

LONDON ASHFORD AIRPORT, LYDD (LAA)

**Extended Phase 1 Habitat Survey And
Assessment Of Hammonds Corner
Road Junction**

August 2008

Prepared by

Parsons Brinckerhoff Ltd
William Armstrong Drive
Amber Court
Newcastle Business Park
Newcastle-upon-Tyne
NE7 4YQ

Prepared for

London Ashford Airport (LAA)
Lydd
Romney Marsh
Kent
TN29 9QL

Report Title : **Extended Phase 1 Habitat Survey and Assessment of Hammonds Corner Road Junction**

Report Status : **Draft**

Job No : **HAG91877A/3.1**

Date : **July 2008**

Prepared by : **Leanne Moses**

L. Moses

Checked by : **Charlotte Peacock**

C. E. Peacock

Approved by : **Mark McLellan**

Mark McLellan



CONTENTS

	Page
1 INTRODUCTION	1
2 METHODOLOGY	2
3 BASELINE CONDITIONS	3
4 CONCLUSIONS AND RECOMMENDATIONS	5
5 IMPACT ASSESSMENT	7
6 REFERENCES	9

APPENDICES

APPENDIX 1: HAMMONDS CORNER EXTENDED PHASE 1 HABITAT MAP

APPENDIX 2: HAMMONDS CORNER EXTENDED PHASE 1 HABITAT MAP TARGET NOTES

APPENDIX 3: DRAWING OF PROPOSED ROUNDABOUT (REFERENCE 7709/001A)

APPENDIX 4: LOCATION OF DESIGNATED SITES IN RELATION TO HAMMONDS CORNER



1 INTRODUCTION

- 1.1 Parsons Brinckerhoff (PB) is acting on behalf of London Ashford Airport, Lydd (LAA) to assess, in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 and the Conservation (Natural Habitats, &c) Regulations 1994, the environmental impacts that may arise as a result of LAA's proposed runway extension and new terminal development.
- 1.2 Two planning applications (reference numbers Y06/1647/SH and Y06/1648/SH) for the proposed airport expansion were submitted to Shepway District Council (SDC) in December 2006, and Supplementary Information on the proposals was submitted in October 2007.
- 1.3 Following the submission of the supplementary information, SDC received comments from a number of stakeholders. These comments were subsequently issued to PB on 5th March 2008.
- 1.4 Although not part of planning applications Y06/1647/SH or Y06/1648/SH, within the submitted documentation accompanying the applications it has been identified that upgrade works will eventually be required to the junction formed by the B2075 (Romney Road) and the A259 (Lydd Road) and known as "Hammonds Corner" in order to mitigate against the impact of the applications. A map showing the location of Hammonds Corner is included in Appendix 3. The final design of the upgrade works will be decided through consultation with the Highways Authority followed by the formal submission of a planning application to SDC. However, preliminary discussions and design have concluded that the existing T-junction be converted into a three-junction roundabout (the latest indicative drawing (ref. 7709/001a) of the proposed roundabout is included in Appendix 3.
- 1.5 Whilst the proposed roundabout does not form part of applications Y06/1647/SH or Y06/1648/SH PB was instructed to respond to the following request from SDC:
- 'Following consultation with the Highways Agency, assess whether the proposed highway improvements to Hammonds Corner will likely affect the SSSI. If they will, undertake ecological surveys as necessary, assess impacts, propose mitigation and submit the results.'*
- 1.6 The SSSI referred to above is the Dungeness, Romney Marsh and Rye Bay Site of Special Scientific Interest (SSSI). The proposed highway improvements (to the roundabout) are not located within the SSSI. Hammonds Corner is located 940m North East of the SSSI.
- 1.7 Before undertaking any field work, the potential risks that may impact on the SSSI from the proposed works at Hammonds Corner were assessed. To assess this risk, the potential zone of influence for the SSSI was determined. The potential zone of influence is dictated by the dispersal distance of the species for which the SSSI is designated. For the Dungeness, Romney Marsh and Rye Bay SSSI, the species



which disperse the greatest distance include water voles *Arvicola terrestris* (up to 2km) and a variety of bird species (variable distances). As Hammonds Corner is located 940m from the SSSI at its nearest point, it is considered to be within the potential zone of influence and any works which take place may impact upon the SSSI.

- 1.8 To determine the potential impacts of the proposed highway improvements, an Extended Phase 1 Habitat Survey of the Hammonds Corner road junction was undertaken. The junction is formed by the B2075 Romney Road intersecting with the A259 Lydd Road (NGR: TR 051 246).
- 1.9 The Extended Phase 1 Habitat Survey was designed to identify any potential ecological issues which might affect the junction design and to inform an assessment of any likely potential impact of the proposed design which may impact upon the nearby SSSI.
- 1.10 The final design of the Hammonds Corner Junction has not yet been decided, although preliminary design options favour that the existing T-junction be converted into a three-junction roundabout.

2 METHODOLOGY

2.1 Desk Study

2.1.1 A desk study was undertaken to collect records of protected and noteworthy species and habitats within 2km of Hammonds Corner. This also included statutory and non-statutory designated sites.

2.1.2 The following web-based data bases were consulted:

- National Biodiversity Network (NBN) Gateway – accessed 7th May 2008.
- Multi Agency Geographic Information for the Countryside (MAGIC) – accessed 7th May 2008.

2.2 Survey methodology

2.2.1 The survey methodology was based on the standard Phase I auditing methodologies developed by the Joint Nature Conservancy Council (JNCC) (2003) and the 'Guidelines for Baseline Ecological Assessment' issued by the Institute of Environmental Management and Assessment (1995) (IEMA).

2.2.2 The site assessment was undertaken on 30th April and 1st May 2008 by a qualified PB ecologist; Leanne Moses, BSc, MSc, AIEEM. The weather was sunny with a small amount of cloud.

2.3 Field Study Limitations

- 2.3.1 To the north-west of Hammonds Corner there is a residential property with a private garden. Access was not available, but the property and garden could be seen from adjacent land and from the A259 Lydd Road.

2.4 Legislative Framework

- 2.4.1 European Directives with an ecological and nature conservation focus include Council Directive 79/409/EEC on the Conservation of Wild Birds (EU Birds Directive), the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), and the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (EC Habitats Directive) which has been transposed into UK legislation through the Conservation (Natural Habitats and c.) Regulations, 1994, as amended in 2007.
- 2.4.2 Of national legislation the key important acts are the Wildlife and Countryside Act 1981 (W&CA, 1981), and the Countryside Right of Way Act 2000 (CRoW, 2000).
- 2.4.3 Other documents, such as the Great Crested Newt Conservation Handbook (Froglife, 2001) and Water vole Conservation HandBook Second Edition (Strachan and Moorhouse, 2006) provide guidelines on ecology and nature conservation assessments, the most applicable being the UK Biodiversity Action Plan (BAP) and the RSPB guidance on the conservation status on UK bird species.
- 2.4.4 Planning Policy Statement (PPS) 9 furthers the interests of UK priority BAP habitats and species and considers other BAP species in both planning policy and development control.

3 BASELINE CONDITIONS

3.1 Designated Sites

- 3.1.1 Hammonds Corner and the land in the immediate vicinity carry no conservation designations. Designated sites near to Hammonds Corner are shown in Appendix 4.
- 3.1.2 Land 240m to the south-west of Hammonds Corner is designated as part of the Dungeness to Pett Level Important Bird Area (IBA). IBAs are non-statutory designations made by Bird Life International.
- 3.1.3 Romney Warren Local Nature Reserve (LNR) lies 2.4km to the north-east of Hammonds Corner.
- 3.1.4 A Site of Special Scientific Interest (SSSI); the Dungeness, Romney Marsh and Rye Bay Site of Special Scientific Interest, is located 940m to the south west of B2075 Romney Road.

3.2 Existing Conditions

- 3.2.1 A Phase I Habitat Map of Hammonds Corner is provided in Appendix 1. Target Notes to accompany this Map are provided in Appendix 2.



Land to the north of Hammonds Corner

- 3.2.2 Immediately opposite where Romney Road meets the A259 is a 3m wide verge. This verge comprises mainly grass species, but also includes cleavers *Galium aparine*, common nettle *Urtica dioica* and cow parsley *Anthriscus sylvestris*. Beyond the verge is an arable field. To the west is a residential house and garden separated from the field by a mature boundary within which are a series of large gaps (Figure 1, Target Note 1). The ditch running alongside the mature boundary was at the time of survey heavily shaded to the southern end. Beyond the boundary, the ditch contains abundant common reed *Phragmites australis*. Sedge warblers *Acrocephalus schoenobaenus* were noted in the reeds.
- 3.2.3 To the north and east of the ditch are further arable fields.
- 3.2.4 On the eastern boundary of the arable field a badger latrine was observed.

Land to the south of Hammonds Corner

- 3.2.5 To the west of Romney Road and running along the south of the A259 is an arable field. This is bordered to the east by a semi-improved grassland verge and Romney Road. The southern and western boundaries are open and bordered by large drainage ditches.
- 3.2.6 These ditches (Figure 1, Target Note 2) are approximately 5m wide with steep sloping sides. At the time of the survey the southern ditch contained areas of open water and a local land owner informed PB that it was regularly dredged. The ditch to the west of the field is approximately 2m wide and dominated by common reed. The sides are steeply sloping and the vegetation consists of mainly grass species and common nettle. To the northern end there is a pipe running under the A259 and in to the ditch.
- 3.2.7 To the east of Romney Road and approximately 65m south of the A259 is a farm house and associated out buildings. The farm yard comprises a combination of semi-improved permanent grassland and bare earth. The area appears to be used as storage for agricultural vehicles and equipment.
- 3.2.8 Between the house and storage buildings to the north runs a ditch. This is culverted beneath Romney Road. This ditch is approximately 3-4m wide with steep sloping sides. The depth of the ditch was not ascertained. Where the ditch emerges from the culvert it is shaded by trees from the farm house garden. As a result, the vegetation is limited to duckweed *Lemna* species. Further along the ditch, as it starts to border improved permanent grassland and arable fields, it is choked with common reed. A badger latrine was observed on top of the ditch bank (Figure 1, Target Note 3).
- 3.2.9 Directly to the east of Hammonds Corner there is a semi-circular verge. There are various drain covers on this piece of land but the majority of the area comprises mixed grass species. There are several other species amongst the grasses, including dandelion *Taraxacum agg.* and bristly oxtongue *Picris echioides*. At the far north eastern corner the verge becomes narrower and begins to run parallel with the A259. This verge is approximately 1m wide and to the south of this is a fence and improved permanent grassland field, currently horse grazed. A public footpath runs across the field.

4 CONCLUSIONS AND RECOMMENDATIONS FROM EXTENDED PHASE 1 HABITAT SURVEY

- 4.1 The land immediately at and surrounding Hammonds Corner is generally of low ecological value. Although the design of the scheme has not been finalised, no ecological factors have been identified which would significantly affect the outline design. Nevertheless, Hammonds Corner is located within the potential zone of influence for a statutory conservation site and a number of recommendations are made in this respect.

Trees and hedgerows

- 4.2 Trees and hedgerows can provide nesting and roosting opportunities for birds and roosting habitat and commuting corridors for bats.
- 4.3 No emergence or flight line surveys were undertaken for bats. It is possible that bats are using the tree and hedge lines along the roadside as commuter corridors, but surveys would need to be completed in order to confirm this. Whilst not affecting the SSSI it is recommended that the local bat group is consulted and that at the detailed planning stage, bat surveys and consultations are carried out.
- 4.4 Birds are likely to be nesting in the trees during the breeding bird season. The need, or otherwise, for a survey will be dependent on the timing of the works. As explained later in this report, whilst it is not considered that the proposed highway works will affect the SSSI in respect of birds, it is recommended that in accordance with good practice at the detailed planning stage, consideration is made for a survey for nesting birds, or any permitted removal of vegetation is carried out outside the nesting season.

Standing water

- 4.5 Standing water was present within the ditch network. There were no ponds within the survey area.
- 4.6 The ditch to the north of the A259, which runs between the arable field and the residential garden, is heavily shaded by the mature boundary and therefore is not considered suitable habitat for water voles.
- 4.7 The ditch to the south of the A259 and west of Romney Road is open with a small amount of vegetation. Such habitat would normally be considered suitable for water voles. However, the land owner informed PB that the ditch was dredged by the local Water Board Authority on a regular basis to remove the vegetation. The timings of these works could affect whether this ditch provides suitable water vole habitat. It is recommended that at the detailed planning stage, water vole surveys are carried out.
- 4.8 The ditch to the south of the A259 and to the east of Romney Road is heavily shaded where it passes along side the house and garden. Beyond this it becomes dominated with the remains of the previous years' vegetation. No field signs of water vole were



observed, but it should be noted that the observations were completed from the banks of the ditch and not from within the water. It is recommended that at the detailed planning stage, water vole surveys are carried out.

4.9 The presence of common reed in the ditch network also provides habitat for birds and several species were noted during survey. As stated above it, is recommended that at detailed planning stage, consideration is made for a survey for nesting birds, or any permitted removal of vegetation is carried out outside the nesting season.

4.10 The ditches have limited potential to provide aquatic habitat for great crested newts as most of them contain over grown vegetation. The ditch furthest south of the A259 and west of Romney Road is potentially the most suitable as areas of open water were observed. However, the diversity of aquatic vegetation is limited, due to annual dredging. For this reason it is unlikely that great crested newts would be breeding in the ditch. Therefore a great crested newt survey is not considered to be necessary at the detailed planning stage.

Grassland

4.11 There are several types of grassland in the area. Amenity grassland is present in the residential gardens and appears to be of low ecological value (this area could not be directly accessed). It is recommended that confirmation of this is made when the design scheme is finalised and the gardens are likely to be affected.

4.12 The improved permanent grassland comprised one field currently being horse grazed. Due to this, the field is of low ecological value.

4.13 The semi-improved grassland margins of the roads and fields are cut regularly and contain no scrub and very few tall ruderal species. These margins are of low ecological value.

Arable

4.14 Most of the land surrounding Hammonds Corner comprises arable fields. These are considered to be of low ecological value as they are large monocultures of crops.

4.15 Badger latrines were along the margins of fields although no signs of setts were observed. Most of the landscape around Hammonds Corner appears to be unsuitable for badger setts, as it is flat with shallow hedge banks restricting suitable habitat for sett construction. However, as latrines are present, badgers are using the area for foraging. Whilst not affecting the SSSI, it is recommended that at the detailed planning stage a badger survey is carried out.

Buildings

4.16 There are two residential properties within close proximity to Hammonds Corner. Both properties have the potential to be used by bats as a roost. These properties also have several out-buildings associated with them, which could also be used by bats. It



is recommended that at the detailed planning stage, bat surveys are carried out on these buildings.

- 4.17 Birds species, such as swallows *Hirundo rustica*, also use buildings as nesting sites. No nests were noted on the parts of the buildings that could be seen, however, it is recommended that at the detailed planning stage, checks are made for nesting birds in these buildings, if it is likely that they would be disturbed.

5 OVERALL IMPACT ASSESSMENT ON DUNGENESS, ROMNEY MARSH AND RYE BAY SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

- 5.1 The purpose of this report is to address the following request from SDC:

'Following consultation with the Highways Agency, assess whether the proposed highway improvements to Hammonds Corner will likely affect the SSSI. If they will, undertake ecological surveys as necessary, assess impacts, propose mitigation and submit the results.'

- 5.2 Although Hammonds Corner is not located within the SSSI in order to assess any likely potential impacts of the improvement works at Hammonds Corner which may affect the SSSI, it is necessary to set out the designation characteristics for the SSSI. The Dungeness, Romney Marsh and Rye Bay Site of Special Scientific Interest (SSSI) has been selected for designation based on a number of criteria which are summarised below:

- The coastal geomorphology of Dungeness and Rye Harbour;
- The presence of nationally important habitats;
- The presence of vascular plant species and assemblages detailed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended);
- The presence of populations of Warne's thread moss *Bryum warneum*;
- The presence of water voles;
- The presence of an important assemblage of breeding and over-wintering birds and bird species on passage;
- The presence of metapopulations of great crested newts; and
- The presence of endangered, vulnerable or rare invertebrate species and assemblages.

- 5.3 Using the Phase 1 Habitat survey results above, the following impact assessment has been made:

Direct impacts on the SSSI

- 5.4 Hammonds Corner is located 940m north east of the SSSI. The final design of the Hammonds Corner Junction has not yet been decided, although preliminary design options suggest that the existing T-junction is likely to be converted into a three-junction roundabout. As part of the proposed design there will be no land take from the SSSI and no construction structures or works taking place within the boundaries. Therefore, the SSSI would not be directly impacted under this design option.

Indirect impacts on the SSSI



- 5.5 The following SSSI designation criteria would be unaffected by any road junction improvement at Hammonds Corner:
- The coastal geomorphology of Dungeness and Rye Harbour;
 - The presence of nationally important habitats;
 - The presence of vascular plant species and assemblages detailed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended);
 - The presence of populations of Warne's thread moss *Bryum warneum*;
- 5.6 The following SSSI designation criteria may be affected:
- The presence of water voles;
 - The presence of an important assemblage of breeding and over-wintering birds and bird species on passage;
 - The presence of metapopulations of great crested newts *Triturus cristatus*; and
 - The presence of endangered, vulnerable or rare invertebrate species and assemblages.
- 5.7 These criteria which may be affected are addressed in detail below.
- 5.8 The habitat surrounding Hammonds Corner has been assessed in the Extended Phase I Habitat Survey. Whilst birds are likely to be nesting in the area, the area surrounding Hammonds Corner was found not to contain any of the 16 bird species noted as having nationally important breeding numbers. If these species are not using this area then the scheme will not affect these species. Therefore the SSSI will not be affected.
- 5.9 While the survey of Hammonds Corner was not completed in the winter the habitat does not seem suitable habitat for waterfowl. The ditches are mainly choked with common reed *Phragmites australis* preventing the development of ideal habitat which is abundant in the wider area, e.g. the SSSI, Dungeness RSPB Reserve. Therefore the assemblages of waterfowl, the 17 wintering bird species and three passage bird species will not be affected by modifications to Hammond Corner.
- 5.10 Great crested newts could potentially be affected indirectly by works at Hammonds Corner. However, it is widely acknowledged that great crested newts usually only travel up to 500m from breeding ponds. As Hammond's Corner is over 900m from the nearest SSSI boundary, the proposed works will not impact upon great crested newts from the SSSI.
- 5.11 Water voles may also potentially be indirectly affected by works at Hammonds Corner. Although it is not envisaged that ditches will be removed as part of the works, some works will take place near to ditches which feed into a network that runs throughout the Dungeness area.
- 5.12 The shortest distance following the ditch network from the SSSI boundary to Hammonds Corner is 1581m which will be within the acknowledged dispersal distance of water voles. Therefore it is recommended that the detailed design for the Junction takes account of the likely movement of water voles in the area.



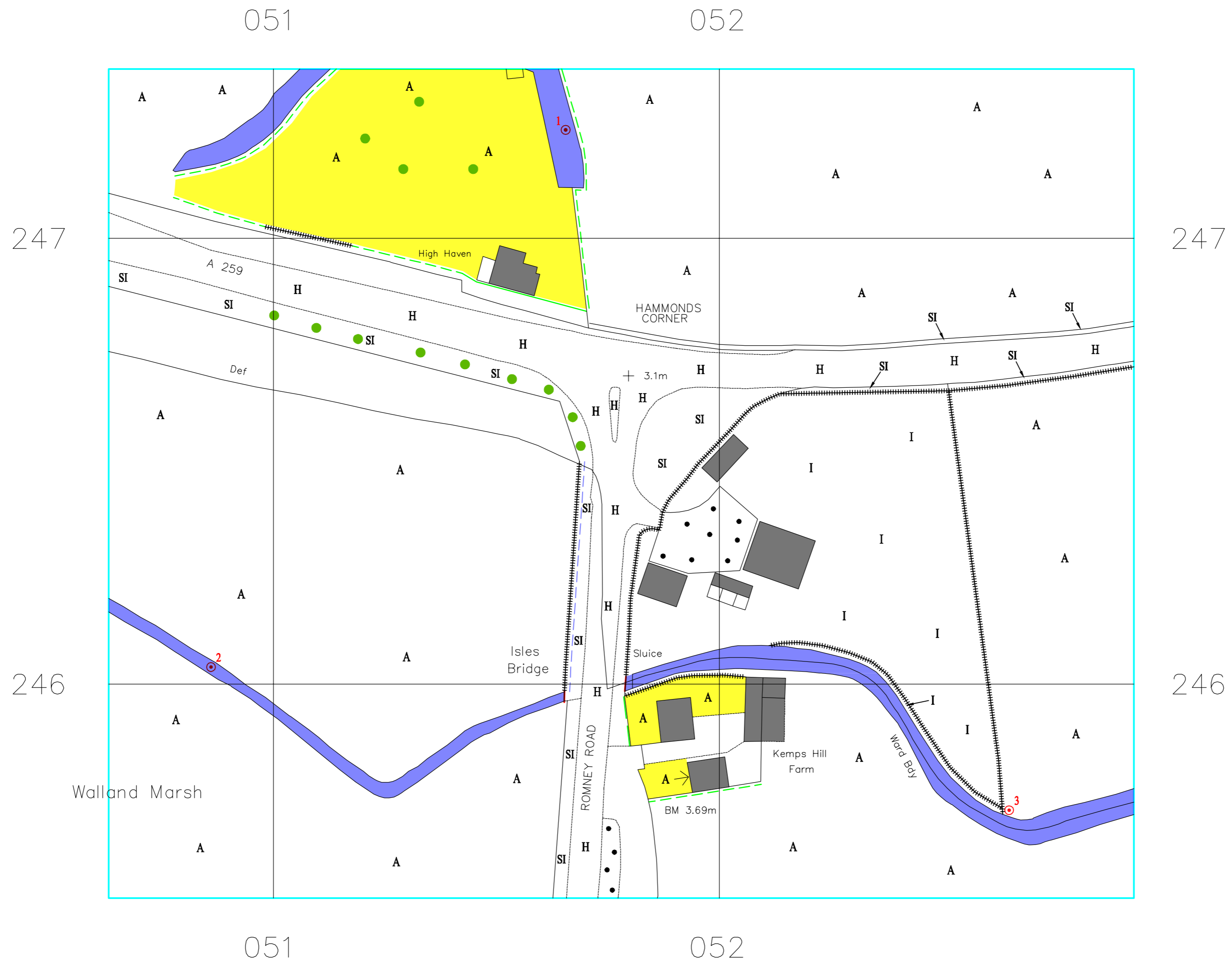
- 5.13 The invertebrate species and assemblages, as well as water voles and great crested newts, could potentially be affected by run-off effluent flowing through the ditch network. Therefore it is recommended that the detailed design for the scheme takes account of water pollution control.
- 5.14 In preparing the detailed design for the proposed highway works, it is recommended that full consideration is given to the guidance set out in Natural England's Technical Information Note TIN042 entitled "Water Voles and development: licensing policy." Accordingly, appropriate mitigation measures should be included, so far as is reasonable and possible, in the detailed design for the proposed highway works to safeguard any water voles and the places they use for shelter and protection.
- 5.15 In conclusion, taking the SSSI designation criteria, it is considered that the proposed highway works will not have a direct impact on the SSSI and is likely to only have an indirect impact on the movement of water voles (if they are present) and invertebrate species and assemblages. Appropriate mitigation measures, if required, can be built into the design of the proposed roundabout prior to the submission of any planning application for the roundabout. As the proposed highway works are only required at a certain trigger point (as agreed with the Highways Agency and Highways Authority) further recommended surveys will be carried out at the time a planning application for the proposed highway works is submitted.

6 REFERENCES

- NaturalEnglandwebsite, <http://www.english-nature.org.uk/special/sssi/reportaction.cfm?report=sdrt18&category=S&reference=2000533>, accessed 25th June 2008.

APPENDIX 1

HAMMONDS CORNER EXTENDED PHASE 1 HABITAT MAP



- LEGEND**
- WALLS
 - #### FENCE
 - BROAD-LEAVED TREES
 - HEDGE
 - - - DEFUNCT HEDGE
 - - - DRY DITCH
 - STANDING WATER
 - AMENITY GRASSLAND
 - I IMPROVED PERMANENT GRASSLAND
 - SI POOR SEMI-IMPROVED GRASSLAND
 - A ARABLE
 - H HARDSTANDING
 - BUILDINGS
 - BARE GROUND
 - TARGET NOTE
 - SURVEY BOUNDARY

REV	DATE	DESCRIPTION	BY	CHKD	APPD

NOTES

Parsons Brinckerhoff
 Queen Victoria House, Redland Hill, Bristol, United Kingdom, BS6 6US
 Tel: 44-(0)117 9339300 Fax: 44-(0)117 9339253
 © Copyright Parsons Brinckerhoff

• CLIENT
LONDON ASHFORD AIRPORT

• PROJECT
HAMMONS CORNER LYDD AIRPORT

• TITLE
PHASE 1 HABITAT MAP

• DATE 10/06/08
 • SCALE 1:750 at A2
 • CAD REF \\HAG\91877A\Z\1\HAG91877A-F01.DWG
 • DRAWING NUMBER
FIGURE 1

DRAWN BY BRG
 PRODUCED BY CP
 CHECKED
 APPROVED

THIS DRAWING WAS PRODUCED USING AUTOCAD AND SHOULD ON NO ACCOUNT BE AMENDED BY HAND

APPENDIX 2

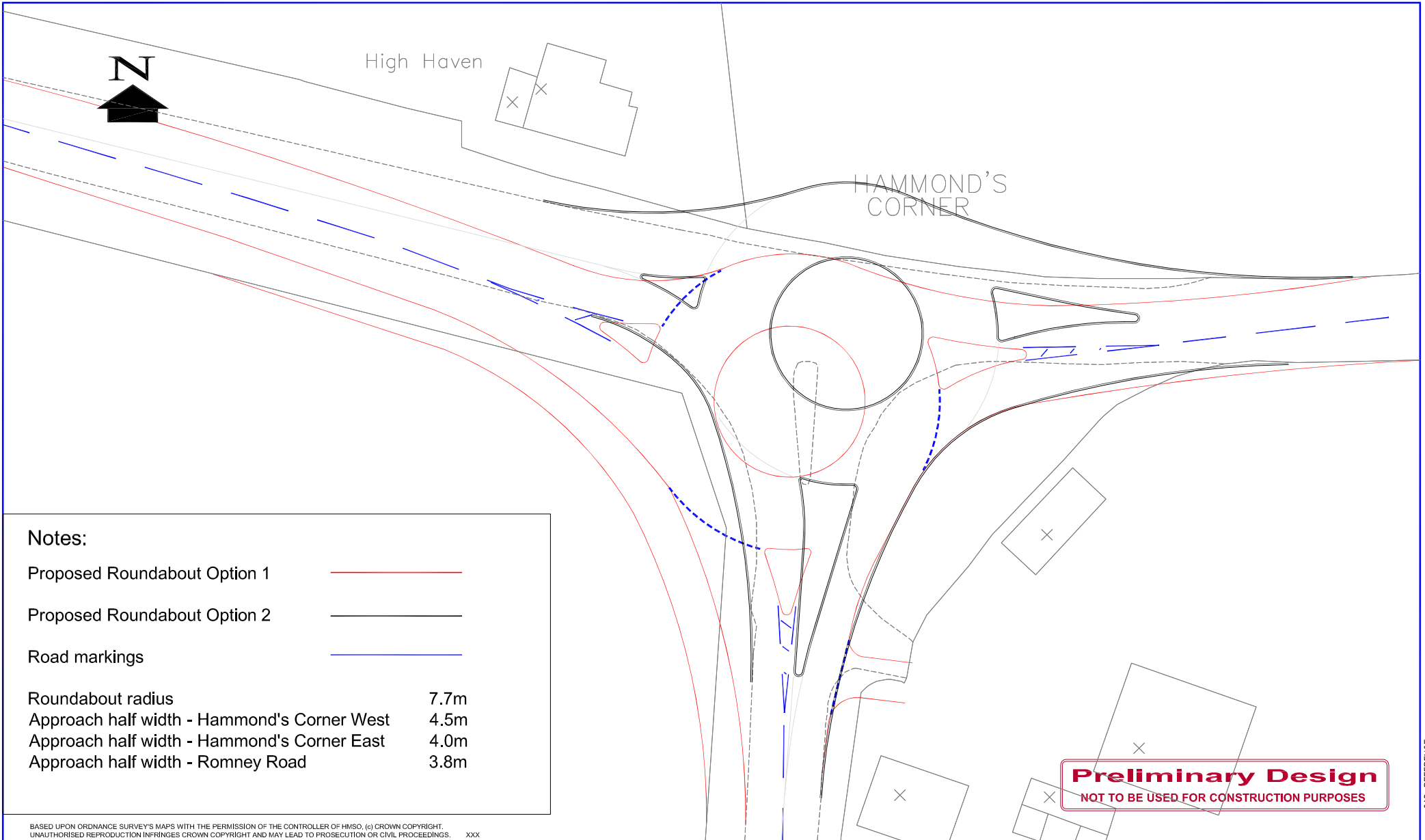
HAMMONDS CORNER EXTENDED PHASE 1 HABITAT MAP TARGET NOTES

HAMMONDS CORNER EXTENDED PHASE 1 HABITAT SURVEY TARGET NOTES

Target Note	Description
1	Ditch heavily shaded by mature boundary
2	Drainage ditch that is regularly dredged
3	Badger latrine

APPENDIX 3

DRAWING OF PROPOSED ROUNDABOUT (REFERENCE 7709/001A)



Notes:

Proposed Roundabout Option 1 ———

Proposed Roundabout Option 2 ———

Road markings - - - - -

Roundabout radius	7.7m
Approach half width - Hammond's Corner West	4.5m
Approach half width - Hammond's Corner East	4.0m
Approach half width - Romney Road	3.8m

BASED UPON ORDNANCE SURVEY'S MAPS WITH THE PERMISSION OF THE CONTROLLER OF HMSO, (c) CROWN COPYRIGHT. UNAUTHORISED REPRODUCTION INFRINGES CROWN COPYRIGHT AND MAY LEAD TO PROSECUTION OR CIVIL PROCEEDINGS. XXX



28-32 Upper Ground London SE1 9PD
Tel: 020 7919 8500 Fax: 020 7827 9850/1/2

Client: -
-

Title
LONDON ASHFORD AIRPORT
Figure 5.1
Hammonds Corner: Indicative Proposed Roundabout Layout Options

Rev.	Date	Comments	Ckd	App
-		ORIGINAL ISSUE		

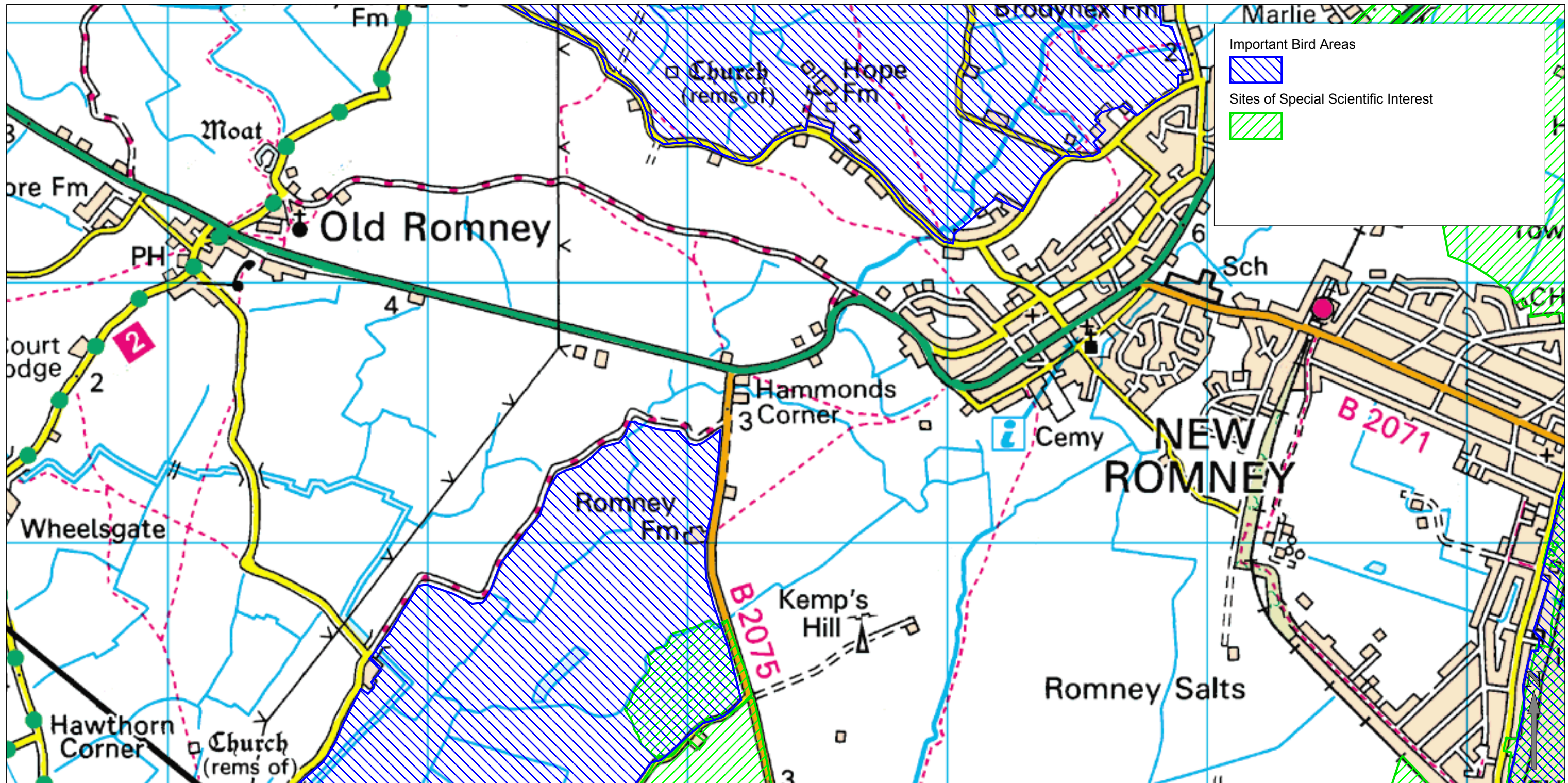
Drawn YPL	Scale. 1:500	@ A4	Rev. -
Job No. 207709-A			
7709/001a			

Preliminary Design
NOT TO BE USED FOR CONSTRUCTION PURPOSES

CAD REFERENCE: .
PLOT DATE: .

APPENDIX 4

LOCATION OF DESIGNATED SITES IN RELATION TO HAMMONDS CORNER



THIS MAP IS REPRODUCED FROM THE ORDNANCE SURVEY MATERIAL BY PARSONS BRINCKERHOFF LTD., WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. CROWN COPYRIGHT. LICENCE NUMBER: 100018516.



CLIENT/PROJECT: **LYDD** London Ashford Airport LAA Runway Extension EIA
 TITLE: Designated Sites

DATE: July 2008
 SCALE: 1cm : 600m
 GIS REF: 96324A - Lydd Airport EIA\2006 Files\Z Drawings\1 Current\GIS
 DRAWN BY: AK
 PRODUCED BY: BF
 DRAWING NUMBER: APPENDIX 4 - FIGURE 1

Parsons Brinckerhoff
 Manchester Technology Centre
 Oxford Road, Manchester, M1 7ED
 Tel: +44 (0)161 200 5000 Fax: +44 (0)161 200 5001

© Copyright Parsons Brinckerhoff Ltd 2008.
 THIS DRAWING WAS PRODUCED USING MAPINFO® AND SHOULD ON NO ACCOUNT BE AMENDED BY HAND.