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**BEDFORD WESTERN BYPASS:
REPORT OF ARCHAEOLOGICAL
SURVEY, IMPACT AND MITIGATION**

17 FEBRUARY 1993

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RPS ARCH 1: ARCHAEOLOGICAL FEATURES AND CONSTRAINTS

1 INTRODUCTION

1.1 The Department of Transport (DoT) is investigating the options for a bypass to the west of Bedford to link with the southern bypass at the A6 west of Elstow and the A428 at Bromham Bridge or the Clapham Bypass east of Biddenham. Brian Colquhoun and Partners (BCP) have been appointed as consulting engineers, and they have instructed RPS Clouston (RPSC) to investigate the heritage aspects of the scheme for the Technical Appraisal Report (TAR).

1.2 The brief identifies an Inner Western (IW) Corridor and an Outer Western (OW) Corridor, including the A421/A5134 junction and improvements or alternatives to the A428 north of Biddenham. This Draft Report addresses the existing conditions, the effects of the schemes, and possible mitigation measures. The study has been a desk based survey of available information enhanced by a walkover survey of the corridors using public access routes only.

1.3 The scope of the study is taken from the TAR draft outline which lists "Heritage, Monuments and Buildings, and Archaeology" under Section 3.11 of the Environment chapter.

1.4 The sources of the information have been:

- i) the Bedfordshire County Council Historical Environment Records (HER),
- ii) existing aerial photographs (APs) held at Bedfordshire County Council (BCC), the National Library of Aerial Photographs and other relevant sources,
- iii) early maps,
- iv) geological maps,

- v) existing ground investigation records held by North Bedfordshire Borough and DSD Contractors
- vi) published and unpublished documentary material,
- vii) English Heritage Scheduled Ancient Monument (SAM) records.
- viii) DoE Listed Building registers ("Green Backs").

1.5 The BCC Archaeological Services carried out the walkover survey (appendix 1) to appraise the state of the fields and note any visible earthworks or soil marks. The survey covered the fields on both sides of the Inner and Outer options to an average distance of 500m on each side. BCC Conservation Department provided the HER data and Parish Survey documentation. BCC Highway Engineers Department and North Bedfordshire Borough Council provided geotechnical data for parts of the area. Bovis Homes kindly allowed access to the archaeological study carried out by Chris Gerrard on their behalf by Countryside Planning and Management (CPM).

1.6 Summary data were collected from a wider Study Area than the Option Corridors in order that the context of the corridor information could be used in the assessment. Detailed information, however, was collected for the Option Corridors only.

1.7 The information gathered by CPM in the Biddenham Loop on behalf of Bovis Homes was consulted, with their permission. There is a considerable amount of detailed material contained in their study, but full disclosure awaits agreement with Bovis Homes. It has only been possible to summarise the information below, on the basis of a verbal briefing by CPM and Bovis Homes.

2 POLICY CONTEXT AND METHODOLOGY

Archaeology: International and National Policies

- 2.1 European Policies. European Community policies are enshrined in Directive 85/337 which is concerned with "the assessment of the effects of certain public and private projects on the environment". Trunk road schemes longer than 1km are included in the schedule of projects requiring assessment. Included in the list of aspects of the environment which should be considered are "material assets, including the architectural and archaeological heritage". These requirements are incorporated in the United Kingdom Town and Country Planning (Assessment of Environmental Effects) Regulations 1988.
- 2.2 National Policies. Statutory protection for archaeology is principally enshrined in the Ancient Monuments and Archaeological Areas Act (1979) amended by the National Heritage Act 1983. Nationally important sites are listed in a Schedule of Ancient Monuments which is maintained by the Secretary of State for National Heritage. Scheduled Ancient Monument (SAM) consent is required for any work which would affect a SAM, including covering it up. The Department of National Heritage is advised by the Historic Buildings and Monuments Commission for England, known as English Heritage.
- 2.3 English Heritage. English Heritage may also be asked to advise on other archaeological matters, as it is mandated in the National Heritage Act "so far as is practicable, to secure the preservation of ancient monuments and historic buildings in England". As well as carrying out a general archaeological advisory role it also monitors the situation of archaeology in the planning process, based on the Planning Policy Guidance on Archaeology and Planning issued by the DoE in November 1990 (PPG16, see below para. 3.5).

- 2.4 English Heritage reviewed the impact of road schemes on archaeology in 1990 in Roads for Prosperity: the Archaeological Impact, which although it has no mandatory status nonetheless represents a succinct statement of English Heritage concerns. In its conclusions this document states: "... the environmental impact must be fully assessed in advance of route selection to allow for the consideration of the possibilities for mitigation of impact ... it is therefore necessary to give greater weight to the archaeological implications of trunk road development and to integrate fully such considerations into the process of assessment required for all such developments"
- 2.5 DoE Planning Policy Guidance (PPG16). The Planning Policy Guidance on Archaeology and Planning (PPG16) published in November 1990 consolidates advice to planning authorities concerning the safeguarding of archaeology within the planning process. The guidance emphasises the irreplaceability of the archaeological resource, details the role of records kept in the county Sites and Monuments Record (SMR), encourages early consultation with county archaeological officers, and sets out the requirement for applicants to furnish sufficient information about the archaeological impact of their proposals for reasonable decisions to be made. The document also indicates the circumstances in which further archaeological evaluation would be necessary, and outlines the use of agreements and conditions to protect the archaeology if appropriate. Its relevance to Trunk Road Schemes has been acknowledged by the Minister of State (see below).
- 2.6 Department of Transport. The Government's policies for trunk roads are set out in Trunk Roads England: into the 1990s published in February 1990. Paragraph 1.8 states that "the requirements for road travel are met in as environmentally friendly way as possible" and the paper goes on to point out that "a great deal of effort already goes into assessing the environmental impact of potential schemes and designing them to fit as sympathetically as possible into the road programme and the Government intends to do even

more". Circular HD18/88 sets out the contents of necessary statements on the effects of published schemes, so as to comply with the 1980 Highways Act section 105 A(2). The requirements of this Act are published in Statutory Instrument 1988/124 which states that the Secretary of State "shall publish not later than the date of publication of details of the project an environmental statement ... to the extent that he considers ... that (having regard in particular to current knowledge and methods of assessment) the information may reasonably be gathered ..." (105A(2)). The guidelines for carrying out such assessments are set out in the Department's Manual of Environmental Appraisal (1983).

Archaeology: Assessment Methodology

- 2.7 DoT Manual of Environmental Appraisal. The DoT Manual summarises the statutory protection given to SAMs and accepts that other archaeological features should also be avoided where practicable (para.6.2.5). The stages of assessment are set out: a summary of heritage information should be included in the Consultation Framework; any new information obtained at the public consultation should be followed up and the subsequent Preliminary Report should outline the proposed responses to archaeological constraints; and the Public Inquiry framework should have a detailed consideration of affected sites together with the mitigation procedures proposed. In a Parliamentary Written Answer the Minister of State, Department of Transport, stated "The effect on archaeological sites is assessed before decisions on routes are taken. The procedures are set out in the Department's Manual of Environmental Appraisal; the Manual is being revised and English Heritage are being consulted" (Hansard 18.12.1990;WA48). It is considered likely that this review will endorse the precepts of PPG16 and that impact and mitigation assessments will be required at an earlier stage of route assessment than previously.

- 2.8 The stages of archaeological assessment for any major project, as suggested in PPG16, and as endorsed by the Institute of Field Archaeologists (The Assessment of Trunk Road Schemes, March 1992 paper produced by the IFA Contract Archaeology Committee), are:
- i) Desk-top (SMR study, Aerial Photographic (AP) study, documentary evidence) leading to mapping of recorded remains, an assessment of the quality of the existing information, and an initial grading of sites. This stage should be carried out over a study area before alternative routes alignments are identified;
 - ii) Field evaluation (walk-over survey, systematic field walking, geophysical survey) carried out both on known sites and "blank" areas in order to upgrade data when route alternatives are considered; if there are particularly sensitive issues then evaluation trenching (see iii below) may be required before a preferred route choice is made;
 - iii) Evaluation excavation (trial trenching, assessment of geotechnical trials) carried out following preferred route choice in areas where the impact of the preferred route is unclear. All areas of threat should be considered including landscaping, junctions, and realigned local access roads.
- 2.9 The present study is at stage i) with the walkover survey of stage ii) completed. Alternative route alignments are being considered and the results of this present study will form the basis of proposals for future work to complete the stage ii) study in order that the potential impact of each of the alternative routes may be assessed more fully.

Archaeology: Local Policies

- 2.10 Bedfordshire Structure Plan Alterations Number 3 (1992) has the following policies related to archaeology:

Policy 12 When considering proposals for development the local planning authorities will seek the preservation of Scheduled Ancient Monuments and other sites of major archaeological significance and their settings through:

- i) ensuring the availability of sufficient information from developers to evaluate the importance of the site and assess the impact of development proposals;
- ii) seeking to resist or modify development proposals likely to have an unacceptably adverse effect upon sites and their settings;
- iii) seeking to ensure that provision is made for an appropriate level of investigation and recording in advance of the destruction of those sites which do not merit permanent preservation.

- 2.11 The North Bedfordshire Borough Local Plan Proposed Changes 1 (1991) contains the following policies related to historic and architectural matters:

Policy HA1 There will be a presumption against proposals which would cause damage to Scheduled Ancient Monuments, or to other sites of known archaeological importance. Exceptionally, development may be permitted where the adverse impact of a proposal can be overcome and the site or monument physically preserved in situ to the satisfaction of the local planning authority.

The Local Planning Authorities will require the archaeological aspects of development proposals to be examined and evaluated before a planning application is determined. Planning permission will be refused without adequate assessment of the archaeological implications.

Policy HA2 Where the Local Planning Authority decides that the physical preservation in situ of archaeological remains is not justified, and the development affecting such remains should proceed, they will require applicants to submit proposals that:

- i) minimise as far as possible the effect of a proposal upon the archaeological remains, and**
- ii) ensure satisfactory provision for the excavation and recording of the remains:**

Archaeological personnel or organisations employed or contracted by applicants, should liaise with Bedford Museum before commencing excavation or other fieldwork to arrange for eventual deposition of the site archive with Bedford Museum, subject to the requirements of the Museum's Acquisition Policy.

Several areas are identified in the Written Statement as having "particular archaeological significance" (para.10.7). These include;

- i) the Biddenham Loop, and north and west of Biddenham Church End**
- ii) west and south of Elstow Abbey.**

Listed Buildings: National Policies

- 2.12 Listed Buildings are protected under the provisions of Section 54(i) of the Town and Country Planning Act (1971), as amended by the Planning (Listed Buildings and Conservation Areas) Act (1990) which empowers the Secretary of State for the Environment to maintain a list of built structures of historic or architectural significance. The criteria for listing are:

all buildings built before 1700

most buildings built between 1700 and 1840

buildings of definite quality and character built between 1840 and 1914

buildings built after 1914 are included only if they are of outstanding interest.

Particular interest is paid to design, formal layout, significance for social or economic history, technological innovation or association with historic persons or events. Group value is also considered.

- 2.13 The lists are published by the DoE and copies are kept by County Councils and Local Councils. Consent is required for any works which materially affect the Listed Building or its setting. Such work includes extensions, alterations, changes of style of fixtures and fittings etc and the setting includes the curtilage of the building, including boundary walls and associated buildings, even if these are unlisted. The setting may extend to land some distance from the Listed Building (Circular 8/87, paras. 25-27).

- 2.14 Listed Buildings are graded I, II* and II. A previous category III has been abandoned, although a current review of the lists is reinstating some of these as Grade II. Only 4% of Listed Buildings are Grade I. Some local planning authorities maintain non-statutory lists of buildings considered to be locally

important, and these may also need to be taken into account in the planning process.

- 2.15 English Heritage (The Historic Buildings and Monuments Commission for England) is the official body incorporated by the National Heritage Act (1983) with responsibility

"so far as is practicable to secure the preservation of ancient monuments and historic buildings in England".

- 2.16 **English Heritage** may be called upon to advise on the archaeological effects of proposals on Listed Buildings, and it monitors the working of the 1990 Act and PPG 16 (see below). It would expect to be consulted on the impact of the present scheme.

Listed Building: Assessment Methodology

- 2.17 The Department of the Environment Guidelines for the treatment of Listed Buildings used by English Heritage are set out in Circular 8/87. This describes the legislative framework, listing procedures and criteria, listed building control, grants. etc.
- 2.18 The criteria for selecting buildings of the 1914-1939 period for listing cover two issues: the range of buildings which may be considered, and the quality of the individual buildings actually selected.
- 2.19 The criteria are designed to enable full recognition to be given to the varied architectural output of the period. Three main building styles (broadly interpreted) are represented: modern, classical and others. the building types which may be considered over nine categories, as follows:-

- (a) Churches, chapels and other places of public worship.
- (b) Cinemas, theatres, hotels and other places of public entertainment.
- (c) Commercial and industrial premises including shops and offices.
- (d) Schools, colleges and educational buildings.
- (e) Flats.
- (f) Houses and housing estates.
- (g) Municipal and other public buildings.
- (h) Railway stations, airport terminals and other places associated with public transport.
- (i) Miscellaneous

The selection includes the work of the principal architects of the period.

2.20 Specific mention is made of road schemes in 8/87. Paragraph 16 states that arrangements have been made for the Department of Transport to inform English Heritage of proposed highway schemes that may affect ancient monuments, listed buildings, conservation areas and gardens on the register. This should be done whilst schemes are still at a formative stage since, given early consultation, English Heritage may be able to give helpful advice as to ways of minimising the damage to the heritage.

2.21 There should be a presumption in favour of preservation except where a strong case can be made out (paragraph 91).

2.22 Some buildings are both Scheduled Ancient Monuments and Listed Buildings, although Scheduling is generally applied to archaeological sites or ruins. Occupied dwellings and ecclesiastical buildings cannot be Scheduled, but unoccupied barns, individual buildings, etc. may be both scheduled and listed. Where this occurs Scheduling takes precedence, and the Listed Building

controls do not apply; Scheduled Ancient Monument consent is required if there are proposals which will affect such buildings (See Section 5, Archaeology, paragraph 4.2. for a discussion of scheduling).

2.23 Listed status attaches to the curtilage of a Listed Building (paragraphs 72, 73), which is defined as objects and structures fixed to the building or which, although not fixed to the building, e.g. walls and other means of enclosure, form part of the land within the curtilage and have done so since before 1 July 1948. "Setting" may include land outside the curtilage (see Circular 8/87 paras. 25-27).

2.24 It is an offence to carry out demolition or alteration or extension to a Listed Building without consent, granted by the local planning authority (paragraph 71).

2.25 Notice of all applications which may affect Listed Buildings or their settings, and the decisions taken thereon, should be given to:-

- o the Council for British Archaeology
- o the Georgian Group
- o the Society for the Protection of Ancient Buildings
- o the Victorian Society
- o the Royal Commission on the Historical Monuments of England (RCHME)
- o the Historic Buildings and Monuments Commission for England (English Heritage) if it affects Grade I, Grade II* and, in London, Grade II buildings. The Royal Fine Art Society's opinion may also be sought.

- 2.26 The present study is only at the stage of identifying Listed Buildings and their locations. The degree of constraint which they constitute is judged by their statutory status and the presumption is in favour of preservation.
- 2.27 Department of Transport. The Government's most recent policies for trunk roads were set out in Trunk Roads, England: into the 1990's published in February 1990. Paragraph 1.8 emphasises that "the requirement for road travel are met in as environmentally friendly a way as possible".
- 2.28 The paper goes on to point out that a "great deal of effort already goes into assessing the environmental impact of potential schemes and designing them to fit as sympathetically as possible into the road programme and the Government intends to do even more".
- 2.29 Paragraph 4.6 notes that it has been standard practice to undertake an environmental assessment of trunk road schemes since the Leitch report in 1977.
- 2.30 In the light of PPG 16 (see Archaeology Working Paper, paragraph 4.3) Trunk Roads, England: into the 1990's and English Heritage's Roads to Prosperity, the archaeological Impact the survey, identification, impact assessment and mitigation proposals are now envisaged as taking place at an earlier stage and in more depth than previously. The Department of Transport's Manual of Environmental Appraisal is presently undergoing revision.

Listed Buildings: Local Policies

- 2.31 Bedfordshire County Structure Plan Alteration Number 3 (1992) include the following policies concerning Listed Buildings:

Policy 13 The character of towns and villages will be protected and enhanced by:

- i) resisting proposals likely to have an adverse effect upon the character and appearance of historic buildings and Conservation Areas**

2.32 The general thrust of these policies is the protection in situ of significant historical structures, landscapes and gardens unless there are overriding contrary considerations. In such cases all policies require some programme of recording the features prior to development. The policy indicates that an evaluation prior to determination would be required in some cases.

2.33 The North Bedfordshire Borough Local Plan is equally concerned to protect heritage and architectural features. The relevant Local Plan policies are:

Policy HA3 The Borough Council will normally oppose the demolition of buildings listed as of architectural and historic interest. An applicant applying for demolition consent will be required to prove that alternative uses and their economics have been fully investigated.

3 ARCHAEOLOGICAL FEATURES

Heritage Background

- 3.1 ~~The location of archaeological features are shown on plan RPS ARCH 1. [N.B. Note to BCP - This plan is currently in draft, a final version will be available by the end of week].~~ The Study Area is effectively the quadrant south west of Bedford. It encompasses large parts of three parishes - Kempston Rural, Kempston Urban and Biddenham - with smaller portions of two more - Bedford and Elstow. The geology of the area comprises Oxford Clay and Kellaway Beds to the south east, overlain by a narrow band of Combrash and then the Great Oolite Series to the north west. They are all more or less obscured with superficial deposits of boulder clay, sands, gravels and alluvium. ~~The southern part of the corridor around the Kempston Urban area is a gravelly and loamy deposit, while the Biddenham Loop is mainly river gravels. The river has deposited a layer of alluvium, which is widest on the inside of the meander south of Biddenham. Biddenham itself occupies a slightly higher area of Oxford Clay with Combrash. The Great Oolite outcrops near Church End, Biddenham, where it has been quarried.~~
- 3.2 The relief is very subdued, and is at its highest at Elstow (about 35m OD) and Biddenham (about 40m OD) and the lowest part of all the options is at their crossing points of the River Great Ouse (about 30m OD).
- 3.3 The earliest evidence of human occupation known from the area is palaeolithic (up to c.10,000 BC). Stone implements have been found in the gravels washed down and deposited by the river at Biddenham, Bedford and Kempston. The principal finds at Deep Spinney (HER327) have been associated with a deposit about 6m above the river terrace and relate to the Hoxnian interglacial around 200,000 years ago. None of these implements were found in the location

where they were originally made or used, and similar finds could be made in any of the river gravels in the vicinity.

- 3.4 There is little evidence for the mesolithic period (c. 10,000 - 4500 BC) from the Study Area. The CPM study located one find spot which is of little significance on its own. It is possible that alluvium masks the evidence for this period.
- 3.5 The neolithic (c 4,500 - 2,000 BC) saw the introduction of farming and long term settlement, and the construction of communal earthworks. There is a cursus (a long ditched ritual enclosure) near Kempston Grange (HER1475) and an oval barrow on the north bank west of Queen's Park (HER7357). Just to the east of the Study Area is a series of major ritual sites at Cardington, suggesting that there was considerable settlement in the vicinity. However, the other finds from the Study Area are only stray artefacts, and there is no evidence of a settlement. This might be because some of the area is covered with alluvium deposited since the neolithic, and sites of the period may be masked.
- 3.6 The bronze age (c. 2,000 - 500 BC) is best known from its burial mounds (barrows). When ploughed out these often show as ring-shaped soil or crop marks on aerial photographs. There are several visible on the gravels around Biddenham (eg. HER730, HER740, HER1476, HER1863/6/7/8). Bronze age objects are noted twice in the HER for the Study Area, and in both cases in areas where there has also been evidence of other periods, as at Kempston Grange, where a "beaker" pot and bronze age flintwork was found with earlier flint (HER15459), and at Elstow (HER262). The recent CPM study and previous field walking by Peter Woodward in the 1970s established the locations of flint scatters in the Biddenham Loop and there are concentrations along the River Great Ouse just above the flood plain. It is thought, however, that the AP traces indicate that settlement and ritual areas tended to be on the

eastern side of the loop, except for the traces north of Biddenham church. Planned geophysical surveys will probably confirm this impression.

- 3.7 In the iron age (c 500 BC - AD 40) a pit alignment was established across the Loop and there is a suggestion that an area south of Main Road, Biddenham, may have been an oppidum (a large town-like pre-Roman settlement). It is possible, however, in the light of recent negative fieldwalking results from Biddenham, that the features of this area are the result of geological conditions rather than archaeological ones. Iron age occupation evidence has come from Bedford, where a hut was located in 1947 (HER329). Late iron age cremations have been recorded in the Biddenham Loop opposite Kempston Church End (HER325) and other late iron age/Roman burials were recorded in 1887 near the river at Queens Park (HER11248).
- 3.8 In the Roman period (c AD 40 - 410) the main route from St Albans (Verulamium) via Godmanchester (Durovigutun) to Lincoln (Lindum) passed through Sandy to the east of Bedford. A number of minor Roman roads are alleged to exist in the Study Area, one of which passes through The Bury before crossing the Ouse. The Ouse crossing has been scheduled by English Heritage as a Roman ford (HER814, SAM64) but it is considered by the County Archaeologist and other authorities to be the ruins of a collapsed 17th century bridge (Sir Edward Cater's Bridge). More importantly there is evidence for one Roman villa at the southern end of the Biddenham Loop (HER3663), and another across the river at Kempston Church End, with metal working at Church End, Biddenham (HER323).
- 3.9 The Saxon period from the end of the Roman occupation to the Norman Conquest (410 - 1066 AD) is represented in the Study Area by the important Saxon cemeteries at Up End, Kempston (HER256,258), artefacts at Elstow

(HER262) and late Saxon pottery from Bedford itself (HER10804,10811). Biddenham and Kempston are both probably the sites of Saxon settlements (-ham = Anglo-Saxon for "homestead", -ton = Anglo-Saxon for "farm"). Bedford also has Saxon origins and was the site of a fort, a mint and commercial activity by the 10th century. The settlements in the area were more or less focused on crossings of the river, as the name *Bedford* implies. There were probably crossings in the vicinity of Bromham Bridge and Kempston as well as Bedford. Elstow too may have had an earlier significance as the -*stow* element is often found in places where there was an important Saxon minster. Elstow is the only example in Bedfordshire.

- 3.10 In the medieval period (1066 - 1500 AD) villages grew up on the sites of some of the earlier farms. Biddenham, Kempston and Elstow are all mentioned in the Domesday survey, with Bedford already a significant town. The earthworks (HER1770) of part of the medieval village of Biddenham survive in the fields to the west of Church Farm at Church End. The land was divided into large open fields farmed in strips by the villagers. In places the ridge and furrow pattern produced by medieval ploughing can still be seen or traced on aerial photographs (eg south east of Biddenham). The sites of several watermills are suspected at Bromham near the bridge (HER1029), Kempston (HER1081), Biddenham (HER8131, 11513, 11514) and Kempston Church End (HER8117). The administration of the land was controlled through manors, and the sites of some still survive at The Bury (Kempston-Bucebury Manor HER3667), Box End (Kempston Greys Manor HER11677), Kempston Daubeny (HER3396), Biddenham, and Elstow (Hillersden HER1196, SAM45). Smaller rural houses were sometimes dignified with a moat as at Tithe Farm (HER2559), Bromham (HER3384), Church Walk (HER4452, 5828), Wootton (HER8276) and Bedford (HER15396). Religious houses were founded in Bedford (Cauldwell Priory HER250, Greyfriars HER268) and Elstow (HER262).

3.11 In the post medieval period (AD 1550 - 1750) farmland was consolidated into larger blocks and enclosed. The villages already in existence developed satellite settlements -- the "Ends" and "Greens" -- in the outer parts of their lands. Landlords were able to amass considerable wealth, some of which they expressed in the building of impressive houses. The Bury (demolished in 1851) was one of these, although only the walls and gate piers remain of the 17th century house. Clay and gravel digging also accelerated in this period to meet the rising demand for bricks occasioned by both local and metropolitan building programmes.

3.12 The modern period since the mid 18th century has seen radical changes in the rural and urban environment. The wealthier members of Bedford society houses in the country (eg. Kempston Lodge, Kempston Hoo, Hillersden) and the expansion of Bedford's suburbs began to impinge on the previously rural parts of the Study Area. The new railways linked Bedford with London and other centres, greatly increasing trade and the mobility of the population. Gravel extraction increased but it was the enormous growth of the brick industry which has had the most lasting impact on the landscape south of Bedford, where huge pits and kiln complexes dominated until very recently.

Sites and Monuments on Route Options

3.13 The sites which are likely to be affected by the route options are described in more detail below. Each route option is considered in turn, and an attempt is made to assess the importance of each site which may be affected using the categories of "minor", "moderate" or "major". These assessments are based on the criteria published by the Department of the Environment as appendix 4 of the Planning Policy Guidance on Archaeology and Planning (PPG16, 1990), but have no statutory or planning status.

3.14 **Outer Western.** The comments in this section are based on the Drawing Nos. 853/B/108/18/9-11 dated January 1993. Taking the OW option from north to south and starting at the Gold Lane Roundabout north of Biddenham, the following sites are likely to be affected:

HER974	Gravel pit.	P-M. minor
HER8710	Milepost.	P-M minor
HER998	Bromham Bridge.	Med. major (SAM)
HER1866	AP ring ditch, encl.	BA moderate
HER7194	Fishpond	med. minor
HER1770	Earthworks, SMV	med. major
HER7447	Frag. polished axe	neo. minor
HER15155	Coin	Rom. minor
HER5090	Stone pits	P-M minor
HER1863	AP ring ditches	BA moderate
HER14800	Pottery	Rom. minor
HER235	Cremations, pottery	IA moderate
HER8117	Water mill	Med moderate
HER1140	Gravel pit	P-M minor
HER1476	AP complex	BA,IA major
HER10303	ford?	Rom? minor
HER11527	Bridge (site of)	P-M minor
HER814	(SAM64) Alleged ford	Rom. minor
HER ---	(LB II 9/94) Lodge	P-M moderate
HER7030	Manor grounds	Med/P_M minor
HER3667	(LB II 9.92) walls	P-M moderate
HER11535	Portway, 15th cent.	med minor
HER11687.	Sailors Bridge (site)	med minor
HER---	AP traces,2 ditches	Pre minor

- 3.15 In addition to the HER sites and LBs listed above, recent fieldwork by CPM and the work of Woodford in the 1970s have shown that there is a mass of flintwork in the Biddenham Loop area, particularly just above the flood plain along the river west of the Loop. The river alluvium may also mask early evidence, particularly at the south end of the Biddenham Loop where the river bed has been gradually moving south.
- 3.16 There are several areas of concern. One is around the Bury, where there is a concentration of landscape features related to the medieval and post-medieval house and grounds. (A road line to the east of the house would affect parts of the surviving layout and the site of Sir William Cater's Bridge, while a line to west may impinge on the site of the medieval house, a possible Roman occupation site (HER163) and a Roman villa site at Kempston Church End (HER162). At Kempston Church End there are also three Listed Buildings, including the church (LB 11/205, Grade I), whose settings may be affected.)
- 3.17 The area opposite Kempston Church End is also sensitive in that there is evidence of iron age and Roman burials here (HER325, 14800) as well as a possible medieval watermill (HER8117).
- 3.18 The area at Church End, Biddenham, contains evidence of important archaeological features. The medieval village of Biddenham extended into this area, and is now represented by earthworks (HER1770, 7194). These have been surveyed in detail by CPM. The stray neolithic axe (HER7447) is not a significant constraint as such isolated finds are typically interpreted as casual losses. The OW option line encroaches on an area of AP traces including ring ditches and enclosures (HER 1866) indicating prehistoric occupation.
- 3.19 North of Biddenham the east end of Bromham Bridge (HER998, SAM63) may be directly affected by the western slip road construction, and the setting of the bridge would certainly be affected. The eastern slip road does not affect any

significant known archaeology but the palaeolithic discoveries at Deep Spinney indicate the potential of the gravels in the area.

3.20 Inner Western Option These comments on the IW option are based upon the drawings 853/CEG/99/9/70B and 71B (revision) dated January 1993. The route is considered from north to south and the following sites may be affected:

HER11988	gold coin of Cunebolinus	IA moderate
HER485	Roman road (alleged)	Rom? minor
HER10480	Roman road (alleged)	Rom? minor
HER329	hut, occupation	IA major
HER8711	milepost	P-M minor
HER8712	milepost	P-M minor
HER485	Roman road (alleged)	Rom? minor
HER2106	lime kiln	P-M minor
HER11248	cremations, pottery	IA/Rom major
HER11748	warren	P-M minor
HER11259	cremation, pottery	Rom major
HER571	axe	pal minor
HER---	field boundaries	Med? minor

3.21 There are several areas of archaeological sensitivity on the IW route. Although the iron age coin (HER11988) in itself is not a major constraint, the fact that it is near a contemporary hut site (HER329) makes it likely that there may be an extensive iron age settlement in the vicinity.

3.22 There are two areas of burials of the late iron age/Roman period, one at Ford End (HER11248) which may have been completely destroyed by 19th century gravel working, and another at the BR sidings (HER11259).

3.23 The A428 Bromham to Clapham Bypass Improvement. There is no drawing showing this proposal, but our understanding is that there may be a route north of Biddenham to improve the A428. The sites in this area which may be affected by such a route are as follows:

HER330	well	Rom moderate
HER8710	milepost	P-M minor
HER974	gravel pit	P-M minor
HER1935	warren	med minor
HER328	axes	pal major
HER2873	gravel pit	P-M minor
HER730	ring ditch	BA moderate
HER1868	ring ditch	BA moderate
HER1867	ring ditch	BA moderate
HER14978	ring ditch	BA moderate
HER168	slake pits	med minor
HER5085	stone pits	P-M minor
HER3192	windmill (site of)	P-M minor

3.24 Obviously any route in this area could not affect all of the above sites. The area has not been studied in as much detail as the Biddenham Loop south of Biddenham, but it is reasonable to expect a similar pattern of prehistoric exploitation. If this were the case then it should be assumed that there will be prehistoric settlement in the area above the flood plain. Also there is likely to be early material masked by alluvium towards the west on the inside of the river bend.

Summary

- 3.25 There are 5 Scheduled Ancient Monuments (SAMs) within 1km of the routes and within the Study Area (appendix 2, RPSC plan 2). Two of these (Bromham Bridge SAM 63, and the alleged Roman ford at Kempston (SAM 64) may be directly affected by the OW corridor. The settings of two others (Elstow Moot Hall SAM 30, and Elstow Manor SAM 45) may be affected.
- 3.26 There are 288 sites listed in the HER and visible on aerial photographs in the Study Area. Of these about 80 fall within 0.5km of the option 5. The Outer Western Option would directly affect about two dozen sites and the Inner Western Option about half that number. The A428 Bromham to Clapham Bypass traverses an area with about a dozen sites but few of these would be directly affected by any one route in this area. The sites which may be directly affected by the OW and IW options and the general situation north of Biddenham are considered in more detail in Section 2.
- 3.27 There are 42 Listed Buildings in the Study Area but only one which may be directly affected by any of the route options. That is the Lodge at the Bury (Kempston Urban LB Grade II, 2/94). The setting of the listed walls and gate piers of the Bury (Grade II, 2/92) and Walnut Tree Cottage (Grade II, 2/93) may also be a consideration. If a line west of The Bury is considered then the settings of three LBs, including a Grade I church, may be affected.

4 ARCHAEOLOGICAL IMPACT

- 4.1 At this stage the impacts of the options can be assessed in general terms. The individual impacts have been assessed as **major, moderate, minor or potential** depending on the proportion of the site affected and the degree of any destruction. The significance of an impact will depend upon the character of the remains and the engineering detail of the proposals. Some sites will require further survey or investigative work in order to refine the data so that detailed interpretations of their character can be made. In these cases the impact is assessed as potential. The engineering details used in this assessment are those shown on the 1:2500 drawings (OW option: 853/B/108/18/9-11 dated January 1993; IW option: 853/CEG/99/9/70 revision B dated January 1993). There are no drawings supplied for the A428 to A6 Link north of Biddenham.
- 4.2 **The Outer Western Route.** The Gold Lane Roundabout to the A428(T) Roundabout widening and the construction of the first 200-300m of new road to the south will affect the edges of the AP traces HER1866. The engineering drawings show the road and junctions at grade, which would result in the destruction of the archaeology represented by the AP traces. Moderate impact.
- 4.3 As the road passes to the west of Biddenham it will impact on the surviving earthworks (HER1770) of the Shrunken Medieval Village (SMV). The at grade road would seriously damage a section of these earthworks, although some have already been destroyed by a playing field. Moderate impact.

- 4.4 The Listed Grade I church (LB 32/2) is about 125m from the road, and its setting would be affected. Moderate impact.
- 4.5 The Listed Grade II barn (LB 32/72) is about 100m from the road, and its setting would be affected. Moderate impact.
- 4.6 A general reference to Roman finds south west of Church End (HER14806) and a coin find (HER15155) suggests that there may be a Roman site in the vicinity. The at grade road would destroy any remains in its path here. Potential impact.
- 4.7 The stone quarry south of Church End (HER5090) has been backfilled and the road would have little impact on original quarry features. Minor impact.
- 4.8 About 500m south of Biddenham are two ring ditches (HER1863), the westernmost one of which lies in the path of the proposed road. It would be destroyed by at grade construction. Major impact.
- 4.9 At the gravel pit HER1140 iron age and Roman cremations and pottery (HER325) were found in the mid 19th century. It is not known if any part of this cemetery survives. The road here would be on an embankment rising to the Church End Viaduct. If appropriate contractual arrangements were made there should be little effect on any surviving remains. Minor impact.
- 4.10 The Church End Viaduct would traverse the area of the alleged Roman ford (HER814), scheduled as such by EH (SAM64) but which is more likely to be a collapsed 17th century bridge. Recent river maintenance works appear to have removed what

visible signs there were of this feature. The setting would be affected. Minor Impact.

- 4.11 The Cemetery Road Bridge would be within 25m of the Listed Grade II Bury Cottages (LB 2/94). The impact on their setting would be major, but there would be no encroachment onto the curtilage. Impact moderate.
- 4.12 The same bridge would be about 100m from the Listed Grade II Walnut Tree Cottage (LB 2/93). There would be no direct impact, but the setting would be affected. Impact minor.
- 4.13 The area around The Bury has a number of features of archaeological and historical interest. The walls of the grounds and the gate piers are Listed Grade II (LB2/92) and the embankment south of Cemetery Bridge would be within a metre or two of part of them. Their setting would be affected. Moderate impact.
- 4.14 Agricultural earthworks survive within The Bury grounds (HER7030) in the path of the proposed road and a proportion of them would be affected. Minor impact.
- 4.15 A cropmark about 200m west of the London to Bedford railway line (HER-Y-) may indicate further archaeological features in the area. The road is in cutting or at grade on this stretch and would damage any surviving features. Potential Impact.

- 4.16 In addition to these impacts on known sites it is clear from the work of CPM that there are other potential sites particularly in the stretch from the (Kempston) Church End Viaduct to Church End, Biddenham. Field walking in the area south and east of The Bury may reveal similar potential.
- 4.17 **Inner Western Option.** The slip roads to the Clapham Bypass, and the railway crossing are in the area of the possible iron age settlement (HER329, 11988). However, the road proposals here are on embankments. With appropriate contractual arrangements there should be no impact.
- 4.18 At the Biddenham Turn Junction the two mileposts HER8711 and 8712 would be affected, and would need relocation. Minor impact.
- 4.19 The possible Roman road (HER485) would be crossed by the IW option, but it would affect only a short stretch of a feature for which there is at present no evidence. Minor impact.
- 4.20 Just north of the river crossing the route crosses the old gravel pit where iron age/Roman cremations were found in the mid-19th century. Nothing has been discovered recently, but the site remains a potential impact.
- 4.21 South of the river the route traverses the site of a medieval rabbit warren (HER11748). The road would be on an embankment here so with appropriate contractual controls there should be no impact.

- 4.22 A Roman cremation (HER11259) and a palaeolithic axe (HER570) were found in the 19th century east of the railway lines in the area of the sidings. This section would be bridged with embankments at either end, so with appropriate contractual controls there should be no impact.
- 4.23 The addition of a new carriageway alongside the existing A6(T) Elstow Bypass might affect the field system visible on APs in this area. Minor impact.
- 4.24 A428 to A6(T) link north of Biddenham. It is difficult to assess the impacts in this area without detailed engineering proposals. However, none of the known sites in the area are of such significance that they would require to be preserved *in situ* if the road proposals were to affect them. It is assumed that the junction with the Clapham bypass would have the same affect as the IW option on the archaeology, that is, a minor impact or none at all.

5 **MITIGATION**

- 5.1 The principals of mitigation related to archaeology are based on the premise that archaeological sites and features are a finite resource and should be preserved if possible. If preservation is not possible then "preservation by record" during a scientific excavation may be an acceptable alternative for some sites. Although this procedure may result in the enhancement of our archaeological knowledge, such a benefit can rarely be used to justify excavation, which is in itself a form of destruction.
- 5.2 Mitigation of the impact on archaeological sites may take a number of forms, depending on the type of site, the engineering details and the flexibility of the route. The archaeologically preferred option, in all cases, is preservation *in situ*, but this may not be possible and must be related to the status of the site as compared to the requirements of the project.
- 5.3 Preservation may be achieved by avoiding the site or by burying it under strictly controlled contractual conditions which ensure that the topsoil is undamaged by plant or other procedures. This may not be sufficient protection for some categories of site which may contain features or artefacts which could be subject to crushing, such as burials and kiln sites. A low embankment (less than 0.5m) is not sufficient because of the engineering requirement to remove topsoil to establish the road structure securely. The construction of a rigid "bridge" has been used to protect remains in some circumstances.
- 5.4 "Preservation by record" may require the scientific excavation of the site or part of it. It should always be carried out by professional archaeologists, and following the production of an agreed research design.

5.5 In areas where the archaeological potential is low it may be sufficient to observe the route as it is constructed. This task should be undertaken by professional archaeologists.

5.6 **The Outer Western Route.** The known sites on the OW route option which should be preserved *in situ* if possible are:

HER1770 SMV west of Church End, Biddenham. The construction of the road on a low embankment should be considered in this area.

5.7 Known sites on the OW route which may require excavation are:

~~HER1866 AP traces.~~

HER15155 potential Roman settlement.

HER1863 ring ditch

HER323 potential IA/Roman cemetery

HER-Y- AP traces

5.8 The other known sites on the OW route may require a watching brief during construction.

5.9 **The Inner Western route.** There are no sites on the IW route where there is an over-riding requirement to preserve *in situ*. There are several sites which should be preserved or excavated. They are:

HER329/HER11988 potential iron age settlement. The road here is on embankments.

HER11259 potential Roman cemetery. The road here is on a bridge or embankment.

HER11248 potential IA/Roman cemetery.

5.10 The other sites on the IW route may require a watching brief during construction.

5.11 The A428 to A6(T) Link. There are no sites which would require preservation in the area traversed by this link. The sites which might require excavation are:

HER730 ring ditch

HER1867 ring ditch

HER1868 ring ditch

HER14978 ring ditch

5.12 The remaining sites would require a watching brief.

6 CONCLUSIONS AND RECOMMENDATIONS

- 6.1 There is a variety of archaeological sites and features on all the route options, but there are more, and more significant sites on the Outer Western route.
- 6.2 None of the known sites are sufficiently significant as to constitute an absolute constraint to any of the options.
- 6.3 There are national and local policies designed to protect archaeological sites which have a presumption in favour of preservation if possible.
- 6.4 Preservation of the more important sites may be possible through burying or bridging.
- 6.5 Other important sites may be recorded prior to construction of the road if their preservation is not possible.
- 6.6 There are likely to be as yet undiscovered sites, particularly in the areas north and south of the Biddenham Loop where intensive fieldwork has yet to be undertaken.
- 6.7 It is recommended that fieldwork designed to enhance the record sufficiently to identify all threatened sites should be carried out.

LEGEND : ARCHAEOLOGICAL FEATURES AND CONSTRAINTS



Listed Building



Sites and Monument Record



Scheduled Ancient Monument



Aerial Photograph Trace



Ridge and Furrow

**ORIGINAL IN
COLOUR**

project
BEDFORD WESTERN BYPASS

title
ARCHAEOLOGICAL FEATURES & CONSTRAINTS (DRAFT)

project number
2115

scale
1:10,000

date
FEB 1993