

9. Archaeological risk and PPPs: the M4 Kinnegad–Enfield–Kilcock scheme

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Aerial view of the early medieval settlement and cemetery enclosure at Johnstown, County Meath, on the M4 Kinnegad–Enfield–Kilcock scheme (Archaeological Consultancy Services Ltd)

Introduction

This paper outlines the methods used on the M4 Kinnegad–Enfield–Kilcock scheme to quantify archaeological risk in a Public–Private Partnership (PPP). Furthermore, it will seek to explain the benefit to the relevant stakeholders of quantifying the archaeological risk — namely, the NRA, the relevant local authorities and the consortia tendering or bidding for the PPP contract for the scheme.

Public–private partnerships (PPPs) represent a new approach to the construction of motorway schemes. In a PPP scheme the successful tenderer or concessionaire takes on the responsibility for building the road and maintaining it for a specified period, such as 30 years. Part or all of the cost is recouped through the collection of tolls. Unless otherwise provided for, the concessionaire assumes all risks associated with the construction and maintenance of the scheme. As this includes archaeological risk, tenderers for a PPP concession must price this particular risk, which may be defined as the extent to which known and unknown archaeological sites are likely to impact on the construction process. Clearly, tenderers require as much information as possible if they are to submit a bid which is both realistic and competitive.

The M4 Kinnegad–Enfield–Kilcock scheme

The M4 Kinnegad–Enfield–Kilcock scheme (M4 KEK) is a proposed four-lane motorway, about 37 km long. It will link the N4 Dublin–Sligo and the N6 Dublin–Galway national primary routes, west of Kinnegad, to the existing M4 motorway at Kilcock. This new motorway will run to the south of the existing N4 road. Three grade-separated interchanges, at Kinnegad, Enfield and Kilcock, will provide access between the motorway and local roads, towns and villages.

Even though the M4 KEK is to be a PPP scheme, it still must undergo the same rigorous planning process as other schemes. The Environmental Impact Statement (EIS) and Compulsory Purchase Order (CPO) for the scheme were published in March 2001. An Oral Hearing was convened by An Bord Pleanála in July 2001 and a Notice of Approval was issued in December 2001. The Notice to Treat (i.e. notice of the local authorities' intention to agree purchase and compensation costs with landowners) was served in January 2002. In addition to all this, there was a separate procedure and hearing in relation to the proposed tolling of the scheme.



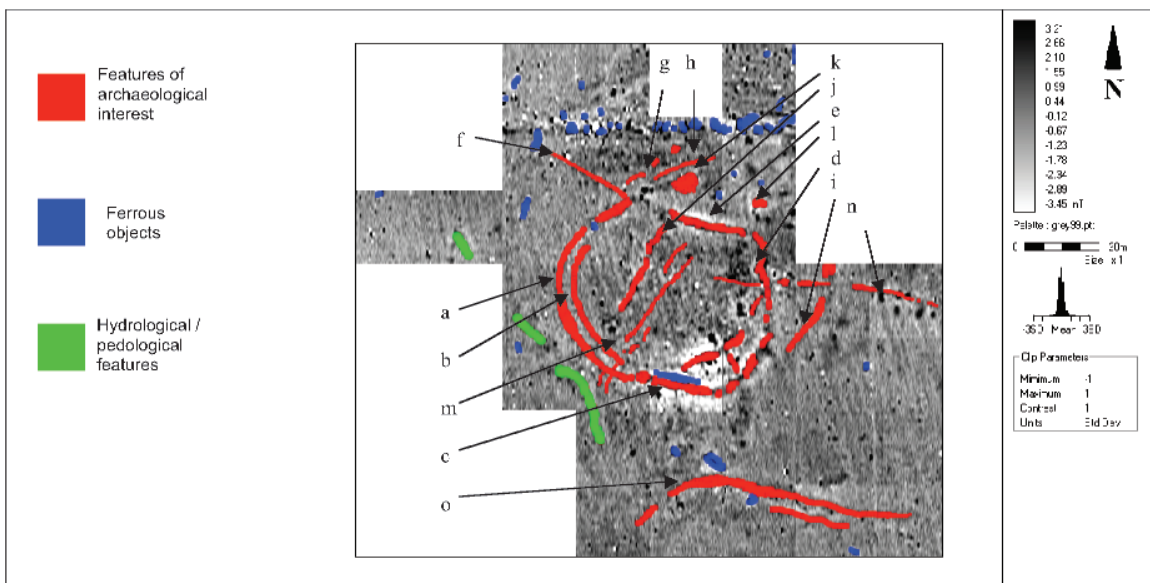
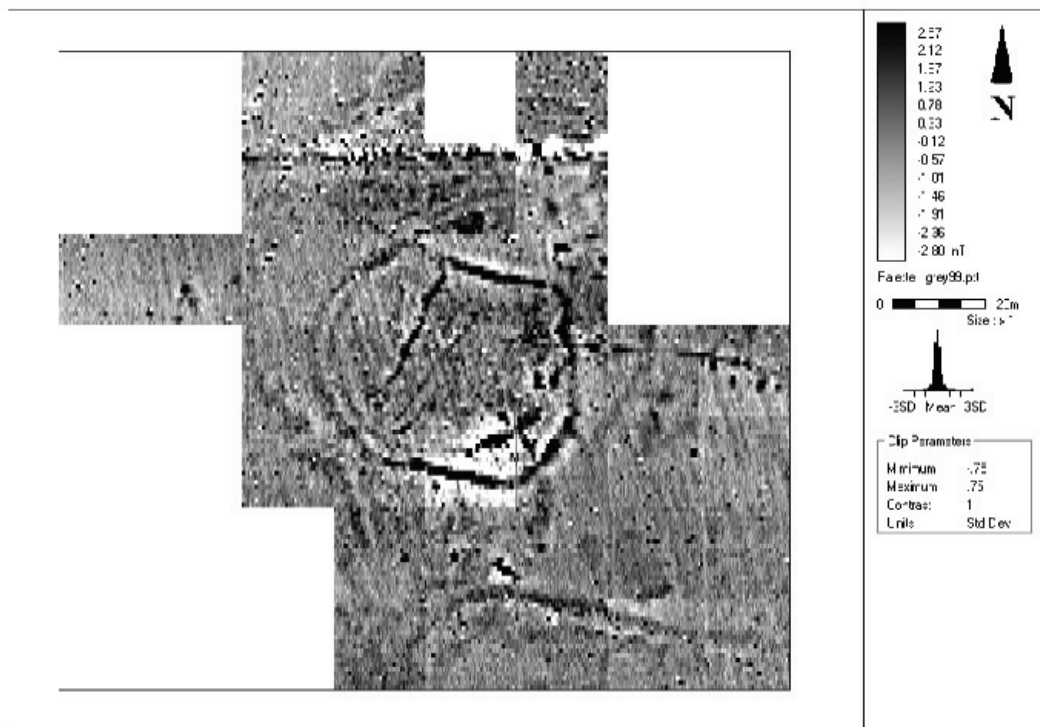
Killickaweeny, County Kildare, on the M4 Kinnegad–Enfield–Kilcock scheme (Irish Archaeological Consultancy Ltd)

Table 1—Development of the M4 KEK scheme

Date	General scheme progress	Archaeological programme
March 2001	EIS and CPO published by relevant local authorities	
May 2001		Aerial survey
July 2001	Public inquiry convened by An Bord Pleanála	Advertisement of archaeological contracts in the <i>Official Journal of the European Union</i>
September 2001		Receipt of completed archaeological tenders
December 2001	Notice of Approval by An Bord Pleanála	Award of archaeological contracts
January 2002	Notice to treat & notice to enter served on landowners	Entry to lands and preparatory works for surveys and testing
February 2002	PPP tenders received	Start of archaeological surveys and testing, contract 2
March 2002		Completion of archaeological surveys and testing, contract 2
April 2002		Completion of archaeological surveys and testing, contracts 1 and 3
April 2002		Commencement of archaeological resolution (i.e. full excavations)
April 2002		Receipt of archaeological survey and testing reports, contract 2
May 2002	Selection of the final two PPP bidders	Receipt of archaeological survey and testing reports, contracts 1 and 3
May 2002		Submission of archaeological assessment reports to the Information Room (per PPP tendering procedures)
September 2002	Best and final offer by PPP bidders	
March 2003	Signing of PPP contract	

Archaeological programme

Various archaeological assessment reports had been submitted for the M4 KEK — based on fieldwalking and desk-studies — from the inception of the scheme in 1990 through to the publication of the EIS in 2001 (i.e. this preliminary work pre-dated the programme



Top: Results of a pre-excavation magnetometry survey of the enclosure at Johnstown, County Meath, on the M4 Kinnegad–Enfield–Kilcock scheme (Archaeological Consultancy Services Ltd)

Above: Interpretative plot of the magnetometry survey at Johnstown, County Meath (Archaeological Consultancy Services Ltd)

outlined in Table 1). The EIS identified a total of 106 archaeological sites or areas of archaeological potential within the general area of the scheme. Specific recommendations were made for further archaeological assessment of 37 sites: these would either suffer a direct impact or were in close proximity to the area of landtake for the scheme. As part of the risk assessment process an aerial survey was undertaken and this identified a further 25 sites that, again, were either within the footprint of the proposed scheme or in close proximity to it. In total, therefore, the EIS and subsequent aerial survey identified 62 archaeological sites or areas of potential likely to be affected by the scheme, though their significance could only be demonstrated by further archaeological assessment.

Following from the EIS and the aerial survey a programme of further archaeological assessment, then resolution, was proposed. This had three principal aims:

- to ascertain whether the 62 ‘known’ sites or areas were really of archaeological interest and, if so, to assess their character, condition and extent
- to assess the archaeological risk arising from any ‘unknown’ sites through an extensive testing programme (in effect, a single, central test trench, throughout the scheme corridor, with offset trenches at alternate sides)
- to agree and pursue strategies for the resolution of all archaeological sites identified by these investigations.

As the scheme is approximately 37 km in length, three separate contracts were issued for this extensive programme of archaeological work (1. from west of Kinnegad to Leinster Bridge, on the county boundary between Meath and Kildare; 2. from Leinster Bridge to Enfield; and 3. from Enfield to Kilcock). The contract documents were drafted by West Consult, the principal consulting engineers to the scheme, in consultation with the National Roads Design Office at Westmeath County Council. Each contract was divided, in turn, into two separate phases: testing and resolution. The tender for this work was advertised in the *Official Journal of the European Union* at the end of July 2001 and the three contracts were awarded to two archaeological companies in December 2001: Archaeological Consultancy Services (contracts 1 and 2) and Irish Archaeological Consultancy (contract 3).

The statutory notices to landowners — the Notice to Treat and Notice to Enter — had been served prior to commencement of archaeological testing and thus the lands for the scheme were now at the disposal of Westmeath County Council. The works were undertaken in co-operation with landowners, however, and in most cases only temporary fencing was erected. Elsewhere, the test trenches were generally not fenced and this was considered a valuable time-saving in the overall progress of the scheme.

Subsequent to the EIS, test trenching was the dominant method in assessing the archaeological potential of the scheme corridor. As described above, an aerial survey was also undertaken. Other methods of assessment included geophysics and topographic survey. Topographic survey had been recommended by the EIS for 25 sites and this took the form of detailed contour surveys using a ‘total station’ survey instrument. The aim was to better define potential archaeological features which had only a limited or vestigial surface expression. Geophysical survey had been recommended by the EIS at 11 sites. These were



Artefacts found in the enclosure at Johnstown, County Meath, on the M4 Kinnegad–Enfield–Kilcock scheme (Archaeological Consultancy Services Ltd)

sites with no surface expression, but where there was a perceived likelihood of extensive remains. Magnetometry and resistivity were employed. The geophysical surveys proved to be quite valuable. They helped to define the extent and character of some archaeological sites and, in other instances, indicated that potential sites were not archaeological at all.

As to the testing programme, tracked machine excavators were used to assess both suspected or known archaeological sites and also the potential for previously unknown sites elsewhere along the length of the route. Each machine was accompanied by at least two archaeologists who observed the excavations. Where possible archaeological features were encountered, they were investigated by hand to determine their character, condition and extent. Proven archaeological features were then described, photographed and planned. Alternatively, if shown to be modern or otherwise non-archaeological, the features were briefly described and their locations noted. (This would avoid duplication of effort during any subsequent archaeological monitoring of the scheme, say, at construction stage.) Once recording was completed another machine was used to backfill the test trenches. As the road corridor was not fenced off, it was essential throughout to maintain good survey control, thus ensuring that all machine investigations were in fact conducted within the landtake for the scheme.

Of the 62 suspected or 'known' sites identified by the EIS and subsequent aerial survey (Table 2), only 16 of these were judged to require further archaeological investigation. (Eight sites were identified by the EIS and eight identified by the aerial survey. Testing identified two unrelated features at one aerial survey site and one of these has been counted as a 'new' site.) For the remaining sites, either sufficient recording had been undertaken

during the assessment phase, or else they could be explained as products of agricultural activity or as natural topographic features. The programme of linear trenching identified 30 previously unknown sites. The majority of these were isolated sites, including pits and areas of burning, though there were also some larger settlement sites and two possible trackways. A total of 46 sites, therefore, was positively identified by all assessment methods. A proposal for the archaeological resolution of each of these 46 sites was agreed and this included details of the schedule and personnel requirements.

Table 2 — Archaeological sites or areas of potential identified by assessment of the M4 KEK road corridor

Primary source of information	Threat	No. sites	Sites found or confirmed by testing
EIS	close proximity	13	—
EIS	direct impact	24	8
Aerial survey	close proximity	6	—
Aerial survey	direct impact	19	8
Total		62	16



Excavation of human skeletal remains in the early medieval cemetery at Johnstown, County Meath, on the M4 Kinnegad–Enfield–Kilcock scheme (Archaeological Consultancy Services Ltd)

Table 3 — Estimated duration of archaeological excavations at sites identified by assessment of the M4 KEK road corridor

Duration of excavation in weeks	1	2	4	9	18	<26
Number of excavations	19	14	8	2	1	2
Total number of excavated sites						46

Benefits of archaeological risk assessment

The PPP tendering process for the M4 KEK consists of two stages. Four invited bidders submitting their tenders for the scheme in mid February 2002. Based on the tenders received two bidders were short-listed to proceed to the next stage. This involved negotiations leading to the submission of a 'best and final offer' in September 2002. As the information available at the first stage was not sufficient to allow bidders to declare archaeological methods and costs in detail, the client (i.e. the NRA and the relevant local authorities) has accepted responsibility for archaeological resolution, where possible, prior to the second tendering stage. The information provided by the extended assessment programme described above enabled decisions to be made on how to deal with the 46 archaeological sites in an efficient and economic manner. The time available for this work is adequate and thus the archaeological risks to be assumed by the PPP concessionaire have been minimised.