

# A medieval grain-drying kiln and earlier mill-lade at Lhanbryde, Moray

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with a contribution by Timothy G Holden

## ABSTRACT

*The remains of a series of ditches at Lhanbryde are interpreted as the remains of a mill-lade system. The northern end of the lade subsequently contained the remains of a possible grain-drying kiln from which burnt oats and a sherd of pottery indicate an 11th- to 13th-century date. The project was funded by the National Roads Directorate via Historic Scotland.*

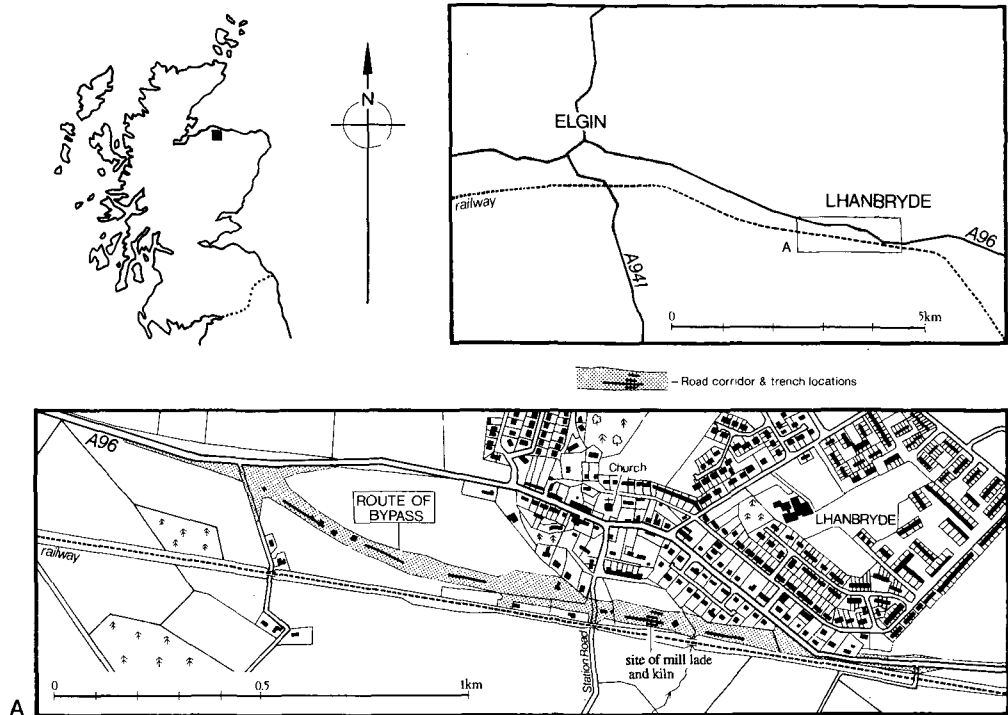
## INTRODUCTION

The Centre for Field Archaeology undertook an archaeological assessment, excavation and watching brief at Lhanbryde, near Elgin, in 1994 prior to the construction of the A96 Lhanbryde Bypass (illus 1). The work was funded by the National Roads Directorate of The Scottish Office and managed on its behalf by Historic Scotland. A number of isolated features were recorded along the route of construction but the majority contained no artefacts and there was no indication of their function or date (Alexander 1996). However, in the field to the south of the village and to the east of Station Road, sealed below a deep topsoil and buried ploughsoil, was a series of ditches, interpreted here as a mill-lade system. Built into the northern end of the disused mill-lade were the burnt remains of a grain-drying kiln of medieval date (NGR: NJ 2726 6104).

## MILL-LADE

The mill-lade was located c 80 m east of a later, 19th-century mill-lade which led to a pond supplying a woollen mill in Lhanbryde (illus 2). The remains were uncovered in Trench 9 during the archaeological assessment, and were further investigated by the excavation of Trenches A, B and C, and during the subsequent watching brief (illus 1 & 2). The ditches were sealed below c 0.7–1.2 m of ploughsoil. They comprised two narrow, iron-panned ditches (Ditches 1A & 2A) cut into the sandy subsoil, which led into two wider and deeper ditches (Ditches 1 & 2) to the north-east (illus 3). Ditch 1A was up to 1.95 m wide and 0.25 m deep while Ditch 2A was 1.65 m wide and 0.35 m deep. The fine silty fills of these ditches, together with the iron-panning along their sides, is consistent with gradual silting of open channels owing to running water. Two patches of stiff pink clay located below ploughsoil beside Ditch 2A may indicate that this ditch was originally luted with clay.

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ILLUS 1 Location maps. (Based upon the Ordnance Survey map © Crown Copyright)

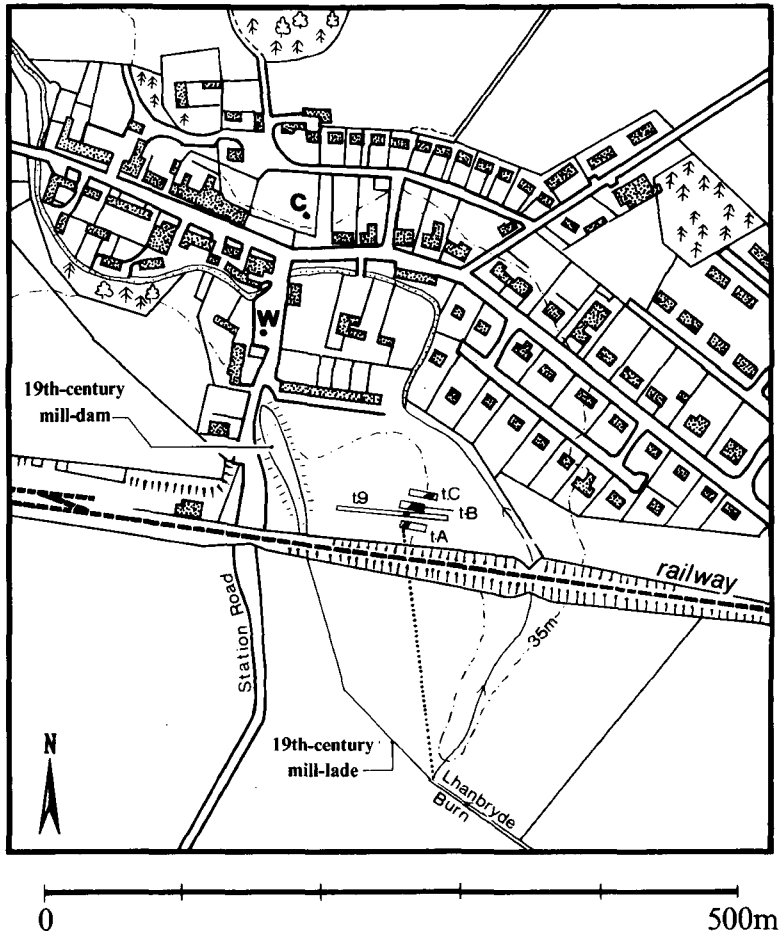
The pairs of ditches suggest that the remains may represent two phases of construction, although it was impossible to determine the sequence. Ditch 1 and Ditch 2 combined to form a large elongated mill-pond, c 25 m long and up to 8 m wide. The pond varied between 0.7 m and 1.3 m deep. At its north-eastern end the pond narrowed to 2 m wide and continued outwith the Trench C excavation area to the north-east. This is presumably the position for a sluice gate to control the outflow of water from the pond. At this point the present ground surface slopes downwards in a north-easterly direction, forming a slight terrace to the south

of the existing burn. If this series of ditches was used to supply water for a mill then the area just outside the road corridor, to the north-east, would be the probable site of the mill (illus 3). The Lhanbryde Burn turns to the north-west at this point and this would have allowed the water from the mill to be returned to the stream here.

The fills within the pond suggest that the lower portions of the lade silted up over time before the upper portion was infilled more rapidly by loam ploughsoil (illus 4). The only finds from these fills were a number of pieces of iron slag and some animal teeth.

#### GRAIN-DRYING KILN

Trench C revealed four distinct layers within the north-eastern terminal of the pond. The base was lined with thick yellow clay, part of which had been burnt (illus 5.1). This hardened, black and red burnt patch of clay formed a single concentrated area (which continued beyond the excavation) and indicates the position of a fire. A single plain body sherd of 12th- or 13th-century pottery was located to the east of this clay layer. Both the clay and the pot sherd were covered in an even layer of carbonized seeds (illus 5.2, burnt seed deposit 1), the majority of which are

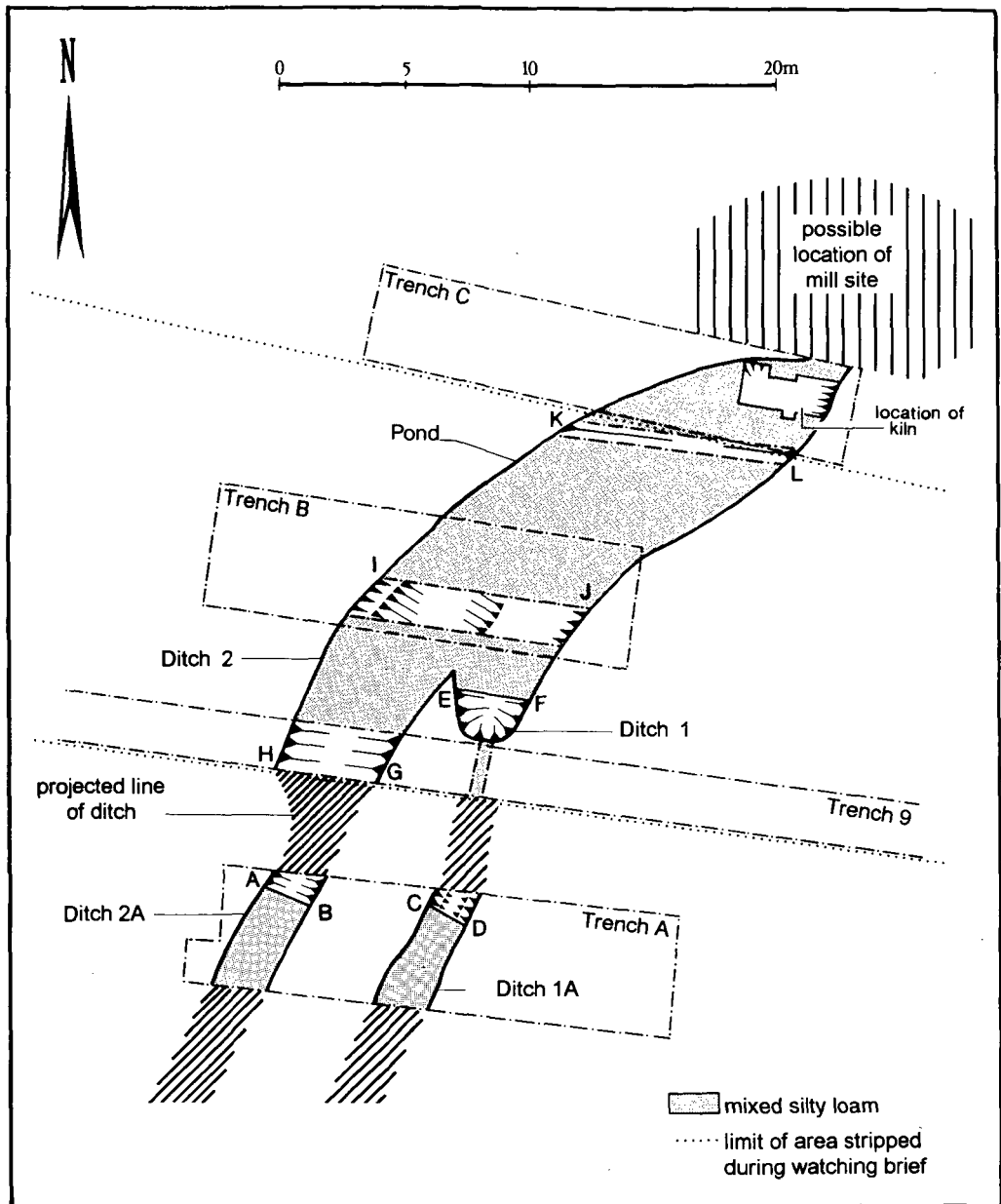


- C** - site of church  
**W** - site of 19th-century woollen mill  
 ..... - postulated line of medieval lade

ILLUS 2 Location of excavation trenches and mill lades

identified as oats (see below). The carbonized remains spread down the south-eastern side of the pond (illus 5.2, burnt seed deposit 2). This latter deposit appeared on examination in the field to be slightly different in character with a more fibrous content. Laboratory analysis of the seed types present in the two layers supported this observation (see below). The seeds produced the following radiocarbon date:

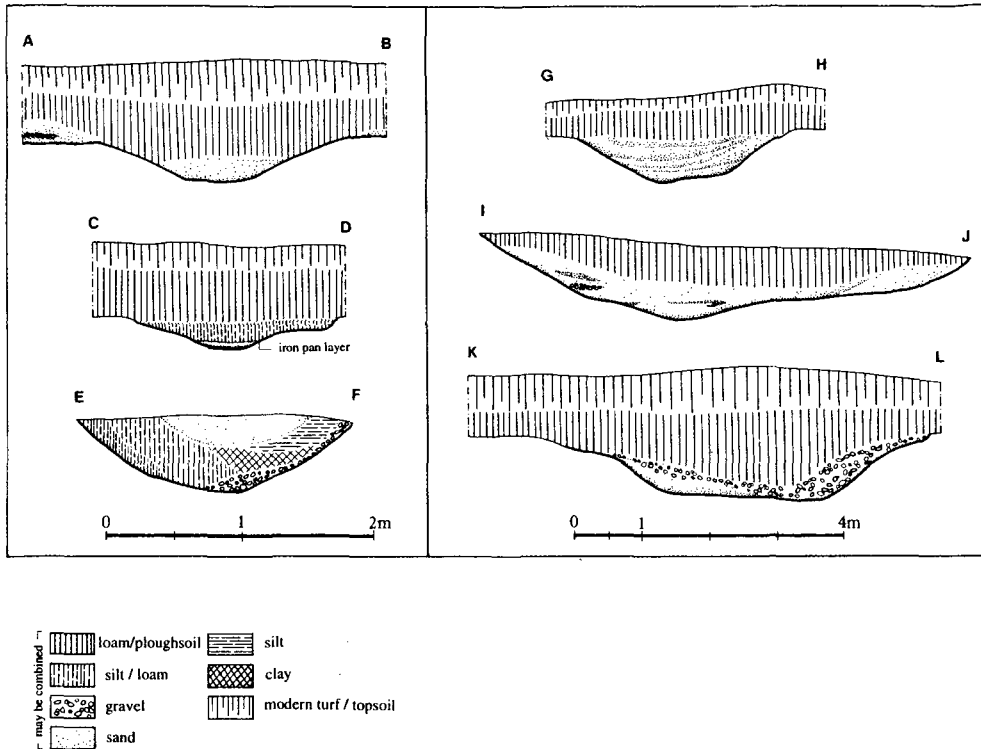
| LAB No  | MATERIAL DATED   | BP       | $\delta^{13}$ (‰) |
|---------|------------------|----------|-------------------|
| GU-4371 | <i>Avena</i> sp. | 830 ± 50 | -28               |



ILLUS 3 Plan of mill lade and location of kiln

The calibrated results from these samples produced a two-sigma calibrated range of AD 1042–1270 (following Stuiver *et al* 1993). A thick layer of burnt wattle (mostly hazel and oak) and burnt daub sealed these layers of carbonized seeds (illus 5.3).

After this episode of burning the north-eastern terminal of the pond silted up. As this process of silting occurred, two pits, each containing a large undressed stone, were cut into the accumulating silt and through the layer of burnt wattle and daub (illus 5.3, pits A & B). The



ILLUS 4 Sections through mill lade

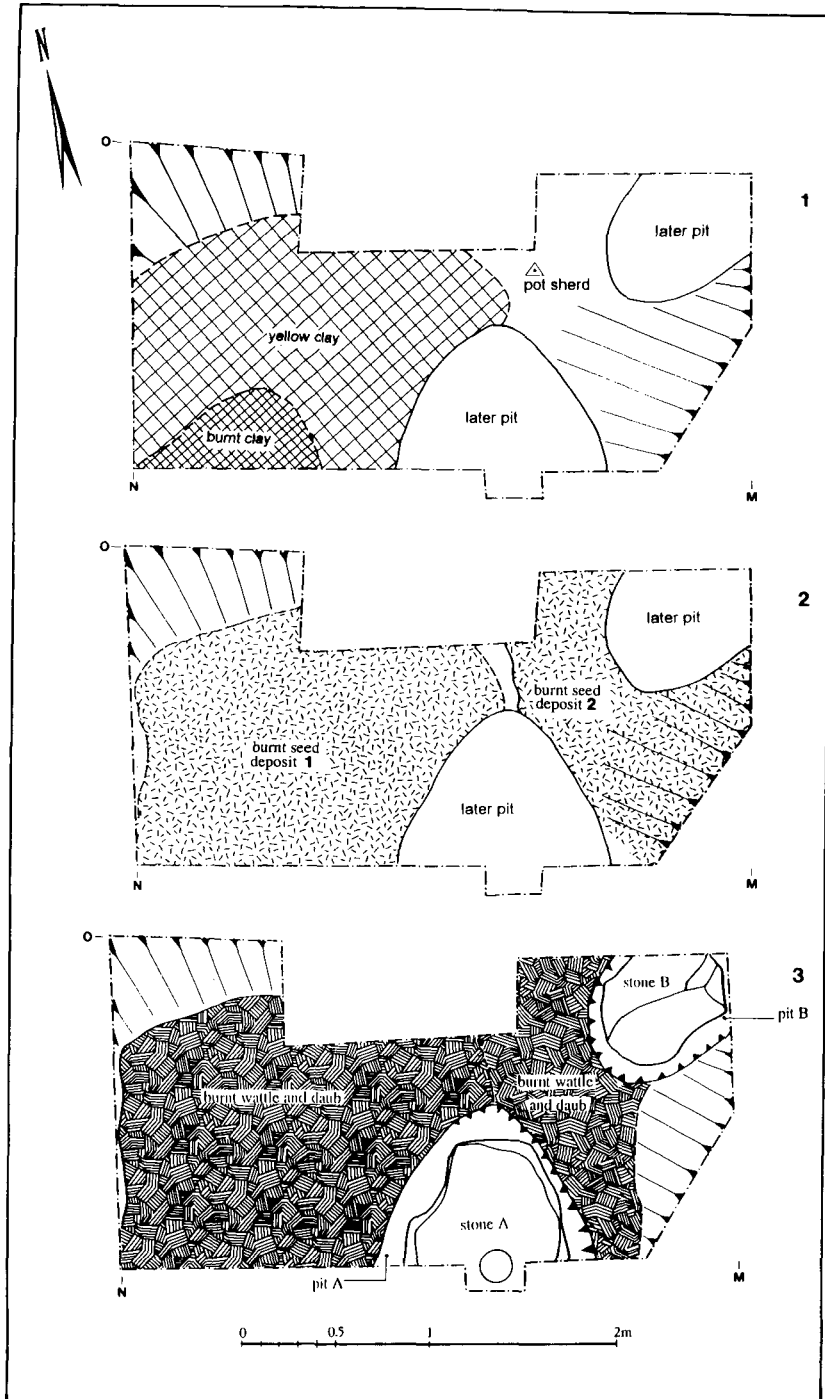
larger of the two stones (stone A) was 0.76 m long, 0.87 m wide and 0.30 m thick as exposed. A cylindrical hole 0.15 m in diameter and 0.20 m deep was cut into the middle of the upper surface. There were no remains within this socket to suggest what its function had been. The horizontal positioning of the stone with the hole facing upwards suggests it was placed there for a purpose, although the other stone, without a socket, argues against this and they may simply have been buried to prevent them being struck during ploughing. It is possible that both stones may have been deposited following demolition of the adjacent mill.

THE CARBONIZED PLANT REMAINS

Timothy G Holden

The samples from the two layers of burnt seeds (1 & 2) were processed and sorted at the Centre for Field Archaeology. Identifications were made using modern comparative material from the collection of AOC (Scotland) Ltd. The results are presented in Table 1 (below).

Both samples were dominated by the grains of oat (*Avena* sp.), a number of which were still held within the enclosing hulls (lemma and palea). This latter category of whole florets enabled the identification of the oats to the black oat (*Avena strigosa* Schreb.). This implies that the majority of the naked grains were also of this species. In addition to the grains and florets considerable quantities of the lighter chaff elements such as lemma, palea, and awn fragments were present, indicating that when charring occurred much of the crop was still in the form of florets.



ILLUS 5 Sequenced plans of deposits in kiln earliest to latest (1-3)

Other cereals were present in burnt seed deposit 2 only; these included hulled barley (*Hordeum vulgare* — hulled), rye (*Secale cereale* L.) and bread/compact wheat (*Triticum aestivo-compactum*). Of these, barley grain was the most common, but because of the highly vesicular nature of the grain most of this could not be identified beyond the level of indeterminate cultivated barley.

Weed seeds (here used to include seeds, fruits etc) were recovered from both samples. From deposit 1 they consisted of considerably less than 1% of the total number of identified items but from layer 2 they amounted to approximately 45%. They are most likely to have been harvested along with the cereals and represent contaminants remaining in the part-processed product. They provide some evidence, therefore, for agricultural field ecology. The species present are typical components of an arable weed flora. A variety of different ecological tolerances are noted with species such as corn spurrey (*Spergula arvensis*) indicative of moderate to acid soils with a good to average nutrient supply. Fat hen (*Chenopodium album* L.) is more prevalent on nitrogen-rich soils while sheep's sorrel (*Rumex acetosella* L.) is more commonly associated with acidic, nutrient-deficient soil and poor arable land (eg Hanf 1983). Both corn spurrey and fat hen are common weed elements in spring-sown cereals including barley and oats. The differing ecological preferences of these seeds might well reflect differing patches of soil quality within the same field or could indicate that the crops were being brought to the site from fields of varying fertility.

TABLE 1

Summary of carbonized plant remains

| Latin name   | Plant part     | Common name                                | Deposits  |         |
|--|----------------|--|-----------|---------|
|  |                |  | 1<br>2.5L | 2<br>3L |
| <i>Polygonum persicaria</i> / <i>lapathifolium</i> | nutlet         | <i>persicaria</i> / <i>pale persicaria</i> |           | 7       |
| <i>Bilderdykia convolvulus</i> (L) Dumort          | nutlet         | black bind weed                            |           | 10      |
| <i>Rumex acetosella</i> agg.                       | nutlet         | sheep's sorrel                             |           | 4       |
| <i>Rumex</i> sp.                                   | nutlet         | dock                                       |           | 1       |
| <i>Chenopodium album</i> L.                        | nutlet         | fat hen                                    |           | 117     |
| <i>Spergula arvensis</i> L.                        | seedcorn       | spurrey                                    | 7         | 16      |
| <i>Raphanus raphanistrum</i> L.                    | siliqua        | wild radish/charlock                       | 2         | 1       |
| cf <i>Raphanus</i> sp.                             | seed           | wild radish/charlock                       |           | 2       |
| <i>Galium aparine</i> L.                           | fruit          | cleavers                                   |           | 1       |
| <i>Galeopsis tetrahit</i> agg.                     | nutlet         | common hemp nettle                         |           | 6       |
| cf <i>Plantago lanceolata</i>                      | seed           | ribwort plantain                           |           | 2       |
| <i>Triticum aestivo-compactum</i>                  | caryopsis      | bread/club wheat                           |           | 1       |
| <i>Triticum aestivo-compactum</i>                  | sprouted grain | bread/club wheat                           |           | 1       |
| <i>Secale cereale</i> L.                           | caryopsis      | rye  |           | 3       |
| cf <i>Secale cereale</i>                           | caryopsis      | rye  |           | 2       |
| <i>Hordeum vulgare</i> indet.                      | caryopsis      | barley indet.                              |           | 15      |
| cf <i>Hordeum vulgare</i> indet.                   | caryopsis      | barley indet.                              |           | 4       |
| <i>Hordeum vulgare</i> (hulled)                    | caryopsis      | hulled barley                              |           | 1       |
| <i>Avena strigosa</i> Schreb.                      | floret         | black oat/bristle oat/small oat            | 247       | 4       |
| <i>Avena</i> sp.                                   | awn            | oat  | ++        | +++     |
| <i>Avena</i> sp.                                   | caryopsis      | oat  | 3557      | 176     |
| <i>Avena</i> sp.                                   | lemma/palea    | oat  | +++       | +       |
| <i>Gramineae</i> indet.                            | caryopsis      | grass indet.                               |           | 5       |
| Cereal indet.                                      | culm node      |  |           | 1       |
| Indeterminate                                      | seed           |  |           | 11      |

With regard to the cereals, black oat, bread/compact wheat, hulled barley and rye all have precedents from other medieval sites in Scotland (Boyd 1988) and are not unexpected for this period. The dominance of black oat followed by hulled barley is also in keeping with the known importance of these cereals between the 11th and 13th centuries. Wheat and rye are less common

components and, as argued by Boyd (1988), might reflect, to some extent, the presence of particularly productive agricultural areas on parts of the coastal strip of eastern Scotland.

The mixture of crop species in burnt seed deposit 2 can be interpreted in two ways: either they were growing together in the fields or they were mixed after the harvest. The evidence from burnt seed deposit 1, by contrast, indicates that a crop of pure oats was being processed. The deposit 2 assemblage, therefore, is probably best interpreted as a crop of oats into which odd grains of barley, rye and wheat had become mixed during processing, storage or deposition. The presence of a much higher percentage of weed seeds in this latter context probably represents a crop less rigorously cleaned prior to charring. It is also possible that the two samples represent crops from different sources (producers) or crops destined for different uses (eg animal food rather than human food).

## DISCUSSION

The excavation at Lhanbryde revealed the remains of a mill-lade and a grain-drying kiln, both of which reflect medieval milling practices in the area. At the western end of the field the line of a further elongated pond feeding a woollen mill in Lhanbryde is recorded on the 1st edition Ordnance Survey map for this area (surveyed 1870–1, published 1874). This was located in the field by trial trenching. It is possible that such long thin mill ponds are characteristic of this part of Moray, perhaps resulting from the local topography. The earlier example discussed here was not marked on any map coverage. It was sealed by a deep deposit of buried ploughsoil and its course was truncated by the construction of the railway line in the early 19th century. The only finds recovered from the buried ploughsoil consist of two sherds of medieval pottery, perhaps 14th century in date (George Haggarty, pers comm) and a continental imitation of an English silver penny of late 13th- or 14th-century date (Holmes *in* Alexander 1996).

A broad *terminus ante quem* for the mill-lade is provided by the calibrated radiocarbon determination, the pottery evidence and the coin. These combine to suggest that the grain-drying kiln dated to between the 11th to 13th centuries. As discussed above, the mill, fed by this lade, must have been situated outwith the road corridor and only further excavation might be able to determine its form.

The charred remains may represent the debris from a corn-drying kiln which had burnt down. The composition of the samples would certainly be compatible with this interpretation. The oat crop was evidently in the form of florets (ie still hulled) and is very similar to that presented by Fairweather (1988) from the corn-drier at the site of Capo, Kincardineshire. Based upon ethnographic evidence, Fairweather relates that oats were usually stored in the form of florets if they were to be threshed and also that parching was usually undertaken in the removal of the hulls for milling. The dominant oat crop from Lhanbryde is most likely, therefore, to have become charred either as a kiln structure was accidentally burnt down while the crop was being prepared for storage, or during parching prior to the removal of the hulls. If this is the case then the barley, wheat and rye recovered from burnt seed deposit 2 probably represent traces of previous crops that had been dried prior to storage, in the same kiln. The accidental burning of crops during kilning was, by all accounts (Fenton 1978), a relatively common occurrence in the past.

Medieval grain-drying kilns have been found at Abercairny, Perthshire and Capo, Kincardineshire, producing dates as early as the 11th and 13th centuries (Gibson 1988). These keyhole-shaped kilns had stone-flagged floors with superstructures mainly of turves. Although the form and alignment of the kiln at Lhanbryde remains unknown, the evidence suggests some



form of wattle-and-daub superstructure, with a clay floor, set into the partly infilled remains of the mill pond. This use of lighter organic materials rather than stone for the superstructure of grain-drying kilns is not inconsistent with the evidence from Abercairny and Capo.

Unfortunately there is very little documentary information regarding the early history of Lhanbryde (Jim Inglis, pers comm) which could confirm the presence of a mill at this time. Since there is no evidence for a motte or even a later stone castle in the vicinity until the construction of the 16th-century tower at Coxton, it is likely that Lhanbryde was an ecclesiastical land holding, as its name (church of St Bridget) suggests. The village was probably focused on the church with a mill situated on the outskirts of the settled area. The lade and pond are at least indicative of the presence of a mill, although its site was not located. Generally, medieval mills have proven elusive to archaeologists which is surprising given that they must have been, along with castles and churches, a ubiquitous feature of the feudal system in the landscape of medieval Scotland.

## ARCHIVE

An archive of the project records has been deposited with the National Monuments Record of Scotland. The finds have been reported to the Treasure Trove Advisory Panel for allocation to an appropriate museum.

## ACKNOWLEDGEMENTS

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