

WEST BERKSHIRE MINERALS AND WASTE LOCAL PLAN EXAMINATION

MASTERS, ISSUES AND QUESTIONS

John Cowley, Director, Mineral & Resource Planning Associates Ltd, for and on behalf of Mr and Mrs Mills, <address details removed>, Chieveley, Berkshire

Position Statement

Soundness Matter 3, Construction Aggregate Supply and Allocated Sites

Issue 1 – Site Selection and Overall Supplies

Question

- b. Is the soft sand site at Chieveley Services appropriately allocated;
- i on the basis of a sound soft sand supply strategy and selection and assessment process
 - ii with particular regard to the North Wessex Downs AONB

with reference to the Site Selection Methodology, Soft Sand Study and Topic Paper including the AONB Exceptional Circumstances Test and Sustainability Appraisal and its Appendix 6, Site Assessment?

c. Can the soft sand requirement realistically be met from the allocated soft sand site at Chieveley Services together with cross-boundary and windfall supplies?

d. Should the degree of reliance on soft sand supplies from Oxfordshire be quantified and clarified to prioritise supplying soft sand from within West Berkshire itself?

Response

1 These matters are partially explored in the response to the Rebuttal to earlier representations.

2 Fundamentally the wrong questions are being asked. The first question should be “is there a need for the allocation at Chieveley Services given the misleading conclusions and suggestions for landbank in the South Sand Study, the demonstrable adequacy of supply of mortar to West Berkshire (the building industry has no problems in mortar supply) and the insignificance of any residual demand for building sand which demand can be provided from ‘sharp sand’ resources and ‘soft sand’ resources outside the AONB”. The answer would be “No” – because of adequacy of supply and availability of resources outside the AONB.

3 There is not a “sound” soft sand supply strategy in policy terms because the strategy is in conflict with objectives for the AONB and in need terms because need is met.

4 The site selection process is unsound for those reasons and because the relevant documents fail to identify the lack of need.

5 Equally it is irrelevant if the site can meet the requirement for building sand set out in the MWLP because that requirement is grossly overstated due to significant errors in

supply and need assessments. The residual requirement for building sand can be met from the 'sharp sand' resources and from 'soft sand' resources outside the AONB.

6 The substantive supply of mortar from other than building sand from West Berkshire or Oxfordshire means that certainty of future supply from Oxfordshire is not relevant to demand within West Berkshire. In any event, even if the supply from Oxfordshire were to be quantified and prioritised the MPAs have no powers to ensure that supply is made. That rests entirely with the commercial decisions and whims of the relevant operators. The achievement of any 'prioritised' supply from Oxfordshire would be a 'pyrrhic' victory for the MWLP for those reasons. Such prospective supply might be suggested by an applicant as part of any application in Oxfordshire, but there is no lawful way in which that supply could be enforced, even if the decision partly turned on that provision.

WEST BERKSHIRE MINERALS AND WASTE LOCAL PLAN EXAMINATION

MASTERS, ISSUES AND QUESTIONS

**John Cowley, Director, Mineral & Resource Planning Associates Ltd, for and on behalf of
Mr and Mrs Mills, Bradley Court, Chieveley, Berkshire**

Position Statement

Soundness Matter 3, Construction Aggregate Supply and Allocated Sites

Issue 2 – Chieveley Services Soft Sand Allocation

Question

Are the development principles stated for the allocated soft sand site at Chieveley Services appropriate, justified and potentially effective and will the site contribute sufficiently to the requisite supply and landbank of soft sand through the MWLP having regard to the following planning considerations, impacts and constraints?

- a AONB
- b biodiversity net gain
- c Flooding risk
- d Practical yield
- e Deliverability
- f Restoration
- g Cumulative impact
- h Previous appeal decision

Response

1 The site lies on the margin of the Reading formation with barren non-mineral bearing land on the western half of the site and therefore only a shallow deposit over the eastern half of the site. The base of the deposit is highly irregular being the location of a major unconformity with the underlying chalk which significantly affects the quality of the base of the deposit.

2 Fundamentally the site will produce a poor yield.

3 The implications of the inadequacies of the site are not raised in questions but they are significant for the future scale of mineral extraction in the AONB.

4 As the site at Chieveley has such a poor yield potential there is a threat that further sites in the AONB may come under pressure to be released. That could probably include bringing forward land near my clients (the '60 acre field') by default without proper assessment of the implications of that via a development plan process as to alternative strategies and options and as partly itemised in the above question.

5 The MWLP suggests in paragraph 4.45 that any failings with supply of soft sand will be resolved by a review of the Plan. That failing is unlikely to be clearly identified in time or resolved expeditiously.

6 Such a review would be burdened by the inaccurate conclusions of the Soft Sand Study (which are grossly misleading as to need and the current and future supply and demand position) and distorted by the acceptance of WBC (if the current decision of WBC to promote extraction in the AONB is ratified by the Inspector at these Hearings) and it may prove difficult to avoid further extraction in the AONB. One would hope that the failings of the SSS and this MWLP would have become clear in the interim.

7 However, that is a risk of unnecessary future harm to the AONB, which could be avoided by properly reflecting now the significance of the AONB in relation to the irrelevant 'rump' of local demand for 'dry-screened' building sand which does not satisfy the exceptional circumstances test and deleting the Chieveley Services allocation and related content now .

8 Therefore the question that should be considered at the Hearing is "what would be the implications on the AONB of any failure of Chieveley Services site to come forward or not to produce the volumes suggested". The answer would be that the AONB would come under further threat for extraction even though the relevant material can be supplied from elsewhere.

9 In the 2012 appeal the site was subject to detailed analysis as to need and impacts and its compliance with the exceptional circumstances test. That assessment was more thorough and subject to a more rigorous analysis that has been undertaken as part of the assessment in the MWLP. The inspector concluded that exceptional circumstances were not demonstrated and dismissed the appeal.

10 There was a previous appeal on the site in 1988 where the appeal was determined by the Secretary of State (APP/U0300/A/88/64431). At that time the AONB had less protection than it has now or in 2012 but where an essential need for the sand was required to be established if consent were to be granted. The Inspector concluded that no such essential need had been demonstrated. He recommended that the appeal be dismissed. The SoS agreed with the Inspector and dismissed the appeal.

11 Therefore, in two occasions and following detailed assessment of both need and AONB impact it was found that need wasn't proven and impacts were unacceptable. Neither situation has changed, except that need is now even less as most of the demand is satisfied by other materials (and also that the claim that soft sand has to be worked for mortar has been shown to be spurious) and that the AONB has even greater importance as a protected area to be enhanced in both landscape and nature conservation terms.

WEST BERKSHIRE MINERALS AND WASTE LOCAL PLAN EXAMINATION

Response to Rebuttal Evidence of Cuesta Consulting

John Cowley, Director, Mineral & Resource Planning Associates Ltd, for and on behalf of
Mr and Mrs Mills, Bradley Court, Chieveley, Berkshire

16 December 2021

1 INTRODUCTION

“The ‘building sands’ may be obtained from (a) dry or wet pits (b) the sea or estuaries by dredging (c) from dunes or (d) from crushed rock.”

The Sand and Gravel Association of Great Britain
Sand and Gravel Handbook: 1960
Chapter VI: Building sands for Plasters, Rendering and Mortars

“Unwashed dry-screened sand whilst sometimes complying with British Standards requirements, tend to produce mortars having a high water demand. As a result they are relatively weaker and more prone to shrinkage than mortars made with well-washed sand”

The Geological Society
Aggregates: Sand, gravel and crushed rock aggregates for construction purposes, 2001

“Policy M2 of the Bedfordshire and Luton Minerals and Waste Local Plan adopted in 2005 set out the intention to maintain seven year landbanks of both concreting sand and gravel and building sand operator’s state that they cannot anticipate how much of their reserves will turn out to be within each of these broad categories In the absence of good quality information concerning the breakdown of mineral reserves.... then the existing policy.... cannot be maintained.”

Bedford Borough, Central Bedfordshire and Luton Borough Council
Minerals Technical Evidence Paper 3: Aggregates Landbank Assessment: July 2012,
paragraphs 8.1 and 8.2

1.1 I set out below a response to the Rebuttal produced by Alan Thompson (AT) in relation to representations I have submitted on the above Submission Plan.

1.2 This response also provides a background to answering the Soundness Matters, Issues and Questions raised by the Inspector in his document INSP.3 I set out my response to the questions raised by the Inspector elsewhere in relevant Position Statements which may reference this response.

1.3 The response deals first with the background and then addresses points under the headings of the Rebuttal.

1.4 I have known Alan for many years and acknowledge his long experience in mineral matters. There are many matters relating to minerals where I am sure we would passionately agree. But we must disagree here.

1.5 The Rebuttal does not answer or resolve the fundamental and conflicting problems arising from the content and conclusions of the 'Soft Sand Study' (SSS, Cuesta May 2019) or the contents of the relevant documents subsequently produced by West Berkshire Council (WBC) in November 2020, as they relate to 'soft sand' (Minerals Evidence Paper, MEP; Soft Sand Topic Paper, SSTP; and the Proposed Submission Plan, PSP), and the contained inaccurate and misleading assessments on need and the resources of building sand.

1.6 I use the term 'soft sand' (and where relevant 'sharp sand') in this response to link through to the arguments by AT and WBC. They are terms to be avoided because they are not used in specification to define aggregates suitable for the relevant end uses.

1.7 It cannot be stressed enough that the term and description 'soft sand' (using the term as used by both AT and WBC) is wholly misleading as used. The 'soft sand' resources may, in part, be a resource to provide building sand but they are not the only viable resource for building sand in West Berkshire.

1.8 The policies in the Plan, the SSS and the Rebuttal create a scenario for a focus on new supplies from soft sand resources in the AONB in contravention to (i) specification and end use requirements and to (ii) the protection and enhancement of the AONB. In that the Plan policies unnecessarily threaten the AONB.

1.9 That focus is further refined in the Rebuttal, presumably with the acceptance of WBC, to the requirement that these be supplies of 'dry-screened' sand and perhaps of particular colour.

1.10 The MWLP seeks a supply (effectively of 'dry-screened' sand) based on historical sales (which in themselves included a significant proportion to concrete sand end use) which

have been overtaken by commercial decisions. That rate of supply from West Berkshire resources is no longer relevant and it is unhelpful to use that within the MWLP.

1.11 The building industry in West Berkshire needs mineral or mineral products that meet specification and are of consistent quality. The industry has voted for commercial and associated reasons to move away almost entirely from 'dry-screened' sand and on-site mixing to the use of consistent factory mixed mortar. They do not need large supplies of dubious and inconsistent quality 'dry-screened' sand, which requires inefficient and wasteful mixing.

1.12 That shift by industry is almost totally ignored by the MWLP and the SSS. It is picked up by the Rebuttal but the implications are then totally ignored.

1.13 The MWLP and the SSS therefore not only promote the provision minerals in the wrong location but promote the provision of the wrong minerals in the wrong location.

1.14 They thereby deprive the minerals industry of those minerals it requires to meet the essential demand from its customers in the building industry, to the detriment of the whole of society.

THE CALL FOR A 'SOFT SAND' LANDBANK

1.15 The call for a 'soft sand' landbank thereby does not properly relate to the need for a landbank for the market for building sand (or indeed for concreting sand which has been the significant end use for 'soft sand' in West Berkshire in recent history).

1.16 To emphasise; the term 'soft sand' describes neither a mineral (building sand) nor a market (fine aggregate for mortar). It relates, in very crude and often inaccurate way, to the presumed lithological relationship (fine sand) of a geological unit to a market. But that supposed relationship is false because (i) sand for 'building sand' or fine aggregate to supply the 'fine aggregate for mortar' market can be (and has been) met by material from other resources (notably 'sharp sand' resources), and (ii) because the geological unit has also been a source of fine aggregate (concreting sand) for the concrete market.

1.17 As the NPPF states in paragraph 207 (h) the requirement to calculate and maintain a separate landbank relates to aggregate materials with "a distinct and separate market".

1.18 To calculate such a landbank for ‘fine aggregate for mortar’ (the ‘market’) for the ‘aggregate materials’ (‘building sand’), it is essential that the ‘reserves’ (that volume of ‘building sand’ mineral in the ground within planning permissions) can be identified separately and unambiguously from other minerals in the deposit being worked.

1.19 If that is not possible then separate landbanks cannot be maintained. It is not possible to do that with the Reading Formation in WBC where the reserves in the ‘soft sand’ can be processed into and used for concreting sand or building sand end uses as required.

1.20 That flexibility of market arises because, by merely selling the product under a different label, or by minor changes to the processing plant, the ‘reserves’ (and the landbank contribution), can be changed by an operator from reserves of building sand to reserves of concreting sand, and vice versa. The scale of the landbank (be that for building or concreting sand) and its compliance with policy could thereby significantly change in an instant and by the unfettered commercial decision of an operator, without the MPA having any control on that decision.

1.21 The link to the need for the reserves to be capable of being identified separately and unambiguously was clearly stated in previous advice on landbanks. It is not stated in the current or former NPPF but the logic of having to satisfy that test is unassailable.

1.22 This need to have reserves that can be identified separately and unambiguously was noted by the Inspector into the Appeal (APP/Z1585/A/12/2176050) decision at Elsenham Quarry, Essex (at paragraph 71) where she noted :

“Separating resources in the ground into those reserves suitable only for building sand or concreting sand can only be done in terms of what is produced for sale after processing. What that split will be will depend on the operator’s commercial decisions as to what the market wants at any particular time. I find the MPA’s argument persuasive on the evidence before me that where building sand and concreting sand cannot be separately identified in reserves, separate landbanks cannot properly be defined or managed.”

1.23 Similarly at the subsequent Essex RMLP hearings the Inspector noted:

“The NPPF at para 145 and the PPG at para 0853 support separate landbanks for specific mineral products, including building sand, where justified by a distinct and separate market. Whether a separate landbank is appropriate therefore depends on whether it is feasible to calculate the reserves of sands in Essex suitable for building use”.

1.24 AT has noted and has agreed with that position himself previously. He stresses that constraint in, for example, the Cuesta 2006 final report ‘Bedfordshire Aggregates Landbank Study, 2005’ (to Bedfordshire County Council), where he considered the problems of applying landbanks to the Woburn Sands (‘soft sand’ in his terminology), a bedrock ‘sand’ where quarries and their reserves supply, at various different and variable rates, both building sand and concreting sand (as well as sand for various industrial markets).

1.25 In particular AT notes in paragraph 1.10 of that report:

“MPG6 notes that it is essential that data on annual production, production capacity and reserves, disaggregated by material type where possible, for the area constituting the landbank unit should be publicly available. It points out this will be especially important where the landbank is comprised of a mixture of aggregate types which are not interchangeable, and uses the specific example here of building sand and concreting sand & gravel. In such circumstances, MPG6 notes that separate landbanks may be appropriate, providing (Cuesta emphasis) that the reserves of the different aggregate types may be identified separately and unambiguously (my underlining)”

1.26 The report gives further detail of the complications involved in trying to provide a split landbank from a single resource and emphasises in paragraph 2.31 of that report the inability of the MPA to control end use and the resultant, effectively chaotic, impact on using separate landbanks where it is stated that:

“Whatever the reasons for the particular markets served from each site, the MPA has no control over the end uses for which the permitted reserves are used, and a change of ownership or of marketing strategy could easily cause a shift in the balance of sales (and corresponding reserves) from one landbank category to another. (my underlining)

1.27 More recently AT has addressed the impact of commercial decisions of end use (which decisions are outside the control of the MPA) in two reports on silica sand ('Silica Sand Study, 2016', for West Sussex County Council and South Downs National Park Authority; and 'Bedfordshire Silica Sand Update, 2017', for Central Bedfordshire Council). The background to both of those reports is that the relevant sand deposit is extracted (or could be) for 'industrial' purposes, but also at widely varying rates from quarry to quarry for both concreting sand and/or building sand.

1.28 He notes in both reports (paragraphs 3.7 and A7 respectively) the following:

"Monitoring the availability of sands to meet the increasingly diverse range of requirements is a further complication. In such cases ... the available permitted reserves can only be apportioned between the separate landbanks on the basis of recent sales information, as supplied by the operators. Whilst this is done, where necessary, in other MPAs, in practice it is difficult. This is because the split between different markets supplied from individual quarries may vary over time depending on the success or otherwise of individual operators in marketing their products for specific end-uses." (my underlining)

1.29 The objective in the NPPF to seek separate landbanks where possible cannot be pursued in the face of commercial realities and inherent flexibility of end use markets.

1.30 As the reserves/resources in West Berkshire cannot be separately defined in the ground into those only suitable for concreting sand and those only suitable for building sand, a separate landbank cannot be physically defined nor can it be managed by the planning process.

A DRY-SCREENED BUILDING SAND LANDBANK

1.31 The thrust of the SSS and hence the Plan is to provide a 'dry-screened' building sand landbank. The NPPF does not seek such provision.

1.32 None of the WBC documents, or SSS or the Rebuttal, identify any requirement or justification in any national guidance or policy that there is a need to provide (i) a landbank based on a geological deposit or (ii) a landbank for a construction material produced only by

a specific form of processing (dry-screening) as suggested, or (iii) even, as intimated by AT at paragraph 3.16 in the SSS, landbank(s) of dry-screened sand based on colour.

1.33 The inability to resolve the underlying conflicting problems clearly lies with the simple but misleading presumption by many planning authorities in the South east (including West Berkshire) that bedrock sand deposits are 'soft sands' (in their terminology) and therefore equate to a mineral resource for building sand and that, in effect there are no other suitable resources for building sand.

1.34 Despite what is said in the Rebuttal by AT to try to seek to avoid that deterministic link, it inescapably follows from the arguments AT sets out in the SSS and the Rebuttal that he considers that building sand can only be sourced from local 'soft sands'. His focus that this should be a landbank for dry-screened building sand reinforces that direct link.

1.35 WBC seem to accept that link which is referenced in, for example, paragraphs 1.2 and 1.3 in the SSTP (1.3 "Soft sand is much older, and it principally occurs in the Reading Formation, a bedrock deposit" and 1.2 "Soft sand (also called building sand) ... in contrast sharp sand is rough and angular... the two minerals are generally recognised as having separate uses and markets").

1.36 Of course the first error here in 1.2 is that 'soft sand' isn't a 'mineral' (it is a geological unit which can supply various minerals), nor does 'soft sand' supply a separate market. As used by WBC 'soft sand' is merely a geological deposit. The presumption of a link to a market *which only soft sand can supply* (my italics) is a presumption which in West Berkshire (and many other areas) is false and has always been false.

1.37 Some 'soft sand' may only be capable of be processed into building sand for use in mortar (because it is too fine), but that is a different consideration.

MORTAR AGGREGATE REQUIREMENTS

1.38 The documents produced by AT and WBC have a fixation with 'roundness' as being an essential characteristic for fine aggregate for mortar.

1.39 While AT notes in the SSS at 3.13 that particle shape is not a specified requirement in the relevant BS he subsequently ignores that point and then proceeds to frequently

reference particle shape in the following paragraphs as a desirable if not an essential consideration. He emphasises the need for that characteristic in 3.16 in the SSS where he states in bold his conclusion on supply sources (one of only 3 such emphasised points in the report) that in order to meet need “**supplies would need to be of soft (rounded and fine to medium grained) sand**” (his emphasis in bold, my underlining).

1.40 That conclusion is inaccurate and unjustified. He acknowledges that in paragraph 3.13 that there is no such requirement for ‘rounded’ grains, but then proceeds to require that characteristic in his supply source. He gives no technical justification for the focus on ‘rounded’ grains.

1.41 The documents frequently stress, link and equate the ‘roundness’ of the sand grains (a) with ‘softness’ and (b) the resultant perceived greater value in use in mortar. That is stated in the Rebuttal (Summary 1, and paragraph 10) where the “rounded sand grains” are considered to be “better suited ... to the production of ... mortar”; and variously in West Berkshire documents such the Soft Sand Topic Paper (paragraph 1.2) “smooth and well rounded” and the Minerals Evidence Paper (paragraph 3.2.3) “Soft Sand ... suitable for mortars”.

1.42 However, the ‘workability’ (its ease in handling and laying on the bed or a brick by the artisan bricklayer) of a mortar, is a reflection of the combination of the overall fineness of the grading of building sand and the greater content of fine sand, silt and ‘clay’ sized particles, which create the ‘fattiness’ of the mortar. These fine particles enable good packing and fill in the pore spaces and create good bonding, holding the mortar together on the trowel and on the brick. At the grain sizes involved, the fact that the grains are rounded is inherently irrelevant, to the behaviour of the mortar.

1.43 The general irrelevance of ‘roundness’ of the sand grains is confirmed in specification.

1.44 BS EN 13139 ‘Aggregates for mortar’, paragraph 5.4.1 Particle shape, states that “The particle shape of fine aggregates smaller than 4mm is not normally relevant to the behaviour of mortars” (most of the aggregate grains by mass in a suitable mortar mix are considerably smaller than 4mm). That specification emphasises the importance of grading

and the control of deleterious substances (sulfate, chloride, iron pyrite, lignite, coal, etc), but as noted makes no mention of the need to control grain shape or the need for the aggregate grains to be 'rounded'.

1.45 This fixation on roundness in planning documents, but which is ignored in relevant technical specifications, is therefore factually irrelevant to (i) the sand end use in mortar, (ii) the resource characteristics of building sand, and (iii) the resources required to provide the landbank of sand and gravel to meet that end use.

1.46 BS EN 13139 is widely used elsewhere in the World. In the USA and also in many other countries the relevant specification used is ASTM C144 'Standard Specification for Aggregate for Masonry Mortars'. This specification has similar grading requirements and, as with BS EN 13139, emphasises the importance of grading and the control of deleterious substances (similar to that in BS EN 13139).

1.47 ASTM C144 has no requirement for the grains to be 'rounded'. There is one requirement as to shape. This is a footnote which requires the need to ensure that there is not an "excessive quantities of flat and elongated particles" which "have historically caused problems with workability". This references the potential significant volumes of minerals such as mica (flat) and tourmaline, rutile (elongate), etc or other durable and heavy minerals (with higher SG than quartz) in sand deposits. These non-spherical or rather non-cuboid shapes inhibit good packing of the mix and its workability.

1.48 I do not wish to extend this debate further but the irrelevance of the fixation on roundness is contrary to both practice and sustainability objectives in specification. Both BS EN 13139 and ASTM C144 provide that suitable aggregate material includes, not only 'natural sand', but also 'manufactured sand' (ASTM) and 'manufactured or recycled materials' (BS EN).

1.49 The use of such materials can provide technical, energy and cost advantages to the building industry compared with 'natural' quartz sand. Their use can also significantly assist sustainability objectives by the direct use of industrial wastes (slag, spent foundry sand, ceramic waste, china clay 'sand', etc) and recycled materials, some of which are naturally cementitious and thereby reduce the amount of cement required in a mortar. Such

materials have been used for decades in mortar and materials such as ash have been added to mortars for thousands of years.

1.50 The relevance here to the 'roundness' debate is that many of these materials are of angular but cuboidal form. The fact that they are not rounded is not relevant to their acceptability. The shape issue of concern (and as noted in ASTM C144) is the desire not to have flat or elongate shapes and to ensure that most of the grains are therefore 'cuboidal' or 'equant' which will ensure better packing.

1.51 In any event most of the sand grains in bedrock deposits ('soft sands' of AT and WBC) in Southern England occur within the range of sub-angular to sub-rounded in shape. It is only those aeolian derived Permo-Trias hot 'desert' bedrock sands in South West England (or sands subsequently derived from them) which have a significant proportion of well-rounded grains. Elsewhere in the UK, cold 'desert' sands also have a significant proportion of well-rounded aeolian derived grains.

1.52 The constituent grains in sand may have a wide range of mineral and shape. This is a reflection of a combination of (i) the 'provenance' of the sands (the source rocks from which the grains have been liberated and subsequently transported to be laid down as the sediment forming the sand deposit), (ii) the transport distance, and (iii) subsequent diagenesis processes.

1.53 The main sand forming mineral in the UK and globally is quartz (the major form of silica in the natural world). Quartz is a hard and durable mineral. At the relevant grain size for building sand it is recognised that further reduction in size is by the slow process of attrition rather than impact breakage (this is due to the high impact energies required to produce impact breakage of such small particles and the buffering of impacts by water).

1.54 It is an accepted concept in sedimentary geology that the grains of quartz sand in many un-cemented sands and sandstones will have been through a number of erosion, transport and deposition 'cycles' which will have initially liberated and fractured the mineral and then in successive cycles gradually reduced the size and produced the grain shape.

1.55 Some of the quartz sand grains in the Reading Formation may therefore have been originally crystallised from a melt many hundreds of millions ago and then been through a

number of such cycles before being deposited in what is now Berkshire. However, the Reading Formation sand also contains younger and fresher highly angular mineral fragments of quartz and other forms of silica (flint and chert) and of other minerals (limestone, ironstone, chalk, etc) derived from recently eroded or younger and softer rocks.

1.56 Due to the geography of the location at the time (the transport and deposition environment) the sand deposit also contains both angular and rounded gravel and grit as well as large cobbles and exceptionally large boulders of sandstone together with clay lumps or seams (which can interdigitate within the 'sands') and silts, or any heterogeneous combination of those materials. Other parts of the Reading Formation deposit reflect different deposition environments and are dominated by clay.

1.57 This deposition environment creates (as acknowledged by AT) a highly variable deposit within which the sands will vary across the outcrop and may be 'coarser' or 'finer'; or more 'clayey' or 'gravelly'; or 'well-graded' or 'gap-graded' or 'single-sized'; and of widely varying colour; or any combination of those features.

1.58 The provenance and depositional environments will together affect the characteristics of the sand deposit. AT notes in the Rebuttal (paragraph 10a) under 'Geological Relationships with Soft Sand Production' that the "bedrock sand are 'soft sands' ... they have more rounded grains due to their origin in high energy marine depositional environments" (my underlining).

1.59 That was not the depositional environment of the soft sands of the Reading Formation in general or more specifically in Berkshire which was located at the then edge of the deposition feature.

1.60 The sands in West Berkshire are not "high energy marine deposits" but were derived from erosion of land to the west in a warmer climate than today and deposited as highly variable meandering large river channel fill deposits flowing across a broad low-lying alluvial plain which may have been subject to seasonal flooding and exposure and/or occasional brackish or marine incursions. As expected the sands are therefore highly variable in characteristics.

BUILDING SAND & MORTAR

1.61 The main use of sand as a construction mineral is in concrete. The other significant use is as building sand for use in mortar and plaster. Sand is also used in asphalt and in other construction uses and for various industrial and other purposes.

1.62 The primary focus of West Berkshire in relation to 'Soft Sand' is in relation to building sand for use in mortar. The latest national survey (AM 2019) indicates a total 'use' of building and asphalt sand for England and Wales as some 6.840 million tonnes – this compares with circa 10 mtpa in 2000 and circa 20mtpa (of building sand) in the 1970s/80s.

1.63 There is no nationally produced survey of the sales of building sand by source or production method. There is no breakdown of that proportion of demand met by 'dry screened' as opposed to washed or in factory mixed mortar.

1.64 The production method is of course open to commercial decisions of producers and is wholly outside effective planning control. Mobile processing plant can be brought on site within hours to either change the process method or significantly increase production levels. Such movement of mobile processing equipment is not subject to planning control at an operational site even where GDPO rights have been removed.

1.65 Informed estimates by (i) the Mortar Producers Association (they sell most of the material – so should know) and (ii) business/industry assessments indicate that nationally (i) 'factory mixed' mortar (either 'dry silo mortar' (DSM) or 'ready mixed mortar' (RMM) combined) now supplies over 80% of the mortar market and (ii) that site mixed mortar (SMM) makes up less than 20% of mortar used. This differs by region to a varying degree.

1.66 There are various pros and cons for sourcing from either, but the SMM proportion continues to fall due to concerns as to consistency/quality/compliance of the sand, and of course the resultant mortar, and due to high waste on construction sites, the costs of disposal of waste, skill shortages, etc.

1.67 It is true that the site delivered cost of dry-screened sand to a building site for use as SMM is substantially less than the cost of an equivalent volume of site delivered DSM. However, when one factors in the cost of cement, additives, equipment, energy and labour

the actual comparative costs for say a one cubic metre of mortar delivered to the bricklayer working on site are around the same, but perhaps marginally less for DSM/RMM.

1.68 SMM may be mixed by hand with a shovel but mainly is mixed using a drum mixer of varying capacities. These mixers rotate and blades inside the drum carry the charge up to hopefully mix the charge into a consistent mortar of the required specification as it falls.

1.69 There is a considerable and varying degree of randomness inherent in this due to the method of charging (shovels, buckets and occasional weighed charge) and the condition of the charge materials (has it been raining and is the sand soaked – affecting water content of charge and weight of sand charge?; how much cement might be blown off of the shovel, or blown away when being tipped in from a container, and lost in the charge due to air turbulence – by the motion of the drum or wind; has the cement bag been previously opened and affected by moisture in the air – and how accurate is the cement charge anyway if it is delivered from a split or left-over bag?).

1.70 Ideally the drum should be emptied entirely and cleaned between charges but that is a time-consuming and unlikely. Cleaning at the end of the day would often involve using an old brick and water to knock the ‘set’ mortar off of the internal walls, although chemicals may also be used. This may not be wholly effective and ‘stuck on’ mortar will impact on the mixing results in future charges. Often site operatives will try to use force (banging the drum with a shovel) to remove this ‘set’ material but that can lead to distortion of the drum creating new opportunities for material to build up and affect the future mixing effectiveness of the drum.

1.71 Of that residual SMM supply the sand will have been processed either (i) ‘dry-screened’ where it is merely passed over a fixed screen to remove ‘oversize’, clay lumps, etc, but which is less effective at removing contaminants such as chalk, lignite, ‘sticky’ clay, plastic waste, metal, organics, etc; or (ii) ‘washed’ in a wet washing plant where oversize is first removed and then the clay, fines, contaminants and organic debris are removed by water processing. There are various pros and cons for sourcing ‘washed’ building sand or ‘dry-screened’ building sand. However, the ‘dry-screened’ proportion continues to fall due to the concerns of consistency noted above.

1.72 Unfortunately, the 'Soft Sand' report for West Berkshire and the Rebuttal Evidence seem to suggest that the residual SMM can only be produced (or has to be produced) and will need to be produced in the future from 'dry-screened' sand (see the Rebuttal at paragraph 2 in the Rebuttal Summary and 16 and 32 in the Rebuttal). This interpretation is emphasised in bold as **"need to maintain an adequate and steady supply of locally-sourced dry-screened sand for use within West Berkshire"** (my underlining).

1.73 Both reports therefore completely fail to note that SMM is in practice also produced using 'washed' sand, precisely to try to replicate the benefits of consistency, less waste, etc as noted with factory mixed mortar and that 'washed' sand is the dominant material in SMM as well. This contribution has been ignored.

1.74 I estimate from current work for clients across Southern England (Suffolk to Cornwall), Wales and the North that 'washed' sand takes between 70-100% of all SMM. The share taken by 'dry-screened' sand is therefore no more than 30% and often a lot less. There are some areas where there are no longer any supplies of 'dry-screened' building sand.

DEMAND

1.75 The Submission Plan and supporting documents suggest that the demand for 'soft sand' or building sand in West Berkshire is some 44,000 tonnes pa. That is not the same as the demand on resources in West Berkshire given the nature of the existing building sand/mortar supply scenario. The demand is said to be for 'dry-screened' sand. But that is a total distortion as it ignores the major supply from DSM, RMM and 'washed' SMM which is currently meeting most of that demand and will continue to do so in the future.

1.76 The demand for mortar and hence building sand for construction in West Berkshire has always relied on imports. Over the last 20 odd years imports of sand for mortar has been replaced mainly by imports of factory mixed material (DSM and RMM). The actual percentage supplied to West Berkshire from each source is not known. But DSM and RSM supplies are the significant physically identifiable constituent of that supply in West Berkshire.

1.77 On a pro-rata basis the demand for SMM in West Berkshire would be less than circa 8,800 tonnes per annum with a total demand for 'dry-screened' sand of perhaps no more than circa 2,600 tonnes per annum.

1.78 The emphasis in the Soft Sand Study and the Rebuttal on the need for 'dry-screened' sand is not justified either in terms of need or policy or for a landbank. There is no guidance or requirement in national policy that sand produced by a specific process has to have or may be provided with its own landbank.

1.79 Further dry-screened sand is merely that produced by a process decision of each operator for each extraction site. The decision to process sand by dry screening or by washing is a commercial decision of the site operator. Similarly the decision to use 'dry-screened' building sand, or 'washed' building sand in SMM, or to use a 'factory-mixed' product such as DSM or RMM is a commercial decision of the construction business.

1.80 All these sources of mortar and use of building sand form the 'market' for building sand. That market can be supplied by any combination of those sources. There is no nationally or locally published data on the market share or reserves in the ground of 'dry-screened' building sand. As demand and reserves cannot be identified it is impossible to identify, calculate or operate a dry-screened sand 'landbank'.

1.81 The NPPF does not identify the building sand market by its contribution from or to DSM or RMM or SMM. More significantly, the NPPF does not suggest that the SMM building sand market should be split into (i) 'dry-screened' building sand, and (ii) 'washed' building sand. The call in the Rebuttal etc for supply of 'dry-screened' building sand is not supported by the NPPF.

2 THE REBUTTAL

2.1 I will now address the six main points raised in the Rebuttal by AT.

1 Geological relationship with soft sand production

2.2 The Rebuttal states that the SSS etc do not link 'soft sand' as the only source of building sand. However, in effect that is precisely what is implied by the debate in the SSS and in WBC documents. Further given the statement in bold in paragraph 3.16 of the SSS

that aggregate supplies for aggregate for mortar “**would need to be of soft ... sand**”, with all other potential sources ignored, then there is clearly an intention to create and use such a direct link because the SSS thereby concludes need can only be satisfied by ‘soft sand’.

2.3 I have demonstrated both in my representations and in this response the falsity of that interpretation and indeed its conflict with the requirements of specification.

2 Changes in the market for mortar production

2.4 I am grateful that AT recognises the substantial change in the supply of mortar and its impact on building sand demand (and in his and WBC terms on demand for soft sand). He concurs that the residual market for site mixed mortar (for mortar other than factory mixed mortar) is now nationally only about 20% of the total market.

2.5 In acknowledging this he does not address how this shift has reduced demand for supply from within WB.

2.6 AT indicates that there is therefore the need for that residual demand to be provided from dry-screened building sand. As I note above, some of that residual demand, but only a small proportion, is still met by dry-screened building sand. The majority is supplied by ‘washed’ building sand from both ‘soft sand’ resources and what AT and WBC would describe as ‘sharp sand’ resources.

2.7 The residual demand for mortar, other than factory mixed, could be satisfied by ‘washed’ building sand or ‘dry-screened’ building sand. His requirement that this is only from ‘dry-screened’ sand is misleading.

2.8 He also accepts in paragraph 18 that sales from the relevant operations in West Berkshire have been to concrete sand end use markets and not only to building sand. He then concludes in that paragraph that these were “sales of soft sand” (his underlining). That comment clearly implies that AT considers that it is not the end use or market that is relevant to supply but the broad geological horizon. That wholly conflicts with the NPPF at 207(h) which confirms that landbanks should relate to markets.

2.9 Discussion in paragraph 17 of the Rebuttal considers the actual percentage of the residual non-factory produced mortar which as AT notes might be different in WB from

other areas or the national figure. He offers no data on percentage because none is available. The LAA does not identify the percentage and former sales figures of 'soft sand' included sales to concreting sand end uses.

2.10 There is therefore no evidential basis for the conclusion in paragraph 18 that there is a **“need to maintain an adequate and steady supply of dry-screened soft sand”** (AT emphasis in bold, my underlining).

3 The justification for a separate soft sand landbank in West Berkshire

2.11 I have noted above the irrelevance of 'soft sand' to landbanks in general and as a specific requirement. I have also noted the fact that the reserves in the soft sand deposits in West Berkshire cannot be split in the ground into the separate end uses and therefore it is not physically possible to calculate or maintain separate landbanks, even if it was considered desirable.

2.12 The Rebuttal draws on what are stated to be other examples in the UK where separate landbank calculations are produced for two or more distinct markets supplied from the same geological deposit.

2.13 I am aware of situations where the reserves in a quarry of each mineral can be separately and unambiguously split from each other because they are contained in two lithologically different parts of a quarry. Such examples are where, for example, sandstone overlies limestone, or where glacial sand and gravel may overlie limestone.

2.14 If the reserves are mixed together in a deposit, such that limestone, for example, can be diverted either to industrial or construction uses, then separate landbanks cannot properly be calculated or maintained.

2.15 In paragraph 21 of the Rebuttal AT references what he describes as such specific examples of separate landbank calculations in such circumstances.

2.16 However, those examples do not provide, as claimed, for separate landbanks where two or more aggregate minerals are worked from a deposit.

2.17 In both the South Wales and North Wales examples the assessments and apportionments in the RTS provide only a combined crushed rock landbank (all types of crushed rock including igneous, sandstone and limestone) even where the resource is either partly or wholly used as aggregate. The proportion of reserves that is or could be used for industrial purposes is not defined.

2.18 The RTS provides no landbank calculation for sandstone and igneous rock reserves in Wales which are suitable for road wearing course, even though that is the specific market which such quarries supply and where their other sales are merely of the waste off-specification mineral.

2.19 The RTS apportionment only provides a combined figure for sand and gravel. That thereby includes building sand, concreting sand and gravel used in concreting and for other purposes into a single landbank. None of the relevant MPAs provide a split landbank for sand and gravel in their development plans.

2.20 In respect of Bedfordshire the Woburn Sands outcrop supplies both the industrial sand and the construction sand market. The construction market is supplied with both building and concreting sand (and some minor gravel) from the Woburn Sands. Neither the relevant adopted Minerals Plan nor the published Local Aggregate Assessments provide or indicate separate landbanks for building sand or concreting sand or for gravel. The relevant landbank provision in Policy MSP2 is to provide a 7 year landbank for “sand and gravel” with no split.

2.21 The reasons for this inability to split reserves in Bedfordshire and significantly the impracticality and misleading nature of such a split is specifically identified by AT in both his 2006 and 2017 reports for Bedfordshire on the Woburn Sands as I note above.

2.22 The Rebuttal categorically states in paragraph 22 that of the resources in potential allocations in WB for ‘sharp sand’ (as defined by AT), “None would be able to provide sand with the characteristics that are suitable for use as building sand”. There is no evidence in the SSS or any other document to confirm generally or individually that statement. The resources in allocations in the Plan are not accompanied by detailed particle size distribution and in any event can (as acknowledged by AT in other locations, such as in

Bedfordshire) be diverted into building sand or concreting sand, if required, by the marketing decisions of the operator. In itself the statement in paragraph 22 is in any event technically incorrect as it conflicts with the relevant BS specification.

2.23 However, in the Summary at 1 AT states merely as a generality his perception that “soft sand is better suited”, (my underlining) to the production of building sand for mortar than is the case for ‘sharp sand’.” Being “better suited” is hardly a demonstration of ‘exceptional circumstances’ and sufficient justification for a soft sand quarry in the AONB, but even that qualification is incorrect and non-compliant with specification.

2.24 This response has identified the difficulty with separating the reserves in the soft sand into their individual markets. A further underlying difficulty with applying a ‘soft sand’ landbank is the inability to provide accurate figures on reserves for each market (building sand or concreting sand) due to confidentiality (because there is only one or two operating units). That has been overcome partly for this Plan by the former two operators providing otherwise confidential information. However, that is not split by end use and is of limited value.

2.25 There is however, no certainty that in the future that such otherwise confidential data will be provided. Former operators may have no qualms about disclosing their past now otherwise commercially irrelevant sales. New operators may choose not to disclose confidential sales. The Inspector now and the MPA and the public in the future cannot be assured that such data will be available. The landbank adequacy (in volume and years) might never be capable of being determined making a mockery of the provision of a separate soft sand landbank. The ‘soft sand’ reserves would in all probability therefore have to be included with the ‘sharp sand’ reserves in WB, to produce a combined landbank.

2.26 An unstated related difficulty that would flow from the adoption of a ‘soft sand’ landbank (based on the thesis that only soft sand can supply building sand) will be the pressure to release further reserves to enable competition as required by the NPPF at paragraph 207(g). Based on the view of AT, and on the proposed acceptance by WBC that reserves must be released in the AONB, an argument could be promoted that there are exceptional circumstances for the release of further reserves in further sites in the AONB to enable competition.

2.27 How WBC will deal with that, given its current apparent acquiescence in policy to extraction in the AONB is unknown. There is no certainty as to how many operating quarries would be required or justified to provide competition. Of course, as has been demonstrated in the past, it might be that the reserves so permitted are not commercially suited to building sand (either because they are too fine or because they can be processed to serve a more lucrative market as concreting sand) and are irrelevant to the dry-screened 'soft sand' landbank. Further, acquisitions of businesses may occur, reducing competition. These and other considerations will impinge on competition considerations and the pressure for further new sites in the AONB.

2.28 One only has to add in the call of AT for this soft sand landbank to be split (i) with a dry-screened landbank and (ii) into reserves of specific colour (as in paragraph 19 of the rebuttal and 3.16 in the SSS – where the requirement for colour matching is highlighted by AT in bold), for landbank chaos to be created, with a whole gamut of landbanks ("soft sand or sharp sand" building sand; subdivided into "washed or dry-screened" building sand; and then sub-divided by colour "yellow, orange, red, brown, grey, white, etc"), where WBC will have difficulty in controlling further development in the AONB.

4 Assessing the quantum of local demand in West Berkshire

2.29 The Rebuttal on this point again references the geological deposit ('soft sand') not the end uses. The figure of 43,720 may be a historical figure for sales of soft sand but as it mainly includes sales of concreting sand (which can also be supplied from 'sharp sand') and therefore does not equate to the demand for building sand nor to the specific landbank required by AT of dry-screened building sand. Given that the historic figure was mainly sales to concreting uses the 43,720 tonnes figure to be supplied from 'soft sand' is clearly excessive.

2.30 Further, the major structural shift in supply (the use of factory mixed mortar) which dramatically affected supply over the period when the reserves in WB started to run out, has captured most of the fine aggregate demand for mortar leaving only a minor demand for building sand for site mixed mortar which can be supplied from washed 'sharp sand' derived building sand. The demand for dry-screened building sand is now minimal.

2.31 Promulgating demand (as AT does and as the Plan suggests) on historic and out-of-date commercial scenarios is unacceptable. It is unreasonable to plan on that basis.

2.32 AT notes “the demand has not gone away”. I concur; but it has just been replaced and by a more commercially and environmentally acceptable supply.

5 The specific need for soft sand extraction in the AONB

2.33 In paragraph 27 of the Rebuttal AT suggests that the need to work sand in the AONB relates directly to the “need for a soft sand landbank”. There is no need for a landbank related to a geological unit, the need, if there is one, should relate to the particular end use market of building sand. As noted above that need can be satisfied by factory mixed mortar and washed building sand with the minor residual supply of dry-screened sand being supplied by resources of Reading Formation sand within Berkshire or from imports. These sources lie outside the AONB or other protected areas.

2.34 The availability of those commercially attractive and environmentally sustainable resources removes any claim of exceptional circumstances. Further, due to the uncertainty as to the actual end use of reserves from the Reading Formation (would most be suitable for concreting sand?) that also removes any claim of exceptional circumstances.

2.35 But fundamentally the claim that a production method (dry-screening) or a colour justifies exceptional circumstances for extraction (as set out in 3.16 of the SSS and variously in the Rebuttal) is indefensible first because sand produced by washing is more acceptable in specification and secondly because even if colour was relevant (which it is not because pigments can ensure continuity), it cannot be maintained with any degree of certainty.

2.36 Contrary to the statement in paragraph 27 in the Rebuttal there are extensive resources of soft sand outside the AONB in West Berkshire and the former Berkshire county. These contain substantial volumes of fine aggregate suitable for building sand for mortar.

2.37 I have previously investigated such resources (and ‘sharp sand’ resources) across Berkshire outside the AONB over a number of years and can confirm that there are workable deposits of bedrock sand (and of course some unworkable deposits) that can produce sand in compliance with the relevant BS specification for use as building sand and

also for concreting sand. Such resources have not come forward as planning applications primarily because of the adequacy of alternative supplies and the impact of factory mixed mortar capturing the market and thereby together affecting commercial viability.

2.38 I will be willing to supply un-redacted copies of one such site evaluation report for a Reading Formation deposit near Maidenhead to the Inspector and the legal representative for WBC on a confidential basis, and redacted extracts to WBC officers and AT. That report demonstrates the presence of a net reserve after allowances of circa 1.0 million tonnes of sand compliant with either/and fine aggregate for mortar or concreting sand.

2.39 The need to work sand in the AONB, as set out in the Rebuttal, is linked with Rebuttal arguments for a soft sand landbank and local demand. It also flows from the historical decision of Berkshire to grant consent for sand extraction in the AONB. That can therefore lead to the interpretation in the Rebuttal that because building sand has historically been extracted from the AONB that that in itself demonstrates the need for further new extraction. That argument was put forward by the appellants at the 2012 Old Kiln Farm appeal (the Chieveley Services site in this Plan, Policy 31) but was rejected by WBC because it ignored changes in the market. What was possibly justified in the past is no longer relevant today.

2.40 The fundamental test here would be to assess the prospects of demonstrating the need for building sand from the AONB in a situation where there were no previous workings, the market was shrinking, the market was merely a local not a national consideration, alternative supplies were available and meeting most of the demand, and the mineral was so variable that it could not be assured that it would meet or be used for the proposed end use. In such a situation exceptional circumstances would not arise.

2.41 I believe the necessity for extraction in the AONB as proposed by AT (and apparently accepted by WBC) is inconsistent with policy in the NPPF. I believe it is also inconsistent with the conclusions of AT in his report Silica Sand Study 2016 to West Sussex County Council and the South Downs National Park Authority.

2.42 That report considers the resources of sand in the Folkestone Formation as to their suitability for industrial uses as 'silica sand'. The sands are currently important sources of

concreting sand and building sand for West Sussex and beyond and are extracted within and outside the South Downs National Park.

2.43 Silica sand resources are considerably less extensive than building sand resources and they may be extracted to meet nationally important markets compared particularly to local dry-screened building sand.

2.44 That report concludes that there are potential resources of industrial silica sand within the National Park but that there are alternative resources elsewhere outside the National Park, which are capable of supplying demand and that there is no clear evidence of an impending critical shortage such that those uncertainties have to be balanced against the very clear need to protect the National Park.

2.45 That report does not suggest that extraction in the protected area (the SDNP) is essential, unlike the conclusions in the SSS in WB, even though that report relates to a nationally important mineral (silica sand for industrial purposes).

6 Protection afforded to Areas of Outstanding Natural Beauty

2.46 The Government has repeatedly emphasised its objective of protecting more of our landscape and enhancing that protected landscape. It was implicit in these announcements that both the status of AONBs and their protection should be assured and enhanced. The Government has made subsequent statements (partly as a response to the Landscapes Review) as to the need to strengthen the status of AONBs and in relation to enhancing the recovery of nature in such protected areas so as, inter alia, provide better environmental outcomes.

2.47 This is a significant and valid 'material consideration' to determining if mineral extraction can demonstrate exceptional circumstances. The wording of action is imprecise in the Government statements; but the intention to protect and enhance that protection of AONBs is clear.

3 CONCLUSIONS

3.1 The MWLP and the SSS ignore the major structural change in supply of mortar and hence the demand for building sand (the 'soft sand' as equated by WBC and AT) and grossly

over estimate future demand. The Rebuttal acknowledges this shift but then wholly fails to address the implication of the precipitous fall in demand for building sand from within West Berkshire.

3.2 The internal sales from 'soft sand' in West Berkshire have, as a consequence, fallen dramatically over the last 15 years. The building industry has continued to build houses as it has been adequately supplied by consistent high quality sand and mortar from other sources including other sources from within West Berkshire..

3.3 The MWLP, the SSS and the Rebuttal seek a 'soft sand' landbank. As defined in the NPPF a landbank should relate to the minerals supplying a particular market. The 'soft sand' in West Berkshire serves two market (concreting sand and building sand) at various rates over the years. A 'soft sand' landbank as sought could not be compliant with the NPPF because it serves two markets and because the reserves cannot be separately and unambiguously defined.

3.4 The SSS and the Rebuttal also indicate that the landbank should reflect colour of the raw sand. That is not compliant with the NPPF.

3.5 The impracticability of separating reserves in a common deposit, where properly addressed, has been identified and accepted. AT in other studies has acknowledged and accepted that impracticability.

3.6 The SSS and the Rebuttal seek a 'dry-screened' soft sand landbank. There is no justification in the NPPF or in the MWLP for a landbank based merely on how the mineral is processed. In any event, that processing can change overnight, without any control by the MPA.

3.7 The MWLP proposes the extraction of 'soft sand' to meet that impractical landbank from within the AONB.

3.8 The residual supply of building sand that might be required by West Berkshire can be sources from resources outside the AONB. This demand is a small local demand of no national significance. Its supply, or non-supply, from within the AONB or without the AONB is of negligible economic significance.

3.9 Extracting such 'dry-screened' sand from within the AONB does not pass the exceptional circumstances test.

3.10 The MWLP should be amended by deleting any reference to (i) a 'soft sand' landbank, and (ii) extraction from within the AONB.