# Hilary Breck, Wallasey, Wirral
Merseyside

## Palaeoenvironmental Analysis Report

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# SUMMARY

Following the assessment of four environmental bulk samples from Hilary Breck by Oxford Archaeology North (OA North) in 2011, recommendations were made for analysis of the charred plant remains and charcoal. Given the extremely rich assemblages and the clear potential for investigating crop husbandry practices and associated fuel use, OA North was commissioned in June 2012 by National Museums Liverpool Field Archaeology Unit to carry out further processing and analysis of the samples. All four samples came from a pit (***14***), which, based on the rich cereal assemblages and presence of fired clay and oven furniture, has been subsequently interpreted as a corn drier or malting kiln of the classic 'key-hole' construction typical of the Roman and early medieval periods in Britain. Cereal grains from the feature indicate a fifth or sixth century AD date, which, given the paucity of comparative material, especially in north-west England, means the feature, and its associated palaeobotanical assemblages, is of local and regional significance.

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# 1 INTRODUCTION

## 1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 Archaeological investigations by National Museums Liverpool Field Archaeology Unit (hereafter referred to as the client) in 2011 on the site of the land at Hilary Breck, Wallasey, Wirral, Merseyside (centering on SJ 2957 9219) revealed a post-Roman settlement dating to the late fourth to late sixth century AD (Adams 2012). Following the assessment of four environmental bulk samples by Oxford Archaeology North (OA North; *Appendix* 1), taken from a large 'key-hole shaped' pit (***14***), recommendations were made for the full analysis of their charred plant remains and charcoal fragments.

1.1.2 Based on the rich cereal assemblages and presence of fired clay and oven furniture, the pit has been subsequently interpreted as a corn drier or malting kiln of the classic 'key-hole' construction, typical of the Roman and early medieval periods in Britain (Adams 2012). Four cereal grains from the kiln returned dates of cal AD 430-580 (1550±30 BP; Beta-315035), cal AD 420-560 (1570±30 BP; Beta-315036), cal AD 390-540 (1610±30 BP; Beta-315037), and cal AD 430-580 (1550±30 BP; Beta-315038), respectively (Adams 2012), placing the feature firmly in the fifth or sixth century AD. The paucity of comparative material, in north-west England especially, makes the palaeobotanical assemblages from Hilary Breck locally and regionally significant.

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# 2 METHODOLOGY AND QUANTIFICATION

## 2.1 QUANTIFICATION

2.1.1 The four bulk environmental samples came from a corn drier/kiln (***14***). Following the assessment of 2-6 litres of material processed by the client, a further 20-30 litres of each sample was processed by OA North. In order to ensure consistency in the methods used, only the later processed material was included in the analysis.

## 2.2 METHODOLOGY

2.2.1 The material was processed by hand floatation, where the flot was collected onto a 250µm mesh and air-dried. The residue was also dried and checked for any residual organic material and finds. The flots were examined with a Leica MZ6 binocular microscope, during which any charred plant remains were extracted and/or quantified and identified. Other material, such as charcoal, bone fragments, ceramic building material (CBM) and metal waste, was also quantified, using a scale of 1 to 4, where 1 represented less than five items and 4 was more than 100 items. A scan of identifiable charcoal fragments larger than 2mm was also carried out in order to determine the types of wood fuel utilised to heat the feature. Identification was aided by comparison with the modern reference collection held at OA North, and with reference to the *Digital Seed Atlas of the Netherlands* (Cappers *et al* 2006), and Hather (2000). Nomenclature follows Stace (2010).

2.2.2 The results of the analysis were tabulated (see *Section 3.1.1*), and, in order to aid interpretation, weed seed taxa are grouped according to habitat types that broadly correspond to the following ecological groups (after Huntley 2000; Huckerby and Graham 2009; Druce *et al* in prep). It is acknowledged, however, that many taxa may grow in more than one habitat.

1. Ruderals and weeds of arable and cultivated land: includes ruderal plant communities found growing on waste or fallow ground, and annuals found in arable fields and cultivated ground. Ruderal plants are usually perennials or biennials and inhibit the growth of annuals;

2. Grassland plants, to be found growing in open grassland or meadows;

3. Damp/wet ground plants, to be found growing on wet marshy ground, on the banks of rivers, ditches and ponds and in water meadows;

4. Heath/bog: plants that grow on areas of heath or bog, often in acidic conditions;

5. Woodland/scrub plants comprise trees and shrubs, and the ground flora common in woodland clearances and hedgerows;

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6. Plants belonging to broad ecological groupings, which are not characteristic of any one community, but are found in several.

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# 3 RESULTS

## 3.1 RESULTS

3.1.1 The results are given in Table 1, and, as the four samples contained broadly similar assemblages, the results are discussed below in general terms, rather than by individual sample.

| | | **Context No** | **34** | **35** | **36** | **59** |
|---|---|---|---|---|---|---|
| | | Sample No | 4 | 3 | 25 | 5 |
| | | Feature Type | | | | |
| | | Sample Size L | 20 | 20 | 30 | 30 |
| | | Percentage of flot analysed/adjusted | 100 | 100 | 100 | 100 |
| **Cereal grains** | | | | | | |
| *Avena* sp | cultivated/wild oat | | 30 | 120 | 68 | 95 |
| *Hordeum vulgare* hulled | hulled barley | | 224 (90 asymmetrical) | 760 (80 asymmetrical) | 860 | 793 (520 asymmetrical) |
| *Triticum* sp | wheat | | 6 | | 20 | |
| *Triticum* sp | *cf* glume wheat | | 2 | 28 | | |
| *Triticum* sp | *cf* free-threshing wheat | | | 12 | | 10 |
| Indeterminate cereals | | | 310 | 600 | 492 | 1250 |
| **Total cereal grains** | | | **572** | **1520** | **1440** | **2148** |
| Indeterminate cereal fragments* | | | 4 | 4 | 4 | 4 |
| **Identifiable cereal chaff** | | | | | | |
| *Avena* floret base | cultivated oat | | | | | 2 |
| *Hordeum vulgare* rachis nodes | barley | | 2 | | 2 | 2 |
| *Hordeum* rachis internodes | barley | | 1 | | 1 | |
| **Total identifiable cereal chaff** | | | **3** | **0** | **3** | **4** |
| Indeterminate glume base fragments | | | 1 | | | |
| *Avena* sp awn fragments | cultivated/wild oat | | 2 | 1 | 2 | 4 |
| Lemma/palaea fragments | | | | 1 | | |
| Indeterminate chaff fragments | | | | | 1 | 1 |
| **Other cereal remains** | | | | | | |
| Detached embryos | | | | 27 | 56 | 100 |
| Detached coleoptiles | | | | 2 | | |
| **Weed seeds** | | | | | | |
| **Ruderals and arable/cultivated land** | | | | | | |
| *Anthemis cotula* | stinking chamomile | heavier calcareous clay soils | 1 | | | |
| *Brassica* sp | mustards/cabbages | | 4 | 27 | 4 | 17 |
| *Chenopodium album* | fat-hen | | 71 | 65 | 144 | 262 |
| *Fallopia convolvulus* | black-bindweed | | 4 | 3 | 10 | 20 |
| *Fumaria* sp | fumitories | | | 3 | | |
| *Glebionis segetum* | corn marigold | | 1 | | | |
| *Persicaria lapathifolia* | pale persicaria | | 19 | 24 | 27 | 22 |
| *Stellaria media* | common chickweed | | | | | 1 |
| *Spergula arvensis* | corn spurry | calcifuge | 1 | | 8 | 2 |
| **Grassland** | | | | | | |
| *Plantago lanceolata* | ribwort plantain | | 1 | | 1 | 4 |
| Poaceae seeds >4mm | grasses with large seeds | probably poorly preserved oats | 22 | | | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Poaceae seeds 2-4mm | grasses with medium seeds | | 5 | 1 | 5 | 11 |
| Poaceae seeds <2mm | grasses with small seeds | | 6 | 20 | 4 | 15 |
| *Rumex acetosella* | sheep's sorrel | poor, well-drained acid soils | 5 | | 3 | 4 |
| **Damp/wet places** | | | | | | |
| *Carex* lenticular | sedges – two-sided | | | 3 | | |
| *Carex* trigonous | sedges - three-sided | | 1 | 1 | | |
| *Comarum palustre* | marsh cinquefoil | | 1 | | | 1 |
| **Broad Grouping** | | | | | | |
| Asteraceae | daisy family | | | 1 | | 1 |
| *Bromus* sp | bromes | | | | 1 | |
| Fabaceae seeds < 4mm | pea family | associated with decreasing soil fertility | 6 | 3 | 3 | 10 |
| *Galeopsis* sp | hemp-nettles | | | | 3 | |
| *Galium aparine* | cleavers | | | 1 | 5 | 1 |
| *Polygonum aviculare* | knotgrass | | | | 4 | |
| *Rumex* sp | docks | | | 13 | | 3 |
| *Silene* sp | campions | | | | | 1 |
| cf *Verbascum* sp | mulleins | mostly sandy or chalky soils | | | | 1 |
| Indeterminate seeds | | | 9 | 28 | 18 | 44 |
| Unknown seeds | | | 2 | 3 | 2 | |
| **Total weed seeds** | | | **159** | **196** | **242** | **435** |
| **Other charred plant remains*** | | | | | | |
| *Corylus* nut fragments | hazelnut fragments | | | | 2 | |
| Poaceae stem fragments | grass family | | | 1 | | |
| Poaceae stem base | grass family | | 1 | | | |
| Indeterminate buds | | | | | 1 | |
| Indeterminate rhizome fragment | | | | | 1 | |
| Indeterminate nut fragment | | | 1 | | | 1 |
| **Other remains*** | | | | | | |
| Charcoal | | | 4 (mostly oak) | 4 (mostly oak) | 4 (mostly oak) | 4 (mostly oak) |
| Bone (mammal) | | | 1 | | | |
| Calcined mammal bone | | | 1 | | 1 | 1 |
| Ceramic building material | | | | | | 1 |
| Heat-affected vesicular material | | | 3 | 2 | 3 | 3 |
| Metal waste | | | 1 | 1 | 1 | 1 |
| Coal | | | 2 | 2 | 2 | 2 |

All figures are actual counts, except * (other plant remains and other remains), which are scored on a scale of 1 to 4 where 1 = <5, 2 = 6-25, 3 = 26-100 and 4 = >100 items

*Table 1: The charred plant remains and charcoal from Hilary Breck, Wallasey*

3.1.2 All four of the samples contained very abundant cereal grains. Although a large number of the grains were heavily distorted (over 1000 in sample **59**), the better-preserved grains consisted primarily of barley (*Hordeum vulgare*), with a lesser component of oat (*Avena* sp). Many of the barley grains retained fragments of their hulls, and this, together with the presence of asymmetrical grains and diagnostic rachis fragments, suggests that a hulled six-row barley was being cultivated. The morphological similarities of cultivated and wild oat grain means they are difficult to tell apart. However, the presence of a few common oat (*Avena sativa*) floret bases suggests that cultivated oat was also being utilised at the site. The samples contained frequent wheat grains, including a glumed wheat (with glume impressions), probably spelt wheat

(*Triticum spelta*), and a short and plump, probably free-threshing variety, such as bread-type wheat (*T aestivum*).

3.1.3 Cereal chaff was extremely sparse, but occasional oat awn fragments were recorded, along with rare barley rachis and oat florets. The most abundant cereal items, other than grains, were detached embryos, which may suggest that some of the grains had just started to germinate. However, only two detached coleoptiles (sprouts), signifying a more advanced stage of germination, were recorded.

3.1.4 All four of the samples contained abundant charred weed seeds, including taxa typically found growing alongside crops, such as fat-hen (*Chenopodium album*), black-bindweed (*Fallopia convolvulus*), pale persicaria (*Persicaria lapathifolia*), and corn spurry (*Spergula arvensis*). Other notable weed seeds were the ubiquitous weeds of cultivation, stinking chamomile (*Anthemis cotula*), corn marigold (*Glebionis segetum*) and common chickweed (*Stellaria media*), although the numbers of these were low. Both stinking chamomile and corn marigold rarely appear in plant assemblages before the medieval period in northern Britain (Huntley 1999), and therefore their presence at Hilary Breck could be considered relatively early.

3.1.5 A minor grassland component was indicated by the presence of grasses (Poaceae), ribwort plantain (*Plantago lanceolata*), and sheep's sorrel (*Rumex acetosella*) seeds, the latter typical of poor acid soils. Even these, however, may easily be found growing at the edge of cultivated fields, especially following a fallow period (Stace 2010). A few seeds from plants that grow in damp/wet soils, such as sedges (*Carex* sp), and marsh cinquefoil (*Comarum palustre*), were also recorded.

3.1.6 Charcoal was abundant in all of the samples, and a thorough scan confirmed that it was dominated by oak (*Quercus* sp) wood. Other remains were rare and included mammal bone and calcined bone fragments, ceramic building material (CBM - probable kiln lining), metal waste, coal, and heat-affected vesicular material (havm).

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# 4 DISCUSSION AND CONCLUSION

## 4.1 DISCUSSION

4.1.1 The abundant cereal grains associated with the feature at Hilary Breck suggest that it was wholly or partly utilised for drying/roasting harvested crops, and therefore its interpretation as a corn drier or malting kiln, used in the early medieval period, is substantiated. As with many sites of this period, very little chaff was recovered, which is thought to be a consequence of the types of cereals being grown (Hall and Huntley 2007). Unglumed cereals, such as barley and oats, were likely to have had their straw and chaff removed at an early stage during processing (Hillman 1981), which probably took place near the point of harvest (Hall and Huntley 2007). Cereal straw and chaff would have been valuable as thatch, bedding, flooring and fodder (Greig 1991), and was unlikely to have been utilised for fuel (Huntley 2011).

4.1.2 Oats appear to be particularly prevalent in assemblages dating to the early medieval period onwards in northern England, Scotland and Wales (Greig 1991; Huntley and Stallibrass 1995; Carruthers 2010a), which is probably due to it being particularly well suited to the wetter conditions and the shorter growing season of these areas (Moffett 2006). Although there is no obvious regional trend in medieval barley cultivation, like oats, barley appears to have been particularly favoured in Scotland and Wales (Greig 1991; Carruthers 2010a). Hulled six-row barley, like that found at Hilary Breck, is considered to have been the most widely cultivated variety during this period (Moffett 2006; Carruthers 2010a). Although barley is not a demanding crop, it tends to prefer better-drained soils (Carruthers 2010a; 2010b). Its abundance at Hilary Breck, therefore, may suggest that some areas under cultivation were relatively free draining.

4.1.3 It appears that both glumed and free-threshing wheat were also present/being utilised at Hilary Breck, although their low numbers suggest that they may represent the remains of casual invaders of the main crops, or are residual material from earlier phases of activity. Certainly, in north-east Britain, glumed wheat, primarily spelt, is considered to be the dominant wheat crop during the later prehistoric and Roman periods (van der Veen 1992; Huntley 2011). Although free-threshing bread-type wheat has been found in earlier deposits, it is not thought to have become a crop in its own right until the late Roman or Anglo-Saxon period in Britain (Greig 1991; van der Veen 1992; 1994). Its presence at Hilary Breck, therefore, is not unexpected. Bread wheat has many advantages as a crop as it is hardier and more adaptable to weather conditions (Jones 1978). It would have also been well suited to some of the heavy clay soils typical of the region (Carruthers 2010a). Bread-wheat's high yield and ease of threshing (van der Veen 1992) would also have been attractive to early farmers. However, conversely, being quite a demanding crop, it is possible that it was not adopted on a large scale until increased time and resources were available (*ibid*).

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4.1.4 Early medieval sites with surviving archaeobotanical material are rare in Britain, and, even more so in northern England (Hall and Huntley 2007). Indeed, early medieval rural structures and settlements themselves are rare in north-west England (Philpott and Adams 2010). A comparable site to Hilary Breck is Ewanrigg, Cumbria, where oats dominated the fills of a circular stone-feature interpreted as a corn drier, dated to cal AD 790-900 (Huntley 1988). Other comparable sites, by period at least, include Middle Saxon assemblages from West Heslerton, in the Yorkshire Wolds, an Anglian/medieval site at West Cotton, in the Upper Nene Valley (Hall and Huntley 2007; Campbell 1994), and early medieval sites in Chester (Hall and Huntley 2007; OA North 2010).

4.1.5 Material from contexts dated to between the fourth century and *c* AD 900 from Bridge Street, Chester, included occasional charred cereal grains of barley, oats (including cultivated oats) and wheat, including bread/club wheat (Hall and Huntley 2007). An early medieval defensive ditch at Heronbridge produced primarily waterlogged remains indicative of flax retting in the ditch, and the environment of its immediate surroundings. Only a few charred wheat grains were recorded from one of the samples taken from the ditch (OA North 2010).

4.1.6 The palaeobotanical remains from Hilary Breck add to recent data from the immediate locale, from sites at Irby and Moreton, both on the Wirral (Philpott and Adams 2010; Huntley 2011). A pit fill assigned to the fifth to twelfth century AD at Irby was dominated by oats, indeterminate barley grains, bread wheat, and pale persicaria seeds (Huntley 2010a). Charred plant remains from probable pre-Conquest to medieval deposits from Digg Lane, Moreton, including a fill from a clay-lined oven or hearth, produced assemblages dominated by hulled six-row barley, oats and bread wheat. Like Hilary Breck, rye was absent, but the samples contained a number of glumed wheat grains, tentatively identified as spelt wheat (Huntley 2011).

4.1.7 Oats and barley, or dredge (oats and barley grown together), would have most likely been used for bread, ale, or fodder (Hammond 1995; Carruthers 2010a), and as such would have been oven-dried at various stages in their preparation. Oats and barley require drying before consumption, and oats, in particular, tend to be harvested prior to ripening (and therefore retain quite a bit of moisture). Both crops are also parched to aid the removal of their husks (Carruthers 2010a). Other taphonomic routeways for charred material in such contexts are that the grains were being oven-dried prior to bulk storage (Hillman 1981; van der Veen 1989), or that the cereal remains represent processing waste being used as fuel. Although three of the samples from Hilary Breck contained detached embryos, which suggest a number of the cereal grains may have just started to germinate, the lack of sprouted grains or detached sprouts in the assemblages does not support an interpretation of malting in this instance. That is not to say, of course, that the kiln was not used for malting at some point during its use.

4.1.8 The accompaniment of abundant crop weeds with the cereals is notable, especially given that other crop-processing waste was relatively sparse. An oat-rich assemblage found in a medieval kiln/oven from Wigan also contained

extremely abundant crops weeds, dominated by corn marigold. However, that assemblage also produced abundant oat chaff, and was therefore interpreted as representing the remains of a very weedy crop of oats being dried in their sheaves (OA North 2011). The early medieval oats at Ewanrigg, were accompanied by numerous corn spurrey seeds, which is a very common weed of modern oat crops in northern Scotland (Huntley 1988).

4.1.9 Prior to modern methods of farming and the advent of herbicides, arable fields were likely to have supported a considerable array of arable weeds. Some, such as fat-hen and corn spurrey, however, which are both rich in carbohydrate, may have been tolerated by farmers, especially after a poor harvest (Hillman 1981; Huntley 1988: Stokes and Rowley-Conwy 2002; Moffett 2006). Black bindweed (*Fallopia convolvulus*), which was recorded in all of the samples from Hilary Breck, is, in particular, indicative of spring barley, as are common chickweed and knotgrass (Campbell 1994). Similar crop weeds from a late Saxon deposit at West Cotton (*ibid*), and a medieval kiln at New Squares, Penrith, Cumbria (Zant in prep), were also associated with possible spring-sown crops, comprising possible dredge.

4.1.10 In essence, the suite of crop weeds from Hilary Breck does not exclude local cultivation. The soils of the area are sandy (Adams 2012), and corn spurry, like fat-hen, prefers sandy, well-drained soils, as does mullein (*Verbascum* sp), which was also tentatively identified. Recent pollen data from a Romano-British enclosure ditch at nearby Irby indicate an open grassland landscape, with evidence of cultivation in the form of cereal-type pollen grains and pollen from a number of arable weeds, such as cornflower (*Centaurea cyanus*) and, most significantly, corn spurrey and knotgrass (Innes 2010).

4.1.11 The charcoal evidence from Hilary Breck suggests that oak was the chosen wood for heating the corn drier, a good choice, given that seasoned oak is regarded as a superior fuel, often associated with other industries, such as pottery production or smithing (Edlin 1949; Gale 2007). Although a little metal-working waste was recorded at the site, there was no other surviving evidence to suggest that the corn drier was being used for anything other than drying/roasting corn. Oak appears to have been the favoured fuel wood to heat medieval corn driers at Penrith, Wigan, and Audlem, Cheshire (Zant in prep; Huckerby 2003; OA North 2011), whereas oak and alder appear to be the dominant wood types used for the medieval oven/kiln at Mitchell's Brewery, Lancaster (Huntley and Huckerby in prep).

4.1.12 The extent of existing woodland cover in the area during the early medieval period is unclear, the majority of the later peat deposits in Merseyside having been removed by peat cutting and subsequent erosion (Innes and Tomlinson 1991; Cowell and Innes 1994). The pollen data from Irby certainly indicate a deforested, mixed farming landscape (Innes 2010), which is consistent with a Roman-period date, when extensive woodland clearance appears to have occurred in the Merseyside area (*ibid*). As such, any surviving pockets of oak woodland are likely to have been highly valued as wood-pasture, for timber, and 'industrial'-level fuel use (Huntley 2010b). Domestic fuel may have been collected locally from woodland floors, or may represent the by-product from other industries/manufacturing. Indeed, it is also possible that ready-prepared

charcoal was used to fuel kilns/corn driers, which, given the reduced smoke levels and ease of control (Edlin 1949), may have been preferable in terms of the activity itself and the taste of the end product.

## 4.2 CONCLUSION

4.2.1 The palaeobotanical evidence from Hilary Breck suggests that the feature may have indeed been a kiln/corn drier. Given the lack of evidence for malting, in this instance the material is more likely to represent cereals being dried prior to milling or storage, rather than being roasted for malt. Like other early and later medieval sites in northern England, Wales and Scotland (see *Sections 4.1.2* and *4.1.6*), the evidence from Hilary Breck indicates a dominant crop of probable spring-sown barley with a sub-component of oat. Both crops were likely to have been cultivated locally, barley being particularly well suited to the local sandy soils (see *Section 4.1.2*). The higher occurrence of bread wheat and stinking mayweed seeds at nearby Moreton however, suggests that both sandy and clay soils were under cultivation in the locality during the pre-conquest or medieval period (Huntley 2011).

4.2.2 The charcoal evidence from Hilary Breck suggests that oak wood was the preferred fuel for the corn drier. Oak woodland was likely to have been highly valued during this period; it is plausible, therefore, that the material was collected from woodland floors or represents a by-product from some other form of manufacturing. It is also possible that charcoal was used to fuel the corn drier, although this is impossible to prove.

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# APPENDIX 1: REPORT FOR THE ASSESSMENT OF THE CHARRED PLANT REMAINS

## A1.1 INTRODUCTION: CIRCUMSTANCES OF THE PROJECT

A1.1.1 Archaeological investigations were undertaken in 2011 on the site of land at Hilary Breck, Wallasey, Wirral, Merseyside (centring on SJ 2957 9219), west of St Hilary's Church. The site lies within the historic core of Wallasey. Oxford Archaeology North (OA North) was asked by the National Museums Liverpool (hereafter referred to as the client) to undertake the assessment of four flots and residues from environmental bulk samples.

A1.1.2 The site was excavated in 2011 by National Museums Liverpool. Bulk samples were taken by the excavators from a large pit in Trench VIII and two litres from each were processed by hand flotation by the client. The flots and residues were submitted to OA North for the assessment of charred plant remains.

## A1.2 METHODOLOGY AND QUANTIFICATION

A1.2.1 Four bulk environmental samples were taken by the excavators, three from a pit in Trench VIII and the fourth from Trench X. Table 1 shows the details of the samples assessed. The client processed the samples and the flots and residues were submitted to OA North for assessment.

| Sample no | Context no |
|---|---|
| 3 | 35 |
| 4 | 34 |
| 5 | 59 |
| 25 | 36 |

*Table 1: Environmental samples assessed from Hilary Breck, Wallasey, Merseyside*

A1.2.2 The flots were scanned with a Leitz/Wild stereo microscope, plant material being recorded on a scale of 1-5, where 1 represents five items or less and 5 is more than 100 items, and the material was provisionally identified. The matrix components were also noted and the residues were examined. Plant nomenclature follows Stace (1997).

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## A1.3 RESULTS

A1.3.1 Flots were <10ml to 75ml in volume (Table 2). They were very rich in charred plant remains, including material from crops. Frequent or abundant charred cereal grains were recorded in all the samples, and barley (*Hordeum*), emmer/spelt wheat (*Triticum dicoccum/spelta*), bread wheat (*Triticum aestivum*) and oats (*Avena*), together with indeterminate grains, were identified. Crop-processing waste, in the form of barley glumes and an oat awn, were recorded in fills *36* (Trench X) and *59* (Trench VIII). A few possible cultivated legumes were identified in fill *34* (Trench VIII) and occasional fragments of hazelnut shell (*Corylus avellana*) were recorded in fills *34* and *36*.

| **Trench and context no** | **Sample no** | **Flot size ml** | **Matrix** | **Charred plant remains** | **Potential for analysis** | **Potential for dating** |
|---|---|---|---|---|---|---|
| Trench VIII ***35*** | 3 | <10 | Charcoal >2mm (2), <2mm (4), modern roots, wood and seeds, sand, coal | Cereals (4) *Hordeum, Triticum* sp, *Avena* and undifferentiated. Weed seeds (3), including *Brassica, Chenopodium album, Chrysanthemum segetum,* and Poaceae with seeds >4mm | High | Yes |
| Trench VIII ***34*** | 4 | <10 | Charcoal >2mm (5), <2mm (2), *Quercus, Corylus*/*Betula*/*Alnus,* modern roots and seeds, sand | Cereals (5) *Hordeum, Triticum* sp, *Avena* and undifferentiated *Corylus* nut fragment (1), cultivated legumes? (1). Weeds (5), including *Bromus, Rumex acetosella, Persicaria lapathifolia* and *Stellaria media* | High | Yes |
| Trench VIII ***59*** | 5 | 75 | Charcoal >2mm (2), <2mm (2), *Quercus* and *Quercus* roundwood, charred stems, modern roots and seeds, sand | Cereals (5) *Hordeum, Triticum* sp, *Avena* and undifferentiated. Crop-processing waste (1), *Hordeum* glumes. Weed seeds (5), including Poaceae with seeds >4mm, *Bromus*, *Rumex* sp, *Polygonum aviculare*, *Chenopodium album*, *Persicaria lapathifolia, Galium* sp and *Stellaria media* | High | Yes |
| Trench X ***36*** Bags 1, 2 and 3 | 25 | 40 | Charcoal >2mm (4), <2mm (4), *Quercus,* charred stems, modern roots, wood and seeds, sand, coal | Cereals (5) *Hordeum, Triticum* sp, *Avena* and undifferentiated. *Corylus* nut fragment (1), cultivated legumes? (1) Chaff (1). Weeds (5), including *Bromus, Rumex acetosella, Persicaria lapathifolia, Galium* sp and *Stellaria media* | High | Yes |

Quantification based on a scale of 1 to 5 where 1 = less than 5 items, 2 = 6-25 items, 3=7-50 items, 4=51-100 items, and 5=more than 100 items

*Table 2: Hilary Breck, Wallasey: assessment results of the charred plant remains and charcoal*

A1.3.2 Significant numbers of charred weed seeds were recorded in the four samples. The assemblage of weed seeds included arable weeds and plants of cultivated or waste ground, for instance, fat-hen (*Chenopodium album*), corn marigold (*Chrysanthemum segetum*), pale persicaria (*Persicaria lapathifolia*), and knotweed (*Polygonum aviculare*). Some grassland plants, such as sheep's sorrel (*Rumex acetosella*) and grasses (Poaceae) with large seeds (>4mm) and medium seeds (2-4mm), were recorded, together with taxa from broad ecological categories, for instance, brome grasses (*Bromus*), small legumes, and bedstraws (*Galium* sp). No plants of wet ground were observed when the flots were scanned.

A1.3.3 Charcoal was identified in all samples, and oak (*Quercus*) dominated, with some hazel/birch/alder-type (*Corylus*/*Betula*/*Alnus*) and other taxa recorded. Some roundwood was noted and charred herbaceous stems were observed. The preservation of the charcoal was mixed and the fragments varied in size from greater than 2mm to less than 2mm in size.

A1.3.4 Modern roots and seeds were recorded in all the samples assessed. Sand particles were present, together with small amounts of coal.

## A1.4 DISCUSSION

A1.4.1 The assessment of the environmental samples for charred plant remains from a pit at Hilary Breck, Wallasey, Merseyside, demonstrates that there is a considerable potential for analysis and AMS dating. The lower fill (*59*) contained the richest assemblage of charred plant remains but, compared with many sites from north-west England (Hall and Huntley 2007), all four samples were exceptionally rich in such remains.

A1.4.2 Hulled barley was the major cereal crop identified in the samples from the site but wheat, including bread wheat, and oats were also recorded. A little crop-processing waste was recorded in fills *59* and *36*, with oat awns in the former and barley glume in the latter. Nearby, at Irby, Wirral, barley was a main crop in the Roman period (Huntley 2010), but, as Hall and Huntley (2007) suggest, it is still unclear whether barley was used for human consumption or for fodder.

A1.4.3 Charred weed seeds were plentiful in the four samples and included a number of different plants. The weed seeds suggest that there were areas of cultivated, waste ground and grassland, but there is little evidence for wet ground. Corn marigold in fill *35* is suggestive of a Roman or medieval date for the feature.

## A1.5 RECOMMENDATIONS

A1.5.1 It is recommended that the remainder of the four samples should be processed and analysed for charred plant remains. It is also recommended that the charcoal from fill *34* (sample 4) should be analysed to provide information about the use of wood on the site.

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## A1.6 ACKNOWLEDGEMENTS

A1.6.1 The samples were processed at National Museums Liverpool. The assessment of the charred plant remains was undertaken, and the report compiled, by Elizabeth Huckerby, who managed the project with Alan Lupton.

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