

## The use of local stone in the buildings of the Isle of Wight

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### Abstract

The charm of the Isle of Wight, so much appreciated by visitors and the local population alike, is very much a combination of its delightful scenery and unique assemblage of vernacular buildings. These buildings range from isolated farmhouses to elaborate manor houses, castles and churches all constructed using the indigenous stone resources of the island. Today, these stone buildings, many of which date back to medieval times, are increasingly in need of conservation repair to maintain them for future generations. Essential to such conservation work is the safeguarding of the island's indigenous building stone sources as many of the stones used are unique to the island and no longer quarried. Protecting these stone sources could also provide stone for new building projects which would help to further enhance the character of the island's towns and villages.

### Introduction

The Isle of Wight has a diverse stone built heritage that has perhaps not received, with the exception of the ground-breaking study of the local vernacular architecture by Marion Brinton and colleagues (1987), the attention it deserves in the general literature. Local guidebooks and the ubiquitous annual calenders often tend to focus on the admittedly attractive 'chocolate-box' picturesque houses (e.g. Brighstone village and Winkle Street, Calbourne) or the grander properties like Appuldurcombe House, rather than reflect on the less obtrusive, but much richer stone-built heritage that exists in towns and villages throughout the island. The relative isolation of the island has meant that almost all the building stone used in the Isle of Wight, from at least Roman times, has been locally quarried and, unlike many other areas of the UK, has been relatively well preserved. There are few parts of the island's diverse geological succession that have not supplied local stone, brick clay or other building material, of one sort or another for construction purposes. During some periods of its history the island became an important exporter of building stone supplying many major medieval building projects on the adjacent mainland and was even providing building stone (Quarr Stone see below) for a number of famous buildings in the London area from the 11<sup>th</sup> century (Tatton-Brown, 1980). It seems that the quality of the limestone and coastal location of the quarries at Binstead made it both feasible and

1 presumably financially lucrative to transport the stone well beyond what might be  
2 considered its normal marketing hinterland, and compete with other stones also being  
3 imported into south eastern England at this time such as Caen Stone from France.  
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## 7 **2. The Geological Succession** (Figure 2)

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9 The geological succession and structure of the Isle of Wight has always been a  
10 magnet for field geologists and it has been described in numerous geological guides  
11 and publications beginning in the early decades of the 19<sup>th</sup> century and continuing to  
12 the present day. Published reviews of the island's stratigraphy, with comprehensive  
13 lists of early publications, include White (1921, 5<sup>th</sup> Impression 1994 with expanded  
14 Bibliography and References by Edwards, R.A.), Insole et al. (1998), Hopson et al.  
15 (this volume). Perhaps the only drawback to this vast array of historic literature has  
16 been the tendency for the regular revision of the stratigraphical names used to  
17 describe the units and the often changing definition of their boundaries, as new  
18 geological techniques and interpretations have developed, a process which continues  
19 to the present day (compare, for example, Curry et al. 1978; Insole et al. 1998 and this  
20 volume).

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22 In contrast, very few of the published books and papers, have provided more  
23 than a limited amount of information about the detailed use of the local stone for  
24 building purposes across the island. Among the principal exceptions are the early  
25 memoirs published by the Geological Survey beginning with Bristow et al. (1889) and  
26 ending with White (1921).  
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30 The island can be divided conveniently into two geographical areas lying to  
31 the north and south of the prominent Upper Cretaceous Chalk upland area that forms  
32 the central ridge, the Sandown and Brighstone anticlinal axes, of the island (Fig. 1).  
33 To the north of these axes the succession is dominated by the youngest rocks of the  
34 island which comprise the mudstone and limestone-dominated intervals of the  
35 Palaeogene (early Tertiary), while to the south of these Chalk axes, the rock  
36 successions are dominated by the lithologically much more varied sequences  
37 (sandstones, limestones, ironstones and mudstones) of the Lower Cretaceous.  
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41 Geologically, the oldest rocks cropping out in the island lie to the south of the  
42 axial area and comprise the fluvio-lacustrine rocks of the Wealden Group of early  
43 Cretaceous age (Fig. 2). Like much of the rock succession of the island they are well  
44 exposed only in coastal sections and, where they are seen at outcrop, they are  
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1 dominated by clay and mudstone-rich lithologies. However, within these fine-grained  
2 successions are occasional thin, hard, fossiliferous limestone, coarse-grained  
3 sandstone and occasional conglomeratic beds.  
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5 In contrast, the conformably overlying shallow marine, Lower Greensand  
6 Group (Aptian-Albian) succession, which crops out extensively over much of the  
7 remainder of the southern half of the island, is typically coarser grained and  
8 characteristically highly ferruginous in character. This group includes the thin basal,  
9 clay-dominated Atherfield Clay Formation which passes up into the coarser grained  
10 sandstone-dominated beds of the Ferruginous Sands, Sandrock and Monk's Bay  
11 Sandstone (Carstone) formations.  
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18 A gradual change in the overall lithological character of the succession  
19 becomes apparent in the overlying beds, with the development of more open marine  
20 deposition characterised first by the clay-dominated Gault Clay Formation and,  
21 subsequently, by the overlying glauconite-rich, siliceous sandstones and sandy  
22 limestones of the Upper Greensand Formation. Together these formations make up  
23 the newly defined Selborne Group (Hopson et al., 2008). The hard, thinly-bedded,  
24 Upper Greensand outcrops are readily recognisable as they form a prominent  
25 topographical cap to many of the southern coastal cliffs and inland exposures. The  
26 Selborne Group also forms a continuous outcrop extensively along the southern edge  
27 of the central upland axes and also in the south part of the island.  
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36 The Selborne Group succession represents the coarsest grained sandstone in  
37 the Cretaceous succession of the Isle of Wight and the commencement of the fine-  
38 grained chalky limestone dominated sedimentation that characterises the Upper  
39 Cretaceous Chalk Group succession. The principal Chalk Group outcrop extends from  
40 Culver Cliff in the east, to the Needles in the west, capping the high ground that forms  
41 the central upland axes of the island; a second outcrop forms much of the high ground  
42 of the south eastern part of the island from Shanklin Down in the east to St  
43 Catherine's Hill in the west (Figure 1). The steeply dipping Chalk Group succession  
44 of the axial area of the Isle of Wight ranges from Cenomanian to Campanian (Grey  
45 and White Chalk subgroups) in age while the thinner southern outcrop is restricted to  
46 chalks of Cenomanian to Turonian (Grey Chalk to lower White Chalk subgroups) age.  
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56 The end of open marine, chalk-dominated carbonate sedimentation of the  
57 Upper Cretaceous is followed in the Isle of Wight by a pause in sedimentation prior to  
58 the onset of Palaeogene (Lower Tertiary) deposition. A marked change to the  
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1 lithologically, highly variable, clastic mud- and sand-dominated, marginal marine and  
2 non-marine successions that dominate the early Palaeogene, is followed, in the late  
3 Palaeogene, by marginal marine and terrestrial clastics and freshwater carbonate-  
4 dominated sedimentation. These Palaeogene outcrops cover most the island to the  
5 north of the central upland axes and provide the best exposures of this succession in  
6 the UK and Europe (Daley 1999).  
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10 A major break in sedimentation related to a phase of tectonism (Alpine  
11 Orogeny) culminating in the Miocene then produced the main structural elements of  
12 the island as we see them today. Sedimentation recommenced in the Plio-Pleistocene  
13 with the deposition of the unconsolidated, coarse fluvial sediments that characterise  
14 the regional drainage systems that developed marginal to the glaciation front to the  
15 north.  
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### 23 **3. Building stone sources in the Isle of Wight**

24 Most of the suitable lithological units from the early Cretaceous to Oligocene rock  
25 succession in the Isle of Wight, supplemented locally by Pleistocene deposits, have  
26 been exploited as sources of vernacular building stone in the past. Lithologically they  
27 comprise a wide variety of sandstones, limestones and ironstones together with  
28 assorted chert and flint nodules and cobbles derived from the Upper Greensand and  
29 Chalk succession, or from the coarse superficial gravels that cover large parts of the  
30 island. However, much of the character of the stone buildings in the Isle of Wight is  
31 not due entirely to the variety of stone used, but also to the distinctive, local  
32 construction styles which are used in the houses. The almost ubiquitous occurrence of  
33 the coursed and ‘galletted’ wallstones in the Cretaceous sandstones, Chalks and  
34 Tertiary limestones is particularly characteristic of the island (e.g. Plate 1)  
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### 47 **4. Early Cretaceous building stones**

48 Wealden Group (Wessex and Vectis formations)

49 The succession is well exposed only in coastal sections in the southeast (Sandown  
50 Bay) and southwest (Brighstone Bay) of the island and is, as noted above, dominated  
51 by variegated clay and fissile mudstone-rich lithologies which have yielded many  
52 significant fish, reptilian and dinosaur fossils. However, also within these fine-grained  
53 successions occasional harder, thin limestones and coarser fossiliferous and  
54 conglomeratic beds occur which provided a local source of rubblestone, for building  
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1 and decorative materials in the villages of Brook, Mottistone, Brighstone and Yafford  
2 in the west, and are occasionally evident in Sandown and the village of Yaverland on  
3 the eastern outcrop (cf. Brinton 1987). Some of the thin, coarsely fossiliferous, brown,  
4 freshwater lagoonal limestone slabs (containing *Filosina sp.* or *Viviparus*  
5 *infracretacicus*), which are common on the beach at Sandown, were locally used as  
6 paving stone and are very similar in character to the fossiliferous or ‘*Paludina*’  
7 limestones of the Wealden Group in the Weald area of south east England (Lewis,  
8 1848).

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16 *Lower Greensand Group (Ferruginous Sands, Sandrock and Monk’s Bay Sandstone*  
17 *formations)*

19 Perhaps the most distinctive building stone resources in the southern part of the Isle of  
20 Wight, however, occur within the ferruginous successions of the Lower Greensand  
21 Group. While much of this succession is too fine-grained or poorly cemented to  
22 produce good building stone, villages across the outcrop still show extensive use of its  
23 more durable beds from both the paler, finer grained, yellow-orange-brown  
24 sandstones of the Ferruginous Sands and Sandrock formations and the distinctive  
25 dark, variegated, purple-red or red-brown ‘ironstones’ extracted from the hard Monk’s  
26 Bay Sandstone Formation that caps the group. Good examples of their use as a  
27 building stone can be seen at Yarbridge, Knighton, Arreton, Whitcroft, Rockley,  
28 Chilerton, Shorwell, Wolverton, Brighstone, Mottistone, Hulverstone, Faringford and  
29 Locksley and along its southern outcrop in Wroxall, Luccombe, Whitwell and  
30 Blackgang. The finer grained sandstones are used both as uncoursed rubblestone  
31 blocks and as dressed ashlar, but the Monk’s Bay Sandstone lithologies are most  
32 commonly seen as large, irregularly coursed, rubblestone blocks (Plate 1 A & B). The  
33 intractable nature of these ironstones has meant that quoin stones, buttresses and  
34 window mouldings are commonly constructed in local brick or using the finer local  
35 sandstones (Upper Greensand Formation) which are more suitable for dressing as  
36 ashlar (Plate 1C & D).

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55 *Petrography of the Lower Greensand Group building stones*  
56 *Ferruginous Sands Formation*

1 The variegated, porous, paler coloured sandstones of this unit are dominated by fine-  
2 grained, moderately well sorted quartz grains, with sporadic ferruginous clasts in  
3 patchy quartz and/or thin, ferruginous grain coating cements (Plate 2A).  
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#### 5 *Sandroek Formation* 6

7 The sandstones of this unit are dominated by well sorted, fine-grained quartz grains,  
8 with subordinate glauconite, sparse potassic feldspar and mica grains which form an  
9 open, porous framework. The quartz grains are dominantly monocrystalline, sub-  
10 angular to angular grains. The grains generally show a narrow, grain-coating (illitic)  
11 cement.  
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#### 13 *Monk's Bay Sandstone Formation (Carstone)* 14

15 The distinctive dark coloured, ferruginous sandstones of this unit are readily identified  
16 wherever they occur. In thin section they comprise poorly sorted, fine- to coarse-  
17 grained, quartz -dominated grain framework with sparse glauconite and potassic  
18 feldspar grains set in a pervasive, thick, opaque, finely pelletal (faecal), ferruginous  
19 matrix (Plate 2B).  
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#### 28 *Selborne Group* 29

##### 30 *Upper Greensand Formation* 31

32 This formation was the most important source of building sandstone on the island. It  
33 comprises pale greenish-grey, fine-grained, glauconitic, calcareous and siliceous  
34 sandstones with spicular cherts, which have been the source of the large ashlar stone  
35 block for many houses in the island (Plate 1C & D). Extensive use of ashlar Upper  
36 Greensand can be seen for example at Shanklin, Newchurch, Rew, Niton, Whitwell,  
37 Newport (Carisbrooke), Gatcombe and Wroxall. The principal worked bed,  
38 commonly once known as the 'freestone' bed, is only in the order of 1.2 - 1.8 m in  
39 thickness but can be traced in the cliff and quarry sections along much of its outcrop  
40 (e.g. Jukes-Browne & Hill 1900; White 1921). A particularly distinctive lithological  
41 or facies variant of the sandstone from this group was quarried between Bonchurch  
42 and Ventnor in the south and was termed Green Ventnor Stone because of the higher  
43 concentration of green glauconite grains present in the sandstones at this particular  
44 location (Plate 2C). The principal quarries were developed along the area known as  
45 the Undercliff, and some were still active in 1921 and even appear to have extended  
46 their workings underground in places. Some of these quarries were subsequently  
47 occupied by the railway station and sidings at Ventnor. Large blocks of Green  
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1 Ventnor ashlar are common in houses in the town and in surrounding villages. The  
2 Upper Greensand was also frequently used in buildings elsewhere around the island  
3 from early times e.g Appuldercombe House (18<sup>th</sup> C), Arreton (17<sup>th</sup> C) and Yaverland  
4 (17<sup>th</sup> C) manors. The coastal location of the quarries also readily facilitated export of  
5 the stone to the mainland for use along with Quarr Stone (and several other stones) in  
6 Winchester Cathedral (Tatton-Brown 1993). In contrast, Tomalin (2002, 2003) has  
7 discussed working of the sandstones from the Upper Greensand Formation for  
8 construction at Carisbrooke Castle, identifying former quarries at Vayres Farm and  
9 Gat Cliff as important sources of local building sandstone since pre-Norman times.  
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### 18 *Petrography of the Upper Greensand Formation building stones*

19 In thin section the sandstones generally comprise a framework of fine- to medium-  
20 grained quartz, with subordinate glauconite and bioclastic debris (including  
21 foraminifera, sponge spicules) and a variable, micromicaceous matrix. Bioturbation is  
22 a common feature in some fabrics. The sandstones may be cemented by both micritic  
23 calcite or silica cements (Plate 2C). When weathered the sandstones can become  
24 highly porous as the vulnerable siliceous spicules are gradually leached out.  
25 Concentrations of siliceous sponge spicules has lead to the development of extensive  
26 chert (siliceous) lenses and laterally continuous, undulating thin beds, particularly in  
27 the upper part of the unit (Plate 2D). Occasionally, isolated lenses and nodules of  
28 chert, and some siliceous burrowfills can be seen in some Upper Greensand wall  
29 fabric blocks, but in general the thicker chert beds are only rarely used as wall stones  
30 with the softer, glauconitic sandy facies preferred as a general building stone.  
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## 44 **5. Late Cretaceous building stones**

### 45 *Chalk Group*

46 The hard, white chalk limestones of the Upper Cretaceous Chalk Group are one of the  
47 most distinctive and easily recognised building stones of the island. Houses, barns,  
48 farms and churches on and adjacent to the chalk outcrops of the central and southern  
49 outcrop areas were commonly, at least in part, constructed using chalk block. There is  
50 some marked variability in its use with random rubble and polygonal chalk  
51 rubblestone patterns common in some cottages, while in others coursed and squared,  
52 ashlar chalk blocks were preferred. Examples of the different chalk building fabrics  
53 that can occur can be seen in Havenstreet, Newchurch, Winford Cross, Mottistone and  
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1 particularly Brighstone villages. Occasionally in some buildings (e.g. Barnsley Farm,  
2 Seaview) large bivalve macrofossil fragments can be seen in the chalk stone blocks  
3 e.g. *Cladoceramus unduloplicatus*, a marker for the top of the Seaford Chalk  
4 Formation (Base Santonian).  
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7 In addition to their importance as a source of this hard white Chalk building  
8 stones, the Upper Cretaceous (Turonian to Campanian) successions also yielded flint  
9 nodules which are a common feature in some houses in parts of the outcrop. Some of  
10 these flints, however, will not have been derived directly from the Chalk but were  
11 probably quarried from the gravel beds of the later Palaeogene strata or hand-picked  
12 from the post-glacial superficial sediment cover including the ubiquitous beach  
13 gravels. There are many examples of the use of these reworked, rounded or dressed  
14 flint nodules around the island, most notably at Ventnor and Calbourne.  
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### 23 *Petrography of the Upper Cretaceous building stones*

24 The distinctive, tectonized, hard, white chalk building stones of the Isle of Wight are  
25 lithologically quite varied in character both in outcrop, in buildings and under the  
26 microscope. Petrographically they comprise micritic limestones with variable  
27 proportions of comminuted, fine, bioclastic debris including planktonic and benthonic  
28 foraminifera, thin-walled bivalves and phosphatic grains in a pervasive non-ferroan  
29 micritic carbonate matrix.  
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## 38 **6. Palaeogene (Paleocene, Eocene and Oligocene) building stones**

39 The principal building stone resources of the Palaeogene succession are the pale grey,  
40 fossiliferous, freshwater limestone beds of the Bembridge Limestone and Headon Hill  
41 formations that crop out extensively along the northern and eastern coasts of the  
42 island. These limestone developments (which have a maximum thickness *c.*9 m in the  
43 Bembridge Limestone Formation), occur only in the Isle of Wight area. The beds  
44 were extensively quarried east of Alum Bay at Headon Hill, where the numerous large  
45 fallen blocks were apparently once worked (Lewis, 1848), and also at Quarr,  
46 Binstead, Gurnard (Cowes) and St Helen's (Bembridge) (Colvin et al. 1982). In the  
47 latter area the worked limestone beds form a series of ledges at sea level. The  
48 quarrying of Bembridge Limestone at Gurnard (west of Cowes) and St Helen's for  
49 construction of fortifications at Portsmouth is documented from 1562 (Colvin *et al*  
50 1982).  
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1 A range of different lithologies were quarried from these limestone beds and  
2 are best seen in the town buildings of Binstead, West and East Cowes, and Ryde, and  
3 in villages such as Calbourne, Shalfleet, Newtown and Totland. Numerous other  
4 historic buildings on the island also used Bembridge Limestone in their construction  
5 (Yarmouth Castle, Quarr Abbey, Arreton Church). The quarries in the Binstead area  
6 were briefly mentioned by Mantell (1847) who noted several active quarries varying  
7 in depth from 10 to 20 feet (3 – 6.1 m).  
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12 Perhaps the most famous of these Bembridge ‘limestones’ is the so-called  
13 Quarr Stone (or Featherbed Limestone) which was taken from a lithologically very  
14 distinctive unit composed of layers of closely packed, bioturbated, broken and  
15 abraded mollusc shells – shell brash or ragstone. The distinctive fabric of the rock and  
16 its durability made it an excellent freestone and it was often preferred for use in  
17 decorative mouldings and quoins rather than for general walling stone (Tatton-Brown  
18 1980). However, the precise stratigraphic interval from which the Quarr Stone facies  
19 came has proved to be difficult to define (see Anderson and Quirk 1964), in part  
20 because the ‘bed’ was of clearly of restricted extent and by the end of the 15th century  
21 was largely worked out. There is no exposure of this facies in the Binstead area today.  
22 It is likely that the heavily quarried ‘hills and holes’ area east of Quarr Abbey and  
23 encompassed by Binstead, Quarr Wood and Holy Cross Church, was the principal  
24 source area of the Quarr Stone. The surviving walls of the abbey grounds and the  
25 local church contain significant proportions of the Quarr Stone, but in general its use  
26 in the island as a whole does not perhaps compare with the volumes exported and  
27 used on the mainland, most notably in the façade of Winchester Cathedral (Tatton-  
28 Brown, 1993), Chichester Cathedral and sporadically at both the cathedral and castle  
29 at Canterbury. Quarr Stone has also been identified in numerous Hampshire churches  
30 at for example at Boarhunt, Corhampton, Headborne Worthy and Little Somborne  
31 (Page, 1912; Potter, 2006).  
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49 The common association in the building stone literature of Quarr Stone with  
50 the original Cistercian medieval abbey at Quarr raises some interesting questions. The  
51 abbey was founded in 1132 and dissolved in 1537 and was named because of the  
52 quarries located closeby. These Binstead quarries are documented as having been  
53 producing limestone for mainland buildings since pre-Conquest times (Hockey,  
54 1970). As a result of the dissolution there is now little to be seen of the abbey above  
55 ground. Archaeological evidence, however, confirms the abbey complex was of  
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1 considerable extent with the church alone comprising a substantial, almost cathedral-  
2 like structure c.55 m long (Nave and Presbytery) by 30 m wide (North and South  
3 Trancepts) (Hockey, 1970). This raises several interesting questions. What stones  
4 were used in the abbey and what happened to the stones following the dissolution?  
5 The limited information regarding the types of stone present suggests as might be  
6 expected that the principal stone used came from the Binstead Quarries. However,  
7 there is no direct evidence as to how much of the fabric was constructed from the  
8 shelly Quarr Stone facies and how much of Binstead Limestone. The general, the  
9 paucity of the shelly Quarr Stone facies in older buildings throughout the island  
10 suggests that despite its evident quality as a freestone, it was principally exported for  
11 use on the mainland, most notably for 11<sup>th</sup> and 12<sup>th</sup> century stonework of Winchester  
12 Cathedral (e.g. Page, 1912). The local Binstead Stone (Bembridge Limestone) appears  
13 therefore to have been the principal stone used in the abbey fabric and documentary  
14 evidence suggests that following dissolution this limestone was sold (together with  
15 stone from Beaulieu Abbey) for re-use in the construction of Henry VIII's Solent  
16 defensive forts at East and West Cowes and also, in part, in the construction of  
17 Yarmouth Castle (Hockey, 1970).

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31 Archaeological surveys on the abbey site have found evidence of other stones  
32 used in the abbey fabric, including carved stone mouldings of Ventnor Stone (Upper  
33 Greensand Formation) and a significant amount of Purbeck Marble fragments  
34 (Hockey, 1970). Fragments of these 'imported' stone types are still visible today as  
35 beach boulders along the adjacent coastal strip.

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40 Perhaps one of the more interesting aspects of the use of Quarr Stone is its  
41 presence in the surviving Norman remnants of the churches of the island. These  
42 churches comprises a small group of examples in which parts of the original Norman  
43 stonework still survive all of which are invariably constructed of Quarr Stone  
44 (Yaverland, Shalfleet, Quarr, Calbourne). The later stone fabrics of these churches are  
45 in contrast constructed of a range of other local stones, confirming that wider access  
46 to the Quarr Stone facies, even within the island, was always restricted from earliest  
47 times.

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55 The most common building limestone quarried from the Bembridge Formation  
56 is, therefore the Binstead or Bembridge Stone (named depending on the vicinity from  
57 which it was quarried) with its distinctive open vuggy layers and fossil casts. This  
58 lithology is particularly common in the older 19<sup>th</sup> century stone buildings of Ryde and  
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1 East Cowes. Norris Castle (1799), for example, has a mixture of both Bembridge  
2 Limestone and cross-bedded Palaeogene sandstone stonework (Newell, 2010 pers.  
3 comm.). The mortar work of the castle also has an unusual but very distinctive fine  
4 flint shard galletting within the mortar work.  
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7 Easy access to the sea meant that both the Bembridge and Quarr stones in this  
8 eastern part of the island were readily exported to the mainland. Both appear in  
9 buildings over a wide geographical area. The Quarr shelly limestones are found in  
10 variable quantities in many mainland medieval churches (Little Sonborne, Headborne  
11 Worthy, Tichborne Hinton Ampner, Corhampton, Boarhunt, Fareham, Titchfield  
12 (Hampshire) and Bosham and Sompting (Sussex)), abbeys (Beaulieu, Hyde, Romsey,  
13 Titchfield), priories (Lewes and Christchurch), cathedrals (Winchester and  
14 Chichester). Quarr Stone has also been recorded in the medieval military architecture  
15 at Portsmouth, Portchester and Southampton forts / castles (e.g. Jope, 1964) and in the  
16 surviving medieval walls and buildings of Southampton (Shore, 1908). In the western  
17 part of the island between Calbourne and Thorley the Bembridge limestone was also  
18 extensively worked for building stone (e.g. the Prospect quarries). The limestones  
19 from these quarries were used locally in Yarmouth from where it could also be easily  
20 exported to the mainland.  
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23 The use of the limestones Bembridge Limestone Formation on the mainland is  
24 known to date back to Roman times and was recorded at, for example, Fishbourne  
25 Palace near Chichester (Williams, 1971). Archaeological studies of the roofing  
26 materials used in several Roman villa sites of the island suggest that Bembridge  
27 limestone was also used for the production of roofing slates and examples can be seen  
28 on display at the Brading Roman Villa site on the island (Tomalin, 1987).  
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### 32 *Petrography of the Palaeogene building stones*

#### 33 *Quarr Stone*

34 The pale-grey or buff coloured, freshwater limestone known as Quarr Stone or  
35 Featherbed Stone because of the distinctive cross-bedded, shelly-rich fabric it exhibits  
36 comprises broken and abraded thin-walled mollusc fragments with sporadic very fine  
37 sand-grade quartz grains. In many of the specimens examined in thin section the shell  
38 fragments show little or no internal structure, having been extensively replaced by  
39 ferroan spar-calcite or, only survive as neomorphic, acicular envelopes with a leached,  
40 open central core (Plate 2 G). Its coarse-grained nature and texture suggests  
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1 deposition in a comparatively high energy setting as a shoal or bank. Proximity to a  
2 shoreline is also suggested by the abundance in some samples of sub-rounded to  
3 angular, detrital quartz grains.  
4

#### 5 *Bembridge Limestone or 'Binstead Stone' (s.l.)*

6

7 Petrographically, a wide range of facies variations are evident in the limestones of the  
8 Bembridge Limestone Formation. This thick-bedded lacustrine and palustrine  
9 succession of grey to off-white limestones commonly shows a range of features from  
10 coarsely vuggy (commonly with *Chara* sp.), micritic, brecciated, peloidal, fine and  
11 coarsely bioclastic limestones to bioturbated and concretionary lithologies (e.g.  
12 Armenteros et al 1997; Plate 2G). Very fine sand to silt-grade quartz and feldspar  
13 occurs ubiquitously, in lenses, patches or are dispersed within these limestone  
14 frameworks (Plate 2H).  
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### 23 **7. Pleistocene building stones**

24 The poorly consolidated superficial sediments that comprise much of the Pleistocene  
25 successions of the island were an important local source of flint and/or chert pebbles  
26 and cobbles for building purposes. Flint walling is common feature in some villages  
27 and towns e.g. Ventnor and Bonchurch. It is used either as cobbles in the round, or as  
28 fractured cobbles in which the paler grey-brown, lustrous, internal face is revealed, or  
29 as dressed or knapped and squared stones. The flints are commonly bedded in mortar  
30 in coursed or random patterns (Plate 1 F). Occasionally ferruginous, cemented blocks  
31 (ferricretes; Lamplugh 1902) from these local gravels (elsewhere in Hampshire  
32 commonly termed 'Heathstones') can be seen in some wall fabrics.  
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### 44 **8. Imported building and decorative stones**

45 Until comparatively recent times the import of building stone from the mainland for  
46 use on the island appears to have been very limited.  
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#### 49 *Portland Stone*

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51 Perhaps surprisingly, despite the close proximity of the famous Portland quarries,  
52 producers of the distinctive white ooidal and bioclastic limestones from the Upper  
53 Jurassic succession of Dorset, very little of the stone appears to have been imported to  
54 the island. The stone was used for the carved decorative stone work in  
55 Appuldurcombe House in the early 18<sup>th</sup> century (Jones, 2000). A good example of its  
56 typical use in the 19<sup>th</sup> century is seen in the classical façade of the HSBC Bank at  
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1 Ryde, but few other examples are present, with the exception of a number of war  
2 memorials and sculptural objects.

3  
4 Although many of the great houses of the Isle of Wight are characterised by  
5 the use of local building materials well into the 19<sup>th</sup> century, there is one prominent  
6 exception Queen Victoria's Osborne House. Designed and constructed between 1845  
7 and c.1851, by Prince Albert and Thomas Cubitt, the latter was best known as a major  
8 house builder in London and was responsible for much of the suburban villa  
9 architecture of Belgravia and Bloomsbury (Hobhouse 1995). This Victorian house, in  
10 Italianate style, is an architectural curiosity in the island. Some of the latest building  
11 techniques were used in its construction but only limited use was made of local  
12 materials. The house is a constructed of brick with an iron framework and smooth,  
13 plaster 'stucco' façade and although the IOW has a long local brick-making tradition,  
14 and was in fact an important exporter of bricks to the mainland, there is no clear  
15 evidence that locally made bricks were much used in the construction of Osborne  
16 House. There are several brick-making pits surrounding the estate in the Bembridge  
17 Marls but these appear to have been principally used to provide drainage pipework.  
18 By the mid-19<sup>th</sup> century the island had also become a major cement producer, notably  
19 from kilns sited along the Medina River and cement produced here was certainly used  
20 in the construction of Osborne House (Fenn 2008). Some natural stone was used  
21 internally, however, with 'Portland Stone' imported from the coastal quarries at  
22 Swanage chosen for paving and staircases. Penrhyn Slates from North Wales were  
23 also selected for the roof (Hobhouse 1995).

#### 41 *Purbeck 'Marble'*

42 In contrast, however, the decorative 'marbles' of the early Cretaceous Purbeck  
43 succession can be widely seen across the island. Probably the best display of imported  
44 Purbeck Marble is in the Norman church at Shalfleet. Here, the large supporting  
45 columns of the nave roof comprise drums of the marble at least 0.45 m across and  
46 0.30 thick. The church also contains a large Purbeck Marble font and a tombstone or  
47 leger. Purbeck Marble shaft bases are also found at Arreton church. Other examples  
48 of the marble include the large tombstone legers, now badly worn, at Godshill church.

#### 56 *Purbeck Roofing Slate*

57 There are several examples in higher status buildings of the Isle of Wight of the use of  
58 thick, heavy, fossiliferous limestone slates imported from the Isle of Purbeck as  
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1 roofing material. Examples can be seen in Mottistone Manor, Wolverton Manor, West  
2 Court Manor, King James Grammar School in Newport, Brighstone Church and at  
3 Carisbrooke Castle (e.g. Brinton 1987; Tomalin 2003). In general, where present, the  
4 heavy Purbeck slates form a narrow strip along the eaves of the roof.  
5

### 6 *Alabaster*

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9 The creamy-brown, alabaster tomb effigies at Godshill Church of Sir William  
10 Worsley, which date back to the mid-16th century, are probably the best examples of  
11 the use of this distinctive Triassic decorative stone on the island. The principal source  
12 and centre for the mining and carving of alabaster (gypsum) was at Chellaston  
13 between Derby and Nottingham. Alabaster blocks were quarried in these mines from  
14 the thick gypsum beds within the Mercia Mudstone Group from medieval times, and  
15 locally carved into prestigious funereal ornaments which were distributed throughout  
16 the UK and Europe (Young 1990).  
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## 25 **9. The future of the Isle of Wight's stone buildings**

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27 Today, as elsewhere in many parts of the UK, most if not all of the local building  
28 stones quarried and used in the Isle of Wight are no longer produced. This has  
29 resulted in significant concerns for both heritage conservation and new build  
30 programmes in the island. The need for replacement stone for conservation repair of  
31 not only its better known heritage buildings such as Mottistone Manor and  
32 Carisbrooke Castle, but also for the hundreds of smaller stone buildings in its towns  
33 and villages will inevitably grow over time. Even the best quality building stones can  
34 eventually decay and fail and will need to be replaced. It would be prescient of the  
35 local planning and conservation authorities in the island to consider safeguarding  
36 access to local stone resources now. The Isle of Wight's local character and  
37 distinctiveness is unique, and is very much a combination of its spectacular  
38 landscapes and distinctive built environments. Without new indigenous sources of  
39 stone for conservation repair and, equally importantly for new build projects, the  
40 island may become a less attractive place for its many visitors and residents.  
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57 Wight mapping team for their guidance and congenial company during my field visits  
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1 to the island. The buildings expertise of my wife Beryl was also invaluable both in the  
2 field examination and interpretation of many of the buildings, and also in contributing  
3 to the final text. I would also like to thank Dr Eric Robinson for his review and  
4 perceptive comments on the manuscript.  
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## Figure captions

Figure 1. Simplified geological map of the Isle of White

Figure 2. Simplified geological vertical succession for the Isle of Wight

## Plate Captions

### Plate 1

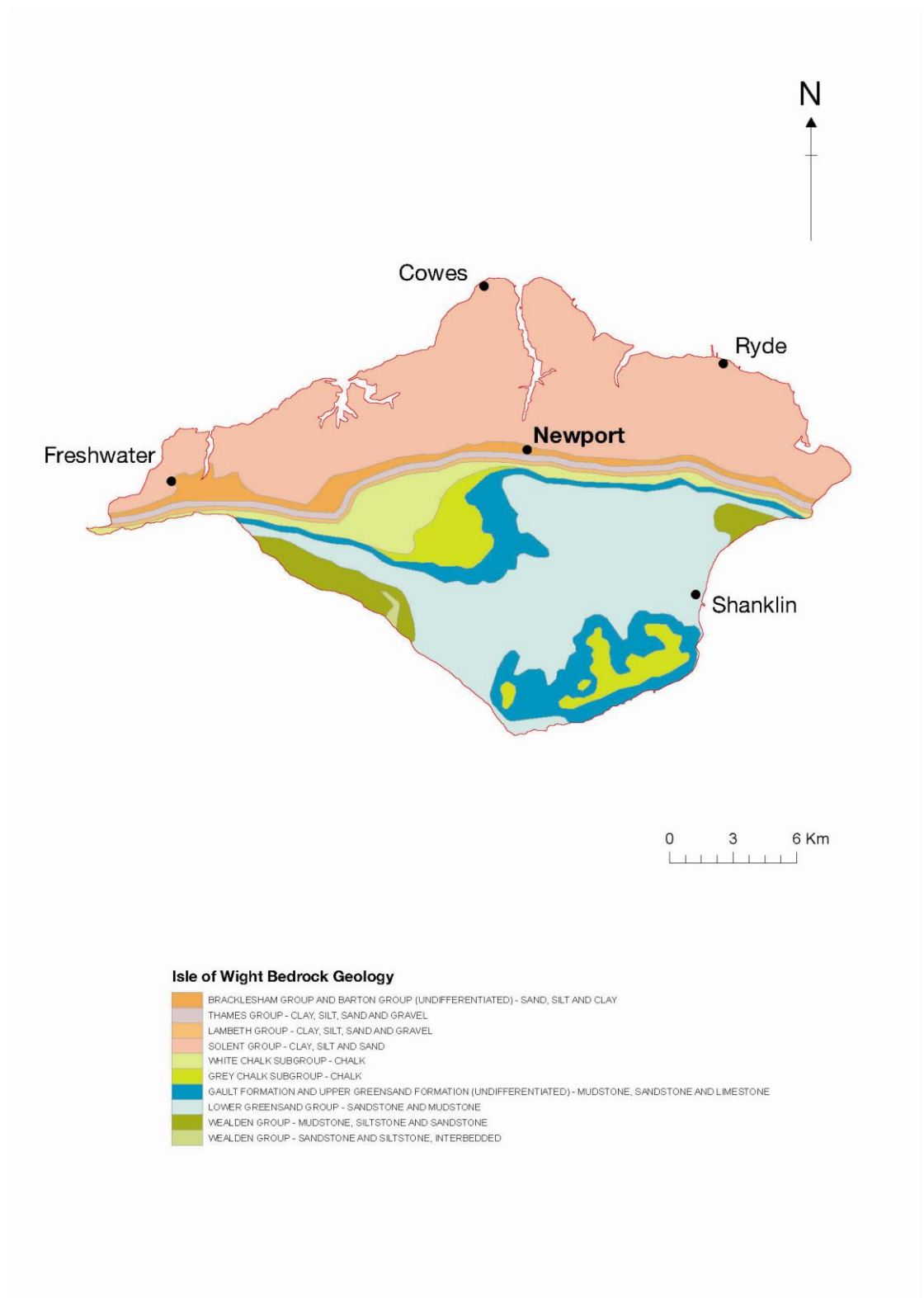
- A. Shorwell Cottages. Large and small blocks, variegated, intricately coursed, rubblestone sandstone blocks from the local Ferruginous Sands Formation. Window surrounds of local brick. Quoins of Bembridge Limestone.
- B. Freshwater Village. Barn constructed of uncoursed, dark, ferruginous rubblestone sandstone blocks from the Monk's Bay Sandstone Formation (Carstone).
- C. Niton Village. Large, coursed, and galletted, irregular blocks of pale greenish grey, sandstone from the Upper Greensand Formation.
- D. Shanklin. Wallstones and window dressings of large ashlar blocks of glauconitic sandstone from the local Upper Greensand Formation.
- E. Brighstone. Large irregularly shaped, coursed and galletted chalk blocks from the local Chalk Group succession.
- F. Calbourne. Coursed flint nodules with dressings of Bembridge Limestone.
- G. Ventnor. Green Ventnor Sandstone (Upper Greensand Formation) ashlar facing with coursed flint cobbles on side walls.
- H. Newbridge. Large and small, irregular, galletted blocks of coursed Bembridge Limestone.

### Plate 2.

Thin section photomicrographs. Note all images taken at the same scale giving a field of view of 8 mm from left to right across the images. The sections have all been impregnated with blue resin to fill natural pores and stained for carbonate and K-feldspar identification.

- A. Fine-grained, ferruginous, sandstone – Ferruginous Sands Formation
- B. Medium- to coarse-grained, pervasively iron cemented (brown), sandstone – Monk's Bay Sandstone Formation (Carstone).
- C. Fine-grained, glauconitic, sandstone – Upper Greensand Formation.
- D. Fine-grained, silica cemented, spicular, sandstone – Upper Greensand Formation.
- E. Non-ferroan, coarsely bioclastic Purbeck Limestone – Carisbrook Castle Roofing Slate (courtesy of the National Trust)
- F. Bioturbated, fine-grained non-ferroan (pink stained) micritic limestone - lacustrine facies, Bembridge Limestone Formation.
- G. Porous micritic, freshwater limestone abundant microfossils including *Chara sp.*
- H. Coarsely bioclastic, marginal marine, limestone, non-ferroan (pink stained) with extensive secondary macroporosity following leaching out of unstable ferroan calcite bioclasts – Quarr Stone or Featherbed Stone.

Figure 1



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Figure 2

BUILDING STONE SOURCES OF THE ISLE OF WIGHT								
STAGE	GROUP	FORMATION	BUILDING STONE	STONE USE LOCATIONS				
PALAEOGENE	PLEISTOCENE		COBBLES, FLINTS & FERRICRETES					
		OLIGOCENE	SOLENT GROUP	BOULDNOR FM.	QUARR STONE BINSTEAD STONE BEMBRIDGE LIMESTONE (s.l.) HEADON LIMESTONE	QUARR, BEMBRIDGE, ST HELEN'S, BINSTEAD HEADON HILL - TOTLAND		
				BEMBRIDGE MARLS FM.				
	BEMBRIDGE LIMESTONE FM.							
	HEADON HILL FM.							
	Eocene	BARTON GROUP						
		BRACKLESHAM GROUP						
		THAMES GROUP	LONDON CLAY FORMATION					
	PALEOCENE	THAMES GROUP	READING FORMATION					
UPPER CRETACEOUS	CHALK GROUP	CAMPANIAN	PORTSDOWN CHALK FORMATION	CHALK BLOCK Flint nodules	FLINT - VENTNOR  ARRETON, MOTTISTONE, BRIGHSTONE, DOWNEND, NEWCHURCH, WINFORD CROSS			
		CONIACIAN CHALK ONIAN	CULVER CHALK FORMATION					
			NEWHAVEN CHALK FORMATION					
			SEAFORD CHALK FORMATION					
			LEWES NODULAR CHALK FORMATION					
			NEW PIT CHALK FORMATION					
			HOLYWELL NODULAR CHALK FORMATION <small>Plenus Maris Member</small>					
			ZIG ZAG CHALK FORMATION					
		CENOMANIAN	WEST MELBURY MARLY CHALK FORMATION GLAUCONITIC MARL FORMATION					
		LOWER CRETACEOUS	SELBORNE GROUP			UPPER GREENSAND FORMATION	GLAUCONITIC SANDSTONE (GREEN VENTNOR) & CHERT NODULES	VENTNOR, SHANKLIN, CARISBROOKE, BONCHURCH, NITON, GODSHILL etc FARRINGFORD, FRESHWATER
						GAULT FORMATION		
			LOWER GREENSAND GROUP			MONK'S BAY SANDSTONE FORMATION	IRONSTONE (CARSTONE)	
						SANDROCK FORMATION		
FERRUGINOUS SAND FORMATION	FERRUGINOUS SANDSTONE			SHORWELL				
WEALDEN GROUP	ATHERFIELD CLAY FORMATION							
	VECTIS FORMATION	FRESHWATER SHELLY LIMESTONES	SANDOWN					
		WESSEX FORMATION						