The Bronze Age Landscape of Aughinish, Co. Limerick

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Based on the creation of a large database of information resulting from archaeological investigations on Aughinish Island, Co. Limerick, the paper attempts to recreate the landscape of this area to understand how it may have been ordered and used in the Bronze Age.

Introduction

One typical by-product of the job of a commercial archaeologist is the retrieval of a large amount of information about a landscape that has been transformed throughout time and which will be further altered by modern construction. Of course, this is the nature of large-scale development, but the archaeological documentation and knowledge-base amassed during such works can be used in a positive manner by attempting to recreate the ancient landscape for posterity. One example of such a landscape is that of Aughinish Island, Co. Limerick (Fig. 1) where archaeological works associated with the extension of an aluminium plant were carried out from 2008 to March 2011. The Bronze Age period is the most ubiquitous across the site, represented by both subsurface and upstanding archaeological remains. The locations and types of these sites were influenced by the differing and distinct microenvironments, which vary across the development site.

Fig. 1 Map of Ireland showing site location.

Fig. 2 Aerial view of the development site facing north.

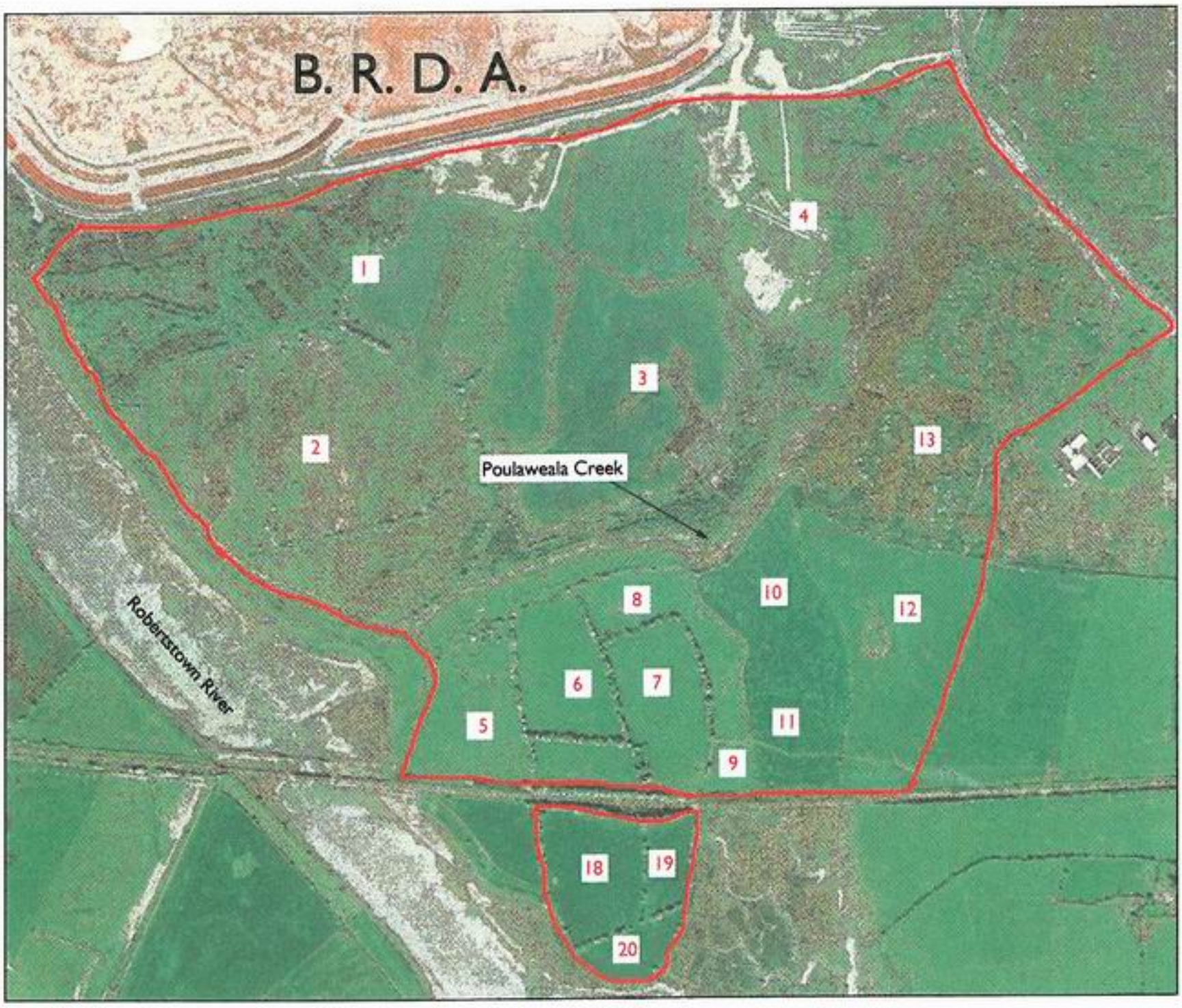

Fig. 3 Overhead view of the fields within the development site.

Development works

The development site was located *c.*17km due west of Limerick city along the shores of the Upper Shannon Estuary in Co. Limerick. It totalled an area of *c.*78 hectares, comprising eighteen fields which lay in four townlands; Aughinish East, Aughinish West, Island MacTéige and Glenbane West (Figs 2 and 3). Aughinish Alumina Ltd has been present in Aughinish since the 1970s; the company imports raw aluminium bauxite, which is dissolved and processed in a caustic soda solution to extract the alumina (Tom Hartney, Aughinish Alumina Ltd, *pers. comm.*) The bauxite waste is disposed of in open air BRDA's (Bauxite Residual Disposal Areas). The development works were necessitated by the need for the construction of an additional BRDA, as well as soil to form its lining. The construction works entailed the large scale removal of soil, reclaimed estuarine salt-marshes and fens, as well as hedgerows and limestone outcrops from eighteen fields, to form a flat base for the proposed BRDA.

Through an Environmental Impact Assessment (Deery 2004), a geophysical survey (Harrison 2007), archaeological testing (Gilligan 2007), excavations (Gilligan 2009a; 2009b) and progress reports (Gilligan 2009c) prior to the development works, and continuous archaeological monitoring during the construction phase (Gilligan 2008; 2009b),[1] the prehistoric and historic landscape has been well documented. The final stages of soil removal were monitored by Lee Scotland[2] and were completed at the end of March 2011 (Scotland; *forthcoming*).

Geology

There were three distinct environments and geological surfaces and soils across the development site, each of which would have influenced settlement and use of the landscape (Figs 4 and 5). Most of the site (eight fields) lay within reclaimed and extant estuarine and alluvial floodplains, south of the Upper Shannon Estuary and east of the Robertstown River. They formed part of a vast expanse of tidal mudflats, salt marsh and karst lagoons (Healy 2002, 229; Healey 2003, 54) with distinct flora and fauna (Pilcher and Hall 2004). The site was effectively cut in half by Poulaweala Creek which ran eastwards from the Robertstown River prior to the latter's entry into the estuary. This creek was drained but there were still waterlogged soils along its length. It ran north-eastwards to meet Poularone Creek to form another complex of mudflats and marsh to the northeast of the development site. The island formed by the Robertstown River and Poulaweala Creek was known as Aughinish Island, from which the townland names of Aughinish East and West originated. The Irish '*each ínis*' (horse island) may be associated with economic activities (O'Sullivan 2001, 15) but it may also point to the fusion of Irish legends and Scandinavian equine symbolism and beliefs (Kilfeather 2001, 45). Some placenames in Ireland retain these legends in their names and the Shannon and Fergus Estuaries are known to be a focus for such tales. A large portion of these lands were reclaimed; probably during the eighteenth/nineteenth centuries (Healy and Hickey 2002, 372), although it is possible that such works may have commenced during the medieval period. Despite reclamation, the fields were saturated at times and often impassable by foot. The surface of these areas varied from 0.5m to 2.5m O.D. Post-medieval efforts to drain the site were visible in the form of drains and sluice gates (Sites of Cultural Heritage 2, 4 and 5), which were recorded by the author prior to their removal (Gilligan 2008).

[1] All archaeological works up to the end of 2009 were carried out under the project management of Margaret Gowen & Co. Ltd.

[2] Archaeological Site Director with Aegis Archaeology Ltd.

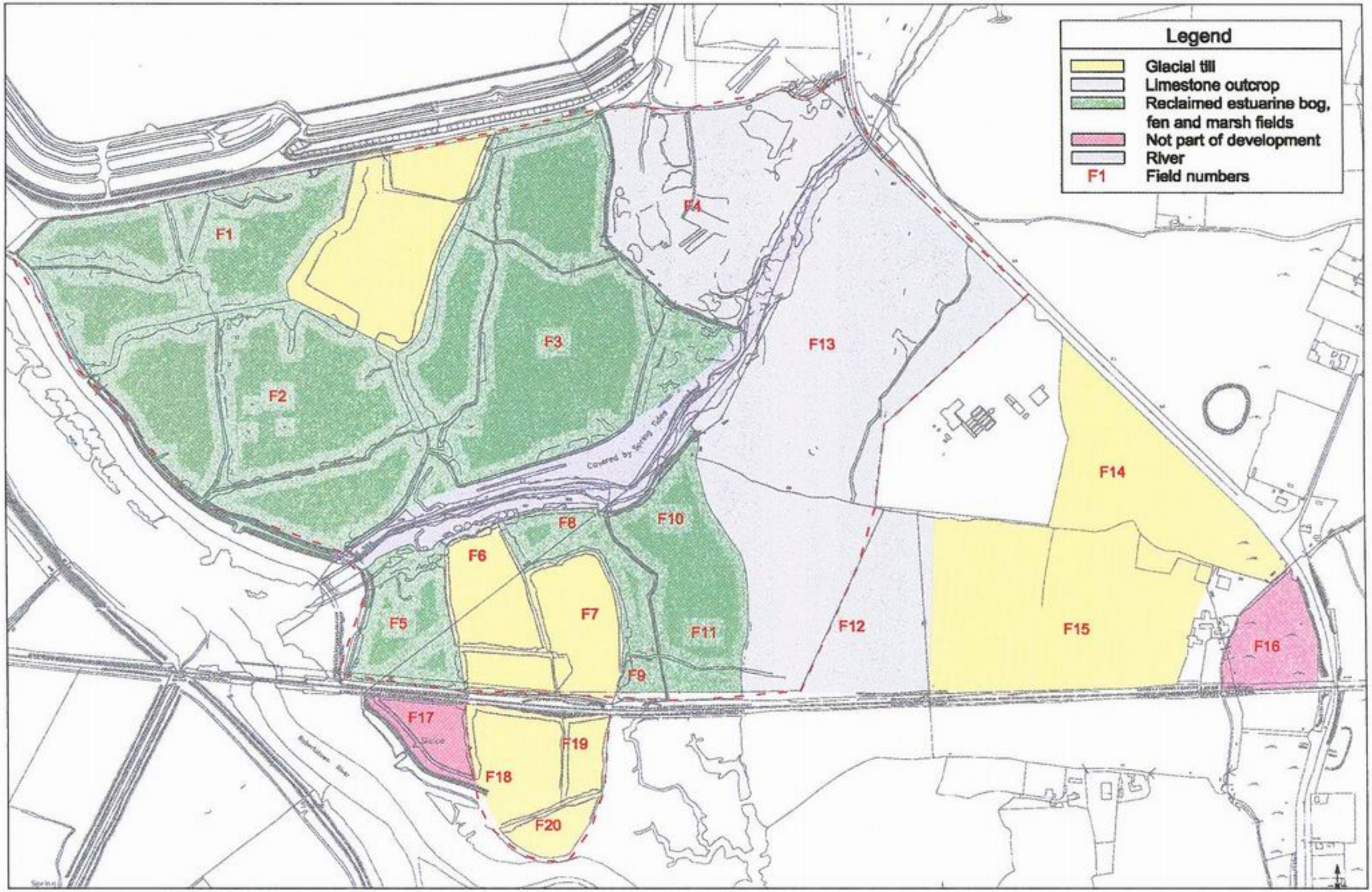

Fig. 4 Differences in geology and soils across the development site.

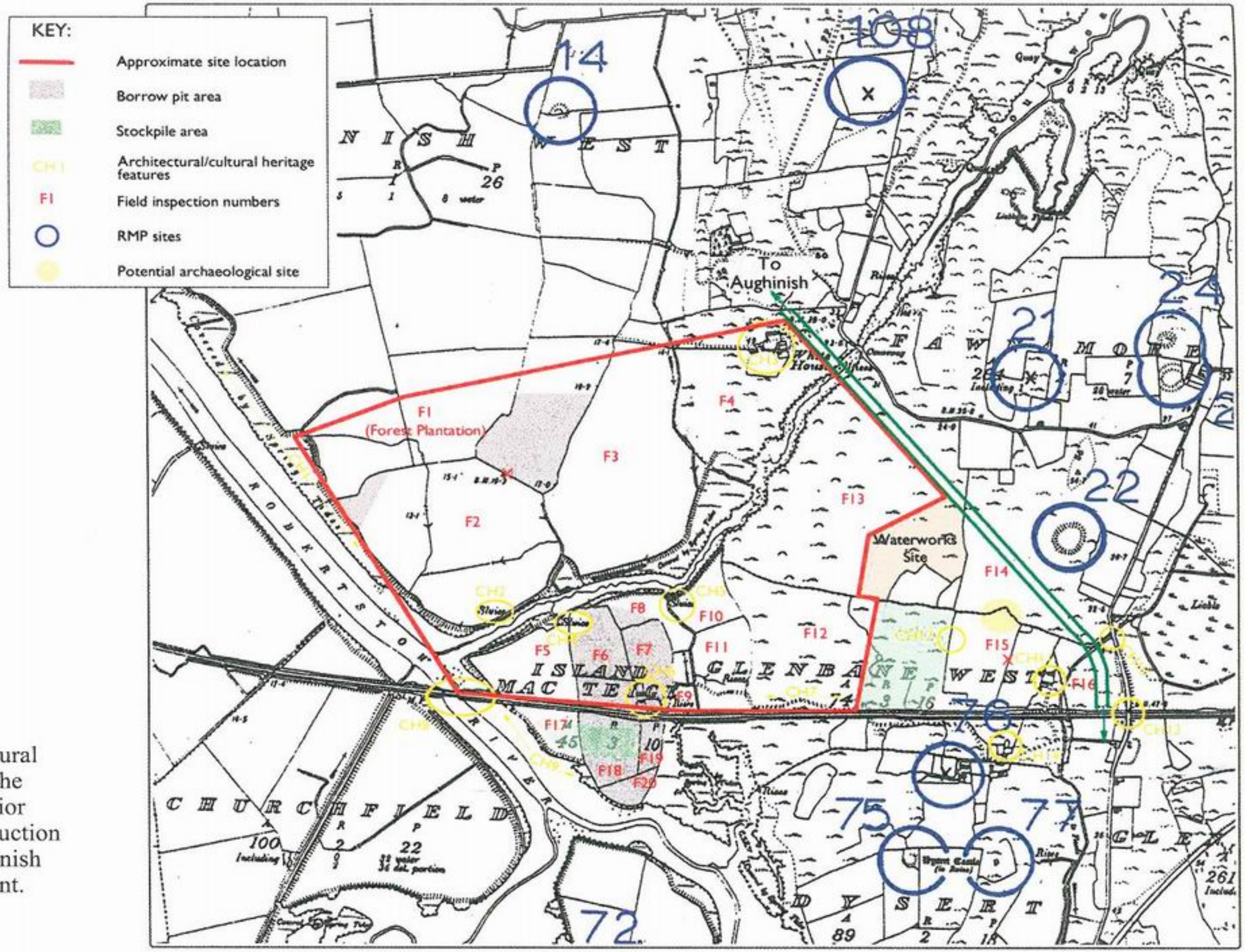

Fig. 5
View of the RMPs and Sites of Cultural Heritage in the local area prior to the construction of the Aughinish Alumina plant.

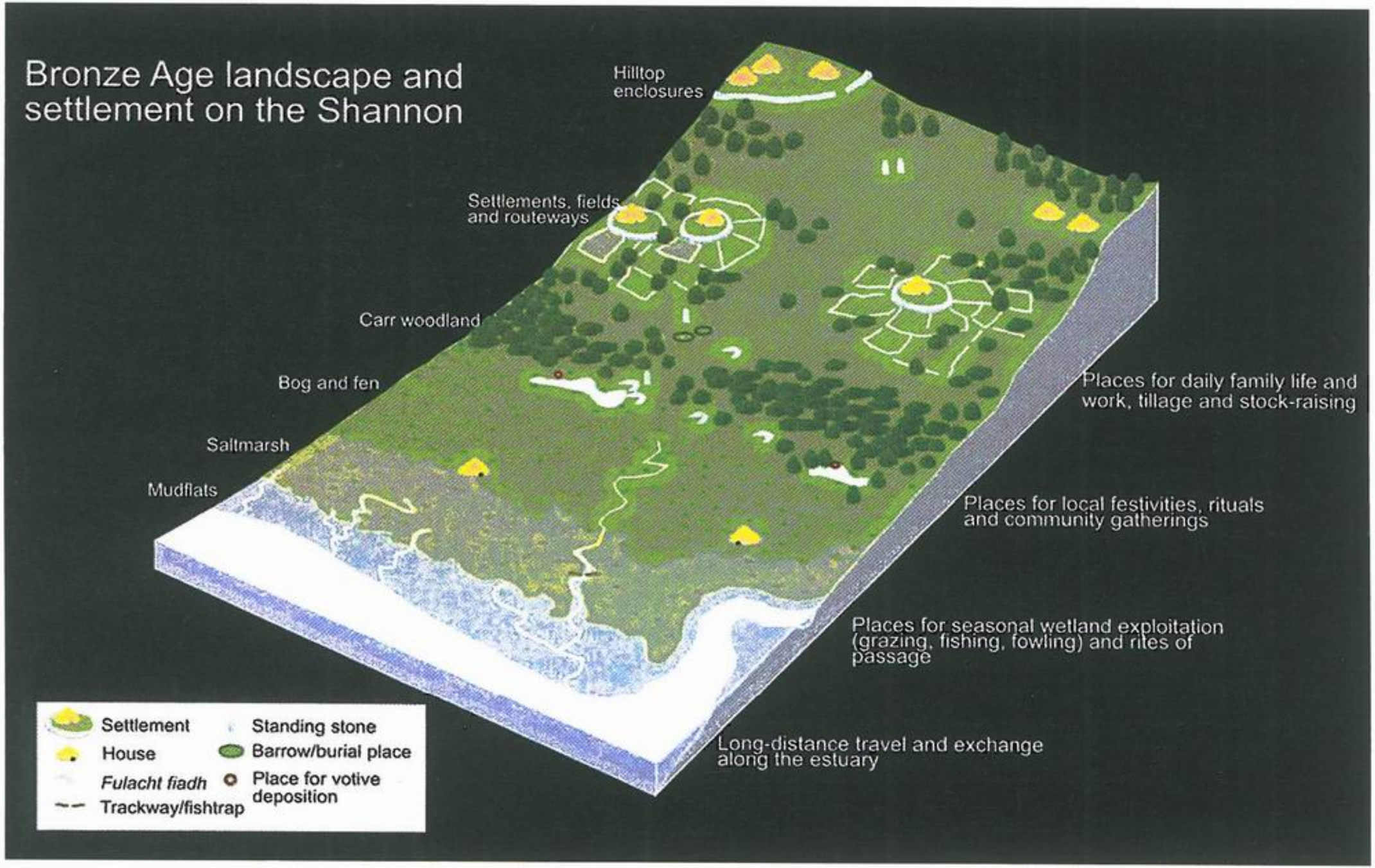

Fig. 6 Hypothetical recreation of Bronze Age landscape in the Shannon Estuary.

Well-drained glacial tills were present in seven fields; the surface of the boulder clays was generally located at *c.* 2.5m to 3m O.D. Five of them (Fields 6-7 and 18-20) were located in the south-western edge of the site and comprised a glacial drumlin which rose to a height of 10.16 OD at its summit in Field 7. Along with bordering and waterlogged Fields 5, 8 and 9, the drumlin formed the townland of Island Mac Téige. It is likely that this 'island' was formed during melt-water phases associated with the retreat of the ice-sheets of the Midlandian glaciations (Synge 1969). It is probable that the boulder clays were covered in oak, and perhaps hazel, woodland in the past (O'Donnell 2009a). The two other fields covered with this glacial till (Fields 14 and 15) were located in the eastern edge of the development site, to the east of the limestone outcrop (see below). The former lay in Glenbane townland, the name of which derives from the Irish *Glenbaun* (the White Glen; Culhane 2003), while the latter was located within the townland of Fawnamore (*Fáná Mhór;* the big slope).

A corridor of limestone outcrop ran north-southwards in Fields 4, 12 and 13, over which a very shallow cover of boulder clay was deposited. The outcrop rose in the east and west from *c.*1.5m to a linear ridge varying from 7m to 11.5m O.D. Synge (1969; in O'Sullivan 2001) places the underlying geological formation of Aughinish as pertaining to the Visean period, formed in warm shallow seas. This is attested by fossils of pre-historic sea life found embedded in the middle layers of this outcrop and noted during the removal of this outcrop in 2008.

Archaeology

Estuarine and alluvial floodplains and their bordering lands typically consist of rich and diverse ecosystems, including mudflats, reed-beds, swamps, and a variety of arch-aeological environments (Healy 2002, 229). Many studies of these micro-environments and associated human activity have been undertaken across the world; such work has been carried out in the Shannon Estuary (O'Sullivan 2001, O'Sullivan and Dillon 2009; Hickey and Healey 2002; Healey 2002) and parts of the United Kingdom (Pryor 2005; www.hull.ac.uk). An ongoing project is currently underway to study both the wetlands and cultural heritage of southwest England, Belgium, Luxembourg, Netherlands and northwestern Germany through the medium of a transnational project (www.planarch.org). Comparisons of information gathered in these studies can aid in the understanding of the palaeoenvironment and in any attempts to recreate the archaeological landscape. It will also supplement existing knowledge needed for the formation of strategies for protection of these areas.

The work carried out in the Shannon Estuary has resulted in the creation of a hypothetical model of the physical environment and human activity in the area in the Bronze Age (O'Sullivan 2001, 125; Fig. 6). This model provides an excellent framework for the attempted recreation of the Bronze Age landscape of Aughinish, as the archaeology uncovered during both works is similar. The diverse ecosystems of wetlands, glacial tills and rock outcrops served to create a rich landscape within which all facets of prehistoric life were evidenced.

Wetlands and fulachta fiadh

The presence of waterways for communication and exchange has been invaluable throughout history (Aalen *et al.* 1997, 19; Fry 2000, 21), not least for the arrival of the first settlers in the Mesolithic period, as well as other innovative imports and exports throughout the past millennia. In the prehistoric and historic periods the bordering mud-

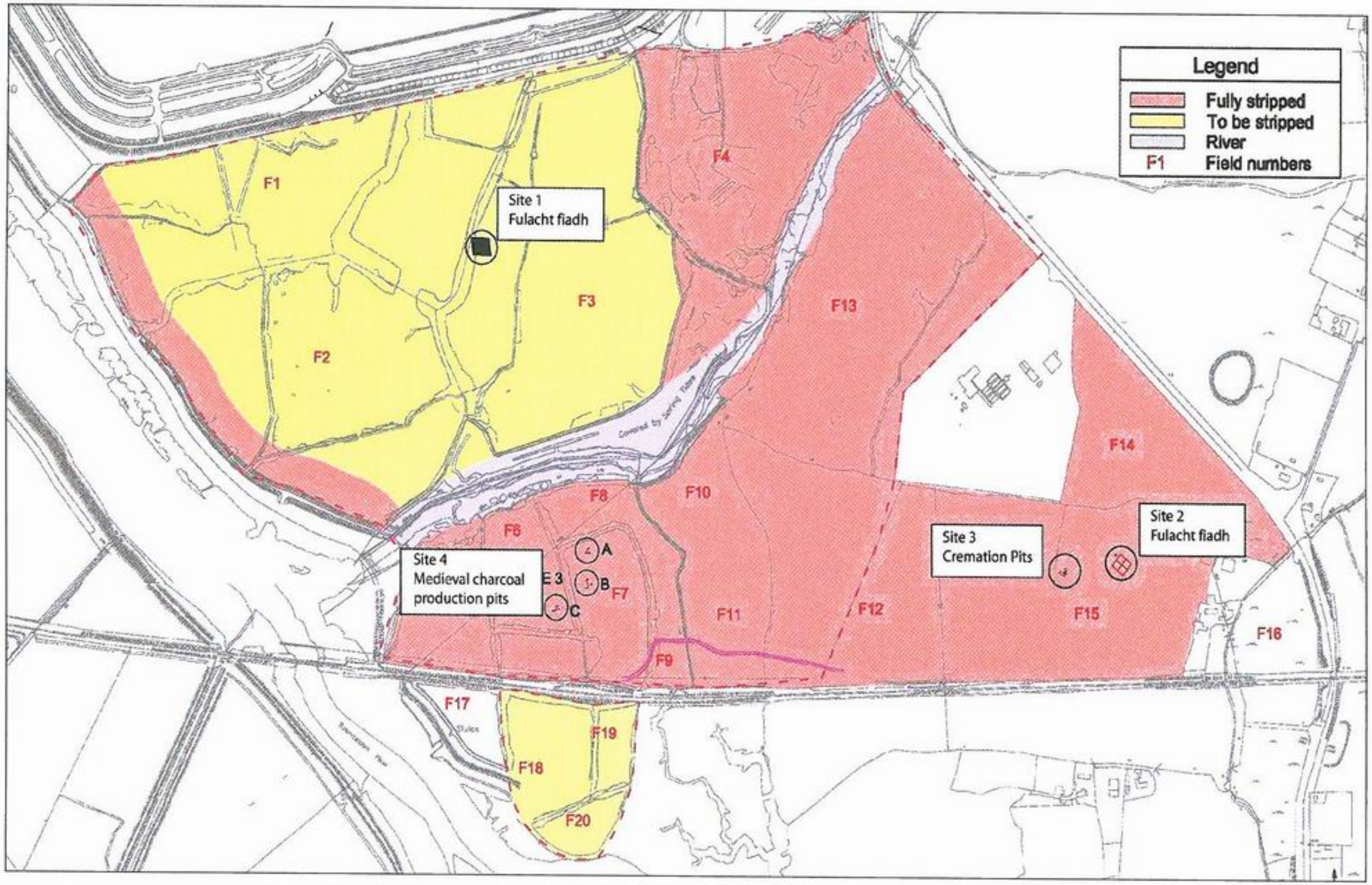

Fig. 7 View of excavated sites 1-4 within the development footprint.

flats, salt-marshes and fenlands provided hunting opportunities where wild fowl, eggs, fish, shellfish and eels could have been collected (O'Sullivan and Breen 2007, 19). Here too, plants and seaweed for food and soil nutrition could have been gathered. Marshes would have provided excellent grazing opportunities for farmers settled on the drier uplands (Rippon 2001, 15), as well as providing the means of access to previously constructed fish-traps and jetties (O'Sullivan 2001; Nayling 133, 2002). *Juncaceae* sp. and *Cyperaceae* sp. could be sourced in the wetland areas and would have been utilised for thatching and weaving roofs and textiles (Pryor 2005, 20) and as additional dietary carbohydrates (Mears and Hillman 2007, 240). Additionally, in the later stages of pre-history, bog ores for the production of iron for tools and weapons would be retrieved from this part of the landscape (Coghlan 1977, 10; Gilligan 2009b). However, despite the bountiful resources, the border between wet and dry land is often quite treacherous and is sometimes thought of as a magical or '*liminal*' space (Brown 2003, 3). Votive offerings, in the form of highly decorated metalwork, are often found in wetland areas suggesting an association between ritual or religious activities and watery places (Bradley 1998). In summary, the many physical and spiritual attributes offered up by the wetlands and immediate hinterlands would have allowed people to settle in dry land close by and exploit the differing environments to their full potential.

Two *fulachta fiadh* (Fig. 7; Sites 1 and 2) were excavated by the author in the marginal zones along the well-drained boulder clays and reclaimed wetlands. These features are predominantly thought to have been used for boiling meat (O'Kelly 1954), although Ó Drisceoil notes that early legends contain descriptions of both cooking and using the by-product of fat for moisturising or massaging human skin (Ó Drisceoil 1990, 162). Monk suggests that meat was boiled within troughs to create fat for preservation and to clean meat which had previously been covered in fat. This fat could also have been used to make tallow and to soften hides (Monk 2007, 22). Other suggestions include their use as ritualistic sweat-lodges or saunas (Barfield and Hodder 1987; Eogan 2007, 38; Laidlaw 2008, 26), while others suggest they may have been used in the production of prehistoric beer (Quinn and Moore 2009). It is likely that many of the sites were utilised for a number of activities, while a few select others may have been limited to specialist activities.

The first *fulacht fiadh* (Site 1) was uncovered in September 2008 and its upper levels were situated at *c.*1.5m OD (Gilligan 2009a). To its west the land consisted of glacial till, while to its east the reclaimed salt-marsh and fens were probably impassable on foot at the time of its construction. This *fulacht fiadh* consisted of three distinct levels of activity dating from the Early to the Middle Bronze Age. The lowest level (Level 1) consisted of three pits, two of which appeared to have been lined with wood. Charcoal from one of the pits was radiocarbon dated to 2491-2292 cal. BC (UBA 10273) placing this activity in the Early Bronze Age. A period of abandonment (Level 2) immediately followed the activity of Level 1. The uppermost level (Level 3) consisted of two phases of activity which truncated the grey clays of Level 2. The first phase consisted of the construction of a 1m^2 rectangular structure, an area of scorching and an oval pit, all of which were sealed by a series of alternate deposits of burnt mound material and clay. Charcoal fragments sampled from these layers were radiocarbon dated to 1831-1730 cal. BC (UBA 10272), which placed this phase in the Middle Bronze Age. The second phase of activity in Level 3 consisted of the insertion of a wooden trough into the pit and the subsequent use of the latter, which resulted in the production of strata of ash and shattered limestone. The trough was remarkably well-preserved and well-made using a metal axe (O'Donnell

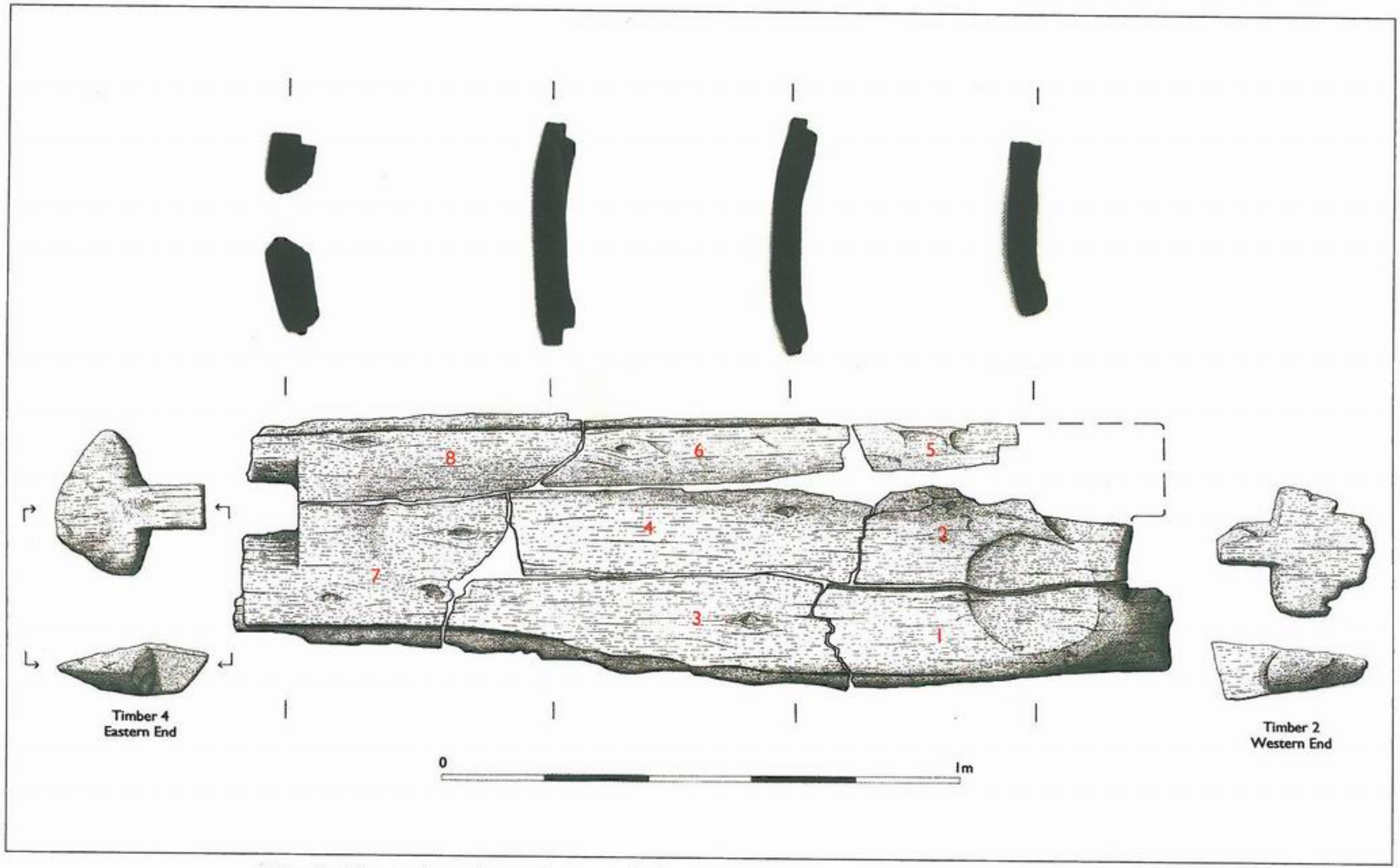

Fig. 8 Illustration of wooden trough found on Site 1 (After M. Kryczka in Gilligan, 2009a).

2009a). It consisted of a worked oak plank with mortices at either end; two separate radially-split oak pieces with tenons were inserted into the mortices, creating the effect of a 'header' and 'footer' (Fig. 8). There were remnants of an ash panel visible along the sides of the plank and ten hazel and one ash stake held the plank in place. One hazel stake was radiocarbon dated to the Middle Bronze Age (1612-1494 cal. BC; UBA 10274). The features within Level 3 were sealed by slumped burnt mound material and the mound was covered with reclaimed estuarine clay. A suggested reconstruction of this trough is visible in Fig. 9.

While it is not clear what this site was used for, its excavation gives us clues about how the landscape was used in the Bronze Age. It is likely that much of the wood and charcoal found on the archaeological site was sourced from Island Mac Téige where it is probable that there was woodland present at this time. This suggests that the site of the *fulacht fiadh* was specially chosen. The oak plank used to form the trough in Level 3 was perhaps transported along the wetlands to the site. It is also probable that the coppiced hazel stakes which lined the trough were felled in Island Mac Téige. This coppicing was probably carried out both as part of woodland management and to create suitable branches for use in basketry and fish-trap production, fence-making and suchlike for the Bronze Age community in this area. The firewood burnt in the hearth of Level 3 may also have been gathered here as there was a distinct lack of water-loving species, such as alder and willow, identified from the charcoal analysis (O'Donnell 2009a). Instead trees which grow on well-drained soils, such as oak, hazel and ash, formed the bulk of firewood. The lining of two pits in Level 1 was also identified as hazel.

The shattered limestone, which was found in Level 3 and which seems to have been used to heat the water in the oak trough, must also have been gathered away from the site. It is likely that it was sourced close to the outcrop in the east and perhaps in the glacial till also. The small structure in Level 3 suggests distinct separation of tasks between the domestic and other; whatever was carried out here was not deemed suitable for the settlement zone in the drier land. While it is often the case that *fulachta fiadh* are located

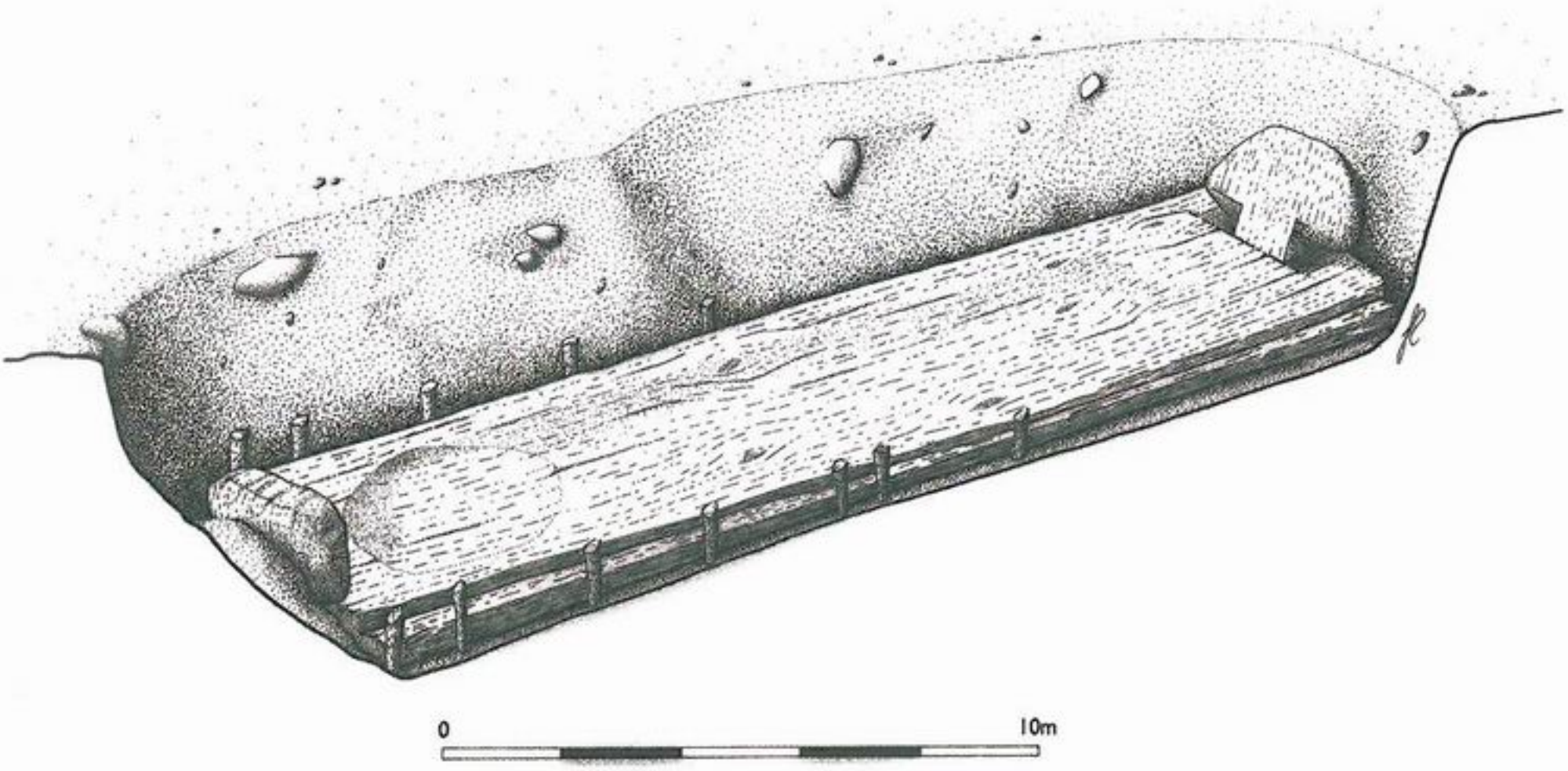

Fig. 9 Suggested reconstruction of trough and pit on Site 1
(After J.P. Ryan in Gilligan, 2009a).

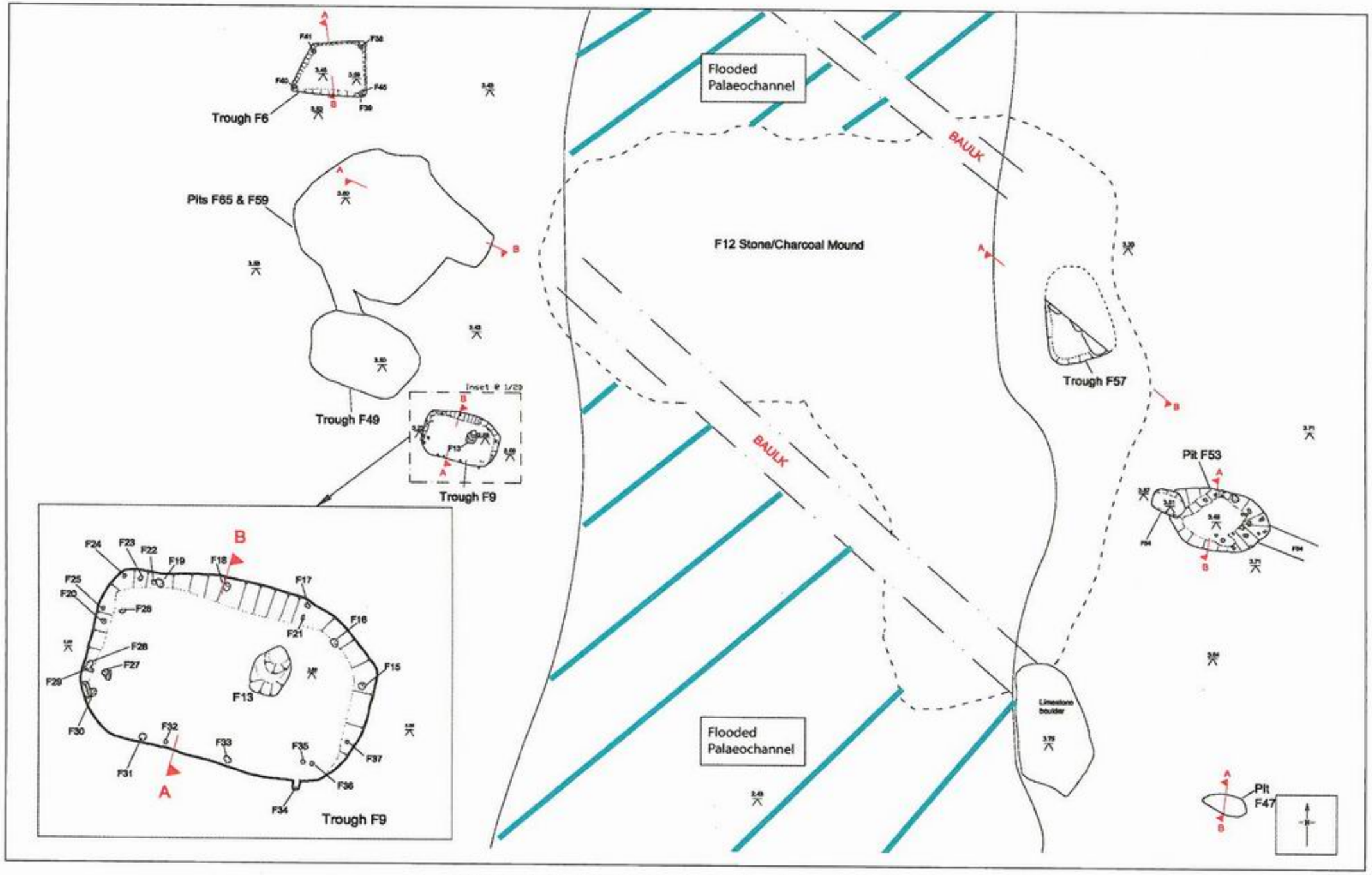

Fig. 10 Post-excavation site plan of Site 2.

close to water sources necessary for their usage, it is more often the case that the wood for construction and the fire is gathered locally also. As regards Site 1, it appears that everything needed for this site, such as the wood for the fire, possible basketry and hut/ trough construction and the limestone, were sourced from elsewhere. This suggests a distinct choice was made with regards to this specific location. It may have been the case that activities carried out here were too messy or pungent for the homestead. The mature cattle humerus found within the basal fill of a pit in Level 1 suggests that perhaps animals were slaughtered here for meat (Geber 2009a) and perhaps their hides were then also processed here. The humerus could also have been boiled in the trough to extract fat in a similar manner to that of the Blackfoot Indians in North America. The latter mixed this fat with dry meat and berries to create *mookimaani* which was a foodstuff that gave them energy throughout the lean winter months (www.glenbow.org). Additionally, the small structure may have been used as a smokehouse for the preservation of fish and meat. While this site provides tentative evidence for varying land use in the different geological zones, as well as wood choice and wood-working skills and tools, it also throws up questions about the function of the *fulacht fiadh* and the local people's relationship with this site.

A second *fulachta fiadh* (Site 2) was excavated along the banks of a palaeochannel in Field 15 (Gilligan 2009b; Fig. 10). Here the glacial till sloped to the lower palaeochannel, the base of which is located at 2.43m OD. The channel only flooded the banks during the winter in 2008; however it is probable that during the Bronze Age the river was full all year round, providing water for any settlement in this dryland zone. The site consisted of one phase of activity represented by four troughs and four circular pits, sealed by a mound of burnt material. The charcoal taken from the base of a stakehole placed the site in the Middle Bronze Age (1129-1007 cal. BC. UBA-11553). The features found on this site differed from that of the previous *fulacht fiadh*. Two of these troughs were lined with stakeholes; the latter may have held a structure or screen in place over a pit of smouldering embers. Suggestions for such structures include A-shaped drying or smoking racks for food or hides, references to which can be found associated with the Amerindians in the United States (Groenman-Vawna Ateringe *et al.* 1999, 887; Fig. 11). A sub-rectangular pit was located close to the water-line and it appears probable that the function of this feature was associated with a continuous water supply. Due to its location within the flooded channel, it could only be half-excavated. However, it was noted that large boulders, heat-shattered stones and charcoal were found within and an area of scorching was located close by. This evidence suggests its function was also related to the heating of water with hot stones, though as before, the reason remains unclear.

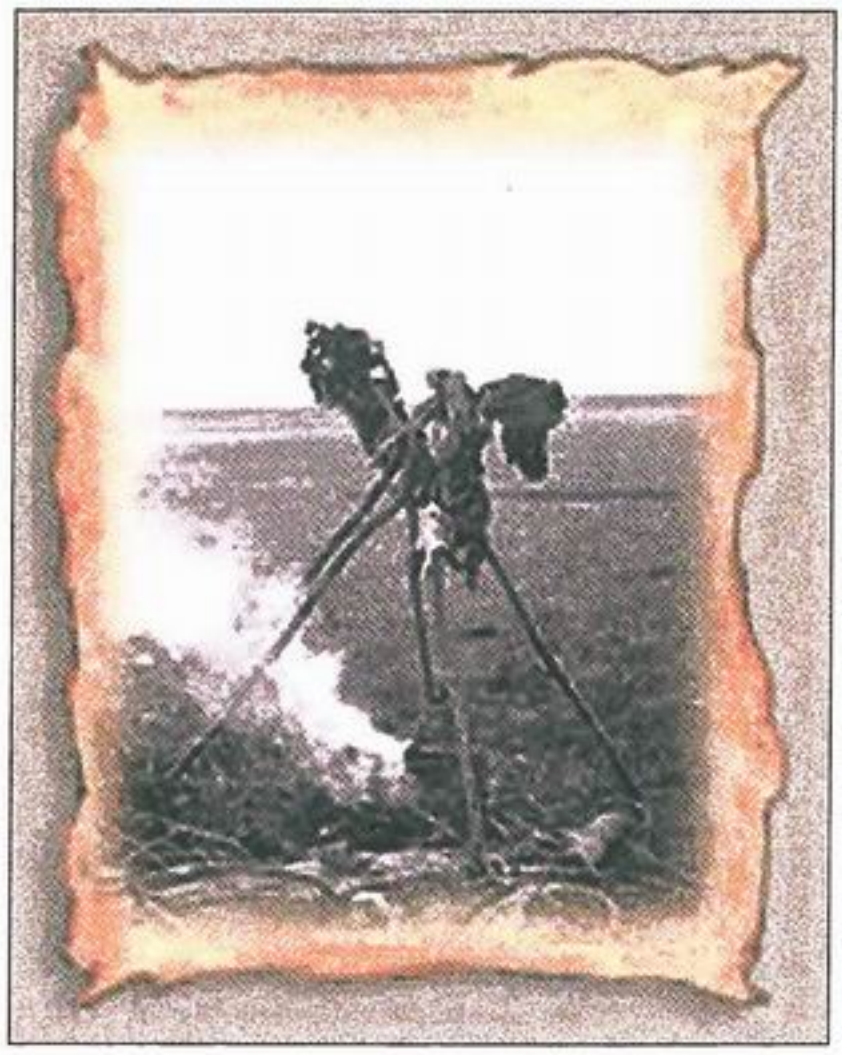

Fig. 11 Drying and smoking rack used by Blackfoot Indians in North America.

An interesting discovery was made in relation to the results of the charcoal analysis. This showed that yew formed a large proportion of wood burnt on the archaeological site (O'Donnell 2009b). The conditions of the local environment are not conducive to the growth of yew and it may have been sourced from Island Mac Téige along with the oak and hazel which was also identified. Typically, charcoal retrieved from *fulachta fiadh* tends to be dominated by oak, which is chosen for its combustion qualities, along with alder, hazel and ash (O'Donnell 2007a, 32). The presence of yew in the charcoal suggests its deliberate collection from elsewhere for a specific reason. This disparity in wood choice, compared to many *fulachta fiadh* of a similar date, may suggest that the purpose of the *fulacht fiadh* differed from others. The idea that this site was different then, may suggest that the location of the *fulacht fiadh* was also carefully chosen. Although it makes good firewood, the yew tree has always been associated with spiritual practises and it was used as a marker for wells or springs. Occasionally, yew artefacts have been found on archaeological sites in Britain and Ireland in the form of bows and spears, such as that in Killoran 237, Co. Tipperary (Cross-May 2005, 266).

Here too there are clues about landscape use. Although the feature required the use of water, it is located within the glacial till where settlement may have been focussed. Thus, the activities carried out here may have differed from those of the previous *fulacht fiadh*. Its location in the settlement or dryland zone suggests an association between the site and the home. Perhaps this *fulacht fiadh* was used for domestic tasks, such as washing, bathing and food preparation. However, its location along the border between wet and dry land, as well as the unusual presence of yew within the charcoal, may add a spiritual dimension to its function.

The elevation of both *fulachta fiadh* is similar (*c.* 1m OD) and they may suggest the lowest depth on which it was possible in the Bronze Age to traverse by foot; lower levels may have been waterlogged. The necessity for the removal of only 0.50m of topsoil from Fields 1-3 may mean that similar sites have evaded discovery and lie buried beneath the reclaimed estuarine mud. Thus it is clear to see that the wetlands in this area formed an integral part of the Bronze Age landscape where evidence for perhaps industrial, ritual and domestic have been found. What is not obvious is whether different parts of the wetlands were viewed differently by the Bronze Age inhabitants of the area.

Boulder clays and cremation pits

The well-drained boulder clays located alongside the wetland areas would probably have been more physically ordered than the wetlands. Here there would probably have been small settlements with fences to delineate private and public spaces. The lands would probably have been divided into separate livestock and agricultural plots, where cattle and sheep were prevented from wandering into the fields of wheat and barley. The latter would have been used as food, fodder, fuel and bedding. In these soils and perhaps close to settlement, the ancestors could also be laid to rest. In the small dryland hills, like Island Mac Téige, it is likely that woodlands would have provided timber for the construction of houses, fences, furniture, sheds etc. as well as fuel for cooking and heating. In these woodlands small animals could have been caught for their meat and pelts, while birds, plants and fungi would have supplemented the diet. These higher areas would also have served as vantage points along the busy alluvial waters. Three medieval charcoal production pits were uncovered in Fields 6 and 7, showing an additional use for Island Mac Téige at a later date (Gilligan 2009b).

No Bronze Age settlement activity was noted during the removal of boulder clays from the dry-land fields, although the necessity of using bulldozers to strip large areas may have obscured the remains of features such as slot-trenches or plough furrows. However, two cremation pits (Site 3) were uncovered in Field 15 as their distinctive charcoal content made them clearly visible (Gilligan 2009b; Fig. 12). Radiocarbon dating of charcoal placed the small funerary site in the Middle Bronze Age (1323-1251cal. BC. UBA 11554). The pits measured *c.*0.50m in diameter and were up to 0.18m deep. They both contained a large amount of cremated human bone (Geber 2009b), while one also contained the tooth of a pig and a sherd of probable Neolithic pottery (Scully 2009). The remains were believed to be that of two individuals aged between 18 and 24 at the time of death. The bones were cleaned prior to their insertion into the cremation pits, showing that a great deal of care was associated with their cremation rites. The inclusion of the pig tooth suggests either some form of body adornment or the addition of an animal carcass to the funeral pyre to aid combustion (O'Donnell 2007b, 108; Geber 2009b). The sherd of Neolithic pottery may throw light on 'family heirlooms' or may even suggest a more blurred division between accepted pottery typologies than is currently accepted.

The cremation pits were located *c.*70m west of the second *fulacht fiadh*. This is interesting for two reasons. Primarily, yew charcoal was also found in large proportions during the charcoal analysis of the cremations (O'Donnell 2009b). While this was unusual for *fulachta fiadh*, it is similarly unusual for cremation pits of the period. Again,

Fig. 12 Mid-excavation view of one of the cremation pits (Site 3).

oak is the preferred wood for cremations, primarily for its combustion properties (O'Donnell 2007b, 112). The analysis of the bone fragments suggests that the yew-fed fire was not hot enough sufficiently to cremate the body (Geber 2009). This may suggest a distinctive choice in fuel-type. As noted earlier, the yew tree has always been associated with spiritual practises and it was used as a marker for wells or springs, particularly those of medieval saints (Bevan-Jones 2002, 147). It has been grown in graveyards for centuries and has been often incorporated into land boundaries. It has also been recorded as having certain magical properties and a distinctive smell when burning (www.tarahill.com). Both the *fulacht fiadh* and the cremation pits close by show a similar choice in fuel-type and although they are separated by *c.*200 years, it may be likely that they are associated through local or family traditions which required the use of a particular type of wood. It suggests that the landscape could have been mapped out through non-tangible local traditions or kinship ties.

A tenuous link between *fulachta fiadh* and cremation pits has previously been made and perhaps this is the case with these sites (Buckley 1999, 26). It may show that the siting of such features were highly specific both to the landscape and to each other. The location of the cremation pits close to the outcrop also suggests a specific choice concerning their location. The outcrop may have been used a marker or it may have represented a shelter for the dead. The occurrence of other cremation pits in similar locations suggests that this part of the landscape held a special place or power. Another Bronze Age cremation pit was excavated just outside the eastern border of the site in boulder clays close to the same outcrop (Cleary 2004). This pit contained fragments of cremated bone and sherds of Beaker pottery. Other cremation sites which demonstrate a similar landscape choice include that of Carrickmines where Reilly uncovered three cremation pits and associated vessels close to weathered limestone outcrop (Reilly 2005, 32). These similarities suggest that distinct choices were made during the assessment of the landscape for burial sites.

Rock outcrops and enclosures

The rock outcrops on the site rose to heights suitable for vantage points over the rich and varied lands, particularly along the busy waters. Rock and soil-built enclosures (RMP LI010:014, LI010:017-19, LI010:021- 25, LI010:072, LI010:075-76 and LI010:108) were also positioned on these parapets in the hinterlands of the mudflats and fens and would have perhaps been used for either a combination of domestic and communal activities, or for more specific purposes. The listed enclosures may have dated to the Bronze Age period; they have not all been excavated however.

Four of these enclosures, (RMP LI010:014, RMP LI010:017-19) were located within the original footprint of the Aughinish Alumina plant and the Phase 1 BRDA in the northern end of Aughinish Island. The latter three were excavated in 1974 prior to construction works (Kelly 1974; Hickey 1974). Two of them measured *c.* 35m in diameter. One site consisted of a bank which was faced internally and externally with limestone slabs and a rubble core. It was constructed on bedrock and lacked any associated postholes, although the ground appeared to have been cleared for a structure of some sort. Pits filled with shells were found and quernstones, pottery and a bronze chisel were among the artefacts retrieved, suggestive of domestic settlement. The other site was located 200m to the southeast of the latter and evidence for a circular structure, 8m in diameter, was revealed as well as pits filled with shells and coarse pottery. A third enclosure may have been used to house animals (Deery 2004). Kelly suggested that the

material culture found here was similar to that of Rathgall, suggesting a similar high status function (Raftery 2000, 41). An additional enclosure (LI010:014), also located within the footprint of the Aughinish Alumina plant, was excavated in 1996 (Byrne 1996). Evidence of a low-banked enclosure was uncovered, but as the site had been much disturbed in antiquity no other features or artefacts were noted. It is not clear whether these sites were used for settlement by a high-status family as suggested by the excavators, or as communal areas where trading, crafts and perhaps ceremonies took place.

There are other enclosures located within 500m of the development site which are probably Bronze Age in date also. Two circular enclosures (RMP LI010:075 and LI010:076) are situated to the south in Dysart Townland, while another two (RMP LI010:021 and LI010:022) are located to the east in Fawnamore townland. The latter is marked as a bivallate enclosure on the 1st Edition O.S and is located roughly 0.5km to the east of the development site; it was constructed on a low summit of outcrop. A test-trench was excavated in close proximity to its exterior, but no archaeological remains were noted (Gilligan 2008). The footprint of the development site is clearly visible from this enclosure. The author was presented with a stone axe by a local landowner, which had been found during the construction of the road to the Aughinish Alumina plant in the 1970s. This road runs directly between the bivallate enclosure and the development site and the axe highlights the intense activity in this area during the prehistoric period. It may have been in use on more than one of the sites mentioned in this text, although it is more likely to have been dated to the earlier stages of the Bronze Age. The artefact was passed on to the National Museum of Ireland.

As noted, enclosure RMP LI010:022 is located close to the *fulacht fiadh* alongside the palaeochannel (Site 2) and the cremation pits excavated by both the author (Gilligan 2009b; Site 3) and Cleary (2004). It has been suggested that while specific sites are found within certain parts of the landscape, they are often thought to be associated, creating a landscape patterned with meaning. Using evidence from Co. Kerry, Connolly (2001) suggests that the *fulachta fiadh* in that area may be associated with embanked enclosures and possible rituals carried out in them. Danaher believes that there may be a relationship between a spread of burnt material in Tonafortes 3, Co. Sligo and a ceremonial enclosure excavated by MacCabe located *c.* 100m to the north (Danaher 2007, 35). It is important to consider that such relationships between the archaeological sites in Aughinish may have influenced the choice for their positions in the landscape.

What seems to be clear from the work carried out in Aughinish is that specific site-types are located in particular parts of the landscape, but together they formed a rich and diverse landscape where each part offered various physical and non-tangible possibilities and potential. The settlers in this area created a living landscape by using each distinct area in a specific manner to form a wide and interlinked land of meaning.

Social

It is easy to attempt the recreation of the physical landscape of Bronze Age Aughinish; however, it is more difficult to understand the social landscape. While all landscapes have imbued memories, no discernible traces are left for us to interpret. It is difficult to surmise how the lands of Aughinish were socially ordered, especially as there may be additional subsurface settlement evidence in the glacial tills beyond the site. Perhaps the landscape was rigidly ordered with social ranking determining access and use of its varied resources; the enclosures physically representative of strict control. Equally, these enclosures may represent a more egalitarian or less controlled society where everyone

had rights to each part of the landscape. It is possible that while all parts of this landscape, from the wetlands to the glacial till to the rock outcrops, were used to their full potential, some may have held a special place in the society for non-tangible purposes which we cannot ascertain from the physical remains.

Conclusions

The archaeological works carried out in Aughinish, Co. Limerick, have resulted in the creation of a large database of information about this landscape in the past. Subsurface and upstanding sites associated with the Bronze Age were the most commonly encountered during the works. The archaeological and geological information gathered have been amalgamated in this paper to attempt to reconstruct the physical Bronze Age landscape. This information has also been used to show how such a distinctive landscape, varying from estuarine and alluvial wetlands to well-drained glacial tills to rock outcrop, was used to its greatest potential to create a place where certain physical and spiritual facets of Bronze Age life could be carried out; from life to death and in between.

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