

Figure 15: Frequency of Total Scores for each Corridor

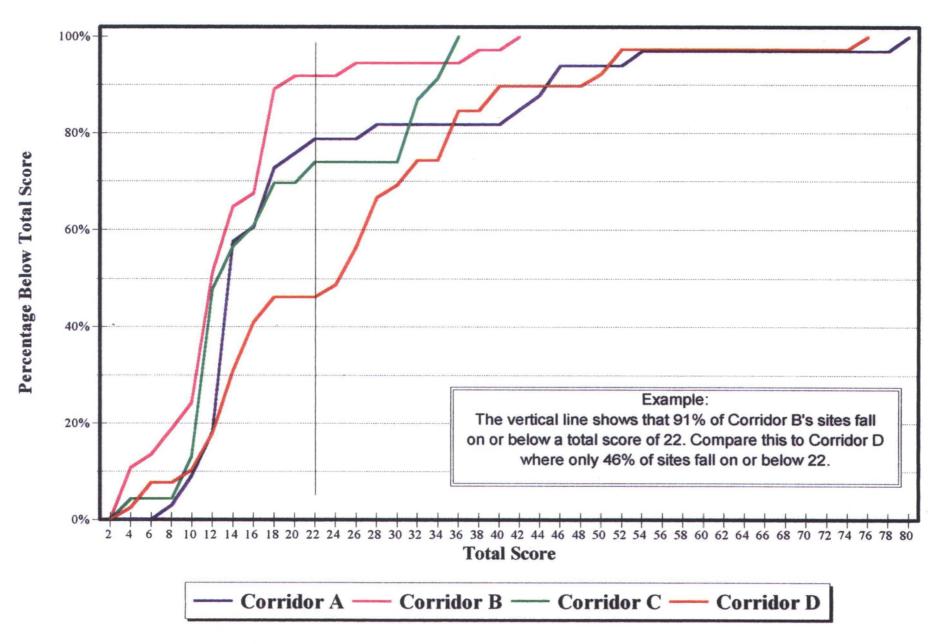


Figure 16: Cumulative Percentage of Total Scores

It is immediately apparent that, viewed in this way, a square kilometre of Corridor D is on average going to be nearly three times as important as an equivalent area of Corridors A or B, and about twice as important as an average square kilometre of Corridor C. The elevation in importance of the latter in the Corridor hierarchy is particularly marked.

If a similar comparison of importance is made following the deduction from the scores of all sites outside the corridors, or within exclusion zones (i.e. all those sites marked with an asterisk in Tables 1-4), then the scores become even more pertinent. This process involves the deductions of: 207 from Corridor A; 152 from Corridor B; 205 from Corridor C; and 340 from Corridor D. The corresponding reduction of corridor areas when exclusion zones are discounted would be: $0.5 \, \mathrm{km}^2$ from Corridor A; $2.5 \, \mathrm{km}^2$ from Corridor B; $0.3 \, \mathrm{km}^2$ from Corridor C; and $1 \, \mathrm{km}^2$ from Corridor D. Hence, in terms of the sites and monuments that could theoretically be threatened by the development, the scores per square kilometre are as follows:

Corridor A =
$$\frac{487}{14.5}$$
 = 33 Corridor C = $\frac{200}{6.2}$ = 32

Corridor B =
$$\frac{354}{9.5}$$
 = 37 Corridor D = $\frac{621}{7}$ = 89

Expressed in terms of the vulnerable archaeology per square kilometre, the importance of Corridor D is about three times that of any of the other corridors.

16. Recommendations for Further Work

16.1 Without knowing the precise route and nature of the ground disturbances that will be involved in the re-routing of the powerline (dependent upon a survey of the ground conditions), it is not possible to be very prescriptive as to the measures one might take to mitigate the impact on the archaeological landscape. All the site record sheets in Part II have a site specific recommendation for further work, should that site be on the line of the proposed powerline. These recommendations tend to outline which method, or methods, would be suitable on that particular site, only as a next stage evaluation method. The results of such evaluations could of course dictate that a further level of investigation is warranted. All final decisions relating to further archaeological work rest with the respective SMRs. Details of the various methods prescribed are provided below. Further details of the geophysical methods that might be employed can be found in Clark (1990).

16.2 Archaeological prospection techniques

16.2.1 Magnetic susceptibility survey

In a large number of circumstances human occupation is known to be related to an enhancement of the magnetic susceptibility of the topsoil. This is easily measured and areas of high susceptibility can be quickly identified, allowing further evaluation methods to be planned more effectively over large areas.

16.2.2 Fluxgate gradiometer survey

The fluxgate gradiometer detects discrete changes in the magnetic properties of the subsoil. Consequently it is particularly good at detecting deep-cut archaeological features. It is a very fast method, suitable for evaluating large rural areas, especially when enhancing cropmark sites. The magnetic anomalies can be processed by computer software and can be presented graphically at an appropriate scale.

16.2.3 Resistivity survey

This method involves measuring the electrical resistance of the subsoil. Low resistance features such as wet ditch fills can be detected, though the method is particularly successful at detecting high resistance features such as walls, roads and floor surfaces. The method is not usually employed on cropmark sites, or over such large areas as the gradiometer. The method is slower than a gradiometer, though the results are often complimentary on multiphase/period sites. The resistance anomalies can be computer processed and graphically presented at the desired scale.

16.2.4 Earthwork survey

A subjective record of surviving archaeological topography, often relating to the former sites of medieval settlements and field systems. Banks and depressions are conventionally portrayed by hachures. A more rigorous approach may involve the production of a levelled contour survey upon which an interpretive element in the form of an earthwork survey could be superimposed.

16.2.5 Fieldwalking

Ploughing destroys the upper surface of buried archaeological horizons and features, often bringing to the surface concentrations of artefacts. The collection and recording of those artefacts on a grid basis, and subsequent analysis, can pin-point the locations of archaeological sites.

16.2.6 Trial excavation

Should deposits or features of apparent archaeological potential be located by the above evaluation methods, it may be necessary to carry out limited trenching in order to confirm their nature and degree of preservation. Such work is often carried out using mechanical excavators to remove modern and topsoil deposits.

16.3 Geophysical surveys, pylons and overhead powerlines

While the requirement for geophysical survey work has yet to be determined, consideration has been given to the effects that an overhead powerline would have, once established, on the potential for carrying out geophysical work in the vicinity of that line.

Apart from the actual ground disturbances for the pylon bases, the powerline would have no effect on the potential for carrying out magnetic susceptibility analysis of the soil or resistivity work. Overhead powerlines would preclude the possibility of geophysical survey using total field instruments such as proton and caesium magnetometers, as well as electromagnetic conductivity meters. However, these are not in general use for evaluation purposes and there would be no effect on a fluxgate gradiometer due to the overhead lines themselves.

There is, however, considerable magnetic interference from pylons. Such is the effect that it is unlikely that a fluxgate gradiometer will be able to operate within a 30m radius of a modern pylon.

17. Conclusion

17.1 Solely on the basis of the known archaeological resources, at face value and with the benefit of numerical quantification, it is unlikely that there will ever be a supportable case for justifying the selection of Corridor D, as defined for the purpose of this syudy, as a first option for a new powerline route. Obviously a combination of considerations and other factors will dictate the eventual selection, not least the distance factor. If archaeological importance and distance were the only critical criteria, then Corridor C stands out as a more appropriate option in which to consider a route.

17.2 These comparisons of archaeological importance are for areas that have been defined by non-archaeological criteria for modern landscape considerations. Their positions and shapes are essentially random with respect to the archaeology. It is very unlikely that, even forearmed, one could pick a similarly sized corridor of land that did not have any known or potential archaeological sites within it. However, there could be areas of relatively low archaeological intensity which assume higher archaeological status by virtue of being included in the same corridor as sites of greater importance. In this way the eastern half of Corridor C assumes greater importance than its sites justify, by virtue of its western neighbours; though as an area in its own right it would score very low on a per square kilometre basis. To some degree Corridor D displays a classic example of this bias. Whilst there are some important sites throughout Corridor D (and a few small areas with barely any), the whole corridor is enhanced in importance by virtue of the sites in and around Newton Kyme village and Scheduled Ancient Monument 538 (Sites D9-D14).

17.3 It must be remembered, however, that what is known to be archaeologically important at this moment could change significantly once any further evaluation work is carried out. Further evaluation of a site could determine that there is no archaeological issue to be resolved. However, it is feasible that a mitigation strategy to avoid one site could result in the discovery and partial destruction of hitherto unknown sites of even greater relative importance. Therefore, a staged programme of appropriate evaluation is essential for the chosen route.

<u>Note</u>: Following the completion of this report a proposed route through Corridor D was submitted for more specific comment and recommendations. This additional information is presented as Appendix 4.

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The archaeological data presented in Volume 2 is stored as a database in dBase IV[®] v1.5 format. Tables 1-4 and Figures 15 and 16 were produced on spreadsheets using Quattro[®] Pro for Windows v5.0.

Bibliography

- Aston, M. and Rowley, T., 1974, Landscape Archaeology
- Beresford, M.W., 1951, 'The Lost Villages of Yorkshire, Part I, Yorkshire Archaeological Journal, 37, 475
- Beresford, M.W., 1955, 'The Lost Villages of Yorkshire, Part III, Yorkshire Archaeological Journal, 38, 223-33
- Bilson, J., 1915, Proceedings in 1913; Wighill', Yorkshire Archaeological Journal, 15, 105-117
- Bogg, E., 1904, Lower Wharfedale
- Clark, A., 1990, Seeing Beneath the Soil: prospecting Methods in Archaeology
- Darvill, T.C., 1988a, 'Monument Protection Programme Monument Evaluation Manual, Part I: Introduction', English Heritage
- Darvill, T.C., 1988b, 'Monument Protection Programme Monument Evaluation Manual, Part II: Single Monuments', English Heritage
- DOE, 1985a, 'List of Buildings of Special Architectural or Historic Interest', 61st List, Borough of Harrogate, North Yorkshire (Parishes of Allerton Mauleverer with Hopperton, Cattal, Flaxby, Goldsborough, Knaresborough, Green Hammerton, Kirk Hammerton, Thornville, Whixley and Wilstrop)
- DOE, 1985b, 'List of Buildings of Special Architectural or Historic Interest', 19th List, Borough of Selby, North Yorkshire (Parishes of Newton Kyme-cum-Toulston and Tadcaster West)
- DOE, 1987a, 'List of Buildings of Special Architectural or Historic Interest', Borough of Harrogate, North Yorkshire (Parishes of Kirk Deighton, Long Marston and Tockwith)
- DOE, 1987b, 'List of Buildings of Special Architectural or Historic Interest', 84th List, Borough of Harrogate, North Yorkshire (Parishes of Bilton in Ainsty, Healaugh and Wighill)
- DOE, 1988, 'List of Buildings of Special Architectural or Historic Interest', 91st List, City of Leeds, West Yorkshire (Parishes of Boston Spa, Clifford, Thorp Arch, Walton and Wetherby)
- Dymond, D.P., 1966, 'Easdike, nr. Tadcaster', Yorkshire Archaeological Journal, 41, 24
- Emmison, F.G., 1966, Archives and Local History
- English Heritage, 1992, 'County List of Scheduled Monuments, North Yorkshire'
- Exwood, J.E. and Unwin, R.W., (eds), 1974, Yorkshire Topography: A guide to historical sources and their uses, University of Leeds

- Faull, M.L., 1981, 'The Post-Roman Period', in Faull, M.L. and Moorhouse S.A. (eds), 1981, West Yorkshire: An Archaeological Survey to AD 1500, Volume 1, 171-8
- Faull, M.L. and Moorhouse S.A. (eds), 1981, West Yorkshire: An Archaeological Survey to AD 1500
- Faull, M.L. and Stinson, M. (eds), 1986, Domesday Book: Yorkshire, Parts I and II
- Fowler, P.J., 1992, The Past in Contemporary Society; Then, Now
- Hoskins, W.G., 1955 (Revised 1988), The Making of the English Landscape
- Hoskins, W.G., 1967, Fieldwork in Local History
- Institute of Field Archaeologists, 1993, 'Standard and Guidance for Archaeological Desk-based Assessments', Draft document
- Le Patourel, H.E.J., 1973, 'The Moated Sites of Yorkshire', *Society for Medieval Archaeology*, Monograph Series, 5.
- Margary, I., 1957, Roman Roads in Britain, Vol. 2, 147-9
- Monaghan, J.M., 1991, 'A Roman Marching Camp and Native Settlement at Newton Kyme, Tadcaster', *Yorkshire Archaeological Journal*, 63, 51-9
- Ordnance Survey, 1959, 'Geological Survey of Great Britain (England and Wales)', Drift, Sheet 62
- Ordnance Survey, 1974, 'Geological Survey of Great Britain (England and Wales)', Drift, Sheet 70
- Page, W. (ed.), 1912-13, 'The Victoria History of the County of York', Volumes 2 and 3, Victoria County Histories
- Palmer, R. and Cox, C., 1993, 'Uses of Aerial Photography in Archaeological Evaluations', *Institute of Field Archaeologists, Technical Paper*, 5.
- Pevsner, N., 1959, The Buildings of England Yorkshire: The West Riding
- Ramm, H.G., 1976, 'The Roman Roads to the West of Tadcaster', York Historian, 1, 3-12
- Ryder, P., 1982, Medieval Buildings of Yorkshire
- Ryder, P., 1993, Medieval Churches of West Yorkshire
- St Joseph, J.K., 1952, 'Air Reconnaissance in Southern Britain', *Journal of Roman Studies*, 43, 87-8
- St Joseph, J.K., 1955, 'Air Reconnaissance in Britain, 1951-5', Journal of Roman Studies, 45, 82
- St Joseph, J.K. (ed.), 1966, The Uses of Air Photography

- Simpson, F.G., unpublished, Account of the excavations at Newton Kyme Roman fort
- Smith, A.H., 1961, 'The Place-names of the West Riding of Yorkshire', *English Place-name Society*, Volume 36, Parts IV and V
- Speight, H., 1904, Lower Wharfedale
- Startin, B., 1993, 'The Assessment of Field Remains', in Hunter, J. and Ralston, I. (eds), Archaeological Research Management in the UK: An Introduction, 184-196.
- Wilson, D.R. (ed.), 1967, Journal of Roman Studies, 58, 181-2
- Yarwood, R.E.Y. and Marriot, J.J., 1988, *The Aerial Time Machine*, West Yorkshire Archaeology Service

Abbreviations:

AP..... Air Photograph

CIV..... Class Importance Value

DoE..... Department of the Environment

DMV..... Deserted Medieval Village

IFA..... Institute of Field Archaeologists

IMV Inhabited Medieval Village

MIV Monument Importance Value

MPP..... Monument Protection Programme

NAR...... National Archaeological Record

NRRD North Riding Registry of Deeds

N/A Not Applicable

NL..... New Listing

NY North Yorkshire

NYCRO North Yorkshire County Record Office

OD Ordnance Datum

OS..... Ordnance Survey

RCHME Royal Commission for Historic Monuments in England

SAM Scheduled Ancient Monument

SMR..... Sites and Monuments Record

SMV Shrunken or Shifted Medieval Village

QIf Quality of Information Factor

WRRD West Riding Registry of Deeds

WY West Yorkshire

WYAS..... West Yorkshire Archaeology Service

YAS Yorkshire Archaeological Society

Archive Maps Consulted

Walton

Tithe Maps and Apportionments c. 1840-45; PRO IR30/43/420, Leeds Archives (copy) LA/PRO/33

Wetherby

Plan of the Duke of Devonshire's Estate, 1748; Leeds Archives ACC 1226/7

Plan of the Wetherby Lordship as Arranged for Sale, 1824; Leeds Archives DB/M 245

Thorpe Arch

Tithe Map and Apportionments, 1842; PRO IR30/43/401, Leeds Archives (copy) LA/PRO A/32

Tockwith

Enclosure Plan and Apportionments, 1792-1797; Wakefield Archives, A102

Whixley and Green Hammerton

Enclosure Plan and Apportionments, late 19th century; Wakefield Archives (copy), A56a

Kirk Hammerton

Enclosure Plan and Apportionments, 1857/8; Wakefield Archives A56

Walton in Ainsty

Tithe Map and Apportionments, 1840-45; PRO IR30/43/420, Leeds Archives (copy) LA/PRO/33

Wighill

Estate Map, Easedike, n.d., possibly pre 1875; Leeds Archives DB/M 146

Tadcaster

Yorkshire Estate Maps, West Sussex Record Office, Petworth House Archives, PHA3422 (1611); and PHA3072(1613)

General

Thomas Jeffrey's Survey of the County of York, 1775, Yorkshire Archaeological Society

Ordnance Survey First Edition 6" to the mile series, 1849: sheets 189, 190; 1850: sheets 172, 173; 1853: sheets 155

Ordnance Survey 1:25000 series, 1964, Sheets SE4047-4147 and SE4248-4348

Archive Maps Not Consulted

Walton

Plan of the Estate of James Fox Esquire, 1817, Leeds Archives LF/M118/9

Whixley and Green Hammerton

Enclosure Plans and Apportionments (two), 1805, Whixley Parish Council

Plan (copy), YAS MS 932

Plan (draft), Leeds Record Office

Newton-le-Willows and Thornton Steward

Enclosure Plan and Apportionment, 1800:1803; NRRD, 5

Kirk Hammerton

Enclosure Plan and Apportionment; NYCRO PR/HMK 16/2

New Listing (NL) numbers used in this report

Corridor A	NL16B10	NL33 C16
NL0A9	NL17B12	NL34C17
NL1A14	NL18B13	NL35 C19
NL2 A15	NL19B15	NL36C20
NL3 A21	NL20B16	NL37C21
NL4 A22	NL21B18	NL38 C22
NL5 A23	NL22B21	NL39 C24
NL6 A25	NL23 B23	
NL7 A26	NL24B24	Corridor D
NL8 A29	NL25B25	NL40D1
NL9 A30	NL26B26	NL41D2
NL10A31	NL27B27	NL42D4
NL11A32		NL43 D16
NL12 A33	Corridor C	NL44D17
NL13 A35	NL28C5	NL45 D18
NL14 A38	NL29C8	NL46D22
	NL30C9	NL47 D24
Corridor B	NL31C14	NL48 D28
NL15B5	NL32C1	NL49D32

List of site classifications used

Artefact

Barn

Battlefield

Barrow

Barrow field

Bridge

Castle

Cemetery

Chapel

Cottage

Cropmark

Deer park

Deserted medieval village

Enclosure

Farmstead

Field system

Fish pond

Fort

Hall

Henge

Holy well

House

Inhabited medieval village

Kiln

Listed Building

Mill

Moat

Nunnery

Parish church

Quarry

Road

Shrunken/shifted medieval village

Trackway

Vicus

Water mill

Proposed Powerline Route Through Corridor D

Proposal

A new east-west powerline route, consisting of 13 new towers (T1-T13) over a distance of some 4km, is proposed for the northern part of Corridor D (see accompanying figure). The proposed route lies to the north of the River Wharfe. It skirts around the southern corner of the Thorp Arch Trading Estate to adopt a relatively direct path that is equidistant from the villages of Newton Kyme and Wighill.

Archaeological Implications

Landscape/Setting Considerations

The selection of Corridor D, by the National Grid Company, was a choice that was not soley based upon archaeological criteria, though the course of the route within Corridor D has taken into account the nature and importance of the known archaeological sites.

The route to the north of the River Wharfe takes a line of least resistance through an area possessing relatively few, for Corridor D, known archaeological sites or features. Moreover, the siting of the route to the north of the river is logical in minimising the effect to any archaeological sites that are associated with the Prehistoric henge and Roman fort and vicus to the south. The river, albeit with a few minor changes to its course over the centuries, will have formed a natural topographical barrier, discouraging the northward expansion of activities associated with these sites in the past. It seems, therefore, less likely that associated archaeological phenomena will exist within the same relative catchments as they do to the south of the river. Indeed, there are no known Prehistoric burials and, apart from the road, no components of the Roman military complex north of the river. To the south of the River Wharfe Bronze Age burials have been found up to 1.5km away from the Newton Kyme henge, in what is almost certainly an extensive ritual landscape. It must be pointed out that the apparent lack of sites immediately to the north of the River Wharfe could be due to them having been concealed by alluvium. However, on the basis of the known landscape archaeology, within the corridor as a whole, the proposed powerline route is, in principle, the most appropriate one to adopt.

With respect to Scheduled Ancient Monuments, the proposed route avoids physical impact upon the area of SAM 1195 (site D15). Additionally, it may not be deemed to have any detrimental effect to the setting of SAM 1195, or SAM 538 (sites D12-14) to the south of the river, as neither is known to possess an extant visible component. The impact upon the villages of Wighill and Newton Kyme is minimised (though this may also be seen as shared) by the equidistant positioning of the route. There remains a case to be justified with respect to the setting of Wighill parish church (D30), in view of English Heritage's concern. However, the present proposal does respect an established precedent, in that it is no closer than the existing powerline, 700m to the east of the church.

Site Specific Considerations

In many cases information gathered on the sites identified and reported has been presented without the benefit of a close and detailed site inspection. Therefore, assessment of the archaeological implications of the proposed route for specific sites must be viewed as merely provisional. However, on the basis of the presently available information there are apparent potential implications for the following sites.

Site D4 (SE445456)

Two proposed junction towers (T2 and T3) lie in the vicinity of this purported site's location. As a cropmark its recorded grid reference will probably be a central one, and it is feasible that whatever features caused the cropmark could extend more widely. However, it is held that these cropmarks could be a natural phenomenon, or caused by relatively recent field boundaries. Whilst a magnetometer survey of the area might resolve the full extent of the anomalies, a reassessment of the hitherto unavailable air photograph(s) may well shed light on the likelihood of them having a natural origin.

Site D8 (SE453457)

Proposed junction tower T5 appears to be located within or very close to the woodland containing St Helen's holy well and chapel, and the route of the Roman road. It is possible that the proposed location is marginal, or entirely outside the critical area, though a precise location will need to be established and confirmed in the field before any final assessment of the implications can be made. This might be done in the context of a further documentary search to locate the 1817 estate plan, which is reputedly very detailed and portrays both the well and chapel. On the basis of available information it is recommended that ground disturbances in the area of the well, chapel and road be avoided on archaeological grounds, as well as in view of the density of the surrounding residual woodland in which they are situated. Should the use of such a location be unavoidable then, in addition to a further documentary search, it is recommended that a comprehensive earthwork survey be carried out, coupled with an appropriate strategy of resistivity surveying and trial excavation which cover the areas to be disturbed by the tower foundations. Whilst oversailing a site of this nature is not desirable, its present detrimental context, lack of access, and lack of amenity value, should be taken into consideration.

Site D17 (SE46254625)

Proposed junction towers T8 and T9 are located in an area of linear cropmarks, close to the recorded earthworks of a ridge and furrow field system. These features may well be associated with the possible deserted medieval village of *Follifoot* (D15), which could conceivably extend eastwards as far as T8. Although the earthworks could not be discerned from the roadside, to the north, it is possible that they still survive in this area. A close field inspection is recommended in order that an appropriate strategy of survey/evaluation is proposed in the first instance.

Site D29 (47154605)

Proposed junction tower T10 is located close to an area recorded as containing a ridge and furrow field system, along with a complex of cropmarks of unknown date and function. A

close field inspection is recommended in order that an appropriate strategy of survey/evaluation is proposed in the first instance.

Site D31 (SE474453)

Proposed junction towers T11, T12 and T13 are situated to the north of the deserted medieval village of Easdike. The tower positions are well away from the known village nucleus and do not fall within any of the known areas of the extant ridge and furrow field system. The setting of the site could be an issue, though this is in the context of an existing powerline to the east of the site. It is recommended that a close field inspection be made of the proposed tower locations in order that an appropriate strategy of field work might be proposed.

Conclusion

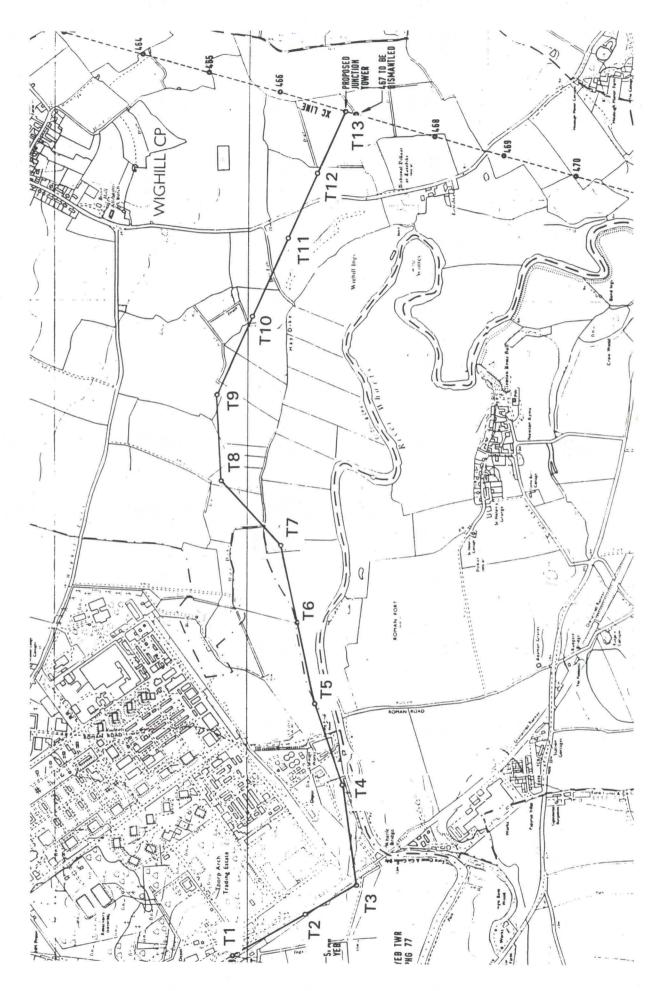
In establishing a mitigation strategy for the known and potential archaeology along the proposed powerline route a number of avenues may be explored. Initially, corroboration is needed of the information that has already been gathered about these sites. This may involve a more concerted search for air photographs and documentary evidence that was known of but not located at the time of the assessment report. Most importantly it will involve close inspection of the sites of all the proposed junction towers and areas of related ground disturbance. Such inspections will enable an appropriate strategy of archaeological survey and evaluation to ensure that archaeological deposits are not destroyed without due consideration and record. This may involve recommendations for slight modifications to the proposed powerline route.

In addition to any ground disturbances required for tower foundations, consideration should also be given to ground disturbances that will be caused by construction access, as few of the proposed tower locations possess suitable vehicular access.

Should this proposed route be adopted, it is anticipated that, where feasible, a magnetometer survey will be required along the full length, of any access routes where ground disturbances are likely, as a minimum requirement. Such a survey would probably have to be carried out over a 40m wide corridor, which would increase to at least 80m wide in the areas of the proposed junction towers. Apart from any specific works, a watching brief on all ground disturbances along the proposed route, with a proviso for a certain amount of archaeological recording and sampling if warranted, is a likely general requirement of the archaeological specification for this project.

Notwithstanding further archaeological information that may be derived from the proposed evaluation works (described above), the proposed route is acceptable on archaeological grounds - so long as an appropriate mitigation strategy is employed.

Ultimately, the acceptability of the proposed route on archaeological grounds, and that of any proposed mitigation strategies, lies at the discretion of the Sites and Monuments Record officers for the respective counties of North Yorkshire and West Yorkshire, and English Heritage.



Appendix 4 (figure): Proposed powerline route through Corridor D; adapted from National Grid drawing number 22/16289. New towers have been provisionally numbered T1-T13.