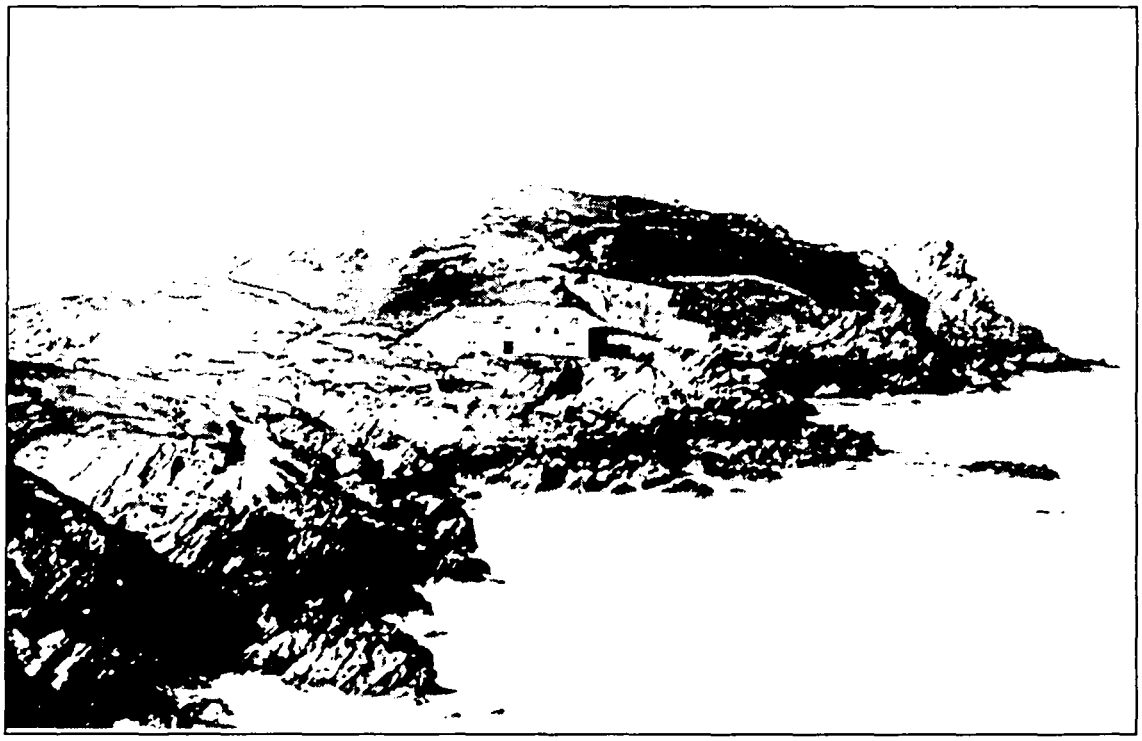
Newquay Sewage Treatment Scheme, Cornwall

Archaeological Mitigation



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A Report for

South West Water

Newquay Sewage Treatment Works, Cornwall

Archaeological Mitigation

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December 2001

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Cover illustration

Towan Head, Late 19thC, showing Spy Fish Cellar

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Reproduced at back of report.

Abbreviations

CAU	Cornwall Archaeological Unit
CRO	Cornwall County Record Office
EH	English Heritage
NGR	National Grid Reference
RCM	Royal Cornwall Museum
PRN	Primary Record Number in Cornwall SMR
SMR	Cornwall and the Isles of Scilly Sites and Monuments Record

1 Summary

Cornwall Archaeological Unit (CAU) was commissioned by South West Water to carry out archaeological recording associated with a new Sewage Treatment Works and transfer pipeline between Towan Head and land at Trevemper Farm, Newquay. This followed recommendations set out in an archaeological assessment of the impact of the proposed works (Reynolds, 1998), which identified a number of important sites, including; a fish cellar and lime kiln on Towan Head; a possible cist cemetery at Atlantic Road; a strip field system and mine at Trevemper; and possible pits and linear features on the site of the proposed treatment works.

The recording work was carried out between October 1998 and June 1999, and took the form of controlled topsoil strip (and small scale excavation), evaluation trenches, watching brief and large scale excavation. The most notable discovery was a late Iron Age and Romano-British occupation site at Atlantic Road, where stone structures and a deep cultivation soil made up of midden (domestic rubbish) material were discovered. The environmental evidence, including large quantities of marine molluscs and animal bones, was exceptionally well preserved for a Cornish site. Pottery retrieved included fabrics as yet unidentified in a Cornish context, and another unusual find was an iron wool comb. The entire site was covered in clean windblown sand which appears to have been a continual problem (some of the structures appear to have been wind breaks to keep sand from the working/living areas) and the probable reason for the site's abandonment. The results from Atlantic Road will be reported in detail in a forthcoming article in Cornish Archaeology, the journal of the Cornwall Archaeological Society.

Elsewhere along the pipeline there were few archaeological features. All traces of the fish cellar on Towan Head had gone, although one outcome of the work was the exposure of the 19th century lime kiln, which had previously been encased within a 20th century toilet block. A number of shallow pits and ditches were found at the site of the new treatment works at Trevemper Farm, along with some Bronze Age and medieval pottery and flints, but there was no clear suggestion as to the function of these features.

The limited nature of the archaeological remains along the pipeline were mainly the result of 20th century urban expansion and landscaping. In contrast, the wealth of remains found at Atlantic Road are sufficient to create a small exhibition and the site itself is recommended for a Ground Penetrating Radar survey to determine its extent and for the area to be given protected status.

2 Introduction

2.1 Project background

Cornwall Archaeological Unit (CAU) was commissioned by South West Water to carry-out a watching brief during the construction of a sewerage treatment works on land of Trevemper Farm (SW81755910 mid point) and an associated transfer pipeline running to Towan Head, Newquay (SW80106270, Fig 1).

The watching brief during the pipeline works took place mainly during October and November 1998, including excavation at Atlantic Road. Evaluation trenches on Towan Head took place in March 1999, with two site visits in January and April 1999 to monitor the condition of the lime kiln. During the beginning of May 1999, controlled topsoil strips followed by a watching brief took place on the site of the new treatment works and widening of the access road off Trevemper Road.

2.2 Aims

The aim of the Archaeological Mitigation was to investigate and make an adequate record of all archaeological features located within the sewage works site and along the pipeline route.

2.3 Methods

Three phases of work were involved in the mitigation: fieldwork, archiving and analysis.

The methods employed at Atlantic Road will be covered in more detail within a forthcoming article in Cornish Archaeology. They have already been set out in Reynolds 1999 - the archive report provided for the benefit of specialists working on the project.

2.3.1 Fieldwork

The archaeological fieldwork consisted of four types of work.

1. Controlled topsoil strip and excavation
2. Evaluation trenches
3. Watching brief
4. Large scale excavation

An earthworks survey along Trevemper Road recommended by the Archaeological Assessment was not carried out as the pipeline avoided the area and as such the earthworks were not affected. Similarly proposed hedge section recording was not carried out as the pipeline did not cross any earthen hedges, only timber and wire fencing and ditches. The road widening on the access lane to the Treatment works involved a technique where the hedge was scooped up and pushed back as a living hedge. This involved no exposure of sections along the boundaries.

Controlled topsoil strip, evaluation trenches and small scale excavation

This took place at Towan Head and the Trevemper Treatment Works site. It involved the folowing:

- Machine stripping of topsoil under archaeological supervision;
- Cleaning up the underlying surface in order to identify any archaeological features lying on top or cut into the subsoil.
- Excavating significant archaeological features.

- Production of plans and section drawings of the excavated features and completing site context forms.
- Retrieving artefacts.

No environmental sampling took place as no buried soils, middens or other organic deposits were found.

Watching brief

This involved an archaeologist being present while South West Water's topsoil stripping/trenching operation was in progress, and comprised the following :

- Identifying and recording any archaeological features that were uncovered.
- Retrieving artefacts from the upcast soil.
- Identifying hedge sections for recording.
- Recording of historic buildings by photography (lime kiln)

Large scale excavation

This was carried out at Atlantic Road. The area had been identified as having archaeological potential following the geophysical survey carried out as part of the archaeological assessment and the discovery of an Iron Age cist cemetery during the construction of Atlantic Road during the early 20th century.

The site was divided into quadrants based on a centre line running north-south, with quadrants spaced at four metre intervals. It was initially excavated by a mechanical digger, using a toothless bucket. This removed the turf, topsoil and windblown sand down to the first archaeological layer. A small sondage was dug at the northernmost part of the site, where no features were visible.

The site was then excavated by hand, concentrating on individual features as they appeared. A larger test pit was excavated by machine, again using a toothless bucket. This was to clarify the stratigraphy found on the site

The excavation was completed by creating a machine dug trench lengthways along the centre of the site, down to natural shillet. Both east and west sections were recorded, and any revealed features excavated.

2.3.2 Archiving

The archiving phase consisted of: indexing all plans and photographs into the standard CAU reference system; processing and recording of all finds including washing and specialist conservation where appropriate; processing and recording of soil samples by wet sieving. The project archive from the works, comprising of field notes, plans and photographs have been stored for the present at the offices of Cornwall Archaeological Unit, Cornwall County Council, Kennall Building, Old County Hall, Station Road, Truro, TR1 3AY. The contents of this archive are listed in more detail in Section 7.

2.3.3 Analysis

Only the material from Atlantic Road merited further specialist analysis. Specialist reports have been prepared on the following types of material: plant macrofossils, charcoal, marine shells and crustacea, pollen, land molluscs, animal and human bone, metalwork, coins, glass beads, pottery and other artefacts, and flint. Bone from the site has produced a date range of 409 BC to 531 AD using radio carbon dating.

2.3.4 Scope of this report

This report covers the results of the watching brief carried out during the works, along with the evaluation trenches and the controlled topsoil strip at the treatment works site and Towan Head. The results of the Atlantic Road excavation are only dealt with briefly as this will be covered in more detail in a forthcoming report within *Cornish Archaeology*. This is the annual journal of the Cornwall Archaeological Society in which the results of key excavations are published.

3 Background

3.1 Location and setting (Fig 1)

The pipeline extended from an area south of Rosecliston Holiday Park, via Trevemper Bridge, Trevemper Road (the Gannel link road), Trethellan Hill and Newquay golf club to Towan Head. The treatment works were situated on Trevemper Farm at SW 8175 5910. A pumping station was constructed on Towan Head. The topography for the most part was gently undulating. The soils varied slightly over the area but consisted of well drained loamy, fine loamy and fine silty soils. One area to the north of the Treament Works and adjacent to a river channel consisted of fine loamy permeable soils with seasonally waterlogged clayey soils. The geology consisted of Palaeozoic slaty mudstone and siltstone.

3.2 Historic Landscape Character (Fig 2)

During 1994, CAU carried out a map-based historic landscape assessment across the whole of Cornwall, using existing field patterns and early map and place-name evidence to characterise the landscape (Countryside Commission 1996). This characterisation reflects the historic processes that have shaped the Cornish landscape and involved dividing the county into a series of zones, each of which reflects a particular set of historic processes and tends to contain a predictable range of archaeological sites and historic features. The pipeline and treatment works covered a range of historic character zones as described below (much of this text has been extracted from the landscape assessment report - Countryside Commission 1996).

3.2.1 Anciently Enclosed Land (AEL)

This is characterised by farming settlements documented before the 17th century AD and irregular field patterns with either medieval or prehistoric origins. AEL tends to be on relatively sheltered land, not too steep and not too poorly drained, but can extend onto the high downs. Networks of winding lanes and roads connect farming settlements whose layouts are typically irregular, often clearly shrunken from hamlets; some are still hamlets. Church towns and a few larger villages are scattered through the zone which also contains most of the county's ancient towns.

Much, even most, of this zone will have been enclosed and farmed since the Later Bronze Age (c.1500 BC). Land cleared and improved in later prehistory or in the Early Medieval period was re-organised in the later medieval period into extensive 'strip' field systems. These systems were associated with hamlets of co-operating families; more irregular medieval field systems were laid out by more solitary farmers.

The gradual enclosure of 'open' strip fields, mainly from the 14th to the 17th century, transformed this zone, leaving fields of various sizes and shapes, but almost all with sinuous sides whose boundaries are substantial, stock proof hedges and walls, supporting rich and varied fauna and flora. At the same time, the communal society of the co-operative hamlets gave way to a more individualistic one of self-contained farming families, a society which survives today.

Examples of AEL stretch from the area of the treatment works and access road, up to Trevemper Bridge and along Trevemper Road as far as the Petrol Station. The fields butting up to the Treatment Works access road consist of remnant boundaries from strip fields. Much of the surrounding AEL has now been converted to urban development.

3.2.2 Urban Development

This consists of built-up areas, beginning with the larger villages and extending upwards in size. It contains a number of settlement types, small towns, often with medieval origins and

market or industrial functions; Post-medieval industrial settlements, either resulting from the expansion of earlier centres or as completely new developments; and coastal fishing and harbour towns and villages, again often with medieval origins.

A considerable area of urban development was crossed by the pipeline corridor as it passed along Trevemper Road up to the Golf Course. Most of this represents 20th century development on the fringes of Newquay, mainly in response to its development as a tourism centre rather than its medieval origins as a fishing port.

3.2.3 Recreation

Recreation land consists of, for the most part, late 19th and 20th century tourism and recreation features. These are mainly coastal chalet or caravan parks, theme parks and golf courses. It is often associated with areas of urban development.

These areas are part of Cornwall's tourism industry, which developed through the 19th century. Until fairly recently these areas have been grouped towards coastal resorts, although there is now a growing demand for inland 'quality' tourism. Most of the chalet and caravan parks consist of 20th century structures, often built out of concrete blocks and occasionally have evolved from wartime camps. Theme parks vary in form, but again tend to consist of late 20th century concrete structures. Some golf courses were established by the end of the 19th century, although most are of later 20th century date. They are usually landscaped, with many earlier historical features removed or damaged. Club houses tend to be modern, concrete structures.

An area of recreational land was crossed by the pipeline towards Towan Head, consisting of Newquay golf course and a small children's play area. The golf course was built at the end of the 19th century as a 9 hole course and contains remnants of a pre-existing field system. Again it was constructed as the result of the tourism boom in Newquay (largely brought about by the construction of the railway line).

3.2.4 Coastal Rough Ground

Coastal Rough Ground consists of unenclosed land lying beyond enclosed fields, above steep cliffs. It is usually quite a narrow stretch of land and can be found all around the Cornish coast. Although it gives the appearance of a natural habitat, it is often the result of seasonal grazing, extractive industries and turf cutting. Today it appears as neglected land apart from coastal path walkers.

Such land has been the focus of activity since at least the Bronze Age. Boundaries, barrows and ceremonial sites are often found in this zone. This activity continued in the Iron Age, with the construction of cliff castles. Summer grazing, and fuel collection continued up until the early 20th century. Mining took place on the cliff tops, whilst lookout posts ranging from pilchard huer's huts to World War II pillboxes also characterise the zone.

A stretch of Coastal Rough Ground is located on Towan Head, to the north west of Headland Road, containing remains of World War II features, a fish cellar and lime kiln, lifeboat station and slipway and Treffry's Harbour of Refuge. This area has been somewhat disturbed in the past with the creation of a road, large car park and shelters.

3.3 Archaeology and History

The pre-works archaeological assessment identified 38 potential archaeological sites, as a result of a desk top survey of available historic sources and known archaeological sites, a walk over survey and a geophysical survey (Reynolds 1998). The earliest evidence of occupation was in the form of the cist cemetery discovered during the construction of Atlantic Road in 1911. Other identified sites were of medieval or post-medieval date and

included present day settlements of medieval origin, field systems, bridges, leats and a number of anomalies identified as part of the geophysical survey and of indeterminable date and identity. Notable post-medieval features included North Cargoll Mine, the site of Spy Fish Cellar, a lime kiln, a former lifeboat house and slipway and Treffry's Harbour of Refuge (Towan Head).

4 Results

Much of the pipeline utilised existing roads, thus avoiding any surviving archaeology. Fields to the north of the treatment works site were extremely wet and muddy to the point of it being impossible to access the lower section of the stripped pipeline corridor on foot, thus making identification of possible features very difficult. The main archaeological evidence was confined to three areas during the works; the treatment works site at Trevemper Farm, Atlantic Road and Towan Head. Elsewhere three relatively recent features were identified (on the golf course and on the edge of the Gannel Link Road).

The golf course consisted of deep deposits of windblown sand intermixed with a dark greyish brown sandy loam. Two features were identified at its northern end (Fig 3). These consisted of a poor shillet wall, 0.8m wide and 0.5m high, and a flat bottomed ditch 1.0m wide and only 0.07m deep. The fill of the ditch contained pieces of modern concrete suggesting that it may have been linked with wartime activity on the golf course (World War Two). The wall is likely to predate the golf course at this northern end - a number of boundaries are shown on the 1880 and 1908 Ordnance Survey maps in this location (the golf course originally occupied the area to the south of the present day footpath to Fistral and was extended northwards after 1908).

The edge of the Gannel link road was found to be the location of an extensive late Victorian rubbish dump (including pottery dumped from the Atlantic and Headland hotels). The dump acted almost as a form of land reclamation from the Gannel Estuary, enabling the construction of the lower section of the Gannel Link road in the 1920's (Fig 1).

4.1 Trevemper Treatment Works Site (Figs 4 to 6)

Three phases of archaeological recording were associated with the construction of the new treatment works: a watching brief during the construction of new passing places along the main access route, test trenches on the site of the treatment works, and a watching brief during the ground preparation works prior to the main construction phase.

4.1.1 Access road

A watching brief was carried out during the creation of lay-bys along the narrow lane leading to the new treatment works site. Geophysical survey had previously located the below ground remnants of medieval strip field boundaries in the surrounding fields, and the watching brief was carried out with the main intention of recording these features and the existing boundaries. As already mentioned, the existing roadside boundaries were moved in such a way that sections were not exposed for recording, with the four passing places being created by pushing back the living hedge. In the case of three of the new passing places they occupied the space previously occupied by the line of the existing hedge and as such no features were uncovered. Passing place D, the most easterly and widest passing place revealed a small 19th or early 20th century stone lined land drain (Fig 4). This would have originally fed into the lane through the hedge.

4.1.2 Treatment Works Site

Geophysical survey on the treatment works site had revealed many below ground features of uncertain character (Fig 5). Given that many were possibly archaeological in nature, a series of twelve test trenches (A –L) were excavated prior to the main ground preparation works (Fig 6).

All the trenches contained a reddish-brown clay loam which lay directly above a natural shillett sub-soil at a general depth of 0.30m to 0.50m. Two ditches [1] and [10], a pit [8] and the line of a double ditched boundary, [4] and [5], were revealed by these trenches.

In the light of the results of the test trenching, a watching brief was conducted during the main topsoil strip on the site. This revealed two further pits, [12] and [14], and 3 ditches, [17] [18] and [19]. An area of burnt clay and charcoal [16], and two 20th century land drains were also recorded.

All the pits and ditches were shallow, being only 0.10m to 0.15m deep. They all contained a reddish brown clay loam with occasional flecks of charcoal and burnt day. Pit [12] contained a large amount of charcoal and a sherd of Bronze Age pottery, whilst pit [8] contained a sherd of medieval pottery. No discernible pattern was formed by the pits. Many of the ditches were found to only run for short lengths, with the exception of two ditches which were once part of a boundary that cut the present field in two (ditches [4] and [5]). All the other ditches were found to be on a different alignment to the existing field pattern. Ditch [18] contained a sherd of late medieval coarseware (16th century).

Large areas of ironstone and pockets of soft clay were also revealed, suggesting that these natural features were responsible in part for the 'busy' results from the geophysical survey.

4.2 Atlantic Road Iron Age and Romano-British Settlement (Figs 7 to 11 and 16 to 21)

A controlled topsoil strip followed by large scale excavation was carried out alongside Atlantic Road, on a grassed area used as a car park, due to the nearby presence of a cist cemetery. The cemetery had been discovered during the construction of Atlantic Road around the turn of the century. Other burials have been found during general construction and highway works in the immediate vicinity, all indicating the likelihood of more burials in the area. Geophysical survey was carried out to confirm whether the burials extended over the pipeline corridor, which produced results suggestive of cist graves (Fig 8).

The topsoil strip revealed that the site was not the continuation of the cist cemetery but was in fact a settlement with activity spanning from the late Iron Age to the early medieval period. The main phase of activity took place during the Romano-British period (2nd- 4th century AD). The following is a summary of the results of the site. Specialist analysis and the final results will be published in full in Cornish Archaeology (see section 2.3.4).

A total of 230 archaeological contexts were recorded including 11 walls, 14 pits, 11 ditches and 20 middens (rubbish dumps). The walls were generally no more than 0.30 metres high and 0.60 metres wide, surviving only as foundations. Both the pits and ditches were fairly shallow, generally being no more than 0.5 metres wide and deep. Excavation of the ditches uncovered a terminal end on each one. The middens mainly consisted of mussel and limpet shells and were generally discreet spreads rather than rubbish pits. A number of stone post sockets, a stone lined hearth and a stone platform were also excavated. A huge amount of pottery sherds, animal bones, marine molluscs, metal work and other artefacts were recovered from the site, making this one of the most significant for survival of such material from Late Iron Age- Romano British Cornwall.

Three main phases of activity were identified and these are outlined below (Fig 9).

4.2.1 Earliest activity (Iron Age)

The earliest evidence of activity on the site appears to have been three pits which were cut into the natural shillet. Two contained animal bone and one contained pottery and shells. Radiocarbon dates from the pits gave ranges of between 338 to 107 BC and 150 to 1 BC. The unusual survival of the bone and shell within the earliest features on site reflected the general large quantities and excellent level of survival of such finds at Atlantic Road. This appears to have been the result of the bands of windblown sand, creating unusual alkaline soil conditions for Cornwall. As such the site has produced one of the largest assemblages of bone and marine shell found on a Cornish site and has the potential to become a national reference collection for Late Iron Age/Romano British archaeology.

Also associated with this early phase of activity was a natural red/brown clay soil which in two areas formed low mounds, possibly as a result of having being artificially built up.

The first signs of the windblown sand which was to dominate the site throughout its life occurred in the upper fill of a ditch (i.e. after the ditch had gone out of use and silted up), at the south end of the site. This suggests it occurred post abandonment of the Iron Age features. It is unclear from the excavation whether the Iron Age activity was limited at the site or whether there are more extensive renaming of activity to the east or west (no traces of any activity were found on the golf course to the north).

4.2.2 Main Romano-British Occupation Phase

This phase was characterised by a number of stone structures, ditches and pits. The numerous shell middens found on the site also appear to date from around this period. Extensive deposits of windblown sand were uncovered, apart from in the southern 12m of the site, generally butting against but often covering the excavated features, indicating that this phase of activity was a constant battle against sand blow.

The clearest indication of occupation occurred to the south of the site. This consisted of a semi-circular tumble of stones, truncated by the trench section to the west. This may be interpreted as a wall that has collapsed in on itself or, perhaps more likely, a structure that has been deliberately levelled. To the immediate south-east of this were three stone lined post holes, creating what appears to have been a screen or windbreak around a stone lined hearth (Fig 19). Three pits lay to the east and north-east of the structure. This area of activity appears to have been demarcated to the north and south by two ditches, giving the appearance of a small building and yard.

To the north of these features lay a series of lengths of walling and ditches. The most extensive feature consisted of a loose, rubble, semi-circular wall extending into the trench section to the east (Fig 17). The largest shell midden lay against and beneath the walling. Other walls had the appearance of being windbreaks, creating double walling against structures with sand built-up against the outer walls. These 'windbreaks' were found elsewhere on the site, along with very slight stone walls which may have acted as boundary markers.

One of the more unusual features excavated on the site was an irregular platform, consisting of a number of flat stones extending west into the trench section. This structure was sitting upon windblown sand and a slight skim of charcoal flecks was located to the immediate east of the platform although no evidence of heat exposure was found on the stones themselves.

The mid section of the trench contained the greatest amount of features, the most significant being two circular hollows lined by walls (Fig 18). Neither structure contained any features within the hollows, although just under a half of each hollow was exposed within the trench. The northern hollow was cut by the construction of the southern,

providing the clearest surviving evidence of continual activity on the site. One of the most significant deposits found on the site lay around the outer edge of the northern hollow. This appears to have been a midden that was dumped in one action, creating a perfect time capsule of artefacts. Many of the 226 pottery sherds excavated from this deposit included previously unknown forms, some representing fairly complete vessels. 302 animal bones, the terminal end of a copper alloy bracelet, marine and land molluscs, crustacean shell and stone objects were also recovered from the deposit, with provided a Radiocarbon date of 219-321 AD.

The northern-most section of the trench contained a considerable depth of windblown sand and although some evidence of occupation in the form of slight walls and shell middens was found, it was clear that this marked the edge of tolerable living conditions (Fig 11). This may go some way to explaining the lack of features found within the pipeline corridor as it crossed into the golf course.

Apart from the features associated with the structure to the south of the trench, there was no direct evidence that the site at Atlantic Road was a settlement (in terms of recognisable house structures), although the large amounts of midden material suggest that a substantial number of people were living or working on or near the site. There were also no indications of industrial activity, although there were slight suggestions of such possible activity around the stone platform. The large numbers of shell fish may indicate that the site functioned as an early fishing community, although initial evidence suggests relatively few fish bones within the deposits. What the excavation has shown us is that the area of occupation was relatively short lived and presents quite a puzzle that an attempt was made to inhabit this marginal area given the close proximity of far more hospitable land (such as the sheltered slopes of the nearby Gannel Estuary).

Sand blow appears to have eventually become too persistent and the site was abandoned as a settlement, probably in favour of another site close by. Given the problems encountered by the sand, one would expect the occupants to have moved to the other side of the ridge, overlooking the Gannel. No evidence was found of Romano-British occupation at Trethellan (an extensive Bronze Age settlement excavated in advance of the construction of the housing estate beside the Gannel), and it is unlikely that the settlement shifted to the direct east, under Atlantic Road given that this is known to have been the site of an Iron Age cist cemetery.

4.2.3 Later Romano-British Cultivation

Following the occupational abandonment of the site, an attempt was made to convert the sand into a cultivable soil by adding domestic refuse. This resulted in the creation of a dark earth which extended over the entire site (Fig 16). This was one of the richest layers in terms of artefacts and organic material, with 1422 animal and fish bones, 624 pottery sherds, stone objects, marine and land mollluscs, crab shell, charcoal, glass beads, Roman coins and other metal work, including an iron wool comb (Figs 20, 21), copper brooches and a lead weight, recovered. This in essence resembled a 2000 year old rubbish dump and its value in understanding the economy and lifestyle of the nearby population is considerable.

In the southern part of the excavation trench the cultivation soil directly overlay the stone structures, while to the north it was separated from the underlying earlier Romano-British activity by a substantial deposit of windblown sand, suggesting greater problems at this end. It is possible that this northern end was abandoned first or its problems led to the abandonment of the site in one go.

Plough marks in the underlying sand towards the north end of the site show attempts at cultivation. The midden-rich soil was gradually built up, with some evidence of slight stratification found to the north. As this section appears to have been shallower than in the southern end, this may suggest why the plough marks were not visible elsewhere on the site, the layer being generally too deep for the plough to make an impression on the sand. The material recovered form the soil is all fairly contemporary and is generally of 4th to 5th century AD in date. The large amounts of material that were dumped suggest consistent disposal by a large population given the relatively short time span. The average depth of the cultivation soil was 30 to 40 cm. Although the cultivation soil appears to have replaced the earlier occupation site it is quite likely, given the amount of material deposited to create the soil, that the focus of settlement had only shifted fractionally away from the earlier site.

Initial results from the assessment stage of the post-excavation process have shown that during both the main phase of occupation and creation of the cultivation soil sheep/goat and cattle were the most numerous animals represented by the bones, with pig, horse, cat, goose, rodents, fish (including wrasse and hake) also being amongst the identifiable remains. A human jaw bone was recovered, believed to be that of a male in his late teens. The large amount of marine mollusc shells were mainly edible, although some Dog Cockles were present. Charred plant remains included barley, with oats and spelt/emmer wheat also present. Weeds from cultivated soils suggest that these cereals were all being deliberately grown as a food source for the population of Atlantic Road. Charcoal analysis pointed towards the presence of oak, gorse, elder, blackthorn, hazel or alder. The land molluscs found on the site indicate that the immediate environment was one of open, dune grassland, suggesting that the firewood was brought in from elsewhere. The charcoal also contained spruce or larch, species not native to Britain and not introduced here for cultivation until the 16th century. This suggests that the wood arrived on the site as secondary artefacts from trade or were even the remains of a boat or driftwood.

4.2.4 Post-Occupation Layers

Problems with windblown sand appear to have continued on the site and a layer of deep clean sand directly overlaid the cultivation soil. This suggests that a violent storm or series of storms abruptly ended occupation on the site.

No other occupation layers were recorded above this sand covering, apart from modern debris in the present topsoil. This suggests total abandonment of the site after the late Romano-British attempts at cultivation.

4.3 Towan Head (Figs 12 to 15)

Towan Head was the location of a new pumping station. A number of archaeological features were known in the vicinity of the proposed works, including a lime kiln, fish cellar and World War Two structures. A Neolithic leaf shaped arrowhead had been found on the headland by a member of the public, supporting the view that prehistoric activity was likely to have taken place here.

4.3.1 Spy Fish Cellar

The Spy fish cellar was first noted in a copy of the West Briton dating to 1815, in which shares in the seine of the cellar were offered for sale (the seine being the large circular net used to catch the fish, the use of the term being extended to encompass the whole outfit of a particular fishery). A bill of sale for Towan Blystra dating to 1834 refers to a lease of the cellar which began in 1781, although the cellar itself could be far older (it is certainly believed to have been one of the oldest cellars operating in Newquay). The c1880 OS map clearly shows a large rectangular building labelled as 'fish cellars', with the small circular lime kiln behind. Fish cellars generally consisted of a rectangular building, with an open

central courtyard. The fish were cured on the floor, protected from the elements by large sloping roofs or a combined sail loft or net store. The floors consisted of round beach pebbles and sloped down to a gully. The gully channelled the brine, oil and blood from the fish off into casks. The fish remained stored between layers of salt for about five weeks. They were then placed in hogsheads, large casks, for pressing. This was carried out by using large pressing stones applied to the top of the cask. This continued for about a week, with the casks being topped up with more fish as the pressing compacted the existing fish (Noall 1972, 38-42). The Spy cellar is believed to have fallen into disuse soon after 1882. It was then used as a dwelling house by a woman known as Kitty Phil, from whom the passage between the Gazzle to Fistral became known as 'Kitty's Hole' or 'Spy Hole'. (Newquay Old Cornwall Society – unprovenanced notes).

4.3.2 Evaluation Trenches

The evaluation trenches were dug with the intention of targeting any below ground remains of the fish cellar and any other potential features within the area of the new pumping station (Fig 12). This was followed by a watching brief during the ground preparation works for the pumping station.

Four trenches were excavated by machine prior to the main works.

Trench one

This was specifically located to find any below ground traces of the fish cellar. The trench was 8.5m long and 1.0m wide. It was excavated to a depth of 0.60m and comprised of a dark brown humic topsoil [1], 0.10m in depth; a firm to friable sandy loam [2], 0.20m in depth; a dark brown gritty and friable sandy loam [3] containing some modern wire, suggesting that it was fairly modern backfill, 0.10m in depth, down onto shillet natural subsoil [4].

No finds or features were recovered although the surrounding area contained many service trenches for the adjacent public conveniences. This suggests that any below ground remains of the cellar had been removed during the construction of the toilet block and associated services.

Trench two

This trench was 4.6m long and 1.0m wide. It was excavated to a total depth of 0.30m and comprised of a thin layer of topsoil [1], over 0.28m of a dark brown, friable sandy loam [5] which contained 20% rubble, below which was a shillet natural subsoil [4].

This trench appears to have consisted of redeposited material to create made up ground. There is no clear reason for this other than it may reflect wartime activity or may simply be the spread of material amassed from the demolition and redevelopment of structures on the headland in the past (although none of the rubble was of sufficient size or quality to have been used as building materials themselves, more likely representing ground disturbance deposits).

Trench three

Trench three was 5.3m long and 1.0m wide. It was excavated to a depth of 0.60m and consisted of 0.10m of topsoil [1], above a firm to friable brown sandy loam [6] of 0.30m in depth. This in turn was above the shillet natural subsoil [4], with bedrock appearing after 0.20m.

This trench appears to have consisted of the natural soil deposits upon the headland.

Trench four

This trench was very similar to trench three, although was only 2.0m by 2.0m in size. It contained two modern drain pipes at a depth of 0.3m ([8] [9]) and as such the trench was abandoned. However, pockets of natural subsoil were visible at this depth, suggesting that it was unlikely that any archaeological layers would be found below this depth.

Watching brief results

The watching brief that followed on from the evaluation trenching uncovered two sections of walling. One survived as a 0.8m wide line of stone footings [12], and is likely to be a stone boundary that is visible on a late 19th century photograph. The other survived as a 3.5m long and 0.4m wide brick and concrete wall [14]. This was situated to the north-west of the public conveniences and appeared to be a retaining wall holding back a mix of construction debris, rubbish and redeposited soil [17]. Again this is likely to be associated with the construction of the toilets and demolition of 19th and early 20th century structures in the vicinity. This debris extended across most of the area to the south-west of the public conveniences and contained much modern material. This suggests that the construction of the toilets was accompanied with some landscaping and reprofiling of the southern base of the headland.

At the western edge of the proposed new pumping works a small section of concrete flooring was revealed [15], besides a shillet block mortared retaining wall, [16], 0.90m high and 0.20m wide. The inner face of the wall was plastered and stained red. An outcrop of bedrock had been utilised to extend the line of the wall to the north. The function of this structure is uncertain but it appears to be 20th century in origin and may be linked to wartime activity on the headland.

4.3.3 Lime Kiln (Figs 13, 14 and 15)

There are two possible accounts given for the construction of the lime kiln on Towan Head, both of which may work hand in hand. An unprovenanced note held by the Newquay Old Cornwall Society claims that it was built to supply the lime for the construction of Treffry's Harbour of Refuge. This was begun in the 1840's with the intention of cutting through the narrow isthmus on the headland and the construction of a harbour wall on the Fistral Bay side, thus providing boats with a safe anchorage and subsequent passage through to the harbour proper. Ken Isham, in his newly published 'Limekilns and Limeburners in Cornwall' refers to a mid 19th century reference which claimed that Treffry was quarrying limestone from the headland itself, with hydraulic properties allowing it to set underwater - quite convenient for the construction of a harbour (2000, 188).

During the later 20th century the lime kiln was encased within a modern toilet block. The ramp to the top of the kiln was cut away as part of the construction of the toilets and the top of the kiln became a viewing platform. Removal of part of the toilets showed that the kiln had been encased as a free standing structure. As such it was possible to demolish the toilet block with no damage occurring to the lime kiln. The kiln contained two small brick lined draw holes, both of which had been blocked up. The outer walls showed signs of roof flashing and the ghost of a wall 1.5 metres below the roof line of the toilet block. This suggests that another building had once butted against the kiln, most likely a store following its disuse as a kiln. This adjoining building was probably 20th century in origin as Spy fish cellar is shown on maps to the immediate south of the kiln as a separate building and the kiln itself is shown on 19th century maps as a perfect circle.

5 Discussion

5.1 Atlantic Road

The site at Atlantic Road has proved to be of great significance for Cornish archaeology, owing to the evidence it provided regarding the diet and economy of the areas Romano-British inhabitants. The acidic nature of most Cornish soils has resulted in a dearth of environmental material in the form of bone and shell. In contrast Atlantic Road produced a large number of such finds in a very good state of preservation. In terms of the animal bone alone, the assemblage is likely to become a standard reference source for Cornwall in the Romano-British period, the preservation being so high that butchery and gnawing marks remain on many of the bones. Likewise pottery was found in large quantities, and is likely to become a standard reference source given its securely dated location (as a whole, the quality of the artefactual and environmental material makes the site one of national significance). A number of the pottery fabrics have not been recognised before on Cornish sites. In many cases, fabrics which have been found on other Cornish sites have until now not been securely dated. The material from Atlantic Road, having being found in secure contexts, will provide vital dating evidence.

Of the other artefacts, the iron wool comb is a rare find and a first for Cornwall (Fig 20, 21). The artefacts and environmental evidence from the site are of sufficient quantity and quality to enable a fair reconstruction of life in Romano-British Newquay. Previous excavations around Newquay (such as at nearby Trethellan Farm) have uncovered Bronze Age and Iron Age settlements. The addition of Atlantic Road to this information provides a unique insight to prehistoric and early historic life in a continually occupied coastal area.

Such comprehensive information on diet and environment is of immense value in terms of Cornish archaeology, however the daily activity of the site is more of a mystery. The stone-walled structures which have tentatively been interpreted as dwellings showed no evidence of occupation layers, whilst there was no evidence of industrial processes beyond day to day tool repairs. The flat stone platform may have been indicative of some sort of industrial activity, but at the present this is unknown. It is quite possible that the structures represented some sort of temporary or seasonal occupation, resulting in the total clearance or lack of normal occupational debris/layers. It is apparent that the site was more intensively worked as an area of cultivation in the later Romano-British period, as evidenced by the deep midden-enriched cultivation soil. This soil suggests that the population utilising it must have been very close by to deposit so much domestic refuse over a sustained period of time.

The results of the excavation bore little relation to those of the initial geophysical survey. This is possibly due to the deep deposits of sand, obscuring a true reading. This suggests that Ground Penetrating Radar (GPR) may be more appropriate in such locations than the normal magnetometer surveys.

5.2 Trevemper STW site

Geophysical survey of the treatment works site produced a large number of responses suggesting the presence of archaeological features, but many of the readings were found to be responses to natural pockets of clay and ironstone. Nevertheless excavation revealed a series of pits and boundary ditches dating back as far as the Bronze Age. The purpose of these pits and ditches is mostly uncertain, especially given their shallow nature. Many of the ditches appeared to be extant for only short lengths or became so ephemeral that they could not be followed. It is likely that they were part of an early field system which was superseded by the present medieval rectilinear field system. Ditches [4] and [5] obviously

fit into this later pattern, resembling a classic double ditched Cornish hedge. All the pits contained flecks of charcoal and burnt clay which may be linked with the pockets of natural clay found on the site. The area of burning may also be linked to this activity. Although only small amounts of pottery and flint were found on the site, it is still indicative of prehistoric and medieval activity. The exact nature of this activity is still uncertain. It was obviously fairly sporadic but may represent small scale gathering of clay for pottery manufacture or similar industry (although no evidence survived of extraction from the clay pockets).

The double ditched boundary was the only distinct feature. It was shown on the 1840 Tithe Map but had been removed by 1880 (First Edition OS map).

5.3 Limited nature of evidence from elsewhere along the pipeline route

Much of the lack of evidence from other parts of the pipeline are due to the urban expansion of Newquay – new roads and buildings determined the route of the pipeline to some degree, resulting in few locations with surviving archaeology.

The remaining fields on Trevemper Farm land were exceptionally wet and it is surprising that this was cited as the location of a mine. As such it can be considered fairly unlikely that a mine was within this exact location in the past.

On the golf course there were a few ephemeral features to its north, but for the most part, this stretch of the pipeline was dominated by windblown sand and artificial landscaping.

The lack of early features on Towan Head, including the fish cellar, appears to be partly the result of the construction of the 20th century toilet block and the demolition of wartime features followed by landscaping.

6 Recommendations

It is recommended, given the importance of the Atlantic Road site, that a GPR survey is carried out over the rest of the car park in an effort to map the full extent of the buried archaeology. At present the site is safe beneath a public car park and children's play area, and the depth of sand acts as a deterrent to potential metal detectorists. The site should be considered for Scheduled Monument status, given its excellent state of preservation and national significance.

There is great potential to create a display of the artefacts from Atlantic Road at an exhibition in Newquay. Media coverage during the project and a well attended talk to the Newquay Old Cornwall Society have shown that a great deal of interest was generated by the work. The site has already been included on a 'town trail' around Newquay, with a small information plaque erected on the site as part of this.

7 References

7.1 Primary sources

Martyn's Map of Cornwall, 1"Inch Scale, 1748 (CAU Microfiche)

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8 Project archive

The CAU project number is 1998069

The project's documentary, photographic and drawn archive is housed at the offices of Cornwall Archaeological Unit, Cornwall County Council, Kennall Building, Old County Hall, Station Road, Truro, TR1 3AY. The contents of this archive are as listed below:

1. A project file containing site records and notes, project correspondence and administration.
2. Field plans and copies of historic maps stored in an A2-size plastic envelope: GRE 399 (GRE 329 = Atlantic Road excavation)
3. Finished plans and sections are stored as: GRH 335
4. Black and white photographs archived under the following index numbers: GBP (907 - 913 = Atlantic Road) 980, 984, 995, 1088
5. Colour slides archived under the following index numbers: GCS 26433-26583
6. This report held in digital form as: H:\DOCUMENT\SITES\SITES N\NEWQUAY STW PIPELINE-ATLANTIC RD WB-EXCAV 1998069\WB REPORT.DOC

Artefacts and environmental material retrieved during the project are to be stored at the Royal Cornwall Museum, River Street, Truro.

9 Appendices

9.1 List of Contexts from Watching Brief (Towan Head and Trevemper STW site)

Artefact abbreviations: C - Ceramic, B - Bone, S - Stone, M - Mollusc, CR - Crustacean, ME - Metalwork, CH - Charcoal, G - Glass

Location	Context	Type	Brief Description	Artefacts
Towan Head	[1]	Layer	Topsoil	
	[2]	Layer	Brown sandy loam	
	[3]	Layer	Dark brown sandy loam	
	[4]	Layer	Shillet natural subsoil	
	[5]	Layer	Dark brown sandy loam	
	[6]	Layer	Brown sandy loam	
	[7]	Layer	Brown sandy loam	
	[8]	Fill	Modern water pipe	
	[9]	Fill	Modern water pipe	
	[10]	Cut	Cut for pipe [8]	
	[11]	Cut	Cut for pipe [9]	
	[12]	Structure	Boundary wall	
	[13]	Cut	Cut for wall [12]	
	[14]	Wall	Modern brick and concrete retaining wall	
	[15]	Layer	20thC concrete flooring	
	[16]	Wall	Shillet mortared and plastered wall	
	[17]	Layer	Clay loam mixed with modern debris	P, G, B, S
Trevemper STW site	[1]	Cut	Ditch	
	[2]	Fill	Orangy brown clay loam fill of ditch [1]	
	[3]	Layer	Topsoil	
	[4]	Cut	Boundary ditch	
	[5]	Cut	Boundary ditch	
	[6]	Fill	Orangy brown clay loam fill of ditch [4]	
	[7]	Fill	Orangy brown clay loam fill	

			of ditch [5]	
	[8]	Cut	Pit	
	[9]	Fill	Reddish brown clay loam fill of pit [8]	
	[10]	Cut	Ditch	
	[11]	Fill	Orangy brown fill of ditch [10]	
	[12]	Cut	Pit	
	[13]	Fill	Dark brown loam fill of pit [12]	P
	[14]	Cut	Pit	
	[15]	Fill	Dark brown loam, fill of pit [14]	
	[16]	Layer	Spread of red brown burnt clay and charcoal	
	[17]	Cut	Ditch	
	[18]	Cut	Ditch	
	[19]	Cut	Ditch	
	[20]	Fill	Red silty clay fill of ditch [17]	
	[21]	Fill	Red brown clay fill of ditch [18]	P
	[22]	Fill	Red grey brown clay loam fill of ditch [19]	

9.2 List of Artefacts from Watching Brief

NB Modern artefacts from Towan Head not collected. Artefacts not retrieved from Trevemper Road dump on Health and Safety grounds.

Location	Material	Category	Quantity/Description
Golf course U/S spoil heaps	Ceramic	Pottery	22 Body sherds late 19th/20thC
			1 Rim sherd 20th C
		Clay pipe	1 Clay pipe stem
		Brick	2 Brick fragments
	Bone	Animal	4 Animal bones
	Glass	Bottle	1 Piece glass bottle and rubber neck seal
	Metal	Copper	1 Exploded copper gun cartridge
Fill of sand ditch, golf course	Plaster	Wall	1 Piece of wall plaster
Topsoil, golf course	Ceramic	Pottery	13 Body sherds late 19th/20thC
			2 Rim sherds 20thC
			2 Base sherds 20thC
	Glass	Bottle	3 Pieces of bottle glass
	Stone	Pebble	2 Water worn pebbles
		Flint	I Flint waste fragment
General golf course U/S	Stone	Lead Ore	3 Pieces of lead ore
		Other	1 Whet stone
Trevemper STW site [3]	Ceramic	Pottery	I Rim sherd
	Stone	Pebble	2 Water rounded pebbles
	Metal	Lead	1 Piece of shaped lead
[13]	Ceramic	Pottery	I Body sherd, Bronze Age
[21]	Ceramic	Pottery	1 Body sherd 16thC
U/S	Ceramic	Pottery	3 Body sherds; 2-Bronze Age, 1-13thC
			I Base sherd 17th/18thC
	Stone	Flint	1 Waste flake
			1 Flake/blade
			1 Flake

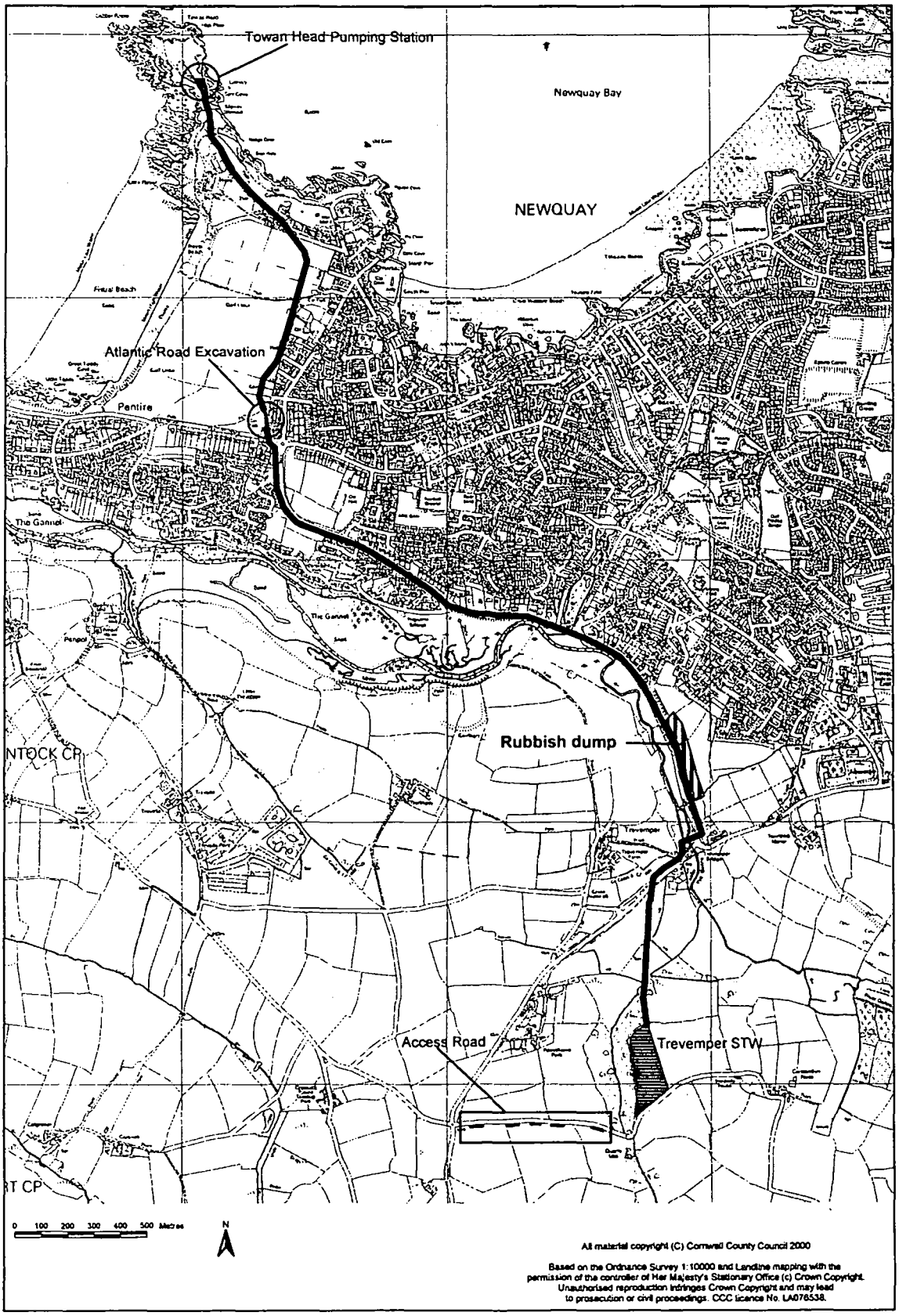

Fig 1 Location Map of Pipeline and Areas of Excavation

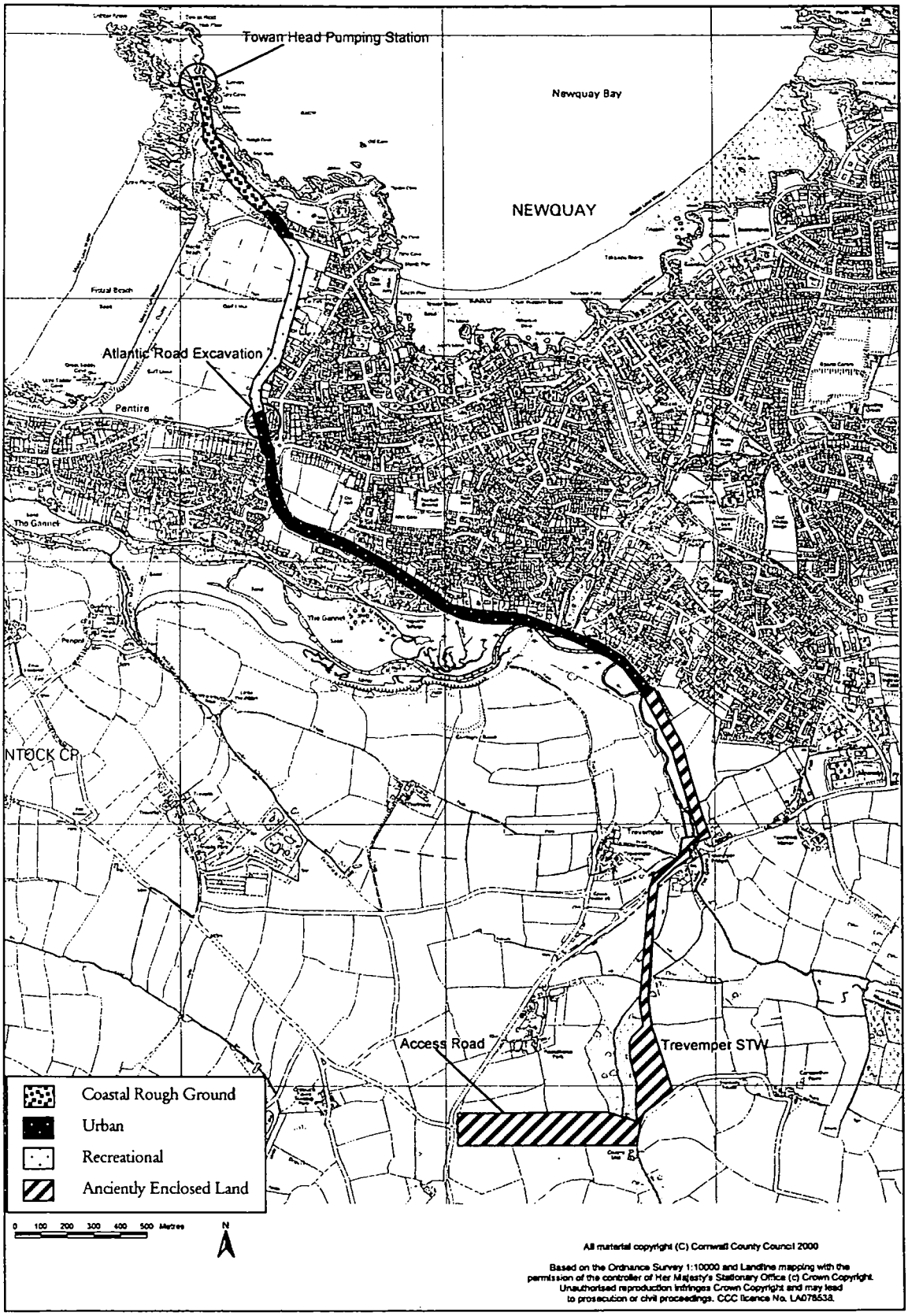

Fig 2 Landscape Characterisation Zones Along Pipeline

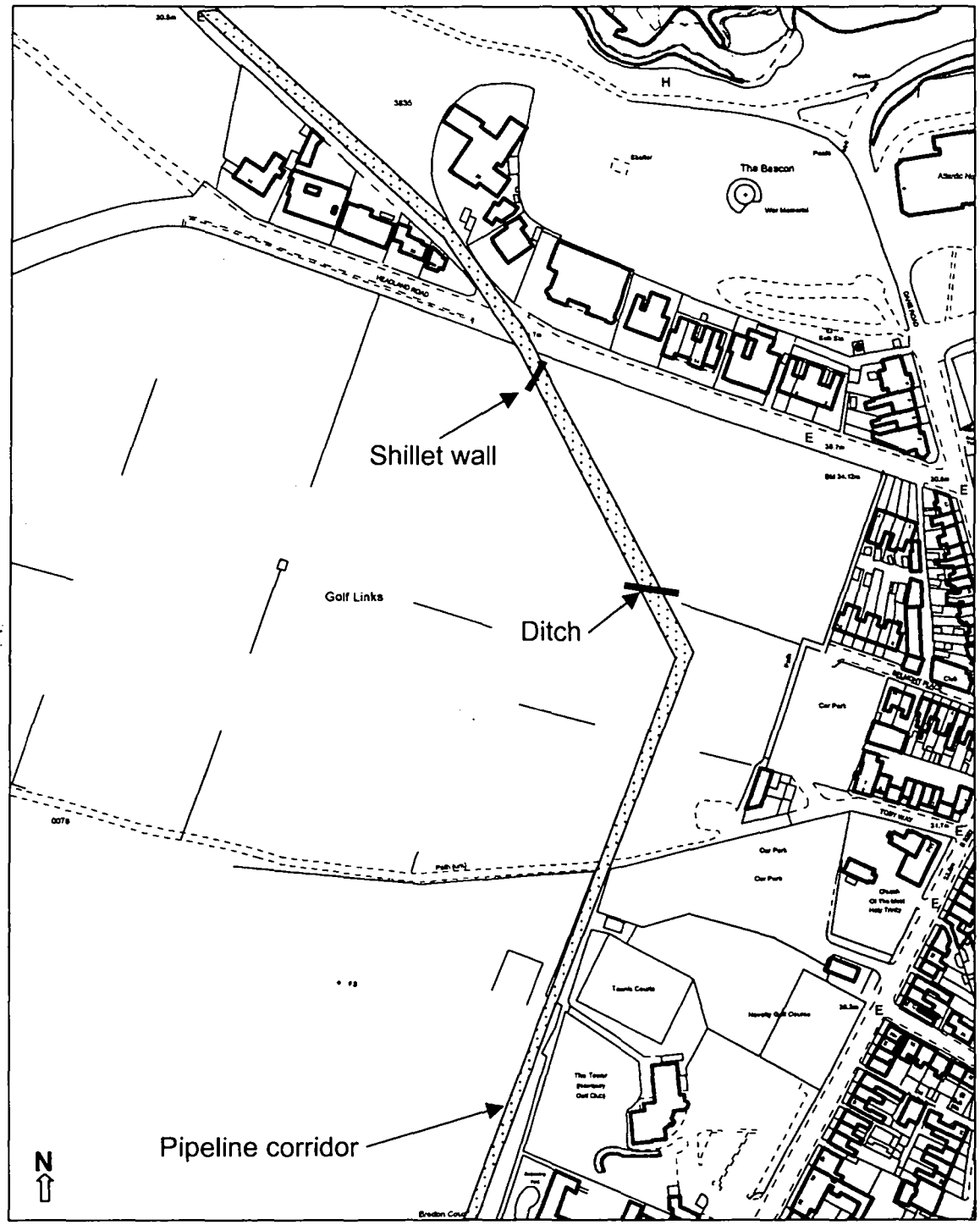

Fig 3 Features Identified on Golf Course (Scale 1:2500)

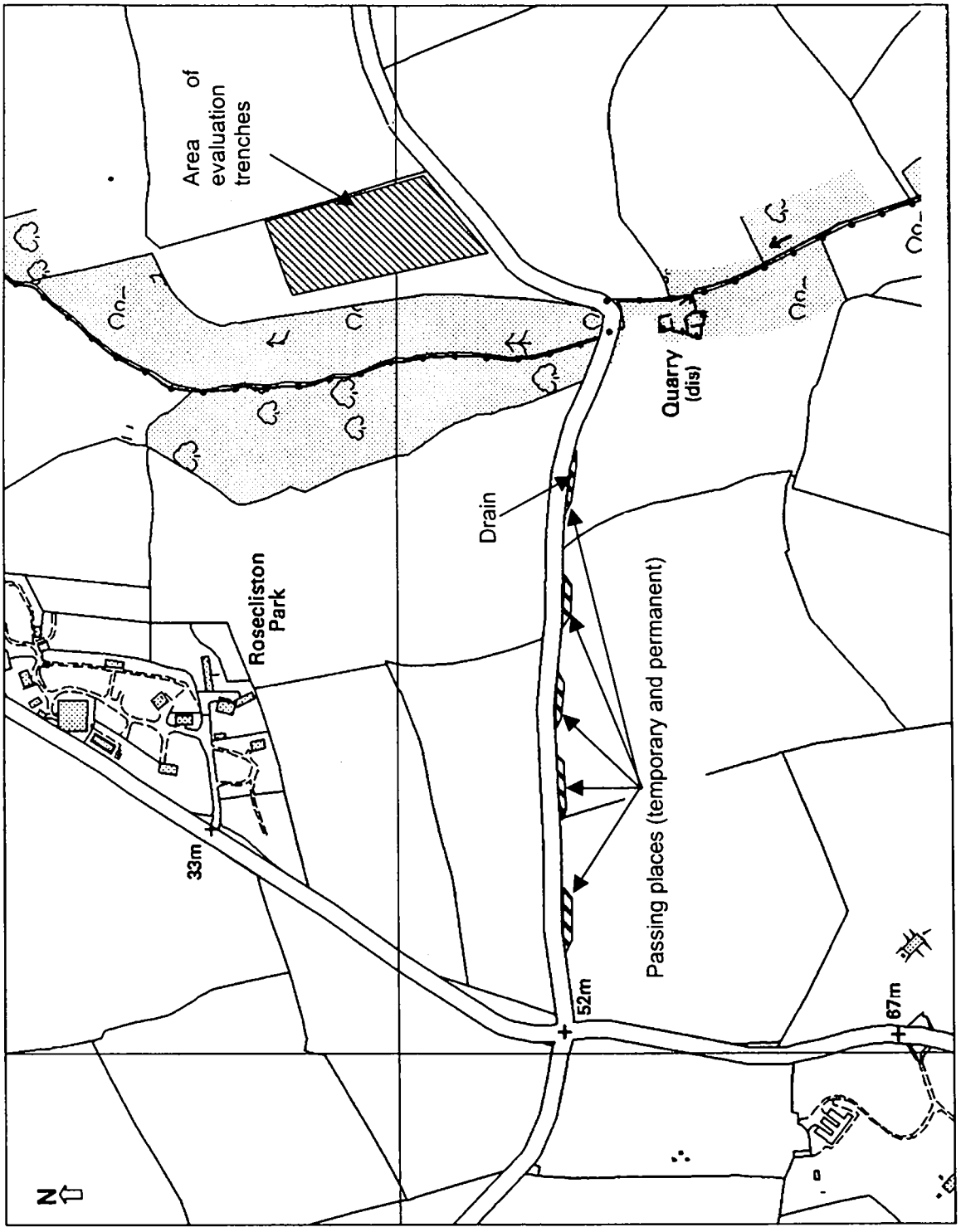

Fig 4 Location of Trevemper STW, Passing Places and Extent of Evaluation Area, Scale 1:5000

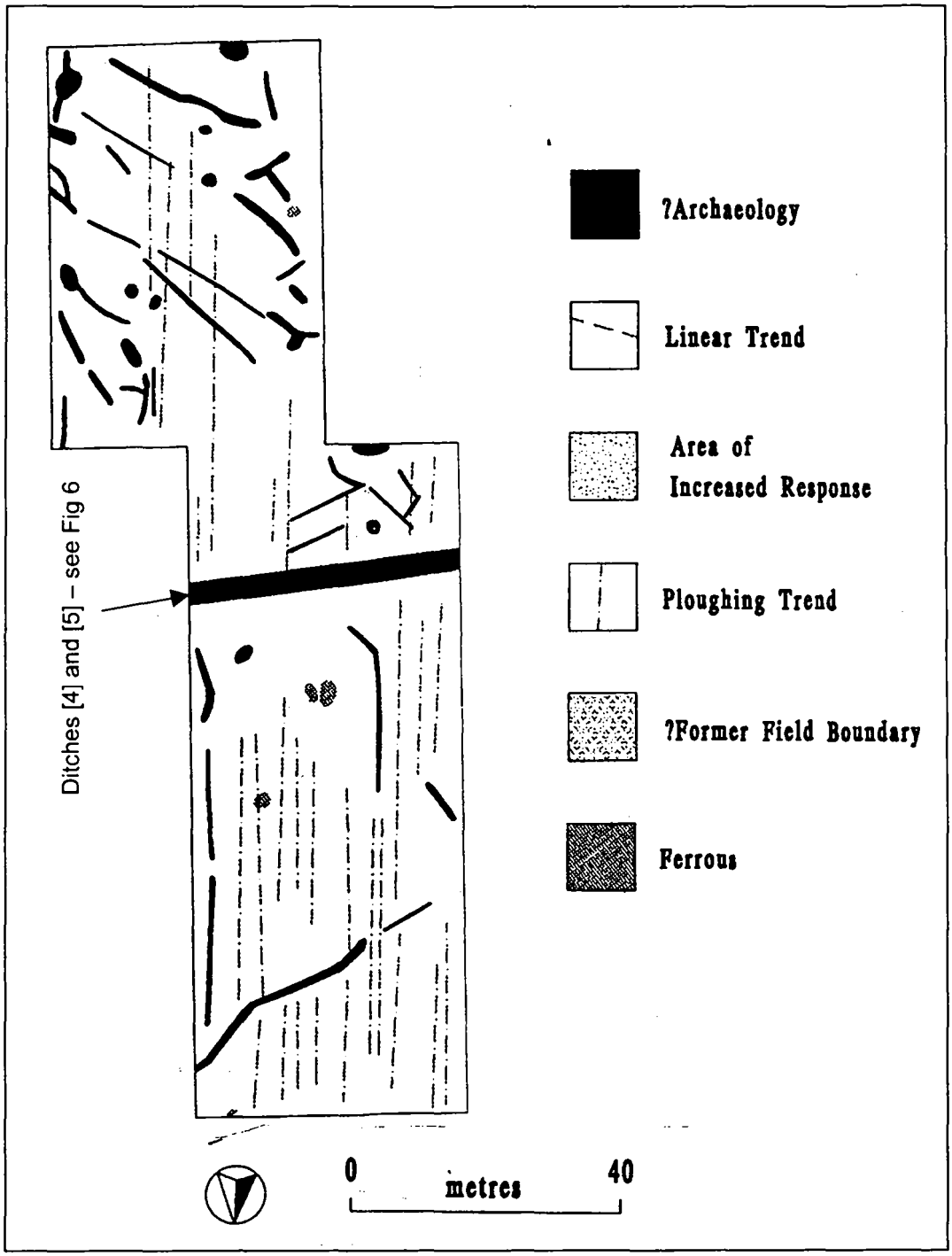

Fig 5 Geophysical Survey of Trevemper STW Site (see Fig 4 'Evaluation Trenches' for Location). Geophysical Surveys of Bradford

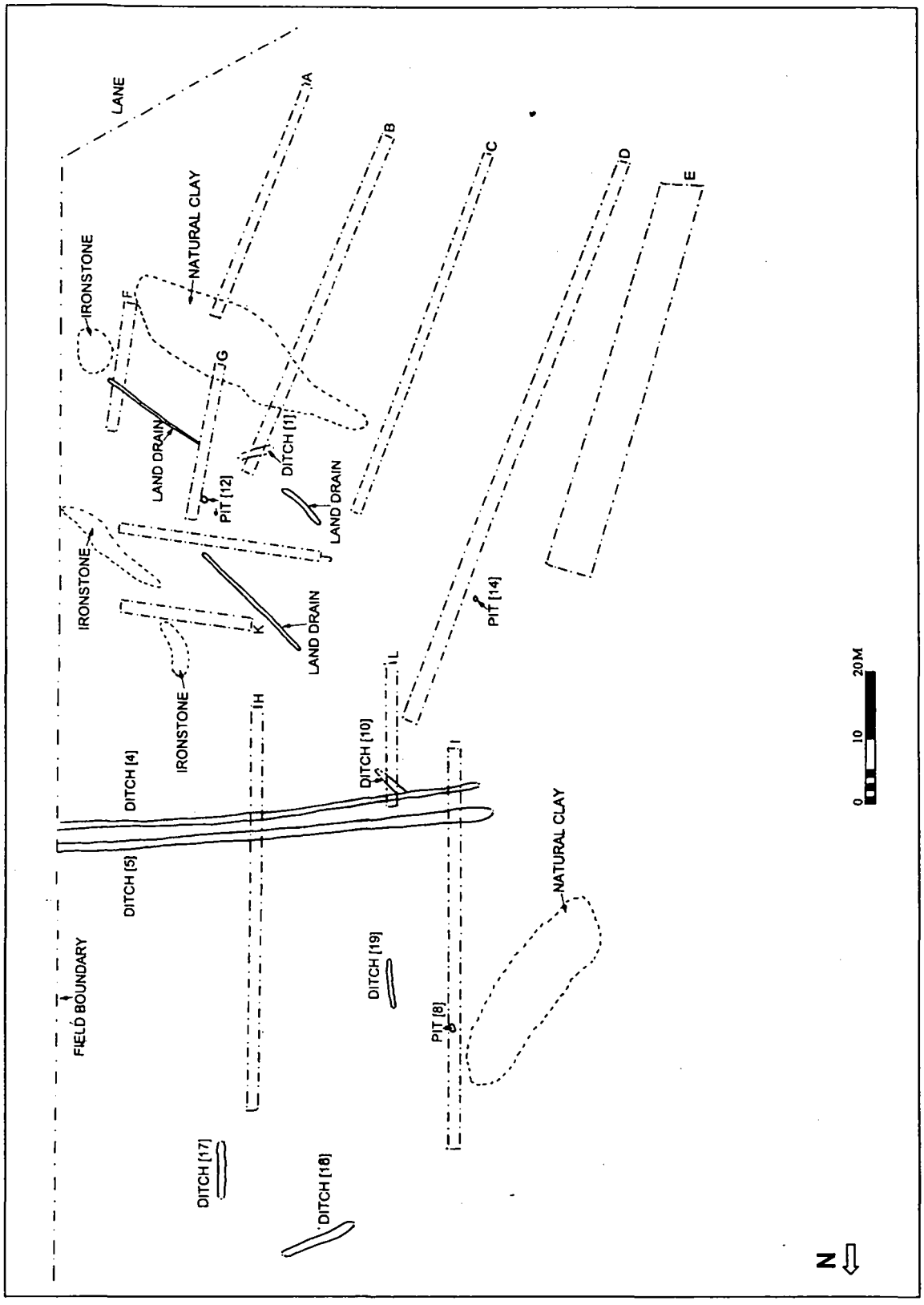

Fig 6 Location of Evaluation Trenches and Exposed Features, Trevemper STW

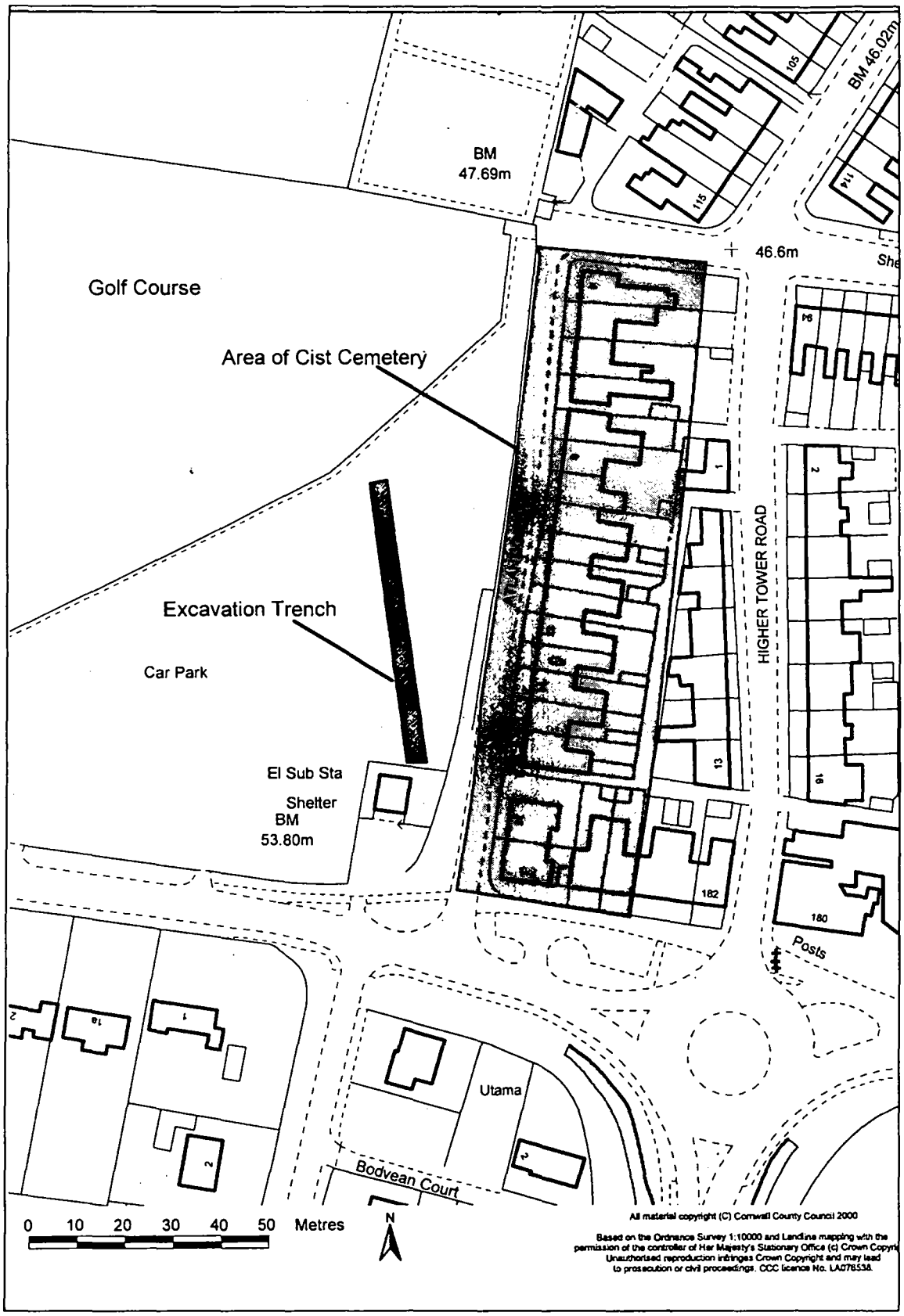

Fig 7 Location Map of Atlantic Road Showing Excavation Trench and Location of Cist Cemetery

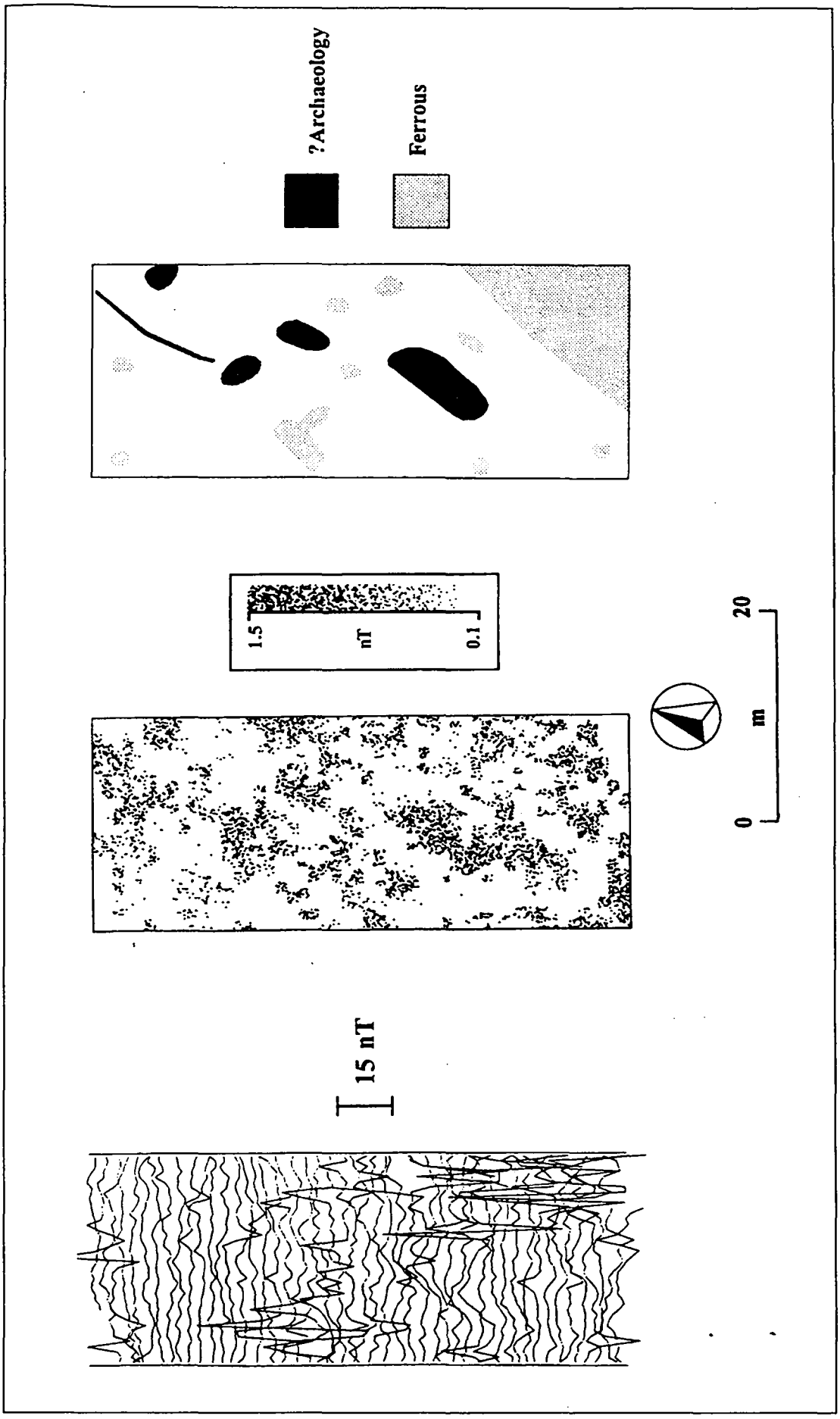

Fig 8 Geophysical Survey of Atlantic Road Site (Geophysical Surveys of Bradford)

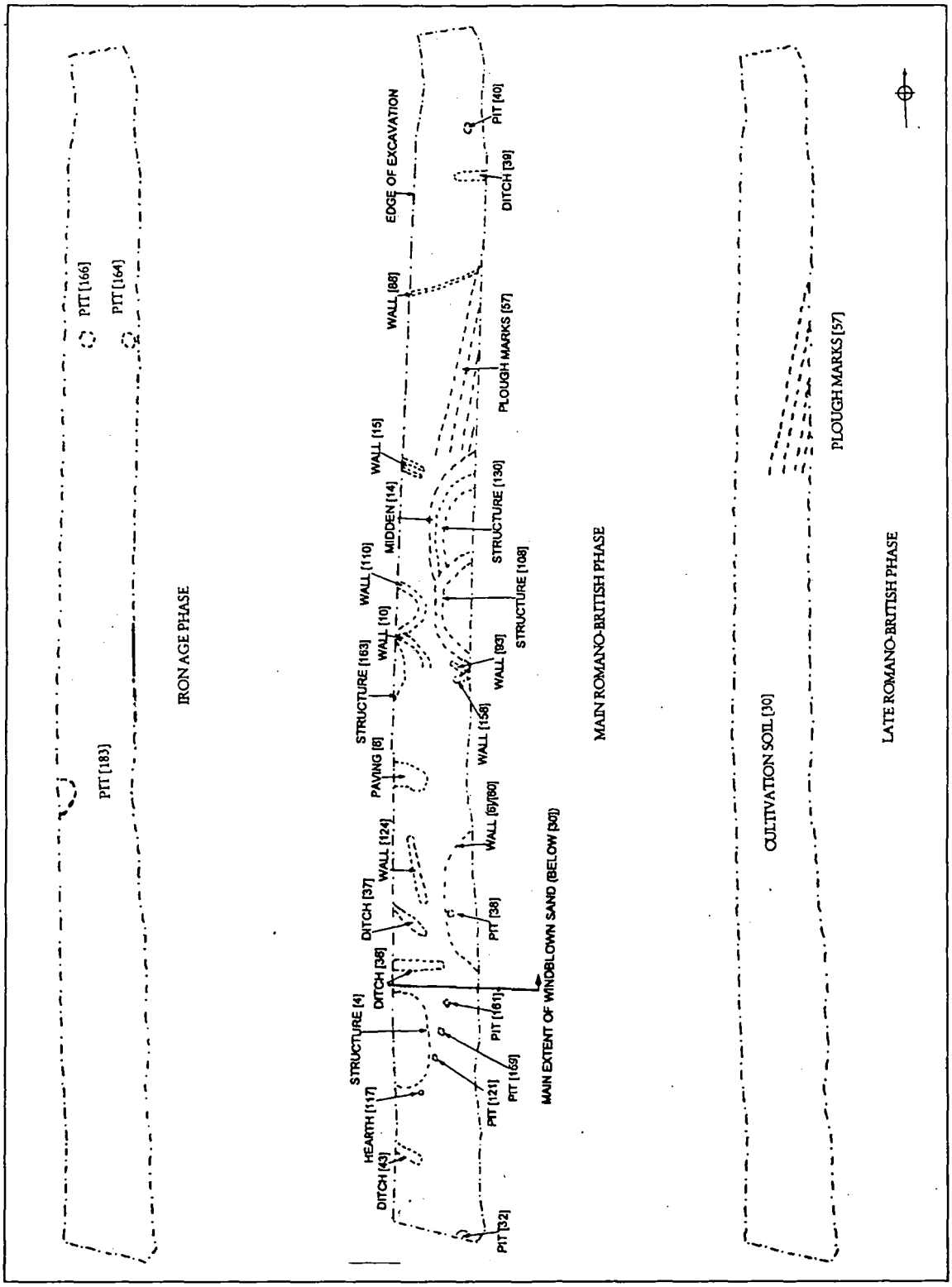

Fig 9 Site Plan of Atlantic Road Excavation, Showing Main Features (not to scale)

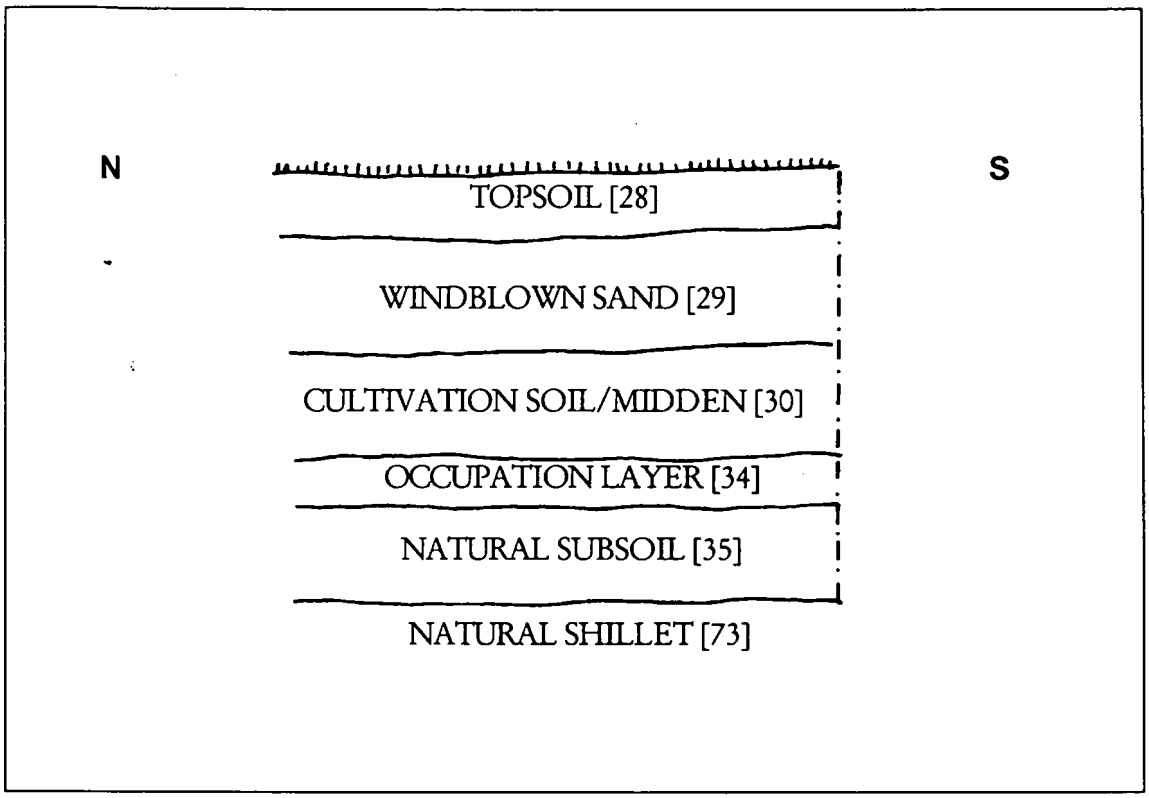

Fig 10 Southern Section of Atlantic Road Excavation Scale 1:20

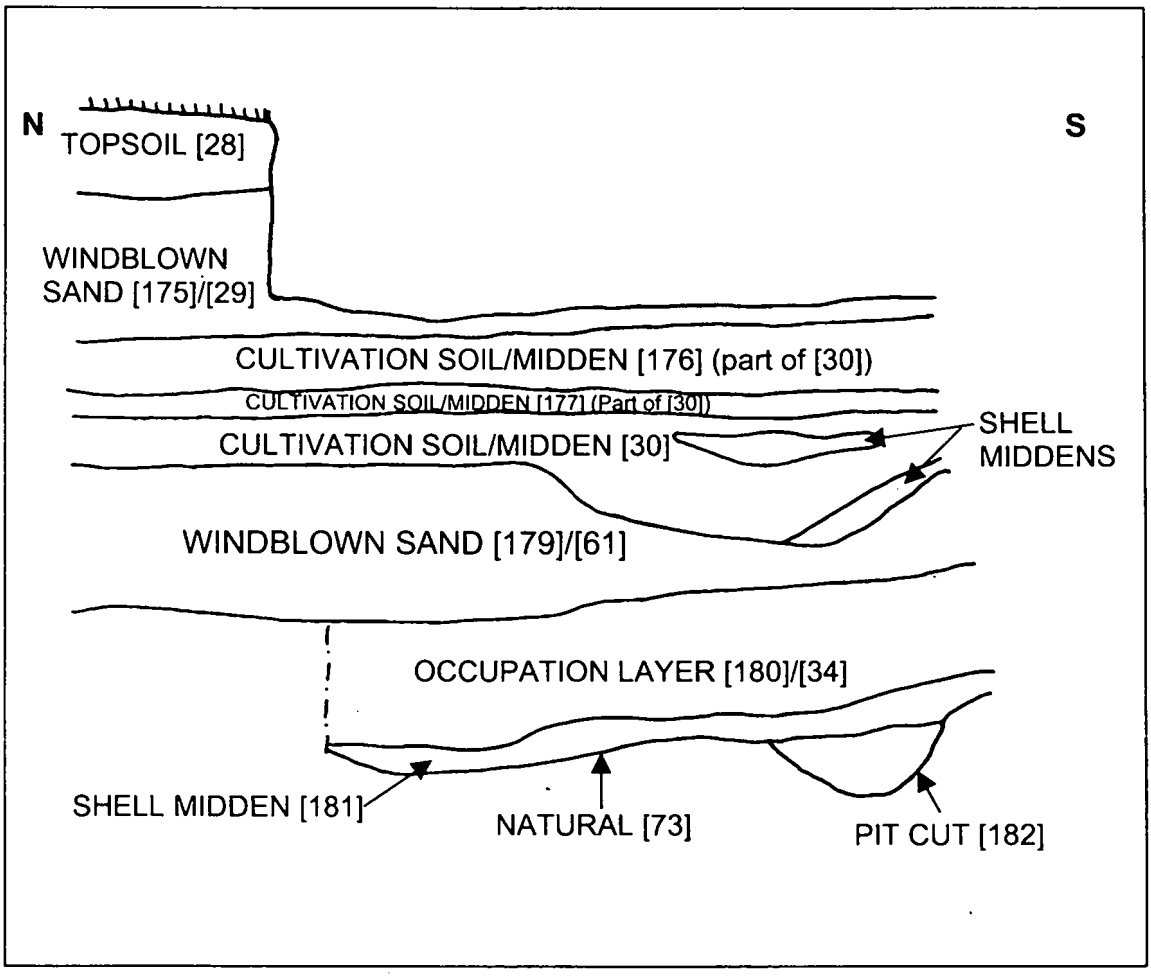

Fig 11 Northern Section of Atlantic Road Excavation. Scale 1:20

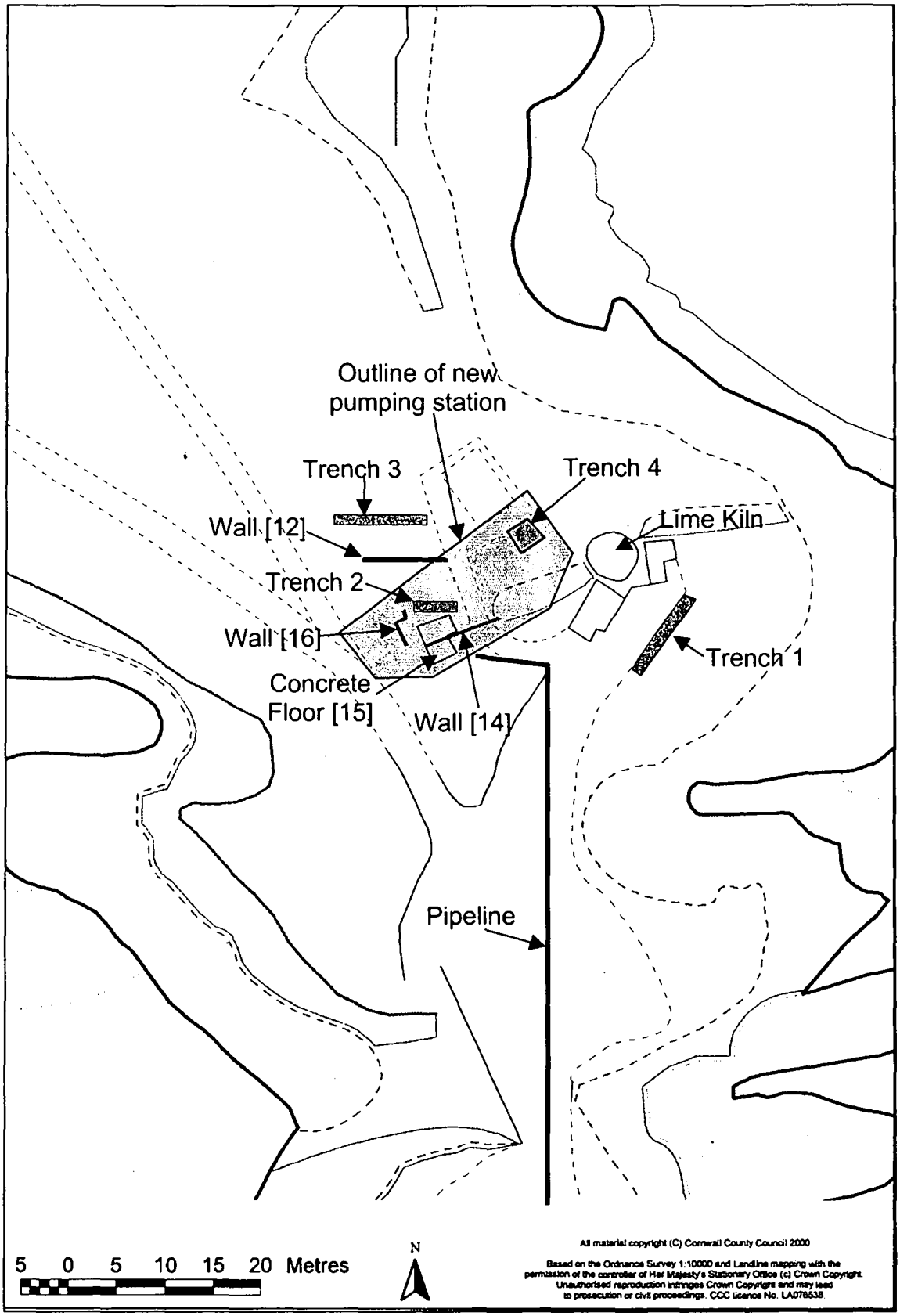

Fig 12 *Location of Trenches and Features, Towan Head, Newquay*

Fig 13 Towan Head Lime Kiln Before Removal of Toilet Block

Fig 14 Draw Hole, Towan Head Lime Kiln

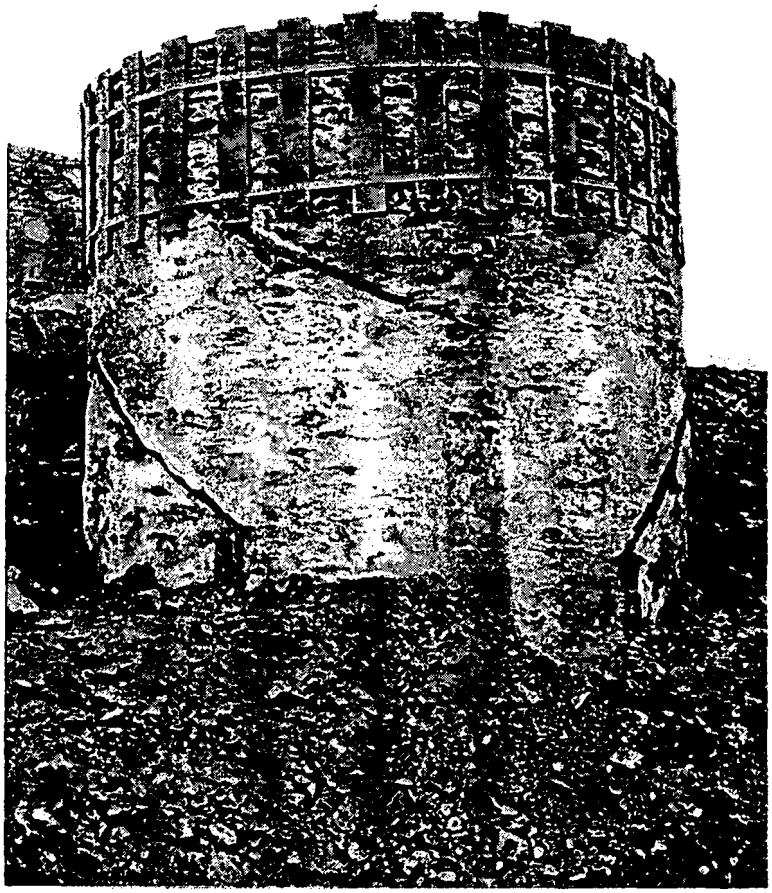

Fig 15 Towan Head Lime Kiln, Showing Ghost of Toilet Block and traces of earlier wall and roof lines

Fig 16 Atlantic Road towards the end of the excavation, showing the proximity of the trench to the houses of Atlantic Road. The section in the foreground shows the dark cultivation soil [30] above an episode of windblown sand [179], in turn over the main occupation layer [180] – see Fig 11 for a section drawing of this area.

Fig 17 Atlantic Road; wall [6], with shell midden below.

Fig 18 Atlantic Road; structure [13] prior to excavation. A wall built for retaining sand off the structure is visible in the foreground.

Fig 19 Atlantic Road; excavation of hearth [117]/[54]

Fig 20 Atlantic Road; wool comb and lead weight prior to excavation.

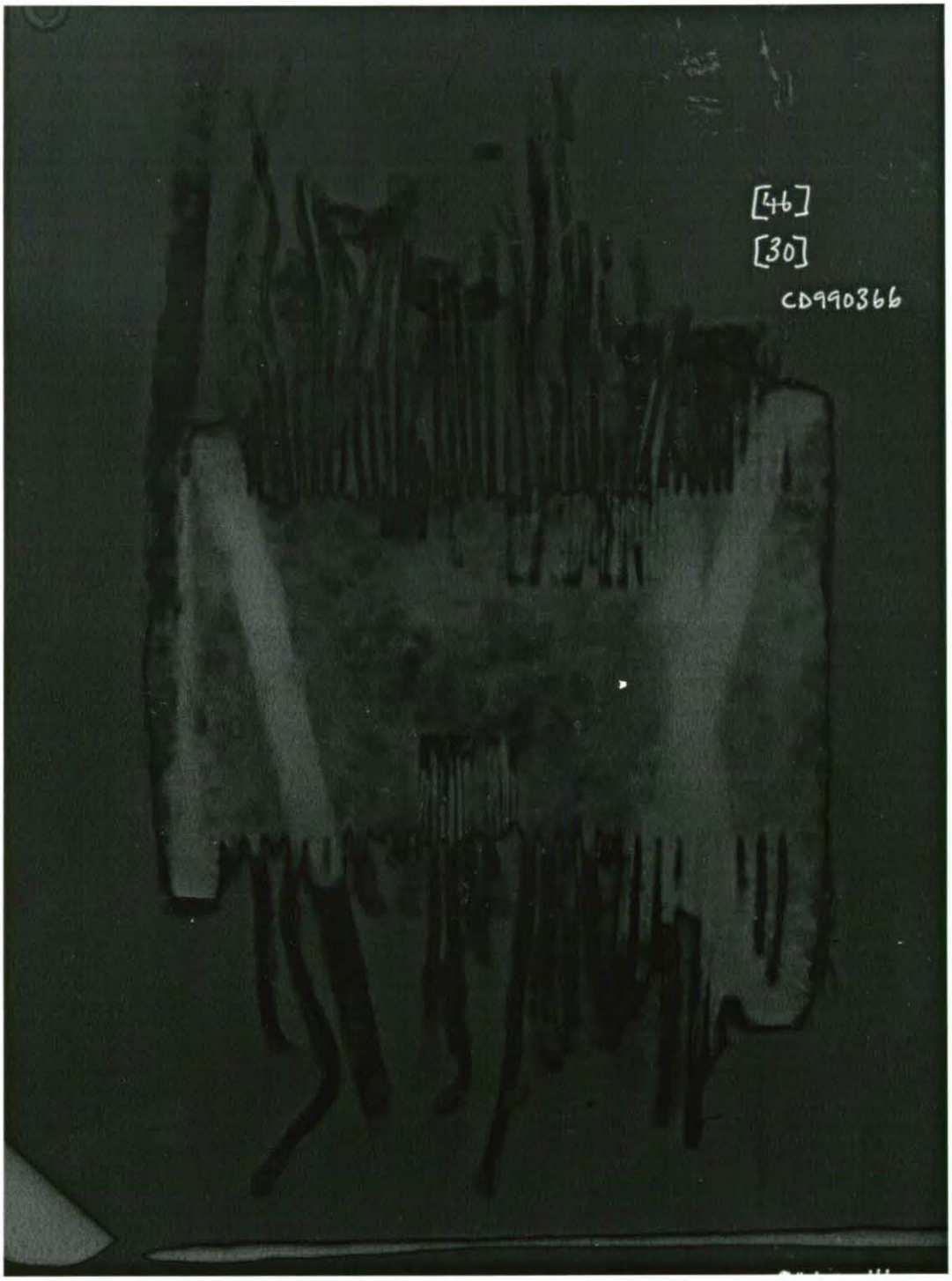

Fig 21 X-ray of wool comb prior to cleaning and conservation