Foreword

The Heritage Council's Review of Urban Archaeology in Ireland noted that there has been a large increase in pre-development archaeological investigation in recent years and simultaneously archaeological assessment and monitoring was becoming a more prevalent and important part of the mitigation process. Operating on the recommendations of that report and the resulting Council policy document on Urban Archaeology, one of the priority actions identified by the Standing Committee on Archaeology for the year 1999 was to commission a review of the purpose, approach, methodology and reporting of archaeological assessment and monitoring in Ireland. The Heritage Council thanks those involved in overseeing the production of this report for their time and support, especially the authors George Lambrick and Ian Doyle. The Council also hopes that this report will lead to the development and adoption of a comprehensive set of guidelines which will encourage best practice in regard to archaeological assessment and monitoring in the future.

F. Rountree

Freda Rountree
Chairperson
Heritage Council
February 2000

Brollach

Sa doiciméad Athbhreithniú ar Sheandálaíocht Uirbeach in Éirinn de chuid na Comhairle Oidhreachta tugadh faoi deara go raibh méadú mór ar scrúdúchán seandálaíochta réamhfhorbartha i ndiaidh a bheith ann le blianta beaga anuas agus ag an am céanna go raibh an measúnú agus an mhonatóireacht seandálaíochta mar chuid thábhachtach fhorleathan den phróiseas maolaithe. Ag feidhmiú ar mholtaí na tuarascála sin agus ar dhoiciméad polasaí na Comhairle ar an tSeandálaíocht Uirbeach a bhí mar thoradh uirthi, ba é ceann de na gníomhaíochtaí a d'aithin an Buanchoiste Seandálaíochta don bhliain 1999 ná athbhreithniú ar chuspóir, cur chuige, modheolaíocht agus tuairisciú an mheasúnaithe agus na monatóireachta seandálaíochta in Éirinn a choimisiúnú. Gabhann an Chomhairle Oidhreachta buíochas leo sin a ghlac páirt sa mhaoirseacht a rinneadh ar fhoilsiú na tuarascála seo as a n-am agus a dtacaíocht, go háirithe leis na húdair George Lambrick agus Ian Doyle. Tá súil ag an gComhairle chomh maith go mbeidh mar thoradh ar an tuarascáil seo go bhforbrófar agus go gcuirfear i bhfeidhm sraith chuimsitheach treoirlínte a spreagfaidh barrchleachtas maidir le measúnú agus monatóireacht seandálaíochta amach anseo.

F. Rountree

Freda Rountree
Cathaoirleach
AN CHOMHAIRLE OIDHREACHTA
Feabhra 2000

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Executive Summary

This study, commissioned by the Heritage Council, has reviewed archaeological assessment and monitoring procedures in Ireland, as a first step in developing guidelines on how these activities should be undertaken in the future.

There has been a dramatic increase in testing and monitoring in the last few years, 94.5% of all licenced test excavations and 93% of monitoring have occurred since 1990.

The study is based on audits and quality assessments of a sample of recent monitoring and assessment reports and on consultations with professional archaeologists involved with the authorisation and execution of testing and monitoring investigations.

The results of this study showed up many problems with both monitoring and testing procedures and reporting. Problems included:
• Common failure to describe the type of machinery used,
• Failure to evaluate the effectiveness of the methodology used,
• Common failure to include National Grid references and OD ground levels on plans or in the text,
• Common failure to state the methodology for trench layout and little awareness of statistical/spatial principles,
• Inadequate (or absent) descriptions of the development,
• Common failure, where archaeology was found, to present section drawings or photographs, or use context numbers for archaeological deposits or features,
• Lack of sieving for finds except for a few rural cases and inadequate environmental sampling, apart from wetland testing projects,
• Weakness in recommendations for further work,
• Common failure to report details of finds and other specialist data,
• Common failure of subsequent excavation reports to refer to the earlier testing assessments,
• Common lack of bibliographies,
• Failure to comply fully with the guidelines set out by Dúchas on Method Statements accompanying licence applications.

The study also looked in general at the reliability of the monitoring and assessment procedures. It appears that certain types of features consistently fail to be identified during monitoring operations. It also appears that in many cases the quality of testing procedures makes it very difficult to predict accurately the archaeological potential of a development site, potentially leading to problems in resourcing subsequent excavations

Chapter 1 - Introduction

1.1.1 This study, commissioned by the Heritage Council, entails a review of archaeological assessment and monitoring procedures in Ireland with a view to developing guidelines on how these activities should be undertaken.

1.1.2 The brief outlined by the Heritage Council is
1. The report should review the purpose, approach, methodology and reporting of archaeological assessment and monitoring and propose guidelines on how to adequately address four key questions:
i. What is the research value and potential of the archaeological remains?
ii. What will the impact of development be?
iii. What types of mitigation (by design modification or further investigation) would be appropriate to mitigate the impact of development and/or make a useful contribution to knowledge?
iv. What will be the likely cost and timescale of any further investigation, analysis and reporting, given the nature of the archaeology and the type and extent of further work required?

2. The report should examine a sample of assessments and determine whether they provide enough information to assess the likely impact of a development. The report should detail guidelines for sources to be consulted, standard of presentation, etc.
3. Using the sample of assessments the report should examine the manner in which field testing is currently carried out. Are the methodology, techniques, recording and reporting standards adequate?
4. The report should compare the results of the sample of assessments to the results of the ensuing full excavations, if any. Are the assessment results a reliable and adequate guide to the archaeology?
5. The report should examine the effectiveness of archaeological monitoring by examining a sample of reports, with particular reference to the techniques and strategies currently employed. It should also examine the approaches and procedures followed when archaeological material is identified in the course of monitoring and identify any problems in this regard.
6. The report should suggest methodological, technical and administrative improvements.

1.1.3 In recent years the pace and breadth of archaeological activity in Ireland has increased dramatically. In particular, the last ten years has seen a rapid increase in the number of individuals involved in the profession. The 1980s saw the emergence of private sector archaeologists in response to the growing number of developer funded excavations. In 1989 the number of excavations undertaken in Ireland reached the one hundred mark for the first time (Fig. 01).

1.1.4 The development of the Sites and Monuments Record (SMR) during the 1980s, and the Record of Monuments and Places in the 1990s, by the Archaeological Survey of Ireland provided a comprehensive statement of known monuments. This has been a key factor in ensuring that archaeological interests are respected in the planning process, reinforced by the statutory recognition of Recorded Monuments based on the SMR.

1.1.5 Ireland's membership of the European Union has also had a significant effect on the number and range of assessments, excavations and archaeological monitoring of new development. Access to funds designed to improve the infrastructure has resulted in road building and gas pipeline construction etc., in addition to commercial and private development, which has necessitated archaeological monitoring and excavation. Urban Renewal schemes have significantly affected the development of historic towns. EU directives providing for Environmental Impact Assessments and the stipulation of requirements to test and monitor land developments have further contributed to the large increase in the number of archaeological excavations undertaken since 1989.

1.1.6 Concurrent work, carried out by the Oxford Archaeological Unit for the Heritage Council reviewing unpublished excavations, noted the lack of any standard format or scope of excavation reports either in published or in unpublished form. This point is even more relevant in the case of testing and monitoring excavations; while conventional excavation and the resulting reports have longer pedigrees, assessment and monitoring, in an Irish context, are more recent developments and the techniques and written forms of these are still developing.

1.2 Acknowledgements

Chapter 2 - The Definition and Scale of "Test Excavation" and Monitoring

2.1.1 Prior to any discussion of the archaeological processes involved in archaeological assessment, testing and monitoring, it may be instructive to examine the definitions of these types of work and scale of the activity involved. The definitions cited below are those recently published by the Department of Arts, Heritage, Gaeltacht and the Islands.

'Test excavation is that form of archaeological excavation where the purpose is to establish the nature and extent of archaeological deposits and features present in a location which it is proposed to develop (though not normally to fully investigate those deposits or features) and allow an assessment to be made of the archaeological impact of the proposed development. It may also be referred to as archaeological testing' (DAHGI 1999a, 27).

'Test excavation should not be confused with, or referred to as, archaeological assessment which is the overall process of assessing the archaeological impact of development. Test excavation is one of the techniques in carrying out archaeological assessment which may also include, as appropriate, documentary research, fieldwalking, examination of upstanding or visible features or structures, examination of aerial photographs, satellite or other remote sensing imagery, geophysical survey, and topographical assessment' (DAHGI 1999b, 18).

**2.1.2** Archaeological monitoring may involve

'an archaeologist being present in the course of the carrying-out of the development works (which may include conservation works), so as to identify and protect archaeological deposits, features or objects which may be uncovered or otherwise affected by the works' (DAHGI 1999a, 28).

2.1.3 The assessment and monitoring work is carried out by private sector archaeologists acting on behalf of a client. Such archaeologists tend to operate in small-scale businesses providing these services or as part of larger archaeological consultancy firms.

2.1.4 The database developed for the Unpublished Excavations Study, founded upon data from the excavation licence database maintained by Dúchas, is particularly useful to determine the scale of this archaeological activity. This database contains details of archaeological excavations carried out in Ireland during the period ca 1930 to 1997.

2.1.5 This data provides a very useful overview of the range and scale of work, but there are some problems with the detailed use of this data, because the different stages of assessment, excavation and monitoring of some projects have not been separately distinguished in the database. Thus, according to the Dúchas data, some large excavations are registered as testing or monitoring excavations. This problem was addressed somewhat during the Unpublished Excavations Study by the creation of an extra field for 'actual excavation type' in the project database. The identification of a number of tests which were licensed but which were not recorded on the Dúchas database has also increased the number of test excavations. A similar situation exists with regard to monitoring work carried out.

2.1.6 Thus, according to the Dúchas data some 1247 test excavations were carried out between 1982 and 1997. If the field for 'actual excavation type' is used this can be increased to 1306 tests carried out between 1981 and 1997. Respectively these figures represent 39% and 41% of all excavations carried out in Ireland from ca 1930 to 1997. Of this latter figure based on 'actual excavation type', 94.5% of all test excavations were found to have been conducted since 1990. During the years 1996-97 some 721 test excavations were carried out. This figure accounts for 41.5% of all archaeological test excavations and comprises some 22.75% of all registered archaeological excavations in Ireland carried out in the period ca 1930-1997
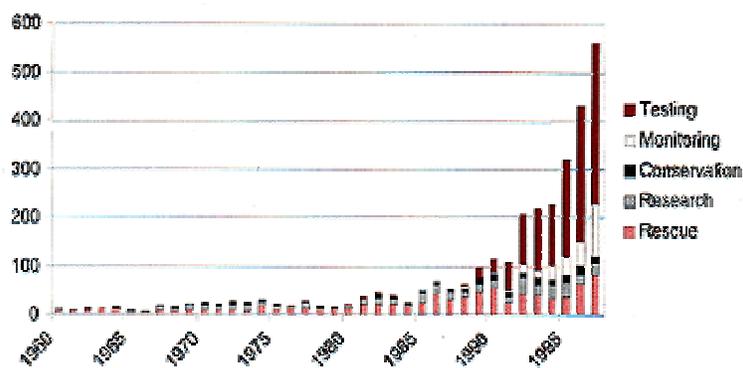
Fig.01 Excavations carried out in Ireland annually 1960-1997

2.1.7 The impression given by Fig. 01 is that monitoring is also a recent development. According to the data some 252 monitoring licences were issued by Dúchas during the period 1983-1997. As with testing, the field 'actual excavation type' reveals a more complex picture. Several examples are apparent where projects, though not monitoring jobs per se, did involve some element of monitoring. Such cases would be where a portion of a site was excavated but where monitoring of pile insertion would take place within unexcavated areas. From this it is possible to say that 307 licences were issued which entailed purely monitoring or some element of monitoring. Of this latter figure some 93% has taken place since 1990, while some 47% are licences issued during 1996-97.

2.1.8 The figures for archaeological monitoring should be treated cautiously. The practice of unlicensed monitoring has been permitted by Dúchas in recent years. This activity carries no stipulation to include details in the Excavations Bulletin and does not show up on the Dúchas licence database.

2.1.9 Archaeological monitoring that is carried on a precautionary basis where the possibility of archaeological features, deposits or objects being uncovered in the course of development works is considered to be slight, may be carried out without a licence. This tends to be in cases where the development itself is small and/or the archaeological potential of the site is very limited. The decision as to whether or not archaeological monitoring should be carried out under licence is made by the archaeologists in Dúchas which advises the planning authority. There are no separate guidelines issued to cover unlicenced monitoring

2.1.10 Since the 1st of July 1998 archaeologists who are carrying out unlicenced monitoring should complete and send a form to Dúchas which officially notifies Dúchas that it is to be carried out. This includes brief details of the development, the start and end date. The system for notification of unlicenced monitoring has no legal standing: it was introduced as a means of keeping track of archaeological works carried out as a requirement of a Condition attached to a grant of planning permission or otherwise sought by Dúchas, and is purely an administrative system.

2.1.11 Archaeologists who carry out unlicenced monitoring, who are not already excavation licence holders, or are not on the List of Consultants maintained by Dúchas, should submit a CV in order that they can be added to the List.

2.1.12 If archaeological features, deposits or objects are found, all works should stop and the discovery should be reported to Dúchas and/or the National Museum of Ireland, so that discussions can take place between the archaeologists and the state authorities, and an appropriate strategy can be worked out. The provisions of the

National Monuments Act regarding the discovery of archaeological objects apply if finds are discovered. Dúchas requires that a report be submitted regardless of whether archaeology is discovered.

Chapter 3 - Issues

3.1 Testing

3.1.1 At present, the methods adopted for testing excavations, at least in urban areas, often appear to be not much better than a watching brief or monitoring of machine trenches, dug under archaeological supervision, but usually recorded from the surface. Typically these trenches are excavated without shoring, and as a result either safety issues are compromised, or the quality of archaeological investigation and recording is limited by the safety considerations (Lambrick & Spandl 2000). This problem occurs less frequently in rural cases.
3.1.2 A key issue is that techniques of archaeological testing should be both safe and reliable in either proving the absence of any archaeology (which is the conclusion of many testing reports), or in properly characterising and recording any archaeology that is present.
3.1.3 It appears from the reports and archives examined, and from some comments made, that it is uncommon for the very cursory methods normally used in testing trenches to revert to full archaeological recording with proper safety measures etc. as soon as any potentially interesting archaeology is encountered. It is important to recognise what information is actually needed (and used) in deciding what further mitigation (by design or further work) may be appropriate, and to allow archaeologists both to allow for reasonable contingencies and to cost any further work realistically.
3.1.4 It is important for the testing to determine how extensive or important any archaeology might be, and whether the development is likely to have an impact on it. A range of key indicators of the location, quality and quantity, where archaeology is present, need to be established. These include the horizontal and vertical extent of deposits, date range, finds quality and quantity, preservation, conditions for stratigraphy, structures and organic material, and potential for environmental archaeology.

3.2 Monitoring

3.2.1 In relation to archaeological monitoring it is worth considering the provision made for the treatment of any remains which may be uncovered in the course of work. This includes examination of any arrangements made with developers for the treatment of archaeological remains and the retrieval of finds. Furthermore, the type of machinery utilised in the stripping of topsoil or overburden may also affect the effectiveness of identification and recording of the archaeological remains.

Chapter 4 - Approach

4.1.1 The recent publications by the Department of Arts, Heritage, Gaeltacht and the Islands entitled Framework and Principles for the Protection of the Archaeological Heritage and Policy and Guidelines on Archaeological Excavation (DAHGI 1999a; 1999b) articulate much of the Department's thinking on the principles relevant to this study. In conjunction with the guidance notes for excavators issued by Dúchas these provide a general framework within which the issues pertaining to this study must be addressed.
4.1.2 The views and insights of leading practitioners are clearly of relevance to this study. To this effect a group of six prominent Irish archaeologists who possess a significant body of experience in site assessment and monitoring have been consulted.

Chapter 5 - Existing Guidelines

5.1.1 At present there are few detailed practical guidelines from the state or from the Irish Association of Professional Archaeologists (IAPA) on the conduct of archaeological test excavations or watching briefs. The Department of Arts, Heritage, Gaeltacht and the Islands has published details of the legislative contexts for both these forms of archaeological activity, as well as setting out circumstances where testing and monitoring are applicable (DAHGI, 1999 a & b). These documents also seek to define testing and monitoring.
5.1.2 IAPA has also drafted guidelines for the assessment of sites of archaeological potential. These provide more detailed practical guidance than the general excavation guidelines issued by the Department of Arts, Heritage, Gaeltacht and the Islands and suggest contents for desktop studies and testing reports. In relation to the actual excavation of trenches these guidelines state:

'Archaeological test trenching usually involves the excavation of long narrow slit trenches to achieve a cross-sectional transect or group of transects across a site in which archaeological features and deposits may be noted. These are most often carried out mechanically (i.e. using a JCB or similar), but sometimes hand-excavation is necessary- in which case trenches must be properly and safely shored and all safety recommendations/regulations adhered to.'

5.1.3 There are no IAPA guidelines in relation to archaeological monitoring.

5.1.4 Other sources of information on the methods employed in testing projects are to be found in a National Monuments Advisory Council handbook (NMAC, 1989) and intermittent papers published in IAPA newsletters.

Chapter 6 - The Review of Reports

6.1 Introduction

6.1.1 The project brief specified that a sample of assessment and monitoring reports be reviewed as to their content and quality. The review of cases was undertaken over a four-week period using the resource of archaeological reports deposited in the National Museum of Ireland. The conditions under which an excavation licence is issued require excavators to submit reports to both Dúchas and the National Museum. An interim report should be submitted within four weeks and a full report is required within twelve months after the expiry of the excavation licence.

6.1.2 The review process involved the identification of a sample of field testing reports where assessment was followed by excavation, or by monitoring which had uncovered remains which necessitated archaeological excavation.

6.1.3 It was initially hoped that the database devised for the Unpublished Excavations Study (UES) could be used to identify suitable cases for review. However, it became apparent at an early stage that this was not straightforward due to factors such as the presence/absence of reports from one or both phases of a case (e.g. only an assessment report/no excavation report etc.) and the quality of reports submitted (it was considered desirable to base the review as far as possible on current good practice). In practice the most effective way to identify and physically locate cases was to trawl through the filing cabinets containing excavation reports in the National Museum of Ireland. Unlike the contents of the UES database, cases from 1998 and 1999 were included in the review.

6.1.4 An element of variety (Fig. 02) was sought in terms of geographical factors, development types (roads, gas pipelines, housing/buildings etc.) and practitioners involved. The earliest report reviewed had been written in 1992, otherwise the bulk of the sample derived from 1996-1999. The later reports had the benefit of an associated Method Statement. The requirement for such a document to accompany the licence application was introduced in late 1997. The Method Statement was useful because few practitioners included details of the technique or methods employed in their actual reports.

Chapter 7 - Review of Assessment Reports

7.1 General remarks

7.1.1 Twenty-three assessment reports were assessed from the point of view of content and quality. Information gathered included obvious details such as the site name, name of the developer, development type, date of test and date of report. Similar details were sought as to the follow up excavation. Essential pre-invasive information such as background research, descriptions of the site and details of the development were also recorded. Data concerning the invasive aspect of the investigation were assessed with emphasis on the methodology and quality of reporting. Where available, and where relevant, details from the Method Statement were taken.

7.1.2 The presence or absence of discussion, impact assessment and recommendations were sought. Lastly, the findings of the assessmet were compared to those from the follow up excavation and a judgement of the accuracy of the former was marked on a five-point scale (see Fig 03). An attempt at gauging the effectiveness of the report to enable a planning decision was also made. The effectiveness of the report as such encompasses whether it considers the archaeological potential of the site, whether or not rescue excavation or development in an altered form should go ahead, and how useful the assessment (and its report) had been in allowing an estimate for the cost of excavation.

Methodology in the Compilation of Assessment Reports

8.1 Desk surveys

8.1.1 The sources used by archaeologists before excavation showed considerable variation. The use of historical sources or the inclusion of an historical background was more frequent in urban contexts where sources are more common. In the cases of some of the larger archaeological companies a previously prepared historical background for each of the larger towns appears to be available and is inserted into each report in that area.

8.1.2 The use of historical sources in rural areas remains quite low in comparison. As would be expected the use of historical maps was restricted to the towns, where these sources are more abundant and more readily accessible in published form. There appears to be very little awareness of historic maps for rural areas, such as estate maps.

Table 001:

Desktop & Surveying: recommended criteria sought in (23) assessments	Urban (12)	Rural (8)	Wetland (3)
Historical data	75%	25%	0%
Archaeological data	50%	50%	0%
Historical maps	58%	0%	0%
OS maps	100%	100%	100%
Bibliography	50%	50%	100%
Pre-test geophysics	0%	25%	0%
Digital terrain mapping	0%	37%	0%
Pre-test site grid/Total Station used	16%	50%	100%

8.1.3 The amount of archaeological research employed also remains quite low, though there was no significant difference in the urban and rural reports seen. The Excavations Bulletin was a frequently cited source, as was the work of the Archaeological Survey of Ireland, i.e. the Sites and Monuments Record, the Record of Monuments and Places, and the county inventories. In the cases of some of the road schemes for which reports were examined, the historical and archaeological research may have appeared in the pre-test excavation route assessment; these were not submitted to the National Museum of Ireland and thus were not seen.

8.1.4 The inclusion of a bibliography setting out details of sources used in the report is clearly not often felt to be an integral part of a assessment report.

8.1.5 All reports examined utilised Ordnance Survey maps, generally in the conventional 6- inch format, and also as an extract from the Sites and Monuments Record or the Record of Monuments and Places.

8.2 Non-intrusive surveying methods

8.2.1 Detailed non-invasive survey methods were seen to be relatively uncommon. No instances of digital terrain mapping or the use of geophysics were seen in any of the urban reports sampled. The use of these techniques was not seen to be widespread in the rural context either. Where they were used related to archaeological projects involving road construction and one housing scheme.

8.2.2 The provision of a site grid in a testing project was difficult to gauge from the reports alone. In an urban context practitioners seem to prefer to use offsets from standing buildings. When dealing with rural sites the frequency of the use of EDMs and the laying out of a grid appeared to be more frequent. To some extent these findings were confirmed in conversation with practitioners (see below).

8.3 Test Excavation: techniques and recording

8.3.1 Some attempt was made in the assessment of testing reports to glean details of the methodology employed by practitioners. The Method Statements supplied by the excavators at the time of applying for the licence were of some use in this process. The requirement for a Method Statement to accompany the licence application was introduced in 1997.

8.3.2 On urban sites the widespread use of machines to clear overburden contrasts with the rural situation where some 25% of the reports seen had employed machines. Few reports stated what type of machine had been used or what type of bucket had been employed. The key issue of how deep the machine dug after clearing overburden is divided on an urban to rural/wetland axis. No rural or wetland excavation used the machine to bottom the trench, and a high proportion of these sites employed hand cleaning to derive maximum information from the trenches. The urban situation is quite different with 41% of the sites whose reports were examined having used the machine to bottom the trench. Accordingly, only half of the reports examined had shown any indications that the trench had been hand cleaned.

8.3.3 It should be noted that in the case of rural sites, four of the eight cases reviewed involved testing in a known enclosure. No machines were used in any of these cases due to the knowledge from fieldwork that the

sites did represent archaeological monuments and that in those circumstances hand excavation was appropriate.

Table 002

Techniques & Recording:recommended criteria sought in (23) testing reports	Urban (12)	Rural (8)	Wetland (3)
Historical data	75%	25%	0%
Machine used	100%	25%	100%
Type of machine stated	16%	0%	100%
Trenches bottomed by machine	41%	0%	0%
Trenches hand cleaned	50%	87.5%	100%
Use of shoring	0%	0%	0%
Levels reduced to Ordnance Datum	75%	87.5	0%
Levels given in relation to ground level	25%	12.5%	100%
Plans	100%	100%	100%
Sections	50%	62.5%	100%
Photographs	41%	75%	100%
Use of numbered contexts	33%	62.5%	100%

8.3.4 No evidence was seen for the use of shoring. In many of these cases, when assessing the reports, an element of 'reading between the lines' had to be employed. The failure to state whether a machine had been used to excavate trenches is a problem, yet the presence of such a machine in photographs and visible bucket marks in trenches does give some indication of their use.

8.3.5 No report gave any detailed account or evaluation of the methodology employed and the Method Statements seen were of varying quality. None of the statements seen complied fully with the guidelines on Method Statements as set out by Dúchas. The assessment of method statements is the responsibility of Dúchas and the National Museum of Ireland, and it is not clear why these organisations have not been enforcing compliance with the guidelines. Although only extracts are quoted here (see Table 003 below), few statements gave the size of the team involved or the rationale behind the layout of the trenches. The statements consulted dealt briefly with the methods of excavation, few were concerned with the background historical sources or how the impact of the development would be addressed.

Table 003

Extracts from Method Statements: testing
Urban:
'a series of test trenches will be conducted across the site in areas of maximum ground disturbance, and further to any information a detailed paper search and borehole/demolition attendance may provide. The trenches will come down onto the top of the archaeological material and in only a few spot areas will any such material be examined in detail to reveal its nature, complexity and depth.'
Rural:
'a topographic survey will be conducted prior to the commencement of any excavation…the deep grass and nettles are to be cleared in the area of the cropmark…a minimum of 2 test trenches to be archaeologically excavated across the circular cropmark, visible on the Ordnance Survey aerial photograph….should archaeological remains be found…the advice of the National Monuments Service shall be sought with regard to further excavation.'
Urban:
'Two test trenches are to be excavated under licence with a machine…The layout of the trenches is to ascertain the effect, if any, the proposed development will have on the archaeology of the site. If any archaeological material is uncovered it will be detailed in the excavation report.'

Rural/suburban:

'I propose to relocate the known burials and open the area around them to facilitate their excavation. It is to be expected that further overlapping burials may come to light and I hope to remove these as well. I further propose limited trenching to either side of the known burials in the hope of defining the area with burials.' [entire statement]

Urban:

'Further to demolition and site clearance, a series of at least four test trenches will be excavated at the site with machine attended by the licensed archaeologist. Excavation will take place down onto top of archaeological deposits only. A report will then be compiled…'

Urban

'it is proposed to dig a test trench east to west across the site, avoiding any disturbance to the remains of the city wall…The trench will be dug with the assistance of a mechanical excavator until archaeological layers are exposed. Excavation will then cease and be continued by hand in one or two limited areas to establish the depth of stratigraphy present on site, all strata thus exposed will be fully recorded. This will define the nature, extent and depth of all archaeological layers on site. In the event of the discovery of artefacts during the course of the excavation a sum has been allocated for their conservation/identification by contract conservators/specialists.'

8.3.6 The recording techniques used varied from case to case. Most excavators appeared to have a preference for levels or vertical measurements to be reduced to Ordnance Datum with a smaller proportion preferring to relate the measurements to present ground level.

8.3.7 The number of reports that included drawn sections reflects whether or not the trenches were hand cleaned. As expected this was marginally higher on rural sites.

8.3.8 Similarly, the use of photographs and the assigning of individual context/feature numbers to excavated material was largely found to be in rural assessments where hand cleaning of trenches was more likely. It could be argued that the use of techniques from conventional excavations (section drawings, context numbers, photography etc.) were applied mainly to hand excavated or hand cleaned test trenches where, despite the trial nature of the investigation, the practitioner effectively treated the exercise as a small excavation. This was perhaps because the shallow nature of stratigraphic sequences on rural sites allows safer access to trenches without shoring.

8.3.9 No instances of the use of statistical or spatial principles were seen to have been used in determining trench location. Such techniques, which are frequently used in Britain, are designed to maximise the probability of site intersection and detection of archaeological features (see Champion et al. 1995, 51-63). Conversation with practitioners revealed little awareness of such practices.

8.4 Reporting standards

8.4.1 The purpose of the testing exercise is to collect data on the date, type, quality, scale and significance of the archaeology to inform decisions about the likely impact that a development will have on the archaeology so that a reasoned mitigation strategy can be developed as necessary. Such a decision involves those removed from the immediate experience of the site, i.e. planners at state and local authority level as well as the state archaeological service, so that clarity of reporting is essential.

8.4.2 In terms of locating a site, the supply of national grid co-ordinates can be seen from the reports examined to be quite poor. The figures from Table 004 include reports where no locational details were found and the supporting excavation licence application had to be consulted.

8.4.3 Many excavators, both in urban and in rural contexts, did not consider descriptions of the site prior to excavation to be essential. It is important to realise that the users/readers of the report, including those at the decision making level, may not be physically familiar with the site. All reports included a plan showing the trench layout.

8.4.4 One of the findings from the assessment of reports is that practitioners do not consider a description of the development as an integral part of their report. No report contained what could be called a detailed description of a development. In the urban sample two-thirds included an outline description of the development, this fell to half in the rural sample. The wetland sample, as part of a single project, did and thus achieved a full score. Similarly the inclusion of plans of the development varied from frequent to uncommon. The reasons for this variation is unclear; in some cases detailed development plans may not exist at the time of the archaeological test.

Table 004

Techniques & Recording:recommended	Urban	Rural	Wetland

criteria sought in (23) testing reports	(12)	(8)	(3)
National Grid points	66%	75%	100%
Topographical/site details	66%	62%	100%
Trench plan	100%	100%	100%
Brief description of development	66%	50%	100%
Detailed description of development	0%	0%	0%
Architects/Engineers plans	58%	37.5%	0%

8.4.5 The greater part of the reports examined contained a discussion of the archaeology exposed. While the discussion varied in terms of length and quality from report to report, the discussion section was the recurrent conclusive element to each document. In many cases this discussion merely summarised the main findings of the testing exercise.

Table 005

How conclusive? Details from (23) testing reports	Urban (12)	Rural (8)	Wetland (3)
Discussion of the archaeology	91%	87.5%	100%
Impact assessment	50%	50%	100%
Recommendations	91%	50%	100%

8.4.6 Crucially, the presence of impact assessments and recommendations are not to be taken for granted. In some cases, such as test excavations undertaken prior to road construction, these textual sections appear to be absent because of an implicit assumption on behalf of the excavator that, since the site is in the path of the road, total destruction and excavation are inevitable, and no design mitigation is possible.
8.4.7 Of the reports and cases reviewed, the section on recommendations tended to be quite general. The majority made recommendations about the need for further excavation but qualified such a statement with an assertion that all recommendations are subject to the approval of the state archaeological services. Recommendations, in their written form, as to how the impact of a development could be eased or avoided were quite weak, especially in terms of the technical aspects of the development. It appears that such matters are dealt with after the report is written and submitted in the form of informal discussions between the private sector archaeologists and the state authorities.
8.4.8 Other than making recommendations, the content of the report should be of a sufficient quality to enable an objective reader, either at the decision making level or another archaeologist trying to use a report, to assess the scale, quality and potential of the archaeological remains. Ultimately the report should also enable a reasonably accurate costing to be made for any follow up excavation.
8.4.9 Some factors that allow for such a costing to be made, such as the final impact of the development and consequent size of the area to be excavated, may be decided some time after the testing report has been written, and may be a matter for the state archaeological services.
8.4.10 Other than this the archaeologist should include in their report details of the depth of the archaeological material, with some implied or stated indication of whether there is a need for an excavation to use shoring or not. The reports examined dealt with these issues competently. No discussion as to the need for shoring was seen and it may be that the archaeologists involved considered the need for this to be obvious given the depths of deposit on some of the sites concerned.
8.4.11 The extent of the archaeological deposit or features over the development site should also be described if possible, as should any variations in the deposit. At the very least the scale or extent should be detailed in relation to the area of impact of the development. The cases studied were largely concerned with the impact of the development on the archaeology, and as such the presence and extent of archaeological material was only sought in the areas of maximum impact. When it was apparent practitioners pointed to variations in the quality of archaeological material (e.g. modern intrusive features), yet other than this little deliberate attempt at the testing stage was made to define variation in the archaeological material.

Table 006

Finds: details from (23) testing reports	Urban (12)	Rural (8)	Wetland (3)
None found	16%	0%	66%
No details of finds	25%	12%	0%
Some found	58%	87.5%	33%
Finds Catalogue	16%	50%	33%
Sieving for finds	0%	0%	0%

Specialist data	25%	12.5%	100%

8.4.12 The character of finds from a tested site is also of relevance in allowing a costing to be made for any follow up excavation. The character of finds assemblages has implications for issues such as conservation, analysis and reporting by specialists as well as the purchase of packaging and storage space prior to deposition with the National Museum of Ireland are significant financial commitments.

8.4.13 It is thus alarming to note that the reports examined could be quite evasive in relation to artefactual details. Of the urban sites examined 16% had recovered no finds while 25% gave no details on this subject. A finds catalogue appears to be a low priority in Irish testing reports. 58% of the urban reports examined had retrieved finds, yet only 16% of the urban reports seen had a catalogue.

8.4.14 Interestingly, the greater emphasis on hand excavation in the rural context, as sampled, appears to have a marked influence on the recovery of finds and the incidence of an artefact catalogue in these reports is accordingly greater. No reports were identified in which sieving was attempted to enable artefact recovery.

8.4.15 Another potentially significant cost in any excavation is that of specialist palaeo-environmental analysis. However, it is a salient feature of Irish testing reports that there is a reluctance on behalf of excavators to include specialist data, or even just the opinion or comment of a specialist as to the potential of a site. No evidence for environmental sampling was seen in any of the cases reviewed, the exception being that of the wetland testing project. This may be due in part to the insufficient numbers of specialists working in Ireland.

8.5 Reliability of the Testing Reports

8.5.1 Since the study entailed the assessment of a sample of testing reports that had progressed to full excavation, some comparison was possible between the test findings and those from the resultant excavation. This was examined from two perspectives. Firstly, to what degree had the findings of the test been integrated into the final excavation report? Two criteria were sought to satisfy this.

• Was the location of the test trenches marked on the follow-up excavation plan?

• Were any finds recovered in the test excavation treated with the finds from the final excavation?

8.5.2 No excavation was found which met with both the two criteria listed above. Test trenches were shown in relation to excavation cuttings in eight out of the twenty-three reports examined. Three out of the twenty-three reports included the finds from the test excavation in the catalogue of artefacts from the final excavation.

Table 007. Reliability of testing process on urban sites

Site	Assessment found	How tested?	Findings of follow up excavation
Urban	Pits, possible Medieval watercourse/ditch	Machine	Series of pits from the Medieval period
Urban	Watercourses, possible mill buildings	Machine	Medieval watercourses
Urban	Evidence for post-Medieval pits and gullies	Machine	One very large post-Medieval pit removed almost all stratigraphy; scattered smaller pits
Urban	Linear feature cutting natural,	Machine/? hand cleaning	Medieval pits, inter-cutting linear features/gullies, sherds of Medieval pottery
Urban	Wall foundations likely to be from a Medieval building	Machine/ hand cleaning	Post-Medieval iron working complex, Medieval hall structure
Urban	Medieval ditches, Medieval pottery	Machine	Medieval and Post-Medieval ditches, furrows and pits
Urban	Cemetery, linear feature, pit	Machine/ hand cleaning	Cemetery, hut site, corn drying kiln
Urban	Archaeology removed by basements,except one post-Medieval wall	Machine	Post-Medieval wall
Urban	Series of walls, cobbled surfaces, midden layer	Machine/ hand	Post-Medieval walls/building, Medieval

		cleaning	dumping. Extent of modern disturbance under-estimated in assessment.
Urban	Layers and features with Medieval pottery and slag,	Machine	High density of pits, 'wall features', city wall/ditch (?hand hearths, structural cleaned) trenches, metalworking evidence, Medieval pottery, post-Medieval walls and drainage features, human burials
Urban	Post-Medieval stratigraphy, one human burial, 'no Medieval layers'	Machine/ hand cleaning	Medieval ditches and pits at level of natural, undated human burials
Urban	Medieval layers in one section of site. These took the form of organic layers, suggested as backyard dump material, above this was a possible timber structure	Machine/ hand excavation	Evidence for sill beam house, backyard fences and occupation debris. Reinterpretation of deposit in test trench section as earthen defensive rampart.

Table 008 Reliability of testing process on rural sites

Site	Assessment found	How tested?	Findings of follow up excavation
Rural	Cemetery: high density of inhumations, sherds of Medieval pottery.	Hand dug trenches	Early Christian – Medieval cemetery, (ca 1550 inhumations), evidence for three separate enclosures
Rural	Monastic enclosure: series of ditches	Machine	Ditches, bank, corn drying kiln, cemetery
Rural	Inhumations	Machinehand cleaning	Medieval cemetery
Rural	Enclosure, ditch, cultivation furrows, one sherd pottery, flint	Hand dug, trenches	Cremation burial, lithics, Medieval pottery
Rural	Circular enclosure 'most likely to be a ringfort'	Hand dug trenches	Ring-ditch, occupation/structure in interior, cremation burial
Rural	Enclosure: stone enclosing bank, flint and pre-historic pottery	Hand dug trenches	Enclosed pre-historic occupation complex, cremation burial, Bronze Age pottery and moulds
Rural	Burnt mound	Hand dug trenches	Burnt mound
Rural	Medieval abbey. Monastic period walls, human skeletal material	Hand dug trenches	Bulk of excavation outside of the areas tested. Remains of monastic building.
Rural: Wetland	Series of toghers, gravel paths, wood spreads as the test	Hand cleaned	Same findings

	excavation, some material interpreted as platforms not toghers		
Rural: Wetland	Togher comprised of stone, replaced wetland by wood, multi-period site with at least two construction phases	Hand cleaned	Stone and timber trackway with four construction phases
Rural: Wetland	Brushwood togher	Hand cleaned	Togher of two phase construction

8.5.3 Secondly, the accuracy of the test excavation findings was examined in the light of the follow-up excavation (Tables 007, 008). Issues taken into account in forming an opinion were the extent of the archaeology, the period, monument type and to what extent had the test enabled an accurate estimate of time for full excavation. These judgements were plotted on a five-point scale (Fig. 03).

8.5.4 Although it was from a smaller sample it is interesting that the wetland material was found to be more accurately tested. The standard of reporting for that material can be seen to have been quite thorough and the use of radiocarbon dating enabled chronological control to be established for the trackways.

8.5.5 Otherwise the rural material achieved a score higher than that from urban test excavations where less hand cleaning of the archaeological record was feasible. It should be emphasised that a number of the rural cases reviewed concerned test excavations that took place within likely archaeological monuments. A greater use of machines might be expected in a different sample of rural testing reports.
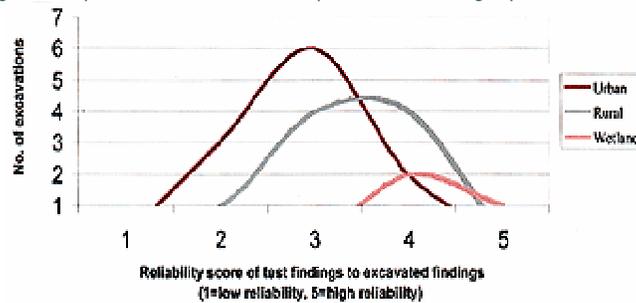

Fig. 03 Graph showing a reliability score (5 point scale) of test findings to results from the follow up excavations

8.5.6 With the exception of one wetland test, no rural or urban excavations achieved the maximum score, either out of a failure to accurately estimate the time required to complete the follow up excavation or because the character of the archaeology was poorly interpreted or under estimated. It should be noted that this graph is based upon a quite small sample.

8.5.7 It is also worth noting that few practitioners felt the need to assess the reliability of the test excavation in the light of the follow up excavation. Very little questioning of the effectiveness of the testing process was seen in any of the testing reports or, more relevantly, in the follow up excavation reports.
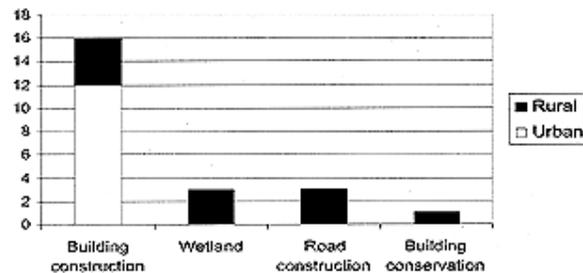
Fig.02 Reviewed assessment reports broken down by the nature of the development threat

7.1.3 From the review of the assessment/follow up excavation cases it can be seen that there is considerable variation in the standard of the reports currently being produced. This variation ranges from reasonably effective assessment detailed in a coherent format, to poorly structured projects that are in turn reported in a mediocre fashion. The lack of a standard for assessment reports was noted earlier and this point holds for the actual test exercise and the desktop documentary survey also.

7.1.4 The need for further professional training and more rigorous thought about the purposes of archaeological assessment and the manner of its reporting is apparent.

Chapter 9 - Review of Monitoring Reports

9.1 General Remarks

9.1.1 Twenty monitoring reports were examined from much the same perspective as those from testing projects. Only monitoring projects where significant archaeology was recorded were assessed. A range of development types that had attracted archaeological monitoring was selected.
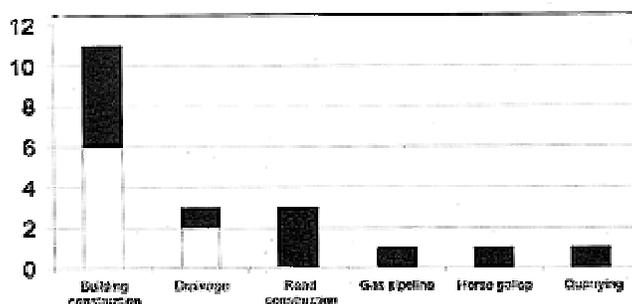
Fig. 04 Reviewed monitoring reports broken down by the nature of the development threat

9.1.2 No suitable examples of archaeological monitoring in a wetland context could be identified. As such the statistics reflect urban/rural activity. Two examples of unlicensed monitoring projects were assessed so as to include this type of work in the body of data.

9.1.3 In some cases, where archaeological remains were uncovered during monitoring, the excavator dealt with small-scale impacts under the monitoring licence. In other cases where the remains uncovered were such that they necessitated further resources, a new method statement was devised and greater resources allocated. In a number of cases the subsequent excavation report is the only source describing the monitoring phase of the project; (i.e. the introduction to the report outlines the monitoring aspect of the project.) and these types of monitoring reports were also examined.

9.1.4 As with the testing reports a small proportion of excavators omitted dates of fieldwork activity and/or failed to date the report.

9.1.5 In assessing these monitoring reports (and from discussion with experienced practitioners), the survey also noted that the potential to recognise archaeological features of low visibility may depend on the resources and experience of the personnel involved as well as issues such as the stripping technology and soil conditions.

Chapter 10 - Monitoring: Techniques and Strategies

10.1.1 As with testing reports, the need for the monitoring archaeologist to be aware of the cultural context of the site is of key importance. The review of monitoring reports therefore sought evidence of what sources had been examined prior to monitoring.

10.1.2 The use of historical sources and maps was more extensive on urban sites, perhaps owing to greater availability of published material. Similarly, archaeological background research can be seen to be biased in favour of urban centres. It should however be pointed out that two of the rural road schemes, although having no historical or archaeological research incorporated into the actual report, had previously been subjected to pre-disturbance environmental impact assessments which were themselves not examined by this project.

Table 009

Non-invasive details: recommended criteria sought in (20) monitoring reports	Urban (8)	Rural (12)
Date of monitoring	75%	91%
Date of report	62.5%	91%
Historical data	87.5%	33%
Archaeological data	100%	50%
Historical maps	50%	0%

OS maps	100%	100%

10.1.3 The type of machine used and the stripping methods employed by the developer may clearly determine the outcome of the monitoring exercise. Taking this into account, it is surprising that few practitioners gave any account of the machinery or technology used other than occasional statements that a toothless bucket was used. Fewer still allow for any evaluation of their efforts or outline any factors which may hinder the discovery of archaeological material such as soil and weather conditions, how the spoil is removed or the level of experience of the monitoring personnel.

Table 010

Methodology & Recording: recommended criteria sought in (20) monitoring reports	Urban (8)	Rural (12)
Machine/bucket type stated?	12.5%	33%
Levels reduced to Ordnance Datum	75%	25%
Levels given in relation to ground level	25%	75%
Photographs	87.5%	83%
Plans	100%	100%
Sections	75%	75%
Numbered contexts	75%	83%
Finds catalogue	25%	66%
Sieving for finds	0%	16%

10.1.4 A clear urban-rural divide is evident in terms of the means used to report depths of deposits. The greater part of urban monitoring reports gave depths as Ordnance Datum, perhaps reflecting the specifications of planning conditions and the relative ease at which OS benchmarks can be found in urban centres. The opposite appears to the case in the rural context where the use of measurements relative to ground level predominated.

10.1.5 The use of photographs, plans, sections and context numbers is broadly comparable between urban and rural reports with the majority of reports containing these.

10.1.6 It appears from examination of the monitoring case studies that a de facto variation in levels of inspection or attendance by the monitoring archaeologist does exist. This ranges from a continuous full time presence by an archaeologist to an intermittent or episodic presence necessitated by the nature of the development. Such variation may be accounted for by the intermittent progress of construction tasks. Alternatively, the archaeologist may have had reason to feel that a full time presence was unwarranted given the nature of the site. One such example is where the insertion of a drainage scheme in a medieval town was monitored in such a way that pipe-laying in sensitive areas was overseen while sections deemed to be archaeologically unproductive were not.

Table 011

Extracts from Method Statements/reports: monitoring
Rural [Method statement] 'The archaeologist, under licence, will have full authority to stop the machine work to assess any potential archaeology uncovered.' 'The client has been made fully aware that should any archaeologically significant material be uncovered full excavation, survey and recording will be required and all site work must cease'.
Urban/suburban [Method Statement] 'The ground works will be carried out by a mechanical excavator, and will be monitored at all times..' The developer 'understands the implications of any archaeological features being uncovered and has agreed to facilitate the archaeologist in any way possible'
Rural [Method Statement]. 'If any archaeological material is discovered during monitoring, ground works will stop, the nature and extent of the threatened material will be investigated, and the NMS will be informed. Ground works will not proceed until the NMS has decided on mitigating measures or further excavation'
Rural [Method Statement] 'The topsoil stripping…will be carried out using a mechanical excavator with a toothless bucket. The topsoil removal will require an almost fulltime presence...If significant

archaeological features should be revealed, additional staff and resources will be available to carry out appropriate excavation and recording'

Rural [Method Statement]
'Any archaeological material revealed during this work will be recorded in full, further to consultation with the Heritage Service and the National Museum'

Urban [Method Statement]
'Any areas revealing in situ archaeological remains would be fenced off to ensure that there would be no disruption due to construction…A decision on how best to deal with the archaeological remains would then be taken by Dúchas'.

Rural [Method Statement]
'It is proposed to monitor the excavation of all trenches for services and drainage from [date]…The trenches will be excavated by machine to the top layer of archaeological material, if encountered, and the remainder will be hand-dug. The developer is aware that preservation in situ may be required in the event of archaeological structural remains being encountered'.

Rural [Method Statement]
Excavation of a drainage trench: 'If archaeological material is uncovered it will be exposed and recorded but not removed until after a report has been submitted to Dúchas…detailing the location and extent of archaeological deposits and what impact the proposed drainage pipe will have on such deposits and a decision made in relation to the archaeology on the site by the Heritage Service'.

Rural [extract from Report]
'Top soil stripping was archaeologically monitored. The immediate area surrounding each potential site was then cleared back to define the extent of the archaeological activity. These were then subsequently excavated. Several large areas were cleared back mechanically with a toothless bucket' [extract from report]. The preceding testing report had recommended that 'further test trenching would not be beneficial', and that the site should be periodically inspected during the preparation phases of the development.

Urban [extract from Report]
'close monitoring on the initial excavation thereafter monitoring on a less regular basis. During the relaying of the pipe, work was halted and archaeological recording proceeded in advance of the pipe laying'…'daily monitoring on other sections'.

10.1.7 Such differing approaches are documented in the Method Statements and the design of such strategies seems to be left to the excavator involved, subject to it being approved by the state archaeological services. No planning condition seen in the course of the project specified any differing levels of presence on a particular site.

10.2 Procedures when material is identified

10.2.1 The method statements associated with the sampled reports were also examined where possible. Recurrent elements in the method statements included the need for operations to cease should archaeological remains be uncovered and that, should this be the case, consultation with the state archaeological services would be necessary.

10.2.2 The importance of keeping the developer informed as to the need for preservation or protection of archaeological material pending consultation with the Dúchas and the National Museum of Ireland was also a strong feature of the Method Statements seen.

10.2.3 Details of the human resources available were uncommon. As with the sample of testing reports, the method statements failed to fully meet the criteria set out by Dúchas in the published guidelines or in any of the preceding drafts.

10.2.4 Few reports detailed the on-site methodology to be employed when archaeological material was discovered. As can be determined from the above discussion, the Method Statements were the principle sources of information in this regard. Conversation with practitioners was found to be more enlightening in this regard (see below).

10.3 Quality of Reporting

10.3.1 The use of grid points appears to echo the situation observed in urban testing reports. The higher proportion of rural watching briefs with national grid references is presumably a reflection of the lack of other locational elements such as those found in towns e.g. street names/numbers etc. A majority of excavators considered the description of the site or the surrounding topography as an essential piece of information to include in a report.

Table 012

Report quality: recommended criteria sought in (20) monitoring reports	Urban (8)	Rural (12)
National Grid points	50%	91%
Topographical/site details	62.5%	58%
Overall site plans	75%	91%
Brief description of development	87.5%	83%
Specialist data	25%	50%

10.3.2 Given the scale of some of the development in question, such as large road schemes, it is surprising that the placing of overall plans into reports showing the spatial relationship of sites was not a constant inclusion.
**10.3.3** A substantial majority of the reports examined did give some indication as to the nature of the development in question, yet none gave what could be considered a detailed description.
10.3.4 The use of specialist expertise and reporting was found to be relatively low. In some cases there appeared to be an element of uncertainty as to whether the reports submitted were intended as full or interim.
10.3.5 Out of the twenty reports assessed only nine (45%) attempted to place the remains uncovered into context. Such discussion varied from report to report in terms of content and length and included efforts to place the archaeological material into a chronological or landscape context. Such a section could be seen as essential in a monitoring report yet its presence is not always assured.

10.4 Effectiveness of Monitoring

10.4.1 Monitoring may be seen ineneral as more effective than archaeological testing because it allows for more extensive coverage of the area under examination. However, there are several outstanding concerns arising from this study's review of monitoring reports. Figure 05 plots all features uncovered in the monitoring cases studied as part of this project.
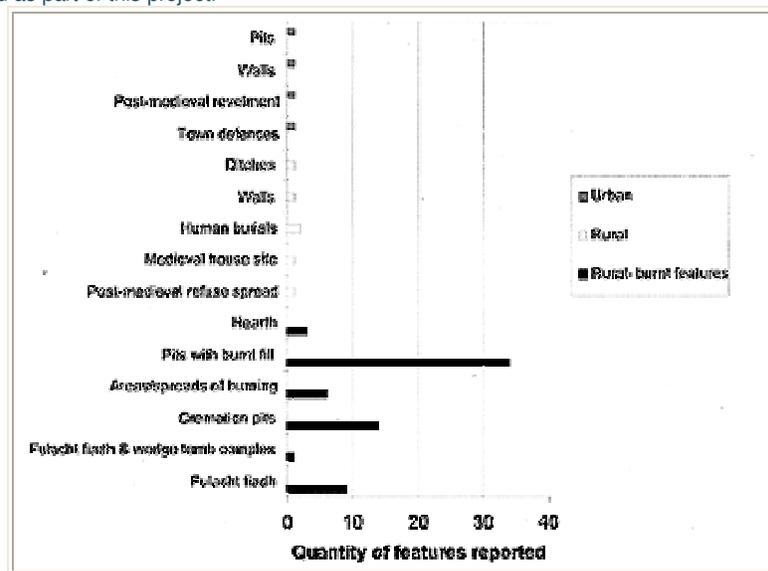
Fig. 05 Archaeological material identified in the course of monitoring based on the sample of 20 reports examined.

10.4.2 It is apparent from Figure 05 that relatively high visibility archaeological features, such as those incorporating charcoal, burnt stone and clay, are more likely to be recognised. It should be emphasised that Figure 05 merely represents the sample of twenty unpublished reports examined by the study.
10.4.3 Similar patterns of prominent 'burnt features' are discernible if the archaeological findings of the Cork to Dublin and Cork to Limerick gas pipelines are plotted (Cleary et al. 1987; Gowen 1988). Both campaigns of monitoring showed the ability of archaeologists to recognise features characterised by soil oxidation, cremated

bone, charcoal or heat shattered stone after the topsoil had been stripped. Sites which were excavated in advance of pipeline construction and topsoil removal are excluded from the present graphs. Such sites (e.g. the important Bronze Age and Medieval complex at Ballyveelish, Co. Tipperary) were identified on the basis of aerial photographs, field walking, cartographic sources etc. and are therefore not relevant to the effectiveness of monitoring per se.
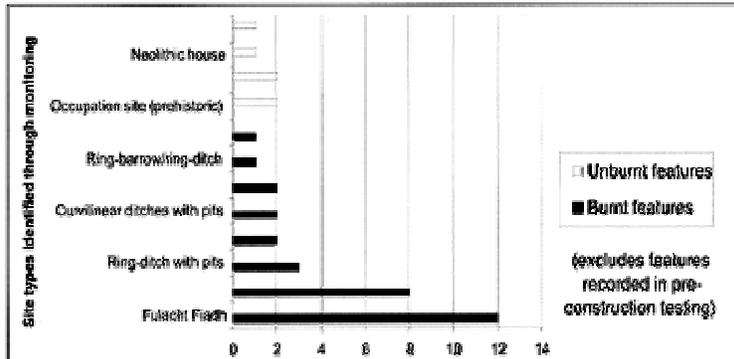
Fig. 06 Archaeological features identified during monitoring of the topsoil stripping of the Cork to Limerick gas pipeline project in 1985-86 (Source: Gowen 1988)

10.4.4 It is difficult to determine with certainty to what extent the conspicuous burnt features may be representative of the wider rural archaeological resource. In the case of the Cork to Limerick gas pipeline construction project, the route went very close to the extensive later prehistoric cremation cemetery in the Morningstar river valley, Co Limerick (Gowen 1988; Cooney & Grogan 1994, 125-32). Such cemeteries are initially visible in the monitoring context by cremated bone, charcoal and by patches of oxidised soil and this may partly explain the predominance of burnt archaeological features in Figure 06.

10.4.5 The routing of rural linear infrastructure developments, such as pipelines, tries to avoid above-surface archaeological monuments. Ploughed out fulachta fiadh, given their low visibility prior to topsoil stripping and relatively high visibility during stripping, are likely to be a prominent feature of monitoring of infrastructure developments.
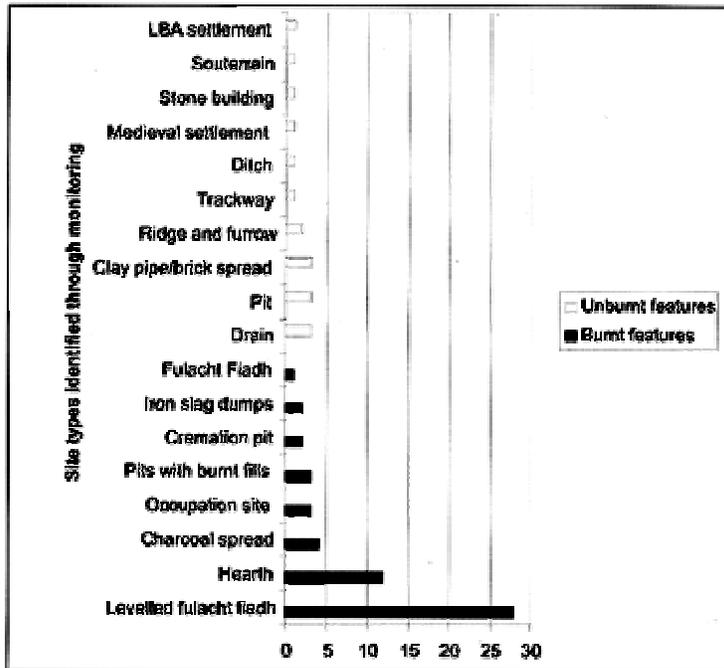
Fig. 07 Archaeological features identified during monitoring of the topsoil stripping of the Cork to Dublin gas pipeline project in 1981-82 (Source: Cleary et al. 1987)

10.4.6 It should be noted that the projects under discussion were gas pipelines, from Cork to Dublin and Cork to Limerick, which appear to have employed topsoil stripping techniques inherently more conducive to the recognition of archaeological features (see below). Data from road construction is often more difficult to collate given the absence of comparable published material. Attempts to gather data from the Unpublished Excavation Study database were unsuccessful due to the inability of the database to distinguish between archaeological material identified by testing on the line of the route prior to construction and material discovered during monitoring. Both of the published gas pipeline reports clearly differentiate between these means of discovery.

10.4.7 In an attempt to place the above findings into context, rural archaeological features, which could potentially appear in monitoring, are plotted in Fig. 08. This data is derived from the Unpublished Excavations Study database and includes all rural excavations, published and unpublished, from the period ca 1930 – 1997.

10.4.8 Potentially obvious features such as tower houses, castles and passage tombs etc., have been omitted and features that have a relatively low visibility prior to topsoil stripping are plotted. In some cases the use of the term 'burnt features' may appear indiscriminate, e.g. not all barrows or ring-ditches display either charcoal, heat shattered stone, oxidised soil or cremated bone, yet to enable comparison with the results of the gas pipelines and the findings of the monitoring reports seen as part of this project, these have been included.

10.4.9 Broadly speaking, as can be seen from Fig. 08, the potential 'burnt features' are quantitatively in a minority and the suspicion remains in the rural context, in particular with large linear infrastructure developments, that monitoring is strongly biased in the range of archaeological remains likely to be recovered.

10.4.10 However, there is an obvious need for more research on this issue. Good quality data on road construction is, as mentioned, lacking. The definition of 'burnt features' is quite general and the regional character of the archaeological landscape, through which a development may pass, in the case of the Co. Limerick cremation cemeteries, may influence the findings to a definite extent.
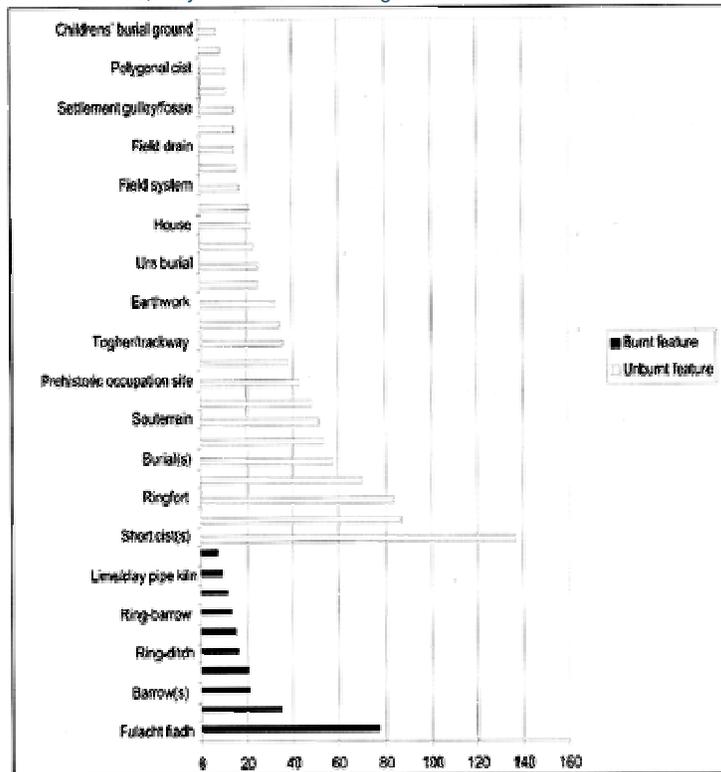
Fig. 08 Selected archaeological material found in rural excavations c. 1930 – 1997 that are equally likely to be found during monitoring. Material potentially of a burnt character is indicated (Source: Unpublished Excavation Study Database)

10.5 Comparison of Testing and Monitoring

10.5.1 Testing and monitoring are two aspects of archaeological investigation carried out to mitigate the impact of development, and have quite distinct purposes (Table 013). Testing represents a carefully controlled means of establishing what response in terms of in situ preservation or investigation may be appropriate to mitigate the impact of development. Monitoring is one means of carrying out such mitigation, and may or may not lead to discoveries that lead to other means being adopted.

Monitoring is inherently less well controlled archaeologically and occurs at a stage of development when significant discoveries are most likely to cause disruption and unexpected costs in the development process. As a means of carrying out archaeological investigations and recording there are inherent biases and limitations (Table 014). Monitoring is thus only appropriate where the potential impact of development on significant archaeology is low. This may be due to the low archaeological potential of the site, the very limited nature of physical impacts anticipated or a combination of these where other mitigation (preservation in situ or excavation) has dealt with the main impacts of development.

Table 013 Summary of Key Points

Testing	Monitoring

Carried out prior to construction	Carried out during development
Testing: Excavation to establish the nature and extent of archaeological deposits and features present and to allow an assessment to be made of the archaeological impact of proposed development	Monitoring: where an archaeologist is present during development so as to identify and protect archaeological deposits, features or objects which may be uncovered or otherwise affected by the works
Testing prior to planning consent, and in some cases subsequent to consent, allows for the redesign of development to cause less impact to deposits, prior to construction works, if archaeologically significant features are found	Development proposals cannot be redesigned to mitigate its impact on significant archaeological deposits.
Testing prior to planning consent, and less commonly after consent, allows development to be prevented, to allow preservation in-situ, if the level of impact is deemed unacceptable in the light of the test excavations	Development very unlikely to be prevented on the site if archaeologically significant features are found which need preserving in-situ
After testing has been carried out there is time to evaluate and agree on whether or how development can go ahead and what the archaeological and development mitigation applied	Once monitoring has discovered significant archaeological deposits there is less time and less defined procedures for proper consideration of the further archaeological strategies should be to be applied
Has to be carried out under licence	Not always carried out under licence, although one is recommended to avoid delays if archaeological excavation is subsequently required
Used mainly to assess the whole area where development is proposed, rather than specific small scale impacts	Can be used where testing is not thought appropriate i.e. the insertion of piled foundations, digging of narrow service trenches, minor house extensions, etc. (Dept Arts, Heritage, Gaeltacht & the Islands 1999p.28)
Testing usually takes the form of trenches which should be sufficient in scale, to be able to characterise the deposits within them without significantly compromising the effectiveness of subsequent excavation	Monitoring of small areas of stripping or excavation leads to problems in interpretation and an understanding of what is there
Testing allows for a complete archaeological strategy to be worked out prior to construction therefore avoiding delays during construction. This can include pre-disturbance techniques e.g. geophysics, digital terrain mapping and documentary survey etc.	Excavations arising from monitoring can cause unexpected and significant delays in the construction programme and associated financial problems.
Testing allows for the developer to be kept informed with maximum	The developer will be aware that archaeology may be present but will not be

information from each stage and allows maximum control to be exercised over the project	able to build the time needed to deal with it into the construction programme as its extent will not have been defined. Both developers and archaeologists have less control of their own and each others programme
More control over operations occurs during testing	Less control over procedures occurs during monitoring as the archaeologists are dependant on the developer for information on when topsoil stripping, or different construction activities will occur
The full impact of development (especially temporary construction works) is seldom fully defined at the stage when testing is carried out. Subsequent mitigation (by preservation in situ, excavation or monitoring) may have to be adapted to deal with the full impact	Some impacts fromtemporary construction works may be entirely unanticipated and monitoring can therefore enable records to be made where unexpected impacts occur
Properly designed and executed testingshould be capable of determining the full potential of on-site stratigraphy, depth, extent and character of archaeology present	Monitoring is very much dependant on type of machine used, soil conditions and personnel, and is, where working methods are not under archaeological control, biased towards certain types of features, therefore it can not necessarily be relied on to provide an accurate picture of the archaeology present. The majority of features found are high visibility features, with the assumption that many, less visible features remain unseen and therefore less identifiable. This is especially true for rural projects

Table 014

Comparison of quality of monitoring and testing reports where assessment categories coincide (scores out of 10)				
Context	Urban Testing	Rural Testing	Urban Monitoring	Rural Monitoring
Urban				
Historical data	7	2	8	9
Machine used/bucket	1	0	1	3
Levels reduced to OD	7	8	7	2
Levels to ground level	2	1	2	7
National Grid points	6	7	5	9
Topographical/site details	6	6	6	5
Overall site plans	10	10	7	9
Brief description of development	6	5	8	8
Specialist data	2	1	2	5
Plans	10	10	10	10
Sections	5	6	7	7

Photographs	4	7	8	8
Use of numbered contexts	3	6	7	8
Sieving for finds	0	0	0	1
Finds catalogue	1	5	2	6

Scores out of ten (where 1 is the worst and 10 the best), based on the percentages already discussed in the report.

Chapter 11 - Interviews/Consultation with Archaeological Practitioners

11.1 Introduction

11.1.1 The following questionnaire provided the framework for systematic interviews, which formed a core method of conducting this study. These meetings were carried out on a one-to-one basis in August-September 1999. The questions were intended to deal with the scope of testing and monitoring. Interviews were held individually with five prominent private sector archaeologists and with one city archaeologist who together possess a good knowledge of archaeological testing and monitoring practices. Interviewees were assured of confidentiality where requested for certain responses.
11.1.2 A series of questions and answers dealing with archaeological testing is provided first, this is followed by a series of questions addressing monitoring.

11.2 Archaeological Assessment

Desktop survey: what role, if any, do you think this has to play in archaeological testing?
11.2.1 All those interviewed considered this to be an important aspect of a site investigation. Terms used varied from crucial, essential and vital. One individual felt that this aspect of a study provided a cultural heritage context in which to view the excavated material remains. It was also commented that such work was not always specified in the planning conditions.
If so, what sources do you use? Cartographic, Historical, Archaeological, Other
11.2.2 All interviewees felt that the site or development context determined the range of sources to be examined. The Sites and Monuments Record was most often cited. The Ordnance Survey maps and letters, and historic maps were also mentioned. One individual cited the Map Library at Trinity College Dublin as being very useful in that it provides a map searching facility. One interviewee cited the value of digitally scanning historic maps in order to overlay them on modern editions.
11.2.3 In relation to historical sources three individuals cited local journals as useful. Local libraries were considered important in so far as they may hold relevant material, which had a low circulation. Two individuals mentioned the National Library of Ireland. One practitioner has frequently engaged a professional university-based historian to compile historical details, and stated that such details should both give a general context for the area, and be tightly focused and relevant.
11.2.4 In terms of archaeological sources all practitioners listed the National Museum of Ireland files (Topographic, Finds Registers, computerised material) as essential. Artefact lists compiled for Dublin, Cork and wetland contexts were cited as useful by two individuals. Published archaeological material in book and journal form as well as the Excavation Bulletin was also mentioned. One practitioner cited unpublished academic theses as a valuable source, particularly those that dealt with field surveys.
11.2.5 One practitioner referred to the material held in the Irish Architectural Archive as a useful source and also cited the Church Representative Body as very helpful. In terms of aerial photographs the Cambridge University collection (CUCAP) was mentioned, as were those from the Geological Survey.
Is such material readily accessible?
11.2.6 All those spoken with felt that there was a problem with access to sources. The present arrangement whereby material at Dúchas may be examined on only one day a week (Monday) was widely commented upon. This, it was felt, restricted access to excavation reports and SMR files. A need for dedicated facilities and an archival staff was pointed to. One practitioner felt that developers could exploit any delays at this stage of a project. It was also stated that the Topographic files at the National Museum of Ireland should have been computerised some time ago. One practitioner added that the location of the site in question and the experience of the archaeologist involved were also factors. In some cases the archaeologist might have some of the necessary sources.
What maps or plans would you consider putting into a testing/monitoring report? Would this include plans of the development?

11.2.7 The typical response to this question was that practitioners would include whatever was relevant. Site location plans, Ordnance Survey maps, Sites and Monuments Record extracts, historic plans, trench location plans, development plans and any survey data would be included.

Would you consider a description of the development as being relevant? If so how detailed would this be?

11.2.8 All those spoken to confirmed that a description of the development would be included but that this would be restricted to the archaeological impact. One individual stressed that they only included what was on paper and that had been through the planning process. Verbal comments made by developers as to the development were no longer included in the practitioner's reports as the planning authority had made its concern known in one such case where the details given to the archaeologist differed from those given to the planning authority. Two individuals emphasised the need for caution with the plans supplied by developers as they were subject to change (e.g. services, depths) even after the planning permission had been granted. The absence of development plans for some sites was also highlighted, such as in cases where sites may be archaeologically tested prior to sale or building design.

Bibliography?

11.2.9 All individuals considered a bibliography as an integral part of a report.

Do you consider the Method Statement as a positive development?

11.2.10 All those spoken with felt that the system whereby each excavation licence application is accompanied by a method statement was a positive development. The standard reason given for this was that it forced the individual concerned to think about the project in a meaningful way. However it was mentioned that there needed to be an element of flexibility allowed on site if the trenching strategy outlined in the method statement proved unsuccessful or was not practical. Two individuals felt that this should be left to the discretion of the archaeologist.

At what point in the project would you lay out a site grid? Do you see a role for portable Global Positioning devices?

11.2.11 Only two practitioners indicated that they would set up a site grid prior to testing. Of these, one individual indicated that it should still be there from the topographical survey. Three individuals commented that they would use off-sets to establish the trench location, with one stating that they had never seen testing carried out with a site grid. One individual stated that an EDM would be used in only large projects, one person indicated that an EDM would be used in all their projects.

11.2.12 In relation to Global Positioning devices only one individual admitted to using these with any frequency. On large rural sites the individual considered such devices essential. Most others had little knowledge of such equipment, but thought that they might be useful. One person was quite suspicious of such devices.

Do you consider geophysics in determining the location of trenches?

11.2.13 All those spoken with dismissed the value of geophysical techniques in urban areas. Otherwise responses varied according to the experience of each individual. One person described geophysics as 'extremely valuable' while another person admitted to only using it twice in five years. However, in general those spoken with were favourable to the use of geophysics. Concern about the high cost surfaced with two practitioners. The scale of the development also determined its usefulness. One practitioner referred to the social context of archaeology whereby the social position and wealth of a client restricted the range of techniques that may be available.

11.2.14 The person who described geophysics as 'extremely useful' felt that areas for analysis should be targeted. Its use in isolation was felt to be unhelpful and accordingly in large projects the analysis of sources at the desktop stage coupled with the results of field survey and general experience suggested areas suited for geophysical techniques. This could then be followed up with archaeological testing.

How do you decide where to place test trenches (on a basis of maximum likely development impact or on a statistical basis etc.)? How many?

11.2.15 This question elucidated a variety of answers. At the simplest, individuals replied that this should be done on the basis of the area to be developed/disturbed. Research carried out at the desktop stage would also inform the trench strategy. Three practitioners felt that the condition of the site, especially in an urban context, partially determined where trenches could be excavated, with one individual stating that they trenched where the machine would fit. No testing program was complete, one person added, until the site clearance was finished. Experience played an important role in deciding where to place trenches. The type of site concerned was also felt to be important.

11.2.16 As such it was felt that the trenching strategy varied from site to site. No individual considered a statistical basis for trenching.

Would you make any statement in a testing or monitoring report as to the type of machine used, if any?

11.2.17 With the exception of one individual all those spoken with felt that the machine type used should be stated in the report. All informed a developer/machine operator that a wide toothless bucket is required for all testing and monitoring jobs. One individual expressed a preference for the use of the machine type commonly referred to as a 'rubber duck' i.e. a large rubber-tyred machine. This, it was felt, could access sites without creating disturbance, yet it was also seen as being strong. The JCB machine and mini-excavators were considered to be 'jerky'.

Would you bottom trenches, if so how? Do you see a role for the hand cleaning of trenches? Do you think shoring might be useful?

11.2.18 All those spoken with emphasised the need to bottom trenches in order to accurately assess how much archaeology is present on a site and hence to cost any further excavation. A machine, if used, should merely be used to remove overburden/topsoil whereupon hand excavation or a boring should be made. The comment was made that if a trench proved too dangerous to enter, and thus it was not possible to draw the

exposed section, it should never have been dug into archaeology in the first place. Two practitioners felt obliged to consider the social context of archaeology. The necessity to have staff on site to hand clean or hand excavate trenches could, it was perceived, render archaeological testing too costly for some groups or individuals.

11.2.19 Shoring was felt to be useful. If this was not employed, trenches were stepped inwards at intervals of 1.25m or 1.5m (this depended on the practitioner). All those spoken to were very conscious of health and safety regulations. One individual stated that they used shoring quite a lot. One person disliked shoring as it posed problems for drawing sections.

Do you have a preference for vertical measurements to be in OD or present ground level (pgl)? Reasons?

11.2.20 Two individuals expressed a preference for vertical measurements to be relative to ground level. In such cases the ground level would be tied into a series of temporary benchmarks. In other cases it was felt that Ordnance Datum was more appropriate and one practitioner considered that this was what architects and engineers sought.

Would you structure any resulting report like a stratigraphic report with context or feature numbers? Reasons?

11.2.21 All interviewees stated that they would assign numbers, either feature or context, to material revealed in a testing project. Three persons clarified this by adding that this would not be the case if boulder clay (i.e. natural subsoil) was found under the topsoil or overburden, or that this would depend on the complexity of the material encountered.

What plans would you include? Sections (none, drawn or schematic), Photographs?

11.2.22 All those spoken with stated that a trench location plan would be essential. Otherwise plans would be used as appropriate. One practitioner added that the testing operation would be treated as a small excavation. Photographs should be included, in the opinion of one contractor, in order to illustrate the nature of the site to staff in the state archaeological services. One individual felt that if the site did not produce much archaeological evidence there was little point in providing photographs. To do so entailed a significant workload for little gain, especially when seven or eight copies of each report was produced.

Finds: Would you include an artefact catalogue? Recourse to specialist data?

11.2.23 Answers as to the inclusion of an artefact catalogue varied with each individual. Four practitioners answered that they would if any finds were recovered or if it was appropriate. One person felt that the provision of a catalogue in a testing report was a 'grey area' another said that they did not for testing reports, but that they probably should.

11.2.24 Two contract archaeologists felt there was insufficient time to allow for the preparation of specialist reports in the standard testing project timeframe. An individual from one of the larger companies stated that analysis would not be undertaken for the assessment report but that the potential would be flagged for the follow up excavation.

Recommendations?

11.2.25 All those contacted stated that they would include recommendations.

11.3 General

How accurate do you think archaeological testing is?

11.3.1 Two individuals with considerable experience in resolving archaeological material prior to road construction felt that, in this development context, testing could be done quite effectively. One such practitioner suggested that in carrying out effective testing prior to road/motorway construction a large number of sites should be dealt with. Of these a high number might be of no importance, thus indicating that all prospective sites were tested and erring on the side of caution.

11.3.2 Others felt that testing could be 'sometimes misleading' or 'hit and miss', while one individual described it as 'risky'. Two individuals felt that there was a difficult issue of insufficient testing versus excessive testing; the latter could cause damage to a site.

Do you think testing is effective in allowing an estimate of the time necessary for excavation? How much to be dug?

11.3.3 A recurrent theme at this juncture of the interviews was that of experience. This, combined with the results of the testing exercise, provided the best means of estimating the likely duration of any follow up excavation. One very experienced practitioner suggested that testing was highly effective in most situations, but only if it was not guided by 'minimal' impact principles and no constraints were placed on access to the site. One practitioner was more pragmatic and felt that it was the only means available and in that situation it was the best technique.

11.3.4 One individual expressed a difficulty in using a testing report that they had not been involved in. First hand experience of the tested material was seen as being of crucial importance. The same person felt it was wise to always err on the side of caution when assessing the amount of time required for excavation. In relation to deciding on how much to excavate, the same individual felt that the disturbance necessitated by the development determined this.

Could the process/practice be improved?

11.3.5 All those spoken with felt that the practice of archaeological testing could be improved. However, as expected, this question prompted a variety of answers. One practitioner operating on a large scale believed that their knowledge of the construction industry had developed over a considerable time span. This and their use of geophysical prospecting techniques and developments in surveying within the company improved the product that they were able to deliver.

11.3.6 Another large archaeological company felt that practitioners should be more conscious of a sequence of steps to follow when involved in a testing project. The paper survey, field inspection and survey, if followed by test excavation, allowed for a control to be exercised over the project. The developer should be kept informed with the maximum information from each stage. It was felt that such structure or control was largely absent from the range of services offered by some practitioners.

11.3.7 An individual from a medium-sized consultancy firm felt that testing could suffer from the competitive tendering system whereby tenders for projects were priced at less than a proper rate. From their experience of archaeological excavation in one particular large Irish town, this professional felt that very limited trenching to the top of the deposit was sufficient to assess and identify the potential of archaeological strata without destruction. This person, as well as another who voiced concern, felt that archaeology, and testing in particular, suffered due to the improper resourcing of the state archaeological services. The lack of on-site inspections was commented upon and it was suggested that practitioners would welcome the re-introduction of visits by state archaeologists. The knowledge and experience of such inspectors was prized and a greater familiarity with the sites in question would streamline the decision making process.

11.3.8 A comment also made was that archaeologists should be aware of the difficulties inherent in testing. The importance of experience and judgement on behalf of the archaeologist needed to be stressed. The need for more seminars on the subject of testing was also voiced. This would help overcome what was seen as a lack of professional trust between state archaeologists and private practitioners. One individual added that the only effective way to manage archaeology in Ireland was at a regional level.

11.4 Monitoring

Would you use the same desk assessment methods when approaching a monitoring job?
11.4.1 All those interviewed indicated that they would do so.

Do you think that the stripping technology employed has any bearing on the material recovered?
11.4.2 All those consulted confirmed that the stripping technology and methodology does indeed determine the type of results recovered by the archaeologist. The views of two practitioners who possess a significant volume of experience relating to road and pipeline construction are of special interest here.

11.4.3 One individual cited the experience of a short study carried out on a gas pipeline construction project. This entailed the use of field drains as an index of visibility for archaeological features. Field drains were particularly suited as they were back-filled with the material that was excavated from them at the time of construction, i.e. re-deposited natural sub-soil. The drains were identified in section on the sides of the pipeline corridor and then sought in the stripped area. Where bulldozers had been used to remove sod and topsoil approximately 15-20% of the drains were visible, however, where backacter machines with toothless buckets were used this figure rose to 80%. The strategy for the disposal of topsoil was also seen as significant. On gas pipelines the topsoil was stockpiled at one or either side of the stripped area, while with developments such as roads the stripped material was loaded into trucks and removed away from the development. In the latter case the nature and frequency of such heavy traffic clearly impacted on the visibility of archaeological features. Such a factor could be further added to by soil and weather conditions.

11.4.4 The experience of another individual was instructive here also. The use of scrapers on roads and motorway projects left little time for examination of the freshly stripped ground before heavy traffic caused disturbance. This was seen to be less of a problem in housing developments where the stripping was carried out in a more piecemeal manner. In general, smaller machinery was found to be more effective for stripping and such equipment could be requested. The placing of such a request into the Environmental Impact Assessment increased the likelihood of its use. The need to form a good working relationship with the machine driver was also pointed to as essential.

11.4.5 One individual placed emphasis also on the role of the machine operator. To this end a machine driver was on his staff and the company owned a mini-digger. This facilitated the cumulative archaeological experience of the machine operator. The problem of uneven mechanical excavation by poorly skilled machine operators was thus avoided.

What provision is made when monitoring for treatment of archaeology?
11.4.6 All those interviewed stated that the developer was advised that remains might be uncovered which would require an archaeological excavation. The developer would always be kept up to date on progress. Such areas could be fenced off. One individual gave as a problem the issue of having people on standby, ultimately at the developer's expense. A different practitioner stated that this was no longer a problem as getting staff today was difficult in any case, but that it was crucial to have enough staff on site to be capable of cleaning back any features. The need to be able to clean and assess any archaeological features revealed was vital so as to make a decision concerning them.

At what point is a new method statement and licence application submitted as opposed to dealing with the material under the monitoring licence?
11.4.7 The response by each person to this question was broadly similar. Cleaning of the feature would allow for some assessment to be made of its scale and nature. Depending on the find it would either be dealt with by use of the existing resources or if further resources were required a new method statement would be submitted and more staff brought in as necessary.

11.4.8 One individual felt that this was a 'grey area' whereby a licence was issued to monitor that allowed a certain amount of de facto excavation yet there was no clear guidelines as to when a rescue licence should be applied for to enable de jure excavation.

Have you ever encountered the problem of remediation, or the stripping of contaminated/hazardous soils?

11.4.9 Four excavators indicated that they had some experience of contaminated soils. One instance consisted of a soil deposit mixed with mercury (Hurley 1997, 3). Other cases mentioned concerned a dump in Co. Dublin and contaminated river gravels. In all cases health and safety consultants were contacted and appropriate levels of response were devised. One archaeological consultant admitted that this was a recurrent problem in one Irish town where excavations, particularly close to the river, encountered burst sewer pipes and foul water. In this case, as above, health and safety regulations were complied with. No practitioner gave any example of a site where ground contamination was used as a basis for removing archaeological material without excavation.

Do you find the practice of unlicensed monitoring useful?

11.4.10 Five of those spoken with said that they had been involved in unlicensed monitoring and that they found it quite useful. The consensus was that the current shortage of licence holders rendered this practice vital. The individuals engaged in such activity were frequently highly experienced but they lacked university degrees. The lack of such a degree prevented full licence eligibility.

11.4.11 It was felt that the permit under which such work was carried out ensured the production of a report. One practitioner did indicate a level of confusion regarding how finds were to be treated, in particular how they were to be numbered. There was also uncertainty in whether or not accounts of such work should be submitted to the Excavation Bulletin for summary publication.

11.4.12 Two practitioners pointed to the fact that less paperwork was involved in unlicensed monitoring. However, one of these individuals did comment that if material was uncovered the archaeologist would require a licence to deal with it and the developer could be unwilling to accept this. The same excavator pointed to the vagueness of some planning conditions that stated that monitoring would be required. The individual felt that this should be clarified with a clause stating that the monitoring would either be licensed or unlicensed.

11.4.13 No practitioner commented on the responsibility of any person who finds an archaeological object to inform the National Museum of Ireland within ninety-six hours of the discovery. This section of the National Monuments Act, 1994, does not apply to those who are acting under an archaeological excavation licence.

As it stands at present, how effective do you think monitoring is in detecting archaeological sites?

11.4.14 Again, most excavators raised the issue of experience when this question was asked. As well as the need for experience, one leading contractor suggested that a talent was required. Rotation of staff was also seen to be vital, and people should be allowed to work in pairs, otherwise fatigue and boredom could arise.

11.4.15 Another contractor with considerable experience of monitoring suggested that areas be targeted in advance of construction for topsoil removal. This allowed for more time to deal with features and produced a better recovery rate. Such targeted areas can be selected from the desktop paper assessment stage, fieldwalking and surveying as well as experience. This structured aspect was seen as crucial in allowing control. However, one person drew attention to the invisible character of many Irish archaeological sites, in particular those that did not show any surface indication until topsoil removal.

Have we got the balance right, i.e. between research and facilitating development?

11.4.16 Two practitioners independently approached this issue. One correspondent felt that not enough research/academic emphasis was placed on the results of monitoring by the archaeologists involved. The need to integrate the findings from monitoring projects into the wider landscape was deemed to be missing from many reports. The research element needed to be stressed and if necessary outside expertise should be brought in to assist with the development of any themes arising from the project.

11.4.17 One individual felt that the desk research aspect of the project provided a research input and that development-led archaeology was different from rescue-driven archaeology, particularly when sufficient time and control was built into the project.

General remarks on monitoring

11.4.18 One individual expressed the view that far too much monitoring was being recommended and that a greater level of consideration needed to be applied to this process. The value of selecting areas for testing on the basis of the EIA was put forward; otherwise that the developer or machine operator should be informed of the legal requirement to report any archaeological finds. The amount of money spent by industry on archaeological monitoring was queried by the same practitioner who felt that the archaeological return on this was small and disproportionate to the financial expense.

11.4.19 Otherwise general comments relating to the conduct of monitoring projects were made. The role of the resident engineer on road/motorway schemes was touched upon. Nominally such resident engineers were responsible for matters such as archaeology; yet more commonly a foreman or the individual machine drivers were better sources of information. The program of topsoil stripping as outlined at the start of projects could in some cases be inaccurate and individuals on the ground were a more reliable source of information.

11.4.20 Two individuals suggested that the licensing system, particularly in relation to monitoring, be examined. It was argued that the need to apply for licences could be seen as superfluous and that a unique licence for each monitoring project should be replaced with a bond or permit for each company. This would allow each company to respond flexibly to the requirements of a developer. A system of control could be established whereby the bond or permit could be assessed and renewed on an annual basis.

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