WS 76

SITE 2

St Edmundsbury Local Development Framework

Site Allocations Development Plan Document

St Edmundsbury BOROUGH COUNCIL

SITE SUBMISSION FORM

We are currently identifying sites with development potential as part of the Local Development Framework. This form should be completed to suggest sites that you think should be considered by the Council for their availability for development over the next 20 years.

Please return this form and a **map** clearly identifying the boundary of the site by: **Monday 5 January 2009** to:

Planning & Engineering Services
St Edmundsbury Borough Council
PO Box 122
Bury St Edmunds
IP33 3YS Or email it to: LDF@stedsbc.gov.uk

ALL INFORMATION SUBMITTED WILL BE MADE AVAILABLE FOR PUBLIC INSPECTION AND MAY BE THE SUBJECT OF PUBLIC CONSULTATION AS PART OF THE LDF PROCESS

Guidance

1 Please use a separate form for each site and complete the form to the best of your knowledge.

2 Do submit sites that:
- would be available for development or redevelopment in the next 20 years; and
- are more than 0.2 hectares (0.5 acres).

3 Do not submit sites that:
- already have planning permission for development unless a new and different proposal is likely in the future; and
- are outside of the St Edmundsbury local authority area.

4 Details of existing constraints can be obtained from a number of sources.
- Information on floodplains can be found at www.environment-agency.gov.uk
- Information on nature designations can be found at www.natureonthemap.org.uk
- Details of special landscape areas and conservation areas can be obtained from the existing replacement Local Plan at www.stedmundsbury.gov.uk

Site Plan

This form should be accompanied by a site plan on a recognised Ordnance Survey base. The site plan should clearly illustrate the following information:
- The exact boundary details (**coloured red**) of the site that you would like considered
- Potential access points *(vehicular and non-vehicular)*
- Those areas identified as brownfield (**shaded blue**) and/or greenfield land (**shaded green**)

1. CONTACT DETAILS

Your name

Organisation Denham Vicarage Farm Partnership

Address c/o agent

Postcode

Telephone

Email address

Your agents (if applicable) Mark Hodgson

Organisation Savills

Address Unex House, 132-134 Hills Road, Cambridge

Postcode CB2 8PA

Telephone 01223 347000

Email address mhodgson@savills.com

Site Owner Denham Vicarage Farm Partnership

Address

Postcode

Please indicate if you have the consent of the landowner to promote this site for inclusion in the Local Development Framework: Yes

2. SITE DETAILS

Site name

Location Land south of Barrow

Total Area 3.5 (ha)

Of which (ha) is on brownfield land

Of which 3.5 (ha) is on greenfield land

Ordnance Survey Grid Reference

Current use(s) (please specify last use if vacant

Agriculture

Suggested uses

Residential

3. DEVELOPMENT CONSTRAINTS

Is the suggested use subject to any of the following constraints?

Constraint	Yes/No	Comments
Flood Plain	No	
Nature designation	No	
Land contamination	no	
Conservation Area	No	
Special Landscape Area	No	

How close is the nearest bus stop?	400 metres Bus service numbers 311,312
How close is the nearest primary school?	1,100 metres
How close is the nearest shop that will provide day-to-day food needs?	400 metres
How close is the nearest doctor's surgery?	0.3 kilometres

If there are constraints to development, what interventions could be made to overcome them?

No constraints

Policy constraints: How does the proposal conform with current national, regional or local planning policies?

Barrow is identified in the Core Strategy as a Key Service Centre where further development is acceptable dependent on its scale and effect on the settlement.

Further development in this location would help contribute towards sustainable objectives as set out in the sustainability appraisal.

Barrow has a number of services and facilities which means day to day needs can be satisfied locally without the use of private cars.

4. OTHER INFORMATION

Has the viability of the site been tested? If so, please include details.

No

Level of developer interest, if known:

Low Medium High

Likely time frame for development:

0-5 years ✓ 6-10 years 10-15 years Beyond 15 years

Any further information: (Continue on separate sheets if necessary) Please supply four copies of any supportive statements or an electronic version.

St Edmundsbury Local Development Framework

Site Allocations Development Plan Document

SITE SUBMISSION SUSTAINABILITY APPRAISAL

	SA Objective	Please indicate whether your proposal will have a positive or negative contribution towards each objective
1	To improve the health of the population overall	**Neutral**
2	To maintain and improve levels of education and skills in the population overall	**Neutral**
3	To reduce crime and anti-social activity	**Neutral**
4	To reduce poverty and social exclusion	**Neutral**
5	To improve access to key services for all sectors of the population	**Positive**
6	To offer everybody the opportunity for rewarding and satisfying employment	**Positive**
7	To meet the housing requirements of the whole community	**Positive**
8	To improve the quality of where people live and to encourage community participation	**Positive**
9	To improve water and air quality	**Neutral**
10	To conserve soil resources and quality	**Neutral**
11	To use water and mineral resources efficiently, and re-use and recycle where possible	**Positive**
12	To reduce waste	**Neutral**

	SA Objective	Please indicate whether your proposal will have a positive or negative contribution towards each objective
13	To reduce the effects of traffic on the environment	**Positive**
14	To reduce contributions to climate change	**Positive**
15	To reduce vulnerability to climatic events	**Neutral**
16	To conserve and enhance biodiversity	**Positive**
17	To conserve and where appropriate enhance areas of historical and archaeological importance	**Neutral**
18	To conserve and enhance the quality and local distinctiveness of landscapes and townscapes	**Positive**
19	To achieve sustainable levels of prosperity and economic growth throughout the plan area	**Positive**
20	To revitalise town centres	**Neutral**
21	To encourage efficient patterns of movement in support of economic growth	**Positive**
22	To encourage and accommodate both indigenous and inward investment	**Positive**

Site Plan

date	January 2009
scale	1:2500
reference	CAPL/SPEC/002

savills
planning & Regeneration
Unex House
132-134 Hills Road
Cambridge
CB2 2PA
Tel:01223 347000
Fax:01223 347111

PROPOSED RESIDENTIAL DEVELOPMENT ON LAND WEST OF BARROW HILL, BARROW SUFFOLK.

PROVISIONAL SUMMARY OF ACCESS ISSUES

Prepared on behalf of Denham Vicarage Farm Partnership

Date: 8th January 2009

Prepared by:

Nigel Eggar MCIHT MIHE
Senior Transport Planner

Checked by:

Mike Palmer BSc CEng MICE MCIHT
Director - Transport Planning

Agent: Savills (L&P) Ltd
Unex House
132 – 134 Hills Road
Cambridge
CB2 8PA

CONTENTS

1.0 INTRODUCTION

1.1 This Statement is prepared on behalf of Denham vicarage farm Partnership in support of a Deliverability Statement for site WS76, dated October 2009. The report identifies the main opportunities and constraints relating to the potential of the site to accommodate residential development with reference to transport and access issues. **The report demonstrates that the site can be delivered with regard to access considerations.**

1.2 A site investigation was performed on 4th December 2009, which identified the main issues as follows:

- Siting of access (Section 2.0)
- Access visibility (Section 3.0)
- Pedestrian infrastructure (Section 4.0)
- Access by public transport (Section 5.0)
- Conclusions (Section 6)

1.3 It should be noted that, by agreement with adjacent land owners, third party land may be included within the overall site allocation.

2.0 SITING OF ACCESS AND ACCESS VISIBILITY

Siting of Access

2.1 The immediate site frontage of WS76 on Barrow Hill measures 76m with a moderate falling slope (less than 5% gradient) towards Barrow village. In the vicinity of the site Barrow Hill typically comprises a 5.5m wide carriageway with adjacent verges of fluctuating width, and flanked by mature hedges. Barrow Hill along the site frontage is unlit; street lighting to a limited standard exists within the existing village framework to the north.

2.2 A shared field access is provided with the adjacent field to the south (WS77). Barrow Hill bends to the south approximately 40m south of the shared access and rises more steeply to the crest of the hill opposite a new access to a property and Wilsummer Wood a further 40m to the south. The crest of the hill dictates the limit of any achievable visibility from the siting of any access within the frontage of WS76.

2.3 For the purpose of achieving maximum visibility, the crest of the hill to the south (WS77) would normally be considered for such an access, however, in this instance the presence of the opposite bend in the road and the existing opposite accesses would preclude this location. In the event that site WS77 is included within the allocation, opportunities for access are far broader.

2.4 To the north of WS76, the tree line on the west side of Barrow Hill adjacent the frontage of No.12 Barrow Hill and the limited highway verge adjacent prescribes the achievable extent of visibility and will also serve to dictate the siting of the access.

2.5 Accordingly, the existing conditions suggest that the shared field access offers the appropriate position for the creation of a new access to a development at site WS76, maximising the available visibility given the boundary constraint to the north and the crest of the hill to the south. The preliminary access siting is indicated on Drawing 180/000/001 enclosed at Appendix 1.

Access Visibility

2.7 In accordance with the Design Manual for Roads and Bridges TD41/95 – 'Vehicular Access to all-Purpose Trunk Roads', it is normal practice in the assessment of visibility requirements access to existing highways to be based upon the actual speed of vehicles on the highway, derived from speed survey in accordance with TD22/81 – 'Vehicle Speed Measurement on All Purpose Roads'. In the absence of such information the prevailing speed limit of the existing highway is applied.

2.8 As indicated on Figure 1, the national speed limit of 60mph applies to the full extent of the frontage of site WS76 and WS77 on Barrow Hill. In accordance with TD41/95, the appropriate visibility splays dictated by the speed limit in both directions are: 2.4m x 215m. Similarly, forward visibility (or Sight Stopping Distance – SSD) of 215m is required for a right turning vehicle, and a vehicle approaching the rear of a right turning vehicle.

2.9 In relation to the limited site frontage and the topographical constraints identified above, it is not possible to achieve the required 2.4m x 215m visibility splays from the existing access point.

2.10 Accordingly, and consistent with the provision of the proposed extension of the built form of the village along Barrow Hill, in order to achieve a safe site access it will be necessary to change the character of Barrow Hill by extending the 30mph speed limit to encompass the site access and visibility splays.

2.11 The reduction in the speed limit should allow the achievement of 2.4m x 70 - 90m visibility splays (suitable for approach speeds of up to 31mph - 37mph respectively). The potential effect of the visibility splays and the relocation of the 30mph speed restriction is shown on Drawing 180/000/001 enclosed at Appendix 1.

2.12 From site inspection, the 90m visibility splay south would extend broadly to the crest of the hill. Achievement of the visibility splay would necessitate the removal/ re-siting of the frontage hedge adjacent WS77. A new speed limit restriction/ village entry gateway feature (and potentially the provision of a street lighting system linking to the village) would be necessary to facilitate the reduction of the speed limit and enable the reduction of the visibility splay standards. It should be noted that works including the reduction of the speed limit should also improve access conditions for the existing properties on the east side of Barrow Hill adjacent the crest of the hill.

2.13 To the north of the access, it is apparent that visibility of 2.4m x 70 – 90m may be achieved towards the existing built fabric of Barrow village. This will necessitate the removal/ re-siting of the existing site frontage hedge, and also the cutting back the existing hedge fronting the garden on No.12 Barrow Hill. Key to achieving the latter is the extent of the public highway adjacent Barrow Hill, which will require further investigation with Suffolk County Council as Local Highway Authority (SCC as LHA).

2.14 With further regard to the northern visibility splay, should it transpire that inadequate highway verge exists to provide visibility third party land may be included in the overall site to provide an adoptable visibility splay to the appropriate standard.

2.15 Accordingly, whilst it is apparent that an acceptable form of access may be achievable to WS76, the following points are apparent:

- Speed limit reduction will be required with the provision of a relocated 60mph/ 30mph gateway feature to the limit of the new visibility splays to the south;
- Street lighting extension will be necessary;
- Clarification of extent of the public highway along Barrow Hill should be sought from SCC in respect of the achievement of visibility south (but would be generally required);
- Third party land may be required subject to topographical survey/ extent of public highway;
- The achievement of visibility splay south requires the removal/ re-siting of the front boundary hedge to WS76 and WS77.

2.16 Whilst the above elements accord with principle of best practice, liaison and agreement with the SCC will be required to ascertain the precise visibility standards to be applied and the extent of associated works.

3.0 PEDESTRIAN INFRASRUCTURE

3.1 New residential developments must be served by suitable and adequate access by foot. Currently, the existing footway on Barrow Hill terminates on the south side of the junction of Johnson Road, approximately 150m north of the site frontage. Accordingly, a new footway link will be required, the extent of which is shown on Drawing 180/000/001 enclosed at Appendix 1.

3.2 Between the existing footway network and the southern extent of the site frontage, it is apparent that a highway verge exists. Site measurement indicates that the existing verge available to provide the necessary footway generally comprises a width of around 1.2m, widening to 1.6m to the north and 1.8m to the south adjacent the frontage of No.12. To the south of the frontage of No.12 Barrow Hill, the back edge of the verge is consistent with a tree line and an adjacent drain.

3.3 Conventional footway widths to serve development of the magnitude proposed are 1.8m/ 2.0m. Accordingly, it is apparent that the implementation of a lesser width will require negotiation and agreement with SCC as LHA.

3.4 In the event that a restricted width of 1.2m is not acceptable to the LHA, the potential exists to widen the footway into the existing carriageway, maintaining the 5.5m carriageway width of Barrow Hill by widening into the eastern highway verge and relocating street furniture as necessary. This will be subject to the extent of the public highway and liaison with SCC as LHA.

3.5 With regard to implementation, the tree line and the proximity of the drain adjacent the frontage of No.12 may complicate footway implementation. Therefore, similar to the provision of the northern access visibility splay outlined in Para 2.14, agreement may be required with the dwelling occupier to secure implementation.

3.6 It should be noted that any new footway will need to be kerbed and drained; the availability of positive drainage is unclear, and will require further investigation in the fullness of time.

3.7 To summarise, it is apparent that highway verge exists between the site frontage and existing footway network to provide a conventional footway link to the proposed development. Achievement of adequate linkage is apparently feasible but will require liaison with SCC as LHA in either accepting a reduced standard, or the realignment of the Barrow Hill carriageway to achieve and adequate footway width and a retain the existing 5.5m carriageway width.

4.0 PUBLIC TRANSPORT AVAILABILITY

4.1 Viable alternative to travel by the private car are regarded as a high priority for new development. With regard to areas identified for residential growth, transport networks are expected to offer a strong level of public transport services (Planning Policy Statement 1). The Deliverability Statement (paragraph 4.15) identified that planning contributions may be required to provide additional services/ enhancements to existing provision.

4.2 This is likely to apply to bus services in the case of Barrow, the existing services for which are outlined in Table 1 below. Service 311/ 312 comprises the main operation between Newmarket and Bury.St.Edmunds with a limited 2 hour frequency.

Service	Origin/ Destination	Days	Frequency
311/312	Bury St.Edmunds – Newmarket	Mon – Sat	Broadly 2 hourly
314	Lidgate – Bury St.Edmunds	Mon - Sat	Single AM/ PM peak journey
905	Burrough Green – Bury St.Edmunds	Weds only	Single AM/ PM peak hour journey
981	Exning – Bury St.Edmunds	AM School Service	Single AM journey

Table 1: Bus Service Summary

4.3 With exception of limited service 905 which directly passes the site, all existing bus routes operate in a broadly west to east arrangement (Higham Upper Green/

Denham – Great Saxham). The closest point of the main service routes to the site is the Denham Lane/ Barrow Hill/ Bury Road junction, around 400m from potential site access, where such a distance represents the desirable linked trip walking distance.

4.4 The LHA and the Highways Agency (as strategic highway authority) routinely appraise new developments with regard to the opportunities to mitigate additional travel demand by way of the capacity of public transport networks to support such increases, together with necessary enhancements to services to encourage public transport usage.

4.5 Specifically in the context of the St. Edmundsbury Core strategy, the potential expansion at Barrow places additional demand on the Trunk road Network (A14). Accordingly, developments at Barrow will almost certainly attract a contribution to improving the existing bus services, or the provision of new services together with enhance infrastructure/ waiting facilities for passengers. The extent of such contributions will be reliant upon discussion/ negotiation with SCC and the local operator.

4.5 The above elements will be explored fully within the Multi-Modal Transport Assessment which will be required to accompany any planning application for the development of the site. An integral element of the TA will be the development of a Travel Plan, the purpose of which would be to reduce car borne trips by encouraging sustainable forms of travel to the new development.

5.0 CONCLUSIONS

5.1 This report has identified the main access issues that are likely to be of concern to Suffolk County Council as Local Highway Authority and the Highways Agency as the Strategic Highway Authority. **In doing so, it has been demonstrated that constraints to development in access terms can be resolved. Consequently, the site can be deliverable with regard to highways and access considerations.**

5.2 Preliminary technical assessment indicates that, in respect of existing road conditions and utilising the existing access, that access to Barrow Hill is currently substandard in respect of:

- Visibility splay north and south of the potential site access, and;
- Forward visibility for a vehicle turning right into the site;

.

5.3 Further, the site currently has no footway linkage to the existing network within Barrow, and the adequacy of public transport provision needs to be addressed.

5.4 The report identifies that, subject to further site investigations and negotiation with the LHA, solutions to these deficiencies are achievable in the form of:

- Extending the existing 30mph speed limit, with attendant street lighting and gateway provision to the limit of 2.4m x 90m visibility splays, requiring the clearance/ re-siting of hedges adjacent WS76 and WS77;

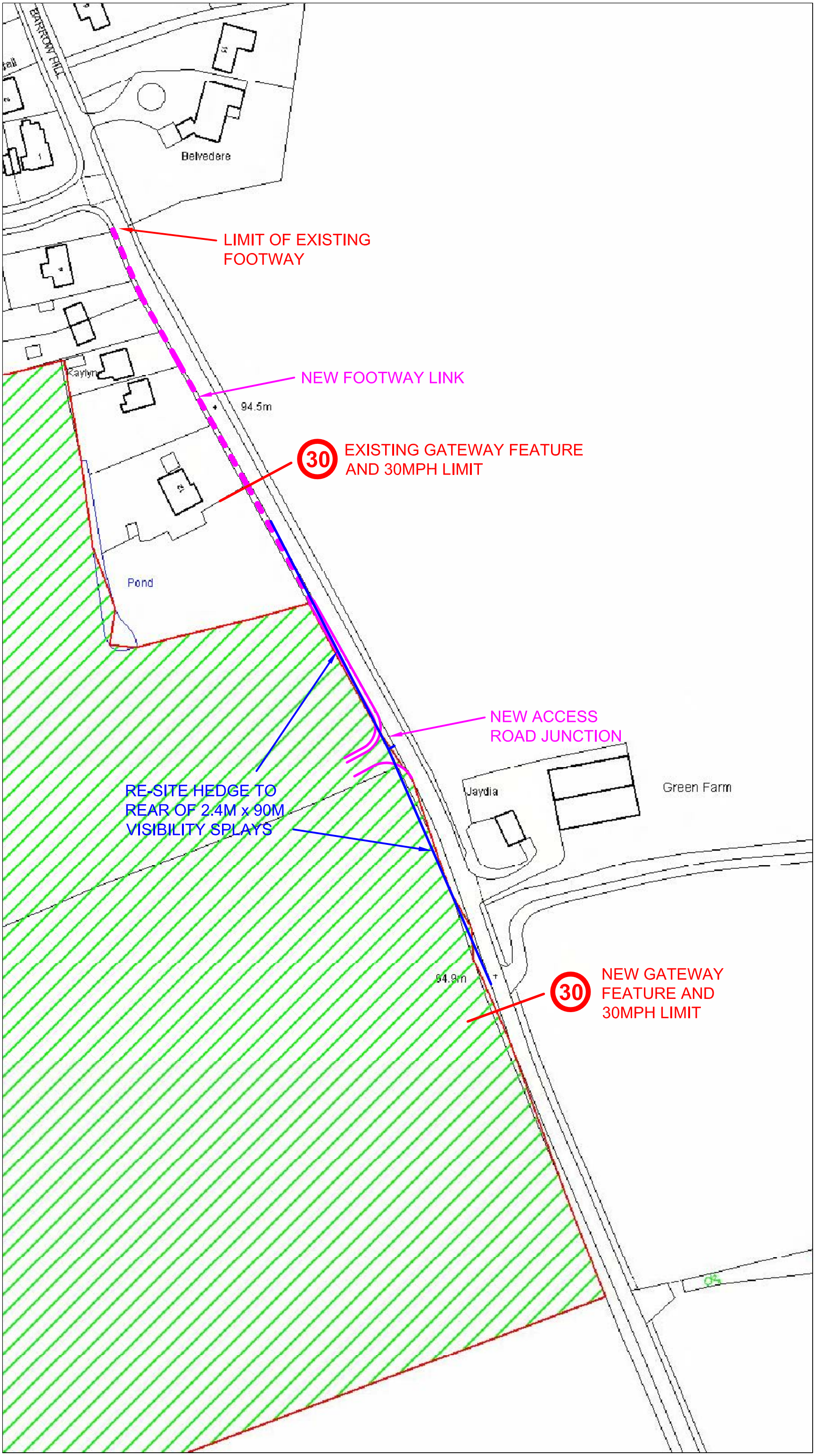
- Provision of a suitable footway between the existing infrastructure at Johnson Road and the site frontage, either by securing a relaxation in standards with the LHA or the minor realignment of Barrow Road carriageway to achieve the desirable infrastructure within the confines of the existing public highway;

- Enhanced public transport provision, potentially in the form of enhanced/ new services and passenger waiting infrastructure.

5.5 Any planning application for the development of the site will be accompanied by a Travel Plan, integrated into (and informed by) the necessary Multi-Modal Transport

Assessment, with the key purpose of identifying and delivering realistic and achievable sustainable transport options.

APPENDIX 1



Notes

1. No Dimensions are to be scaled from this drawing.
2. Contractors must verify all figured dimensions at site before commencing any work or making any Shop drawings.
3. This drawing is the sole copyright of Savills and no part may be reproduced without the written consent of the above.
4. Site Location Plans are prepared from the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright Reseserved.

No.	Revisions	By	Date

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Client
DENHAM VICARAGE FARM PARTNERSHIP

Job
RESIDENTIAL DEVELOPMENT
LAND WEST OF BARROW HILL
BARROW, SUFFOLK

Drawing Title
INDICATIVE ACCESS ARRANGEMENTS

Scale	Date
1:1250 @ A3	DEC 2010
Drawn By: MJ	Checked By: NE
Drawing No.: 180 / 000 / 001	Rev.:
Job No.: CATP 180000	

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

Land South of Barrow, Bury St. Edmunds, Suffolk

Initial Review of Groundwater Flooding

December 2009

for Denham Vicarage Farm Partnership

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DOCUMENT REVIEW SHEET:-

This document has been prepared for the sole use of Denham Vicarage Farm Partnership. Its content should not be relied upon by others without the written authority of Cannon Consulting Engineers. If any unauthorised third party makes use of this report they do so at their own risk and Cannon Consulting Engineers owe them no duty of care or skill.

Document Status

Issue	Date	Description	Author	Checked
Draft	December 09	Draft for team comment	JA	RT

Contents

Figures

Appendices

1.0 Introduction

Context

1.1 As part of the East of England Plan, both Forest Heath District Council (FHDC) and St. Edmundsbury Borough Council (SEBC) have agreed to deliver a minimum of 16,400 new homes between 2001 and 2021.

1.2 FHDC and SEBC commissioned Hyder Consulting to produce a Level 1 Strategic Flood Risk Assessment and Outline Water Cycle Study. This study was to identify any flooding or water related issues presenting significant obstacles to the ability to provide the preferred levels of development. A Level 2 study will commence following the publication of these preferred locations and will specifically assess the infrastructure requirements.

1.3 The August 2009 Level 1 SFRA and WCS highlights Barrow as one of the key development areas due to the sufficient water resources available and ability to accommodate future growth within the existing infrastructure.

1.4 The SFRA and WCS highlights groundwater flooding to be one of the main sources of flooding in Barrow. It identifies Barrow to suffer repetitive flooding from seasonal rising groundwater due to the low lying nature of the land and underlying geology.

1.5 The Environment Agency (EA) was consulted during the preparation of the SFRA and WCS so as to obtain any information on previous groundwater flooding incidents. The data provided show that previous groundwater flooding occurred across the study area between 2000 and 2001.

2.0 Groundwater Flooding

General Geology

2.1 The 1:50,000 geology maps (refer to Appendix A) show the site (refer to Figure 1) to lie on a superficial deposit of Diamicton over a bedrock of Chalk. British Geological Survey (BGS) records from the early 1980's (see below) indicate that the Diamicton in the vicinity of the site comprises pebbly Clay which is likely to be relatively impermeable.

Topography

2.2 The site lies at an elevation of around 95m AOD. The land to the south-west is slightly higher (in the order of 98m AOD) but otherwise levels fall away to the south and east. Barrow itself similarly lies at an elevation of around 95m AOD with levels falling away to the north, south, east and west.

Existing/Historic Boreholes

2.3 The BGS has supplied details of boreholes in the vicinity of the site; the locations of which are shown on Figure 2 with the logs at Appendix B.

2.4 The two boreholes most relevant to this site are located to the south / south-east at TL 76 SE 24 and TL 76 SE 29. Both records indicate topsoil (approximately 0.3m deep) over pebbly Clay (approximately 4m deep) over Chalk. Both boreholes were to a depth of around 20m and there was no water strike in either (September).

2.5 Whilst seasonal variations in the water table may have meant there was no water strike in September, the permeable nature of the Chalk could give rise to a very different result in the wetter months. However the overlying 4m thick layer of pebbly Clay layer is likely to halt the rise of groundwater.

Historic Groundwater Flooding

2.6 As noted in the SFRA and WCS, there has been groundwater flooding experienced in Barrow between 2000 and 2001. The elevation of this site and the presence of the pebbly Clay layer over the Chalk would indicate this to perhaps not be the case for this location. However, the water body on the eastern boundary of the site could be groundwater fed, i.e. hydraulically connected to the underlying Chalk. This therefore could act as a pathway for groundwater.

Impact on the Proposed Development

2.7 Should the open water body on the eastern boundary of the site represent a pathway for groundwater, then the following simple techniques could be included in the site's master plan to manage this flood source:

- Raised ground floor levels and access thresholds – should the surface expression of water or overland flow occur, then water would not be directed into the properties.
- Provision of cut-off drains to intercept rising groundwater levels and channel flows to low impact areas, e.g. open space, balancing ponds or a designated wetland. Such drains could be installed to keep certain areas dry such as access/egress routes.

- A landscaping strategy that directs any overland flows away from the properties to open areas or surface water drainage features.
- A sustainable drainage system that includes for the management of groundwater, e.g. the creation of a wetland which could specifically intercept rising groundwater as well as attenuating surface water runoff.

2.8 A considered site layout and building design could adequately mitigate the risk of groundwater flooding at the site for the lifetime of the development. However, the construction phase itself may need to include for temporary dewatering systems.

Planning Application Stage

2.9 At the later planning stages, data from on-site groundwater monitoring wells would help inform the Flood Risk Assessment (FRA), which would be required as part of any forthcoming planning application. The FRA would need to assess the risk from groundwater flooding and develop appropriate mitigation measures in accordance with the Environment Agency and St. Edmundsbury Borough Council's policies. Similarly the FRA would be required to develop a surface water drainage strategy that accords with sustainable drainage policies.

3.0 Conclusions

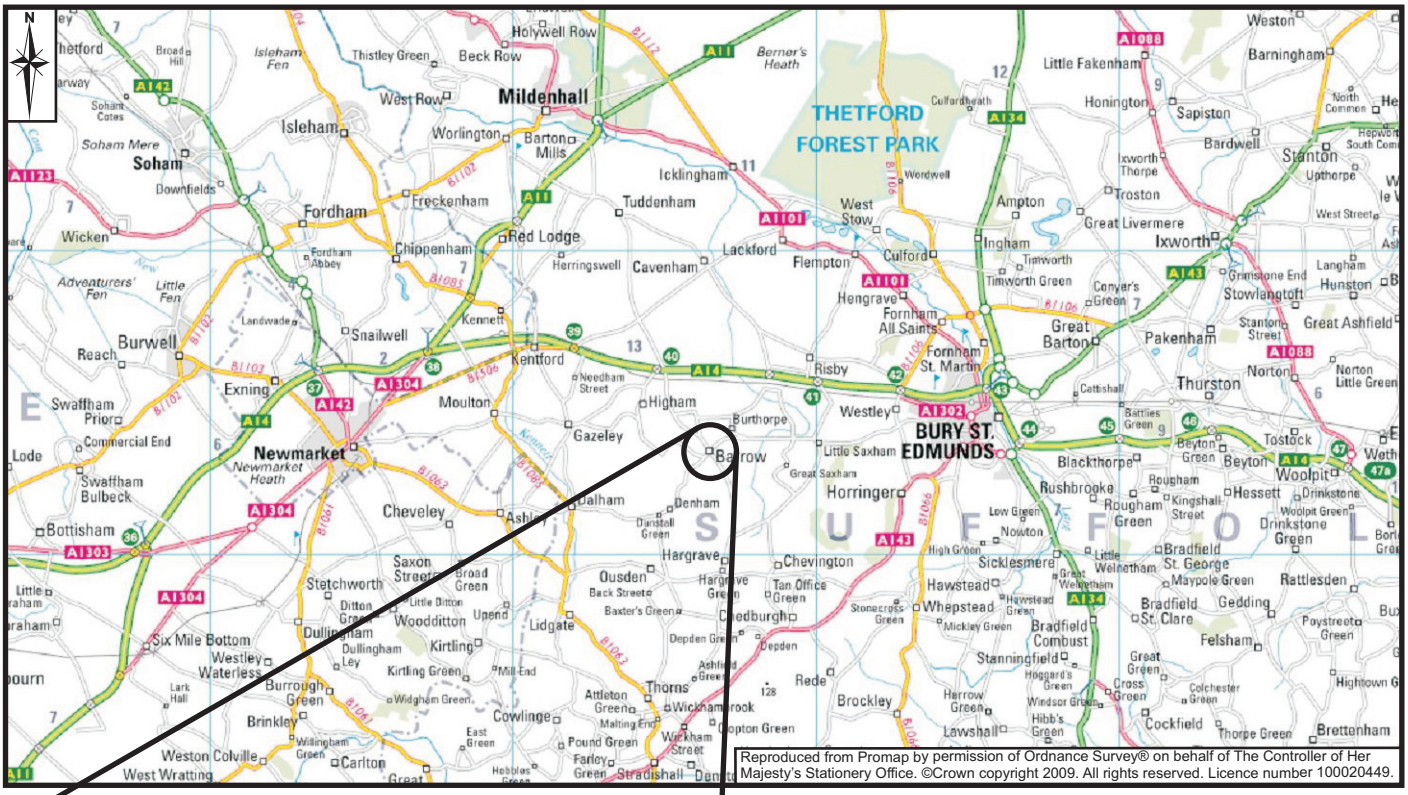
3.1 The local topography and underlying geology point to groundwater flooding not being an issue for this proposed development site. However, the existing open water body on the eastern boundary may provide a pathway for rising groundwater in the seasonally wet months.

3.2 The impact of any surface expression of groundwater or flooding from the existing water body can simply be mitigated through raising finished floor levels and setting access thresholds above the existing ground level.

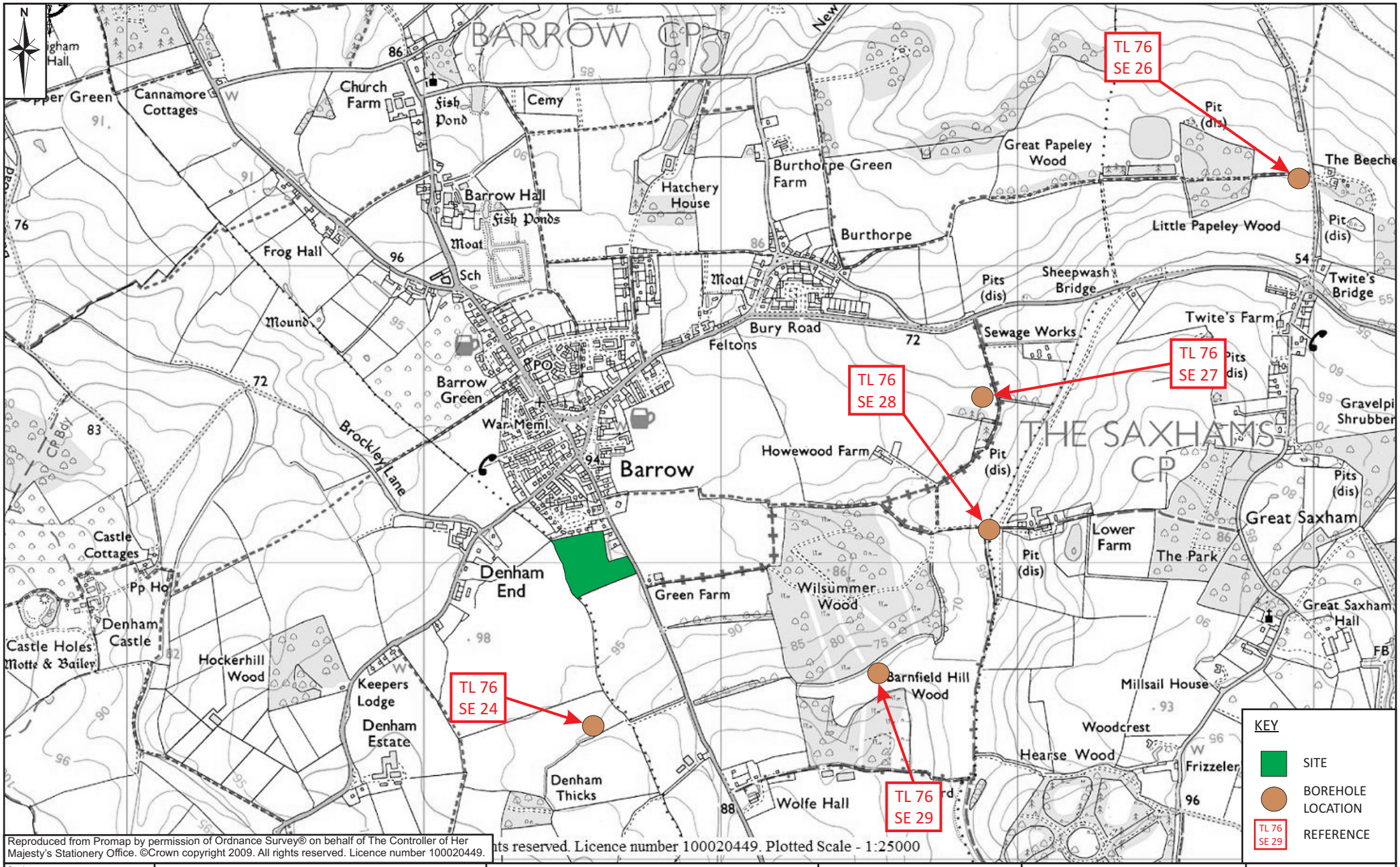
3.3 A considered site layout, building design, and landscape strategy would adequately mitigate against any risk from groundwater flooding, the full details of which would be developed as part of a site specific Flood Risk Assessment at the later planning stages.

3.4 It is concluded that the risk from groundwater flooding alone would not prevent residential development in this location, albeit that the mitigation measures and space required for the surface water drainage components would influence the master plan.

Figures



Scale: N.T.S Date: 16/12/09 Drawn By: JA	Job Title: LAND AT BARROW, BURY ST. EDMUNDS, SUFFOLK Client: DENHAM VICARAGE FARM PARTNERSHIP	Drawing Title: SITE LOCATION PLAN	Cambridge House, Lanwades Business Park, Kentford, Newmarket, CB8 7PN Tel: 01494 677 255 Fax: 01494 677 779 Email: info@cannonce.co.uk Web www.cannonce.co.uk	CANNON CONSULTING ENGINEERS Highways, Transport & Infrastructure Planning	Project No: F361 Figure No: FIGURE 1



Scale: N.T.S	Job Title: LAND AT BARROW, BURY ST. EDMUNDS, SUFFOLK	Drawing Title: BOREHOLE LOCATION PLAN	Project No: F361
Date: 15/12/09	Client: DENHAM VICARAGE FARM PARTNERSHIP		Figure No: FIGURE 2
Drawn By: JA			

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CANNON CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

Appendices

Appendix A – 1:50,000 Geology Maps

Envirocheck® Geology

Envirocheck® Report:

Geology 1:50,000 Maps

Order Details:

Order Number:
29551127_1_1

Customer Reference:
F361

National Grid Reference:
576570, 263000

Slice:
A

Site Area (Ha):
3.55

Search Buffer (m):
1000

Site Details:

Site at 576550, 263010

Client Details:

Mr R Totman
Cannon Consulting Engineers
Cambridge House
Landwades Business Park
Kentford
Newmarket
Suffolk
CB8 7PN

Prepared For:

Land at Barrow
Suffolk

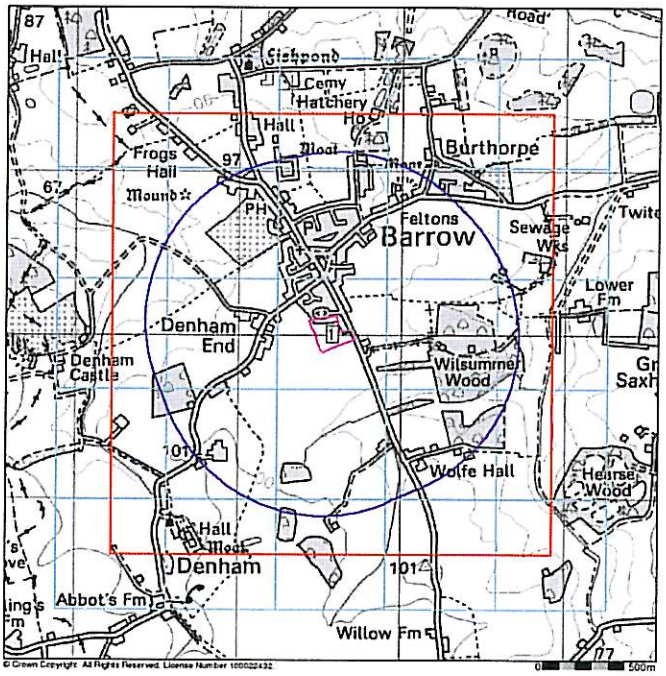
Landmark® Information Group

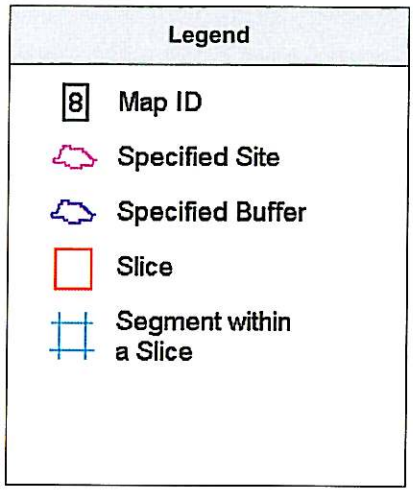
Geological Coverage Map

This report is designed for users carrying out preliminary site assessments who require geological maps for the area around a site. The report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale. This mapping may be more up to date than previously published paper maps.

The various geological layers - artificial (man-made) and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps. The final map, that of 'Combined Surface Geology', superimposes all these distinct layers into one, producing a map that shows the rocks that occur at the surface just beneath the soil. NOTE: The legend is in chronological order in accordance with the BGS geological age index.

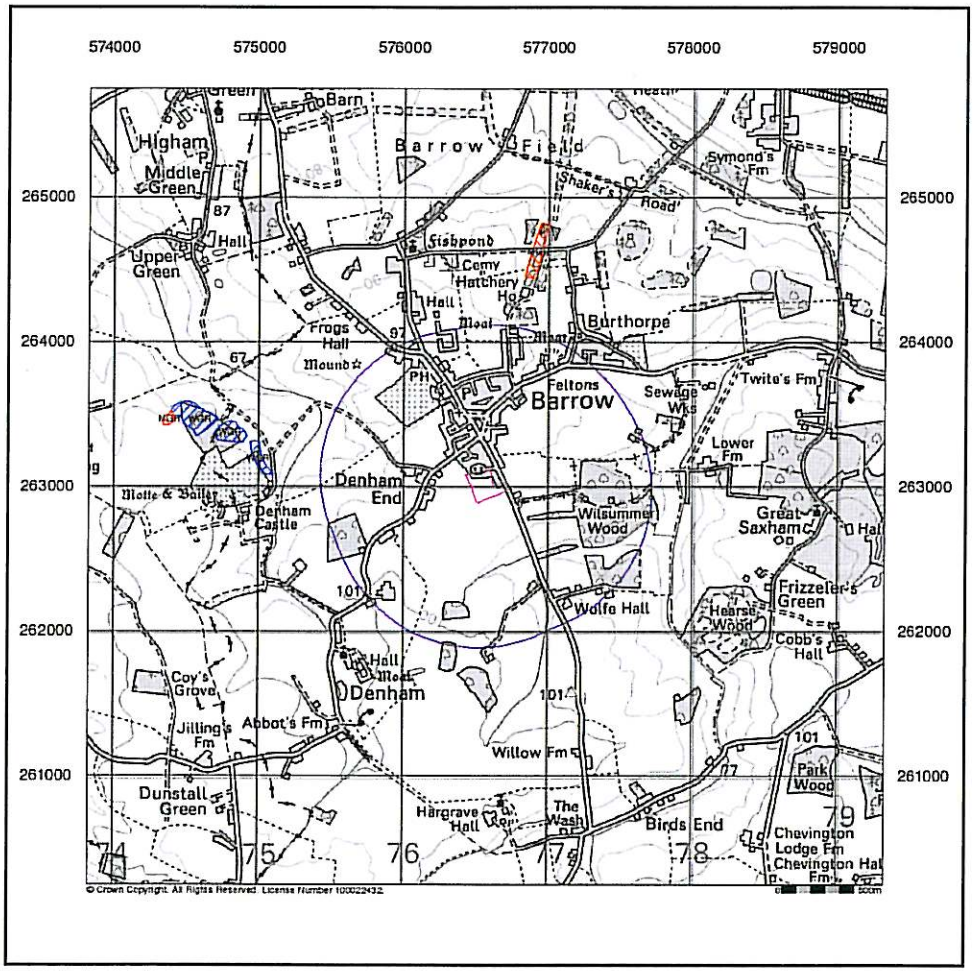
Not all of the layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.





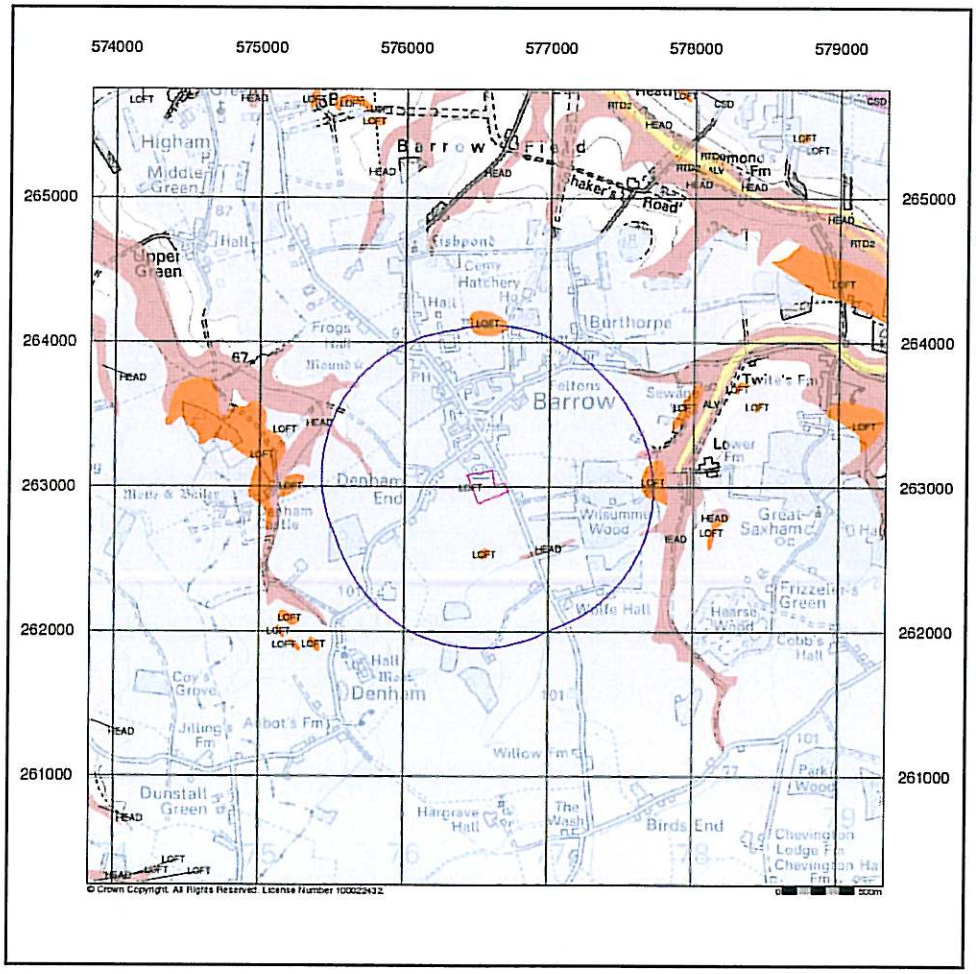
BGS 1:50,000 Geological Mapping Coverage	
Map ID:	1
Map Sheet No:	189
Map Name:	Bury St Edmunds
Map Date:	1982
Bedrock Geology:	Available
Superficial Geology:	Available
Artificial Geology:	Available
Faults:	Not Available
Landslip:	Not Available
Rock Segments:	Not Available

Artificial Ground and Landslip Map



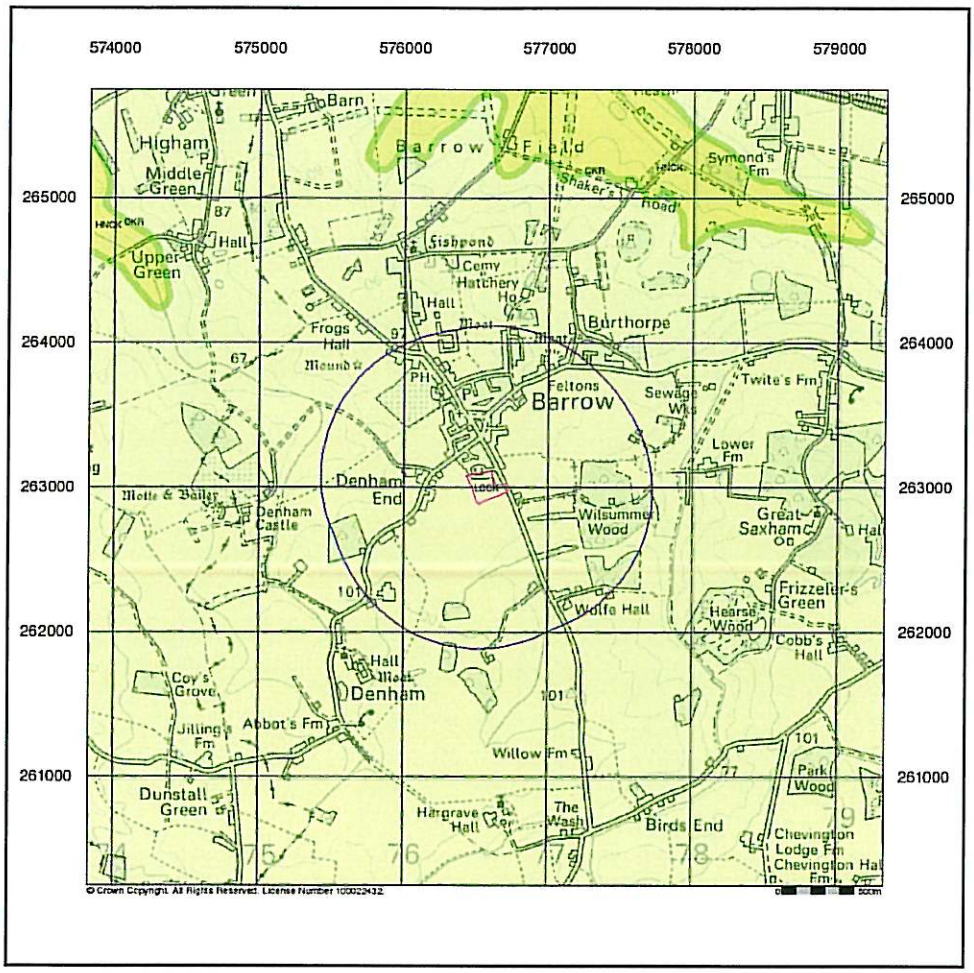
Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MGR	Made Ground (Undivided)	Artificial Deposit	Present Day - Present Day
	WGR	Worked Ground (Undivided)	Void	Present Day - Present Day

Superficial Geology Map



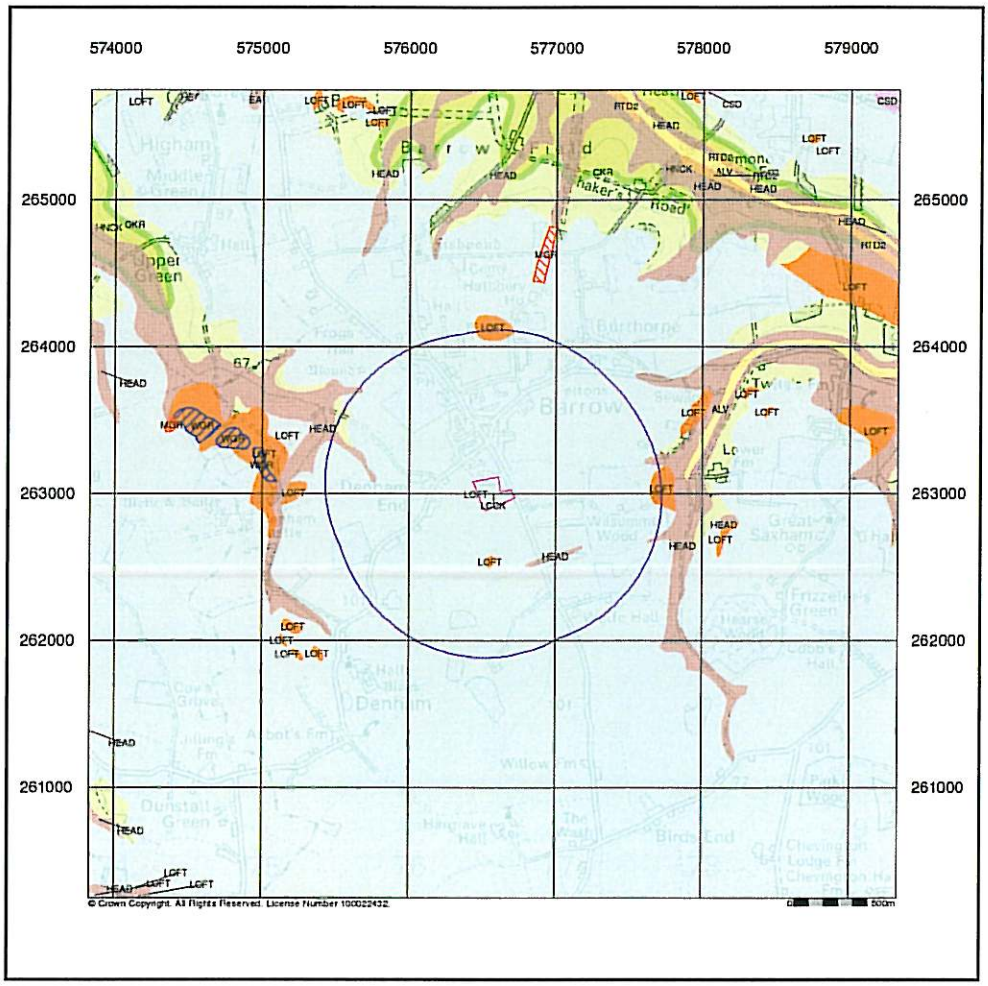
Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Flandrian - Flandrian
	LOFT	Lowestoft Formation	Sand and Gravel	Anglian - Anglian
	LOFT	Lowestoft Formation	Diamicton	Anglian - Anglian
	RTD2	River Terrace Deposits, 2	Sand and Gravel	Quaternary - Quaternary
	HEAD	Head	Clay, Silt, Sand and Gravel	Quaternary - Quaternary
	CSD	Cover Sand	Sand	Quaternary - Quaternary

Bedrock and Faults Map



Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	CKR	Chalk Rock Member	Chalk	Turonian - Turonian
	LCCK	Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation and Culver Chalk Formation (Undifferentiated)	Chalk	Campanian - Turonian
	HNCK	Holywell Nodular Chalk Formation and New Pit Chalk Formation (Undifferentiated)	Chalk	Turonian - Cenomanian

Combined "Surface Geology" Map



Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

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Appendix B – Extract from British Geological Survey Borehole Records

TL 76 SE 24 **7655 6240** **South of Barrow** **Block E**

Surface level 89.8 m (295 ft)
Water not struck
September 1981

Waste 20.0 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
Soil	Topsoil	0.3	0.3
Boulder Clay	Pebbly clay, dark grey, weathered light to moderate brown in upper 4.0 m, abundant subrounded chalk and subangular flint pebbles	19.7+	20.0

TL 76 SE 25 **7665 6155** **Hargrave Hall** **Block E**

Surface level c 90.0 m (c 295 ft)
Water not struck
September 1981

Waste 20.7 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
Boulder Clay	Soil on pebbly clay, dark grey, weathered light olive brown and decalcified in upper 4.0 m, abundant subangular flint and subrounded chalk pebbles	20.7+	20.7

TL 76 SE 26 **7895 6450** **Gt. Papeley Wood, Gt. Saxham** **Block E**

Surface level c 75.0 m (c245 ft)
Water not struck
September 1981

Waste 10.0 m
Bedrock 0.7 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
Soil	Topsoil	0.3	0.3
Boulder Clay	Pebbly clay, dark grey, weathered light to moderate brown in upper 2.0 m and below 8.5 m, abundant flint and chalk pebbles, some limestone fragments in parts	9.7	10.0
Upper Chalk	Chalk, white, hard	0.7+	10.7

TL 76 SE 27 **7795 6358** **Wilsummer Wood, Denham** **Block**

Surface level 73.0 m (240 ft)
Water not struck
September 1980

Waste 1.3 m
Bedrock 1.0 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
Soil	Topsoil	0.3	0.3
Boulder Clay	Silty pebbly clay, light brown, firm, numerous flint and chalk pebbles, some flint cobbles	1.0	1.3
Upper Chalk	Chalk, white, soft becoming hard	1.0+	2.3

TL 76 SE 28 **7791 6312** **Lower Farm, Saxham** **Block**

Surface level 68.3 m (224 ft)
Water not struck
September 1980

Waste 4.8 m
Bedrock 1.0 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
Soil	Topsoil	0.3	0.3
Boulder Clay	Silty clay, moderate brown, stained moderate and light olive brown, firm, scattered flint pebbles	2.2	2.5
	Pebbly clay, moderate brown, stiff, slightly sandy in parts, abundant chalk and scattered flint pebbles	2.3	4.8
Upper Chalk	Chalk, white, hard, some flint nodules	1.0+	5.8

TL 76 SE 29 **7754 6261** **South of Wilsummer Wood, Barrow** **Block**

Surface level 73.3 m (240 ft)
Water not struck
September 1980

Waste 19.6 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
Soil	Topsoil	0.3	0.3
Boulder Clay	Pebbly clay, medium dark grey, weathered moderate brown in upper and lower parts, abundant chalk and flint pebbles and cobbles especially in lower part	19.3+	19.6

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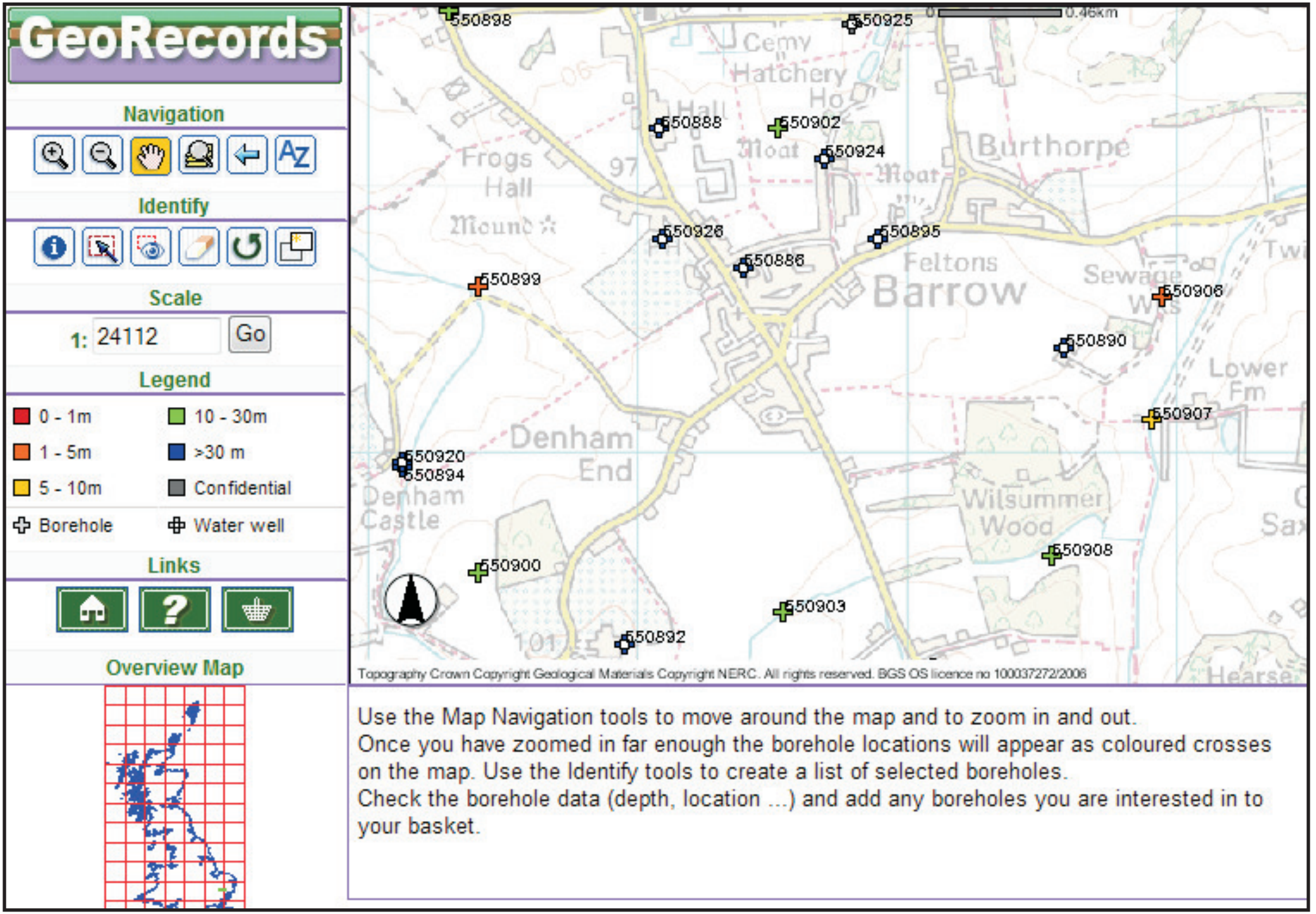
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Use the Map Navigation tools to move around the map and to zoom in and out.
Once you have zoomed in far enough the borehole locations will appear as coloured crosses on the map. Use the Identify tools to create a list of selected boreholes.
Check the borehole data (depth, location ...) and add any boreholes you are interested in to your basket.