Oxfordshire Minerals and Waste Plan: Part 1 – Core Strategy
Proposed Main Modifications, February 2017

Cover Note to Accompany Representations of:

Sheehan Haulage and Plant Hire Ltd;
Mckenna Environmental Ltd;
M&M Skip Hire Ltd; and
David Einig Contracting Ltd

1. In light of the discussions at the examination hearing sessions in September 2016 and the agreed waste policy principles (examination document H10); the suggested amended policies (examination document H17aa); and the Inspector's interim findings, we are pleased that the Plan has taken on board that the CDE waste figures are not reliable and cannot be used in policy, but rather has adopted a positive approach to provide for waste recycling, and is not requiring the demonstration of need, as most clearly found in paragraph 5.23 – though it might have been better to have been directly represented in policy.

2. We are generally happy with the Proposed Modifications, but have simply made a series of representations, to address where there are residual references to CDE waste numbers, capacity, and requirement etc., which for clarity are best removed, as well as specific drafting points in relation to the C-policies, to more closely reflect the waste policy principles (examination document H10) and national policy.

3. However, if the Council is seeking to persuade the Inspector that contrary to his conclusions that CDE waste figures should be included in the Plan, then we would expect the examination to be re-opened to consider the waste figures.

4. Unfortunately, furthermore, not all the suggested amendments of the C-policies in examination document H17aa have been included in the Proposed Modifications. We consider that policies C5, C9 and C10 still need to be changed in order to reflect the waste policy principles, and follow the NPPF, and our objection in respect of these policies stands.

5. On a final point, It has been noted that Tables 3-7 and 3-8 of Appendix A to the Sustainability Appraisal Report Update February 2017 include references to CDE waste figures, which the Inspector has determined should not be shown. These figures should therefore not be identified in these tables as they are stray references that could cause problems at a later stage.

Suzi Coyne
Suzi Coyne Planning
March 2017

Oxfordshire County Council
Minerals and Waste Plan:
Part 1 – Core Strategy
Proposed Main Modifications, February 2017

Representation Form

Please return this form before 5pm on 20 March 2017

This form should be used to make representations on the Proposed Main Modifications to the Oxfordshire Minerals and Waste Local Plan: Part 1 – Core Strategy, February 2017. Advice on how to make representations is provided in the guidance notes which accompany this form.

This form comprises of 3 parts:

- Part 1 – Respondent details
- Part 2 – Your representation
- Part 3 – Equalities information

The period for making representations runs from 03 February 2017 **to 5.00pm on 20 March 2017**, after which representations will not be accepted.

Representations on the Proposed Main Modifications to the Core Strategy should be submitted using this form, either:

a) by email to: mineralsandwasteplanconsultation@oxfordshire.gov.uk

or

b) by sending the form to:

Minerals & Waste Core Strategy Consultation
Planning Regulation – Minerals and Waste Policy Team
Communities
Oxfordshire County Council
County Hall, New Road
Oxford OX1 1ND.

Please note that late representations – received after 5.00pm on 20 March 2017 – cannot be accepted.

Data protection: Please be aware that any representations made cannot be treated as confidential. Respondent details and representations will be forwarded to the Inspector carrying out the examination of the Core Strategy when the period of consultation has ended. All representations and related documents will be held by Oxfordshire County Council and will be available for the public to view by appointment and published on the Council's website. They will be handled in accordance with the Data Protection Act 1998 and kept for at least three years after the Minerals and Waste Core Strategy is adopted.

Part 1 – Respondent Details

1(a) Personal details		
Title	Mr	
First Name	Chris	
Last Name	Sheehan	
Job Title (where relevant)	Managing Director	
Organisation (where relevant)	Sheehan Haulage and Plant Hire Ltd	
1(b) Agent details ***Only complete if an agent has been appointed***		
Title	Mrs	
First Name	Suzi	
Last Name	Coyne	
Job Title (where relevant)	Planning Consultant	
Organisation (where relevant)	Suzi Coyne Planning	
1(c) Contact address details ***If an agent has been appointed please give their contact details***		
Address Line 1	60 Blenheim Drive	
Line 2	Oxford	
Line 3		
Line 4		
Postcode	OX2 8DQ	
Telephone No.	01865 453747	
Email address	suzi.coyne@ntlworld.com	
Are you writing as	☐ **A resident** ☐ **A local business** ☐ **Minerals industry** ☑ **Waste industry**	☐ **A parish council** ☐ **A district council** ☐ **A county council** ☐ **Other (please specify)**

Please tick the appropriate boxes if you wish to be notified of any of the following:	
Publication of the Inspector's report and recommendations	✓
Adoption of the Oxfordshire Minerals and Waste Core Strategy	✓

Please tick this box if you no longer wish to be notified of any updates regarding the Oxfordshire Minerals and Waste Core Strategy: ☐

Please sign and date the form:			
Signature:	[redacted]	**Date:**	16 March 2017

Part 1 – Respondent Details

1(a) Personal details		
Title	Mr	
First Name	Michael	
Last Name	Mckenna	
Job Title (where relevant)	Managing Director	
Organisation (where relevant)	Mckenna Environmental Ltd	
1(b) Agent details ***Only complete if an agent has been appointed***		
Title	Mrs	
First Name	Suzi	
Last Name	Coyne	
Job Title (where relevant)	Planning Consultant	
Organisation (where relevant)	Suzi Coyne Planning	
1(c) Contact address details ***If an agent has been appointed please give their contact details***		
Address Line 1	60 Blenheim Drive	
Line 2	Oxford	
Line 3		
Line 4		
Postcode	OX2 8DQ	
Telephone No.	01865 453747	
Email address	suzi.coyne@ntlworld.com	
Are you writing as	☐ **A resident** ☐ **A local business** ☐ **Minerals industry** ☑ **Waste industry**	☐ **A parish council** ☐ **A district council** ☐ **A county council** ☐ **Other (please specify)**

Please tick the appropriate boxes if you wish to be notified of any of the following:	
Publication of the Inspector's report and recommendations	✓
Adoption of the Oxfordshire Minerals and Waste Core Strategy	✓

Please tick this box if you no longer wish to be notified of any updates regarding the Oxfordshire Minerals and Waste Core Strategy: ☐

Please sign and date the form:			
Signature:	[redacted]	**Date:**	16 March 2017

Part 1 – Respondent Details

1(a) Personal details		
Title	Mr	
First Name	Rob	
Last Name	Fluckliger	
Job Title (where relevant)	Managing Director	
Organisation (where relevant)	M&M Skip Hire Ltd	
1(b) Agent details ***Only complete if an agent has been appointed***		
Title	Mrs	
First Name	Suzi	
Last Name	Coyne	
Job Title (where relevant)	Planning Consultant	
Organisation (where relevant)	Suzi Coyne Planning	
1(c) Contact address details ***If an agent has been appointed please give their contact details***		
Address Line 1	60 Blenheim Drive	
Line 2	Oxford	
Line 3		
Line 4		
Postcode	OX2 8DQ	
Telephone No.	01865 453747	
Email address	suzi.coyne@ntlworld.com	
Are you writing as	☐ **A resident** ☐ **A local business** ☐ **Minerals industry** ☑ **Waste industry**	☐ **A parish council** ☐ **A district council** ☐ **A county council** ☐ **Other (please specify)**

Please tick the appropriate boxes if you wish to be notified of any of the following:	
Publication of the Inspector's report and recommendations	✓
Adoption of the Oxfordshire Minerals and Waste Core Strategy	✓

Please tick this box if you no longer wish to be notified of any updates regarding the Oxfordshire Minerals and Waste Core Strategy: ☐

Please sign and date the form:			
Signature:	[redacted]	**Date:**	16 March 2017

Part 1 – Respondent Details

1(a) Personal details		
Title	Mr	
First Name	David	
Last Name	Einig	
Job Title (where relevant)	Managing Director	
Organisation (where relevant)	David Einig Contracting Ltd	
1(b) Agent details ***Only complete if an agent has been appointed***		
Title	Mrs	
First Name	Suzi	
Last Name	Coyne	
Job Title (where relevant)	Planning Consultant	
Organisation (where relevant)	Suzi Coyne Planning	
1(c) Contact address details ***If an agent has been appointed please give their contact details***		
Address Line 1	60 Blenheim Drive	
Line 2	Oxford	
Line 3		
Line 4		
Postcode	OX2 8DQ	
Telephone No.	01865 453747	
Email address	suzi.coyne@ntlworld.com	
Are you writing as	☐ **A resident** ☐ **A local business** ☐ **Minerals industry** ☑ **Waste industry**	☐ **A parish council** ☐ **A district council** ☐ **A county council** ☐ **Other (please specify)**

Please tick the appropriate boxes if you wish to be notified of any of the following:	
Publication of the Inspector's report and recommendations	✓
Adoption of the Oxfordshire Minerals and Waste Core Strategy	✓

Please tick this box if you no longer wish to be notified of any updates regarding the Oxfordshire Minerals and Waste Core Strategy: ☐

Please sign and date the form:			
Signature:	[redacted]	**Date:**	16 March 2017

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM5 – Paragraph 4.8

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. Objection was made to the content of paragraph 4.8 in representations on the August 2015 Proposed Submission Plan (paragraph 2.2.3 – 2.2.5 of response 113). The essence of that objection was that the paragraph reflected past practice in aggregate recycling, and that it would now be incorrect for the Plan to maintain that high quality land-won aggregate is usually the only practicable option for higher specification (building) applications. This is because of the significant advances that the aggregate recycling industry is beginning to undergo, and which is – through wash plant technology - enabling recycled aggregates to be produced from construction, demolition and excavation (CDE) waste to the same range and quality assured level as would be available from land-won sources.

2. To support this position details were provided of the range of products available from the Dix Pit recycled aggregate wash plant (which are equivalent to those of a local sand and gravel quarry) and a summary report of trials that had been conducted to demonstrate that the recycled products pass the tests of the properties required of aggregates for structural concrete, achieving BS EN 12620 certification, i.e. that they are suitable for concrete manufacture. (See paragraphs 2.2.6 and 2.27 of response 113).

3. In addition it was explained that recycled aggregate wash plant facilities can handle very dirty materials (with high soil and clay content), which means that they introduce the very significant benefit of enabling the recycling of excavation waste. The aggregate content is screened out and the soils/clay materials are washed off and manufactured into a filter cake material that is suitable for landfill engineering and brick manufacture. The recycling of this excavation element of the waste stream has not been possible with conventional (dry) aggregate recycling, and its management has hitherto therefore been limited to less valuable recovery activities or to landfill. On the other hand recycled aggregate wash plant facilities now provide the opportunity for this conventionally more 'intractable' element of the CDE waste stream to be fully recycled and this means that there is more source material or 'feedstock' to recycle. (See for example paragraphs 2.2.11 and 2.4.18 of response 113).

4. It is therefore very disappointing that this paragraph, rather than being amended to promote a more positive approach to the developing abilities and progresses in aggregate recycling, has been amended to introduce statements that continue to downplay the capability and potential for improved levels of recycled aggregate production, and which are not supported by the evidence.

5. Objection is made in particular to the additions that:
    1. the "type" of feedstock limits the supply of recycled aggregates; and
    2. recycled aggregate cannot be used for "load bearing concrete".

6. With regard to the 1st point, it is evident from the comments at paragraph 3 above,

why this addition is not supportable. On quite the contrary, the supply of recycled aggregate is no longer limited by the type of feedstock material available, i.e. by being restricted essentially to that sourced from construction and demolition activity (as identified in the earlier part of the paragraph). It is now the case that very much more of the excavation element of the CDE waste stream can be recycled with new technology than was previously the case – producing both aggregate and other re-useable mineral.

7. Experience with the Dix Pit recycled aggregate wash plant, which has been established since 2012 shows that about 70% of all the material that is sourced from the groundworks and construction business can be recycled through the wash plant. Another example of the fact that more of the CDE waste stream can be tackled by wash plants is shown by the substantial increase in volumes that the Dix Pit plant can (and is) handling compared with the operator's previous facility at Slapehill that it replaced. The Slapehill facility was a dry recycling facility and processed about 60,000 tonnes per annum (tpa). The Dix Pit wash plant is having to turn material away to stay within its throughput limit of 100,000 tpa, and a planning application is being prepared to increase its capacity to 1750,000 tpa (at this stage, but there is scope to increase it to much more – the only limiting factor being concerns about HGV movements).

8. On the 2nd point, as identified at paragraph 2 above, evidence was produced in the representations on the Submission Plan that the recycled aggregate from the Dix Pit plant was suitable for manufacturing concrete. A copy of the summary report of the trials was provided, because the full report and all the test results run to 87 pages. It was to be assumed that since the trials were conducted by a leading environmental and engineering consultancy, RSK Environmental Ltd, well-experienced in providing services to the construction industry, that the summary report would be accepted as a true reflection of the results of the trials. Indeed there was no criticism of the evidence until at the very end of the examination hearing session into the Local Aggregates Assessment, when one of the participants disputed the validity of the conclusions of the report, stating that recycled aggregate could not be used for concrete manufacture. In response it was undertaken to provide a full copy of the report, which was subsequently sourced, and given to the programme officer, together with other evidence about the concrete products that are actually being manufactured with the recycled aggregate. Unfortunately, however, given subsequent involved discussions on other matters (relating to waste figures), the need to ask the programme officer to put this document formally into the examination sessions process was overlooked.

9. This omission is clearly very regrettable, given the Inspector's comments at paragraph 103 of his interim report that the use of recycled aggregates in load bearing products was challenged without rebuttal. Nevertheless the relevant information and further data and photos of the concrete blocks that are being manufactured from recycled aggregate were subsequently provided to the Council on 28 October 2016 (and are now also provided at **Appendix 1** to this representation).

10. Consequently the Council has been provided with the necessary evidence to confirm not only that recycled aggregate can be, but is also being, used for load bearing concrete. Pages 89 and 90 of **Appendix 1** make clear that the concrete blocks that are being manufactured from recycled aggregate (sourced from the Dix Pit plant) have high load bearing capacity. About 50,000 blocks are being manufactured a week and demand for them is outstripping the rate of production. It is therefore very puzzling as to why this additional phrase has been added to

paragraph 4.8 in the face of clear evidence to the contrary.

11. It is accepted that recycled aggregate is not currently being widely used in concrete manufacture, but that is not the same as saying that it cannot be used. The issue is that this is very new territory, and the confidence in quality-assured (washed and graded) recycled aggregate still needs to grow. There is no justification for seemingly dismissing it as a possibility, it would be better and more positive not to mention the matter at all, and focus on the benefits that recycled aggregate can bring.

12. It is also the case that it is not the nature of the constituent particles in the recycled aggregate that is the problem, but the manner in which they are processed. Conventional dry recycled aggregate contains fines, silt and debris, which make it unsuitable for concrete manufacture, but washed recycled aggregate does not. An appropriate comparison would be that 'as dug' sand and gravel would also not be suitable for concrete manufacture, whereas sand and gravel that has been processed (washed and graded) would be.

13. The National Planning Policy Framework (NPPF) stipulates that Local Plans must be prepared with the objective of contributing to the achievement of sustainable development, should plan positively, being aspirational, setting out opportunities for development, meaningfully collaborating with (amongst others) businesses, and be based on up-to-date and relevant evidence (paragraphs 151, 154, 155, 157 and 158). The whole thrust of paragraph 4.8 as set out in MM5 reflects, nevertheless, an approach that does not follow this advice. It is negative, not positively prepared, continuing to present an unenthusiastic portrayal of the potential for improvements in the recycled aggregate industry sector, and to ignore the evidence presented by those with direct experience and knowledge of the business, rather than being informed by it. In so doing the opportunity is missed for giving real support to the growth of improved recycled aggregate production, which can help to reduce reliance on primary materials, conserving them for use by future generations and which goes right to the heart of contributing to the achievement of sustainable development.

14. Paragraph 4.8 is therefore unsound, because it is:
    - Not positively prepared – by taking a negative rather than an encouraging approach;
    - Not justified – by failing to take account of the available evidence;
    - Not effective – by taking an over-cautionary approach that undermines the achievement of sustainable development;
    - Not consistent with national policy – by not following NPPF advice.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that paragraph 4.8 is re-phrased, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

The supply of recycled and secondary aggregates in Oxfordshire ~~will be limited~~ is largely dependent ~~by the~~ on the scale of construction, ~~and~~ demolition and groundworks activity within or in the vicinity of the County and the ~~type and~~ quantity of ~~feedstock~~ material available from that source for recycling. ~~The aggregate materials produced general vary in quality and cannot meet all specifications; for higher specification applications such as load bearing concrete, use of high quality land-won aggregate is usually the only practicable option.~~ Whilst recycled and secondary aggregate may not currently be entirely interchangeable for primary aggregates, aggregate recycling is now beginning to undergo significant advances in capability and with new wash plant technology in operation there is the potential to increase both the volumes and performance of recycled aggregate, so that it can increasingly provide a viable alternative to the extraction and use of land-won mineral.

This change would remedy the failings in relation to the tests of soundness that have been identified at paragraph 14 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It provides a more positive and encouraging attitude towards the benefits of and improvements in recycled aggregate production, whilst also recognising that recycled aggregate does not entirely replace the need for land-won aggregate.

Continue on a separate sheet or expand the box if necessary.

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM8 – Policy M1

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. It is acknowledged that the proposed modifications to policy M1 are moving in the right direction towards addressing the concerns that were expressed in representations on the August 2015 Proposed Submission Plan. However, there remain a number of issues that still need to be addressed.

2. Firstly, the introduction of the phrase: "that which improves waste separation and the range or quality of end products" in the second paragraph of the policy is very welcome, but the preceding word "including" negates its value. The objective is to give some preference or additional weight to this type of aggregate recycling, whereas with the policy as currently phrased it would not be perceived as any better than conventional aggregate recycling, (which for the reasons set out under the representations at Section 2.2 of response 113 and on MM5 does not have the same level of benefits). The phrase should therefore be preceded with such words as "in particular", in order to demonstrate that systems that offer improved forms of aggregate recycling (over conventional methods) will be especially supported.

3. Secondly, the figure in the third paragraph of the policy should be for supply only. The figure is based on the National and regional guidelines which is for supply of the material, not for capacity that might enable this figure to be achieved. Furthermore the National Planning Policy Framework (NPPF) requires there to be a steady and adequate supply of aggregates, including from both land-won and the other elements of their Local Aggregate Assessment, which includes secondary and recycled sources. (Paragraph 145, 1st and 3rd bullets). The Plan makes provision for the supply of land-won sources under policy M2, and must in a consistent fashion do so also for alternative aggregates.

4. Thirdly, the full extent of the wording taken from paragraph 14 of the NPPF must be used in the 5th paragraph of the policy, i.e. the word "any" must replace "the" and "significantly and" must be inserted before "demonstrably outweigh the benefits". Clearly it is not at all appropriate (and therefore unsound) for the Plan to selectively quote from the NPPF, but also the wording as drafted derogates the benefits it purports to "take into account".

5. This is important, because in the absence of reliable supply or requirement figures, the strategy for delivery relies on allocations and other sites coming forward through the development control process. As these other sites will not have the benefit of an in principle support of an allocation and are likely to have some site specific impacts, if they are to be permitted it is important that any positive aspects of the development are accorded great weight in policy itself (see below), or any negative effects are required to significantly outweigh the benefits, or both.

6. Whilst the "reason for change" column of the proposed modifications does not identify examination document H10 as the reason for this change, it should do so,

because the change stems from the agreement that was reached at the examination hearings over the waste policy principles, in order to deliver a positive approach to aggregate recycling as set out in that document[1]. The fourth principle was that great weight will be given to the benefits of providing additional capacity in determining allocations for secondary and recycled aggregate facilities.

7. It would have been preferable (and more straightforward) for policy M1 simply to adopt the format of the fourth principle. However, if alternative wording is to be used, then it must at least reflect the gist of the agreed principle, and not (as it does) introduce a more stringent test even than that which applies in the NPPF.

8. The word "demonstrably" means simply to be capable of being shown. There is no qualification as to the extent that any adverse impacts could outweigh the benefits. They might just minimally outweigh the benefits – according to the judgement of the decision-maker - in order to sustain an objection against the policy. Such an approach is not in accordance with the NPPF, which requires that any adverse impacts must significantly outweigh the benefits, but it is also far from the spirit of the agreed waste policy principles of examination document H10.

9. The Inspector provides some views about examination document H10 at paragraph 86 of his interim report, including about how to consider the question of 'weight" (only – not the emphasis of "great"), and concludes at paragraph 134 (subject to his observations on them at paragraph 86) that the Council will wish to reflect those principles in policy wording.

10. In respect of the Inspector's observations it does need to be noted that it is not only in respect of development in Green Belt where the 'weight' to be given is set out in policy. There are a number of other examples where the NPPF requires great or significant weight to be given, as follows:
    - paragraph 19 - significant weight should be placed on the need to support economic growth;
    - paragraph 63 - great weight should be given to outstanding or innovative designs;
    - paragraph 72 - great weight should be given to the need to create, expand or alter schools;
    - paragraph - great weight should be given to conserving landscape and scenic beauty in nationally designated areas;
    - paragraph 132 – great weight should be given to the conservation of a designated heritage asset; and
    - paragraph 144 – great weight should be given to the benefits of mineral extraction, including to the economy.

11. The aggregate recycling industry is both an important part of the economy and one that that is fully focussed on delivering sustainable development. The benefits of this business sector's growth are therefore very much ones, which the Government requires that great (or significant) weight should be given through the planning system, and accordingly the fourth waste policy principle is entirely compliant with national policy.

12. Policy M1 is therefore unsound, because it is:
    - Not positively prepared - by not taking an encouraging approach and failing to reflect the agreed waste policy principles;

[1] It is noted that the reasons for a similar change in respect of policy W3 do cite examination document H10

- Not justified – by failing to take account of the basis on which provision should be made (i.e. supply of materials);
- Not effective – by reducing the value of systems that can improve the value of recycled aggregate in replacing virgin materials;
- Not consistent with national policy – by not following NPPF advice.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that policy M1 is re-worded, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

So far as is practicable, aggregate mineral supply to meet the demand in Oxfordshire should be from recycled and secondary aggregate materials in preference to primary aggregates, in order to minimise the need to work primary aggregates.

The production and supply of recycled and secondary aggregates, ~~including~~ in particular that which improves waste separation and the range or quality of end products, will be encouraged so as to enable the maximum delivery of recycled and secondary aggregate within Oxfordshire. Where practicable, the transport of recycled and secondary aggregate materials (both feedstock and processed materials) from locations remote from Oxfordshire should be by rail.

Provision will be made for sufficient facilities to enable the ~~production and/or~~ supply of a minimum of 0.926 million tonnes of recycled and secondary aggregates per annum.

Sites which are suitable for facilities for the production and/or supply of recycled and secondary aggregates at locations that are in accordance with policies W4 and W5 ~~and other relevant polices of this Plan and of other development plans~~ [2]will be allocated in the Minerals and Waste Local Plan: Part 2- Site Allocations Document. Permission will be granted for such facilities at these allocated sites provided that the requirements of policies C1-C12 are met.

Permission will normally be granted for recycled and secondary aggregate facilities at other sites, including for ~~temporary~~[3] recycled aggregate facilities at aggregate quarries and landfill sites, that are located in accordance with policies W4 and W5 and that meet the requirements of policies C1 – C12, taking into account the benefits of providing additional recycled and secondary aggregate capacity and unless any ~~the~~ adverse impacts of doing so significantly and demonstrably outweigh the benefits. Where permission is granted for such a facility at a time-limited mineral working or landfill site this will normally be subject to the same time limit as that applying to the host facility and the site shall be restored in accordance with the requirements of policy M10 for restoration of mineral workings at the end of its permitted period~~. ~~Except where~~, unless a new planning permission is granted for retention of the facility beyond its permitted end date~~, temporary facility sites shall be restored at the end of their permitted period~~.[4]

Sites for the production and/or supply of recycled and secondary aggregate will be safeguarded under Policy M9 and/or W11 ~~and safeguarded sites will be defined in the Site Allocations Document~~.[5]

[2] This test is superfluous and over-complicates the policy – it duplicates legislative provision.
[3] There is no need for this additional reference to "temporary" given the provision later in the policy in relation to time-limiting permissions.
[4] These changes are suggested in order to simplify the policy.
[5] Text deleted to simplify the policy - because it replicates the provision of the policies it refers to.

This change would remedy the failings in relation to the tests of soundness that have been identified at paragraph 12 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It provides more encouragement for the benefits of improved recycled aggregate production and more positively promotes the supply of alternative materials in place of land-won aggregate.

Continue on a separate sheet or expand the box if necessary.

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM31 – Table 3

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. The Inspector concluded in his interim report (paragraphs 76, 78, 82 and 87). that it would not be appropriate to include figures for CDE waste in policy W1 because of the extremely divergent outcomes that the Council had arrived at over time by applying different methodologies and assumptions, ranging from 2.1 million tonnes per annum (mtpa) to the latest 1.033 mtpa figure, which represents a halving of the amount. The figure for CDE waste – of 1.033 - in Table 3 must therefore not be included.

2. Table 3 forms part of the explanatory text to policy W1 and therefore to include a figure for CDE waste in Table 3 is contrary to the inspector's findings. Although a footnote has been added to say that there is "considerable uncertainty over the figure" this does not in any way convey the extent of uncertainty that there is.

3. The National Planning Policy Framework (NPPF) (paragraph 158) and National Planning Policy Guidance (ID: 12-014-20140306) make clear that appropriate and proportionate evidence is essential for producing a sound Local Plan, and the inclusion of this CDE waste figure which is not supported by any robust evidence does not comply with that advice.

4. Table 3 is therefore unsound, because it is:
   - Not positively prepared – by not being based on objectively assessed development needs;
   - Not justified – by not following the most appropriate strategy, as identified by the Inspector's interim report, of not including figures for CDE waste;
   - Not effective – by diminishing the ability of development needs to be delivered over the plan period;
   - Not consistent with national policy – by not being informed by an appropriate and proportionate evidence base.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that Table 3 should be deleted (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

~~*Table 3: Baseline waste arising in Oxfordshire requiring provision for management (million tonnes per annum)*~~

~~*MSW*~~	~~*C&I*~~	~~*CDE*~~	~~*Hazardous*~~	~~*Agricultural*~~	~~*Waste Water*~~	~~*LLW*~~
~~*0.300**~~	~~*0.533***~~	~~*1.033***~~	~~*0.50**~~	~~*0.900**~~	~~*0.023**~~	~~*See table 15*~~

~~**Baseline year 2012*~~
~~*** Baseline year 2014*~~
~~*Source:*~~
~~*MSW (Municipal Solid Waste) – Oxfordshire County Council (OCC)*~~
~~*C&I (Commercial and Industrial Waste) – BPP Consulting for OCC ('as managed' estimate)*~~
~~*CDE (Construction, Demolition and Excavation Waste) – Oxfordshire County Council ('as managed' estimate – there is considerable uncertainty over this figure, see paragraph 5.5b)*~~
~~*Hazardous waste – BPP Consulting for OCC*~~
~~*Agricultural waste – BPP Consulting for OCC (estimate)*~~
~~*Waste Water – Thames Water plc*~~
~~*LLW (Low Level Radioactive Waste)*~~

The deletion of Table 3 would not be prejudicial to the other information it contains, because the figures (other than for CDE waste) are available elsewhere in the Plan – indeed one of the columns (LLW) already does not give a figure and cross-refers to information elsewhere. Also the table has in any event become very confusing and inconsistent, given that its base year is supposedly 2012 and it is for arisings, yet two of the columns then give figures for 2014 and for 'managed' waste, not for arisngs, and therefore there is no meaningful comparison amongst the entries.

The explanatory text at paragraph 5.4 should also be amended as follows:

Attitudes towards waste and waste management practice continue to change. The amount of waste disposed in landfill has fallen and the amount of household waste produced per person has reduced. However, the amount of waste arising in Oxfordshire requiring provision for management is still expected to grow as population increases and the local economy develops, particularly in the main urban areas of Oxford, Banbury, Bicester, Witney, Abingdon, Didcot and Wantage and Grove. The types of waste that need to be planned for are: Municipal Solid Waste; Commercial and Industrial (C&I) Waste; Construction, Demolition and Excavation (CDE) Waste, Hazardous Waste; Agricultural Waste; Waste Water; and Low Level Radioactive Waste (LLW).~~ ~~– shown in Table 3, which sets out the 2012 baseline figures of waste produced in Oxfordshire that are used in the Core Strategy. The Waste Needs Assessment provides more detail on the amount of waste that is currently managed and how much may need to be managed in future.~~

This change would remedy the failings in relation to the tests of soundness that have

been identified at paragraph 4 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It ensures that the findings of the Inspector's interim report are complied with and that an arbitrary and untested figure for CDE waste is not provided in the Plan.

Continue on a separate sheet or expand the box if necessary.

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM32 – Paragraph 5.5a

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. As identified under the representations on MM31 the Inspector has concluded that no figures for CDE waste should be shown in policy W1, because of the extremely divergent outcomes that the Council had arrived at over time by applying different methodologies and assumptions. It follows therefore that for the Plan to set out (in part) the methodologies that have been used in relation to a CDE waste management figure, as new paragraph 5.5a seeks to do, is not applicable, because that approach has not been found to be supportable.

2. The objections to the various different methods that the Council has used to arrive at CDE waste baseline figures and the many reasons why these have not been robust or reliable are set out in detail in previous responses 113 (Section 2.5) and 113/ac (paragraphs 3.86 – 3.96), and it is not proposed to repeat them here.

3. However it does need to be stressed that the statement in paragraph 5.5a that the use of "a method developed by national government to establish an 'as managed' waste figure" is entirely inappropriate in respect of CDE waste. The method used for CDE waste in 2016 was an old, out-dated methodology that had been withdrawn from use by national government because it was not fit for purpose. To rely on its use therefore and make reference in this new paragraph is in direct contradiction of the National Planning Policy Framework (NPPF) expectation that the Local Plan is based on up-to-date and relevant evidence (paragraph 158).

4. Furthermore new paragraph 5.5a continues by citing activities, which are said to justify the Council's use of an 'as managed' figure. The earlier responses 113 and 113/ac, as identified above, also include the reasons why the Council's assumptions about these activities are not well-founded (and as a consequence cause a considerable under-estimate in the CDE waste baseline figure). Therefore references to such activities in paragraph 5.5a are not appropriate, but in particular, it is not proper for the Plan to include the phrase that the use of mobile plant does "not require express planning consent". This is quite a misleading statement. Mobile plant if used on land for longer than 28 days in any calendar year (and not ancillary to an otherwise permitted construction activity) does not qualify as permitted development. Even should the mobile plant not be used on the land for the full 28 days, but the associated activity of stockpiling and delivery to/removal of the processed materials does, then the site requires planning permission.

5. It was agreed and the nature or quantification of the CDE waste figures, including the various methodologies and assumptions used, were not discussed or tested at the examination hearings on the understanding that the Council had accepted the principles set out in examination document H10. As a consequence it is entirely inappropriate for there to be any reference to the Council's unverified approach to estimating CDE waste figures to be included in the Plan.

6. Paragraph 5.5a must be amended to ensure that it only provides the background to how the C&I waste stream figures were calculated, as CDE waste figures are not to be provided, and so any manner in which they might have been calculated is not relevant.

7. Paragraph 5.5a is therefore unsound, because it is:
   - Not positively prepared – by not being based on a properly objective assessment of the issues;
   - Not justified – by not following the most appropriate strategy, as identified by the Inspector's interim report, of not including reference to CDE waste figures;
   - Not effective – by providing unrealistic assumptions about how CDE waste is managed;
   - Not consistent with national policy – by not being informed by up-to-date or relevant evidence.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that paragraph 5.5a is re-worded, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

The BPP Review of the Waste Needs Assessment (2014) established a point of production 'arisings' figure for the C&I ~~and CDE~~ waste stream~~s~~, whereas the Supplement to the Waste Needs Assessment (2016) used a method developed by national government to establish an 'as managed' waste figure ~~for each of these waste streams~~. The 'as managed' figure~~s~~ in broad terms ~~are~~ is approximately 60-70% of the equivalent 'arisings' figure~~s~~. The reason for the difference between the values (other than the three year time lag between estimates) is attributable to the fact that a certain amount of waste is managed through routes outside the formal management system, This might be ~~through management on the site of production (e.g. crushing of demolition waste and incorporation into groundworks),~~ through methods ancillary to other activities such as storage and distribution (e.g. backhauling by major retailers of packaging waste for bulking at distribution depots)~~, or through the use of mobile plant that do not require express planning consent and therefore bypassing static facilities~~. The actual degree to which such activities may contribute to the management of ~~these~~ the C&I waste stream~~s~~ today and in the future is not fully able to be accounted for. Therefore the 'as managed' values for C&I waste included in Table~~s 3 and~~ 4 and in Policy W1 should be regarded as ~~a~~ minimum arising values.

This change would remedy the failings in relation to the tests of soundness that have been identified at paragraph 7 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It ensures that the findings of the Inspector's interim report are complied with, and that unverified assumptions about CDE waste arisings are not provided in the Plan.

Continue on a separate sheet or expand the box if necessary.

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM33 – Paragraph 5.5b

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. As identified under the representations on MM31 the Inspector has concluded that no figures for CDE waste should be shown in policy W1, and therefore for proposed new paragraph 5.5b, which is supporting text to policy W1, to include as it does (a very low) figure for CDE waste is contrary to the inspector's findings.

2. The objection and many reasons as to why this is not a robust or reliable figure are set out in detail in response 113/ac (paragraphs 3.86 – 3.96), and it is not proposed to repeat them here.

3. Moreover, (as also identified under the representation on MM32) it needs to be said that the calculation of this figure was not based on a new methodology (paragraph 58 of the Inspector's interim report) but on an old, out-dated and withdrawn methodology. It is therefore not just a case of widely divergent values being arrived at, but the best available data and information not being used to arrive at the figure.

4. It was agreed and the waste figures were not discussed at the examination hearings on the understanding that the Council had accepted the principles set out in examination document H10, as an alternative to quantification of the CDE (and C&I) waste figures in policy. As a consequence the (various) figures in the evidence base to the Plan have not been tested through examination. It is therefore entirely inappropriate for any CDE waste figure to be cited whatsoever in the Plan.

5. Furthermore the "qualifying" statements that "there is considerable uncertainty over the estimated figure for CDE waste" and that "it can be taken as a minimum value for the amount of CDE waste to be managed going forward" do not excuse or somehow legitimise inclusion of (such) a precise figure. They in no way convey any sense of the extent of uncertainty that there is, and what a significant under-estimate this figure is of the quantities that need to be managed and are likely to arise over the Plan period. According to the draft submission Plan it could be double at 2.1 mtpa and according to the Waste Needs Assessment (WNA) August 2015 it could be triple rising to as much as 2.8 – 3.0 mt (Figure 13 and Table A7/5), because of new house building commitments generated by the Strategy Housing Market Assessment (SHMA).

6. The figure is untested, not credible and meaningless, and must be removed, because it has no legitimacy. There is no justification for it and it is an entirely arbitrary figure – by way of demonstration of this point, the Council might just have easily used other (untested) figures, such as the higher (2014) figure and said that there was uncertainty about this, or the even lower Submission Plan figure again saying that it is a minimum. The National Planning Policy Framework (NPPF) (paragraph 158) and National Planning Policy Guidance (ID: 12-014-20140306) make clear that appropriate and proportionate evidence is essential for producing a

sound Local Plan, and the inclusion of this figure which is not supported by any robust evidence does not comply with that advice.

7. To include a figure, even in the supporting text, will give it a level of validity that it does not have, and yet could become an excuse for applying a "needs test" on future development proposals. For example it may seem to a decision-maker in the future that to be providing new CDE waste recycling capacity amounting to 2 or 3 million tonnes a year might not be justified, as it would amount to a doubling or tripling of the estimated ("minimum") baseline – as identified (erroneously) in the Plan, and could be leading to over-provision. However, given the very high level of uncertainty about the figure and the fact that it could be (and we say is more likely) about 2.0 mt anyway, this would be far from the case.

8. Paragraph 5.5b is therefore unsound, because it is:
   - Not positively prepared – by not being based on objectively assessed development needs;
   - Not justified – by not following the most appropriate strategy, as identified by the Inspector's interim report, of not including CDE waste figures;
   - Not effective – by diminishing the ability of development needs to be delivered over the plan period;
   - Not consistent with national policy – by not being informed by an appropriate and proportionate evidence base.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that paragraph 5.5b is re-worded, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

There is considerable uncertainty over the estimated ~~figure for~~ volumes of CDE waste arising ~~in Table 3~~ and over forecasts for this waste stream. Significantly different figures can be derived depending on the assumptions used. Consequently, no forecasts for CDE waste are included in Table 4, and no values for this waste stream are included in policy W1. ~~Nevertheless the estimate of 1.033 mtpa shown in Table 1 can be taken as a minimum value for the amount of CDE waste to be managed going forward. This will~~ CDE waste includes an element of non-inert waste, which has been estimated to comprise 20% of the total, and this waste will require management as non-hazardous waste rather than inert waste. Inert waste is expected to be primarily managed through recycling, in particular at recycled aggregate production facilities, recovery operations or the backfilling of mineral workings. Some will continue to go to landfill for restoration purposes.

This change would remedy the failings in relation to the tests of soundness that have been identified at paragraph 8 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It ensures that the findings of the Inspector's interim report are complied with and that an arbitrary and untested figure for CDE waste is not provided in the Plan.

Continue on a separate sheet or expand the box if necessary.

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM37 – Paragraph 5.9

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. As identified under the representations on MM31 the Inspector has concluded that no figures for CDE waste should be shown in policy W1, and therefore inclusion of the unsubstantiated CDE waste figure in paragraph 5.9 is contrary to the inspector's findings.

2. In addition, the references to the National Planning Policy Guidance (NPPG) on forecasting future waste arisings for the CDE waste stream are wholly inappropriate. In the first place this is because the NPPG advice pre-supposes that robust figures have been established as a basis on which to project future growth. However, as the inspector has determined in his interim report (paragraph 76), this is not the case.

3. Secondly, the reference is only a partial quote of the NPPG paragraph, which continues by listing a number of factors that may be relevant – including "any significant planned regeneration or major infrastructure projects over the timescale of the Plan". Paragraph 5.9 therefore ignores the advice to consider likely future developments, which would lead to growth in the waste stream.

4. As is well known the Government is proposing that there should be major new investment in house building nationwide, and for Oxfordshire this means much higher house building levels than are currently the case (as concluded by the Strategic Market Assessment for Oxfordshire of March 2014). The Oxfordshire economy is also forecast to grow considerably (see paragraph 3.42 of the Waste Needs Assessment (WNA) 2015), which will undoubtedly also create significant new construction activity. The WNA 2015 identifies (Figure 12 and Table A7/5) growth in levels of the CDE waste stream of as much as 2.8 mt – 3.0 mt resulting from house building alone – not taking account of other construction activity arising from the projected growth in the local economy. Indeed paragraph 5.4 of the Plan confirms that the amount of (all) "waste arising in Oxfordshire requiring provision for management is still expected to grow as population increases and the local economy develops". Paragraph 2.2 of the Plan also states: "Over the plan period, significant population growth, new housing, commercial and related development, investment in infrastructure and related traffic growth are expected" with a footnote explaining that Oxfordshire's population is expected to grow by a further 26% to 2031.

5. It is unacceptable therefore that the new text should be introduced to paragraph 5.9 because it is not supported by the up-to-date evidence, goes against the Inspector's recommendations that CDE waste figures should not be given, and contradicts conclusions drawn in other parts of the Plan.

6. Furthermore, as is evident from the proposed deleted text in the paragraph, the changes represent a complete U-turn during the short timescale since submission of the Plan, going from high growth to none, or from a predicted increase of 50% to

0%. This is not a reasonable or realistic approach, particularly given that the NPPG advice (partially) relied upon has not changed in that timescale. The National Planning Policy Framework (NPPF) (paragraph 158) and NPPG (ID: 12-014-20140306) make clear that appropriate and proportionate evidence is essential for producing a sound Local Plan, and the inclusion of this figure and forecasting assumptions, which are not supported by any robust evidence, does not comply with that advice.

7. Moreover, the addition of this text supports the misapprehension already expressed under representations on MM33 that it could well in future introduce a "needs text" or presumption against proposals for capacity that doubles or triples this quoted figure, on the grounds that they may be deemed to lead to over-provision when that would not be the case, because the "baseline" figure and assumptions about growth were never actually sound.

8. For these reasons the whole text of paragraph 5.9 should be removed, but also because the modifications to paragraph 5.23 and policy W3 clarify that there is no requirement for an assessment against need.

9. Paragraph 5.9 is therefore unsound, because it is:
   - Not positively prepared – by not being based on objectively assessed development needs;
   - Not justified – by not following the most appropriate strategy, as identified by the Inspector's interim report, of not including CDE waste figures;
   - Not effective – by diminishing the ability of development needs to be delivered over the plan period;
   - Not consistent with national policy – by not being informed by an appropriate and proportionate evidence base.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that paragraph 5.9 should be deleted (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

~~*Future construction, demolition and excavation waste arisings will be largely governed by the rate of new building work. The national Planning Policy Guidance for waste states that when forecasting future arisings for this waste stream, waste planning authorities should start from the basis that net arisings will remain constant over time as there is likely to be a reduced evidence base on which forward projections can be based. Following this guidance, it can be taken that a minimum of 1.033 mtpa of CDE waste will require management in Oxfordshire throughput the plan period to 2031.*~~

This change would remedy the failings in relation to the tests of soundness that have been identified at paragraph 9 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It ensures that the findings of the Inspector's interim report are complied with, that arbitrary and unsubstantiated assumptions about CDE waste figures are not provided in the Plan, but that the text is based on the evidence base supporting the Plan, and that it does not contradict statements made in other parts of the Plan.

Continue on a separate sheet or expand the box if necessary.

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM38 – Policy W1

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. Policy W1 as modified is not appropriate. It should be about actual delivery of the waste management target levels not about theoretical capacity that might well not be sufficient to achieve those levels. It was common ground with the Council (point 4 of examination document H2) that sites do not operate at full capacity.

2. The policy (to introduce providing capacity for, rather than actual management of waste) has been inexplicably changed from the wording in the August 2015 Proposed Submission Plan. There is no indication that there was any objection to the change, and the Council gives no other reason why the wording that it considered to be sound at submission stage has now been altered in a manner that will reduce its effectiveness in ensuring that the county's waste management needs are met.

3. The National Planning Policy Framework (NPPF) makes clear (paragraph 154) that local plans should provide a clear indication of how a decision maker should react to a development proposal. Changes are therefore needed to policy W1 in order to comply with this advice; to provide certainty that provision will be made to ensure that these levels of waste will be managed, and not the alternative scenario that provision only of capacity with the potential to do so could suffice.

4. Paragraph 5.9 is therefore unsound, because it is:
   - Not positively prepared – by not being based on objectively assessed development needs;
   - Not justified – by not following the most appropriate strategy, of promoting the most sustainable management of waste;
   - Not effective – by diminishing the ability of development needs to be delivered over the plan period;
   - Not consistent with national policy – by not providing a clear indication of the proposed strategy.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that the first two paragraphs of policy W1 are amended, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

Provision will be made for waste management facilities ~~to provide capacity~~ that allow Oxfordshire to be net-self sufficient in the management of its principal waste streams – municipal solid waste (or local authority collected waste), commercial and industrial waste, and construction, demolition and excavation waste – over the period to 2031.

The amounts of these wastes that need to be managed ~~for which waste management capacity needs to be provided is~~ are as follows:

This change would remedy the failings in relation to the tests of soundness that have been identified at paragraph 4 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It ensures that the provision for new facilities recognises that sites do not operate at full capacity and that the Plan adopts a positive approach to meeting the waste management needs of the county.

Continue on a separate sheet or expand the box if necessary.

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM40 and MM41 - Paragraph 5.23 and Table 5

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. The final sentence of paragraph 5.23 supports the agreed principles in examination document H10 and is very welcome. However, it is unfortunately prefaced by a (very low) figure for CDE waste, which the Inspector has concluded in his interim report (paragraphs 76, 78, 82 and 87) should not be given.

2. The full reasons why this figure must be removed from paragraph 5.23 of the Plan are set out under the representation on MM31, MM33 and MM37, and are not repeated here.

3. A further issue with paragraph 5.23 is that the wording continues to equate recycling levels to be achieved with overall waste management capacity, when this is not the case. Objection was made in representations on the August 2015 Proposed Submission Plan to this approach (paragraphs 2.3.12, 2.3.13 and 2.7.4 – 2.7.7 of response 113). The Council then subsequently agreed in a Statement of Common Ground (point 4 of examination document H2) that a contingency capacity should be included in policy to acknowledge that sites do not operate at full capacity (see also paragraph 61 of the Inspector's interim report).

4. The wording of paragraph 5.23 that, waste management capacity equivalent to the management targets needs to be provided, is therefore misplaced. Instead it must make clear that the capacity needs to be greater than the target levels. In addition this clarification would be consistent with the new (and very welcome) approach that there is no ceiling to be set on the level of capacity to be provided (as identified in the last sentence of paragraph 5.23).

5. In addition there are some inappropriate aspects to Table 5 (which paragraph 5.23 is concerned with explaining).

6. In the first place it itemises figures for CDE waste, which in light of the Inspector's findings should not be given. As a consequence the CDE column (and its figures) should be amalgamated into the C&I column, which would also be consistent with the paragraph 5.23 text. Whilst the non-hazardous element of the CDE waste stream included in the C&I waste figure is untested, the figures in Table 5 are in any event not to be regarded as maximum figures, in view of the Council's positive approach to recycling and no cap to be set on the capacity to be provided.

7. Secondly, and given this positive approach of the Council, the table and first column headings by referring to "capacity requirement" do not properly describe the nature of the figures, which are more appropriately identified as waste management target levels.

8. For these reasons paragraph 5.23 and Table 5 are unsound, because they are:
   - Not positively prepared – by not being based on a properly objective

assessment of the issues;

- Not justified – by not following the most appropriate strategy, as identified by the Inspector's interim report, of not including reference to CDE waste figures;
- Not effective – by not introducing clarity about the development needs to be delivered over the plan period;
- Not consistent with national policy – by not being informed by an appropriate and proportionate evidence base.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that paragraph 5.23 and Table 5 are amended as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

Table 5 shows how the forecast tonnages of non-hazardous waste for the principal waste streams in policy W1 should be managed for the waste management targets in policy W2 to be met. Sufficient ~~W~~waste management capacity ~~equivalent~~ to enable at least these tonnages to be achieved needs to be provided if Oxfordshire is to be net self-sufficient in meeting its waste needs (policy W1). ~~The~~ A non-hazardous element of the CDE waste stream has been ~~calculated~~ included in the C&I waste figure ~~based on the arising value of 1.033 mtpa~~. The management capacity required for the inert element of this waste stream is not specified in view of the uncertainty over the baseline value and forecast, and consequent absence of figures for CDE waste in policy W1; and also in recognition of the positive approach in policies W3 and M1 towards provision of additional capacity for recycling of CDE waste, particularly for the production of recycled aggregate, whereby there is no requirement for need to be demonstrated against a specified capacity requirement and, subject to proposals being in accordance with other relevant policies, there is no ceiling set on the level of capacity that may be provided.

Table 5: Oxfordshire minimum estimated non-hazardous waste management target levels ~~capacity required~~ 2016 - 2031 (tonnes per annum)

Projected ~~Capacity Requirement~~ Target Levels	*MSW*	*C&I*	*~~CDE (non-inert proportion)~~*	*Total (tpa)*
2016				
Composting/food waste treatment	*92,800*	*~~27,100~~ 37,400*	*~~10,300~~*	*130,200*
Non-hazardous waste recycling	*105,600*	*~~298,100~~ 411,800*	*~~113,700~~*	*517,400*
Non-hazardous waste residual	*96,000*	*~~81,300~~ 112,300*	*~~31,000~~*	*208,300*
2021				
Composting/food waste treatment	*109,700*	*~~28,200~~ 38,500*	*~~10,300~~*	*148,200*
Non-hazardous waste recycling	*113,200*	*~~338,100~~ 462,100*	*~~124,000~~*	*575,300*
Non-hazardous waste residual	*102,900*	*~~140,900~~ 192,600*	*~~51,700~~*	*295,500*
2026				
Composting/food waste treatment	*126,000*	*~~28,700~~ 39,000*	*~~10,300~~*	*165,000*
Non-hazardous waste recycling	*126,000*	*~~372,500~~ 506,900*	*~~134,400~~*	*632,900*

Non-hazardous waste residual	*90,000*	*~~143,300~~ 195,000*	*~~51,700~~*	*285,000*
2031				
Composting/food waste treatment	*131,600*	*~~29,100~~ 39,400*	*~~10,300~~*	*171,000*
Non-hazardous waste recycling	*131,600*	*~~378,600~~ 513,000*	*~~134,400~~*	*644,600*
Non-hazardous waste residual	*94,000*	*~~145,600~~ 197,300*	*~~51,700~~*	*291,300*

These changes would remedy the failings in relation to the tests of soundness that have been identified at paragraph 8 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It ensures that the findings of the Inspector's interim report are complied with, that an arbitrary and untested figure for CDE waste is not provided in the Plan, and that the capacity figures reflect the agreed position that contingency should be included in recognition that sites do not operate at full capacity.

Continue on a separate sheet or expand the box if necessary

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM42, MM43 & MM44 – Paragraph 5.25 and Tables 6 & 7

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. Given that the final sentence of paragraph 5.23 makes clear that there is no requirement for need to be demonstrated against a specified capacity requirement as well as the positive terms of policy W3, there is no need for paragraph 5.25 or Tables 6 and 7 to be included in the Plan, because their purpose is to identify a waste capacity requirement, and because they use figures that have not been subject to examination.

2. The waste capacity gap was not a matter that was discussed at the hearing sessions as it was to have little or no bearing on the way policy is to be applied – as the Inspector confirmed at point e) of his response in further correspondence with the Council (examination document EX18).

3. The Council had confirmed at the examination hearings that its intention was to encourage the provision of new recycling facilities and that it did not see any figures being interpreted as a cap (see paragraph 79 of the Inspector's interim report). On the basis therefore of the principles set out in examination document H10, and because of the widely diverging nature of the waste figures produced and challenges to the robustness of the methods used, it was agreed that the waste figures should not be discussed at the hearing sessions. The purpose of the waste policy principles was to provide a positive framework whereby the figures ceased to be of importance and proposals for recycling facilities did not have to demonstrate quantitative (or qualitative) need for the development.

4. It is extremely encouraging that the proposed modifications have accepted this principle, for example at paragraph 4.9, which confirms that policy M1 sets no ceiling for the amount of provision to be made for recycled and secondary aggregate, and at paragraph 5.23 in support of policy W3, which affirms that there is no requirement for need to be demonstrated against a specified capacity requirement. However, this principle has unfortunately not been followed through into commensurate changes to paragraph 5.25 and Tables 6 and 7. Paragraph 5.25 still reflects that of the earlier version of policy W3, whereby proposals were intended to be assessed against the waste figures and would have warranted a reason for refusal on the basis of a lack of need, where no shortfall was showing, yet this is no longer to be the case.

5. Consequently paragraph 5.25 together with Tables 6 and 7 should be deleted altogether.

6. Failing that then a second but least preferred option would have to be to make significant changes to the text of paragraph 5.25, to remove the references to waste management capacity requirements and to clarify that Table 7 does not show the waste management capacity requirement, but merely the difference between potential capacity provided by existing facilities and the estimated minimum waste management target levels.

7. The text of paragraph 5.25 continues to make a straightforward arithmetic calculation between available waste management capacity figures (Table 6) and target amounts (Table 5), without allowing for the fact that the two are not equivalent. As also stated in the representations on MM40, it was common ground with the Council (point 4 of examination document H2) that a contingency capacity should be included in policy to recognise that sites do not operate at full capacity (see also paragraph 61 of the Inspector's interim report). Whilst it is acknowledged that the manner in which the Council would apply a contingency in the proposed modifications was not agreed, it is the case that no contingency has been applied whatsoever in Table 7, which shows the supposed capacity surplus/deficit.

8. Nevertheless, and although this difference between potential capacity and actual recycling achievement should be made clear in the Plan, it is the case that the Council's more positive strategy of not imposing a capped requirement with proposals being refused once the capacity had been reached, which is a very welcome approach, means that a contingency capacity would not be necessary.

9. For these reasons paragraph 5.25 and Tables 6 and 7 are unsound, because they are:
   - Not positively prepared – by not being based on a properly objective assessment of the issues;
   - Not justified – by not following the most appropriate strategy, of promoting the maximisation of waste recycling levels;
   - Not effective – by diminishing the potential for development needs to be delivered over the plan period;
   - Not consistent with national policy – by not being informed by an appropriate and proportionate evidence base.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that paragraph 5.25 and Tables 6 and 7 are deleted.

The alternative and least preferred option would be to amend paragraph 5.25 as follows:

Table 7 shows the difference between ~~when and for which types of facility a need is expected to arise for additional waste management capacity and the amount required. Shortfalls arise where~~ the potential capacity provided by existing facilities (table 6) ~~is insufficient to meet~~ and the estimated minimum waste management target levels ~~capacity requirement~~ (table 5). Sites do not operate at full capacity and therefore the actual waste management facility provision required is not the same as the waste management target levels identified in table 5. Greater recycling capacity than those shown would ordinarily be required to enable recycling production to at least reach the target levels. However, this Plan has a positive approach to waste recycling and no ceiling is to be set on the level of capacity that may be provided. The nature of ~~W~~waste management capacity ~~requirements~~ will be kept under review and updated in the Oxfordshire Minerals and Waste Annual Monitoring Reports. These reports will also set out how ~~the~~ waste management capacity ~~requirements are expected to be met~~ is being delivered, including the capacity that is ~~expected~~ to be provided by:

- *Permanent and established waste management facilities;*
- *Time-limited waste management facilities;*
- *Sites with planning permission for waste management facilities that have not yet been built;*
- *Site allocated for waste development in the Minerals and Waste Local Plan: Part 2 – Site Allocations Document; and*
- *Any further sites that may be identified ~~needed to meet updated capacity requirements identified~~ in the Annual Monitoring Reports following adoption of the Site Allocations Document.*

This change would remedy the failings in relation to the tests of soundness that have been identified at paragraph 9 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It ensures that the provision for new capacity reflects the agreed position that sites do not operate at full capacity, that the Plan is adopting a positive approach with no ceiling set on the level of capacity that may be provided, and that there is therefore no maximum waste management capacity requirement to be met.

Continue on a separate sheet or expand the box if necessary

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM46 – Policy W3

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. As stated in the representations on MM42 - MM44 it was agreed at the examination hearing sessions that the waste figures would not be discussed, as the Council had confirmed that its intention was to encourage the provision of new recycling facilities, and that there would be no capacity requirement in policy against which to assess the need for proposals. As a consequence the figures in policy W3 for the provision to be made for non-hazardous recycling serve no purpose and need to be removed.

2. The figures, not having been tested for soundness at the examination hearings, do not comply with the requirement (paragraph 158) of the National Planning Policy Framework (NPPF) that they are based on a proportionate evidence base. They also do not incorporate the change that it was agreed was common ground, of including a contingency capacity (see examination document H2 and paragraph 61 of the inspector's interim report).

3. Furthermore, as with the third aspect of the representations that are made in respect of policy M1 (MM8), the full extent of the wording taken from paragraph 14 of the NPPF must be used in the 4th paragraph of policy W3, i.e. the word "any" must replace "the" and "significantly and" must be inserted before "demonstrably outweigh the benefits". Clearly it is not at all appropriate (and therefore unsound) for the Plan to selectively quote from the NPPF, but also the wording as drafted derogates the benefits it purports to "take into account".

4. This is important, because in the absence of reliable supply or requirement figures, the strategy for delivery relies on allocations and other sites coming forward through the development control process. As these other sites will not have the benefit of an in principle support of an allocation and are likely to have some site specific impacts, if they are to be permitted it is important that any positive aspects of the development are accorded great weight in policy itself, or any negative effects are required to significantly outweigh the benefits, or both.

5. It is noted that the "reason for change" column of the proposed modifications identifies examination document H10 as the reason for this change. This document provided a set of agreed waste policy principles, in order to deliver a positive approach to waste recycling, the fourth of which was that great weight will be given to the benefits of providing additional recycling capacity.

6. It would have been preferable (and more straightforward) for policy W3 simply to adopt the format of this fourth principle, and it is considered that for the same reasons given at paragraphs 9 - 11 of the representations on MM8, that that would be entirely consistent with national policy. However, if alternative wording is to be used, then it must at least reflect the gist of the agreed principle, and not (as it does) introduce a more stringent test even than that which applies in the NPPF.

7. The word “demonstrably” means simply to be capable of being shown. There is no qualification as to the extent that any adverse impacts could outweigh the benefits. They might just minimally outweigh the benefits – according to the judgement of the decision-maker - in order to sustain an objection against the policy. Such an approach is not in accordance with the NPPF, which requires that any adverse impacts must significantly outweigh the benefits, but it is also far from the spirit of the agreed waste policy principles of examination document H10.

8. Policy W3 is unsound, because it is:
   - Not positively prepared – not taking an encouraging approach and failing to reflect the agreed waste policy principles;
   - Not justified – by not following the most appropriate strategy, of promoting the maximisation of waste recycling levels;
   - Not effective – by diminishing the potential for development needs to be delivered over the plan period;
   - Not consistent with national policy – by not following NPPF advice.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, policy W3 should be re-drafted, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

Provision will be made for ~~the following~~ additional waste management capacity to manage the non-hazardous element of the principal waste streams~~:~~ to ensure that the recycling levels identified in policy W2 are met.
~~Non-hazardous waste recycling:~~

- *~~By 2021: at least 145,400 tpa~~*
- *~~By 2026: at least 203,000 tpa~~*
- *~~By 2031:at least 326,800 tpa~~*

Specific sites for strategic and non-strategic waste management facilities (other than landfill) ~~to meet the requirements set out in this policy, or in any update of these requirements in the Oxfordshire Minerals and Waste Annual Monitoring Reports, at locations that~~ ~~are in accordance with policies W4 and W5 and other relevant policies of this Plan and of other development plans will be allocated in the Minerals and Waste Local Plan: Part 2 – Site Allocations Document. Other sites which are suitable for strategic and non-strategic waste management facilities and which provide additional capacity~~[1] for preparation for re-use, recycling or composting of waste or treatment of food waste (including waste transfer facilities that help such provision) at locations that are in accordance with policies W4 and W5 ~~and other relevant policies of this Plan and of other development plans~~[2] will ~~also~~ be allocated in the Minerals and Waste Local Plan: Part 2 – Site Allocations Document.

Permission will be granted at allocated sites for the relevant types and sizes of waste management facilities for which they are allocated provided that the requirements of policies C1 – C12 are met.

Permission will normally be granted for proposals for waste management facilities that provide capacity for preparation for re-use, recycling or composting of waste or treatment of food waste (including waste transfer facilities that help such provision) at other sites that are located in accordance with policies W4 and W5 and that meet the requirements of policies C1-C12, taking into account the benefits of providing ~~additional~~ capacity for the management of waste at these levels of the waste hierarchy, and unless any ~~the~~ adverse impacts of doing so significantly and demonstrably outweigh the benefits. Where permission is granted for such a facility at a time-limited mineral working or landfill site this will normally be subject to the same time limit as that applying to the host facility and the site will be restored in accordance with the requirements of policy M10 for restoration of mineral workings at the end of its permitted period~~. Except where~~, unless a new planning permission is granted for

[1] Repetition and and text deleted to simplify the policy.
[2] This test is superfluous and over-complicates the policy – it duplicates legislative provision.

retention of the facility beyond its permitted end date~~, temporary facility sites shall be restored at the end of their permitted period~~.[3]

Proposals for non-hazardous residual waste treatment will only be permitted if it can be demonstrated that the development would not impede the movement of waste up the hierarchy and that it would enable waste to be recovered at one of the nearest installations, and provided that the proposal is located in accordance with policies W4 and W5 and meets the requirements for additional non-hazardous residual waste management capacity that may be identified in the Oxfordshire Minerals and Waste Annual Monitoring Reports ~~in the consideration of proposal for additional non-hazardous residual waste management capacity for the principal waste streams~~.[4]

This change would remedy the failings in relation to the tests of soundness that have been identified at paragraph 8 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It ensures that the provision for new capacity reflects the agreed position that the Plan is adopting a positive approach with no ceiling set on the level of capacity that may be provided, and that there is therefore no maximum waste management capacity requirement to be met.

Continue on a separate sheet or expand the box if necessary

[3] These changes are suggested in order to simplify the policy.
[4] Repetition and text deleted to simplify the policy.

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM47, MM48 and MM51 – Paragraphs 5.33 - 5.34 and Policy W4

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☑ Yes	☐ No
(ii) Sound?	☑ Yes	☐ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☐
(ii)	Justified	☐
(iii)	Effective	☐
(iv)	Consistent with national policy	☐

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. The proposed modifications to policy W4 are very welcome and address the concerns raised in previous representations on the August 2015 Proposed Submission Plan (section 2.8 of response 113), in particular to widen the area around Oxford where waste management facilities may be located and to include small towns as acceptable locations. These representations did suggest that there should be wider areas around Oxford and the small towns than are now set out in paragraphs 5.33 and 5.34, but it is accepted that the strategy as modified provides the necessary flexibility to enable suitable locations for waste management facilities to be found.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text. **Please be as precise as possible.**
No change is proposed.
Continue on a separate sheet or expand the box if necessary

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM53 – Policy W6

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. It was a matter of common ground with the Council (see point 9 of examination document H2) that the potential for using inert waste in operational development should be provided in policy W6. It is acknowledged that the manner in which policy W6 was to be modified was not agreed. However, the Council has not modified policy W6 in to reflect this agreement whatsoever.

2. As was identified in representations on the August 2015 Proposed Submission Plan (paragraphs 2.10.12 – 2.10.13), use of inert waste in operational development schemes enables the displacement of primary materials that would otherwise have to be used, and therefore is to be defined as a recovery operation. As a consequence it is both a highly sustainable form of development – by conserving natural resources, and a means of managing waste that is higher up the waste hierarchy than landfill.

3. Unfortunately however, policy W6 as currently drafted actually incorporates a presumption against use of inert waste in development schemes (unless there would be an overall environmental benefit), and instead only prioritises use of inert waste to backfill quarries, which could well be a waste disposal activity at the bottom of the hierarchy, not a recovery operation.

4. It is imperative therefore that policy W6 should be amended to give preference equally to the use of inert waste in operational development schemes, not only to honour the agreement on common ground, but also in order that the policy fulfils the Government's objectives of contributing to the achievement of sustainable development and driving management of waste up the waste hierarchy, in line with paragraphs 6 and 151 of the National Planning Policy Framework (NPPF) and paragraph 1 of the National Planning Policy for Waste (NPPW).

5. An amendment to policy W6 is also necessary to ensure that in addition to provision being made through existing facilities and site allocations, planning permission will be granted for other sites. This is required to reflect the fact that provision for the use of inert waste in operational schemes cannot be catered for through site allocations, as it is a matter dependent on suitable construction and development schemes coming forward over time.

6. Policy W3 is unsound, because it is:
   - Not positively prepared – by not being consistent with the aim of achieving sustainable development;
   - Not justified – by not following the most appropriate strategy of encouraging development higher up the waste hierarchy;
   - Not effective – by diminishing the potential for delivering sustainable waste management development;
   - Not consistent with national policy – by not following the NPPF and NPPW.

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that the part of policy W6 relating to inert waste should be re-drafted, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

Inert waste facilities

Provision for the permanent deposit to land or disposal to landfill of inert waste which cannot be recycled will be made at existing facilities, ~~and~~ in sites that will be allocated in the Mineral and Waste Local Plan: Part 2 – Site Allocations Document, and by granting planning permission at other sites. Provision will be made for sites with capacity sufficient for Oxfordshire to be net self-sufficient in the management of inert waste.

Priority will be given to the use of inert waste that cannot be recycled as infill material to achieve the satisfactory restoration and after use of active and unrestored quarries~~.~~, or in operational development where the waste serves a useful purpose in replacing other materials that would have had to be used for that purpose, and it can be demonstrated that ~~Permission will not otherwise be granted for development that involves the permanent deposit or disposal of inert waste on land unless~~ there would be an overall environmental benefit.

This change would remedy the failings in relation to the tests of soundness that have been identified at paragraph 6 of the comments in the preceding section 2 (d), and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

It ensures that the Plan reflects the agreed position that the use of inert waste in operational development schemes would be provided for, and supports recovery operations that would have more benefits than and be preferable to the alternative of landfill, or disposal, at the bottom of the waste hierarchy.

Continue on a separate sheet or expand the box if necessary

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM59 – Policy W11

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☐
(ii)	Justified	☐
(iii)	Effective	☐
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. It is very welcome that policy W11 has been amended to include waste management sites with temporary permissions. However, it is considered that the drafting of the policy remains over-complicated and does not provide the clarity and certainty that the National Planning Policy Framework (NPPF) requires (paragraphs 17 and 154).

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that policy W11 should be re-drafted, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

Existing and permitted waste management sites and sites allocated for waste management development in ~~T~~the Minerals and Waste Local Plan: Part 2 – Site Allocations Document ~~will identify sites that will be~~ are safeguarded for waste management use for the duration of their planning permission ~~comprising:~~

- ~~*Operational waste management sites with planning permission;*~~
- ~~*Sites with planning permission for waste management use which have not yet been brought into operation;*~~
- ~~*Vacant site last used for waste management purposes; and*~~
- ~~*Sites allocated for waste management development in the Site Allocations Document.*~~

~~*Pending the adoption of the Site Allocations Document the sites safeguarded for waste management uses are specified in Appendix 2.*~~

~~*The list of sites safeguarded for future waste management use will be monitored and kept up to date in the Minerals and Waste Annual Monitoring Report.*~~

Proposals for development that would directly or indirectly prevent or prejudice the potential use of a site safeguarded for waste management development will not be permitted unless:

- *The development is in accordance with a site allocation for development in an adopted local plan or neighbourhood plan; or*
- *Equivalent waste management capacity can be appropriately and sustainably provided elsewhere; or*
- *It can be demonstrated that the site is no longer required for waste management.*

This change would make policy W11 much more understandable, and would make the Plan legally compliant in respect of the requirement to have regard to national planning policy.

Continue on a separate sheet or expand the box if necessary

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM61 – Policy C4

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. In accordance with examination document H17aa policy C4 needs to be modified to remove the words "or risk to". This is necessary to accord with the agreed 7th waste policy principles of examination document H10, which the Inspector confirmed that the Council should give consideration to (paragraph 86 of his interim report).

2. The policy needs also to be consistent with the policy approach of the National Planning Policy Framework (NPPF), which is to seek to balance any harm caused by proposed developments against the benefits, and to aim to reduce or mitigate impacts to acceptable levels. The national policy approach does not support potential or unqualified harm leading to a reason for refusal.

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that policy C4 should be re-drafted, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

Proposals for minerals and waste development will need to demonstrate that there would be no unacceptable adverse impact on ~~or risk to~~:

- *The quantity or quality of surface or groundwater resources required for habitats, wildlife and human activities;*
- *The quantity or quality of water obtained through abstraction unless acceptable provision can be made;*
- *The flow of groundwater at or in the vicinity of the site; and*
- *Waterlogged archaeological remains;*

Proposal for minerals and waste development should ensure that the River Thames and other watercourse and canals of significant landscape, nature conservation, or amenity value are adequately protected from ~~unacceptable~~[1] significant adverse impacts.

This change would make policy C4 compliant with national planning policy.

Continue on a separate sheet or expand the box if necessary

[1] NPPF policy in relation to these matters is a positive requirement to conserve value and minimise harm, requiring a balancing of impacts against the benefits of a proposal, and does not set such a stringent test.

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM63 – Policy C6

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. In accordance with examination document H17aa policy C6 needs to be modified to reflect the agreed 7th waste policy principles of examination document H10, which the Inspector confirmed that the Council should give consideration to (paragraph 86 of his interim report).

2. The policy as drafted presumes against development that affects best and most versatile agricultural land irrespective of the extent of that loss, which for waste management proposals could actually amount to a relatively small impact. Such unqualified harm is also only to be offset by showing that there is an overriding need for the development, and does not accord with the agreed approach that the benefits, of waste management that implements the waste hierarchy, should be given great weight in the balance against any harm.

3. The policy is also not consistent with the relevant National Planning Policy Framework (NPPF) guidance (paragraph 112), which does not contain any such presumption, but rather more positively seeks that the economic and other benefits of best and most versatile agricultural land should be taken into account, and clarifies that the aim is look to areas of poorer quality land in preference to that of a higher quality, where significant development of agricultural land is demonstrated to be necessary (emphasis added).

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that policy C6 should be re-drafted, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

In determining ~~*P*~~*proposals for minerals and waste development,* ~~*shall demonstrate that they take into*~~ *account will be taken of the* ~~*presence*~~ *loss, if any, of* ~~*any*~~ *best and most versatile agricultural land.*

~~*The permanent loss of best and most versatile agricultural land will only be permitted where it can be shown that there is an overriding need for the development which cannot reasonable be met using lower grade land, and where all options for reinstatement without loss of quality have been considered, taking into account other relevant considerations.*~~

Development proposals should make provision for the management and use of soils in order to maintain agricultural land quality (where appropriate), and soil quality, including making a positive contribution to the long-term conservation of soils in any restoration.

This change would make policy C6 compliant with national planning policy.

Continue on a separate sheet or expand the box if necessary

Part 2 – Representation

Please complete this part (Part 2) of the form separately for each separate representation you wish to make.

You can find an explanation of the terms used below in the accompanying guidance on making representations.

2(a) State which Proposed Main Modification you are making a representation about

Proposed Main Modification No. (and part or policy no. or paragraph if relevant)	MM66 – Policy C7

2(b) Do you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is: (tick as appropriate)

(i) Legally compliant?	☐ Yes	☑ No
(ii) Sound?	☐ Yes	☑ No

If you have answered **No** to question 2(b)(ii), please continue to question 2(c). In all other cases, please go to question 2(d).

2(c) Do you consider the Oxfordshire Minerals and Waste Core Strategy incorporating the Proposed Main Modifications is unsound because it is not: (tick as appropriate)

(i)	Positively prepared	☑
(ii)	Justified	☑
(iii)	Effective	☑
(iv)	Consistent with national policy	☑

On the following pages, please set out why you think the Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally non-compliant and/or unsound and any changes you are suggesting should be made to it that would make it legally compliant or sound.

Please note *your representation should include as succinctly as possible all the information and evidence necessary to support/justify the representation and the suggested change, as there will not normally be a subsequent opportunity to make further representations based on your representation at this stage.*

2(d) Please give details of why you consider the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is not legally compliant or is unsound. Please be as precise as possible.

If you agree that the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications is legally compliant and/or sound and wish to support this, please also use this box to set out your comments.

1. In accordance with examination document H17aa the first sentence of policy C7 needs to be modified to reflect the agreed 7th waste policy principles of examination document H10, which the Inspector confirmed that the Council should give consideration to (paragraph 86 of his interim report).

2. The policy needs also to be consistent with the policy approach of the National Planning Policy Framework (NPPF), which is to seek to balance the benefits of proposed developments against any significant adverse impacts, and to minimise impacts to acceptable levels. The national policy approach in the first principle of paragraph 118 of the NPPF, which this first sentence of policy C7 reflects, does not support unqualified harm leading to a reason for refusal, but rather that it would be significant harm from a development that cannot be adequately mitigated or, as a last resort, compensated for (emphasis added).

Continue on a separate sheet or expand the box if necessary

2(e) Please set out the changes(s) you consider necessary to make the Oxfordshire Minerals and Waste Local Plan Core Strategy incorporating the Proposed Main Modifications legally compliant or sound, having regard to the reason you have identified at 2(c) above where this relates to soundness. You should say why this change will make the Core Strategy legally compliant or sound. It will be helpful if you are able to put forward your suggested revised wording of any policy or text.
Please be as precise as possible.

In order for the Plan to be sound, it is suggested that the first sentence of policy C7 should be re-drafted, as follows (text to be deleted is shown ~~struck through~~ and additional text shown underlined):

In determining proposals for m~~M~~inerals and waste development, account will be taken of significant adverse impacts on biodiversity. ~~should conserve and, where possible, deliver~~ Proposals are encouraged to result in a net gain in biodiversity.

The remaining text of the policy should remain as proposed to be modified.

This change would make policy C7 compliant with national planning policy.

Continue on a separate sheet or expand the box if necessary

APPENDIX 1

From: **suzi coyne** suzi.coyne@ntlworld.com
Subject: Oxfordshire Minerals and Waste Core Strategy and LAA
Date: 28 October 2016 at 08:33
To: Day, Peter - E&E Peter.Day@Oxfordshire.gov.uk
Cc: Kinderman, Elise - E&E Elise.Kinderman@Oxfordshire.gov.uk

SC

Dear Peter

I am writing further to the discussions on the second day of the Local Plan examination hearings on the LAA and the criticisms made about the lack of sufficient information provided to demonstrate the ability of higher quality recycled aggregates (i.e. using wash plant technology) to be used in concrete manufacture. In response to the points raised that petrographic composition test certificates and evidence of compliance with BS standards for concrete products should have been provided we undertook to source this information, which I did later that evening. Unfortunately, however, (and although a copy printed was printed out by the Programme Officer), given the subsequent involvement in negotiations to agree the approach of not having to test the figures at the hearings, we overlooked putting this information into the examination sessions. Given the inspector's comments at paragraph 103 of his interim report, this is clearly very regrettable.

Nevertheless, I am providing you with the information now with a view to it perhaps helping in future LAAs. The information comprises

- The full RSK report including the petrographic examination results; and
- Data and photos of the concrete blocks that Sheehan are manufacturing from recycled aggregate at their concrete plant at Knightsbridge Farm. (Chris tells me that they are making about 50,000 blocks a week and demand for them is outstripping rate of production).

We would also be very happy to assist in providing further information for future LAAs in relation to the issue of the availability and suitability of recycled materials, particularly as this market continues to develop.

Best regards
Suzi

PDF

285231.002_FINAL..pdf

QAS ISO 9001 QAS ISO 14001

SHEEHAN HAULAGE & PLANT HIRE

CONCRETE BLOCK DATASHEET

Solid dense – the most durable and resilient block with high load bearing capacity for unfinished facing applications

Dense blocks containing a minimum of 75% recycled/secondary aggregates.

- Environmentally engineered to meet the requirements of today's values
- 75% minimum recycled aggregate makeup
- Raw materials used are precisely selected for their environmental performance and the products fulfil all UK and European technical standards
- Freeze/Thaw resistance: Frost Resistant
- Sound Insulation: 45 RwdB

Applications

Suitable for use above and below ground, both internally and externally up to 3 storeys.
Standard finish - Suitable for locations where the surface will not be seen, i.e. plastered or rendered.

Manufacturing standards

The Sheehan block range is manufactured using a semi-dry process and is compliant to European Standard BS EN 771-3.
All Sheehan products are manufactured in accordance with ISO 9001 with compliance to ISO 14001.

Technical Data -

Property	BS EN Standard	Value
Manufacturing Category	BS EN 771-3	Category II

Property	BS EN Standard	Value

General view of the processed fine recycled aggregate stockpiles

Sheehan Group

Dix Pit Washing Plant, Stanton Harcourt

Assessment of recycled fine aggregate

285231-01 (01)

MAY 2013

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APPENDICES

RSK DOCUMENT CONTROL

Report No.: 285231-01 (01)

Title: Dix Pit Washing Plant, Stanton Harcourt – Assessment of recycled fine aggregate

Client: Sheehan Group
Knightsbridge Farm
Woodstock Road
Yarnton
Oxford
OX5 1PS

Date: 30 May 2013

Office: Hemel Hempstead

Status: FINAL

Author	Paul Bennett Hughes Associate Director	**Technical reviewer**	Dr Ian Sims Director
Signature		Signature	
Date:	30 May 2013	Date:	30 May 2013

EXECUTIVE SUMMARY

On the instructions of Mr Chris Sheehan of Sheehan Contractors ('Sheehan'), RSK were instructed to characterise the composition and properties of the processed fine recycled aggregate from Dix Pit Washing Plant, Stanton Harcourt, Oxfordshire. The main source of the material to be recycled is understood to be arisings, which is different from the usual sources of recycled concrete aggregate (RCA) and recycled aggregate (RA).

Dr Ian Sims and Paul Bennett-Hughes of RSK undertook an initial site visit on 13 November 2012, to tour the processing plant and recycled aggregate stockpiles. Subsequent site visits by RSK representatives sampled aggregate from three of the fine recycled aggregate stockpiles and water from both the on-site borehole and the water used in the washing plant.

The three fine recycled aggregate samples were subjected to petrographic examination, physical testing and chemical analyses in the RSK laboratory, to characterise the composition and properties of the product. The water samples were subject to the BRE SD1 suite of chemical analysis to assess the presence, if any, of potentially harmful constituents.

The petrographic examination of the fine recycled aggregate determined that is was typically dominated by quartz and limestone, with minor proportions of various constituents, including ironstone, calcitic sandstone, shell, brick, slag, quartzite and chert (flint), with trace proportions of calcite, silicified limestone, dolomite, dolerite, glauconite, plant material and paint. The large majority of the determined constituents are typical constituents of fine aggregate within concrete and arisings, though more polymictic than most naturally occurring fine aggregates.

The recycled fine aggregate was typically well graded, although the mean fines content (<63µm) was the same as the threshold value given in EN 12620 between harmful and non-harmful fines, suggesting some concern as that the material could be potentially unsuitable for concrete depending on the source of the arisings that are being recycled. However, XRD analysis of this material determined that no clay minerals were present and that this <63µm sized material was similar in composition to the >63µm material.

Chemical analysis of the recycled aggregate showed it to exhibit some degree of variation, but the majority of the values were in the low categories (where applicable). The fine recycled aggregate has a low total sulfur content, exhibited a mean acid soluble sulfate content of 0.2% as SO_3 by mass of dry aggregate (ie equal to EN 12620 category $AS_{0.2,}$ however, individual test results were higher and indicate a degree of variability) and a mean water soluble sulfate content of 0.13% as SO_3 by mass of dry aggregate ($SS_{0.2}$). The determined values of acid and water soluble chloride contents, alkali content and methylene blue determination are not particularly high and can be taken into account when designing a concrete mix.

In terms of compressive and flexural strength, the Dix Pit material exhibited lower values than prisms cast with reference BS sand from Leighton Buzzard. The results suggested that the strength results are related to the age of the stockpile, with the older material performing relatively poorly compared with the recent stockpile. Further work will need to be undertaken to determine whether the cause of this reduction in strength is related to either a change in production over time or a change in the material properties over time.

Overall, the samples of fine recycled fine aggregate exhibited properties that would generally appear suitable for use within concrete. It should be noted that fine recycled aggregate can vary in composition over time and therefore it is advocated that a routine test programme is put in place to provide a continuous set of data that can be analysed to show the degree of consistency in the product over time.

The analysis of a sample of the water being re-circulated in the washing plant suggests that it does not significantly affect the chemistry of the recycled fine aggregate being washed.

The information given in this summary is necessarily incomplete and is provided for initial briefing purposes only. The summary must not be used as a substitute for the full text of the report.

1 INTRODUCTION

1.1 Background

In recent years, the wisdom of continued wholesale extraction and use of aggregates from natural resources has been questioned at an international level, mainly because of the depletion of quality primary aggregates and greater awareness of environmental protection[1]. The UK government has introduced a number of policies to encourage wider use of secondary and recycled aggregate as an alternative to naturally occurring primary aggregates. These include landfill and future extraction taxes to improve economic viability, and support to relevant research and development work.

From a sustainability point of view, the ideal source of recycled aggregate would be a general material available from aggregate suppliers in the same way as a natural aggregate. It would come from mixed sources but meet a general specification ensuring appropriate quality[2]. However, considering the wide potential range of source materials it could be an onerous task for aggregate suppliers to achieve and demonstrate a consistent product.

It is now widely accepted that there is a significant potential for reclaiming and recycling demolition debris for use in value added applications to maximise economic and environmental benefits.

While accepting the need to promote the use of recycled concrete aggregate (RCA) in wider applications, it must be remembered that the aggregate for concrete applications must meet the requirements set in the relevant specifications for its particular use[1].

1.2 Current guidance - Recycled concrete aggregate

BS 8500-1[3] defines recycled aggregate (RA) as aggregate resulting from the reprocessing of inorganic material previously used in construction, whilst it defines recycled concrete aggregate (RCA) as recycled aggregate principally comprising crushed concrete.

Provisions for the use of fine RCA and fine RA are not given in Clause 4.3 of BS 8500-1[3], but this does not preclude their use where it is demonstrated that, owing to the source of material, significant quantities of deleterious materials are not present and their use has been agreed with the Client.

[1] Limbachiya, M, Koulouris, A, Roberts, J & Fried, A., Performance of recycled aggregate concrete, RILEM International Symposium on Environment-Conscious Materials and Systems for Sustainable Development, RILEM Publications SARL, 2004, pp 127-136

[2] Design Manual for Roads and Bridges, Volume 2 – Highway Structures: Design (substructures and special structures) materials, Section 3: Materials and Components, Part 9: The use of recycled concrete aggregate in structural concrete, 2007.

[3] BS 8500-1: 2006, Concrete, Complementary British Standard to BS EN 206-1. Part 1: Method of specifying and guidance for the specifier, British Standards Institution, London, UK

As the potential composition of fine RCA and RA is so wide, the requirement for additional testing should be assessed on a case-by-case basis taking into account the specific composition of the RCA and RA. In particular the project specification for RA should include:

- Maximum acid-soluble sulfate
- Determination of the chloride content
- Classification with respect to alkali-aggregate reactivity
- Determination of the alkali content
- Any limitations on use in concrete.

BS 8500-2[4] states that clean fine RCA can be suitable for use within concrete, however, there is a concern about the potential levels of sulfate. Some concrete elements, in their past use, may have been coated with gypsum plaster, and on crushing most of this gypsum plaster will finish in the fine RCA. Excess gypsum plaster can lead to internal sulfate attack and/or delayed ettringite formation (DEF). British Standards Institution has stated that there is no practical sampling system that would detect localised high volumes of sulfate[4]. For these reasons the use of fine RCA is left to the individual project specification, which can take account of the particular source of RCA.

1.3 Fine aggregate derived from arisings

In this case, the source of the material for the recycling plant is primarily construction arisings, rather than those sources stated for RA and RCA. There is a lack of published documents relating to the use of fine recycled arisings (say FRA) within concrete, so the properties of the material must be assessed on a 'first principles' basis. However, given that the FRA is a recycled product for use within concrete, it is possible to use some of the current BS and EN standards as guides to assess the potential use of the material within concrete. As stated in Section 1.2, the use of fine RCA and RA should be taken on a case-by-case basis, which also seems applicable to FRA given the potential range of sources of material to be recycled.

[4] BS EN 8500-2: 2006, Concrete, Complementary British Standard to BS EN 206-1. Part 2: Specification for constituent materials and concrete, British Standards Institution, London, UK

1.4 Instructions

On the instructions of Mr Chris Sheehan of Sheehan Contractors ('Sheehan'), by purchase order 4107 dated 29 November 2012, RSK were instructed to characterise the composition and properties of the processed recycled fine aggregate from stockpiles at Dix Pit Washing Plant, Stanton Harcourt, Oxfordshire.

The purpose of assessing the various stockpiles, approximately 6 months of production, of the FRA was to gain an initial assessment of the consistency of the product over a period of production time and also to assess whether it was potentially suitable for use within concrete. The tests included within this investigation were selected to give a preliminary indication of the fitness for purpose of the material. If the results of this first phase of testing were positive, it was suggested that further performance-related testing might be required.

RSK were not asked to assess the recycled coarse aggregate product.

The water for the closed circuit washing plant is provided from a borehole on site[5]. The purpose of assessing both the borehole water and the plant water was to assess whether there are any changes in the water during use and recirculation and also to determine if the constituents of the water have any influence on the aggregate that is produced within the plant.

[5] The Client advised in January 2013 that they are intending to discontinue use of the borehole and move to a surface pond, for which they had just been given planning permission.

2 SITE VISITS AND SAMPLES

2.1 Initial Visit

On 13 November 2012, Dr Ian Sims and Paul Bennett Hughes of RSK, accompanied by Mr Chris Sheehan, visited the Dix Pit site to observe the crushing and washing plant for the recycled aggregates. The purpose of the visit was to observe the plant in use and also to discuss the quality control procedures in place.

Mr Sheehan provided a thorough guided tour of the whole processing plant, designed by CDE, which contains a range of equipment from the CDE product portfolio, including a feed system, logwasher, aggregate screens and a sand washing plant. The system employs full closed circuit water recycling, which is fed, when required, with water from the on-site borehole (since advised by the Client to be soon to be changed to an on-site surface drainage pond). The washing plant included pre-screening, attrition, removal of 'deleterious materials' and aggregate dewatering. The removed 'deleterious materials' include plastics, polystyrene, rubber and wood. The plant produces two grades of FRA from the plant; broadly concreting/sharp sand and building/soft sand.

A selection of photographs from the site visit is shown in **Appendix A**.

2.2 Sampling

On 06 November 2012, Clive Rayner of RSK, accompanied by a representative of Sheehan, visited Dix Pit to sample representative portions of processed fine aggregate, in accordance with EN 932-1[6], from three of the recent concreting fine aggregate stockpiles.

On 04 January 2013, Paul Bennett-Hughes of RSK sampled the two water samples. The borehole water sample was taken from the tap in the kitchen within the main office at Dix Pit, which was advised by the Sheehan representative to run straight off the borehole (there is no mains water supply on site). The second water sample was taken from the settlement tank within the washing plant.

A summary of the sample schedule is shown in **Table 2.1**.

Table 2.1 Sample Schedule

RSK Sample Ref	Site Sample Ref	Sample size	Grade
12478/A1	Latest stockpile	50 kg	Concrete sand
12478/A2	Intermediate-age stockpile	50 kg	Concrete sand
12478/A3	Oldest stockpile	50 kg	Concrete sand
12478/O1	Borehole water	1 litre	N/a
12478/O2	Plant water	1 litre	N/a

[6] BS EN 932-1: 1997, Tests for general properties of aggregates, Part 1: Methods for sampling, British Standards Institution, London, UK

3 LABORATORY SCHEDULE AND METHODS

A summary of the laboratory schedule is presented in **Table 3.1**.

Table 3.1 Laboratory Test Schedule

Test	Sample Ref				
	A1	A2	A3	O1	O2
	Latest stockpile	Intermediate-age stockpile	Oldest stockpile	Borehole water	Plant water
Petrographic examination[7]	✓	✓	✓		
Particle size distribution[8]	✓	✓	✓		
X-ray diffraction (XRD)	✓	✓	✓		
Acid and water soluble sulfate contents[9]	✓	✓	✓		
Acid and water soluble chloride contents[9]	✓	✓	✓		
Total sulfur[9]	✓	✓	✓		
Alkali content[9]	✓	✓	✓		
Methylene blue[10]	✓	✓	✓		
Particle density and water absorption[11]	✓	✓	✓		
Influence on initial setting time[12]	✓	✓	✓		
Compressive and flexural strength[13]	✓	✓	✓		
Loose bulk density[14]	✓	✓	✓		
BRE SD1[15] analysis of water				✓	✓

[7] RSK In-house procedure TP 83 – Petrographic examination of Fine Aggregate, based upon BS 812-104: 1994, Testing aggregates. Methods for qualitative and quantitative petrographic examination of aggregates, British Standards Institution, London, UK

[8] BS EN 933-1: 2012, Tests for geometrical properties of aggregates, Part 1: Determination of particle size distribution, Sieving method, British Standards Institution, London, UK

[9] EN 1744-1: 2009, Tests for chemical properties of aggregates, Part 1: Chemical analysis, British Standards Institution, London, UK

[10] BS EN 933-9: 2009, Tests for geometrical properties of aggregates, Part 9: Assessment of fines. Methylene blue test, British Standards Institution, London, UK

[11] BS EN 1097-6: 2000, Tests for mechanical and physical properties of aggregates. Determination of particle density and water absorption, British Standards Institution, London, UK

[12] BS EN 1744-6: 2006, Tests for chemical properties of aggregates. Determination of the influence of recycled aggregate extract on the initial setting time of cement, British Standards Institution, London, UK

[13] EN 1015-11: 1999, Methods of test for mortar for masonry, Part 11: Determination of flexural and compressive strength of hardened mortar, British Standards Institution, London, UK

[14] EN 1097-3: 1998, Tests for mechanical and physical properties of aggregates, Part 3: Determination of loose bulk density and voids, British Standards Institution, London, UK

[15] BRE Special Digest 1: 2005 Concrete in aggressive ground, 3rd Ed., Building Research Establishment, Watford, UK.

4 SUMMARY OF RESULTS

The detailed certificates of examination, analysis and testing of the aggregate samples are presented in **Appendix B** and summarised in **Table 4.1**.

Table 4.1 Summary of Fine Aggregate Testing

Sample Ref	Petrographic examination		Particle size distribution		Mineralogical composition of <63µm sized material		Mean bulk density,	Mean compressive strength of mortar	Mean flexural strength of mortar	Acid soluble sulfate content	Water soluble sulfate content	Acid soluble chloride content	Water soluble chloride content	Total sulfur	Alkali content	Methylene blue	Particle density	Particle water absorption	Influence on initial setting time of concrete, minutes
	Constituent	% by mass	Sieve size, mm	Percentage passing	Constituent	% by mass	kg/l	MPa (ref sand)	MPa (reference sand)	As SO_3 (%) by mass of dry aggregate	As SO_3 (%)	% chloride by mass of sample	% chloride by mass of sample	% S by mass of sample	Total alkalis as $Na_2Oeq.$	g of dye per kg	Apparent particle density, mg/m^3	% of dry mass	(control 210 minutes)
Newest stockpile	Quartz	38	63.0	100	Quartz	43	1.43	8.0	2.20	0.2	0.11	0.015	0.004	0.10	0.073	0.7	3.08	3.7	206
	Limestone	30	31.5	100	Calcite	34		(11.6)	(2.84)										
	Brick	7	16.0	100	Microcline	8													
	Sandstone	5	8.0	100	Muscovite mica	6													
	Ironstone	4	3.35	100	Albite	4													
	Steel Slag	4	2.0	98	Goethite	3													
	Shell	4	1.0	80	Dolomite	1													
	Quartzite	3	0.5	61	Augite	1													
	Chert	3	0.25	29	Gypsum	<1													
	Calcite	1	0.125	10															
	Dolerite	<1	0.063	2.5															
	Plant debris	<1																	
	Paint	<1																	
Inter.-age stockpile	Quartz	41	63.0	100	Quartz	48	1.37	5.8	1.89	0.1	0.01	0.012	0.002	0.05	0.066	1.0	3.03	3.0	241
	Limestone	30	31.5	100	Calcite	30		(11.6)	(2.84)										
	Ironstone	6	16.0	100	Muscovite mica	5													
	Limestone	5	8.0	100	Albite	5													
	Chert	4	3.35	100	Microcline	4													
	Shell	4	2.0	99	Sanidine	3													
	Steel slag	3	1.0	87	Goethite	3													
	Brick	3	0.5	69	Augite	1													
	Quartzite	3	0.25	33	Dolomite	<1													
	Dolomite	1	0.125	12	Orthoclase	<1													
	Si lmst*	<1	0.063	3.2															
	Glauconite	<1																	
	Calcite	<1																	
Latest stockpile	Quartz	35	63.0	100	Quartz	46	1.41	4.6	1.67	0.3	0.26	0.016	0.005	0.16	0.070	1.1	3.02	2.9	242
	Limestone	32	31.5	100	Calcite	30		(11.6)	(2.84)										
	Ironstone	8	16.0	100	Muscovite mica	5													
	Shell	7	8.0	100	Microcline	5													
	Steel slag	4	3.35	100	Albite	4													
	Quartzite	4	2.0	98	Goethite	4													
	Limestone	2	1.0	84	Sanidine	2													
	Brick	2	0.5	64	Orthoclase	2													
	Calcite	2	0.25	31	Augite	1													
	Chert	1	0.125	12	Bassinite	1													
	Si lmst*	1	0.063	2.9															
	Dolomite	<1																	
	Glauconite	<1																	
	Paint	<1																	

*Si lmst = silicified limestone

The detailed certificates of analysis of the water samples are presented in **Appendix C** and summarised in **Table 4.2**.

Table 4.2 Summary of Water Analysis

Test		O1 Borehole water	O2 Plant water
pH	pH	8.2	8.2
Ammonium as NH_4	mg/l	3.7	3.5
Chloride	mg/l	3180	213
Nitrate	mg/l	<0.5	97.1
Sulfate	mg/l	4663	1236
Magnesium (dissolved)	mg/l	112.0	10.2

5 DISCUSSION

5.1 Fine Aggregate

5.1.1 Overview

A summary of the findings of the testing is shown in **Table 5.1** and discussed in more detail in the subsequent sub-sections.

Table 5.1 Assessment of fine aggregate

Test	Determined Values			EN 12620[16] Notes for aggregate	
	Unit	Mean	Range	Class	Status
Petrographic examination	see section 5.1.2 and Table 5.2			-	-
Particle size distribution	see section 5.1.3			***MP***	*Category*
Acid soluble sulfate content	As SO_3 (% by mass of dry aggregate)	0.2	0.10 – 0.30	***$AS_{0.8}$***	*Category*
Water soluble sulfate content	As SO_3 (%)	0.13	0.01 – 0.26	***$SS_{0.2}$***	*Category*
Acid soluble chloride content	% chloride by mass of sample	0.014	0.012 – 0.016	***0.014***	*Declared value*
Acid soluble chloride content	% chloride by mass of sample	0.004	0.002 – 0.005	***0.004***	*Declared value*
Total sulfur	% S by mass of sample	0.10	0.05 – 0.16	***Pass***	*Pass/fail threshold value*
Alkali content	% total alkalis as Na_2Oeq	0.070	0.066 – 0.073	***0.070***	*see 5.1.8*
Methylene blue	g of dye per kg	0.93	0.7 – 1.1	***0.93***	*see 5.1.3.3*
Apparent particle density	Mg/m^3	3.04	3.02 – 3.08	***3.04***	*Declared value*
Particle water absorption	% of dry mass	3.2	2.9 – 3.7	***3.2***	*Declared value*
Influence on initial setting time	see 5.1.10			***A_{40}***	*Category*
Loose bulk density	kg/l	1.403	1.364 – 1.430	***1.403***	*Declared value*
Flexural strength	MPa	1.92	1.56 – 2.48	-	*See 5.1.11*
Compressive strength	MPa	6.1	4.1 – 9.4	-	*See 5.1.12*

[16] BS EN 12620: 2008, Aggregates for concrete, British Standards Institution, London, UK

5.1.2 Petrographic examination

The mean composition of the three fine aggregate samples is shown in **Table 5.2**. The aggregate is dominated by quartz and limestone, with minor proportions of ironstone, calcitic sandstone, shell, brick, slag, limestone, quartzite and chert (flint) and trace proportions of calcite, silicified limestone, dolomite, dolerite, glauconite, plant material and paint. As arisings are the major source of material that is being recycled in this case, then the majority of the constituents are as you might expect, as they are commonly found within the south of England.

The brick and slag present within the aggregate may be derived from crushed concrete or may have been derived from other construction products or earlier industrial processes. The trace amount of paint is also likely to have been derived as a coating on concrete. However, as older paints can contain lead and even small concentrations of lead contamination can interfere with cement hydration and setting in concrete, it would be prudent to check the contents of lead and some other metallic elements within the fine aggregates (see the results in sub-section 5.1.9). It is likely the trace amount of plant material is derived from the excavation process of extracted concrete foundations.

Table 5.2 Mean composition of fine RCA samples

Constituent	%
Quartz	38
Limestone	31
Ironstone	6
Sandstone	5
Shell	5
Brick	4
Slag	4
Limestone	3
Quartzite	3
Chert	3
Calcite	1
Silicified limestone	1
Dolomite	1
Dolerite	<1
Glauconite	<1
Plant material	<1
Paint	<1

5.1.3 Particle size distribution

5.1.3.1 Grading

Based upon the particle size distribution findings, which indicate that the mean percentage of material passing the 0.5mm sieve was 65%, the fine aggregate can be considered to be *MP* grading (30 to 70% passing by mass), as defined in EN 12620.

5.1.3.2 Total fines content

In accordance with EN 12620, fines, ie material <63µm, shall be considered non-harmful when any of the four following conditions apply:

a) the total fines content of the fine aggregate is less than 3% or other value according to the provisions valid in place of use of the aggregate;

b) the sand equivalent value (SE) when tested in accordance with EN 933-8[17] exceeds a specified lower limit;

c) the methylene blue test (MB) when tested in accordance with EN 933-9[10] gives a value less than a particular specified limit;

d) Equivalence of performance with known satisfactory aggregate is established or there is evidence of satisfactory use with no experience of problems.

It should be also noted that PD 6682[18] states that whilst EN 12620 gives the option to assess harmful fines content using the sand equivalent or methylene blue tests, these tests are not considered sufficiently precise for the purpose of determining harmful fines content in fine aggregates and filler aggregates in the UK. PD 6682 further indicates that such aggregates should be assessed for harmful fines using either a fines content limit or evidence of satisfactory use.

With regards the testing completed as part of this laboratory programme, the mean percentage passing 0.063mm (63µm) was 3%, with one individual result exceeding this requirement. Overall, given the findings of the particle size distribution, there is some initial concern regarding the level of fines being produced as, in accordance with EN 12620, they could be at a level that could be considered to be harmful unless they can be shown otherwise. The purpose of the total fines content is to try to limit the presence of clay minerals and especially swelling clay varieties, which would be considered deleterious within concrete. X-ray diffraction (XRD) analysis of the <63µm sized material allowed assessment of the composition of this material (see **Table 5.3**). In all of the three samples analysed, no clay materials or other potentially deleterious constituents were observed in the <63µm sized material. In general, the composition of the <63µm sized material reflects the composition of the >63µm sized material.

[17] BS EN 933-8: 1999, Tests for geometrical properties of aggregates, Part 8: Assessment of fines. Sand equivalent test, British Standards Institution, London, UK

[18] PD 6682-1: 2009, Published document, Aggregates – Part 1: Aggregates for concrete – Guidance on the use of BS EN 12620, British Standards Institution, London, UK

Table 5.3 XRD analysis of <0.63µm sized aggregate

Constituents	A1	A2	A3	Mean
Quartz	43	48	46	46
Calcite	34	30	30	31
Microcline	8	4	5	6
Muscovite mica	6	5	5	5
Albite	4	5	4	4
Goethite	3	3	4	3
Dolomite	1	<1		<1
Augite	1	1	1	1
Gypsum	<1			<1
Sanidine		3	2	3
Orthoclase		<1	2	<1
Bassanite			1	<1

5.1.3.3 Sand equivalent value

The sand equivalent value was not determined for these samples and, as stated in sub-section 5.1.3.2, it is not considered a valid test for fine aggregate in the UK[18].

5.1.3.4 Methylene blue value

The mean methylene blue value for the three samples was 0.93g of dye per kg, although it should be noted that in accordance with PD 6682 this test is not valid for use with fine aggregate in the UK. Despite the non-acceptance of the test for UK fine aggregates, the determined mean value would pass the French criterion[19] of ≤1 g/kg of dye for use in concrete[20]. Research into the methylene blue staining test has certainly shown that significant contents of swelling clay are liable to give rise to values considerably higher than 1 g/kg, but wide variations have been encountered, including deleterious fines that gave misleadingly low values.

5.1.3.5 Performance criteria

As mentioned in sub-section 5.1.3.2, PD 6682 indicates that evidence of satisfactory use of the aggregate is another way of assessing the fines. Assuming no such performance data currently exist, it may be worth casting some concrete test specimens, including cubes, cylinders and blocks, and subjecting them to a range of physical, chemical and durability testing.

5.1.4 Acid soluble sulfate content

When required, the acid-soluble sulfate content of the aggregate for concrete determined in accordance with EN 1744-1[9], shall be declared in accordance with the

[19] Normalisation Française XP P 18-540. AFNOR. Granulats. 1997

[20] Nikolaides, A., Manthos, E & Sarafidou, M., Sand Equivalent and Methylene Blue Value of aggregates for highway engineering, Foundations of Civil and Environmental Engineering, No 10, 2007, Publishing House of Poznan University of Technology, Poznań.

data shown in **Table 5.4**. In accordance with the guidelines, the mean determined acid soluble sulfate value would categorise the fine RCA as $AS_{0.2}$, however, it should be noted that one of the three individual values exceeded 0.2%. Given the possible variability of the source, it may be more prudent to classify the material as $AS_{0.8}$.

Table 5.4 Categories for maximum values of acid-soluble sulfate content

Acid soluble sulfate content Percentage by mass	Category *AS*
≤0.2	$AS_{0.2}$
≤0.8	$AS_{0.8}$
>0.8	$AS_{Declared}$
No requirement	AS_{NR}

5.1.5 Water soluble sulfate content

When required by a project specification, the water-soluble sulfate content of recycled aggregates shall be declared in accordance with the relevant category specified in **Table 5.5**.

The mean determined value for the fine RCA testing was 0.13% as SO_3, which would classify the material as $SS_{0.2}$. However, the high variation of test results invalidates the mean and indicates variability in the nature of the sulfate phases as well as the proportions. It is suggested that a larger data set is required to assess the degree of variability. Further representative samples should be subject to chemical analysis.

Table 5.5 Categories for maximum values of water-soluble sulfate content of recycled aggregates

Water-soluble sulfate content Percentage by mass	Category SS
≤0.2	$SS_{0.2}$
No requirement	SS_{NR}

5.1.6 Chloride content

5.1.6.1 Acid soluble chloride content

There is no requirement within BS EN 12620 to determine the acid soluble chloride content unless it is written into the specification. The acid soluble chloride content was fairly consistent for all three samples, ranging between 0.012 and 0.016% chloride by mass of sample[21].

5.1.6.2 Water soluble chloride content

There is no requirement within BS EN 12620[16] to determine the water soluble chloride content unless it is written into the specification. The water soluble chloride content was fairly consistent for all three samples, ranging between 0.002 and 0.005% chloride by mass of sample.

5.1.6.3 Chloride content of concrete incorporating recycled fine aggregate

Whilst chloride content is not usually specified for aggregate constituents, it is often specified within a concrete specification, when it is regarded relative to the cement content of the mix; however, any chloride typically derives from the aggregates and/or admixtures. Using assumed mix proportion values, it is possible to estimate the contribution the recycled fine aggregate would make to a typical concrete containing, say, a flint (chert) coarse aggregate (see **Table 5.6**).

Table 5.6 Chloride contribution to a standard concrete mix

Assumptions	Value	Unit
Dry density of concrete	2250	kg/m^3
Water/cement ratio	0.43	
Aggregate ratio	2 : 1	Fine : Coarse
Cement content	14	%
Acid soluble chloride content of a CEM I 42.5N cement	0.030	% by mass of sample
Acid soluble chloride content of coarse aggregate	0.001	% by mass of sample
Determined values		
Mean acid soluble chloride content of recycled fine aggregate	0.014	% by mass of sample
Mean water soluble chloride content of recycled fine aggregate	0.014	% by mass of sample
Calculated values		
Chloride content of concrete (using acid soluble chloride content of fine aggregate)	0.09	% by mass of cement
Chloride content of concrete (using water soluble chloride content of fine aggregate)	0.05	% by mass of cement

These calculated values could be assessed against the guidance provided in EN 206-1 (see **Table 5.7**), which would suggest that a 'normal' concrete made with recycled fine aggregate would be suitable for use of plain concrete (not containing reinforcement)

[21] BS EN 206-1: 2000, Concrete – Part 1: Specification, performance, production and conformity, British Standards Institution, London, UK

and for those concretes containing steel reinforcement, assuming there are no other significant sources of chloride (such as an admixture). However, the calculated acid soluble chloride contribution shown in Table 5.6 would equal the maximum permitted in class Cl 0.10 of EN 206-1 for concrete containing prestressing steel (the determined value of 0.09% would round to 0.1%).

Table 5.7 EN 206-1 - guide to maximum chloride content of concrete

Concrete use	Chloride content class	Maximum Cl content by mass of cement
Not containing steel reinforcement or other embedded metal with the exception of corrosion-resisting lifting devices	Cl 1.0	1.0%
Containing steel reinforcement or other embedded metal	Cl 0.20	0.2%
	Cl 0.40	0.4%
Containing prestressing steel reinforcement	Cl 0.10	0.1%
	Cl 0.20	0.2%

5.1.7 Total sulfur

When required, the total sulfur content of the aggregates, determined in accordance with EN 1744-1[9], shall not exceed 1% by mass for aggregates. The total sulfur content for the three fine aggregate samples ranged between 0.05% and 0.16% by mass of sample and therefore would pass the criterion set in EN 12620.

5.1.8 Alkali content

There is no requirement within BS EN 12620 for the alkali content of fine RCA to be determined. However, in some circumstances (such as assessing the alkali-reactivity potential of a planned concrete mix), the contribution of the alkalis within the aggregate can help determine their suitability for use in a particular concrete mix design. The mean alkali content of the FRA was 0.070% as Na_2Oeq, which is relatively similar to a normal quartzitic sand fine aggregate.

Using assumed mix proportion values, it is possible to estimate the contribution the alkalis within the recycled fine aggregate would make to a typical concrete containing, say, a flint (chert) coarse aggregate (see **Table 5.8**).

Table 5.8 Typical alkali contribution of recycled fine aggregate to a 'normal' concrete

Assumptions	Value	Unit
Alkali-silica reactivity potential – coarse aggregate	Normal	-
Alkali-silica reactivity potential – recycled fine aggregate	Normal to high[22]	
Dry density of concrete	2250	kg/m^3
Water/cement ratio	0.43	-
Aggregate ratio	2 : 1	Fine : Coarse
Cement content	14	%
Alkali content of cement- CEM I 42.5N (moderate alkali cement)	0.65	Total alkalis as % Na_2Oeq by mass of sample
Alkali content of coarse aggregate – flint (chert)	0.010	Total alkalis as % Na_2Oeq by mass of sample
Determined values		
Mean alkali content of recycled fine aggregate	0.070	Total alkalis as % Na_2Oeq by mass of sample
Calculated values		
Contribution of alkalis from cement	2.0	kg $Na_2Oeq./m^3$
Contribution of alkalis from aggregate	0.9	kg $Na_2Oeq./m^3$
Recommended limit for alkali content of aggregate in accordance with BRE Digest 330	2.5	kg $Na_2Oeq./m^3$

The recommended limits for alkali contents for concrete in BRE Digest 330 are based upon the potential alkali-silica reactivity of the aggregate combination (low, normal or high) and the alkali content of the CEM I-type component of the cement or the CEM I component of a combination with ggbs or pfa. In order more accurately to assess the reactivity potential of the recycled fine aggregate, it may be necessary to subject representative samples of the fine recycled aggregate to expansion testing, such as using BS 812-123[23].

5.1.9 Particle density and water absorption

In accordance with EN 12620, when required, the particle density and water absorption should be declared on request. The mean particle density for the sands was 3.04 mg/m^3, whilst the mean water absorption was 3.2% of dry mass. This mean particle density is higher than a quartz sand (typically 2.65 mg/m^3) or a limestone sand (say 2.6 mg/m^3). The relatively high value of the determined particle density of the FRA in this case has not been explained, but might be associated with the various minor constituents within the aggregate.

[22] BRE Digest 330, Parts 1 to 4: 2004, Alkali-silica reaction in concrete, BRE Centre for Concrete Construction, BRE Press, UK.

[23] BS 812-123: 1999, Testing aggregates, Part 123: Method for determination of alkali-silica reactivity. Concrete prism method, British Standards Institution, London, UK

5.1.10 Constituents affecting the setting time

When required, recycled aggregates shall be assessed for the influence of water-soluble materials from the aggregates on the initial setting time of the cement paste in accordance with EN 1744-6. The mean initial setting time for the three FRA samples was 230 minutes, whilst for the reference sample it was 210 minutes, which equates to the BS EN 12620 category of A_{40}. A negative value of *A* indicates an accelerating effect on the setting time, whilst a positive value indicates a retarding effect.

5.1.11 Loose bulk density

In accordance with EN 12620, when required, the loose bulk density should be declared on request. The mean bulk density was 1.40 kg/l (or kg/m^3). Typical bulk density of aggregates[24] used for normal weight concrete generally ranges between 1.2 and 1.76 kg/m^3.

5.1.12 Flexural strength

There is no provision within EN 12620 as a guide for flexural strength and no requirement to state it if required. The mean flexural strength was 1.92 MPa. The values for flexural strength appeared to decrease with the age of the stockpile, the values for the A1, A2 and A3 were 2.20, 1.89 and 1.67 MPa respectively. This reduction in values could be associated with storage conditions affecting the strength of some constituents over time. The mean of three prisms cast using BS reference sand from Leighton Buzzard and the same cement was 2.84 MPa. The mean of the prisms cast using the Dix Pit material is approximately 70% of the mean of the reference prisms.

5.1.13 Compressive strength

The mean compressive strength of the prisms cast was 6.1 MPa. The mean of three prisms cast using BS reference sand from Leighton Buzzard and the same cement was 11.6 MPa. The mean of the prisms cast using the Dix Pit material is approximately 50% of the mean of the reference prisms. The values for compressive strength appeared to decrease with the age of the stockpile, the values for the A1, A2 and A3 were 8.0, 5.8 and 4.6 MPa respectively. This reduction in values could be associated with storage conditions of the sand affecting the strength of some constituents over time or a change in the material properties over time.

BS EN 12620 states aggregates and filler aggregates that contain organic and other substances that alter the rate of setting and hardening of concrete shall be assessed for the effect on stiffening time and compressive strength.

The proportions of such materials shall be such that they do not:

[24] ACI Education Bulletin E1-07, Aggregates for Concrete, Developed by ACI Committee E-701, American Concrete Institute, August 2007, MI, USA

a) increase the stiffening time of mortar by more than 120 min;

b) decrease the compressive strength of mortar test specimens by more than 20 % at 28 days

BS EN 12620 also states that constituents that may adversely affect the rate of setting and hardening of concrete may be inorganic and not detected by some procedures.

5.2 Water Samples

The borehole and plant water samples exhibit similar pH levels and a similar level of ammonium. However, the levels of chloride, sulfate and magnesium appear significantly reduced in the plant water compared with the borehole water; whereas the situation is reversed for the nitrate levels within the plant water, which are significantly greater than in the borehole water.

Assuming the water from the plant is derived from the borehole, then the results would suggest that the materials within the washing plant absorb some of the elements determined within the borehole water.

The increased levels of nitrate within the plant water compared with the borehole water, may suggest that the arisings themselves, possibly including some soil and ground coated by organic materials, fertilisers and similar compounds, have increased the level within the washing plant water.

No British or European standards exist prescribing the water to be used in washing plants, however, values are available for the ground conditions in which concrete is to be placed[15] and also mixing water for concrete to give an idea of the magnitude of the values determined[25]. A summary of comparative values is given in **Table 5.9**.

Table 5.9 Comparative acceptable values for water associated with concrete

Test		O1 Borehole water	O2 Plant water	BRE SD1 Ground conditions for concrete	EN 1008 Mixing water for concrete
pH	pH	8.19	8.20	Variously >2.5 or >5.5	>4
Ammonium as NH_4	mg/l	3.7	3.5	*	*
Chloride	mg/l	3180	213	*	500 – prestressed concrete 1000 – concrete with reinforcement 4500 – concrete without reinforcement
Nitrate	mg/l	<0.5	97.1	*	500
Sulfate	mg/l	4663	1236	DS1 - <500 DS2 – 500-1000 DS3 - 1600-3000 DS4 – 3100-6000 DS5 - >6000	<2000
Magnesium (dissolved)	mg/l	112.0	10.2	*	*

*No value provided within the respective standard or guidance paper

On the whole, it shows that the pH level and the levels of chloride, nitrate and sulfate within the washing plant water are below the threshold values for mixing water for

[25] BS EN 1008: 2002, Mixing water for concrete – Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete, British Standards Institution, London, UK

concrete. Obviously this water is not actually going to be used for mixing concrete, but the values determined suggest that it does not significantly adversely affect the condition of the fine aggregate being washed. The values determined only relate to one sample from each of the borehole and the washing plant. Analysis of samples of both the borehole and the washing plant over a period of time would give some degree of comfort as to whether there was any variability over time.

6 CONCLUSIONS

6.1 Fine aggregate

- Samples of the fine recycled concreting aggregate from the Dix Pit processing plant have been subject to petrographic examination, chemical analyses and physical testing to determine their composition and suitability for use within concrete.
- Petrographically, the aggregate samples were dominated by quartz and limestone, which are commonly part of concrete fine aggregates. Minor proportions of ironstone, sandstone, shell, brick, slag, quartzite and chert (flint), and trace proportions of calcite, silicified limestone, dolomite, dolerite, glauconite, plant material and paint were also observed. As to be expected of a fine recycled aggregate, given the variability in the arisings source material, there is some variation in the minor and trace constituent types, but the dominant components typically comprised 61 to 72% of the fine aggregate.
- The aggregate samples were well graded and could be classified as fitting the *MP* grading envelope. The mean fines (<63µm) content was 3%, which is the threshold value between non-harmful and harmful fines in accordance with EN 12620. X-ray diffraction (XRD) analysis of the fines determined that the <3µm sized material did not contain any clay materials. The constituents within the <63µm sized material were similar to the >63µm sized material.
- There was some variability in the results for the acid and water-soluble sulfate contents, with individual determinations, which, if taken on their own, would put the material into a higher category than the mean value. In accordance with EN 12620 the mean values for the material would classify the material as $AS_{0.2}$ and $SS_{0.2}$.
- The determined acid and water-soluble chloride contents for the fine recycled aggregate varied, but were consistently low. The chloride contents, along with the alkali content and particle density and water absorption value could be taken into account when specifying a concrete mix. The acid and water soluble chloride content of the recycled fine aggregate within a standard concrete mix, would suggest values of 0.09% and 0.05% by mass of cement for acid and water soluble chloride contents of concrete, respectively. These values of chlorides within a concrete would enable it to be used for plain concrete and concrete containing steel reinforcement, however, it would not be suitable for concrete containing prestressing steel. The alkali content of the recycled fine aggregate if used in a 2:1 ratio with a flint coarse aggregate would contribute approximately 0.9 kg $Na_2Oeq./m^3$ of concrete.
- The mean total sulfur content of the recycled aggregate did not exceed the threshold value in EN 12620 for natural aggregates (mean value 0.10% sulfur by mass of sample against a threshold value of 1%).

- The mean methylene blue value of the recycled aggregate (0.93 g/kg) was relatively low and consistent with an aggregate dominated by quartz and limestone. There is no UK threshold value for methylene blue values, however the determined value would just satisfy the French maximum value of 1g/kg for aggregates for use in concrete.
- The initial setting time of cement appears to have been increased by use of the fine recycled aggregate; increasing the mean setting time by 20 minutes.
- The loose bulk density of the aggregate appears fairly consistent with a mean of 1.40 kg/l, which is consistent with fine aggregates used for normal weight concrete.
- Prisms cast using the Dix Pit material appeared to exhibit lower flexural and compressive strengths compared with specimens cast using a reference sand and the same cement. The relative flexural and compressive strengths of the prisms appeared to reduce with the increasing age of the stockpile of the fine aggregate material, with the material from the oldest stockpile showing a ~70% loss in comparitative strength. Further work will need to be undertaken to determine whether the cause of this reduction in strength is related to either a change in production over time or a change in the material properties over time.
- Overall, the findings of the petrographic examination, the chemical analysis and the majority of the physical testing appear positive that the fine aggregate material can be used within concrete. The results of the compressive and flexural strength testing suggest that there has been either a production procedural change or a change in the material that has caused the older aggregate to exhibit comparatively poor performance compared with the new material. The results of the influence on setting time suggest that there may be something in the older aggregate that is inhibiting the performance of the aggregate.

6.2 Water

- Representative samples of water from the on-site borehole and the washing plant water have been analysed to determine their composition and to assess the presence of any potentially deleterious constituents.
- On the basis of the samples analysed, the water used within the washing plant does not appear adversely to affect the overall composition of the recycled aggregate.

6.3 Preliminary Recommendations

- Chemical analysis of the recycled fine aggregate to determine if any of the paint identified as part of the petrographic examination contains lead, or any other potentially deleterious minerals or compounds.

- With any fine recycled aggregate there is the potential for the composition of the material to vary over time, which could also affect its properties. It is suggested that a rigorous regular test programme is put in place, at least for the first year of production, to assess how the material varies within this period. An increased level of satisfactory historic test data should go some way to providing confidence to concrete specifiers and prospective users.

APPENDIX A - SITE PHOTOGRAPHS

This appendix contains 7 pages, including this one

Plate 1 General view of the recycled material stockpiles before introduction to the plant.

Plate 2 View of the loading of the recycled material into the plant and through the first crusher, which sorts oversized material for separate crushing. The orange box above the conveyor belt is a magnet to remove metallic consistituents.

Plate 3 General view of the plant, showing the loading of the material on the left-hand side of the photomicrograph and the processed fine RCA on the right-hand side.

Plate 4 General view of the magnet above the conveyor belt.

Plate 5 Aerial view of the washing of the aggregate once through the initial crusher.

Plate 6 Similar view to Plate 5, showing the washing of the coarse and fine aggregates.

Plate 7 General view of the dewatering screen of the fine RCA.

Plate 8 View of the fine aggregate travelling up the conveyor belt and being deposited in the stoickpiles.

Plate 9 General view of a fine RCA stockpile.

Plate 10 General view of the fine RCA stockpiles.

Plate 11 View of a fine RCA stockpile that has been sampled for subsequent laboratory testing.

APPENDIX B - CERTIFICATES OF TEST – AGGREGATE SAMPLES

Petrographic examination	285231/41175a – A1 285231/41176a – A2 285231/41177a – A3
Particle size distribution	285231/41224 – A1 285231/41225 – A2 285231/41226 – A3
Acid soluble sulfate content	285231/41178
Water soluble sulfate content	285231/41171
Acid soluble chloride content	285231/41172
Water soluble chloride content	285231/41170
Total sulfur	285231/41173
Alkali content	285231/41174
Methylene blue	285231/41169
Particle density and water absorption	285231/41180 – A1 285231/41181 – A2 285231/41182 – A3
Influence on initial setting time	285231/41275
Loose bulk density	285231/42031
Compressive strength	285231/42237
Flexural strength	285231/42236
X-ray diffraction	285231/42125 285231/42126 285231/42127

This appendix contains 49 pages, including this one

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0278

Certificate of Examination
Petrographic Examination of Fine Aggregate

Your Ref.	4107	**RSK Sample Ref.**	12478/A1
Client	Sheenan Haulage & Plant Hire	**Client Sample Ref.**	Stockpile New
	Knightsbridge Farm	**Sampled By/Date**	CR/06.12.12
	Woodstock Road	**Date Received**	06.12.12
	Yarnton	**Condition**	Damp
	Oxford	**Examined by/Date**	AS/19.12.12
	OX5 1PS	**Advised Source**	Dix Pit
		Advised Material Grade	None Advised

SAMPLE

Two bags totalling approximately 52.3kg in mass, advised to comprise a sand aggregate from Dix Pit, were received in our laboratory for examination.

METHODS OF EXAMINATION

A representative portion from the submitted sample was subjected to petrographic examination following methods given in RSK internal test procedure TP83 which is based on BS 812-104: 1994, Procedure for Qualitative and Quantitative Petrographic Examination of Aggregates, except that only a single portion was examined.

The sample was prepared for the determination of the constituents by both hand separation using visual and low-power microscopical criteria and point counting in thin-section. The sample was sieved and hand separation was carried out upon >5mm, 5-2.36mm and 2.36-1.18mm size fractions. A representative portion of the <1.18mm material from the sample was prepared as a thin-section for point counting.

RESULTS

The detailed petrographic examination results are given on sheets 2 and 4 of this Certificate of Examination. A record colour photograph was prepared and is presented on sheet 3. Representative photomicrographs (photographs taken through a microscope) of the <1.18mm material are shown on sheets 5 and 6.

SUMMARY

The sample received was found to comprise a nominal 3mm maximum sized, continuously graded, blended recycled fine aggregate comprising chiefly quartz (38%) and limestone (30%) with minor proportions of brick, calcitic sandstone, ironstone, slag, shell, quartzite and chert, and traces of calcite, dolerite, plant material and paint.

Certificate prepared by

Alex Smith
Graduate Geoscientist

Certificate reviewed by

Paul Bennett-Hughes
Associate Director

Date of issue: 22 January 2013

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref. 12478/A1
Client Sample Ref.s Stockpile New
Advised Source Dix Pit
Advised Material Grade None advised

SUMMARY OF FINDINGS

General Description

The sample received was found to comprise a nominal 3mm maximum sized, continuously graded, blended recycled fine aggregate comprising chiefly quartz (38%) and limestone (30%) with minor proportions of brick, calcitic sandstone, ironstone, slag, shell, quartzite and chert and traces of calcite, dolerite, plant material and paint.

Size Fraction, mm:	**> 5**	**5–2.36**	**2.36–1.18**	**< 1.18**	**Total**
Proportion, g:	-	0.7	17.1	102.1	119.9
Proportion, %:	-	0.58	14.26	85.15	100.00
Discrete Constituent	**Gravimetric Determination, g**			**Points[1]**	
Quartz	-	0.029	0.276	220	
Limestone	-	0.257	0.429	166	
Brick	-	-	0.457	30	
Calcitic sandstone	-	0.180	1.061	6	
Ironstone	-	0.023	0.251	15	
Slag	-	0.069	0.861	5	
Shell	-	0.041	0.176	18	
Quartzite	-	-	0.079	19	
Chert	-	-	0.233	15	
Calcite	-	-	0.003	5	
Dolerite	-	-	-	1	
Plant material	-	0.002	0.007	-	
Paint	-	-	0.002	-	
Total:	**-**	**0.601**	**3.835**	**500**	
Discrete Constituent	**Gravimetric Determination, %**				
Quartz	-	4.83	7.20	43.26	37.89
Limestone	-	42.76	11.19	33.26	30.16
Brick	-	-	11.92	5.90	6.72
Calcitic sandstone	-	29.95	27.67	1.20	5.14
Ironstone	-	3.83	6.54	3.90	4.27
Slag	-	11.48	22.45	0.98	4.11
Shell	-	6.82	4.59	3.61	3.77
Quartzite	-	-	2.06	3.74	3.48
Chert	-	-	6.08	2.95	3.38
Calcite	-	-	0.08	1.00	0.86
Dolerite	-	-	-	0.21	0.18
Plant material	-	0.33	0.18	-	0.03
Paint	-	-	0.05	-	0.01
Total:	**-**	**100.00**	**100.00**	**100.00**	**100.00**

1. Number of points counted in thin-section.

Other Details

A Certificate of Sampling was received with the aggregate material.

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref.	12478/A1
Client Sample Ref.s	Stockpile New
Advised Source	Dix Pit
Advised Material Grade	None advised

RECORD PHOTOGRAPH			
RSK Sample Ref.	12478/A1	**Client Sample Ref.**	Stockpile New
Film Number	Digital	**Frame Number**	--
Description	Typical view of a portion of the aggregate as received.		

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref. 12478/A1
Client Sample Ref.s Stockpile New
Advised Source Dix Pit
Advised Material Grade None advised

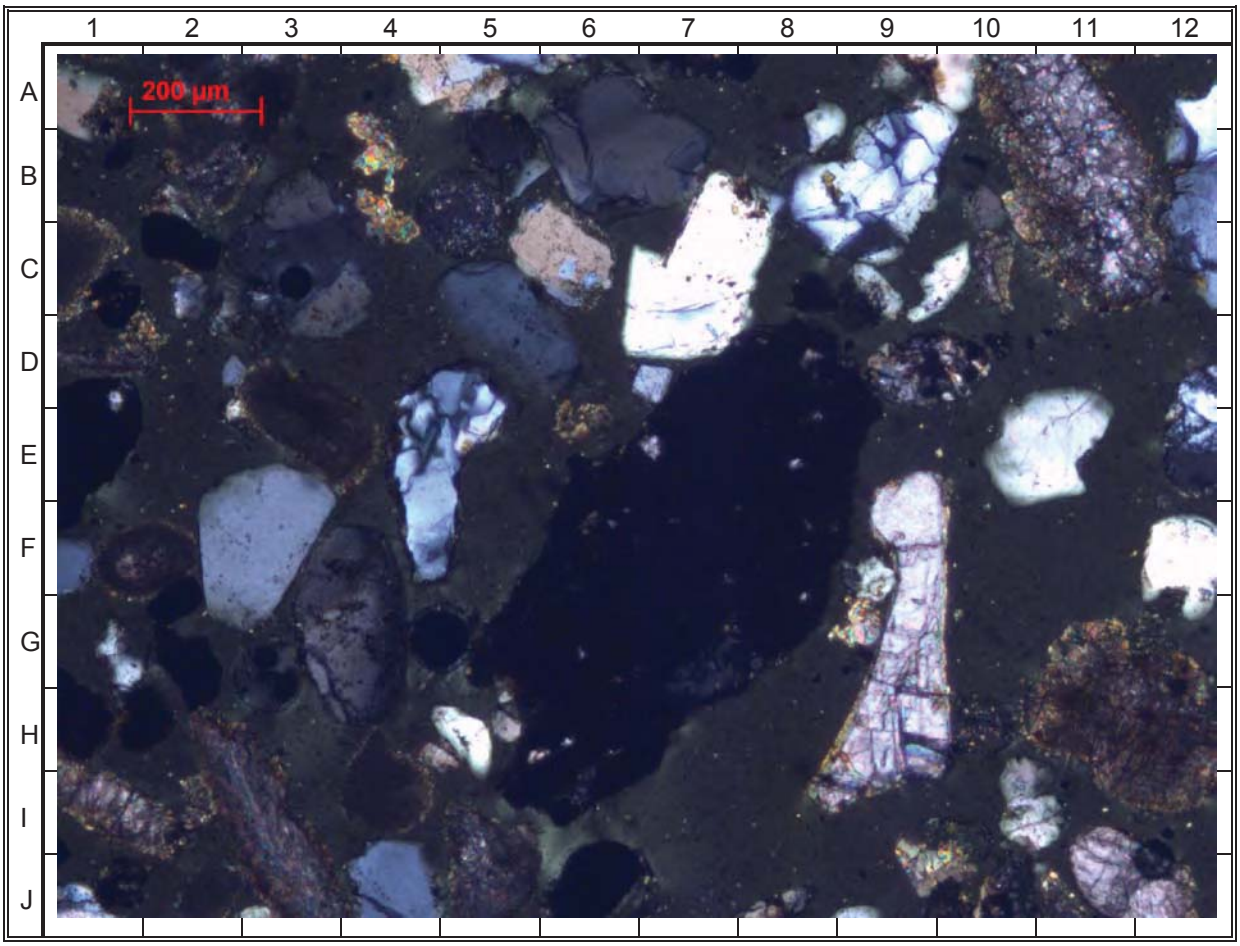
DESCRIPTION OF CONSTITUENTS

Discrete Constituent	Maximum Size, mm	Shape/ Weathering	Petrographic Details[2]
Quartz	2	Sub rounded to well rounded /Fresh	Hard to very hard, pale yellow/grey, semi-translucent, comprising monocrystalline and polycrystalline silica.
Limestone	3	Sub-rounded to well rounded/ Fresh	Moderately soft to moderately hard, pale grey/brown/pale orange/dark yellow brown/pale yellow, comprised of micrite (calcite, <4µm) and sparite (calcite, >4µm). Particles exhibited common fossil content.
Brick	3	Sub-angular to well rounded/ Fresh	Moderately soft to moderately hard, red brown/pale grey, comprised of iron rich clay matrix binding sporadic grains predominantly comprised of quartz.
Calcitic sandstone	3	Sub-angular to well rounded/ Slightly weathered to fresh	Moderately soft, brown/grey/pale brown/pale yellow/white speckled comprised of quartz, shell and chert grains bound by micrite (calcite, <4µm). A minor proportion (<10%) of particles resemble concrete.
Ironstone	2.5	Sub-rounded to well rounded/ Fresh	Moderately soft, dark red, chiefly comprised of rare quartz grains bound by very fine iron oxide/hydroxide material.
Slag	3	Angular to well rounded/Fresh	Moderately hard, black/dark brown, vesicular irregular shaped slag particles.
Shell	3	Angular to well rounded/Fresh	Moderately soft, pale grey/pale orange/white, comprised of calcitic bivalve and shell fragments.
Quartzite	<1.18	Sub-angular to well rounded/ Fresh	Very hard to hard, grey, primarily comprised of silica, primarily bound by very fine silica matrix.
Chert	3	Sub rounded to well rounded/ Slightly weathered to fresh	Very hard, brown/white/orange/grey, comprised of micro/cryptocrystalline silica, sporadically coated in iron oxide/hydroxide material.
Calcite	1.5	Angular to well rounded/Fresh	Moderately soft, translucent grey, crystalline rhombs of discrete calcite.
Dolerite	<1.18	Well rounded/Slightly weathered	Hard, speckled dark grey, medium grained, crystalline, comprised chiefly of plagioclase feldspar with minor proportions of clinopyroxene and olivine.
Plant material	2.5	Well rounded/Fresh	Soft, dark brown/green, various plant material including very fine stems and wood fragments.
Paint	2	Angular/Fresh	Moderately soft, yellow paint flakes.

2. Details mainly relate to features of possible engineering significance

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

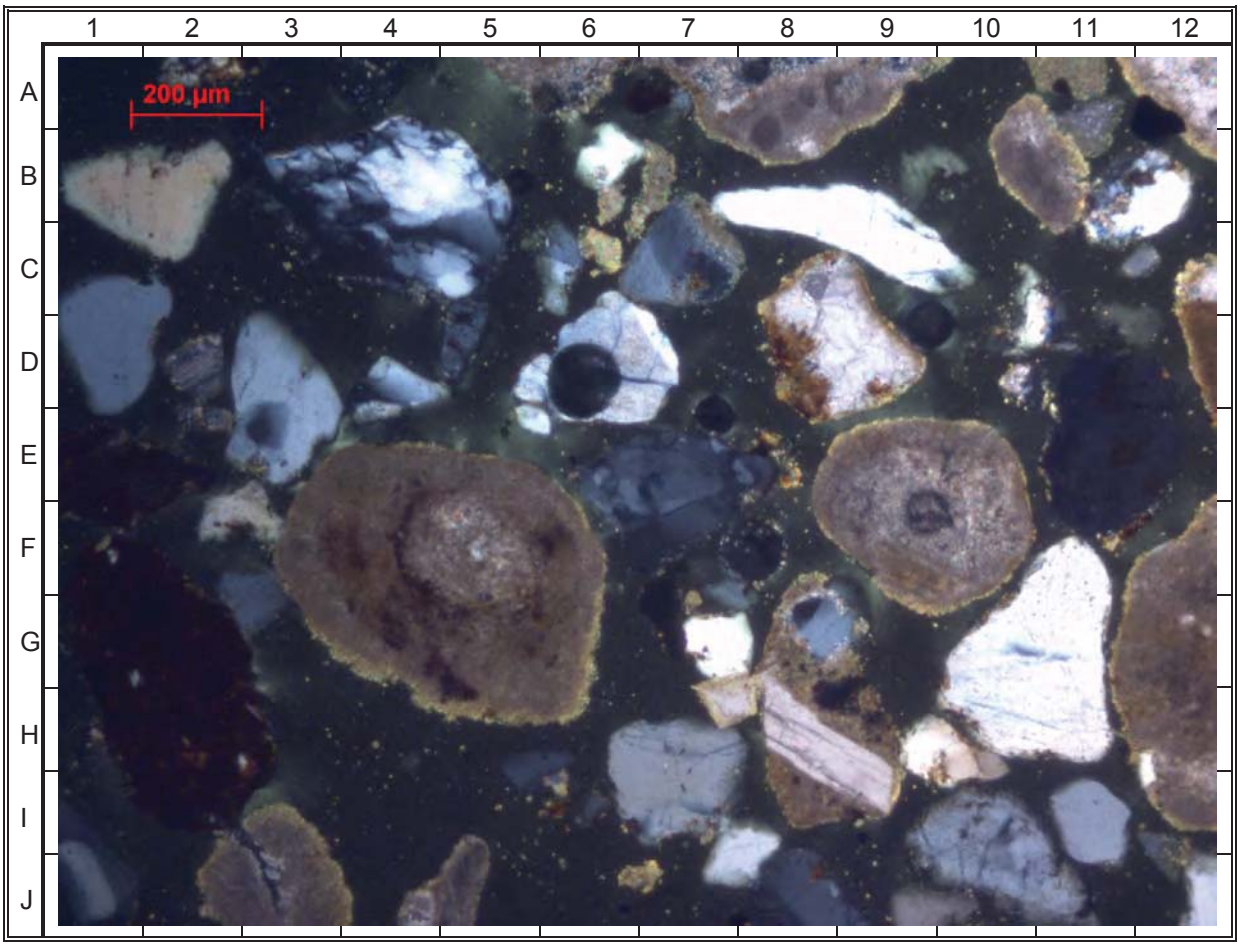
RSK Sample Ref.	12478/A1
Client Sample Ref.s	Stockpile New
Advised Source	Dix Pit
Advised Material Grade	None advised



RECORD PHOTOMICROGRAPH			
RSK Sample Ref.	12478/A1	**Client Sample Ref.**	Stockpile New
Film/Frame Number	Digital	**Viewing Light**	Cross-polarised
Approx. Mag^{n}	×75	**Approx. Scale**	10mm = 133µm
Description	General view of a portion of the aggregate <1.18mm sized, showing quartz (white to medium grey, F3), limestone (sparite, blue/green, B11) shell fragments (speckled pink/brown, I3), quartzite (grey/black/white, B9) and slag (black, F7) fine aggregate particles. The thin section mounting medium appears dark grey (I7).		

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref.	12478/A1
Client Sample Ref.s	Stockpile New
Advised Source	Dix Pit
Advised Material Grade	None advised



RECORD PHOTOMICROGRAPH			
RSK Sample Ref.	12478/A1	**Client Sample Ref.**	Stockpile New
Film/Frame Number	Digital	**Viewing Light**	Cross-polarised
Approx. Mag^{n}	×75	**Approx. Scale**	10mm = 133µm
Description	General view of a portion of the aggregate <1.18mm sized, showing ironstone (brown, H2), quartz (white to medium grey, D1), limestone (sparite, blue/green, G4), calcitic sandstone (brown/grey, G/H/I8-9) and quartzite (grey/black/white, B4) fine aggregate particles. The thin section mounting medium appears dark grey (I7).		

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Certificate of Examination
Petrographic Examination of Fine Aggregate

Your Ref.	4107	**RSK Sample Ref.**	12478/A2
Client	Sheenan Haulage & Plant Hire	**Client Sample Ref.**	Stockpile 1
	Knightsbridge Farm	**Sampled By/Date**	CR/06.12.12
	Woodstock Road	**Date Received**	06.12.12
	Yarnton	**Condition**	Damp
	Oxford	**Examined by/Date**	AS/19.12.12
	OX5 1PS	**Advised Source**	Dix Pit
		Advised Material Grade	None Advised

SAMPLE

Two bags totalling approximately 57.1kg in mass, advised to comprise a sand aggregate from Dix Pit, were received in our laboratory for examination.

METHODS OF EXAMINATION

A representative portion from the submitted sample was subjected to petrographic examination following methods given in RSK internal test procedure TP83 which is based on BS 812-104: 1994, Procedure for Qualitative and Quantitative Petrographic Examination of Aggregates, except that only a single portion was examined.

The sample was prepared for the determination of the constituents by both hand separation using visual and low-power microscopical criteria and point counting in thin-section. The sample was sieved and hand separation was carried out upon >5mm, 5-2.36mm and 2.36-1.18mm size fractions. A representative portion of the <1.18mm material from the sample was prepared as a thin-section for point counting.

RESULTS

The detailed petrographic examination results are given on sheets 2 and 4 of this Certificate of Examination. A record colour photograph was prepared and is presented on sheet 3. Representative photomicrographs (photographs taken through a microscope) of the <1.18mm material are shown on sheets 5 and 6.

SUMMARY

The sample received was found to comprise a nominal 3mm maximum sized, continuously graded, blended recycled fine aggregate comprising chiefly quartz (41%) and limestone (30%) with minor proportions of ironstone, calcitic sandstone, chert, shell, slag, brick and quartzite and traces of dolomite calcite, silicified limestone, glauconite and calcite.

Certificate prepared by

Alex Smith
Graduate Geoscientist

Certificate reviewed by

Paul Bennett-Hughes
Associate Director

Date of issue: 22 January 2013

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref. 12478/A2
Client Sample Ref.s Stockpile 1
Advised Source Dix Pit
Advised Material Grade None advised

SUMMARY OF FINDINGS

General Description

The sample received was found to comprise a nominal 3mm maximum sized, continuously graded, blended recycled fine aggregate comprising chiefly quartz (41%) and limestone (30%) with minor proportions of ironstone, calcitic sandstone, chert, shell, slag, brick and quartzite, and traces of dolomite, silicified limestone, glauconite and calcite.

Size Fraction, mm:	**> 5**	**5–2.36**	**2.36–1.18**	**< 1.18**	**Total**
Proportion, g:	-	0.9	12.2	118.1	131.2
Proportion, %:	-	0.69	9.30	90.02	100.00
Discrete Constituent	**Gravimetric Determination, g**			**Points[1]**	
Quartz	-	0.027	0.060	230	
Limestone	-	0.306	0.304	152	
Ironstone	-	0.020	0.200	19	
Calcitic limestone	-	0.086	0.069	22	
Chert	-	0.081	0.077	18	
Shell	-	-	0.084	17	
Slag	-	0.074	0.111	9	
Brick	-	0.045	0.092	10	
Quartzite	-	-	0.017	14	
Dolomite	-	-	0.011	5	
Silicified limestone	-	-	-	2	
Glauconite	-	-	-	1	
Calcite	-	-	-	1	
Total:	**-**	**0.639**	**1.025**	**500**	
Discrete Constituent	**Gravimetric Determination, %**				
Quartz	-	4.23	5.85	45.10	41.17
Limestone	-	47.89	29.66	30.37	30.42
Ironstone	-	3.13	19.51	4.92	6.27
Calcitic limestone	-	13.46	6.73	4.40	4.67
Chert	-	12.68	7.51	3.53	3.96
Shell	-	-	8.20	3.40	3.82
Slag	-	11.58	10.83	1.76	2.67
Brick	-	7.04	8.98	1.96	2.65
Quartzite	-	-	1.66	2.75	2.63
Dolomite	-	-	1.07	1.04	1.03
Silicified limestone	-	-	-	0.39	0.35
Glauconite	-	-	-	0.20	0.18
Calcite	-	-	-	0.20	0.18
Total:	-	**100.00**	**100.00**	**100.00**	**100.00**

1. Number of points counted in thin-section.

Other Details

A Certificate of Sampling was received with the aggregate material.

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref.	12478/A2
Client Sample Ref.s	Stockpile 1
Advised Source	Dix Pit
Advised Material Grade	None advised

RECORD PHOTOGRAPH			
RSK Sample Ref.	12478/A2	**Client Sample Ref.**	Stockpile 2
Film Number	Digital	**Frame Number**	--
Description	Typical view of a portion of the aggregate as received.		

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref. 12478/A2
Client Sample Ref.s Stockpile 1
Advised Source Dix Pit
Advised Material Grade None advised

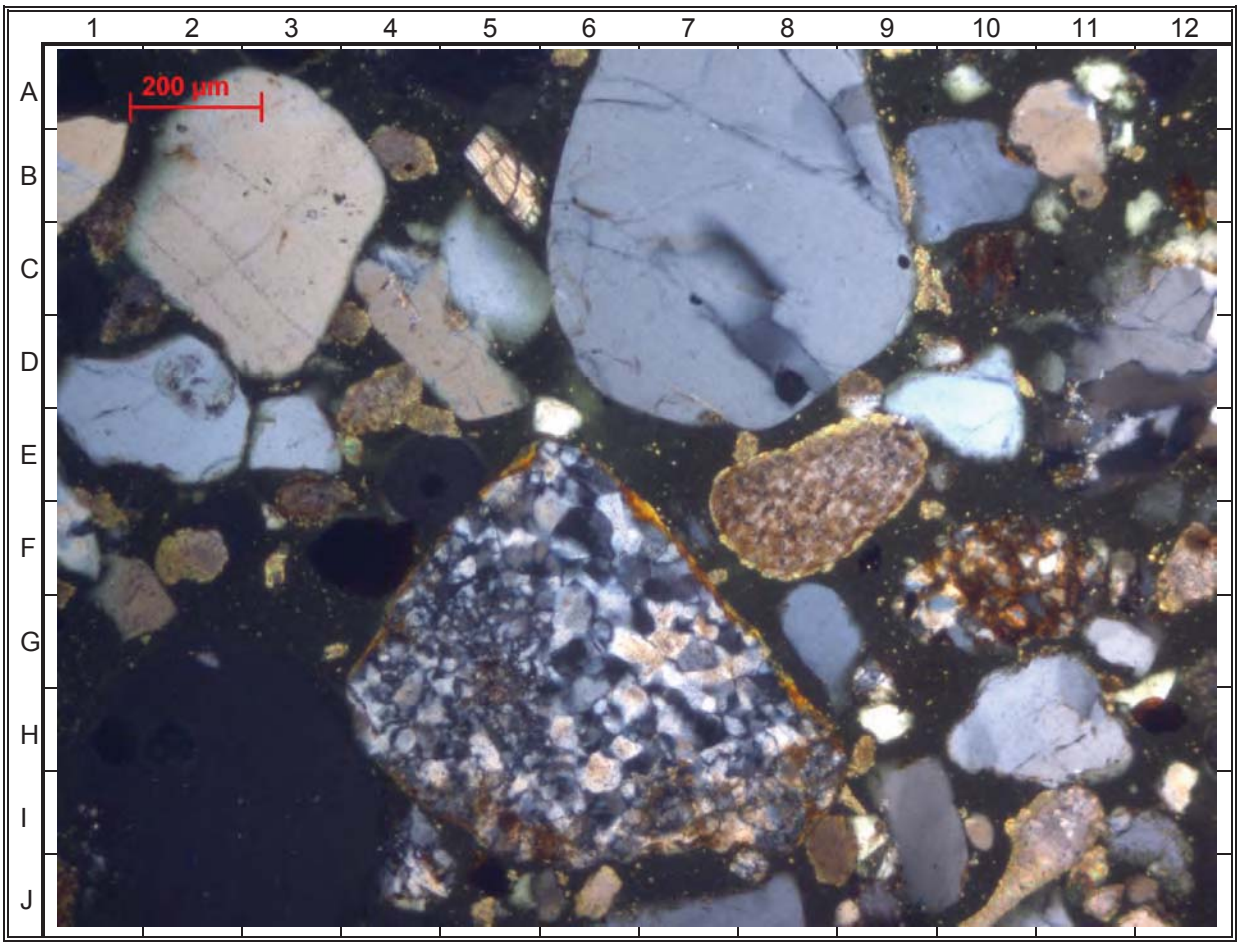
DESCRIPTION OF CONSTITUENTS

Discrete Constituent	Maximum Size, mm	Shape/ Weathering	Petrographic Details[2]
Quartz	3	Sub-angular to well rounded/ Fresh	Hard to very hard, pale yellow/grey, semi-translucent, comprising monocrystalline and polycrystalline silica.
Limestone	3	Sub-rounded to well rounded/Fresh	Moderately soft to moderately hard, pale grey/brown/pale orange/dark yellow brown/pale yellow, comprised of micrite (calcite, <4µm) and sparite (calcite, >4µm). Particles exhibited common fossil and ooid content.
Ironstone	2.5	Sub-rounded to well rounded/Fresh	Moderately soft to moderately hard, dark red, chiefly comprised of rare quartz grains bound by very fine iron oxide/hydroxide material.
Calcitic limestone	2.5	Angular to well rounded/ Slightly weathered to Fresh	Moderately soft, brown/grey/pale brown/pale yellow/white speckled comprised of quartz, shell and chert grains bound by micrite (calcite, <4µm). A minor proportion (<10%) of particles resemble concrete.
Chert	3	Sub-angular to well rounded/ Fresh	Very hard, brown/white/orange/grey/black, comprised of micro/cryptocrystalline silica, sporadically coated in iron oxide/hydroxide material.
Shell	2	Sub-angular to well rounded/ Fresh	Moderately soft, pale grey/pale orange/white, comprised of calcitic bivalve and shell fragments.
Slag	3	Sub-angular to well rounded/ Fresh	Moderately hard, black/dark brown, vesicular irregular shaped slag particles.
Brick	2	Sub-rounded to well rounded/ Fresh	Moderately soft to moderately hard, red brown/pale grey, comprised of iron rich clay matrix binding sporadic grains predominantly comprised of quartz.
Quartzite	2	Sub-angular to well rounded/ Fresh	Very hard to hard, grey, primarily comprised of crystalline silica, primarily bound by very fine silica matrix with sporadic particles coated in iron oxide/hydroxide material.
Dolomite	<1.18	Sub-angular to well rounded/ Fresh	Moderately soft, grey, granular with <5% calcite content.
Silicified limestone	<1.18	Well rounded/Fresh	Hard, pale brown/grey, comprised of fine secondary silica replacing calcite.
Glauconite	<1.18	Well rounded/Fresh	Moderately soft, medium to dark green glauconite.
Calcite	<1.18	Angular/Fresh	Moderately soft, translucent grey, euhedral crystalline rhombs of discrete calcite.

2. Details mainly relate to features of possible engineering significance

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

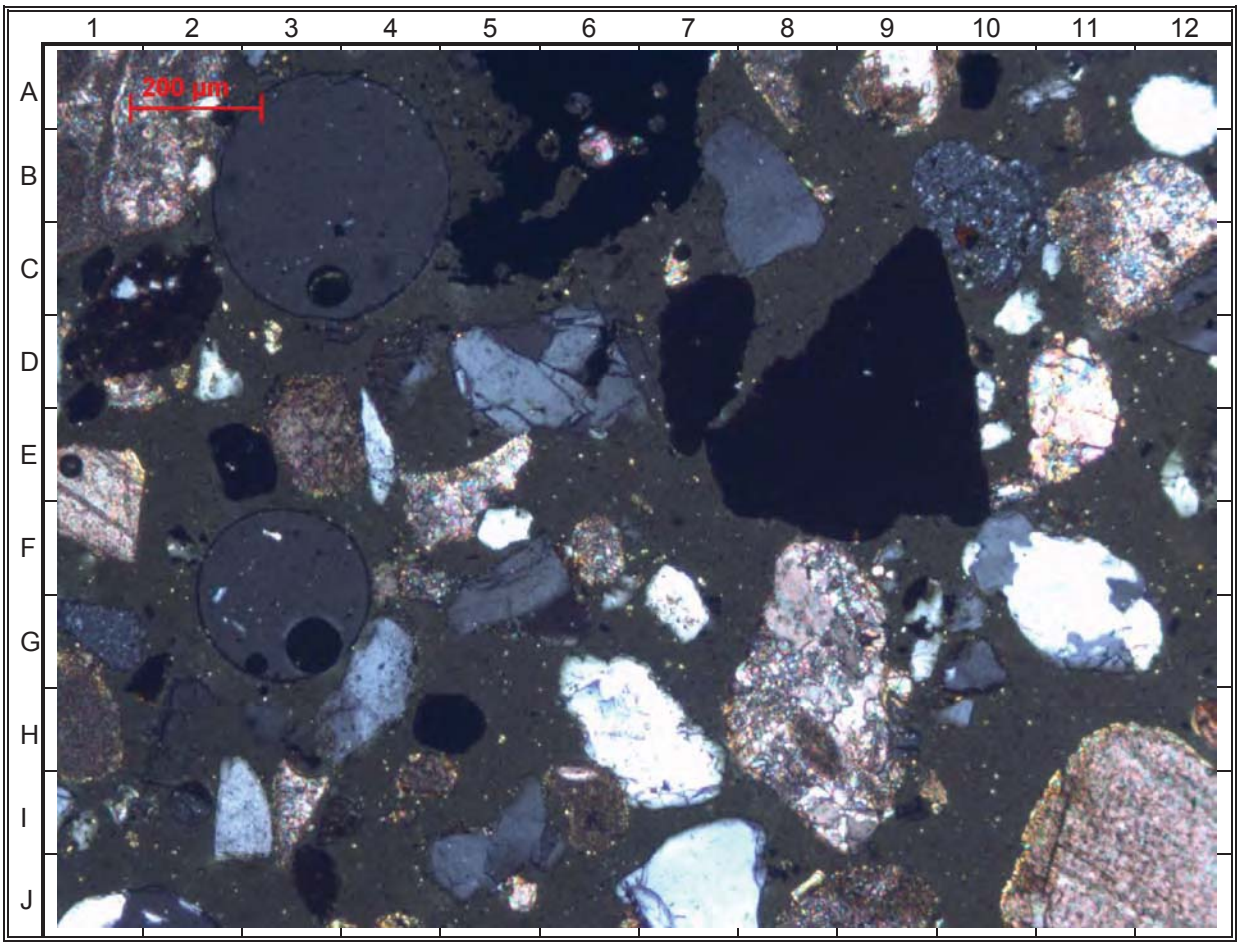
RSK Sample Ref.	12478/A2
Client Sample Ref.s	Stockpile 1
Advised Source	Dix Pit
Advised Material Grade	None advised



RECORD PHOTOMICROGRAPH			
RSK Sample Ref.	12478/A2	**Client Sample Ref.**	Stockpile 2
Film/Frame Number	Digital	**Viewing Light**	Cross-polarised
Approx. Mag^{n}	×75	**Approx. Scale**	10mm = 133µm
Description	General view of a portion of the aggregate <1.18mm sized, showing quartz (white/medium grey/pale yellow, C7), ironstone (brown/grey/pale yellow, F/G9-11), limestone (pale brown, E/F7-9) shell fragments (orange, B5) and quartzite (grey/black/white, G6) fine aggregate particles. The thin section mounting medium appears dark grey (J1).		

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref.	12478/A2
Client Sample Ref.s	Stockpile 1
Advised Source	Dix Pit
Advised Material Grade	None advised



RECORD PHOTOMICROGRAPH			
RSK Sample Ref.	12478/A2	**Client Sample Ref.**	Stockpile 2
Film/Frame Number	Digital	**Viewing Light**	Cross-polarised
Approx. Mag^{n}	×75	**Approx. Scale**	10mm = 133µm
Description	General view of a portion of the aggregate <1.18mm sized, showing quartz (white/medium grey/pale yellow, J7), slag (black yellow, B6), limestone (pink/green/brown, F-I8-9) shell fragments (pink/green/brown, I12) and chert (speckled dark grey, B10) fine aggregate particles. The thin section mounting medium appears dark grey (J4) with imperfections caused by the thin sectioning process appear round (dark grey, B3).		

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RSK

Certificate of Examination
Petrographic Examination of Fine Aggregate

Your Ref.	4107	**RSK Sample Ref.**	12478/A3
Client	Sheenan Haulage & Plant Hire	**Client Sample Ref.**	Stockpile 2
	Knightsbridge Farm	**Sampled By/Date**	CR/06.12.12
	Woodstock Road	**Date Received**	06.12.12
	Yarnton	**Condition**	Damp
	Oxford	**Examined by/Date**	AS/19.12.12
	OX5 1PS	**Advised Source**	Dix Pit
		Advised Material Grade	None Advised

SAMPLE

Two bags totalling approximately 50.8kg in mass, advised to comprise a sand aggregate from Dix Pit, were received in our laboratory for examination.

METHODS OF EXAMINATION

A representative portion from the submitted sample was subjected to petrographic examination following methods given in RSK internal test procedure TP83 which is based on BS 812-104: 1994, Procedure for Qualitative and Quantitative Petrographic Examination of Aggregates, except that only a single portion was examined.

The sample was prepared for the determination of the constituents by both hand separation using visual and low-power microscopical criteria and point counting in thin-section. The sample was sieved and hand separation was carried out upon >5mm, 5-2.36mm and 2.36-1.18mm size fractions. A representative portion of the <1.18mm material from the sample was prepared as a thin-section for point counting.

RESULTS

The detailed petrographic examination results are given on sheets 2 and 4 of this Certificate of Examination. A record colour photograph was prepared and is presented on sheet 3. Representative photomicrographs (photographs taken through a microscope) of the <1.18mm material are shown on sheets 6 and 7.

SUMMARY

The sample received was found to comprise a nominal 3mm maximum sized, continuously graded, blended recycled fine aggregate comprising chiefly quartz (35%) and limestone (32%) with minor proportions of ironstone, shell, slag, quartzite, calcitic sandstone and brick, and traces of calcite, chert, silicified limestone, dolomite, glauconite and paint.

Certificate prepared by

Alex Smith
Graduate Geoscientist

Certificate reviewed by

Paul Bennett-Hughes
Associate Director

Date of issue: 22 January 2013

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref. 12478/A3
Client Sample Ref.s Stockpile 2
Advised Source Dix Pit
Advised Material Grade None advised

SUMMARY OF FINDINGS

General Description

The sample received was found to comprise a nominal 3mm maximum sized, continuously graded, blended recycled fine aggregate comprising chiefly quartz (35%) and limestone (32%) with minor proportions of ironstone, shell, slag, quartzite, calcitic sandstone and brick, and traces of calcite, chert, silicified limestone, dolomite, glauconite and paint.

Size Fraction, mm:	**> 5**	**5–2.36**	**2.36–1.18**	**< 1.18**	**Total**
Proportion, g:	0.4	0.6	14.8	123.6	139.3
Proportion, %:	0.22	0.43	10.62	88.73	100.00
Discrete Constituent	**Gravimetric Determination, g**			**Points**[1]	
Quartz	-	-	0.045	197	
Limestone	-	0.219	0.109	167	
Ironstone	-	0.025	0.071	28	
Shell	-	-	0.054	35	
Slag	-	0.122	0.097	11	
Quartzite	-	-	-	22	
Calcitic limestone	0.3830	0.058	0.015	9	
Brick	-	0.046	0.021	9	
Calcite	-	-	-	11	
Chert	-	0.039	0.014	6	
Silicified limestone	-	-	0.025	3	
Dolomite	-	-	0.005	1	
Glauconite	-	-	-	1	
Paint	-	-	0.002	-	
Total:	**0.383**	**0.509**	**0.458**	**500**	
Discrete Constituent	**Gravimetric Determination, %**				
Quartz	-	-	9.83	38.38	35.10
Limestone	-	43.03	23.80	33.15	32.13
Ironstone	-	4.91	15.50	7.21	8.06
Shell	-	-	11.79	6.95	7.42
Slag	-	23.97	21.18	2.14	4.26
Quartzite	-	-	-	4.29	3.80
Calcitic limestone	100.00	11.39	3.28	1.79	2.20
Brick	-	9.04	4.59	1.75	2.08
Calcite	-	-	-	2.18	1.94
Chert	-	7.66	3.06	1.17	1.40
Silicified limestone	-	-	5.46	0.58	1.10
Dolomite	-	-	1.09	0.21	0.30
Glauconite	-	-	-	0.19	0.17
Paint	-	-	0.44	-	0.05
Total:	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

1. Number of points counted in thin-section.

Other Details

A Certificate of Sampling was received with the aggregate material.

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref.	12478/A3
Client Sample Ref.s	Stockpile 2
Advised Source	Dix Pit
Advised Material Grade	None advised

RECORD PHOTOGRAPH			
RSK Sample Ref.	12478/A3	**Client Sample Ref.**	Stockpile 3
Film Number	Digital	**Frame Number**	--
Description	Typical view of a portion of the aggregate as received.		

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref. 12478/A3
Client Sample Ref.s Stockpile 2
Advised Source Dix Pit
Advised Material Grade None advised

DESCRIPTION OF CONSTITUENTS

Discrete Constituent	Maximum Size, mm	Shape/ Weathering	Petrographic Details[2]
Quartz	2	Sub-angular to well rounded/ Fresh	Hard to very hard, pale yellow/grey, semi-translucent, comprising monocrystalline and polycrystalline silica.
Limestone	3	Sub-angular to well rounded/ Fresh	Moderately soft to moderately hard, pale grey/brown/pale yellow, comprised of micrite (calcite, <4µm) and sparite (calcite, >4µm). Particles exhibited frequent fossil and ooid content.
Ironstone	3	Sub-rounded to well rounded/Fresh	Moderately soft, dark red, chiefly comprised of rare quartz grains bound by very fine iron oxide/hydroxide material.
Shell	2	Angular to well rounded/ Slightly weathered to fresh	Moderately soft to moderately hard, pale grey/pale brown/white, comprised of calcitic bivalve and shell fragments.
Slag	3	Angular to sub-rounded /Fresh	Moderately hard, black/dark brown, vesicular irregular shaped slag particles.
Quartzite	<1.18	Sub-angular to well rounded/ Fresh	Very hard to hard, grey, primarily comprised of crystalline silica, primarily bound by very fine silica matrix with sporadic particles coated in iron oxide/hydroxide material.
Calcitic limestone	5	Sub-angular to sub-rounded/ Slightly weathered to fresh	Moderately soft, brown/grey/pale brown/pale yellow/white speckled comprised of quartz, shell and chert grains bound by micrite (calcite, <4µm). A minor proportion (<10%) of particles resemble concrete.
Brick	3	Sub-angular to well rounded/ Fresh	Moderately soft to moderately hard, red brown/pale grey, comprised of iron rich clay matrix binding sporadic grains predominantly comprised of quartz
Calcite	<1.18	Angular to sub-rounded/ Fresh	Moderately soft, translucent grey, euhedral crystalline rhombs of discrete calcite.
Chert	2.5	Sub-rounded to well rounded/Fresh	Very hard, brown/white/orange/grey/black, comprised of micro/cryptocrystalline silica, sporadically coated in iron oxide/hydroxide material.

2. Details mainly relate to features of possible engineering significance

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref. 12478/A3
Client Sample Ref.s Stockpile 2
Advised Source Dix Pit
Advised Material Grade None advised

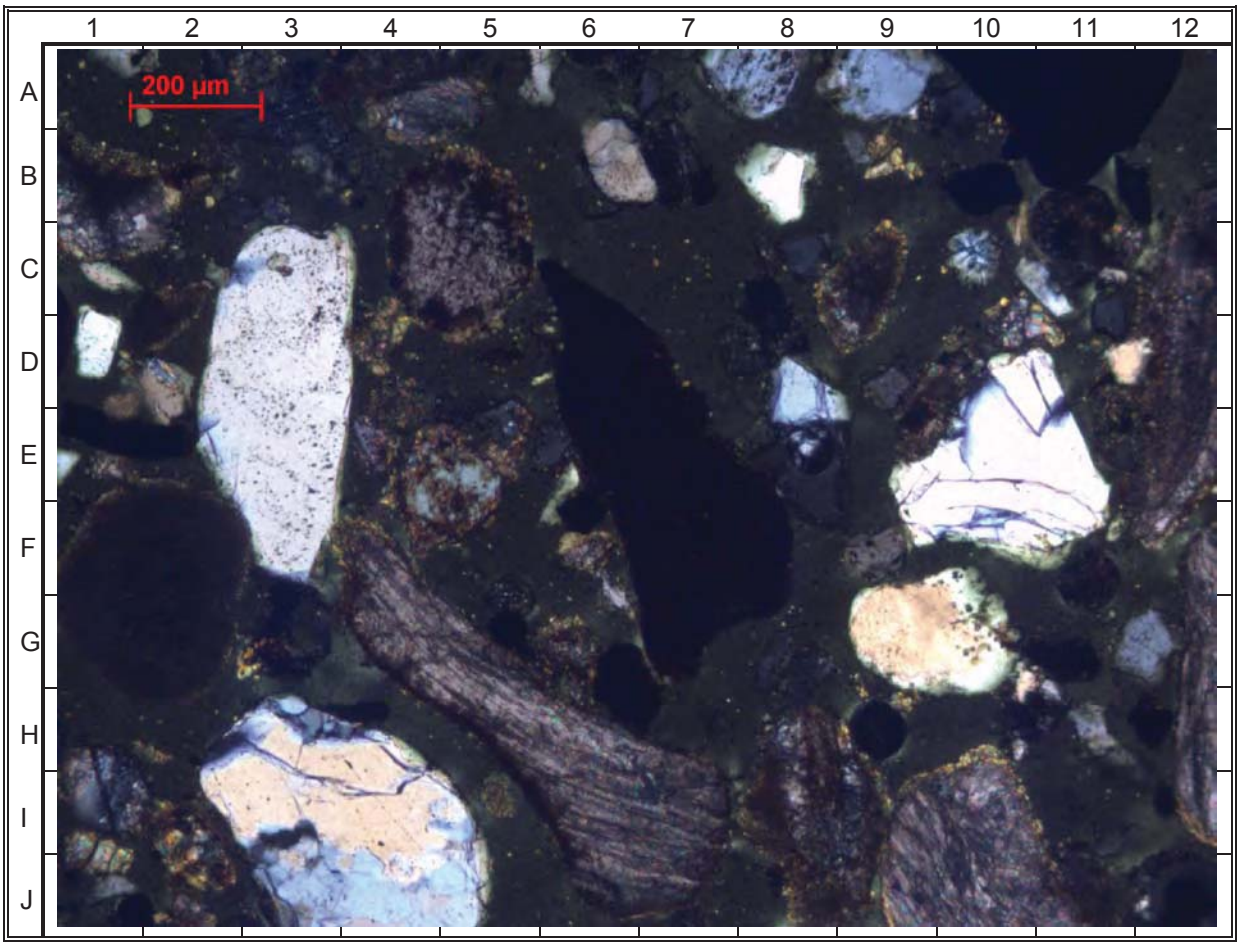
DESCRIPTION OF CONSTITUENTS (cont.)

Discrete Constituent	Maximum Size, mm	Shape/ Weathering	Petrographic Details[2]
Silicified limestone	1.5	Angular to well rounded/Fresh	Hard, pale brown/grey, comprised of fine secondary silica replacing calcite.
Dolomite	2	Sub-angular to sub- rounded/ Fresh	Moderately soft, grey, granular with <5% calcite content.
Glauconite	<1.18	Sub-rounded to well rounded/Fresh	Moderately soft, medium to dark green glauconite.
Paint	2	Angular/Fresh	Moderately soft, white/pale yellow paint flakes.

2. Details mainly relate to features of possible engineering significance

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

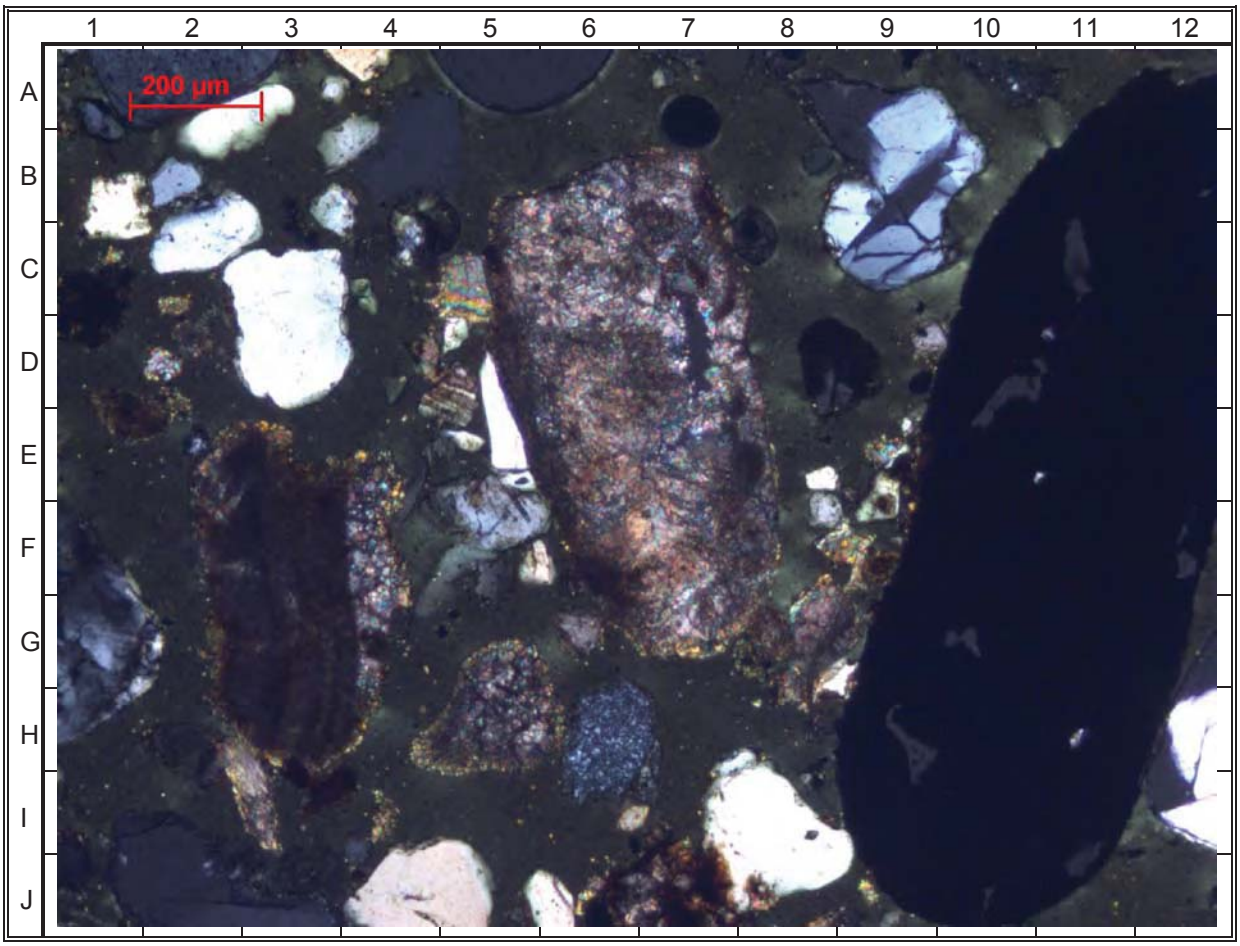
RSK Sample Ref.	12478/A3
Client Sample Ref.s	Stockpile 2
Advised Source	Dix Pit
Advised Material Grade	None advised



RECORD PHOTOMICROGRAPH			
RSK Sample Ref.	12478/A2	**Client Sample Ref.**	Stockpile 2
Film/Frame Number	Digital	**Viewing Light**	Cross-polarised
Approx. Mag^{n}	×75	**Approx. Scale**	10mm = 133µm
Description	General view of a portion of the aggregate <1.18mm sized, showing quartz (white/medium grey/pale yellow, D3), limestone (pale brown, C5) shell fragments (pink/grey, I7), slag (black, E6) and quartzite (grey/black/white, I4) fine aggregate particles. The thin section mounting medium appears dark grey (C7).		

Petrographic Examination of Fine Aggregate
TP 83, based on BS 812-104: 1994

RSK Sample Ref.	12478/A3
Client Sample Ref.s	Stockpile 2
Advised Source	Dix Pit
Advised Material Grade	None advised



RECORD PHOTOMICROGRAPH			
RSK Sample Ref.	12478/A2	**Client Sample Ref.**	Stockpile 2
Film/Frame Number	Digital	**Viewing Light**	Cross-polarised
Approx. Mag^{n}	×75	**Approx. Scale**	10mm = 133µm
Description	General view of a portion of the aggregate <1.18mm sized, showing quartz (white/medium grey/pale yellow, C/D3), shell fragments (striped brown, D5), limestone (pale pink, D6) chert (speckled grey, H6), slag (black, F11) and quartzite (grey/black/white, G1) fine aggregate particles. The thin section mounting medium appears dark grey (E1).		

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Particle Size Distribution
BS EN 933-1: 1997

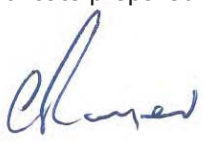
285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Bulk		
Sampled by	Client	Material Type/Class	N/A
Client ref.	Site Ref: New	Sampling date	06/12/12
RSK batch no.	12478/A1	No. of samples	1
Receipt date	06/12/12	Test date/period	20/12/12

Methods	
Test	The test was carried out in accordance with BS EN 933-1: 1997.
Deviations	None.

Results
The results are reported on page 2 of this certificate.

Certification			
Certificate prepared by  Clive Rayner Principal Technician		Certificate reviewed by  Andrew Grafton Director	
Testing by	CR	Certificate Issue Date	03/01/13

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RSK Sample Reference	12478/A1
Client's Sample Reference	Site Ref: New

Results

SIEVE ANALYSIS		
Sieve Size (mm)	**Percentage Passing**	**Specified Limits**
63.0	100	None specified
31.5	100	
16.0	100	
8.0	100	
3.35	100	
2.0	98	
1.0	80	
0.5	61	
0.25	29	
0.125	10	
0.063	2.5	

The mass of sample tested complies with the requirements of the test method.

The results given in this certificate relate only to those samples submitted and specimens tested and to any materials properly represented by those samples and specimens. Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

End of Certificate

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Particle Size Distribution
BS EN 933-1: 1997

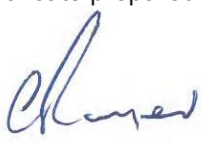
285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Bulk		
Sampled by	Client	Material Type/Class	N/A
Client ref.	Site Ref: 1	Sampling date	06/12/12
RSK batch no.	12478/A2	No. of samples	1
Receipt date	06/12/12	Test date/period	20/12/12

Methods	
Test	The test was carried out in accordance with BS EN 933-1: 1997.
Deviations	None.

Results
The results are reported on page 2 of this certificate.

Certification			
Certificate prepared by  Clive Rayner Principal Technician		Certificate reviewed by  Andrew Grafton Director	
Testing by	CR	Certificate Issue Date	03/01/13

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RSK Sample Reference	12478/A2
Client's Sample Reference	Site Ref: 1

Results

SIEVE ANALYSIS		
Sieve Size (mm)	**Percentage Passing**	**Specified Limits**
63.0	100	None specified
31.5	100	
16.0	100	
8.0	100	
3.35	100	
2.0	99	
1.0	87	
0.5	69	
0.25	33	
0.125	12	
0.063	3.2	

The mass of sample tested complies with the requirements of the test method.

The results given in this certificate relate only to those samples submitted and specimens tested and to any materials properly represented by those samples and specimens. Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

End of Certificate

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Particle Size Distribution
BS EN 933-1: 1997

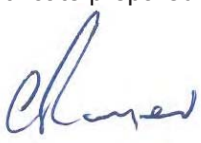
285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Bulk		
Sampled by	Client	Material Type/Class	N/A
Client ref.	Site Ref: 2	Sampling date	06/12/12
RSK batch no.	12478/A3	No. of samples	1
Receipt date	06/12/12	Test date/period	20/12/12

Methods	
Test	The test was carried out in accordance with BS EN 933-1: 1997.
Deviations	None.

Results
The results are reported on page 2 of this certificate.

Certification			
Certificate prepared by  Clive Rayner Principal Technician		Certificate reviewed by  Andrew Grafton Director	
Testing by	CR	Certificate Issue Date	03/01/13

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RSK Sample Reference	12478/A2
Client's Sample Reference	Site Ref: 1

Results

SIEVE ANALYSIS		
Sieve Size (mm)	**Percentage Passing**	**Specified Limits**
63.0	100	None specified
31.5	100	
16.0	100	
8.0	100	
3.35	100	
2.0	98	
1.0	84	
0.5	64	
0.25	31	
0.125	12	
0.063	2.9	

The mass of sample tested complies with the requirements of the test method.

The results given in this certificate relate only to those samples submitted and specimens tested and to any materials properly represented by those samples and specimens. Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

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UKAS TESTING
0278

Acid Soluble Sulfate Content of Aggregate

BS EN 1744-1: 2009

285231 Dix Pit, Stanton Harcourt

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	3
Receipt date	06/12/12	Test period	13-17/12/12

Methods	
Test	The acid soluble sulfate content was determined in accordance with BS EN 1744: Part 1: 2009.
Deviations	None.

Result

RSK sample reference	Client sample reference/location	Sulfate (as SO_3) % by mass of dry aggregate
12478/A1	Site Ref: New	0.2
12478/A2	Site Ref: 1	0.1
12478/A3	Site Ref: 2	0.3

Certification

Certificate prepared by		Certificate reviewed by	
Ben Stainton Senior Chemistry Technician		Dr David B Crofts Associate Director	
Testing by	BJS / LAC	Certificate issue date	19/12/12

The results given in this certificate relate only to those samples submitted and specimens tested and to any materials properly represented by those samples and specimens. Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

End of Certificate

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Water-Soluble Sulfate Content of Aggregate

BS EN 1744-1:2009

285231 Dix Pit, Stanton Harcourt

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	3
Receipt date	06/12/12	Test period	12-14/12/12

Methods	
Test	The test was carried out in accordance with BS EN 1744-1:2009. The 2:1 water extract was treated with an excess of barium chloride to precipitate the sulfate as barium sulfate, which was determined gravimetrically. The result has been expressed as SO_3 in % by mass.
Deviations	None.

Results

RSK sample reference	Client sample reference/location	Sulfate as SO_3 (%)
12478/A1	Site Ref: New	0.11
12478/A2	Site Ref: 1	0.01
12478/A3	Site Ref: 2	0.26

Certification

Certificate prepared by		Certificate reviewed by	
Ben Stainton Senior Chemistry Technician		Dr David B Crofts Associate Director	
Testing by	BJS	Certificate issue date	19/12/12

The results given in this certificate relate only to those samples submitted and specimens tested and to any materials properly represented by those samples and specimens. Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

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Acid Soluble Chloride Content of Aggregate
In House TP02

285231 Dix Pit, Stanton Harcourt

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	3
Receipt date	06/12/12	Test date	13/12/12

Methods	
Test	The samples were tested in accordance with in house TP02.
Deviations	None.

Results

RSK sample reference	Client sample reference/location	% Chloride by mass of sample
12478/A1	Site Ref: New	0.015
12478/A2	Site Ref: 1	0.012
12478/A3	Site Ref: 2	0.016

Certification

Certificate prepared by		Certificate reviewed by	
Ben Stainton Senior Chemistry Technician		Dr David B Crofts Associate Director	
Testing by	BJS	Certificate issue date	19/12/12

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UKAS TESTING
0278

Water Soluble Chloride Content of Aggregate
BS EN 1744-1:2009

285231 Dix Pit, Stanton Harcourt

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	3
Receipt date	06/12/12	Test period	12-14/12/12

Methods	
Test	The samples were tested in accordance with BS EN 1744-1:2009.
Deviations	The samples were extracted according to clause 10.1.4.

Results

RSK sample reference	Client sample reference/location	% Chloride by mass of sample
12478/A1	Site Ref: New	0.004
12478/A2	Site Ref: 1	0.002
12478/A3	Site Ref: 2	0.005

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Ben Stainton Senior Chemistry Technician		Dr David B Crofts Associate Director	
Testing by	BJS	Certificate issue date	19/12/12

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UKAS TESTING
0278

Total Sulfur Content of Aggregate

BS EN 1744-1: 2009

285231 Dix Pit, Stanton Harcourt

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	3
Receipt date	06/12/12	Test period	13-17/12/12

Methods	
Test	The total sulfur content was determined in accordance with BS EN 1744-1: 2009. The sample was tested in duplicate and the mean value is reported to the nearest 0.01% by mass of dry aggregate.
Deviations	None.

Result

RSK sample reference	Client sample reference/location	Sulfur (% S by mass of sample)
12478/A1	Site Ref: New	0.10
12478/A2	Site Ref: 1	0.05
12478/A3	Site Ref: 2	0.16

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Ben Stainton Senior Chemistry Technician		Dr David B Crofts Associate Director	
Testing by	BJS	Certificate issue date	19/12/12

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UKAS TESTING
0278

Alkali Content of Aggregate
In-house test procedure TP5

285231 Dix Pit, Stanton Harcourt

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	3
Receipt date	06/12/12	Test period	14-19/12/12

Methods	
Test	The analyses were carried out in accordance with our in-house documented test procedure TP5 which is based on BS EN 196-2: 2005 Clauses 17 and 18. A portion of the analytical sub sample prepared to pass a 125 µm sieve was extracted with nitric acid solution. The sodium and potassium contents were then determined by atomic absorption/emission spectrophotometry.
Deviations	This method is for the determination of alkali content of concrete.

Results

RSK sample reference	Client sample reference/location	Determined values		Calculated values
		Sodium oxide Na_2O	Potassium oxide K_2O	Total alkalis as Na_2O equivalent
		% by mass of sample		
12478/A1	Site Ref: New	0.037	0.055	0.073
12478/A2	Site Ref: 1	0.022	0.066	0.066
12478/A3	Site Ref: 2	0.038	0.048	0.070

Certification

Certificate prepared by		Certificate reviewed by	
Ben Stainton Senior Chemistry Technician		Dr David B Crofts Associate Director	
Testing by	BJS	Certificate issue date	19/12/12

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UKAS TESTING
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Assessment of Fines - Methylene Blue Test
BS EN 933-9:2009

285231 Dix Pit, Stanton Harcourt

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	3
Receipt date	06/12/12	Test date	13/12/12

Methods	
Test	The methylene blue value was determined in accordance with BS EN 933-9:2009.
Deviations	The samples were dried before testing.

Results

RSK sample reference	Client sample reference / Location	MB value (g of dye per kg)
12478/A1	Site Ref: New	0.7
12478/A2	Site Ref: 1	1.0
12478/A3	Site Ref: 2	1.1

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Certificate prepared by		Certificate reviewed by	
Ben Stainton Senior Chemistry Technician		Dr David B Crofts Associate Director	
Testing by	BJS	Certificate issue date	19/12/12

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UKAS TESTING
0278

Particle Density and Water Absorption of Aggregate
BS EN 1097-6: 2000

285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate	Client ref.	Site Ref: New
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478/A1	No. of samples	1
Receipt date	06/12/12	Test date/period	20/12/12

Methods	
Test	The test was carried out in accordance with BS EN 1097-6: 2000 Clause 8 (Pyknometer Method).
Deviations	None.

Results	
Particle density on an oven dry basis (Mg/m^3)	2.76
Particle density on a saturated surface dry basis (Mg/m^3)	2.86
Apparent particle density (Mg/m^3)	3.08
Water absorption (% of dry mass)	3.7

Certification			
Certificate prepared by		Certificate reviewed by	
Clive Rayner Principal Technician		Andrew Grafton Director	
Testing by	CR	Certificate Issue Date	02/01/13

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UKAS TESTING
0278

Particle Density and Water Absorption of Aggregate
BS EN 1097-6: 2000

285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate	Client ref.	Site Ref: 1
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478/A2	No. of samples	1
Receipt date	06/12/12	Test date/period	20/12/12

Methods	
Test	The test was carried out in accordance with BS EN 1097-6: 2000 Clause 8 (Pyknometer Method).
Deviations	None.

Results	
Particle density on an oven dry basis (Mg/m^3)	2.77
Particle density on a saturated surface dry basis (Mg/m^3)	2.85
Apparent particle density (Mg/m^3)	3.03
Water absorption (% of dry mass)	3.0

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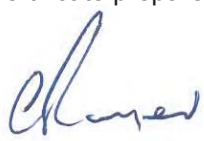
Certificate prepared by  Clive Rayner Principal Technician		Certificate reviewed by  Andrew Grafton Director	
Testing by	CR	Certificate Issue Date	02/01/13

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UKAS TESTING
0278

Particle Density and Water Absorption of Aggregate
BS EN 1097-6: 2000

285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate	Client ref.	Site Ref: 2
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478/A3	No. of samples	1
Receipt date	06/12/12	Test date/period	20/12/12

Methods	
Test	The test was carried out in accordance with BS EN 1097-6: 2000 Clause 8 (Pyknometer Method).
Deviations	None.

Results	
Particle density on an oven dry basis (Mg/m^3)	2.77
Particle density on a saturated surface dry basis (Mg/m^3)	2.85
Apparent particle density (Mg/m^3)	3.02
Water absorption (% of dry mass)	2.9

Certification			
Certificate prepared by		Certificate reviewed by	
Clive Rayner Principal Technician		Andrew Grafton Director	
Testing by	CR	Certificate Issue Date	02/01/13

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UKAS TESTING
0278

Determination of the influence of recycled aggregate extract on the initial setting time of cement
BS EN 1744-6: 2006

285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Mr Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Bulk		
Sampled by	RSK	Material Type/Class	N/A
Client ref.	Not advised	Sampling date	06/12/12
RSK batch no.	12478/A1	No. of samples	4
Receipt date	06/12/12	Test date/period	08/01/13

Methods	
Test	The test was carried out in accordance with BS EN 1744-6: 2006.
Deviations	None.
Note	A negative value of *A* indicates a retarding effect, a positive value an accelerating effect.

Results				
RSK Ref	Reference	12478/A1	12478/A2	12478/A3
Site Ref	N/a	Stockpile New	Stockpile 1	Stockpile 2
Initial setting time, mins	210	206	241	242
		Mean = 230		
A	N/a	20		

The initial setting time = The time elapsed between 'zero-time' and the time at which the distance between the needle and the base-plate is 6 3mm, measured to the nearest minute.

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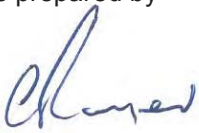
Certificate prepared by  Clive Rayner Principal Technician		Certificate reviewed by  Paul Bennett-Hughes Associate Director	
Testing by	CR	Certificate Issue Date	08/01/13

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Determination of Loose Bulk Density

BS EN 1097-3: 1998

285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	1
Receipt date	06/12/12	Test date	26/03/13

Methods	
Test	Testing was carried out in accordance with BS EN 1097-3: 1998
Deviations	None.

Results
The results are reported on page 2 of this certificate.

Certification			
Certificate prepared by  Clive Rayner Principal Technician		Certificate reviewed by  Dr David Crofts Associate Director	
Testing by	CR	Certificate Issue Date	27/03/13

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Results			
RSK reference	**Client reference**	**Bulk Density (kg/L)**	**Mean Bulk Density (kg/L)**
12478/A1 A	Site ref: New	1.428	1.43
12478/A1 B		1.430	
12478/A1 C		1.430	
12478/A2 A	Site ref: 1	1.364	1.37
12478/A2 B		1.382	
12478/A2 C		1.377	
12478/A3 A	Site ref: 2	1.415	1.41
12478/A3 B		1.400	
12478/A3 C		1.411	

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Determination of Compressive Strength of Hardened Mortar
BS EN 1015-11: 1999

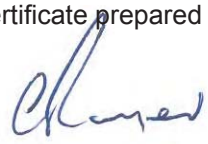
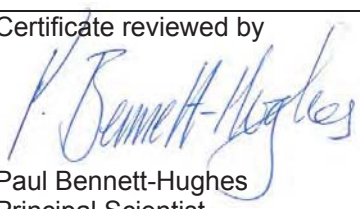
285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	3
Receipt date	06/12/12	Test date	22/04/13

Methods	
Test	Testing was carried out in accordance with BS EN 1015-11: 1999. Reference samples, cast using the same cement but using BS sand, were prepared for comparison.
Deviations	None.

Results
Results are reported on page 2 of this certificate.

Certification			
Certificate prepared by  Clive Rayner Principal Technician		Certificate reviewed by  Paul Bennett-Hughes Principal Scientist	
Testing by	CR	Certificate Issue Date	23/04/13

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Results

RSK Ref		Client Ref	Length (mm)	Width (mm)	Max Load (N)	Compressive Strength (MPa)	Mean Compressive Strength (MPa)
12478/A1	A	Site Ref: New	40.0	40.0	15.1	9.4	**8.0**
	B		40.0	40.0	15.7	9.8	
	C		40.0	40.0	11.2	7.0	
	D		40.0	40.0	13.6	8.5	
	E		40.0	40.0	11.0	6.9	
	F		40.0	40.0	10.1	6.3	
12478/A2	A	Site Ref: 1	40.0	40.0	9.5	5.9	**5.8**
	B		40.0	40.0	9.7	6.1	
	C		40.0	40.0	10.1	6.3	
	D		40.0	40.0	8.8	5.5	
	E		40.0	40.0	8.4	5.3	
	F		40.0	40.0	8.7	5.4	
12478/A3	A	Site Ref: 2	40.0	40.0	7.8	4.9	**4.6**
	B		40.0	40.0	6.9	4.3	
	C		40.0	40.0	7.3	4.6	
	D		40.0	40.0	7.5	4.7	
	E		40.0	40.0	7.9	4.9	
	F		40.0	40.0	6.5	4.1	
Reference Sample	A		40.0	40.0	17.7	11.1	**11.6**
	B		40.0	40.0	19.5	12.2	
	C		40.0	40.0	18.8	11.8	
	D		40.0	40.0	18.0	11.3	
	E		40.0	40.0	18.3	11.4	
	F		40.0	40.0	18.7	11.7	

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Determination of Flexural Strength of Hardened Mortar
BS EN 1015-11: 1999

285231 Dix Pit

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Contact name	Chris Sheehan		
Order reference	4107	Order date	29/11/12

Sample Details			
Sample type	Aggregate		
Sampled by	Client	Sampling date	06/12/12
RSK batch no.	12478	No. of samples	3
Receipt date	06/12/12	Test date	22/04/13

Methods	
Test	Testing was carried out in accordance with BS EN 1015-11: 1999. Reference samples, cast using the same cement but using BS sand, were prepared for comparison.
Deviations	None.

Results

RSK Ref		Client Ref	Span Length (mm)	Width (mm)	Height (mm)	Max Load (N)	Flexural Strength (MPa)	Mean Flexural Strength (MPa)
12478/A1	A	Site Ref: New	120.0	40.1	40.1	777	2.18	**2.20**
	B		120.0	40.0	40.1	883	2.48	
	C		120.0	40.0	40.1	693	1.95	
12478/A2	A	Site Ref: 1	120.0	40.0	40.0	695	1.95	**1.89**
	B		120.0	40.0	40.1	665	1.86	
	C		120.0	40.1	40.1	662	1.86	
12478/A3	A	Site Ref: 2	120.0	40.0	40.0	642	1.80	**1.67**
	B		120.0	40.0	40.0	582	1.64	
	C		120.0	40.0	40.1	560	1.56	
Reference Sample			120.0	40.0	40.1	985	2.76	**2.84**
			120.0	40.0	40.0	1207	3.39	
			120.0	40.0	40.1	840	2.36	

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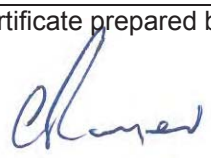
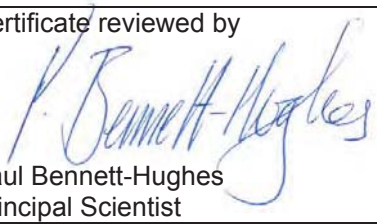
Certificate prepared by  Clive Rayner Principal Technician		Certificate reviewed by  Paul Bennett-Hughes Principal Scientist	
Testing by	CR	Certificate Issue Date	23/04/13

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Certificate of Examination
X-ray Diffraction Analysis

Your Ref	4107	**RSK Sample Ref**	12748/A1
Site	Dix Pit	**Client Sample Ref**	Site Ref New
Client	Sheehan Pit Knightsbridge Farm Woodstock Road Yarnton Oxford OX5 1PS	**Advised Sample Depth**	Not advised
		Sampled by/Date	Client/06.12.12
		Date Received	06.12.12
		Examined by/Date	CW/09.04.13

SAMPLE

Two bags totalling approximately 52.3kg in mass, advised to comprise a sand aggregate from Dix Pit, were received in our laboratory for examination. A representative portion of the sand aggregate was directly sampled from the material received in our laboratory. The representative portion of the sand aggregate was then sieved over a 63μm, with the <63μm fraction undergoing XRD analysis. The >63μm fraction was not analysed.

OBJECTIVES OF ANALYSIS

The objective of the XRD analysis was to describe the nature and chemical composition of the crystalline minerals within the rocks.

METHODS OF EXAMINATION

Phase identification using XRD is achieved by comparing the diffraction pattern obtained from the unknown, to a standard database that is compiled by the International Centre for Diffraction Data (ICDD). If and when a positive identification is made, the presence of the constituent is indicated by a stick pattern that is superimposed on the XRD diffractogram.

A semi-quantitative estimate of relative proportions is made by consideration of the pattern intensity for each constituent, but the individual percentages remain only approximate.

SUMMARY OF RESULTS

Sample	Composition, approx. %								
	Quartz	Calcite	Microcline	Muscovite mica	Albite	Goethite	Dolomite	Augite (pyroxene)	Gypsum
12748/A1	43	34	8	6	4	3	1	1	<1

Prepared by

Carmine Wainman
Graduate Geoscientist

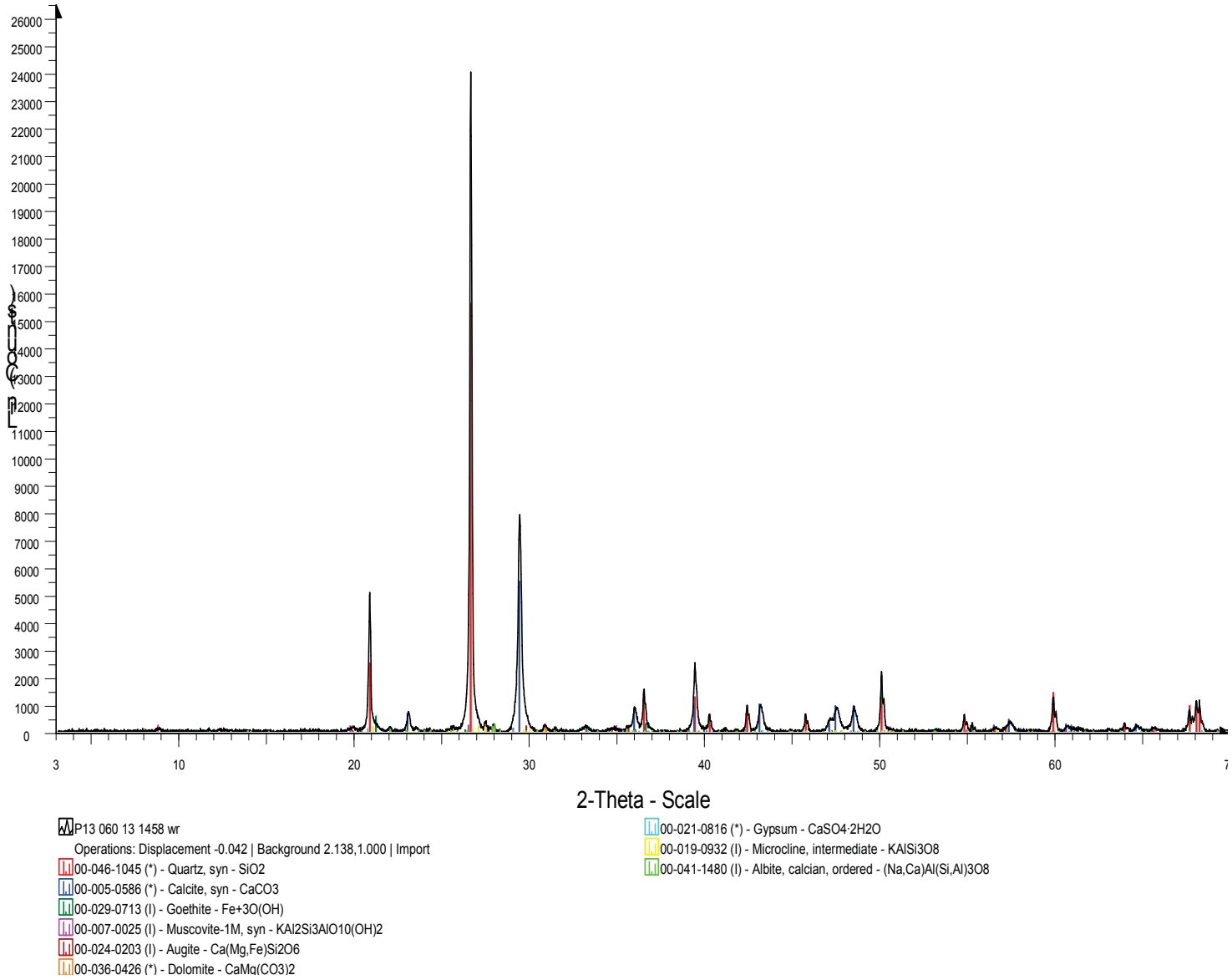
Reviewed by

Paul Bennett-Hughes
Associate Director

Date of issue: 09 April 2013

X-RAY DIFFRACTION RESULTS

Figure 1. XRD diffractogram from the aggregate sample 12748/A1 showing the phases identified (see legend)



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Certificate of Examination
X-ray Diffraction Analysis

Your Ref	4107	**RSK Sample Ref**	12748/A2
Site	Dix Pit	**Client Sample Ref**	Site Ref 1
Client	Sheehan Pit Knightsbridge Farm Woodstock Road Yarnton Oxford OX5 1PS	**Advised Sample Depth**	Not advised
		Sampled by/Date	Client/06.12.12
		Date Received	06.12.12
		Examined by/Date	CW/09.04.13

SAMPLE

Two bags totalling approximately 57.1kg in mass, advised to comprise a sand aggregate from Dix Pit, were received in our laboratory for examination. A representative portion of the sand aggregate was directly sampled from the material received in our laboratory. The representative portion of the sand aggregate was then sieved over a 63μm, with the <63μm fraction undergoing XRD analysis. The >63μm fraction was not analysed

OBJECTIVES OF ANALYSIS

The objective of the XRD analysis was to describe the nature and chemical composition of the crystalline minerals within the rocks.

METHODS OF EXAMINATION

Phase identification using XRD is achieved by comparing the diffraction pattern obtained from the unknown, to a standard database that is compiled by the International Centre for Diffraction Data (ICDD). If and when a positive identification is made, the presence of the constituent is indicated by a stick pattern that is superimposed on the XRD diffractogram.

A semi-quantitative estimate of relative proportions is made by consideration of the pattern intensity for each constituent, but the individual percentages remain only approximate.

SUMMARY OF RESULTS

Ref	Composition, approx. %									
	Quartz	Calcite	Muscovite mica	Albite	Microcline	Sanidine	Goethite	Augite (pyroxene)	Dolomite	Orthoclase
12748/A2	48	30	5	5	4	3	3	1	<1	<1

Prepared by

Carmine Wainman
Graduate Geoscientist

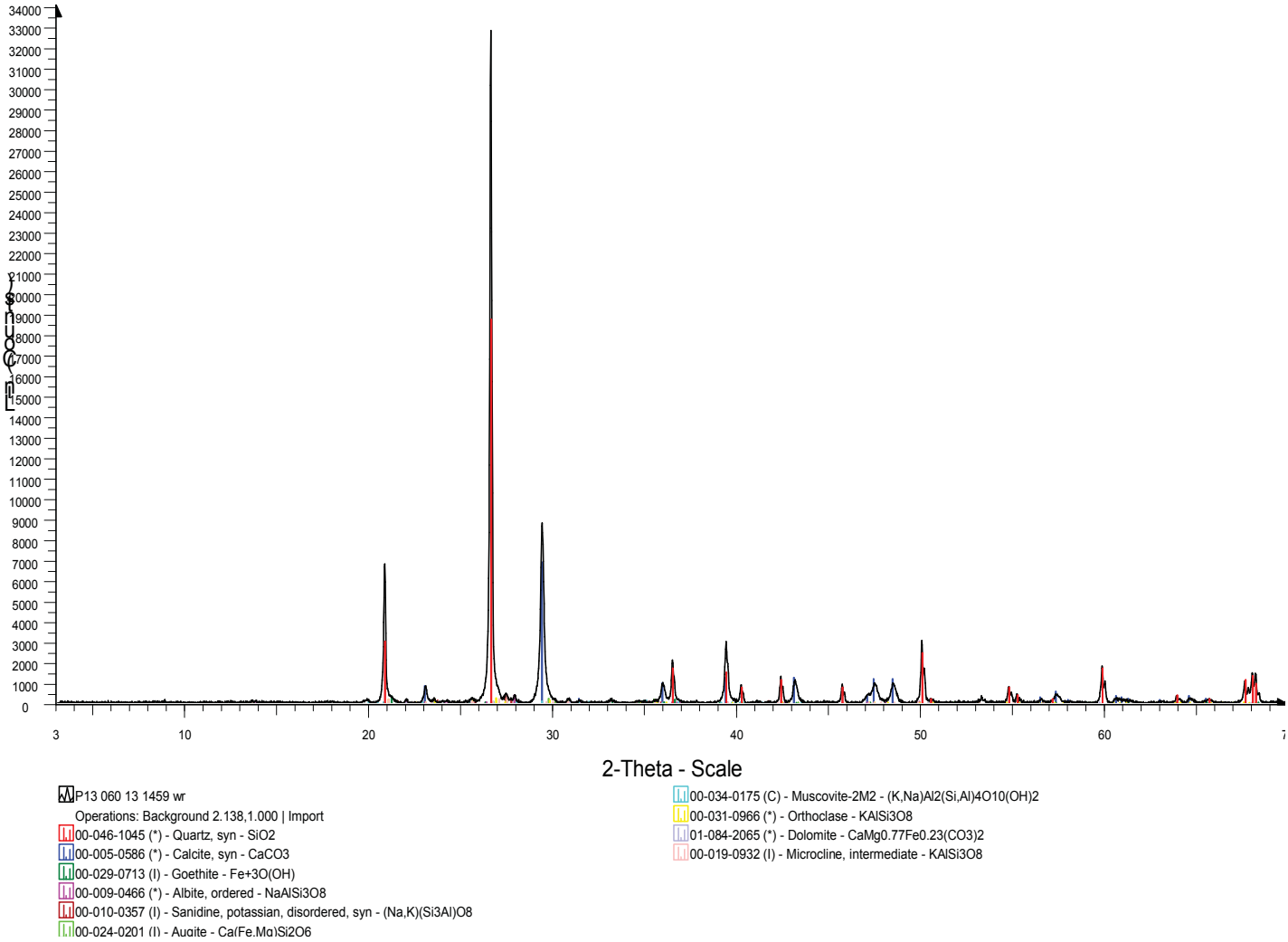
Reviewed by

Paul Bennett-Hughes
Associate Director

Date of issue: 09 April 2013

X-RAY DIFFRACTION RESULTS

Figure 1. XRD diffractogram from the aggregate sample 12748/A2 showing the phases identified (see legend)



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Certificate of Examination
X-ray Diffraction Analysis

Your Ref	4107	**RSK Sample Ref**	12748/A3
Site	Dix Pit	**Client Sample Ref**	Site Ref 2
Client	Sheehan Pit Knightsbridge Farm Woodstock Road Yarnton Oxford OX5 1PS	**Advised Sample Depth**	Not advised
		Sampled by/Date	Client/06.12.12
		Date Received	06.12.12
		Examined by/Date	CW/09.04.13

SAMPLE

Two bags totalling approximately 50.8kg in mass, advised to comprise a sand aggregate from Dix Pit, were received in our laboratory for examination. A representative portion of the sand aggregate was directly sampled from the material received in our laboratory. The representative portion of the sand aggregate was then sieved over a 63μm, with the <63μm fraction undergoing XRD analysis. The >63μm fraction was not analysed.

OBJECTIVES OF ANALYSIS

The objective of the XRD analysis was to describe the nature and chemical composition of the crystalline minerals within the rocks.

METHODS OF EXAMINATION

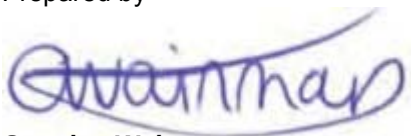
Phase identification using XRD is achieved by comparing the diffraction pattern obtained from the unknown, to a standard database that is compiled by the International Centre for Diffraction Data (ICDD). If and when a positive identification is made, the presence of the constituent is indicated by a stick pattern that is superimposed on the XRD diffractogram.

A semi-quantitative estimate of relative proportions is made by consideration of the pattern intensity for each constituent, but the individual percentages remain only approximate.

SUMMARY OF RESULTS

Sample	Composition, approx. %									
	Quartz	Calcite	Muscovite mica	Microcline	Albite	Goethite	Sanidine	Orthoclase	Augite (pyroxene)	Bassinite
12748/A3	46	30	5	5	4	4	2	2	1	1

Prepared by



Carmine Wainman
Graduate Geoscientist

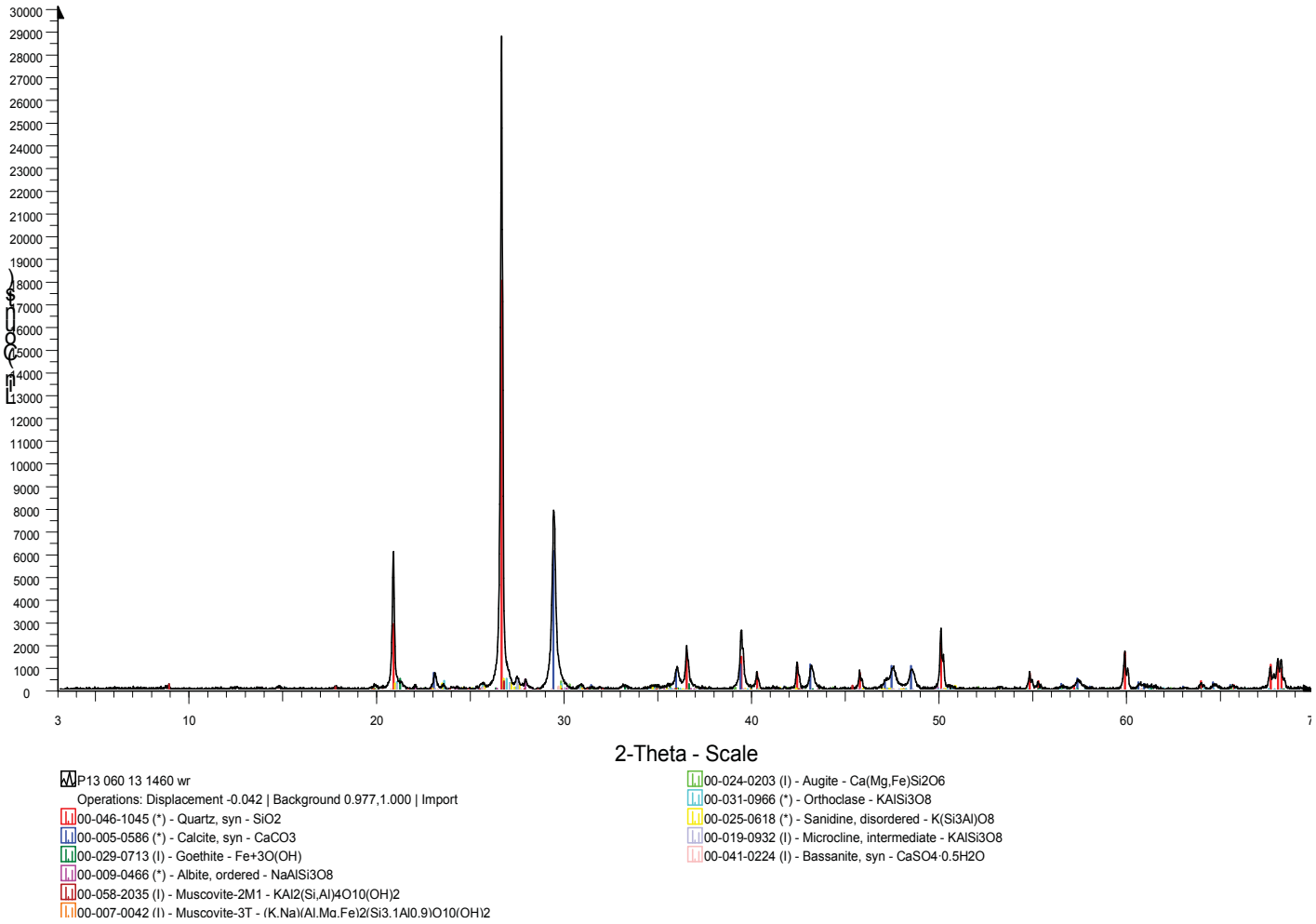
Reviewed by

Paul Bennett-Hughes
Associate Director

Date of issue: 09 April 2013

X-RAY DIFFRACTION RESULTS

Figure 1. XRD diffractogram from the aggregate sample 12748/A3 showing the phases identified and approximate weight fraction, (see legend)



APPENDIX C -
CERTIFICATES OF TEST – WATER SAMPLES

This appendix contains 3 pages, including this one

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Analysis of Water

285231 Dix Pit Washing Plant, Stanton Harcourt

Client Details			
Sheehan Haulage & Plant Hire Knightsbrige Farm Woodstock Road Yarnton Oxford OX5 1PS			
Client contact	Chris Sheehan		
Order reference	4107	Order date	29.11.12

Sample Details			
Sample type	Water		
Sampled by	RSK	Sampling date	04.01.13
RSK batch no.	12478	No. of samples	2
Receipt date	04.01.13	Test date/period	14.01.13

Methods	
Test	A summary of the test methods is presented on Sheet 2 of this certificate.

Summary of Results

RSK Sample Ref	pH	Ammonium as NH_4	Chloride	Nitrate	Sulfate	Magnesium
		mg/l	mg/l	mg/l	mg/l	mg/l
12478/O1 – Borehole water	8.19	3.7	3180	<0.5	4663	112
12478/O2 – Plant water	8.20	3.5	213	97.1	1236	10.2

Certification

Certificate prepared by		Certificate reviewed by	
 Paul Bennett Hughes Associate Director		 Dr Ian Blanchard Senior Consultant	
Testing by	S/c	Certificate issue date	23.01.13

The results given in this certificate relate only to those samples submitted and specimens tested and to any materials properly represented by those samples and specimens.

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Methods of Test

pH

An aliquot of the settled sample is transferred to a pH analyser. Analysis of the final extract is carried out using a pH analyser. The pH analyser is calibrated using standard buffer solutions before each analytical batch. Appropriate buffer solutions are analysed with every analytical batch. **Limit of Detection:** 0.1pH units.

Ammonium

An aliquot of the filtered sample is transferred to a vial for analysis. Analysis of the final extract is carried out using an Aquakem colorimetric analyser. The Aquakem is calibrated before each analytical batch. Appropriate water reference solutions and matrix blanks are analysed with every analytical batch. **Limit of Detection.** 0.1mg/l.

Chloride, Nitrate and Sulfate

An aliquot of the filtered sample is transferred to a vial for analysis. Analysis of the final extract is carried out using an Aquakem colorimetric analyser. The Aquakem is calibrated before each analytical batch. Appropriate soil spikes, water reference solutions and matrix blanks are analysed with every analytical batch. **Limit of Detection.** Nitrite = 0.1mg/l. Chloride and Sulphate = 1mg/l.

Magnesium

An aliquot of the sample is filtered through a 0.45µm filter ready for analysis and 0.05ml dilute nitric acid added. Analysis of the filtered water sample is carried out using ICP-OES. The ICP-OES is calibrated using target metal standards before each analytical batch. Appropriate reference solutions and matrix blanks are analysed with every analytical batch. **Limit of Detection.** Magnesium = 1mg/l.

End of Certificate

CONCRETE BLOCK DATASHEET

Solid dense – the most durable and resilient block with high load bearing capacity for unfinished facing applications

Dense blocks containing a minimum of 75% recycled/secondary aggregates.

- Environmentally engineered to meet the requirements of today's values
- 75% minimum recycled aggregate makeup
- Raw materials used are precisely selected for their environmental performance and the products fulfil all UK and European technical standards
- Freeze/Thaw resistance: Frost Resistant
- Sound Insulation: 45 RwdB

Applications

Suitable for use above and below ground, both internally and externally up to 3 storeys.
Standard finish - Suitable for locations where the surface will not be seen, i.e. plastered or rendered.

Manufacturing standards

The Sheehan block range is manufactured using a semi-dry process and is compliant to European Standard BS EN 771-3.
All Sheehan products are manufactured in accordance with ISO 9001 with compliance to ISO 14001.

Technical Data -

Property	BS EN Standard	Value
Face size	BS EN 771-3	440mm x 100mm x 215mm
Dimensional tolerance	BS EN 772-16	Category D1
Gross Dry Density	BS EN 772-13	1800 – 2000 kg/m^3
Mean Compressive Strength	BS EN 772-1	7.3, 10.4N/mm^2

Property	BS EN Standard	Value
Manufacturing Category	BS EN 771-3	Category II
Thermal Conductivity	BS EN 1745	Internal - 1.06 W/mK External - 1.14 W/mK
Moisture Movement	BS EN 772 -14	<0.6mm/m
Fire Resistance	BS EN 13501-1	Class 1 Reaction to Fire
Configuration	BS EN 1996-1-1	Solid – Group 1
Bond Strength	BS EN 998-2 Annex C	0.15N/mm^2

Pack Size –

Block Size mm	Blocks per pack	m^2 per pack
440 x 100 x 215	88	8.8

Recyclable: 100% of the product can be recycled thus reducing the amount of material that is sent to landfill.

Manufacturing location: produced in the UK, with locally sourced materials under strict environmental and social legislation, for local supply.

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Registered Office: 30 BANKSIDE COURT | STATIONFIELDS | KIDLINGTON | OXFORD | OX5 1JE
INCORPORATED IN ENGLAND NO. 2248991 V.A.T. REGISTRATION NUMBER: 630 5617 59

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Email: enquiries.mso@esg.co.uk
www.esg.co.uk

TEST REPORT

Test Report
BS EN 772-1:2011

Client:	John Sheehan		UXB0336072-1
Site:	Knightsbridge farm ,Yarnton Oxford		51024365
Test Requested:	Compressive Strength of Masonry Units	Date Reported:	16 June 2016
Date Received:	14 June 2016	Date Sampled:	02 June 2016
Date Tested:	30 June 2016	Sampled By:	Client

Client Reference: 7 to 12
Masonry Unit Type: Aggregate Concrete Masonry units BS EN 771 part 1
Results:

ESG Sample Reference	Dimensions (mm)			Maximum Load (kN)	Compressive Strength (N/mm²)	Normalized Compressive Strength (N/mm²)
	Length	Width	Height			
24045267	440	96	212	301.8	7.1	11.5
24045268	440	96	212	283.5	6.7	10.9
24045269	440	96	212	312.6	7.4	12.0
24045270	440	96	212	297.4	7.0	11.3
24045271	440	96	212	351.4	8.3	13.4
24045272	440	96	212	339.6	8.0	13.0
Mean					**7.4**	**12.0**
Coefficient of variation					**0.08**	

Remarks
Tested at 28 Days
Water Conditioned As to 7.3.5 BS EN 772
Sampled from Stock Pile
Test surfaces capped with HAC & Sand As to 7.2.5 BS EN 772

Signatory N.Oliver Nick Oliver - Operations Manager

For and on behalf of ESG