



4. Preliminary Minerals Assessment

The following section will discuss if and how the Proposed Development meets the 3No. exemption criteria of Policy M9.

4.1. Policy M9 (i): Mineral Sterilisation will not occur

The Site includes parts of MSAs for both building stone and the Wadhurst Clay Formation. BGS mapped outcrops of building stone on Site cumulate to an area of 0.184km² and the associated MSAs (which include a 250m buffer) total approximately 0.822km². For the Wadhurst Clay Formation the on Site outcrop is minimal (approximately 500m²) with the corresponding MSA and buffer totalling approximately 0.098 km².

4.1.1. Is the Mineral Resource present?

Historical workings

Figure 3-2 shows there are a number of small historic quarries associated with both the Ardingly Sandstone Member and Cuckfield Stone Bed. Both deposits have clearly been worked but it is not possible to quantify the extent of the workings from historical mapping.

Geology

A series of published BGS boreholes lie along the northern edge of the Site, along the A272, three of which lie within the building stone MSA. Drawing P21367_R3_DO4 shows the location of historic BGS boreholes as well as trial pit locations from the Yellow Sub investigation. BGS borehole TQ22SE23 in the northwest of the Site records the Ardingly Sandstone Member as a very weak, poorly cemented, yellow-brown, moderately weathered, silty, fine sandstone with pockets and layers of very dense silty sand between 2.1m and 8m bgl. The Ardingly Sandstone Member was not encountered in the recent Site investigation by Yellow Sub.

Borehole TQ32SW8, 100m north of the Site records the transition from the Cuckfield Stone Bed to the Grinstead Clay Formation and suggests that the majority of the Cuckfield Stone Bed reserve at the surface here is highly weathered and mostly unsuitable as building stone. Between 3m and 3.35m bgl a strong to very strong, dark grey, slightly weathered sandstone is recorded which would likely be suitable, however the limited thickness is unlikely to be economical. No sandstone is recorded within TQ32SW9 (maximum depth of 4.7m bgl) which is also located within the building stone MSA. The Cuckfield Stone Bed reserve encountered within the four trial pits from Yellow Subs recent infiltration testing (TPO1, TPO2A, TPO2B and TP10) was also highly weathered and unsuitable for building stone, with it recorded it as a sandy, clay with a sandstone gravel. However, these trial pits extend to a maximum depth of between 2.5m and 3m bgl, so it is possible a suitable reserve exists at a greater depth as seen in TQ32SW8. Data from these boreholes and trial pits suggests an economic reserve of building stone is absent in the north of the Site.

There are no historical boreholes on Site which encounter the Wadhurst Clay Formation, the nearest being TQ32SW43, approximately 2.26km northeast of the Site. For the purpose of this mineral assessment, it is assumed the mineral resource is present where mapped by the BGS

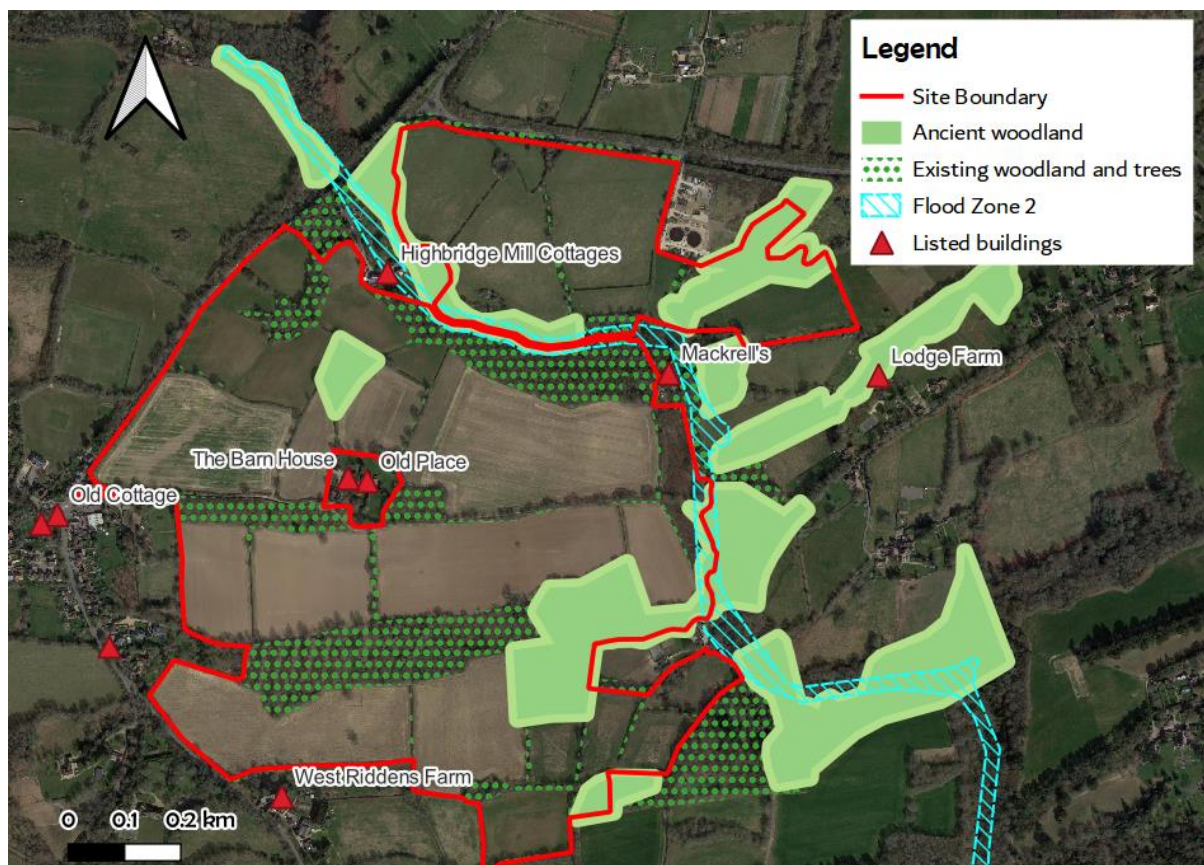


and the resource thickness is taken as 3m based on observations within the geological memoir for sheet 302.

4.1.2. Is the mineral resource economic?

Several on Site constraints including the presence of listed buildings, designated ancient woodland, woodland and flood zones, may impact the economic viability of mineral extraction. These constraints are depicted in Figure 4-1 and discussed further below in regard to building stone and the Wadhurst Clay Formation.

Figure 4-1 Existing Site Layout



Buffer zones – Building Stone

Large areas of the Site are designated as Ancient Woodland, which prevents mineral extraction taking place in these areas. The Mid Sussex District Plan 2014–2031, Policy DP37 states: “development should be positioned as far as possible from ancient woodland with a minimum buffer of 15 metres maintained between ancient woodland and the development boundary”. Off Site, portions of the building stone MSA have already been sterilised by existing infrastructure including the sewage treatment works, the A272, the Grade II listed buildings West Riddens Farmhouse and Highbridge Mill. In the instance of the listed buildings, they also sterilise a portion of the mineral resource on Site due to the requirement of a suitable buffer zone. As well as maintaining buffer zones around existing infrastructure, if the mineral resource was to be



extracted, a suitable buffer zone would have to be maintained around the excavation itself. This is firstly to allow for safe working areas/ slope angles and secondly to screen the Site, to limit the potential visual and noise impacts. The buffer zones are anticipated to be at least 20m wide as shown in Figure 4-2. Accounting for buffer zones around the Site boundary and around areas of ancient woodland and listed buildings, this would reduce the area from which building stone can be extracted from 0.184 km² to 0.12 km². The building stone MSA area reduces from approximately 0.822 km² to 0.593 km² with these constraints.

Figure 4-2 Building Stone MSA with buffer constraints



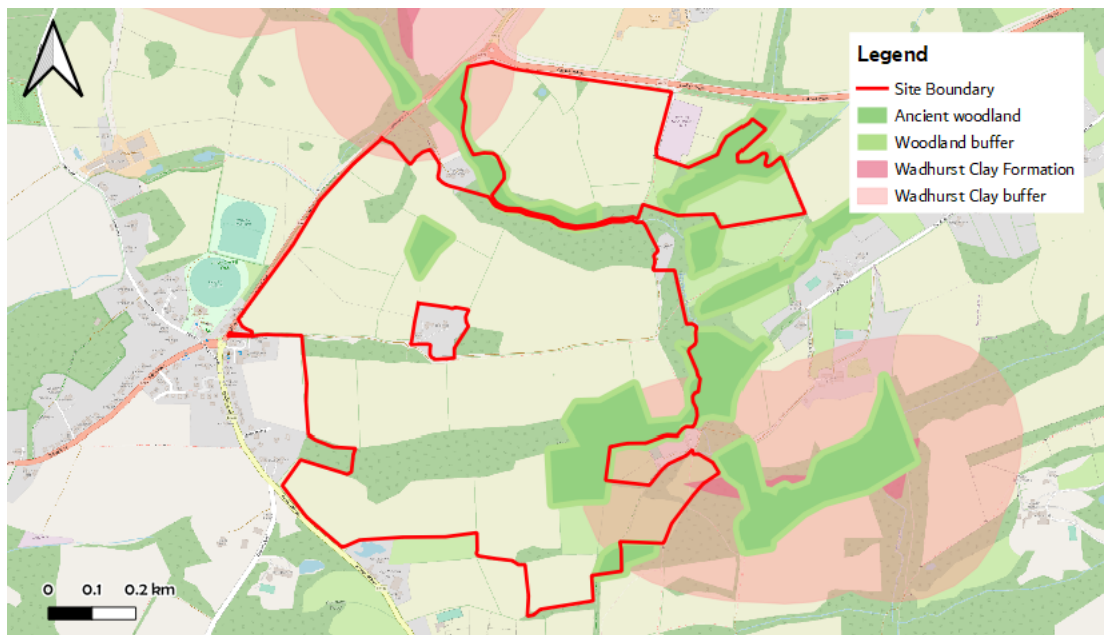
Buffer zones – Wadhurst Clay Formation

There are two MSAs on Site associated with the Wadhurst Clay Formation, one in the northwest associated with an off Site outcrop, 135m from the Site boundary and a second associated with a small outcrop at the south east of the Site. The 250m buffer is included in the MSA to prevent inappropriate developments sterilising a neighbouring reserve. However, the presence of the A272, Cuckfield Cricket Club, Old Mill Cottage and Ancient Woodland within the 250m buffer of the northwest MSA has already resulted in the effective sterilisation of this deposit, as shown in Figure 4-3. Therefore, a development in the northwest of the Site, within the MSA, would not sterilise the off Site reserve and is not considered further. The majority of the southeast MSA is



effectively already sterilised by the presence of ancient woodland across the outcrop. If the on Site outcrop was extracted, as with the building stone, a suitable buffer zone would have to be maintained around the excavation itself to allow for safe working slope angles to screen the Site, to limit the potential visual and noise impacts. Allowing for a 20m buffer zone, this reduces the area on Site to just 70m² which is not economic.

Figure 4-3 Wadhurst Clay Formation MSA with existing constraints



Available resource

Based on the building stone being an assumed 0.35m thick (usable thickness in TQ32SW8) and the requirement for buffer zones, the extractable volume of building stone within the MSA is estimated to be approximately 42,000m³. In reality the extractable volume may be even less due to historical workings.

Based on the Wadhurst Clay Formation being an assumed 3m thick and the requirement for buffer zones, the extractable volume of the resource on Site is estimated to be approximately 210m³.

4.2. Policy M9 (ii): It is appropriate and practicable to extract the mineral prior to the development taking place

A preliminary assessment of the potential environmental impact of prior extraction on Site prior to the Proposed Development is summarised in Table 4-1. The extensive potential negative impacts upon air quality, noise and landscape show that prior extraction may not be practicable on the Site.



Table 4-1 Summary of potential environmental impacts due to mineral extraction

Topic	Potential impacts	Effect
Air Quality	Large scale earthworks in close proximity to existing residential properties, as well as intensive use of plant and machinery could have a significant impact on air quality if not managed correctly.	Potential negative impact
Agriculture	The mineral resource extraction will sterilise the agricultural land, however the Proposed Development will have the same effect.	Neutral impact
Community	Mineral extraction will have a range of visual, noise and air quality impacts on the local community.	Potential negative impact
Cultural Heritage	Grade 2 listed Highbridge Mill and West Riddens Farmhouse neighbour the Site and are located within MSAs, they would likely see a significant increase in traffic passing by as well as potential visual, noise and air quality impacts should mineral extraction go ahead.	Potential negative impact
Ecology	A preliminary Ecological Appraisal and Phase 1 Habitat Survey (The Ecology Co-Operation Ltd.) has been completed for the entire Site, identifying 22 different habitats. Broadleaved semi-natural woodland has been identified as Priority habitat inventory and will require a 15m buffer to development. It is present along the south eastern margin of the Site and along the stream in the north of the Site, within the Building Stone MSAs. There are also several water bodies on Site which would be lost or diverted as a results of mineral extraction. The proposed residential led development will retain and protect both the woodland and water bodies. In addition, an active badger sett was identified at the south of the Site within the building stone MSA.	Potential negative impact
Landscape and Visual Impact	Mineral extraction will have negative landscape and visual impact until the Site is restored and developed.	Potentially negative impact
Land Quality and Ground Stability	There is not expected to be any impact on land quality provided control measures regarding fuels and chemicals are adhered to. The excavations will require stand offs and potentially benched/terraced excavations depending on the depth of the resource, which will reduce the area of workable deposit.	Neutral impact
Socio-economic	The Site could provide building stone to the local historic buildings, as well as provide jobs to the local residents.	Largely positive
Sound, Noise and Vibration	Noise and vibration from mineral extraction and traffic may impact the local community, however the proposed development will have the same effect.	Neutral impact
Traffic and Transport	The volume of traffic to Site will significantly increase. Currently the northern MSA is only accessible by the	Potentially negative impact



Topic	Potential impacts	Effect
	A272, there is no road access to the south east of the Site and the south west of the Site is only accessible by Burgess Hill Road which neighbours the listed West Riddens Farmhouse. Increased traffic will likely impact local residents.	
Waste and Material Resources	Excavated overburden material will potentially be re-used to restore the Site and during subsequent development.	Neutral impact
Water Resources and Flood Risk	Mineral extraction may impact groundwater and surface water quality in the vicinity of the Site. In addition, the area along the watercourse in the north of the Site (the Ardingly Sandstone Member outcrop) is within Flood Zone 2 and at high risk of flooding from surface water.	Potential negative impact

As discussed in Section 4.1 the building stone and Wadhurst Clay Formation reserves are not thought to be economic due to the requirement of buffer zones and existing sensitive receptors and infrastructure all of which significantly reduce the area from which resource can be extracted. Therefore, the costs of mineral extraction and Site restoration prior to development would make the proposed residential led development unviable. Furthermore, the potential environmental impacts summarised in Table 4-1 would also outweigh the benefits of extracting the deposits.

4.3. Policy M9 (iii) The overriding need for the development outweighs the safeguarding of the mineral and it has been demonstrated that prior extraction is not practicable or environmentally feasible

4.3.1. Building stone

Building stone demand today is mostly related to the restoration of historical buildings which require matching stones, with just 4No. active quarries remaining. The WSCC 2020/2021 Monitoring report records a 0.022 mega tonne (mt) annual average of sales between 2011 and 2020 for building stone. The total building stone reserve remaining on Sites with planning permission is 2.55mt, which given annual sales could provide for 115 years. However, it should be noted that a high proportion of material is not suitable as a building stone product, with generally only 15% of permitted reserves deemed a viable building stone product. Accounting for this, current permitted reserves account for 17 years of supply presuming demand remains at 0.022mt and purely as building stone as opposed to aggregate. Due to the small scale of the building stone industry, there is no requirement for authorities to make future provisions for the production of building stone. The WSCC mineral local plan states: 'evidence suggests there is no need to allocate any additional sites (or extensions to existing sites) for stone and the strategy is therefore to meet projected demand for sandstone from existing permitted quarries.



4.3.2. Wadhurst Clay Formation

There are 4No. active brickworks in West Sussex currently of which only the Freshfield Lane Brickworks uses the Wadhurst Clay Formation. The WSCC 2020/2021 Monitoring report records annual average of sales between 2011 and 2020 as 0.31mt and reserves on Sites with existing planning permission total 14.2mt, which should account for 45 years of supply given annual sales. The NPPF states that Mineral Planning Authorities should maintain at least 25 years of reserves for brick clay.

4.3.3. Discussion

Sites with existing planning permission account for sufficient reserves of both building stone and brick clay and there is also potential that new Sites could be provide further reserves. The Mid Sussex District Plan confirms a minimum district housing supply requirement of 16,390 dwellings between 2014–2031, which the proposed development will help to achieve. Providing up to 1,450 new homes of a range of different types suitable for families, older people and disabled people, with up to 30% of these being affordable housing. Therefore, based on the significant constraints noted above coupled with the limited area of deposits on Site, it is considered that in this instance, the need for the development outweighs the need for the mineral reserves.



5. Conclusions

5.1.1. Building stone

The total maximum extractable volume of building stone within the MSA on Site is calculated to be approximately 42,000m³ based on a reserve thickness of 0.35 and accounting for required buffer zones. This is likely an overestimate as recorded historical workings have not been accounted for. In addition, historical boreholes suggest much of the Ardingly Sandstone Member and Cuckfield Stone Bed are highly weathered and not competent enough to be used for the desired purpose of building stone. The results of the Yellow Sub Site investigation are expected to corroborate this.

This coupled with the significant constraints within the MSA including ancient woodland, listed buildings, afforested areas, a watercourse and associated flood zone renders the deposit uneconomic, which is expected to satisfy Policy M9 (i).

5.1.2. Wadhurst Clay Formation

Based on the Wadhurst Clay Formation being an assumed 3m thick and the requirement for statutory and non-statutory buffer zones (including ancient woodland and afforested areas), the estimated extractable volume on Site is estimated to be approximately 210m³.

Given the small extractable area and that existing permitted sites within WSCC have the capacity to meet current demand for the next 45 years, extraction on Site will not be economically viable.



Drawings

