# 4 ARCHAEOLOGICAL RESULTS

### *4.1 The excavation*

The excavation proceeded by removing the vegetation and peat deposits which covered the road, followed by the excavation of the road and its underlying deposits until undisturbed natural subsoil was encountered. The deposits and archaeological features were found within a palaeochannel which appeared to have formed by the action of water running downslope (illus 1). The following archaeological results are described in stratigraphical sequence starting with the lowest layers (illus 3–5).

The natural subsoil was a pinkish-red silty clay with angular stone inclusions within which were patches of bluish-grey silty clay. A palaeochannel had been cut through the subsoil which measured *c* 70m wide on the north-eastern upslope side, narrowing to *c* 35m on the south-western downslope side of the study area (illus 1).

Running through the middle of the palaeochannel was a cut for a probable streamlet (125) which could be seen in the north-west facing section (illus 3 and 5, Section A–A1). The streamlet had been infilled with a thin lens of greyish-red sand (112) within which was a deposit of reddish to grey-brown peat (106) with an overlying deposit of dark brown peat (114). To the north-east of layer 114 was a deposit of dark brown peat 113 (illus 5, Section A–A1). The soil micromorphology analysis (Section 5.4) suggests that contexts 112 and 114 were naturally formed deposits, with 112 possibly being either eroded bedrock or till, and 114 the result of a slow accumulation of organic material. Deposits 113 and 114 occupied a similar stratigraphic position and are likely to be the same.

It was this streamlet infilled with peat that the Roman road builders had to bridge. They did this by constructing a lattice framework (107) across the streamlet overlying peat deposit 114 (illus 5, Section A–A1). This lattice structure was restricted to the southern end of the trench and projected from the section for a distance of *c* 0.9m (108 in illus 6). Abutting the lattice to the north was a loosely constructed matting made of branchwood (105) which continued across the width of the road and can be seen in the south-western facing section overlying peat deposit 113 (illus 5, Section B–B1).

Overlying the lattice was a deposit, measuring 5.98m long by 1.63m wide by 0.11m thick, of firmly compacted reddish-pink coarse sandy clay (104) which in turn was overlain by a deposit of reddish stones and silt (121) similar to the natural subsoil (illus 5, Section A–A1). In the north-west facing section these layers were overlain by the cobbled surface of the road (101) aligned north-west to south-east. This single layer of cobbles was 0.5m thick and was set within a loose coarse sand and clay matrix. The cobbles ranged in size between 100mm and 200mm and were generally sub-rounded. The cobbled surface was cambered on both its eastern and western sides. There was evidence of damage and repair within 101, identified as sunken areas where the underlying branchwood matting was also absent, and where the holes had been infilled and compacted with cobbles, similar to those used on the original cobble surface. There were eight probable areas of repair (illus 3; 109, 110, 122, 123, 126, 127 and 128).

On the eastern side of the cobbles was a gully (124) which ran parallel with the road, surviving intermittently, and measured 0.3m deep by 1.2m wide. This gully cut into the peat deposit (113), had an irregular base, shallow sloping sides and was filled with a deposit of mid-grey gravel and silt (120) (illus 3 and 5, Section A–A1). Overlying the gully was a deposit of pink-grey/blue-grey silty clay (103). Abutting the west side of the road was a deposit of dark grey silt (118) (illus 5, Section A–A1).

Deposits 118 and 103 were also identified in the south-west-facing section, as was a similar grey silt deposit (119) which overlay and abutted the road cobbles. Here, part of 118 appeared to have been eroded away prior to the deposition of peat 102. Overlying 103 was a deposit of pinkish-brown silty clay (117) which in turn was overlain by a thin lens of dark brown peat (116) which underlay a deposit of orange-yellow silty clay (illus 5, Section B–B1).

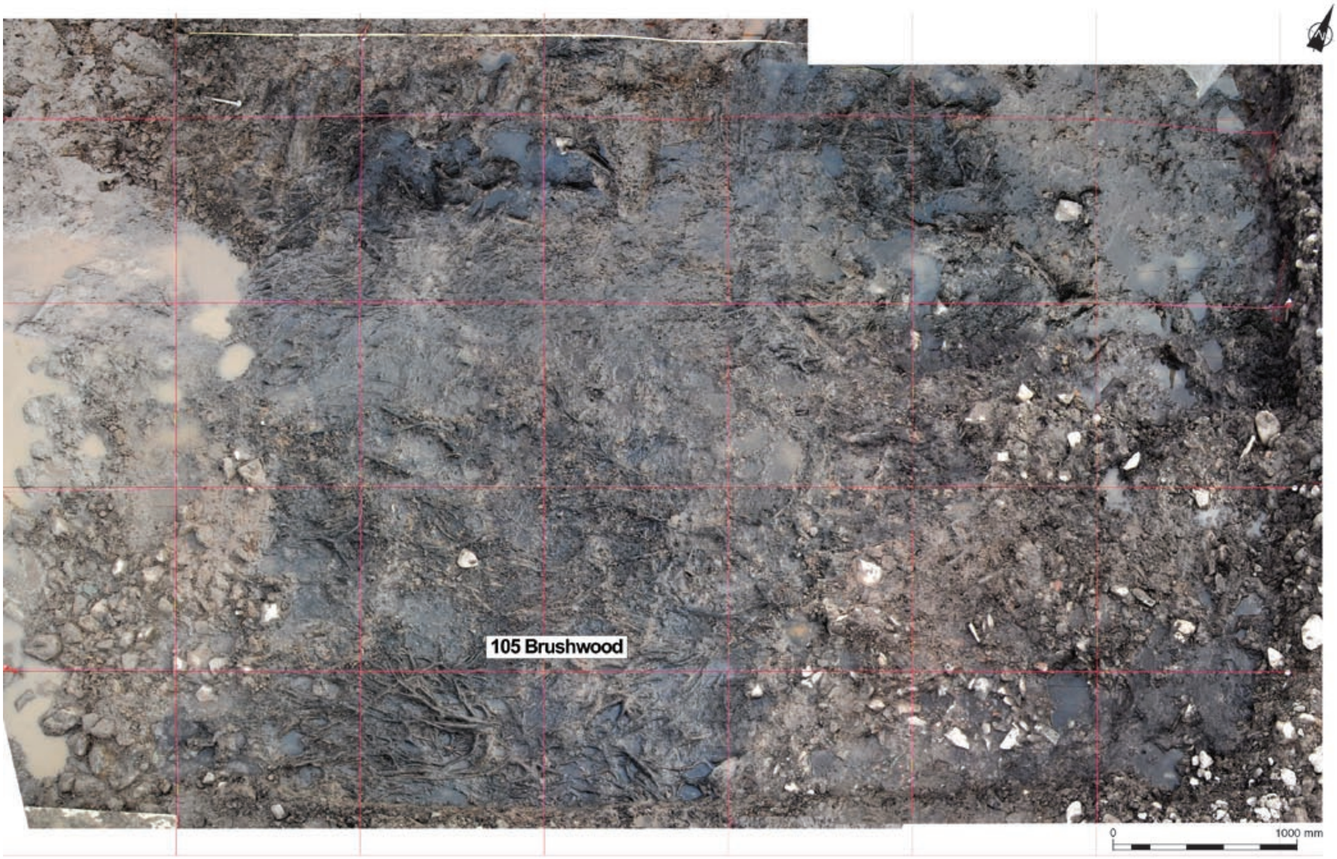
The road, its repairs and the abutting deposits were all sealed by a deposit of peat and vegetation (102) formed after the road fell into disuse.

### *4.2 Summary sequence of road construction*

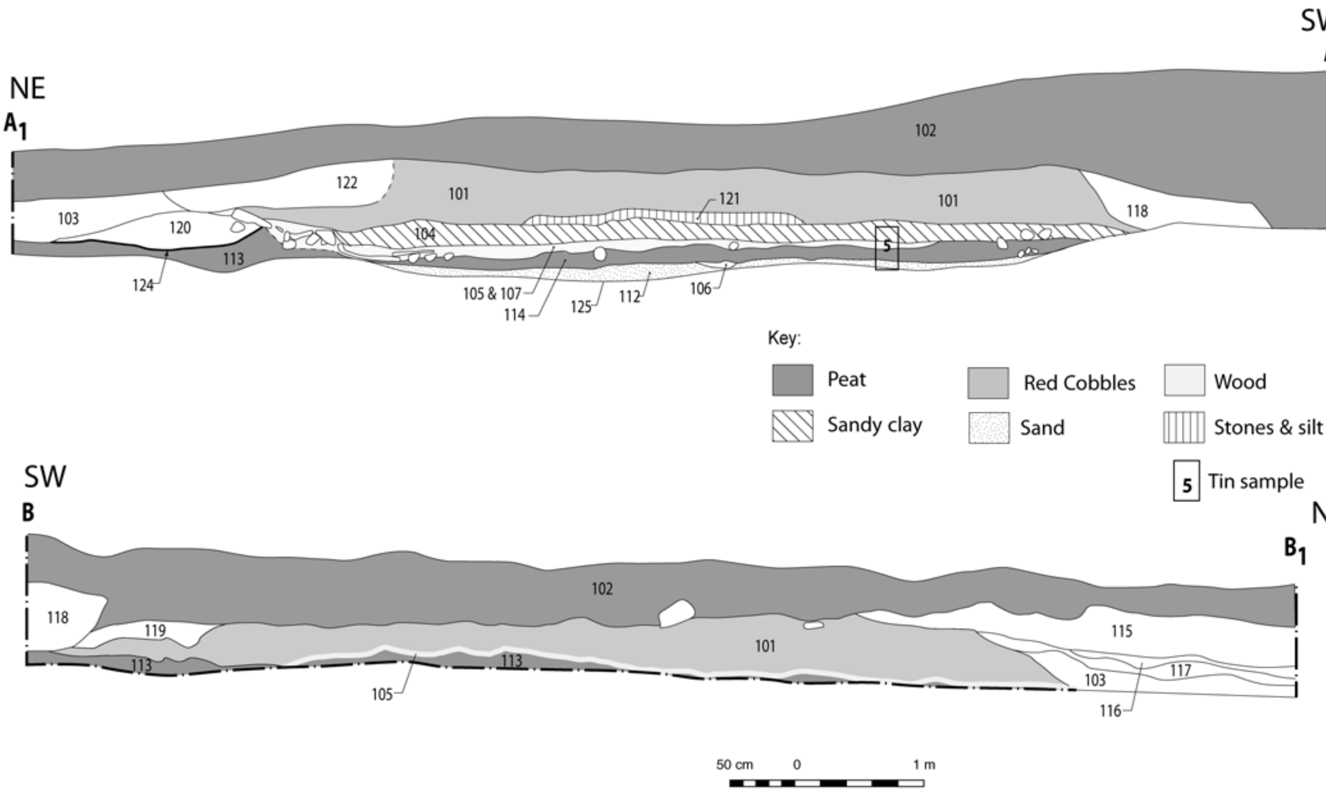
Five major components to the Roman road were recorded. The wooden lattice (107 and 108), the brushwood mat (105), the levelling surface (104), a cobbled layer (101) and a lateral gully on the east side of the road (124). The construction stages as revealed at Dun Law can be summarised as follows:

Stage 1 At this point in the construction of Dere Street, the Roman engineers would have encountered and had to contend with the wet and boggy conditions of Dun Law, and as a response excavated at least one drainage gully. Only intermittent sections of the gully (context 124) survived, on the east and downslope side of the road. The

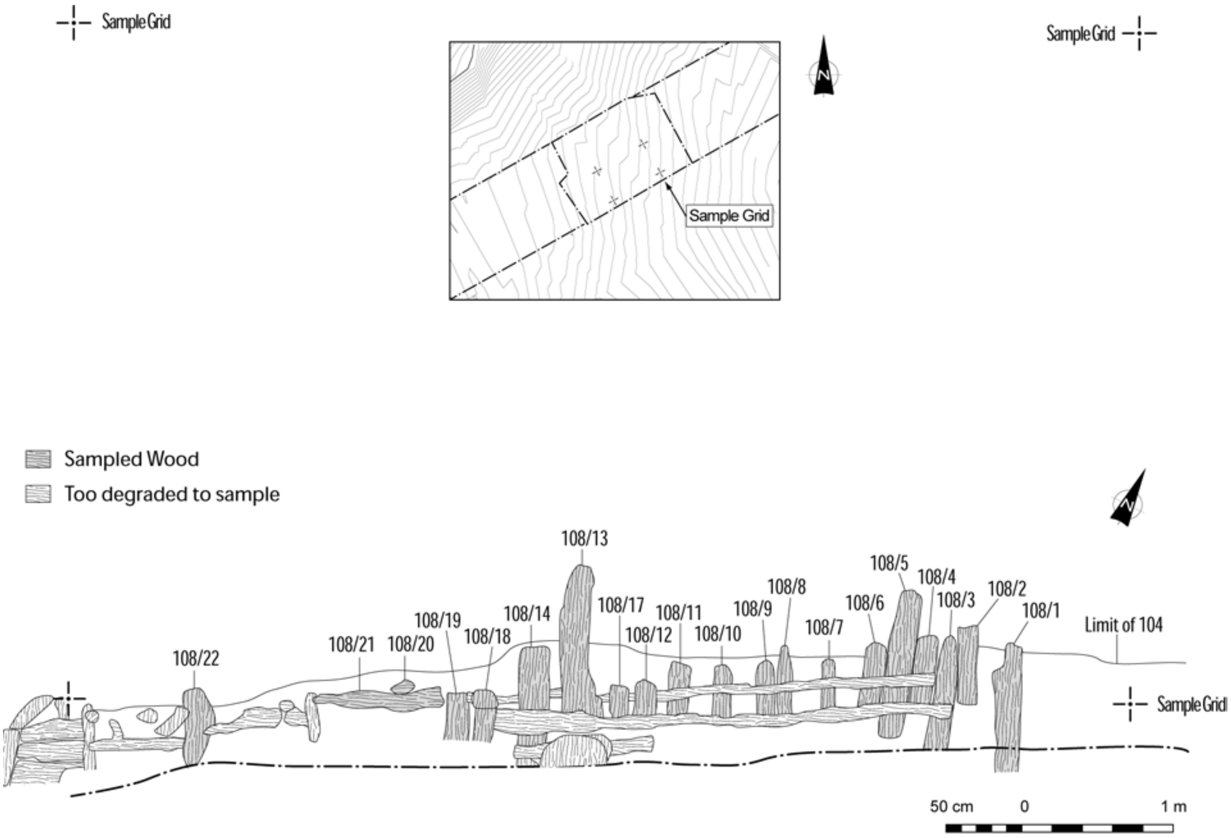

*Illus 3 Plan of the road surface*




*Illus 4 Detailed photographic survey*




*Illus 5 A: north-west-facing section of road; B: south-east-facing section of road*




*Illus 6 Pre-excavation plan of wooden layer 108 and limit of deposit 104*

purpose of the gully was probably to drain away any water run-off from the road. There was no evidence of a drainage gully on the western and upslope side of the road, probably due to erosion. The intermittent gully (124) may also have been used to mark out the course and width of the road, a demonstrable method employed on other Roman roads (Berechman 2003, Phase 2).

Stage 2 This stage comprised the construction of the lattice of logs and brushwood matting, fabricated from local resources. It is likely that for ergonomic reasons the Roman engineers decided to bridge the palaeo-channel with brushwood matting (105) and the streamlet within the channel with the latticework of logs (107 and 108), rather than excavate a trench (*fossa*) through the peat deposits that filled the channel in an attempt to reach the underlying and relatively firm subsoil. In order to understand the physical qualities of the matting (105) it is useful to draw an analogy with modern geotextiles, here described for use in railway construction by Raymond (1990, with notes in italics inserted by present author):

1 To drain water away from the track roadbed on a long-term basis, both laterally and by gravity along the plane of the geotextile without build-up of excessive hydrostatic pressures. (*Twigs and small branches of the matting were generally laid east to west following the gradient of the site, thus allowing lateral drainage by gravity along the plane of the matting.*)
2 To withstand the abrasive forces of moving aggregate caused by the tamping compacting process generated during initial construction and during subsequent cyclic maintenance, and by the passage of trains (*read Roman legions, horses and ox-drawn carts*) on a frequent basis.
3 To filter or to hold back soil particles while allowing the passage of water.
4 To separate two types of soil of different sizes and gradings that would readily mix under the influence of repeated loading and water migration.
5 To have the ability to elongate around protruding large gravel-size particles without rupture or puncture.

Stage 3 There was evidence of a probable sub-base stratum (*pavimentum*), in the form of a layer of a reddish-pink sandy clay (104), overlying the brushwood matting (105) and the lattice of Birch logs (107 and 108), and underlying the cobbled layer of the road

(101). The sub-base layer of a Roman road, as described by Berechmann (2003), was often either a lime mortar (*mortarium*) or a layer of sand. The function of the sub-layer was to provide a level base on which subsequent road layers could be built. On Dun Law it is unlikely that a lime mortar would harden quickly enough in such waterlogged conditions, hence a suitable and readily available alternative was used. This clay layer, probably excavated from the numerous streamlets in the area, was probably deliberately mixed with sand for use as the levelling component in the road construction.

Stage 4 The cobbled layer (101) is interpreted as the *statumen* and, at 0.5m deep, falls within the depth range of 0.25m to 0.7m given by Berechman (2003). The cobbles were recorded within a matrix of sandy clay, probably the bonding for the *statumen*, or the upper levels of 104 as discussed above. It was within this layer that repairs were evident. Although there was no direct dating evidence for these repairs, stratigraphically it appears that repair 122 must have occurred after the upper layers of the road make-up had eroded, as 122 cut through deposit 103, which has been interpreted as this eroded material (see below).

Stage 5 The last stage is represented by material that appears to have washed from the surface of the road, and collected, particularly on the downslope, of the road. The material included clay, silt and gravel (103, 115, 116, 117, 118 and 119) (illus 5b) and may be the eroded *nucleus* of the road.