Carmahome has been considered to be one of a small group of Early Neolithic 'Breton-style' megalithic funerary monuments – simple passage tombs and polygonal closed chambers, some with surrounding kerbs and some with low cairns – which hypothetically appeared on and near the west coast of Scotland, and elsewhere along the west coast of Britain and around the coast in the northern half of Ireland, at some time between 4300 cal BC and 3900 cal BC, probably *c* 4000/3900 cal BC (Sheridan 2017: 300; Sheridan & Schulting 2020: 196).

The group includes four of the five passage tombs from North Lorn, Morvern, and Ardnamurchan, all either Highland or Argyll & Bute, previously listed by Ritchie (1970: 37), who noted that 'superficially these tombs may be divided into two types, namely those for which there is no evidence for a passage to the chamber and are thus closed chambers (Greadal Fhinn, NW chamber; Achnacreebeag, NW chamber; Rahoy and Clach an t'Sagairt), and those for which there is good evidence for a passage leading from the chamber to the outside of the cairn (Greadal Fhinn, SE chamber; Achnacreebeag, SE chamber; Achnacree).' Achnacree is not included in Sheridan and Schulting's (2020) group of Breton-style monuments, as in their opinion it constitutes a later development of that passage tomb tradition in the area. When Ritchie was writing, only three of these monuments, all in Argyll & Bute, had been excavated: Achnacree (in 1871), Achnacreebeag (in 1969), and Clach an t'Sagairt (in 1920) (Henshall 1972: 355-8, 364). At the time of their excavation these could not be dated due to the limitations of radiocarbon dating methodologies, and no datable material relating to the construction of the monument is available in the archive from Achnacreebeag, even though cremated human remains relating to secondary activity there (namely blocking of the passage tomb, during the Early Bronze Age) have been radiocarbon dated (Sheridan 2004a: 174).

In their consideration of Breton-style monuments, Sheridan and Schulting (2020: 197) included three further monuments from western Scotland in addition to those mentioned by Ritchie: Moleigh in Lorn; Leaval on South Uist;

and Craonaval in North Uist. The tomb at Moleigh (Canmore ID 22935) was excavated in 1872 (Smith 1874: 84, 85; Anon. 1874: 458; Anderson 1878: 454–5, fig. 13) and again in 1967 (Ritchie 1968), and was originally considered to be Bronze Age in date, since the remains of an Early Bronze Age dagger had been found in the chamber alongside cremated human remains (Ritchie 1968; Henshall 1968: 181, 183, fig. 42.4, pl 1c). The butt-riveted, flat-bladed dagger is of a type known to date to between 2200/2150 cal BC and 1950/1900 cal BC (Needham 2015: 23.). However, a series of radiocarbon dates obtained for National Museums Scotland (NMS) on the cremated bone that Ritchie recovered from a lower deposit of cremated remains in the chamber places its initial use in the 38th or 37th century вс (namely 3770-3660 cal вс (GrA-24858), 3760-3640 cal вс (GrA-26158, from same sample as GrA-24858), and 3730–3520 cal BC (GrA-28741): Sheridan 2004a; 2005). The closed megalithic chamber at Leaval on South Uist was partly excavated in 1999 (Cummings & Sharples 1999; 2005; Cummings et al 2012: 66) but did not produce any information pertinent to its date of construction. As for Craonaval in North Uist (Henshall 1972: 512) - an unexcavated monument – it is the square, closed chamber and not the Clyde-type chamber (which is believed by Sheridan to be a subsequent addition) that is considered to be a candidate for a Breton-style

Sheridan has argued that the appearance of the Breton-style monuments relates to the arrival of immigrant farmers from the Morbihan area of southern Brittany, probably around 4000/3900 вс (Sheridan 2017; Sheridan & Schulting 2020). In addition to the architectural similarities of these funerary monuments with those in Brittany, a decorated bipartite bowl, identified as being similar to the classic Breton Late Castellic-type, was recovered from the later passage tomb of the two-phased cairn of Achnacreebeag, along with other Breton-style pots (Sheridan 2016). Sheridan has traced the subsequent development of the Late Castellic-style decorated bipartite bowl in the Neolithic ceramic repertoire of western Scotland (Sheridan 2016) and Ireland (Sheridan 1995), showing that these ceramic 'descendants' can be found in non-passage tomb contexts.

One such example was discovered at the Blasthill Clyde cairn on the south end of Kintyre, Argyll & Bute (Sheridan 2023: 72). Charcoal from the heavily bioturbated fill of a lateral chamber (which constitutes part of the initial-phase monument at Blasthill, built prior to the 'classic' Clyde cairn) suggests a primary use date for the monument of 3980-3790 cal BC (GU-21796), although the excavators cautioned that the charcoal could be residual, deriving from the earlier buried soil (Cummings & Robinson 2015: 6). In this chamber a crushed, lugged globular Early Neolithic bowl, organic residue from which was dated to 3630-3360 cal BC (GU-21791), was found directly beneath the sherds of the decorated bipartite bowl and perhaps represented later use of the monument (Cummings & Robinson 2015: 8, 19).

In considering the broader archaeological and architectural context of the Carmahome passage tomb, two other monuments have been selected for discussion here. Both are located near the simple passage tomb of Achnacreebeag: the passage tomb of Achnacree, just 700m away, excavated in 1871 (Smith 1872; 1874); and the Clyde cairn of Dalineun in Lorn, also Argyll & Bute, around 10km to the southwest, excavated in 1970-71 (Ritchie 1971) (Illus 2 and 3). On plan, the passage tomb of Achnacree is a similar size to many of the other sites selected for illustration; but the massive mound of stones (standing to over 4m in height, and with an original diameter of around 26m) is a salutary reminder of both the complex architecture that may remain hidden elsewhere, and the volume of the cairn material that may have been lost due to stone robbing elsewhere. The excavation of the Clyde cairn of Dalineun reminds us of the complex sequence of events that may remain masked at unexcavated sites: the rectangular twocompartment Clyde-style chamber with sill stone was blocked, perhaps by deliberately destroying and reusing the large kerb stones of its façade (envisioned by the excavator to have resembled the kerb of the passage tomb of Achnacreebeag) (Ritchie 1971: 53). The unusual insertion of a small cist into a pit in front of the entrance to the chamber prior to the blocking of the chamber and the secondary insertion of a massive cist into the cairn material - also demonstrate the often complex sequence of construction events present

at such sites. Without excavation, the typological categorisation of these sites (simple passage tombs, polygonal closed chambers, a passage tomb and a Clyde cairn) based on their size and shape, and the size and shape of their chambers and passages, can be uncertain - and regional and temporal aspects of Neolithic chambered cairn architecture can be seen to change and blend into each other. Indeed, some authors consider the simple passage tomb to be part of the wider tradition of portal tomb buildings (eg Cummings 2009: 67; 2017: 114), although it has been argued portal tombs do not seem to exist in Scotland (Sheridan 2004b: fig. 2.6). Achnacreebeag boasts unusually large and prominent capstones that are worthy of comment and comparison, although no portal stone arrangement is present, and the number of uprights does not correspond to that of portal tombs.

11.1 Hypotheses of construction and use

In preparing this paper, the three principal authors enjoyed some (at times) robust and feisty discussion, and did not reach agreement in regard to the date of the monument's initial construction and use. Two hypotheses are therefore put forward here: the first sees the monument constructed in the Late Neolithic and reused in the Chalcolithic (CE and MR); the second sees the monument constructed during the Early Neolithic and reused in both the Late Neolithic and Chalcolithic periods (AS).

11.1.1 Hypothesis 1

This hypothesis takes the view that the dating evidence obtained during the excavation proves that the monument was constructed during the Late Neolithic period, and there are sound archaeological reasons for accepting the idea that this simple passage tomb was constructed at that time, not least the Bayesian model described in Appendix 1. The radiocarbon dates are derived from samples that were considered secure during the excavation of the tomb. There is no evidence whatsoever that there was an early Neolithic phase of this monument.

The monument was built over a peaty podzol which was covered by damp herb rich grassland or meadow and which may have been grazed.

A chamber was created by the erection of eight abutting sandstone orthostats and was accessed by a short passage formed by two opposing orthostats and two portal stones set perpendicular to the passage stones. The portal stones were set back from an outer circle of kerb stones to form a slight recessed crescentic façade. The outer surface of each of the portal stones was concave and these stones may have been deliberately chosen to accentuate the curve of the façade. The chamber was capped by probably two or more large slabs of sandstone, one of which was subsequently re-used as a floor slab following the collapse of the chamber roof. The area between the chamber and the kerbstones was filled with stone and turf. Stone was also used to shore up the exterior of the kerbstones, although this may only have been done after some time when the weight of the cairn fill started to push the top of the kerbstones outwards.

There was then a partial collapse of the monument, perhaps only decades after its construction. The roof collapsed because one of the capstones – there must originally have been at least two large capstones - had been too small to span the central chamber. Rather than source and transport an alternative larger stone, the tomb builders adapted their design by adding two upright stone props to the interior of the chamber (after the floor surface had been prepared) and on which the widest span of the capstone would have been supported; clearly, this adaptation was inherently unstable. Following the collapse of the roof of the chamber and partial collapse of the passage roof and wall, one of the large capstones and one of its stone supports were laid flat over the crushed sandstone floor and over one end of the broken top of the north passage orthostat. After the repair of the monument at least one deposit of cremated remains was placed within the chamber of the tomb but there is no evidence for the extended use of the tomb beyond the Late Neolithic. In fact, the Bayesian modelling of the radiocarbon dates suggests that the use of this simple passage tomb may have been limited to a few generations.

According to this hypothesis, based on the excavated evidence, the re-examination of Carmahome has established it was built in the Late Neolithic, around 3055–2890 cal BC. Although there is some similarity in plan of Carmahome to

other small chambered cairns (closed megalithic chambers and simple passage tombs), and to Achnacreebeag in particular, as Cummings and Robinson (2015: 22) point out 'monuments which look alike are not necessarily contemporary.' This statement is particularly pertinent given the distinct lack of dates for the construction of simple single chambers located within small cairns (ibid).

11.1.2 Hypothesis 2

This hypothesis takes the view that the dating evidence obtained during the excavation does not prove that the monument was constructed during the Late Neolithic period, and there are sound archaeological reasons for rejecting the idea that this simple passage tomb was constructed at that time. Rather, it is proposed that the monument was constructed during the Early Neolithic period, then re-used during the Late Neolithic (when it also collapsed and was structurally modified), and was re-used once more during the Chalcolithic, when the Beaker was deposited.

The argument for monument construction occurring during the late third millennium appears to hinge on the date of 3320-2930 cal BC (4427±28 BP, SUERC-122897) obtained from a fragment of hazel charcoal from the buried soil under the cairn (context 021). However, as Susan Ramsey's report on plant remains (Appendix 3) makes clear, it is possible that the natural processes of bioturbation and downward transportation that the excavator cites to account for a late third millennium date of 2400-2150 cal BC (SUERC-122898) for charcoal in the cairn - namely root action, the action of soil biota or water percolation - could well be responsible for the presence of the hazel charcoal fragment in (021). Ramsey notes the presence, in (022) - also part of the original ground surface - of 'a trace of heather type wood that may be much more recent in date [than the Late Neolithic]'. Furthermore, the fact that the dated charcoal fragment in (021) was found at a lower level than a piece of hazel charcoal from the disturbed old ground surface (020) that was dated to 3500-3140 cal BC (4593±28 BP, SUERC-122896) sheds further doubt on the status of the old land surface as a 'closed' deposit. It is therefore hard to accept the Late Neolithic date for the

(021) charcoal as a reliable indicator of when the monument was constructed.

As for the other radiocarbon dates, the two very similar dates for calcined human bone from (012), below the large capstone-turned-floor slab (005), and from (017), the floor of the passage - namely 3030-2890 cal вс (4332±28 ВР, SUERC-122890) and 3020-2890 cal BC (4324±28 BP, SUERC-122895) respectively - attest to funerary use of the chamber and passage during the Late Neolithic, around the turn of the third millennium. The date for calcined human bone stratified above (005), in (013) - 2900-2690 cal BC (4216±26 BP, SUERC-122490) - not only provides a date bracket for the collapse of the chamber roof (and perhaps for the passage too) but also attests to continuing use for funerary purposes after the consequent structural modification of the monument. In the case of the calcined bone found in (037), the fill of a small pit underlying (005) and stratigraphically the earliest archaeologically-attested deposit in the chamber, the bone itself failed to produce a date. It is suspicious that the date for hazel charcoal from this pit - 2900-2690 cal BC (4216±28 BP, SUERC-122889) - is virtually identical to that for cremated bone above (005) and is later than the date for calcined bone from pre-(005) context (012). The excavator has admitted that the small amount of charcoal in (037) could have derived from disturbed soil (036)/(034) placed in the chamber. This means that the calcined bone in (037) is not necessarily Late Neolithic in date; and even if it were, it might not relate to the earliest use of the monument in any case: we cannot rule out the possibility that unburnt human remains had been deposited in the chamber during the Early Neolithic and had decayed away completely in the acidic environment. The Late Neolithic funerary activity attested by the cremated human remains could therefore relate to a secondary re-use of an already-ancient monument. Indeed, it could be that the Late Neolithic re-use accidentally triggered the monument's collapse; it is interesting that people continued to deposit the dead after having repurposed the fallen capstone as a flagstone floor.

As for the date of 2400-2150 cal BC (3814 ± 28 BP, SUERC-122898) for hazel charcoal in the turf of the mound – a date that was excluded from the

Bayesian modelling – its possible contemporaneity with the Beaker has already been discussed, along with the possibility that there could have been a renewed use of the monument for funerary depositions at that time. The broader context of Chalcolithic and Early Bronze Age funerary practices on Arran has been mentioned above.

Regarding the archaeological reasons for rejecting the suggestion that the simple passage tomb was built around 3000 BC: firstly, there is no evidence from Scotland (Sheridan & Schulting 2020) or Ireland (Schulting et al 2017a; 2017b), or England and Wales for that matter, that any simple passage tombs of comparable design to Carmahome were being built around this time (see Schulting et al 2017b on what kind of passage tomb was constructed after the mega-passage tombs of the Boyne Valley in Ireland).

Secondly, on Arran, there is no evidence for the construction of megalithic funerary monuments after the second quarter of the fourth millennium, when the Clyde cairns were built. Rather, if one considers what was happening on Arran during the Late Neolithic, one finds that on Machrie Moor, just 5.5km to the north of Carmahome, that people were erecting timber then stone circles (Haggarty 1991), and were using Orcadian-style Grooved Ware pottery. This suggests a society (or a segment of society) that was aware of, and was emulating, developments in Orkney. The radiocarbon dates for these Machrie Moor monuments that were obtained in the early 1990s have recently been complemented by dates for organic residue attached to some of the Grooved Ware sherds, obtained for Mike Copper's Tracing the Lines project (Copper et al 2021). Modelling of the dates for Grooved Wareassociated activity at Machrie Moor has produced a date bracket of 3110-2945 cal BC for its start and 3090-2700 cal BC (both 95% probability) for its end (ibid: 96). This corresponds neatly to the time frame for the use of Carmahome for the Late Neolithic deposition of cremated human remains. The simple passage tomb at Carmahome bears no resemblance to the Maes Howe-type passage tombs of late fourth millennium BC Orkney; rather, in the context of Late Neolithic Arran, it can be regarded as a nearby ancient monument that was chosen, possibly even by the builders of the Machrie Moor circles, as an appropriately venerable location

in which to bury the cremated remains of the dead (cremation is attested as a funerary practice associated with Grooved Ware users). Moreover, it is not the only ancient monument on Arran to have been re-used in this way: the presence of Orcadianstyle Grooved Ware and an ovoid macehead in the Clyde cairn of Tormore 1 (Henshall 1972: 305, 371–3), just c 4km away from Carmahome and

1.65km from Machrie Moor, provides a compelling *comparandum*. In this author's opinion, then, the Carmahome evidence does not disprove the theory that this, and other simple passage tombs and closed megalithic chambers, is a Breton-style monument of Early Neolithic date; absence of corroborative evidence in this instance does not invalidate the theory.