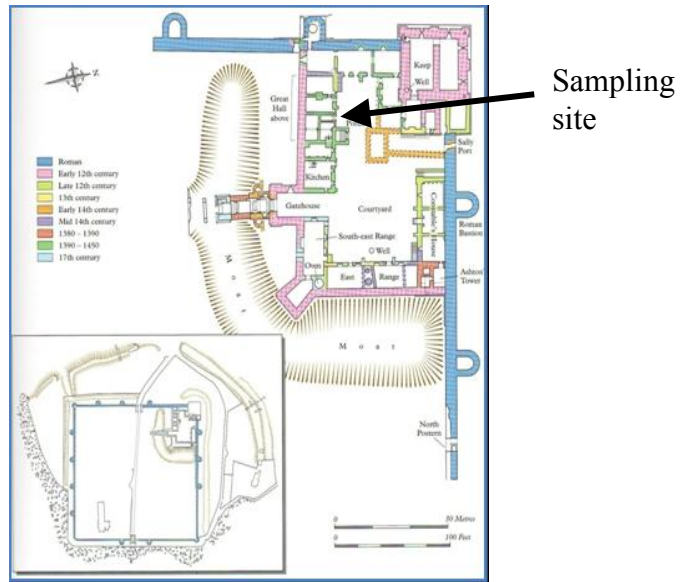
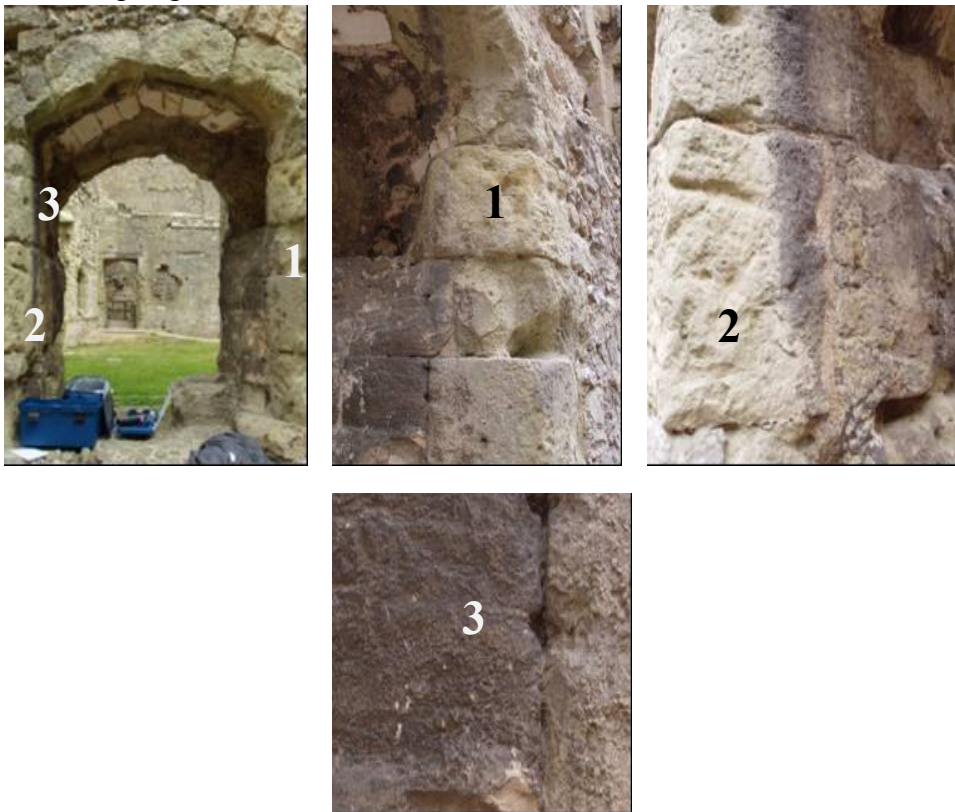


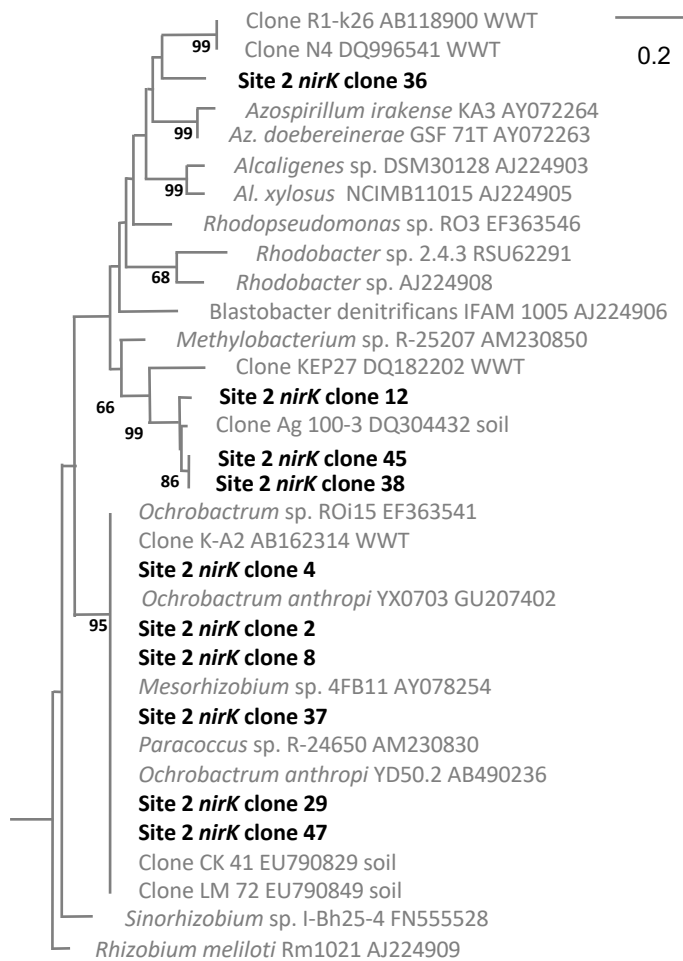
**A. Richard II's palace (1390-1450)**



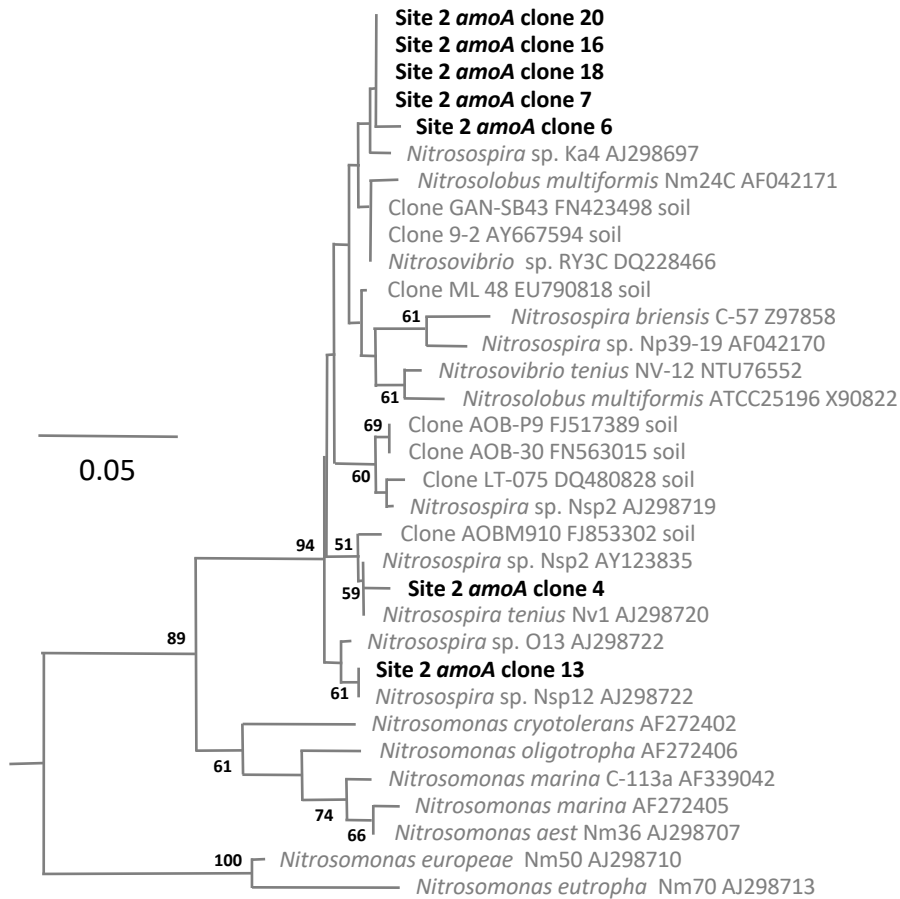
**B. Sampling sites**



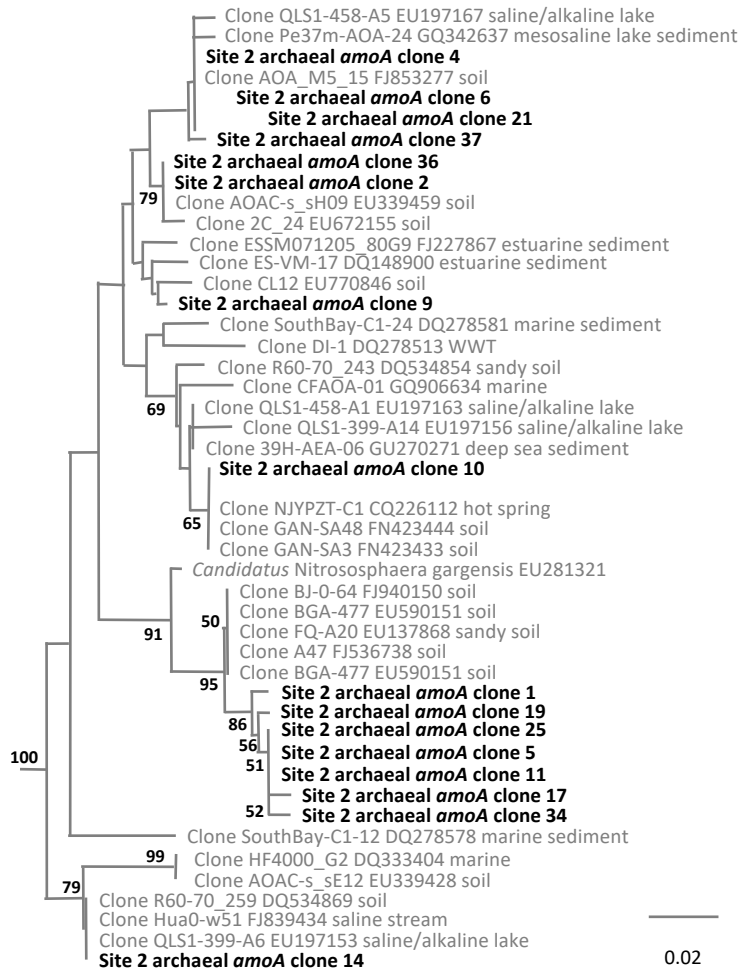
**Figure S1.** Sampling sites at Portchester Castle. **A.** Richard II's palace (1390-1450). **B.** Sampling sites, from a window. Sites 1 and 2 were exfoliated stone, Site 3 was a dark encrustation. Schematic of Richard II's palace reproduced with permission of Historic England.



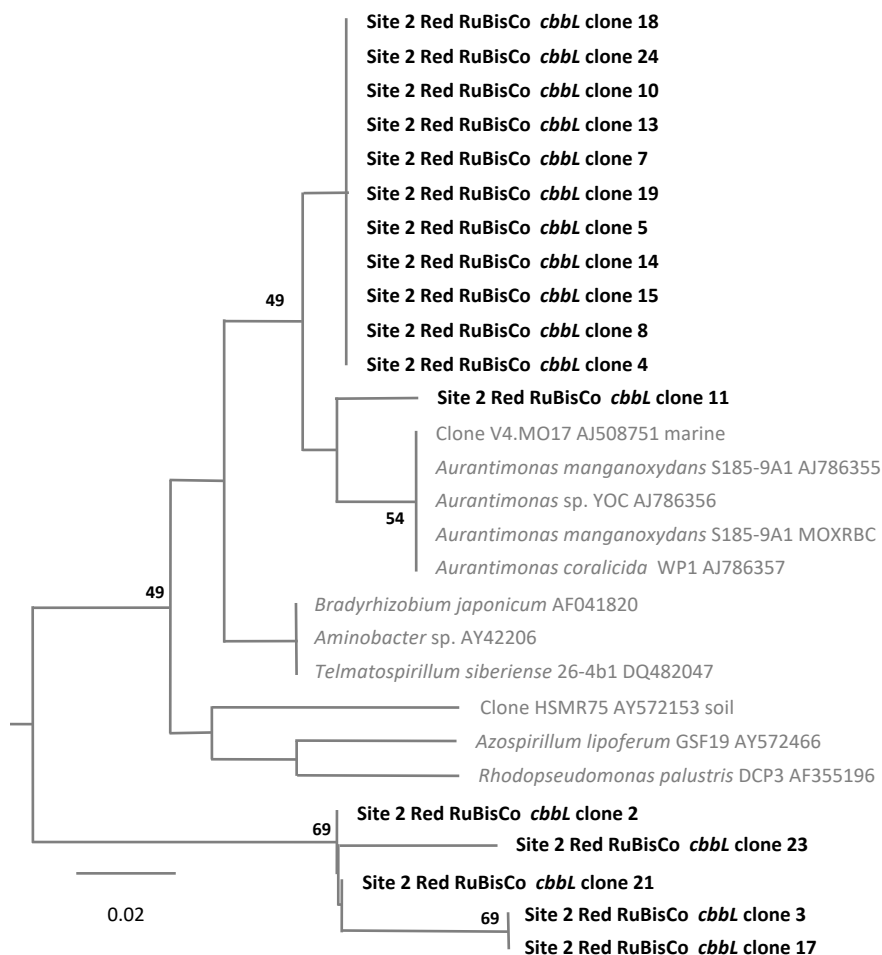
**Figure S2.** Neighbour-joining tree of bacterial *nirK* clones from Portchester Castle, Site 2. Tree was rooted with the outgroup *Nitrosomonas europea* ATCC25978 (EF016124; not shown).



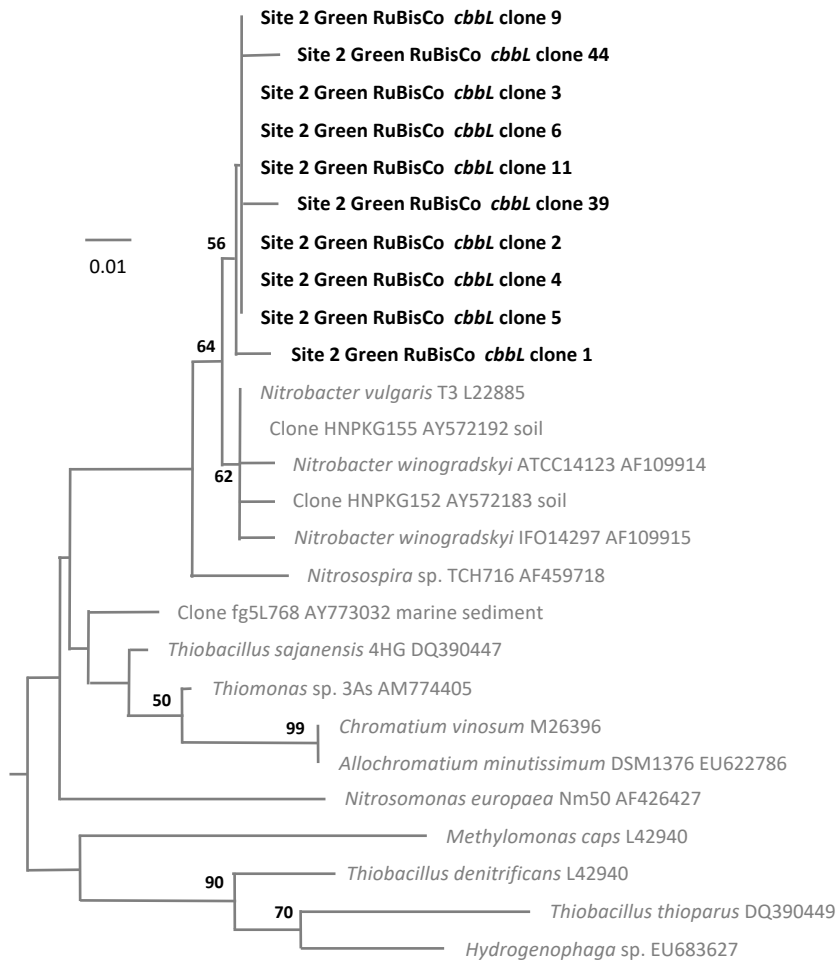
**Figure S3.** Neighbour-joining tree of bacterial *amoA* clones from Portchester Castle, Site 2. Tree was rooted with the outgroup *Nitrosococcus oceani* ATCC19707 (AF272521; not shown). Bootstrap values >50% are given at nodes.



**Figure S4.** Neighbour-joining tree of archaeal *amoA* clones from Portchester Castle, Site 2. Tree was rooted with the outgroup *Nitrosopumilus maritimus* SCM1 (EU239959; not shown). WWT = wastewater treatment plant. Bootstrap values >50% are given at nodes.



**Figure S5.** Neighbour-joining tree of Red RuBisCo (*cbbL*) clones from Portchester Castle, Site 2. Tree was rooted with the outgroup *Rhodobacter sphaeroides* 2R (AY450589; not shown). WWT = wastewater treatment plant. Bootstrap values >50% are given at nodes.



**Figure S6.** Neighbour-joining tree of Green RuBisCo (*cbbL*) clones from Portchester Castle, Site 2. Tree was rooted with the outgroup *Thi alkalivibrio denitrificans* ALJD (AY914807; not shown). Bootstrap values >50% are given at nodes.