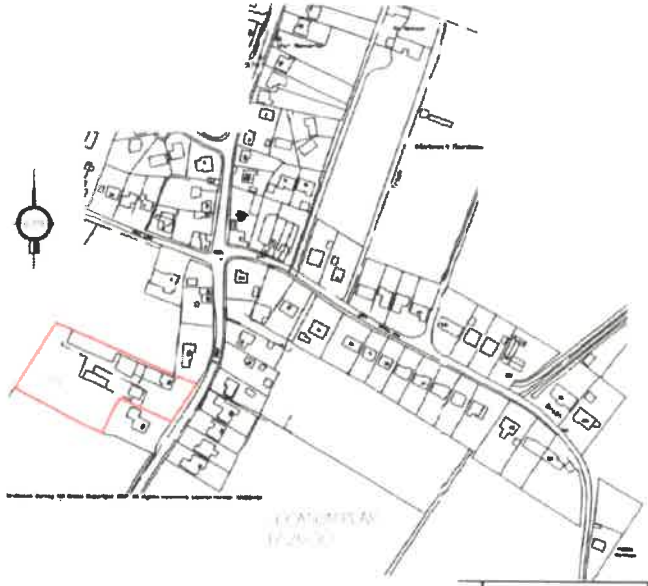
- Although the site is in Flood Zone 3, the actual risk of site flooding from any Environment Agency river system is very low (less than 0.5%).

- Although the site is located within an Internal Drainage District with a minimum standard of drainage of 1 in 50 years, this accords with Defra guidelines for rural development. Freeboard to design water level of 900mm to lowest land level is available for events greater than 1 in 50 years providing further storage within the drainage channels.

- On site rainwater from the development will be discharged to proposed soakaway drainage to BRE365 design requirements and Building Regulations approval.

- Finished floor levels will be raised 300 mm above existing ground level with a further 300 mm of flood resilient construction above finished floor level.





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Project

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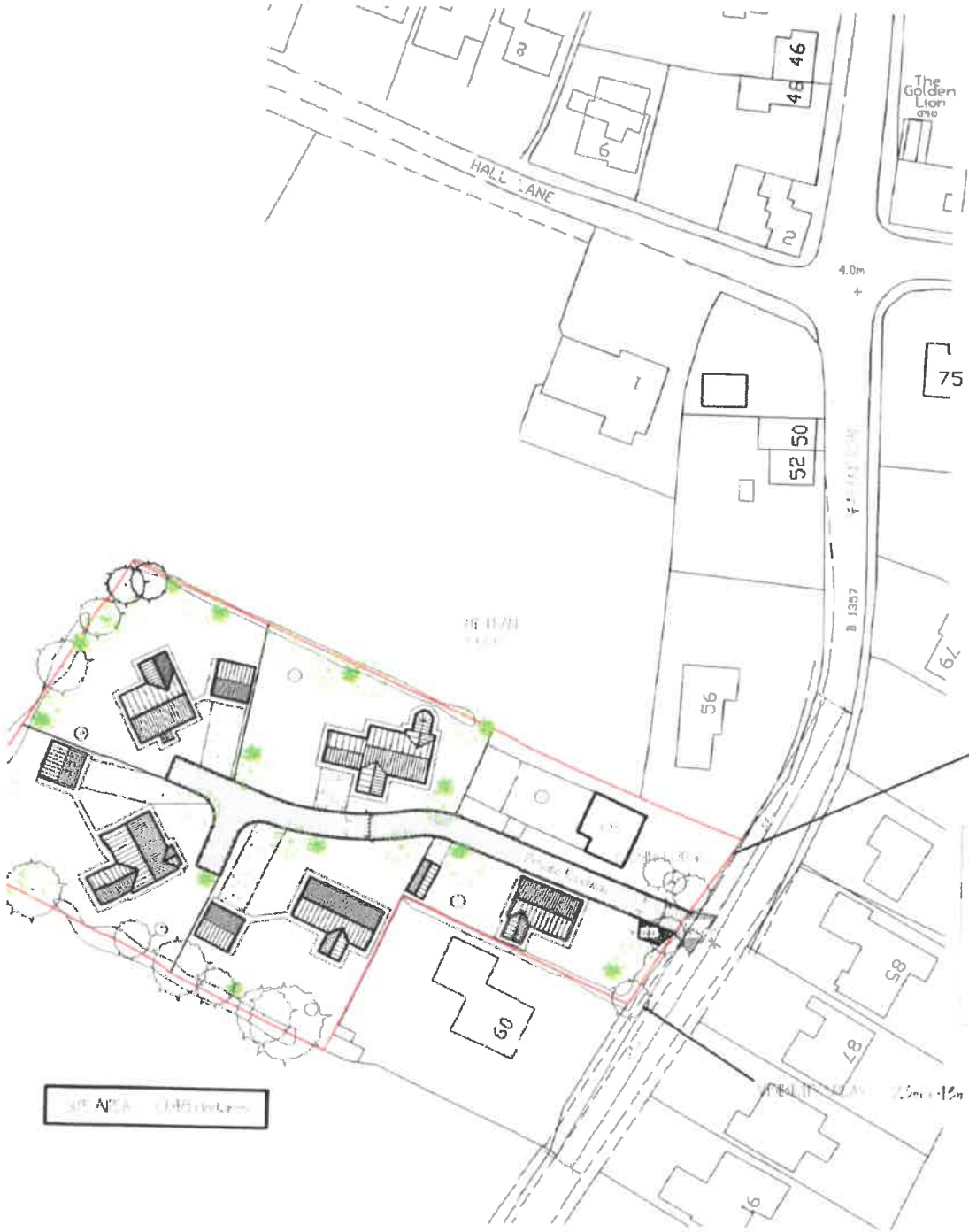
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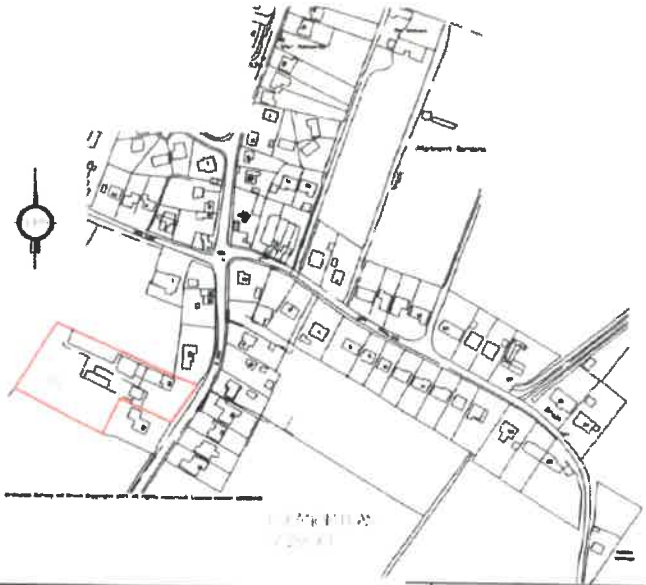
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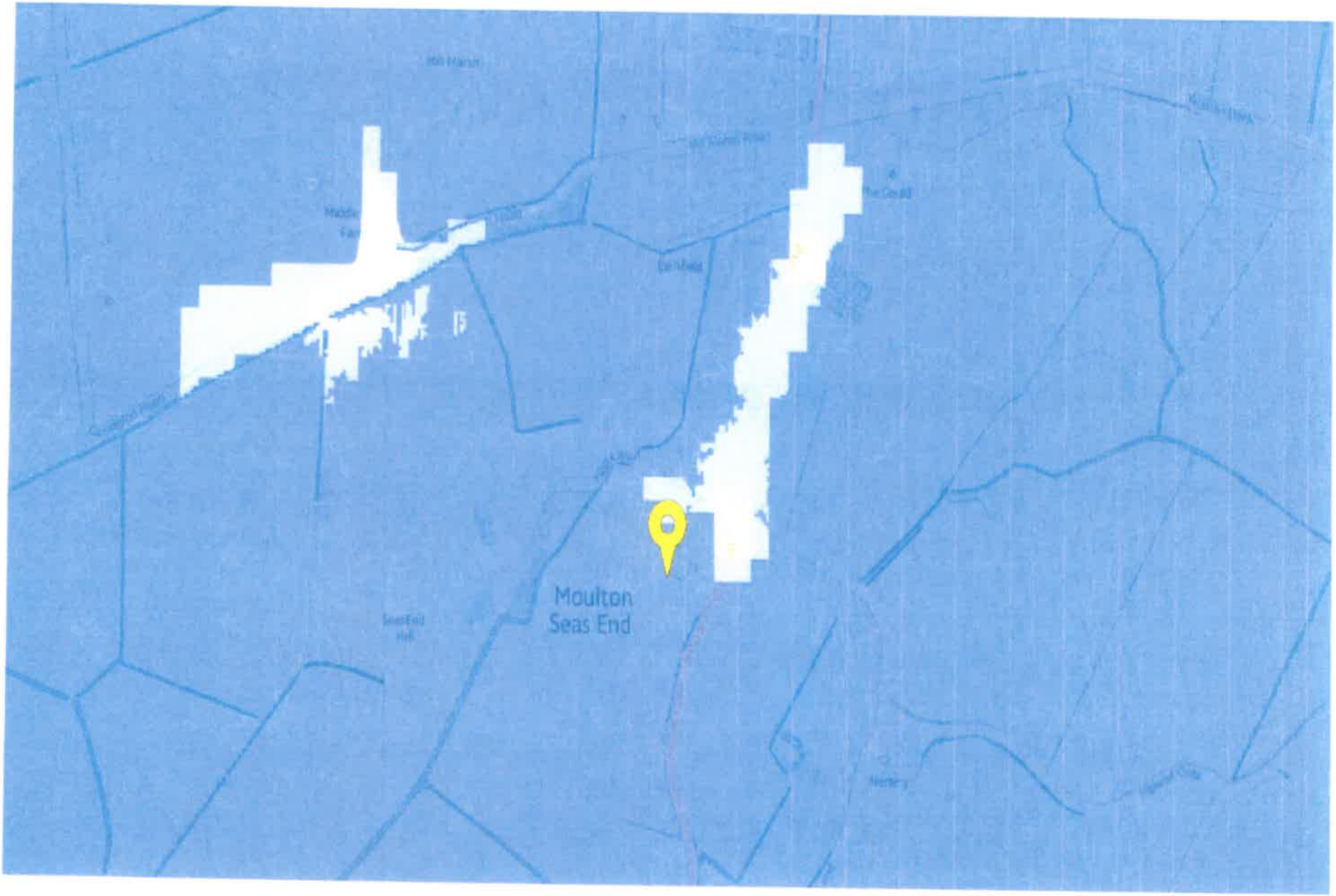


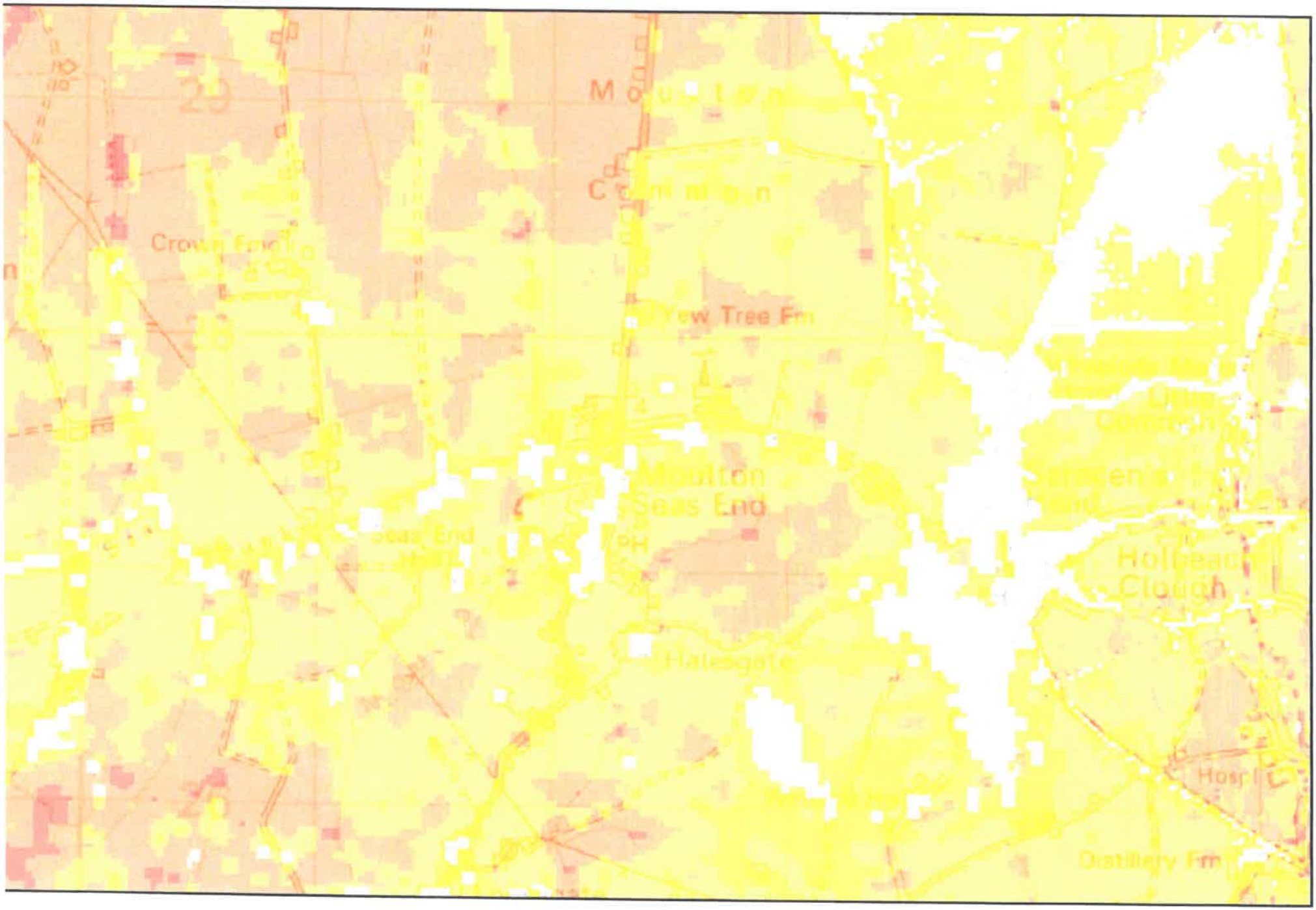
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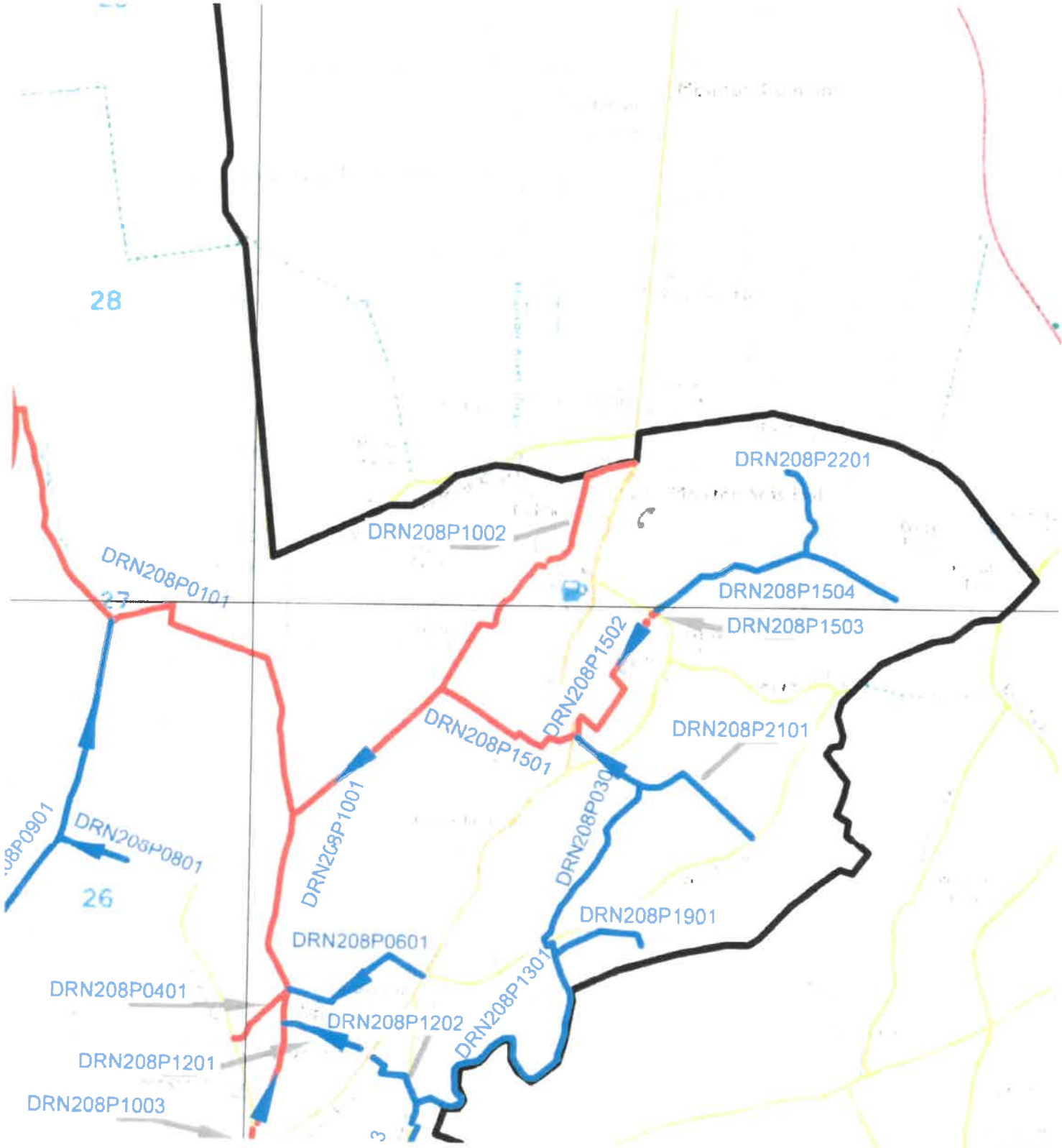
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Seas End


Yew Tree Fm
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Seas End
Holbeach
Clough
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