OR/15/053 Possible sources of decorative stone in Argyll galley castles

The site visit showed that nearly all the decorative stones in the Argyll galley castles are of two principal types: some are metamorphosed rocks and others are sandstone. In this section, some of the possible sources of these stones are described.

Four quarries that are known to be historic sources of metamorphosed rock in Argyll were examined during the site visit (Table 1 and Figure 5). Rock samples from each quarry were collected and a thin section was prepared from samples representing three quarries. Petrographic descriptions and location details for each are presented in Appendix 1.

None of the sandstone outcrops in Argyll and adjacent areas were visited (they are in general too far from the castles), but brief descriptions of each are given below based on BGS records.

**Metamorphosed rocks**

The stone in each case is metamorphosed greenish-grey mafic igneous rock (metamafic rock). The geological character of the stone from each quarry is distinct to some degree (Appendix 1), but the most distinctive feature is the strength of the metamorphic foliation. The orientation of joints (large open fractures) that cut the exposed rock at each of the quarries would have influenced the size and shape of quarried blocks, and the ease with which tabular blocks could be extracted.

### Table 1 Details of quarries visited during the site visit

<table>
<thead>
<tr>
<th>Quarry location</th>
<th>Grid Reference</th>
<th>Quarry description</th>
<th>Sample</th>
<th>Stone type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilchurn Castle</td>
<td>NN 1331 2759</td>
<td>A small “scoop” on the east side of the castle. Visibly quarried ground is c.15 x 8 m in area and 2 m high. Oblique fractures cut the outcrop.</td>
<td>ED11447 (thin section prepared)</td>
<td>very weakly foliated greenish grey metamafic rock</td>
</tr>
<tr>
<td>Lag na Luinge, by Loch Awe</td>
<td>NN 1257 2551</td>
<td>The smaller of two adjacent pits is c.10 x 15 m in area and c.1-2 m high. Very little rock is exposed. The larger of two adjacent pits is c.25 x 30 m in area and 3m high, with a substantial face of exposed rock. Parallel joints cut the outcrop.</td>
<td>ED11444</td>
<td>weakly foliated greenish grey metamafic rock, locally containing pyrite</td>
</tr>
<tr>
<td>Lochan Uaine, by Loch Awe</td>
<td>NN 0120 1835</td>
<td>Not an obvious quarry, but a number of rock exposures have evidence of quarrying along a 50 m long crag</td>
<td>ED11446 (thin section prepared)</td>
<td>weakly foliated metamafic rock, commonly containing pyrite</td>
</tr>
</tbody>
</table>

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A large pit 25 x 20 m in area, 8 m high with evidence of tooling.

The outcrop consists of near-vertical, markedly tabular slabs of rock typically 20–40 cm thick, with parallel joint surfaces parallel to the metamorphic foliation.

Tabular slabs of rock in an area of wooded crag by the shore, likely to have been quarried in the past.

ED11442
(thin section prepared)

ED11443

strongly-foliated fine-crystalline metamafic rock

Figure 5 Locations of quarries in metamafic rock visited during the site visit.

The extent of mapped units of metamafic rock is indicated in green (see also Figure 4).

Sandstones

Outcrops of sandstone are rare and typically small in Argyll and adjacent areas, but beds of Devonian, Carboniferous, Permian-Triassic, Jurassic and Cretaceous sandstone do crop out in several places (Figure 4).

Unlike the potential sources of metamorphosed rock, sources of sandstone are generally substantially more distant from any of the castles, and in most cases would have had to be transported a significant distance. However, most of the sandstone outcrops are on or near the coast, or by a navigable waterway, and therefore would have been accessible by boat when the galley castles were constructed.
A summary of the sandstone and evidence (if any) for historical quarrying at several of the potential source sites (those identified on Figure 6) is presented below, based on BGS resources including the BGS Database of Mines and Quarries (‘BritPits’), the BGS Rock Collections, BGS geological maps and memoirs, and other historical records.

Figure 6 Sites of possible sources of sandstone used in Argyll galley castles.

See also Figure 4.

**Devonian sandstone**

**Oban/Kerrera area**

Beds of Devonian sandstone and conglomerate of the Kerrera Sandstone Formation crop out near Oban and Kerrera (Figure 4). BGS records do not contain details of historic quarries in this area. However, a possible historical source of Devonian sandstone is suggested in Walker (2000)[1]:

“**A coarse greenish or purple sandstone of Lower Old Red Sandstone age was quarried over many centuries at Ardentallen on Loch Feochan. The quarry was partly on the foreshore and is now partly flooded. The stone can be seen in the old Parish Church at Kilmore, S of Oban, and Gylen Castle on Kerrera. The Free High Church in Oban is a prominent building constructed in 1846 from the green sandstone. A similar rock at Barrnacarry Bay on the other side of Loch Feochan was also used, for example, in the coach house at Ardmaddy Castle.”**

BGS does not hold rock samples from Ardentallen or Barrnacarry Bay, so the character of the stone
quarried at Loch Feochan has not been determined.

**Carboniferous sandstone**

**Inninmore Bay**
The BGS Collection of UK Building Stones includes two samples from a quarry at Inninmore Bay (OS Grid Ref [NM 7229, 4188]). These consist of uniform, light grey to buff medium- to coarse-grained sandstone (Figure 7a).

The quarry produced Carboniferous sandstone from the Scottish Coal Measures Group. This bedrock unit crops out extensively in the Midland Valley of Scotland, where it is divided into the Upper, Middle, and Lower Coal Measures Formation(s), each of which may be up to several hundred metres thick (much thicker than at Inninmore Bay).

Walker (2000)[1] referred to historic quarrying at this location as follows.

“... coarse, white and yellow Carboniferous sandstone was quarried in the 18th and 19th centuries at Inninmore Bay [sic], in Morvern, but was mainly used for millstones and gravestones.”

**Bridge of Awe**
The BGS Collection of UK Building Stones includes a sample of pink coarse-grained sandstone from a building stone quarry at Bridge of Awe (Figure 7b). Geological maps indicate that the sandstone has been extracted from a small, isolated outcrop of Carboniferous sandstone.

The following quote is from Walker (2000)[1].

“A small outcrop of coarse sandstone of [Carboniferous] age near the old Bridge of Awe was used for dressings at Fraoch Eilean Castle [situated on an island in Loch Awe]... and later at Kilchurn Castle on Loch Awe.”

**Arran**
Beds of Carboniferous sandstone also crop out on Arran (Figure 4). Building stone quarrying on Arran historically has focussed mainly on the pink to orange Permian-Triassic sandstones which crop out quite extensively there (see below). However, a disused quarry in the Carboniferous rocks by Millstone Point is recorded in the BGS Database of Mines and Quarries, and although this quarry was used primarily to produce millstones it is possible that Carboniferous sandstone was quarried historically for building stone on Arran. BGS does not hold samples of any Carboniferous sandstone quarries on Arran.

**Central Belt**
A large proportion of the Central Belt of Scotland is underlain by Carboniferous sandstones. Given the distance involved, it is highly unlikely that stone would have been brought from the Central Belt during Medieval phases of construction and alteration, but it may have been used in later stages. According to Walker (2000)[1]:

“In the C19 sandstone was imported from the Central Belt of Scotland and used in the construction of C19 mansion houses and as dressing stone in the characteristic granite houses of Oban”.

**Permian-Triassic sandstone**

**Arran**
Permian-Triassic sandstone crops out quite extensively on Arran, including many parts of the coast,
and stone could have been quarried historically from many sites. A small outcrop of Permian-Triassic sandstone at the Cock of Arran is within a few miles of Skipness castle.

A well-known building stone quarry at the village of Corrie, on the east coast of Arran, produced Permian-Triassic sandstone (‘Corrie Sandstone’) that was used in buildings on Arran and on the mainland.

BGS samples from Corrie are pink to orange, uniform, medium-grained sandstone (Figure 7c). Blocks can feature cross bedding and parallel bedding. The sandstone was deposited in a desert environment and contains distinctive rounded, wind-worn sand grains.

Walker (2000)[1] stated that Permian-Triassic sandstone from Arran was used in Skipness Castle, but did not record the source of this information.

“Rocks of the New Red Sandstone occur widely, though in small, isolated outcrops, and have often been used. Such red sandstones were quarried on the Isle of Arran, at Corrie, and on the W coast at Machrie Bay and were used, for example, in Skipness Castle and later in Oban.”

**Muasdale**

The BGS Database of Mines and Quarries holds a record of a quarry at Muasdale, on the west coast of Kintyre, which sits in Permian-Triassic sandstone of the Bellochantuy Bay Formation. The BGS rock collections do not contain a sample of stone from this location but the Bellochantuy Bay Formation is described in the BGS Lexicon of Named Rock Units as:

“... bright red, friable sandstone, with beds of breccia, however greyish white sandstone with a calcareous cement is noted at Muasdale.”

The quarry that is recorded at Muasdale may have produced the ‘greyish white sandstone’ as building stone.

**Inninmore/Lochaline**

Walker (2000)[1] described a source of Triassic sandstone in the Inninmore/Lochaline area, but again did not record the source of his information:

“A buff-coloured Triassic sandstone was quarried from the 13th century to the 19th century between Inninmore Bay and Ardtornish (nearby Lochaline) in Morvern. This was used in both Aros and Duart Castles on the Isle of Mull.”

BGS does not have rock samples of, or any record of an historic quarry in, the Triassic sandstone in this area.

**Jurassic sandstone**

**Carsaig, Mull**

The BGS Collection of UK Building Stones contains several samples of Jurassic sandstone from Carsaig quarry on the south coast of Mull. The samples consist of fine-grained, light greenish grey to buff sandstone which can contain dark wispy laminae (Figure 7e). Carsaig quarry has been exploited for building stone for several centuries. According to Walker (2000)[1]:

“.. the sandstone quarried at Carsaig Bay ... is a greenish or buff, fine-grained sandstone of Lower Jurassic age which was widely used, particularly on Iona, but also in many other buildings on the mainland. It can be seen in the C13 part of Ardchattan Priory and in Mull in several buildings around Loch Buie.”
Cretaceous sandstone

Lochaline

Beds of Cretaceous sandstone, assigned to the Loch Aline White Sandstone Formation, crop out in a narrow band on the west side of Loch Aline, in Morvern. This geological formation consists of very pure, white to pale yellow-brown, well sorted, medium-grained, quartz-rich sandstone (Figure 7d).

The BGS Database of Mines and Quarries contains a record of a quarry near to the village of Lochaline, which has mined silica sand for high quality glass manufacture from this formation intermittently since the mid-20th century. The material is mined as loose sand, so it seems unlikely that a building stone quarry would have been in the same location. However, the BGS Collection of UK Building Stones includes a sample from the Loch Aline White Sandstone Formation, suggesting the formation has been quarried for building stone at some time in the past. Unfortunately, BGS has no record of where the quarry was, when it was operational, or where the stone was used.
**Figure 7** BGS samples of sandstone from quarries in Argyll and Arran.

*a* – Carboniferous sandstone from Inninmore Bay.  
*b* – Carboniferous sandstone from Bridge of Awe.  
*c* – Permian-Triassic sandstone from Corrie.  
*d* – Cretaceous sandstone from Lochaline.  
*e* – Jurassic sandstone from Carsaig.

**References**


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