

8. A PPP scheme case study: the N25 Waterford Bypass

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Test excavation by standing stones in Kilmurry, County Kilkenny, on the N25 Waterford Bypass (Tramore House Regional Design Office)

Introduction

The N25 Waterford Bypass involves the construction of 23 km of dual carriageway and 15 km of single carriageway roads, with a new bridge crossing the river Suir. An estimated 273 ha of land will be acquired by Compulsory Purchase Order (CPO). The scheme is one of the pilot Public-Private Partnership (PPP) projects. The PPP contract is scheduled for award in October 2002.

The preferred route for the Waterford Bypass was selected following a detailed route selection process that considered, among other things, the potential impacts of the proposed routes on the archaeological heritage (Ewbank Preece Ó hEocha 2000). The Environmental Impact Statement (EIS) was based on desk-based research and walkover studies. It identified seven archaeological sites which would be directly impacted by the preferred route (Ewbank Preece Ó hEocha 2001). Specific mitigation measures were proposed in the EIS for each of these sites. Furthermore, the EIS predicted that many more archaeological sites, with no visible surface trace, would probably be affected by the development.

To mitigate the predicted impact of the road on these previously unrecorded archaeological sites the EIS recommended archaeological monitoring of topsoil stripping with the provision that ‘in the event of an archaeological find the developer shall facilitate the archaeologist in every possible way in investigating the find’ (Ewbank Preece Ó hEocha 2001, 224).

Following detailed consideration of the recommendations of the EIS, in relation to the predicted archaeological impacts of the scheme, the project team recognised that the recommended strategy exposed the NRA and the PPP consortium to considerable risk of delay to the construction programme with consequent financial implications.

The point can be illustrated with reference to the N25 Rathsillagh to Harristown realignment, in County Wexford. On that scheme, during pre-construction archaeological testing and monitoring of topsoil stripping (June to September 2000), fourteen archaeological sites were found in the 33 ha acquired for the scheme. This equates to one previously unknown archaeological site in every 2.4 ha of land acquired for the scheme. This suggests that 114 previously unknown archaeological sites might survive in the lands acquired for the N25 Waterford Bypass.

These figures are provided for illustrative purposes only and it is not proposed that they can be adopted as a benchmark for this or any other project. The nature of the landscape and its use through time will have had a great influence on the number of archaeological sites which may exist in any tract of land acquired for road-building purposes. What the figures highlight is the potential impact of the Waterford Bypass on archaeological remains which have yet to be identified and, reciprocally, the potential impact of these sites on the progress of the scheme. The earlier these sites are identified in the planning and design phases of a proposed road scheme — and the potential impacts of the scheme assessed —



Geophysical survey using an electrical resistance metre on the N25 Waterford Bypass (Tramore House Regional Design Office)



Test trench near a nineteenth-century brickfield on the N25 Waterford Bypass (Tramore House Regional Design Office)

then the better the outcome from the archaeological, engineering and financial points of view.

Project scoping

With this in mind the Project Archaeologists reviewed the scheme, in consultation with other members of the project team, the NRA and Dúchas the Heritage Service, and identified 28 areas of archaeological potential which it was considered a priority to investigate prior to the award of the PPP contract. These areas total 116 ha, comprising 42% of the lands to be acquired by CPO. They were identified on the basis of a) known or presumed archaeological value and b) topographic location.

A Scope of Works for the assessment was drafted for each of the areas, in accordance with national heritage policy (DAHGI 1999b). It is envisaged that the works will be carried out in two phases: Phase 1 will involve pre-construction assessment and Phase 2 will involve the mitigation of impacts, including preservation by record of archaeological remains, where necessary.

Phase 1: pre-construction assessment

Phase 1 of the archaeological works will involve an assessment of the 28 areas of archaeological potential with the following aims.

- identify any archaeological remains that will be impacted by construction of the road
- characterise those remains according to form, function, date and cultural associations
- quantify the extent of the remains
- reduce the risk to the PPP consortium of uncovering archaeological remains during construction
- develop strategies to mitigate the impact of road construction on remains identified.

Both intrusive and non-intrusive methods are being applied. Non-intrusive methods include site inspection and recording, documentary research, topographic survey and geophysical survey. Intrusive methods are test excavation by hand or machine.

Geophysical survey

For tender purposes two types of geophysical survey were defined: Type 1, reconnaissance magnetic scanning; and Type 2, detailed survey. Type 1 survey is being carried out over 66 ha. It involves traverses on foot with a hand-held fluxgate gradiometer, at traverse intervals of approximately 10 m, without formal signal logging. The locations of any significant anomalies (i.e. anomalies that are believed to be archaeologically significant) are recorded and marked by the operator observing the output. Type 2, detailed geophysical survey (fluxgate gradiometer and/or resistivity as appropriate), is carried out to investigate significant anomalies identified during the scanning survey.

Test excavation

At those 25 sites where test excavation is required the strategy adopted is to mechanically excavate a test trench, 2 m wide, along the centre-line of the proposed road. Offset trenches are dug, on alternate sides of the centre-line, at 30 m intervals. The offset trenches are dug at an angle of 45 degrees to the centre-line trench (this increases the area that would have been tested by offsets at 90 degrees). The strategy can be altered by changing the location of offset trenches or excavating additional trenches, to take account of local conditions, or to investigate any anomalies identified in the geophysical survey, or as otherwise required for archaeological purposes.

The test trenches are excavated to the top of undisturbed natural subsoils or any suspected archaeological deposits or features. If suspected archaeological deposits or features are identified, they are investigated by hand as far as is necessary to confirm their archaeological character.

The aim of excavating by hand is to ascertain as far as possible the form, function, extent and cultural associations of any features or deposits uncovered. This information is required so that a comprehensive mitigation strategy can be drawn up for those features that are found to be archaeological in character, and so that any features that are the result of non-archaeological activity can be dismissed.



Excavators uncover remains of a medieval corn-drying kiln on the route of the N25 Waterford Bypass (Tramore House National Roads Design Office)

It is estimated that at least 35,425 linear metres of test trench will be excavated in the course of the Phase 1 archaeological assessment. The total area of the test trenches will be an estimated 7.4 ha or 6.4% of the 25 areas of archaeological potential to be investigated using this technique.

Reporting

The end result of the Phase 1 works will be a) a series of assessment reports on each of the sites or areas of potential investigated and b) an ordered archive of all reports and other records for each of the sites or areas. The reports will be the basis for proposing Phase 2 mitigation strategies to Dúchas the Heritage Service and will be provided to the PPP consortia bidding for the contract to build the Waterford Bypass. The reports must contain a clear, comprehensive statement of the results of the works carried out and recommendations for further works where required.

Phase 2: mitigation of impacts

As seen above, Phase 2 works are dependent on the Phase 1 results. The aim of Phase 2 works will be to mitigate the impact of the road development, archive the documentation

and materials which result from the mitigation, and disseminate the results of the archaeological work to the public.

The local authority and the NRA are not obliged to proceed to Phase 2 of the works with the archaeological consultants appointed for Phase 1. The consortium that is awarded the PPP contract may carry out these works employing their own archaeological consultants (under the supervision of the Project Archaeologists) or by taking over the contract between the local authority and the National Roads Authority and the existing consultants.

Conclusions

We are at an early stage in this project and the foregoing is a combination of a statement of intent and a report on work in progress. As the project proceeds strategies will be refined in the light of experience. It is hoped that by using a combination of investigative methods and addressing the 28 areas of highest potential, the risk of discovering previously unknown archaeological remains during construction works will be greatly reduced.

Of course, there is still an archaeological risk attached to the 58% of the lands to be acquired by CPO which are perceived to be of lesser archaeological potential. In the absence of a confirmed CPO it will not be possible to excavate test trenches along the entire proposed route. However, a strategy is being developed for the wider deployment of geophysical survey techniques (a combination of magnetic susceptibility and the detailed survey techniques outlined above) and targeted test trenches to assess these areas. Once the CPO is confirmed it is intended to excavate test trenches in all available areas according to the methodology outlined above.

If these strategies can be implemented it should result in the achievement of a reasonably complete assessment of the archaeological impact of the Waterford Bypass ten months before the main earthworks for construction are estimated to begin. This will allow time for a properly planned and resourced mitigation strategy to be agreed and implemented by all relevant parties, the design team, the local authorities, the NRA, Dúchas the Heritage Service, archaeological consultants and the PPP consortium.