APPENDIX 1

MINUTES OF MEETINGS WITH THE APPLICANT OF 17/07/14 and 12/11/15

Parish Meeting – 17th July 2014 at Appleford Village Hall

Attendees:

Tom Bowtell	-	Long Wittenham Parish (Chair)	(**TB**)
Jaqi Mason	-	Culham Parish	(**JM**)
Chris Neill	-	Clifton Hampden Parish (Chair)	(**CN**)
Ian Mason	-	Clifton Hampden Parish	(**IM**)
John Woodley Sheard	-	Culham Parish	(**JWS**)
Hamish Forbes Forsyth	-	Culham Parish (Chair)	(**HFF**)
Johanna Richardson	-	Appleford Parish	(**JR**)
Sue Harris	-	Appleford Parish	(**SH**)
Lewis Beadle	-	Appleford Parish	(**LB**)
Alan Mackenzie	-	Consultant to Hills Quarry Products Ltd	(**AM**)
Lucy Binnie	-	Land & Mineral Management Ltd	(**LJB**)
Andrew Liddle	-	Hills Quarry Products Ltd	(**AL**)

AM Gave a brief introduction to the Hills Company and a brief outline to the proposal of a 5 million tonne reserve, running at 250,000tpa with an associated concrete plant. New access onto A415

AM Ran through a number of plans, showing the site area, the archaeology and the geology.

LB Asked "how had Hills become aware of the site"?

AM Approaches from the land owners and information from Oxford County Council.
The ownership of the site is under three trusts: Emmet, Cauldwell and Morrell
Archaeological site investigations have been carried out and a report submitted to the County archaeologist who has agreed there is no significant archaeology present.
The geological report is currently being updated with further information.
The initial working plan is being developed.

TB Asked how the site would be worked, would all the areas would be open at the same time?

AM There will be a number of phases open as the development progresses, the intention is always to strip soils from a new area and use that material for restoration of a completed phase, the timing of this can change depending on the amount of soils and overburden to be handled and the depth of mineral.

AM Currently work is being carried out on the hydrology report by Amec, for flood impact assessments. Noise, Dust and visual impact assessments are also being undertaken by Advanced Environmental.

AM Outlined the restoration plan, which makes provision for the three main drivers for any restoration, agriculture, habitat and leisure. This is to maximise the re-use of the Grade 2a soils and also achieve a soils balance to negate the requirement for any importation of inert infill materials.

TB Question regarding the marina, what facilities would this include, would there be residential?

AM There will be associated buildings and structures with the marina, such as car park and service buildings but not housing. The restoration plans are still being developed, with changes such as removing the 'rowing lake' and providing a larger lake for a number of activities.

TB The parishes are trying to establish a link between Appleford and Clifton Hampden along the Thames, how would the development affect this?

AM We have had discussions with Oxford CC rights of way and there have been no concerns raised regarding the development.

CN Stated Parish not aware of any discussions and footpaths are the responsibility of the parish.

LJB Asked if it would be possible to see details of their footpath proposals.

SH Asked if there would be any impact on the Thames Path?

AM Have spoken to National Trails about a standoff

JI What would be the standoff be?

AM At least 16 metres. As a demarcation there would also be a fence installed and possibly a soil bund.

CN How tall would these bunds be?

AM Could make any size providing don't impact flood capacity.

CN Mentioned Oxfords West Way announcement which would see an increase in water on this stretch of the Thames.

TB Can you give an indication of traffic movements?

JWS Mentioned the two bridges crossing the Thames, both of which are heavily congested and can also flood in the winter.

CN Also asked about routeing with concerns about the pinch point in Abingdon and Clifton Hampden.

AM Currently the traffic report is being undertaken by Cole Easdon. The intention is for 250,000tpa to be taken from the site on predominantly 20t trucks, onto the A415 turning either right or left – it and A road and the County is responsibility for. Wouldn't use the bridges at Culham.

JM Have you established what the catchment area for these products?

AM Most gravels travel no more than a 30/40 mile radius of the site to where development is. Proposed developments in Didcot and the Science Park are example of demand.

TB Are Hills applying for any other sites in Oxford?

AM Currently no. We operate a building sand site near Faringdon, a high quality Mortar Sand site at Upwood and we are just completing the restoration of a site near Appleton. Currently sand & Gravel products are being carried long distances from Hills site in the Waterpark to Newbury and into the Oxford area.

TB Can you give us an idea of the type of cement plant?

AM Clarified difference between a cement plant and a concrete plant, a concrete plant doesn't make cement it combines *cement* with the aggregates to produce *concrete*. Tabled were photographs of the gravel washing plant and the concrete plant installed at Woodsford which are similar to what propose here.

JM Queried there would be extra movements bringing in cement.

AM Yes, would be detailed in highway report.

TB How much noise will there be from the concrete plant?

AM Experts working on it and speaking to EHO, mitigation measures, such as planting and bunds, will be looked at to reduce the noise of the plant.

TB Asked when would be able to know the results

AM A couple of months

IM Asked about the processing plant

AM Went through the proposed site plant layout showing the position of screening bunds and the proposed heights.

IM How high can these bunds be?

AL Bund heights vary they can be up to 10 metres if they are constructed from over burden but only 3 metres if they made from topsoil to avoid destroying the quality of the soils for future use.

IM Can they be planted with trees?

AL Yes. All the bunds would be grassed and maintained, but certain ones can also be planted with bushes or trees.

CN How many people would be employed?

AL 6-8 on site with additional employment with drivers.

IM As **TB** has mentioned the noise impact assessment report would need to be seen by the Parish's as soon as it is available.

LJB All the reports will be compiled into the E.I.A as part of the planning process with all the technical information forming part of the planning application submission.

AM There will also be a Non-technical Summary of the application to allow for a wider understanding of the issues and how they are addressed.

HFF Do you go through the reports before the application is made?

LJB There are various discussions with different parties and amendments made before submission.

TB Do you have any indications on timescale?

AM We would be hoping to have a planning application ready to submit by the year end.

JR We do hear noise from the nearby Hanson operation at Sutton Courtney, reversing bleepers and general noise.

AL There are mitigation measures which can be used, technology fitted to those machines may not be current, there is a need for audible sounders on mobile plant, but here are new units on the market which are broadband noise designed to operate at only 5dBA above ambient.

TB Congestion in the area is of real concern, further developments at Didcot and the Science Park will increase this. The plans do not take into account the North – South movements, which is a County highways issue.

AM Is issue consultants looking at. OCC needs to put more into infrastructure, it's the same at many locations.

CN One major point – the site is entirely within the Clifton Hampden parish not Culham!

AM Weren't aware of issue with name. It isn't a site name Hills picked. From day one, with the landowners and the County, the site has always been referred to as Culham. Beside Culhman Science park and Culham station.

CN Clifton Hampden has just been granted the power to establish its own Neighbourhood Plan; it would be useful to have a copy of the restoration proposal to see how that would link in.

LB Asked if Hills could have details of Clifton Hampden's Neighbourhood Plan proposals.

JR The Hanson site should have been completed by now. The proposed development is for 20 years or so - if there is a downturn in the market would the site be mothballed?

AM The Hanson company is a global business with a very diverse number of operation which allows them to stop and start operations depending on the market. Hills a very different, a family business and the nature of the investment is such that Hills can't close a unit on a temporary basis because of the revenue implications.

IM Raised the point of gravel deposit available on the other side of the railway and it's potential to be brought into the site like Hanson have done by going under the road.

AM There is gravel the other side of the railway, but there are very substantial engineering aspects to being able to bring that gravel into the proposed development, which would be financially prohibitive for the quality and quantity of gravel available.

CN When would documents be available and when have a public exhibition?

AM In a couple of months we would expect a number of reports to be near completed for the E.I.A which will then allow us to set up the public exhibition.

AM Said would attend individual Parish council meetings before the public exhibition.

JWS Asked if there were too many quarries in Oxfordshire

AM Explained different types of quarries, some of them are only sand quarries. There is only one site in the whole of Oxfordshire supplying Oxfordshire, at Witney. Other site in South Oxfordshire supplies its products directly into Berkshire.

IM Said if Hills got permission there would be economic gain for company and parishes looking for some share in this with the mitigation measures to reduce the effects on the local community.

AM Circulated copies of the Hills company magazine ‘In Touch’ and also the Mineral Products Association ‘MPA Today’ magazine.

Meeting closed.

Minutes of a meeting held in Appleford on Thames Village Hall on 12th November 2015 from 6.45pm to 7.30pm.

Present:-

Hills - Lucy Binnie , Peter Andrew and Andrew Liddle

Appleford Parish Council – Lucy Guinn, Sue Harris and Lewis Beadle

SODC Councillor Sue Lawson

Batchport - Giles Baxter and Ian Mason

Clifton Hampden Parish Council - Chris Neill and Jaqi Mason

Culham Parish Council - Andrew Steele

Long Wittenham Parish Council - Gordon Rodgers

Peter Andrew introduced the meeting by explaining that Hills were carrying out initial consultations on their current proposals to extract 2.5M tonnes of gravel over a period of 10 years from their site at Fullamoor Farm. He explained that, following similar meeting in 2014 Hills had reviewed their proposals and modified them to take on board both the comments they had received, and constraints imposed by the English Heritage protection of the Fullamoor Plantation Ancient Monument (SAM) and the indicated route lines for a new road bypassing Clifton Hampden and Burcot and under consideration by OCC due to the further developments of Didcot.

Information packs showing the proposals were handed round to attendees.

Lucy Binnie explained the proposals by reference to an aerial photograph showing the site outlined in red, and explained that the proposed route lines for the OCC new road were on the east and western sides of the red line area , and the SAM site had now been excluded from the proposals. She explained that technical work carried out by Hills indicated that there would be no significant impact for either the adjacent properties or the adjacent villages.

The proposal was to extract 2.5M tonnes (which was half the amount previously proposed) over 10 years with the minerals worked anti clockwise from the top left hand corner . The expectation of the Company was that the site would have an operational life of 10 years, extracting 250K tonnes a year. The area of the site of the proposed application is 104 (approx.) hectares, which is down from the former proposals when the site was over 160 hectares in area, and includes land not being quarried , but with ancillary functions such as soil storage etc.

Once the gravel has been extracted the site will revert to an agricultural use, or be restored to lakes to provide nature conservation/additional habitat facilities. This will ensure that the restoration is low key – part agriculture and part lake, with a new footpath created to run across the site, and recreational uses – probably fishing or sailing - on the lake. There is no planned connection between the site and the River Thames.

Hills are planning a Public Exhibition of their proposals at Abingdon Vale Cricket Club on 25th November , when the proposals will be on display and there will also be key members of their team in attendance.

Site Impacts

Traffic

The developers are modelling traffic movements of 10 per hour (on average) and expect traffic leaving the site to use the A415 to the east and west of the site, but they are prepared to enter into a lorry routeing agreement to prevent vehicles passing over any of the local bridges, and this will be monitored by the company through a GPS system, which is fitted in every company vehicle. The Traffic Impact Assessment is likely to show that traffic leaving the site will have minimal impact as it will then disperse.

Archaeology

There are no proposals for the SAM to be disturbed, although the Developers are working with English heritage to clarify the boundaries of the Scheduled Ancient Monument. Appleford PC commented that there was also a SAM in Appleford which could also limit the extent of any development. As part of the restoration proposals the company are looking at erecting an interpretative board to assist visitors in their understanding of the SAM.

Flooding

Calculations suggest that there will be no increase in the flood risk should the site proceed, and the site will contain its own settlement and silt management ponds.

Waste

There are no proposals to import any material (including waste materials) onto the site,or operate a waste service on the site.

Rights of Way

During excavation the developer proposes to divert the existing rights of way along the concrete path and then along the site boundary to Clifton Lock. Once completed there is a proposal to put in a new footpath with a quasi circular walk around the lake. On completion access to the site will become the access for the agricultural/recreational uses on the site.

Storage of Materials

Materials will be stored on the land presently protected as routes for the new bypass road.

To sum up the current proposals for the site, which will be called Fullamoor Quarry, are for a reduced area, with consequentially reduced visual impact which will be bunded, and with a low level, smaller plant than originally proposed.

Peter Andrew confirmed that Hills were aiming to submit the planning application to OCC early in 2016. In response to a question he confirmed that Hills would not be seeking to extend the site, should the protected road routes be removed. While he confirmed that Hills had developed their plans on the basis of a 10 year extraction rate at 250K tonnes per year , he was not able to give any cast iron assurance that the site would not be extended if circumstances required it to be, although the company did consider that it was highly unlikely that there would be enough viable material in the reserve to justify any extension of the extraction area.

The meeting was told that Hills are a family company – who are looking at a maximum period of 10 years disruption at the quarry, following which the land will be farmed. probably through a rental agreement with a local farmer. Hills observed that they "work in local communities for local people" and maintain their own responsibilities for maintenance of sites that they have worked.

When asked if it would be possible for the site to be extracted over a period of fewer than 10 years the meeting was advised that faster extraction and increased tonnage would necessitate more plant and therefore the company did not consider that a faster extraction rate would be economic.

Representatives repeated to the meeting that the company had estimated approximately 10 lorry movements an hour, with operating hours of 7am -6pm Monday to Friday, 7.00am -1.00pm on Saturday and no working Saturday afternoon, Sunday or Bank Holidays. They envisaged the material serving the local market, particularly small builders and builders' merchants. This means that they believe that their market is almost recession proof , and collapse of demand is not a realistic contingency. However, if there was a slowdown in demand there would be a consequential slow down in the rate of extraction and therefore the extraction period would need to be extended.

When questioned about noise and pollution the meeting were advised that the developer had arranged for a Noise Consultant to survey the background noise, and his report is expected to conclude that there will be no adverse impact on the nearest properties, but notwithstanding this conclusion, the company propose to erect a noise attenuation bund around the site. Vehicles on the site emit "white noise" – which is considered to be less penetrating, rather than "beeping" when reversing , and field conveyors transporting extracted material to the plant will be electrically operated and therefore silent.

The site will have low impact lighting, which will be fitted with sensors to detect light levels or motion.

As the meeting ended concern was expressed at the company's proposals to hold a public exhibition at the Abingdon Vale Cricket Club. It was the strong feeling of the Parish representatives present at the meeting that the exhibition should be held in one of the Village Halls of the four Councils present, and most appropriately Clifton Hampden Village Hall. Hills stated they were unable to move the location as they had already put adverts in the local papers and had printed and made plans for a leaflet drop locally advertising the consultation venue; they had been unable to find information on booking the local village halls or been able to find one available at a time convenient to them, hence the Abingdon location. They were also asked them to consider holding the consultation on a Saturday to allow more people to attend, which they said they couldn't do.

It was agreed that Hills would be sent contact details for the Clifton Hampden Village Hall as early as possible on 13th November.

Finally, Hills indicated that it was not their intention to present their plans individually to Parish Councils (contrary to their intentions expressed at a meeting with the 4 Parish Councils in 2014).

Peter Andrew
Group Director Hills Quarry Products
Wiltshire House
County Park Business Centre
Shrivenham Rd
Swindon SN1 2NR

19th November 2015

Dear Mr Andrews,

Fullamoor Quarry Community Consultation

Thank you for inviting the Parish Councils of Clifton Hampden & Burcot, Long Wittenham, Appleford and Culham (the 4PCs), which represent the parishes surrounding the proposed quarry, to a joint meeting with Hills last week.

Purpose of the meeting
The 4 PC's have have been working together to ensure the concerns of our communities about this development are clearly articulated and understood by your company. It took considerable effort on our part to ensure a representative from all four parishes could attend this meeting at short notice, and did so in the spirit of continued cooperation.

We believe these joint meetings have been an efficient and effective process for all parties as a first line of communication.

Previous Commitments by Hills
We last met eighteen months ago on 17th July 2014. At that meeting Hills committed to consult with each parish council at their parish council meeting and hold a public exhibition in the local community. This is recorded in the minutes by Lucy Binnie.

CN When would documents be available and when have a public exhibition?

AM In a couple of months we would expect a number of reports to be near completed for the E.I.A which will then allow us to set up the public exhibition.

AM Said would attend individual Parish council meetings before the public exhibition.

On various occasions since that meeting we have asked Hills if they were ready to meet the individual parish councils. The response has been there was nothing new to say at that time.

Current Consultation Plans
At last week's meeting you unveiled a new set of plans for the quarry and announced your intention to submit a planning application early in the New Year, most likely in January.

At the meeting you revealed you no longer intended to meet with the individual parish councils (despite being aware only representatives were attending this meeting); that you had arranged to hold a public exhibition outside the local community in a fortnight's time on a weekday, which could not be changed as advertisements had been placed and leaflets to the communities had been put out for distribution; and that your choice of location was because you were unable to find details for booking a local community hall in any of the four parishes.

Following the meeting, despite providing you with the booking details for Clifton Hampden Village Hall as agreed, your representative told the Chairman of Clifton Hampden & Burcot Parish Council that the choice of venue was because Hills were unable to “find a local hall to suit the time and date that we required”.

This suggests Hills are working to a timetable not shared with us, and as such appear more concerned with “ticking a box” with the public exhibition than engaging with our communities.

Since the meeting the households of Clifton Hampden & Burcot have been provided with an information leaflet about the Public Exhibition, but at the time of writing this letter, with less than a week to go till the Public Exhibition, no households in Culham, Long Wittenham and Appleford have received one. Furthermore, none of the households in Clifton Hampden received your comments form and freepost envelope with the leaflet should they be unable to attend.

Our response to your meeting

We would like you to reconsider your community consultation plans, and make some specific recommendations:

- As only representatives from each parish council could attend this meeting we ask you to meet with each individual parish council as previously agreed.

- We ask that you hold a further public exhibition, ideally in Clifton Hampden village hall and on a weekend day between now and the submission of your application

- That you articulate and implement your plans for community consultation in the coming months, (including the actions above) both before and after the submission of your planning application.

- That you give us a clearer indication when you plan to submit your application to Oxfordshire County Council.

While we have made clear our desire to have any planning proposal for a gravel pit rejected as inappropriate for this site, we have also been clear that, without prejudice to our first objective, we must work with Hills to mitigate the impacts of a gravel pit on our communities should it be approved.

A better outcome will be achieved by effective community consultation. We ask you to consider our recommendations and work with us.

Your sincerely,

on behalf of

Chris Neill
Chairman, Clifton Hampden & Burcot Parish Council

Steve Brown
Chairman, Long Wittenham Parish Council

Lucy Guinn
Chairwoman, Appleford Parish Council

April Jones
Chairman, Culham Parish Council

cc:
Mary Thompson, Oxfordshire County Council Environment and Planning
Lorraine Lindsey-Gale - County Councillor Clifton Hampden & Burcot and Culham
Lynda Atkins - County Councillor Long Wittenham
Richard Webber - County Councillor Appleford

APPENDIX 2

REVIEW OF ES CHAPTER 11 GEOLOGY & MINERAL RESOURCES

FULLAMOOR QUARRY.

ENVIRONMENTAL STATEMENT. LAND AND MINERAL MANAGEMENT (24TH FEB 2016). REVIEW OF CHAPTER 11, GEOLOGY AND MINERAL RESOURCES

1. INTRODUCTION

This note reviews the evidence presented in Chapter 11 of the Environmental Statement presented by Hills Quarry Products in support of their planning application to open a new sand and gravel quarry, called "Fullamoor Quarry", in the parish of Clifton Hampden.

Policy M4 of the submitted OWMLPCS notes in criterion a/ that, in allocating sites, consideration of the quantity and quality of the mineral will be taken into account.

2. OVERVIEW OF THE AVAILABLE MINERAL

The geological report on the mineral reserve for Fullamoor Quarry shows that it comprises approximately 70% sand and 30% gravel, the majority of which is fine grained (5 - 10mm). There is a small amount (6%) of medium gravel (11 - 20mm) and an insignificant proportion (0.5%) of coarse gravel (>20mm)[1]. These results were derived from borehole samples across the wider site area of 160ha using a flight auger in 2008.

Test pits were investigated in 2013, again across the wider site area, to take bulk samples to ensure no large sized aggregates had been pushed to one side during the flight auger sampling. The results are recorded in Appendix 11B, of which 13 are in the site area for this application.

The test pit results appear to exclude the results of 10 pits based on the numbered order of the pits - this should be queried and if found to be the case, the reasons why these results have been excluded should be provided to ensure they have no bearing on the assumed yields[2].

Analysis of the 13 test pit results alone in the area of the site does not materially change the results from the borehole samples and confirms there is an insignificant quantity of coarse gravel (1.5%). The results for the other mineral grades remains similar at 6% medium gravel, 20% fine gravel, 70% washed sand, 2.5% silt. For the benefit of this report the results from the 13 test pits have been used as these record the highest proportion of coarse gravel.

Table 1 shows the distribution and annual volume of mineral between the types of sand and gravel using the information from the test pits and the estimated volume of "processable" mineral. The results show the output will be primarily washed sand and fine gravel with very small tonnages of coarser aggregates.

Structural concrete normally contains one part cement to two parts fine mineral aggregate to four parts coarse mineral aggregate, though these proportions are often varied to achieve the strength and flexibility required in a particular setting. Aggregates, which comprise 75 percent of concrete by volume enhance the structural performance of concrete. Fine grade comprises particles up to 5mm in size (sand and fine gravel), while coarse grade concrete includes particles up to 20mm (fi-

[1] Paragraph 4.7, and from borehole results Appendix 11B

[2] Test pit no's 1,6,7,11,14,17,19,20,25,28

ne and medium gravels). For massive construction, aggregate particle size can exceed 38mm (coarse gravel).

Table 1. Projected annual output by type of material, tonnes[3]

Size of material	Volume Tpa
Washed concrete Sand (0-4mm) 70%	180,250
Fine Gravel (5-10mm) 20%	51,500
Medium Gravel (11-20mm) 6%	15,450
Coarse Gravel (20-40mm) 1.5%	3,862
Silt 2.5%	6,438
All materials	257,500

The lack of medium and coarse grained aggregate (20 - 40mm) available at this site would limit the range of concrete that can be produced. This would account for the relatively small volume of mineral used in the concrete plant (30,000 Tpa[4] or 12% of the annual resource).

The low volume of concrete output, together with the limited range of construction uses it can support does not warrant the special circumstances to justify the development of the concrete plant in the Green Belt.

Aside from the restriction on concrete production, this quarry does not provide the volume to support a full range of *raw* aggregate materials expected by the construction industry. Most quarries would offer a "one-stop shop" putting this quarry at a potential commercial disadvantage. Hill's might therefore seek at a future date to bring medium and coarse grade material to the site under permitted development rights (as they have done at Upton Park after planning permission was granted), either to be mixed with the sand to make concrete or to provide a full range of aggregate materials. This could lead to a significant increase in the number of vehicle movements to and from the site for two reasons:

- there would be a doubling of HGV movements associated with bringing these materials to site to combine with sand for concrete production (because 2 x 20T loads of coarse aggregate would be required to mix with every 1 x 20T load of sand assumed in the HGV movements)

- any off-site material brought in and processed to concrete generates an additional 60% in concrete vehicle movements off-site because of the different load capacity between vehicles[5].

This could lead to a very material increase in the number of HGV's movements on and off the site and exacerbate the traffic implications of the proposal if this were required. Any such development would conflict with the proposed policies in the submitted OMWLP to reduce the road miles that minerals are transported.

[3] Derived from total processable mineral over 10 years stated in paragraph 6.4

[4] Paragraph 4.2 Transport Assessment, Appendix G to the Planning Statement

[5] The transportation of 30,000 T of aggregate would generate 1,500 20T aggregate tipper lorries **or** 2,500 6m^3 concrete lorries (paragraph 6.2-6.3 Transport Assessment, Appendix G).

3. COMPARISON WITH OTHER SITES

3.1 Site yield per hectare

Table 2 shows a comparison of the mineral reserve with other large sites currently in operation in Oxfordshire, based on information supplied at the time of the most recent site planning application.

The comparison with existing quarries shows that aside from the last extension at Bridge Farm in Sutton Courtenay, the site has a considerably lower yield per hectare of mineral, with other existing sites yielding between 46% and 100% more volume per hectare.

Table 2. Comparison of Fullamoor with other existing Sand and Gravel quarries

Site	Reserve (T)	Working area (ha)	Yield (T / ha)
Fullamoor	**2,574,810**	**76.0**	**33,879**
Gill Mill Extension (2015)	5,018,000	73.7	68,087
Caversham Extension (2013)	1,863,000	33.5	55,612
Stonehenge (2009)	1,550,000	31.2	49,679
Bridge Farm (2015)	600,000	21.6	27,752

In addition to Fullamoor Quarry another proposed new site for sand and gravel working is under active assessment at New Barn Farm, Cholsey. The applicant (Grundons Ltd) applied to Oxfordshire County Council for a scoping opinion in November 2015 and subsequently held a public exhibition in March 2016 exhibiting details of their proposal.

Both Fullamoor Quarry and New Barn Farm are within the Thames and Lower Thames Valleys area from Oxford to Cholsey area of search proposed in policy M3 of the submitted OMWLPCS and therefore a comparison is merited.

New Barn Farm would produce a significantly higher mineral yield per hectare (273%) than the Fullamoor quarry. The New Barn Farm site nomination form lodged with OCC in 2009 identified this site to have a similar ratio of sand to gravel to the proposed quarry at Fullamoor, based on a single BGS borehole. Subsequently Grundons have confirmed the site is expected to yield 40% gravel.

Table 3. Comparison of Fullamoor Quarry with New Barn Farm Quarry proposal

Site	Reserve (T)	Working area (ha)	Yield (T / ha)
Fullamoor	2,574,810	76.0	33,879
New Barn Farm	2,500,000	27.0	92,593

3.2 Mineral profile

A limited comparison of Fullamoor Quarry to two large existing sites at Gill Mill and Caversham and the prospective site at New Barn Farm in South Oxfordshire, on the characteristics of the available mineral profile is made in Table 4. Gill Mill and Caversham were the only two sites with Environmental Statements available on the OCC planning portal with this detail of information.

The Fullamoor Quarry shows a distinct difference vis a vis these three quarries, being significantly higher in sand and lower in gravel. With a large number of identified sites within Oxfordshire it is highly likely alternative sites could be identified with a more beneficial mineral profile at source than the Fullamoor quarry.

Table 4. Comparison of available mineral type by Quarry[6]

	Fullamoor	Gill Mill	Caversham	New Barn Farm
Silt%	**2.5%**	5%	4%	2.5%
Washed concrete Sand (0-4mm) 72%	**70.0%**	40%	46%	58%
Gravel %	**27.5%**	55%	50%	39.5%
Fine (5-10mm)	**20.5%**	21%	n/a	31.0%
Medium (11-20mm)	**6.0%**	17%	n/a	7.5%
Coarse (20-40mm)	**1.0%**	16%	n/a	1.0%

4 CONCLUSION

There is an estimated reserve of around 2.5mT of sand and gravel at Fullamoor Quarry. The majority of the mineral is sand (70%).

The mineral yield per hectare of land is significantly lower in comparison to other sand and gravel sites currently in production within the county.

Overall the mineral profile does not appear to be typical of a sharp sand and gravel quarry, being high in sand and having little medium, and an insignificant quantity of coarse, grained gravel.

There is an insufficient volume of medium to coarse gravel to support a wide range of concretes supplied from the site and concrete production is forecast at only 12% of sales. This does not justify special circumstances for a concrete plant in the Green Belt.

If a concrete plant was constructed it is likely the applicant will apply to bring aggregate materials to site in order to supply a wider range of concrete manufacture. This would have a significant impact on the associated transport movements with this site.

[6] New Barn Farm information provided by Grundons following public exhibition

APPENDIX 3

REVIEW OF ES CHAPTER 13 ALTERNATIVES

FULLAMOOR QUARRY. ENVIRONMENTAL STATEMENT. LAND AND MINERAL MANAGEMENT (24TH FEBRUARY 2016). REVIEW OF CHAPTER 13, ALTERNATIVE SITES

1.INTRODUCTION

This document presents a review of the assessment of Alternative Sites undertaken by Land and Mineral Management on behalf of Hills Quarry Products Ltd, and presented as Chapter 13 of the Environmental Statement prepared in support of the application for a new quarry ('Fullamoor Quarry') at Clifton Hampden.

In preparing this review, consideration has been given to the relevant legislation and policy.

1. Background

The chapter is supposed to present a review of alternative sites for sand and gravel extraction in Oxfordshire, as identified by Oxfordshire County Council in the Oxfordshire Minerals and Waste Development Framework: List of Possible Mineral Sites (January 2009). However no alternative sites were presented for comparison in the chapter.

Instead this chapter has presented the results of the applicant's search to establish a sand and gravel quarry in Oxfordshire. This does not meet the requirements of the Environmental Statement where the comparsion of alternative sites in planning terms is not concerned with a particular applicant's commercial interests, but with whether the site that is being proposed is the most environmentally acceptable option.

National land use development policies set out in the National Planning Policy Framework (NPPF) highlight the need for new development to be planned to avoid increased vulnerability to the range of impact arising from climate change (paragraph 99). Paragraph 101 refers specifically to the risks posed by flooding from changes in climate, and requires a strategic flood risk assessment using the sequential test in order to steer new development to areas with the lowest probability of flooding (that is Flood Zone 1). The planning practice guidance goes further and states in paragraph 5 that *only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 be considered*.

National land use development policies set out in the National Planning Policy Framework (NPPF), seek to safeguard scarce natural resources in the long-term national interest. Consequently, policies for development in the countryside give protection to the best and most versatile agricultural land, defined as Grades 1,2 and 3a in the Agricultural Land Classification.

Paragraph 112 of the NPPF advises local planning authorities to take into account the economic and other benefits of the best and most versatile land, and where significant

development of agricultural land is necessary, local planning authorities should seek to use poorer quality land in preference to higher quality land.

1.2 Assessment methodology

The chapter states Hills have made their own site searches in Oxfordshire as well as considering the potential sites identified by the county council. It states (paragraph 2.2) that *where potential sites were identified Hills then contacted the landowners* but they do not state how many, or which, sites they explored, or the reasons for not pursuing them. Furthermore, they do not provide any evidence of their contact with other landowners.

In identifying Fullamoor as a site for applying for planning, they have not presented any evidence why this site was considered to be the most suitable of the ones they considered, other than stating that *small sites… within a very localised area are rarely viable;* and having *secured the acquisition* [the option to acquire the land at Fullamoor] *no other suitable sites, subject to mitigation measures such as landscaping and site design, where available to come into operation when Sutton Courtenay sand and gravel pit is coming to a close".*

The chapter appears to be a statement of Hill's commercial interests and is not a justification that having examined other alternative sites, these have been found to be less suitable for a new sand and gravel resource in Oxfordshire.

1.3 Required comparison on Flooding

Elsewhere in the Environmental statement Hills have made an attempt to assess alternative sites using the sequential test for flooding. The information used in this assessment is presented in Appendix 3A-D: Sequential Test to Chapter 3 on Flooding.

In this appendix "Table 3.1 Flood Zone Classification" presents flood zone data for this site (derived from Amec Wheeler's models) for comparing Fullamoor Quarry with alternative sites on the extent of land in each category of flood plain (flood zones 1-3). However, the first requirement of any robust comparison between sites is to use the same set of data for comparing each site. It is not possible therefore to use Amec's assessment of the flood zones for this site unless Amec are able to provide the same data for all the alternative sites. This approach to the assessment is therefore flawed.

The only meaningful way to compare sites on flooding is to use the data on the extent of each flood zones for each site provided by the Environment Agency.

Before comparing the extent of land in the floodplain the assessment proposes to only compare sites that have an identified reserve that is no more than 25% bigger or 25% smaller than the proposed site, on the basis only these sites could deliver a comparable yield.

This is a nonsense. The proposed site was identified to have an estimated reserve of 4mT in the County Councils list of sites in 2009; subsequently Hills Scoping Opinion 2014 confirmed the identified reserve to be 4.75mT; following further review of the site Hills decided to apply for permission to work only 2.5mT of the reserve. This sequence of events demonstrates the reserves in the County Council list may be understated; that any site with a proven reserve of 2.5mT can be applied to be worked to the same yield; and there is nothing to prevent sites with larger reserves being worked in part initially.

Furthermore, sites of smaller yields are economically productive to develop, in contradiction to the statement that smaller sites are rarely viable. The recent extension applied for and granted at Caversham quarry by Lafarge was for 1.86mT; Hansons have put in a scoping opinion for a site extension of 600,000 T at Sutton Courtenay; and London Rock Supplies Ltd have put in a scoping opinion for a new sand and gravel quarry in Wallingford at White Cross Farm for an assessed workable reserve of 500,000T.

The methodology used by Land and Mineral Management to apply the sequential test to alternative sites identified by the County Council is therefore fundamentally flawed and unacceptable. The methodology does not use comparable data for making the assessment between the sites; and uses a methodology other than flood zone capacity to exclude sites from being scrutinised by the sequential test.

1.3 Comparison on Best and Most Versatile Agricultural Land

The comparison of alternative sites takes no account of the requirement that where significant development of agricultural land is necessary, local planning authorities should seek development which uses use poorer quality land in preference to higher quality land.

We would expect to see a comparison of alternative sites with the land at Fullamoor on the quality of agricultural land. As it is not practicable to have a detailed assessment of the quality of agricultural land using soil samples for each site, this assessment should be based on the Regional Agricultural Land Classification Maps from Natural England together with information for local agro-climatic factors using the Meteorological Office's standard 5km grid point data set.

1.4 Comparison on other criteria

Not withstanding comparisons on flooding and best and most versatile agricultural land, the comparison of alternative sites may identify other sites that although more suited on these two grounds, may have other mitigating factors that might be considered and given weight in assessing an alternative sites suitability. For example the distance by road from markets of growth using the road network; passage through settlements before dispersing on to the road network; detrimental impacts to landscape character and visual intrusion; restoration potential; yield per hectare of land; grade of mineral. Further assessment may be required and evidenced in any comparison with other sites, to order to demonstrate if

alternative sites are less or more suitable on these criteria such that these might mitigate the impacts of use of the flood plain and agricultural land.

3. CONCLUSIONS

The presentation of Alternative Sites is unacceptable and does not undertake the work required to make a proper comparison of this site with other reasonable alternatives identified by Oxfordshire County Council. The site has not conducted any assessment of alternatives on the extent of the floodplain or on the use of best and most versatile agricultural land as required by the NPPF. Had this work been done it may have identified alternative sites for consideration which may have merited further comparison on other mitigating factors.

APPENDIX 4

LANDSCAPE AND VISUAL REPORT TO REVIEW THE APPLICANT'S LVIA

Landscape and Visual Report to Review the LVIA Supporting the Planning Application for a New Quarry at Fullamoor Farm

For

Bachport

Prepared by:

Prepared by Anthony Stiff

Checked by: Carolyn Place

Issued:18 May 2016

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Contents

1 Qualifications and Experience

1.1 My name is Anthony Stiff. I hold a BSc Special Honours Degree in Plant and Animal Biology and an MA degree in Landscape Architecture. I am a Chartered Member of the Landscape Institute. I established Anthony Stiff Associates in 2003 and have a total of over 30 years in both local authority and private practice.

1.2 I have been carrying our landscape assessments nationwide over a period of over 25 years. I have experience of dealing with many scales of projects and in many sectors including minerals such as a sand and gravels quarry in Oxfordshire and hard rock quarries in the Peak District and Shetland.

1.3 I am very familiar with this part of Oxfordshire having lived and practiced within this area since 1988.

2 Introduction

2.1 Anthony Stiff Associates was instructed by Bachport in January 2016 to act on their behalf with respect to the application made in April 2016 in order to review the LVIA report that has been submitted by the applicant and to comment on its findings in the light of my own conclusions regarding the landscape and visual impacts that will result from the proposed Quarry at Fullamoor Farm.

2.2 The Landscape and Visual Impact Assessment (LVIA) process is to assess the impact of a development proposal on two aspects related to landscape and the public's enjoyment of it. I will be looking at both of these aspects; firstly the landscape setting itself and second the visual impact of the proposed development on the surrounding areas from which views are possible.

2.3 The application was made in April 2016 and this response has been prepared during the consultation period.

2.4 I have familiarised myself with the relevant documents submitted by the applicant, in particular the LVIA and the Heritage Assessment

2.5 The methodologies used in landscape and visual impact assessments (LVIAs) can vary between practitioners, even when they may both be in compliance with the national guidelines and good practice, in particular the Landscape Institute Guidance for Landscape and Visual Impact Assessment 3rd Edition 2013 (GLVIA). I have followed as far as possible the methodology and definitions used in the applicant's LVIA document. I consider this to be broadly compliant with accepted methodologies for LVIA as set out in 'Guidelines for Landscape and Visual Impact Assessment'. Where my views or interpretation of the guidelines differ from the applicant's report I have pointed this out. Also, I am not in agreement with all of the approaches taken in the applicant's

assessment process including the judgements made on sensitivity, magnitude and significance of impacts. For this reason I have come to some differing conclusions on the likely landscape and visual impacts and their significance.

2.6 My report is based on a combination of desk based research and field survey work carried out in 2014 and recently in March 2016. I have had the opportunity to assess the landscape and visual impacts during the summer and winter months and I am therefore able to comment in both scenarios.

3 Baseline Landscape

Settlements

3.1 The application site lies less than 500m to the immediate north of the villages of Appleford and Long Wittenham, with the village of Clifton Hampden being located at the north eastern corner of the application site, about 200m from the application site boundary. Within a 5km radius of the application site lie the settlements of Sutton Courtenay, Culham, Milton, Dorchester, Burcot, Radley, Didcot and Abingdon along with interspersed residential developments throughout the region. The A415 Abingdon Road runs along the northern border of the application site.

3.2 Further afield Oxford is located 8km to the north, Wallingford 8km to the south east and Wantage is 16km to the south west.

3.3 The landscape within the study area is largely rural and sparsely populated with the exception of the settlements discussed above.

Topography

3.4 The application site topography is relatively flat and lies between 48-58m Above Ordnance Datum including the access road. The immediate vicinity of the proposed extraction site is also relatively flat, which provides open views to the site from some locations. However, the land surrounding the site to the east gently undulates e.g. the village of Clifton Hampden is located in an area where the land lies between 50-59m AOD. The A415 Abingdon Road is located at 59m AOD. However the land directly to the north of Abingdon Road is located between 52-58m AOD. Therefore the Abingdon Road acts as a visual barrier and restricts views from the road to the application site. Properties south of the road however will have views of the quarry. The River Thames acts as the southern boundary to the application site. This is located at 49m AOD. The land at the other side of the River Thames is relatively flat but with gentle undulations and the villages of Appleford and Long Wittenham lie at 50m AOD (Landscape Designations and Rights of Way (Figure 1)).

3.5 Within a 5 km radius of the site the land tends to gently undulate between 50-60m AOD. Exceptions to this are at Little Wittenham SSSI where Round Hill is located at 121mAOD and provides the highest viewpoint of the local area and Nuneham Park to the north of the application site undulates between 55-100m AOD.

3.6 The topography is a key element in assessing the site's impact on landscape character and visual amenity. Combined with existing vegetation and tree screens it provides enclosure, defines views and can be seen to be influential in screening many receptors

from any views.

Land Use

3.7 The application site comprises agricultural land. The land surrounding the site is generally farmed or is residential. However, the application site and its immediate vicinity landscape is highly used by recreational users. The Thames Path National Trail is a popular route of national importance which follows the River Thames from its source in the Cotswold Hills to the sea. Similarly the River Thames is enjoyed by boat users and anglers. Located immediately to the north of the site just off Abingdon Road is Culham Adventure Park – High Ropes Oxford. Also along this road is Culham Science and Engineering Centre, which is a powerhouse of high technology innovation and enterprise. Culham Railway station is located close to this providing a vital route for commuters both in and out of the area. Bridge House Caravan Park is located adjacent to the River Thames on the opposite side of the river to the south of the application site.

3.8 This landscape is dominated by the low-lying floodplain landscapes of the River Thames. Major routes include mainline rail, canals, a network of roads including the M40 and M4 and The Ridgeway and Thames Path National Trails.

Public Rights of Way

3.9 There is an extensive local network of public rights of way. The Thames National Trial acts as the southern boundary to the application site. A Public Right of Way (171/15/20) runs through the centre of the application site. A further footpath (106/2/10) runs parallel with the Thames Path to the south of the site.

Other Features

3.10 The A415 Abingdon Road runs adjacent to northern boundary of the application site. The Great Western main line railway is about 400 metres from the western site boundary.

3.11 The 3 remaining cooling towers of Didcot Power Station lie 2km south west of the application site. However these are due to be demolished in 2017. The remaining part of the turbine hall is also due to be demolished.

3.12 The Fullamoor Plantation lies just to the west of the site and is within a designated Schedule Monument SM. It is designated for its interest as a Bronze Age settlement with cemetery. There is also a SM which is an Iron-Age settlement site just to the west, on the other side of the railway line. There is further SM to the immediate south on the other side of the river which is another Bronze Age settlement site and barrow cemetery 1.4km to the south east and south lies the North Wessex Downs AONB. The North Wessex Downs is a unique and spectacular landscape that includes tranquil open

downland, ancient woodland and chalk streams in the centre of southern England.

3.13 The site also lies within an area designated as Green Belt. The Green Belt serves five purposes, as detailed in paragraph 80 of the NPPF:

- to check the unrestricted sprawl of large built-up areas;
- to prevent neighbouring towns merging into one another;
- to assist in safeguarding the countryside from encroachment;
- to preserve the setting and special character of historic towns; and
- to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

Landscape Character

National Landscape Character

3.14 The Natural England Landscape Character Area that covers the study area is number 108 Upper Thames Clay Vales. The key characteristics are paraphrased within the Applicant's LVIA so I have not repeated them here. I have instead focussed on the Regional Character and Local Character descriptions that are available including as Supplementary Planning Guidance from South Oxfordshire District Council in the form of their Landscape Character Assessment.

Regional Landscape Character

3.15 This is described within the Oxfordshire Wildlife and Landscape Study (OWLS). Within the OWLS Regional Character Area 'Vale of the White Horse', the site coincides with three landscape types – River Meadowlands LT that occupy the lower third of the site and Terrace Farmland LT that occupies the slightly higher terrace of land and the Vale Farmland LT that include the proposed site access on its northern boundary. The Lowland Village Landscape Type lies to the south of the Thames beyond the narrow strip of River Terrace Lowlands.

3.16 Within the character description below I have bolded the text that I consider to be of particular relevance to the quarry proposal. My summary of 'Likely Impacts' is included after each section.

10 River Meadowlands LT

3.17 The key characteristics of the No. 10 River Meadowlands LT, which is located to the

south of the site, adjacent to the River Thames, are defined by OWLS as follows:

- ***Flat, low-lying topography*** *with seasonally flooded alluvial floodplains.*
- *Meandering river channels.*
- *Grazing meadows and small fields of permanent pasture.* (Although these are large fields in arable use within the site)
- ***Riparian character with a strong pattern of riverside willows and tree-lined ditches****.*
- ***Sparsely settled with a few roads."***

3.18 ***It also has a pastoral character with meadows, wet and semi-improved pasture and tree cover is a notable element in this landscape type, with tree-lined corridors dominated by willows, often pollarded, being characteristic throughout the landscape. Small deciduous plantations, frequently dominated by poplar, and small blocks of wet and semi-natural woodland also add to the tree cover along the river valleys.***

Local Landscape Area: Lower River Thames (WH/1) (This is a sub-character area within the River Meadowlands landscape type)

3.19 Where the River Meadowlands LT lies within the Vale of White Horse RCA, it is defined as Lower River Thames (WH/1) and its specific description by OWLS is as follows:

3.20 *"The river corridor is mainly characterised by small to medium-sized semi-improved grass fields and some arable farming, particularly around Radley. Hawthorn hedges are not a conspicuous feature, except in some of the less built-up areas. They are overgrown and gappy and, in places, replaced by fences. Gardens, and some parklands, come down to the river edge and are particularly noticeable adjacent to villages and other built-up areas. There is a continuous tree corridor that borders the river, consisting mainly of willows, poplars, alder and sycamore. There are also some pollarded willows bordering the river and ditches and, along the river,* ***there are a few small mixed poplar and conifer plantations and ash and sycamore woods****. More ornamental and exotic species such as weeping willows and conifers are associated with suburban gardens."*

3.21 Additionally the the Bioscore/bioband descriptions provide further detail:

3.22 *This length of the River Thames, between Oxford and Goring,* ***supports a relatively wide range of locally important habitats including deciduous woodlands, plantations, semi-improved grassland, species-poor hedges with trees and trees bordering the river****. There are also a number of neutral grassland and wet woodland sites adjacent to the river, as well as parts of the river being fringed with species-rich*

marginal vegetation.

Forces for Change

3.23 *Agricultural intensification has led to the drainage and conversion of pasture to arable, as well as to the poor maintenance and loss of field boundaries. As a result, many hedges are gappy and sometimes replaced by fences.*

3.24 *There is some intrusion from urban fringe development at the edge of main settlements. Major roads, with their associated roundabouts and service stations,* ***railway lines and overhead power lines intrude upon the tranquil and pastoral character of the landscape type***

Landscape Strategy

3.25 ***Conserve and enhance the tranquil, small-scale, intimate pastoral character and visual unity of the river corridors****.*

Guidelines

3.26 ***• Conserve the surviving areas of permanent pasture and promote arable reversion to grassland particularly on land adjacent to rivers and other watercourses****.*

• Strengthen the field pattern by planting up gappy hedges using locally characteristic species such as hawthorn, and hedgerow trees such as oak and ash*.*

• Promote environmentally-sensitive maintenance of hedgerows, including coppicing and layering when necessary, to maintain a height and width appropriate to the landscape type.

• Enhance and strengthen the character of tree-lined rivers and other watercourses *by planting willows and alders and, where appropriate, pollarding willows.*

• Promote small-scale planting of deciduous woodland blocks *using locally characteristic species such as willows and alders.*

• Minimise the visual impact of intrusive land uses at the fringes of towns with the judicious planting of appropriate tree and shrub species characteristic of the landscape type. This will help to screen the development and integrate it more successfully with its surrounding countryside

• Maintain high standards of restoration at gravel pits to accommodate a range of after-uses that integrate successfully with the character of the surrounding

landscape.

Biodiversity Guidelines

3.27 • ***Conserve and enhance the tranquil, small-scale, intimate pastoral character and visual unity of the river corridors through safeguarding existing grassland and the promotion of arable reversion to grassland.***

Likely Impacts:

3.28 Loss of deciduous plantation/screen belts of trees opening up the river corridor and eroding the riparian landscape to views of extensive quarrying activities and plant. This would represent a continuation of the perception of a landscape dominated by mineral workings by users of the Thames Path who can experience views of the Sutton Courtenay quarry to the south west of the site. There would be a significant loss within the landscape of visual unity and amenity value for a medium to long term time scale.

3.29 There are also cultural and perceptual qualities that would be permanently lost or significantly devalued including the literary reference to Three Men in a Boat by Jerome K. Jerome. The journey from Kingston upon Thames to Oxford passes along the stretch of river lying closest to the site. The Barley Mow pub (Grade II listed) which lies to the south of the bridge at Clifton Hampden, at 500m to the east of the site and in the parish of Long Wittenham, is mentioned in this book. Nuneham Courtenay has also been the subject of art and literature, with the house and landscape being portrayed in poetry "The Deserted Village" by Oliver Goldsmith, published in 1770 and in a very early painting by Turner View of Nuneham Courtenay from the Thames 1787.

15 Terrace Farmland LT

3.30 *A flat open, intensively farmed landscape overlying river gravel terraces*

Key characteristics

- *Broad, flat or low-lying gravel terraces.*
- *A large-scale, regularly-shaped field pattern of predominantly arable land.*
- *Localised tree-lined ditches.*
- *Nucleated villages.*

3.31 *Extracts :* ***Woodlands are uncommon and limited to characteristic clumps of trees scattered throughout the landscape type. A few small plantations, mainly of***

poplar and crack willow, add to the woodland cover.

Local Landscape Area: I. Culham (WH/15)

Landscape character

3.32 ***The area is dominated by medium to large-sized arable fields. Field boundaries are almost non-existent, although roadside hawthorn hedges have remained intact. The most prominent feature in the area is the linear strips of crack willows and poplars bordering watercourses. There are also occasional very small deciduous plantations.***

Biodiversity

3.33 *Bioscore/bioband:*

The only locally important habitats are deciduous plantations and tree-lined species-poor watercourses.

Biodiversity Strategy

3.34 ***Ensure that all surviving priority habitats are safeguarded, in favourable condition and management, and enhanced to satisfy the actions and targets identified within the relevant habitat and species action plans. Safeguard, maintain and enhance all locally important habitats in a way that is appropriate to the landscape character of the area****. Promote agri-environment schemes which will benefit biodiversity in general and protected species and farmland birds in particular.*

Guidelines include:

3.35 ***Species-rich hedgerows with trees are distributed throughout different parts of the landscape type. Priority should be given to safeguarding, maintaining and expanding this resource, particularly in those local character areas where they remain a significant feature.***

3.36 ***Tree-lined watercourses are a feature throughout the landscape type. They should be safeguarded and enhanced by planting species such as ash and willows, pollarding willows where appropriate, and establishing buffer strips/field margins to potentially benefit small mammals, invertebrates and birds.***

3.37 *Opportunities for the establishment of other locally important habitats, such as semi-improved grassland and small deciduous woodlands, should be promoted in a way to strengthen wildlife corridors and enhance the local landscape character.*

Key Recommendation

3.38 ***Strengthen and enhance pattern of hedgerows, hedgerow trees and tree-lined***

watercourse.

Likely Impacts:

3.39 The loss of key features of the landscape would result from the quarry activities, most notably the loss of the strong structure of hedgerows and tree screens on the south boundary of this area. There would be a significant erosion of the rural and tranquil qualities of this landscape and the spoiling of the views towards the AONB (my Viewpoint 9 – Appendix A) and Wittenham Clumps. In 1912 the War Artist Paul Nash (1889-1946) first painted Wittenham Clumps and started a long personal fascination with this landscape. This subject is also very popular with contemporary artists.

3.40 There would in addition be impacts on the setting to Clifton Hampden and other properties that currently have and enjoy views across this rural and unspoiled landscape. Fullamoor Farmhouse and the 4 properties in the converted barns to the east of it all have views. These and other properties near to Clifton Hampden are dealt with in the visual Impacts section.

3.41 The applicant's Archaeology and Cultural Heritage report (Chapter 4 Paras 5.84 to 5.86 and 6.43 to 6.46 of the Environmental Statement) makes a special point of examining the impacts on the landscape setting to Fullamoor Farmhouse: [my bolding]

> *'**It is clear from the historic maps that the original farmhouse was aligned to take in the aspect to the south**, with two substantial ranges of barns built to the north to form a horseshoe arrangement around a central farmyard with access from the main road to the north. **The farmhouse would have looked out over its landholding to the south, which included the land now taken up by the proposed site.***
>
> *Today the property of Fullamoor Farm comprises the farmhouse set within landscaped gardens; the original barns and farmyard to the north have been lost. As a landholding it is well screened with vegetation and trees to the north and east/south-east. **The southern boundary is more open affording views to the south.** Indeed, from within the site there are views across to Fullamoor Farm which is visible on the slightly higher ground to the north, adjacent as it now is to a large range of 20th century barns, now converted to residential use. On the basis of the historical intention of the intervisibility of Fullamoor Farm with its landholding to the south, **the situation of the site within that associated landscape and the survival of a visual link between the northern part of the site and the farm it is considered that the significance of Fullamoor Farm, as informed by its setting may be affected to some degree by the proposals and it is included in the***

following assessment:

Fullamoor Farm - non-designated heritage asset

The northern edge of the site is c.190m [it slightly closer in reality at 155m away] *from the historic farmhouse at Fullamoor Farm. This undesignated asset does drive* [derive?] *some of its significance from its setting.* ***This setting includes the long views to and from the farmland to the south (the area of the site) as this formed part of the farm's original landholding when it was established.***

During the operational phase a topsoil bund will be constructed in the northwestern corner of the site. This bund, in combination with the retained mature hedgerow along the northern boundary of the site and the retained woodland of Grasshill Covert will provide a visual screen of the workings from the farmhouse. Whilst the view will be changed, the storage bund and vegetation screening will soften and minimise the visibility of the works and the machinery, they will also deliver noise mitigation.

Overall, effect of the scheme during operation and active restoration is ***Low*** *adverse resulting in a* ***Minor*** *temporary adverse effect on the significance of the historic farmhouse at Fullamoor Farm.*

Mitigation and residual effect

This adverse effect would resolve to ***Negligible/Neutral*** *at the end of the restoration phase of the scheme as designed and no additional mitigation is required.'*

3.42 This assessment concludes that the impact during the operational life of the quarry will be Minor Adverse. This does not seem to take into account the change to the setting of the property in terms of the significant loss of the mature trees of Sandy Bury and the other hedgerows in the view. These are unlikely to be replaced to the same degree maturity in the lifetime of the current property owners. Also the introduction of a 10m high artificial bund and other lower bunds immediately south of the property as well as unnaturally shaped silt ponds would be totally uncharacteristic elements within the setting as will be the views towards the workings. I query the conclusion that the impact would be restricted to a Minor level. I would question what level of impact there would need to be to result in a moderate or major impact if the proposed extensive bunding dominating the view does not represent such an effect.

17 Vale Farmland

Overview

3.43 This is a vale landscape defined by regularly shaped, arable fields enclosed by hawthorn hedges and hedgerow trees. A nucleated settlement pattern is also a characteristic feature of this landscape type.

Key characteristics

- *A gently rolling landscape associated with clay soils.*
- *Medium to large regularly shaped arable fields and more localised smaller grass fields.*
- *A well defined hedgerow pattern with characteristic hedgerow trees.*
- *Occasional ditches and minor streams bordered by crack willows and ash*
- *A nucleated pattern of small, compact villages.*
- *This landscape is dominated by intensive arable farming, although there is some semi-improved grassland around villages and adjacent to watercourses. Woodland is not a prominent feature.*
- *The settlement pattern is characterised by a nucleated pattern of well-defined, small villages and sparsely scattered farms.*

Biodiversity

3.44 *An intensively farmed landscape dominated by arable fields enclosed by species-poor hedges and trees. There are few woodlands, but trees bordering watercourses are a characteristic feature. There is only a limited range of priority habitats including calcareous and marshy grassland and species-rich hedgerows with trees.*

3.45 *Locally important habitats include deciduous woodland, semi-improved grassland and tree-lined watercourses. There are few priority habitats, except some calcareous and neutral marshy grassland, fen and species-rich hedgerows with trees.*

Local Landscape Area: I. Clifton Hampden (WH/14)
Landscape Character

3.46 *This is a very intensively managed landscape characterised by large arable fields. The extensive grounds of Culham laboratory dominate the western part of the area. Hawthorn and dead elm hedges are often gappy and in poor condition.* ***Scattered hedgerow trees and linear treebelts along ditches provide some structure to the landscape. There are a few small deciduous plantations scattered throughout.***

Biodiversity

3.47 *Bioscore/Bioband:*

Locally important habitats include wet woodland, plantations, species-poor hedgerows with trees, and tree-lined watercourses*. There are no recorded priority habitats*

Likely Impacts:

3.48 This landscape is elevated compared to the location of the site and some views are possible towards the proposed quarry and the associated plant. The local landscape is characterised by intensive agriculture and also by intrusive features such as the busy Abingdon Road and by the Culham Science Centre. There is a direct impact on this landscape due to the location of the quarry access road that leads from the A415 into the site and bunding either side of the access road.

8 Lowland Village Farmland

Overview

3.49 *A variable, often large-scale farmed landscape closely associated with village settlements.*

Key characteristics

- *A varied gently rolling and almost flat topography*
- *Medium to large-sized arable and hedged fields.*
- *Thinly scattered hedgerow trees, which are mostly ash.*
- *Ash, willow and poplars fringing ditches and streams.*
- *Prominent village settlements scattered throughout the area.*

3.50 *To the north and south of Didcot the geology is mainly associated with the Gault Clay. However, in this area, a band of siltstones and sandy limestones of the Upper Greensand forms the transition between the low-lying Vale and the higher Downs, resulting in a more rolling landform.*

3.51 *This landscape type is dominated by arable farming with some semi-improved, neutral and wet grassland around villages and bordering ditches and small streams. Small pasture fields are particularly characteristic of the undulating landscape around Toot Baldon, Garsington and to the south of Wheatley. A key landscape feature is the dense corridors of ash, willows that are often pollarded, and poplar that border watercourses.*

3.52 *Woodland is generally not a characteristic feature of this landscape type, except for occasional small deciduous and mixed plantations and large blocks of ancient woodland on the hilltops and slopes to the south of Ducklington. There are also small tree clumps throughout the area, particularly around villages, farmhouses and in some fields. They consist mainly of ash, willow and poplar. Poplar shelterbelts occur around Cote,*

Begbroke and Harwell.

3.53 ***Parts of the landscape type are associated with mineral extraction**, and this has resulted in a number of flooded gravel pits which are particularly important for the wintering wildfowl and other bird species they attract.*

Local Landscape Area: O. Sutton Courtenay (WH/20)

Landscape Character

3.54 ***The area is characterised by medium to large-sized arable and grass fields. To the east of the village and north of Didcot Power Station, the landscape is dominated by an extensive area of mineral extraction and landfill sites,** which are at varying stages of restoration. Fields are generally enclosed by a prominent network of tall, thick hawthorn and blackthorn hedges with a dense pattern of ash, willow, poplar, dead elm and oak trees, particularly bordering roads and country lanes. Roadside hedges are generally intact, but many internal field hedges are fragmented and gappy, particularly where they enclose arable land. **There is also a significant number of tree-lined ditches with species such as crack willow, ash, poplar** and dead elm. Small deciduous plantations and trees within villages are also characteristic.*

Biodiversity

3.55 Bioscore/bioband: 63/M

***There is a range of locally important habitats including plantations, semi-improved grassland, species-poor hedges with trees, scrub and tree-lined watercourses**. There are a few species-rich hedges with trees.*

Likely Impacts

3.56 The landscape within this area on the south of the River Thames is characterised by a terrace of elevated land that provides views across the valley and towards the site. (VPs 18 and 19). To the west the existing mineral workings around Sutton Courtenay dominate the landscape (VPs 14 and 15) and the cumulative impact (for example from footpath 106/08/10) of a further extensive area of quarry to the north of the Thames between Appleford and Long Wittenham will extend the perception of a landscape dominated by this land use.

South Oxfordshire Landscape Assessment –July 2003 – Atlantic Consultants (See Figure 4) (SODC Supplementary Planning Guidance)

3.57 Carried out in 2003 this document remains as the guidance relied upon by SODC with respect to advice on landscape character. This study divides the site and its immediate vicinity into just 2 character areas (I have referred to the LVIA figure showing Landscape Character Areas). These are the Nuneham Courtney Ridge and the River Thames

Corridor.

3.58 I have again bolded relevant text.

Nuneham Courtney Ridge

3.59 Character in the Nuneham Courtney Ridge is dominated by the extensively wooded parkland and estate landscapes of Nuneham Courtney, which occupy the core of the area. However, landform is also a unifying element, with the distinctive rolling plateau rising prominently above the surrounding river valleys. The main variations in landscape character have been identified as:

- **the low-lying floodplain landscapes of the River Thames** and Baldon Brook;
- distinctive parkland and estate landscapes at Nuneham Courtney;
- the institutional complex of The Culham Laboratory;
- and the distinctive rolling hills and valleys which typify the rest of the area.

3.60 This character area is subdivided, the site being in the **semi-enclosed farmed hills and valleys area**;

Key characteristics:

- ***a strong structure of hedgerows and trees which provide clearer definition of field pattern;***
- *occurs mostly in association with settlements (eg. Marsh Baldon), where a smaller-scale field pattern and the hedgerow structure remain more intact;*
- ***predominantly intensive arable land use but some pockets of permanent pasture** occur, particularly around settlements and on steeper hillsides;*
- ***predominantly rural character;***
- ***landform and landscape structure create enclosure and reduce intervisibility**.*

3.61 *Key landscape enhancement priorities should be – and include (relevant bullet points only)*

- ***to: encourage better maintenance of field boundaries and discourage further hedgerow removal and replacement by fencing;***
- *improve landscape structure and land management on the fringes of built areas to mitigate adverse impacts*

Planning and development issues

3.62 ***Large-scale development of any kind will be inappropriate within this essentially***

rural and unspoilt landscape. *The ability of the landscape to accommodate small-scale development will depend upon:*

- ***the potential impacts on distinctive landscape and settlement character****;*
- ***the potential impacts on intrinsic landscape quality and valued features and the overall sensitivity of the landscape to change****;*
- ***the visual sensitivity of the receiving landscape****.*

3.63 Some general conclusions to the potential suitability of development proposals are that:

- *the parkland/estate landscapes and the remote,* ***low-lying floodplain landscapes are particularly vulnerable to change and are likely to be unsuited to new built development;***
- *open landscapes, hill-tops and hill-sides are visually exposed and unsuitable for prominent development unless closely integrated with existing built form or well-integrated within new landscape frameworks;*
- ***landscapes with strong landform and a mature structure of woods and hedgerows are less visually exposed and may be more able to absorb change but they are generally of higher landscape quality and therefore sensitive to development;***
- *landscapes on the fringes of settlements are particularly vulnerable to change and special attention should be paid to creating strong landscape 'edges' to reduce the urbanising influences of development on adjacent countryside and to prevent the coalescence of settlements.*

Likely impacts:

3.64 The loss of key features of the landscape would result from the quarry activities, most notably the loss of the strong structure of hedgerows and tree screens, erosion of the rural and unspoilt character and increase in the intervisibility of the landscape when exactly the opposite is required to screen the quarrying activity.

River Thames Corridor

3.65 ***Landscape character in this area has a strong degree of coherence, with the River Thames providing a strong unifying influence****. There are consequently few variations in landscape character. The main distinctions that have been drawn are between:*

- *the different sub-types of the flat, low-lying floodplain landscapes which dominate the*

area;

- *small areas of parkland landscape to the north of Wallingford and at Mongewell;*
- *an area of amenity landscape in the form of a golf course to the south of Mongewell park.*

3.66 *The character area is subdivided, the site being in the flat* ***floodplain pasture area;***

Key characteristics:

- *flat, low-lying farmland, typically dominated by permanent pasture with a distinctively 'wet', riparian character;*
- ***prone to flooding with distinctive network of drainage ditches ;***
- ***comparatively strong landscape structure with willows conspicuous along the riverside;***
- ***intimate, pastoral and tranquil character with some 'arcadian' qualities along the Thames close to settlements*** *and riverside parklands (eg. Mongewell);*
- ***generally low intervisibility, although views along the river corridor may be possible in some more sparsely vegetated areas;***
- ***important areas of riverside greenspace within or adjoining the main settlements*** *and urban areas (eg. the riverside at Wallingford).*

Landscape management issues

3.67 ***Overall, this area retains a predominantly rural character with some particularly unspoilt and attractive areas of landscape which have retained a strong structure of hedgerows and trees, have a particularly rich, diverse and well-managed character and are of high scenic quality****.* ***These mainly comprise the pastoral floodplain pasture landscapes*** *and the small areas of remnant parkland immediately next to the Thames.* ***Management to conserve and enhance these characteristics and qualities is the most appropriate strategy in these landscapes****.*

3.68 *Much of the remaining area comprises a rural farmed landscape which is showing some signs of decline in condition and quality. Principally this is the result of a general weakening of landscape structure through intensive arable farming, creating an open and denuded character which exacerbates the intrusion of built development and roads (eg. to the south of Wallingford). Action to repair or restore former landscape diversity and structure would be desirable within these areas.*

3.69 *Other typical land management issues include the impact of 'horticulture' and somewhat 'scruffy' or intrusive land uses on the fringes of settlements, and the gradual sub-*

urbanisation of the river corridor landscape through development along the riverside.

Planning and development issues

3.70 ***Large-scale development of any kind will be inappropriate within open countryside areas and along the river corridors**. The ability of the landscape to accommodate small-scale development will depend upon:*

- ***the potential impacts on distinctive landscape and settlement character;***
- ***the potential impacts on intrinsic landscape quality and valued features and the overall sensitivity of the landscape to change;***
- ***the visual sensitivity of the receiving landscape***

3.71 *Some specific conclusions are that:*

- ***development would generally be inappropriate within the unspoilt floodplain pastures**, wetlands and parkland/estate landscapes;*
- ***development within visually exposed landscapes such as the open flat farmland of the floodplain, will be highly prominent** unless closely associated with existing built form or well-integrated within new landscape frameworks;*
- ***further recreational development associated with the former gravel pits is generally incompatible with nature conservation interests and therefore undesirable**;*
- ***landscapes on the fringes of settlements are particularly vulnerable to change and special attention should be paid to creating strong landscape 'edges' to reduce the urbanising influences of development on adjacent countryside and to prevent the coalescence of settlements.***

Likely Impacts

3.72 Loss of unifying elements ie the strong tree belt of Sandy Bury and other hedgerows defining the field pattern, loss of the intimate pastoral and tranquil character, opening up of views, and loss of scenic quality. The proposed restoration scheme will also open up the rural and tranquil landscape to new recreational uses including fishing and sailing which is contrary to the advice from the SODC landscape assessment.

North Wessex Downs Area of Outstanding Natural Beauty (AONB)

North Wessex Downs Integrated Landscape Character Assessment 2002.

3.73 Two landscape areas are identified within this study whose setting may be affected by

large scale development such as quarrying operations.

Character Area 5d: Moreton Plain

3.74 The Hills Landscape Character Plan 009 shows this area lying to the south and south east of the site (the nearest point is 1.4km away)

3.75 Distinctive features include the clumps of woodland on prominent hilltops, as at Wittenham Clumps. Generally, this is a very open landscape with 'pockets' of remoteness and extensive views. The adjacent town and chimneys of Didcot, are often a dominant feature, in views gained from higher land.

Key Issues

- *almost exclusively in intensive arable cultivation with the loss of environmental assets including biodiversity (e.g. chalk grassland) archaeological features and landscape character with creation of large open 'prairie' fields;*
- ***loss of hedgerow enclosure plus poor management of remaining hedgerows creating a very open landscape;***
- *denuded woodland cover - need to maintain distinctive hilltop clumps;*
- ***open landscape with particular vulnerability to large scale development -high visual impact of built development and power station at Didcot plus overhead power lines;***
- *management of historic parklands and designed landscapes, e.g. at Sinodun Hills;*
- *development pressures within the villages and impact on settlement character;*
- ***development impinging on AONB boundaries, particularly at Didcot***

3.76 *Under the heading Key Management Requirements, the report states that: 'Consideration should be given to the impact of new development on the boundary on both the character of the AONB and in views from the higher ground'*

Character Area 6d: Thames Valley Floodplain
Key Characteristics

- ***a number of small areas of 'Vale' landscapes on the eastern edge of the AONB form part of the larger floodplain of the Thames;***
- ***a flat low-lying landscape generally below a height of 50m, with long views and comparative sense of remoteness and isolation;***
- *linear water-filled drainage ditches and other small watercourses flowing to the Thames are a defining feature;*
- *generally large scale fields with a mixture of arable and pasture with hedgerows of*

varying condition in addition to the ditch boundaries;

- ***tree and shrub lined streams and ditches provide landscape structure****;*
- ***numerous traces of pre-historic occupation in the area in the form of crop marks on the well drained gravels of the Thames floodplain including evidence for Palaeolithic activity;***
- ***floodplain generally characterised by a lack of settlement with the exception of occasional farms.***

The North Wessex Downs AONB Management Plan 2014-2019

3.77 The AONB is a landscape of national and international importance and this document sets out a number objectives and policies to benefit the landscapes and the communities within them over a period of 5 years up to 2019.

Urban Fringe and Setting

3.78 *A number of sizable and expanding towns lie just outside the North Wessex Downs.*

3.79 *There are other proposals for growth outside but on the edge of the North Wessex Downs. These include at Wantage,* ***Didcot****, Andover and Devizes.* ***The potential for harm on the setting of the area from large-scale urban extensions is substantial****. Any new uses or development proposed outside but within the setting of the area should consider the North Wessex Downs AONB Position Statement on Setting. Proposals should include detailed measures to mitigate against harm on and into the area. Forms of mitigation may include strategic landscape buffers, restrictions on building heights, care over massing and scale, care over roofscape design, or avoidance of development in the most exposed locations.*

Likely Impacts:

3.80 Views towards the site from elevated AONB landscape and Wittenham Clumps, perception of the quarry operations in particular resulting from the loss of mature trees and shelter belts, opening up the landscape to views. Also of particular concern would be the views from near to and within the site. VPs 4 8, 9 and 11 (all taken from close to each other within the site) would have views of towards the AONB and of Wittenham Clumps. These views would be permanently lost to the quarrying activities.

AONB Position Statement on Setting (Development Affecting the Setting of the North Wessex Downs AONB – October 2012)

3.81 The purpose behind this Position Statement is to inform local planning authorities, landowners, applicants and other interested parties regarding development outside but within the setting of the North Wessex Downs AONB. The document is intended to guide

policy makers, to assist in the preparation of planning applications and to assist in the decision making process.

3.82 *For the purposes of spatial planning,* ***any development or change capable of affecting the significance of the AONB or people's experience of it can be considered as falling within its setting.*** *The surroundings of the North Wessex Downs AONB are also important to its landscape character and quality. Views out of the AONB and views towards or into it from surrounding areas can be very significant. Development proposals that affect views into and out of the AONB need to be carefully assessed to ensure that they conserve and enhance the natural beauty and landscape character of the AONB.*

3.83 *A very large or high development may have an impact even if some considerable distance from the AONB boundary. Therefore there is no defined boundary where the setting of the North Wessex Downs AONB ends. However, distance away from the AONB will obviously be a material factor in forming a decision on any proposals, in that the further away a development is from the AONB boundary the more the impact is likely to be reduced.*

3.84 *Examples of adverse impacts on the setting of the North Wessex Downs AONB could include:*

- ***development which would have a significant visual impact on views in or out of the AONB****;*
- ***loss of tranquillity through the introduction or increase of lighting, noise, or traffic movement or other environmental impact like dust, vibration, spatial associations and historic relationships;***
- ***introduction of abrupt change of landscape character****;*
- ***loss of biodiversity, particularly of habitats or species of importance to the AONB;***
- ***loss or harm to heritage assets and natural landscape, particularly if these are contiguous with the AONB;***
- ***change of use of land where of a significant enough scale to cause harm to landscape character; and***
- ***development individually or cumulatively giving rise to significantly increased traffic flows to and from the AONB, resulting in loss of tranquillity and erosion of the character of rural roads and lanes****.*

Likely impacts:

3.85 The introduction of the gravel processing plant, concrete plant and the opening up of the

site in general may have some wider impacts on the setting to the AONB. The close proximity of Scheduled Monuments points to the actual and potential historic importance of the landscape (Historic England and Oxfordshire County Council's Archaeologist have commented on the impacts that the quarry is likely to have). The abrupt change to the landscape will be permanent. The additional impacts of road transport, noise and general activity may also impinge of the setting to the AONB.

3.86 Clearly views towards the AONB and the distinctive landmark of Witteham Clumps will be lost completely or will be marred with the quarry in the same views. This will represent a real loss to a key aspect of this landscape character and will impact on the setting to the AONB.

Conclusion of the Consideration of the Local Character Assessments

3.87 It can be seen from these various landscape character descriptions relating to the site in the OWLS study and the SODC Landscape Assessment that there is a consistency across them in terms of the key characteristics that are described for each landscape type or area. There is also a general consensus of the value of these elements in landscape and biodiversity terms.

3.88 The River Meadowlands described in the OWLS study describe the pastoral, meadow character with tree lined corridors typical throughout this landscape type. These are highlighted as being important to retain, supporting as they do a wide range of locally important habitats. The overall strategy is to conserve and enhance the tranquil, small scale, intimate pastoral character and visual unity. The SODC Assessment describes the landscape character in this area as having a strong degree of coherence, with the River Thames providing a strong unifying influence. Echoing the OWLS study the description is of an intimate, pastoral and tranquil character with some 'arcadian' qualities along the Thames close to settlements. The landscape has a comparatively strong landscape structure with willows conspicuous along the riverside and a generally low intervisibility as a result of screening vegetation

3.89 The SODC study concludes that this area retains a predominantly rural character with some particularly unspoilt and attractive areas of landscape with retained elements including a strong structure of hedgerows and trees, and with a particularly rich, diverse and well-managed character and high scenic quality.

3.90 It also concludes that large-scale development of any kind will be inappropriate within open countryside areas and along the river corridors, that development on the floodplain would be highly prominent and that further recreational activity in new gravel pits would be generally incompatible with nature conservation interest and therefore undesirable.

3.91 The Terrace Farmlands described in the OWLS Study portray an area dominated by medium to large-sized arable fields. Field boundaries are almost non-existent, although

roadside hawthorn hedges have remained intact. The most prominent feature in the area is the linear strips of crack willows and poplars bordering watercourses. There are also occasional very small deciduous plantations. All of these elements are important as habitats which should be safeguarded. As a result of the quarrying operations all these elements within the site will lost.

3.92 Within the SODC Assessment a variation within the LCA is highlighted as being within the semi-enclosed farmed hills and valleys area. The key characteristics include the strong structure of hedgerows and trees which provide clearer definition of field pattern, the predominant rural character and the landform and landscape structure that creates enclosures and which reduces visibility. Within the proposed quarry site there are strong lines of shelter belts and woodland blocks (Sandy Bury, Grasshill Covert and Fullamoor Plantation) that serve to enclose the landscape and control views. Within the central part of the site by contrast there is a lack of field boundaries where hedgerows have been removed.

3.93 The stated landscape enhancement priorities within the SODC Assessment are to maintain field boundaries and structure and to discourage hedgerow removal and avoid the replacement and introduction of fences. The restoration proposals show fewer field boundaries in place after completion leading to a more expansive field pattern south of Fullamoor Farmhouse. We assume that fences will be required to the silt ponds and possibly the large water bodies too which will introduce an urbanising feature into the landscape. The new water bodies themselves do not appear to have any relationshiup to the underlying field pattern or grain to the landscape.

3.94 Once the landscape is devoid of its existing vegetation cover and views are opened up, the quarry may have an impact even if it is some distance from the AONB boundary. There is no defined boundary where the setting of the North Wessex Downs AONB ends. It is possible that views out of the AONB towards the quarry or views of the quarry towards Wittenham Clumps in the AONB within the views could be significant. Important local views of Wittenham Clumps will be lost as a direct result of the quarry. It is for the Applicant to clearly demonstrate that this will not be the case which has not been done. Paragraph 2.39 of the LVIA acknowledges that these views exist: *'Wittenham Clumps is clearly visible from several locations within the site',* but does not refer to the significance of these views being lost.

3.95 Similar to the conclusions reached for the River Meadow landscapes large-scale development of any kind will be inappropriate within this essentially rural and unspoilt landscape. There is no doubt that the scale of the proposed quarry and its predicted operating time would be regarded as large scale development.

4 Assessment of the Landscape Effects and Mitigation

4.1 The applicant's LVIA sets out in broad terms in paras 2.37 onward the predicted landscape effects for each of the OWLS LCAs River Thames Meadowlands, Terrace Farmlands and Lowland Village Farmlands. The LVIA excludes the Vale Farmland as a landscape receptor which is clearly not the case and I include this LCA in my assessment below. There is a general description followed by a table summarising my assessment of the impacts in terms of sensitivity – resulting from Susceptibility to change and landscape value, and Magnitude of Change – resulting from the potential significance of the effect on key landscape characteristics. The sensitivity and the magnitude of change are then combined to provide a 'score' in terms of the overall Significance of Impact. These are provided for different scenarios over time ie during the working life of the quarry, at final restoration, and then 15 years after restoration.

4.2 The impacts are also provided at these timescales with mitigation and for the residual impacts.

4.3 For my assessment I have assumed that during the operational phase the landscape mitigation of bunding is in place and that initial planting will be done as completed phases become available. I also acknowledge that removal of vegetation will be left as long as possible prior to future stages commencing.

4.4 I have highlighted where my conclusions differ from those of the LVIA's author.

4.5 The quarry workings move progressively in a direction west to east across the site. The existing vegetation including Sandy Bury and associated shelter belts are the most significant vegetation features in terms of altering the appearance and character of the site. These begin to be removed at Phase 2A out of 27 working phases. It appears to be substantially removed by Phase 11A though the grey tones on the drawing make it difficult to discern the difference between existing retained vegetation and the areas excavated to base of mineral. The remaining eastern most section of screen planting is removed in Phase 21A.

4.6 In the first Phases 1 and 1a impacts are likely to be experienced most by receptors north of Sandy Bury within the Terraced Farmlands LCA. This will include residents located to the south of the Abingdon Road including Fullamoor Farmhouse. A 7.5m high gravel processing plant and 4.5 m concrete batching plant will be installed near to Grasshill Covert. This will be mostly screened from the north by the Covert and by a 10m high soil bund. From Phases 2A onwards the views are opened up due to the loss of part of Sandy Bury and associated screening shelterbelts and the impacts on the River Meadowlands will be apparent. This will include users of this landscape on the Thames Path who would progressively experience views towards the processing and batching plants. There would also be an impact at this stage on the Lowland Village Farmland

LCA through the loss of Sandy Bury and likely views through to the workings.

4.7 By Phase 6A the workings are extended south to within about 25-30m of the River Thames and they will have a direct impact on the River Meadow LCA and a significant impact on the Lowland Village Farmland LCA.

4.8 Beyond Phase 6 the development continues generally westward in a patchwork of progressive operations with conveyors extending to the far reaches of the extraction operation. By Phase 16A the water body at the west end of the site is being filled and it is assumed some planting mitigation will be installed at this point. Agricultural restoration north of the water body will be partially complete. Phase 20A will extend the water body eastwards and the east part of the quarry will be in full swing with the west section being nearly completed in terms of restoration works.

4.9 The timescales for the duration of effect as set out in the applicant's LVIA methodology is 10-20 years which is defined as long term. In terms of the time taken for the landscape to 'recover' to a level of maturity that may be considered to be equivalent to the baseline landscape this may take the 11-13 years estimated for the duration of the development (taking account of the time needed to implement the initial development works and for restoration works) plus at least 15 years for the new landscape to approach early maturity. This is a total of 28 years which in terms of the duration of effect in the methodology is 'very long term'.

4.10 The restoration proposals submitted with the application will represent a wholesale and uncharacteristic change to the landscape. Two water bodies will dominate the River Meadowlands Landscape Type, The smaller gravel pit will also be placed within the Farmed Terrace landscape on rising to the north which will be against the grain of the topography.

4.11 The amorphous form of the larger gravel pit has a heaviliy scalloped margin dotted with tree groupings within a meadow setting to the banks. To the north is a more solid fringe of planting that will screen the water from the north and provide a wooded backdrop from the south. The intermittent nature of the planting on the southern banks will mean that views from the Thames Path will be possible for most if not all of its length. The intended use is for fishing and small boat sailing which necessitate introducing a car park, additional length of access road and storage buildings to support these activities. This is stated as being incompatible with nature conservation interests by the SODC Landscape Assessment.

4.12 Table 1

(LVIA conclusions in italics if different from mine)

Receptor	River Meadowlands			
Sensitivity	**Susceptibility of Receptor to Specific Change**	High	**Susceptibility of Receptor to Change**	High **This is a particularly sensitive landscape and I have combined High and Medium/High to give High rather than *High/Medium***
	Value attached to Landscape	Medium/High		
Magnitude of Change	**Interaction between proposals and landscape receptors**			
	During working operations	**At final restoration**	**15 years after restoration**	
	Site/scale/duration and reversibility	**Site/scale/duration and reversibility**	**Site/scale/duration and reversibility**	
	Loss of deciduous plantation/screen belts of trees (VPs 5, 6, 11, 19, 20 and 21) and opening up the river corridor and eroding the riparian landscape to views of extensive quarrying activities and plant. This would represent a continuation of the perception of a landscape dominated by mineral workings by users of the Thames Path who can experience views of the Sutton Courtenay quarry to the south west of the site (VPs 14 and 15). There would be a significant loss within the landscape of visual unity and amenity value for a medium to long term time scale. There are also cultural and perceptual qualities that would be permanently lost or significantly devalued including the literary reference to Three *Men in a Boat* by Jerome K. Jerome. The journey from Kingston upon Thames to Oxford passes along the stretch of river lying closest to the site. The Barley Mow pub (Grade II listed) which lies to the south of the bridge at Clifton Hampden, at 500m to the east of the site and in the parish of Long Wittenham, is mentioned in this book. Nuneham Courtenay has also been the subject of art and literature, with the house and landscape being portrayed in poetry "The Deserted Village" by Oliver Goldsmith, published in 1770 and in a very early painting by Turner *View of Nuneham Courtenay from the Thames* 1787.	Scarred landscape would have some planting around water bodies in establishment phase and agricultural areas restored. The high sensitivity combined with a still raw landscape represented by a 'Medium' change would lead to significant residual impact.	Landscape reaching early maturity though character of landscape totally altered from baseline. Landscape character of restored gravel pits becoming an uncharacteristic but typical sight for the area with others around Sutton Courtenay. The setting to the SAMs would also be affected. Fencing may be needed around the water bodies for safety reasons adjacent to public rights of way.	
	Large Adverse	Medium Adverse	*Small* Medium/small adverse	
Potential Significance of Landscape Effect	Major adverse	*Moderate/Major* Major adverse **– combining High and Medium**	*Moderate/Minor* Major/Moderate adverse – combining High with Medium and High with Small	
Effective Mitigation Measures	Progressive restoration, but significant impacts would be	Landscape would be mostly raw and in early establishment	Planting and water bodies would be establishing and	

	evident throughout the operational period.	phase with little maturity compared to baseline landscape particularly at the east end of the site.	reaching early maturity in a changed character of a gravel pit landscape.
Magnitude after Mitigation	*Medium* Large adverse The impacts would still be major as a result of the ongoing operations. Mitigation measures would not yet be mature enough to reduce impacts by a significant amount.	*Negligible* Medium adverse The underlying landscape sensitivity is still high and the Magnitude is Medium so the significance must be still be Major before the restoration and mitigation on recently completed quarrying activities has been able to establish and have any remedial effects. In this case the remedial landscape is a large water filled gravel pit, open to and dominating the surrounding landscape.	*Small Beneficial* Small adverse as the water body margins establish and a more natural look evolves, though still a total change to the underlying landscape type. The new extensive water body would be the dominant feature radically altering the landscape character in this highly sensitive landscape. After uses such as sailing and fishing with associated car parking and activity would bring an unwelcome intrusion to the rural and tranquil landscape.
Predicted Significance of residual landscape effect	*Moderate* Major adverse	*Negligible/Minor Adverse* Major adverse	*Minor Beneficial* Moderate adverse

4.13 Table 2

<table>
<tr><td>Receptor</td><td colspan="4">Terrace Farmlands</td></tr>
<tr><td rowspan="2">Sensitivity</td><td>Susceptibility of Receptor to Specific Change</td><td>Highly susceptible to being excavated to quarrying and dramatically changed.</td><td rowspan="2">Susceptibility of Receptor to Change</td><td rowspan="2">Medium</td></tr>
<tr><td>Value attached to Landscape</td><td>An agricultural landscape with good public access, but not as valued as adjacent river side meadows. Medium Value</td></tr>
<tr><td rowspan="4">Magnitude of Change</td><td colspan="4">Interaction between proposals and landscape receptors</td></tr>
<tr><td colspan="2">During working operations</td><td>At final restoration</td><td>15 years after restoration</td></tr>
<tr><td colspan="2">Site/scale/duration and reversibility</td><td>Site/scale/duration and reversibility</td><td>Site/scale/duration and reversibility</td></tr>
<tr><td colspan="2">The total loss of key features of the landscape (VPs 5, 6, 11, 19, 20 and 21) would result from the large scale quarry activities, most notably the loss of the strong structure of hedgerows and tree screens, erosion of the rural and unspoilt character and increase in the intervisibility of the landscape when exactly the opposite is required to screen the quarrying activity. The loss of key features of the landscape would result from the quarry activities, most notably the loss of the strong structure of hedgerows and tree screens on the south boundary of this area. There would be a significant erosion or loss of the rural and tranquil qualities of this landscape and some views towards the AONB and Wittenham Clumps (VP9). In 1912 the War Artist Paul Nash (1889-1946) first painted Wittenham Clumps and started a long personal fascination with this landscape. This subject also very popular with contemporary artists.

There would in addition be impacts on the setting to Clifton Hampden and other properties that currently have and enjoy views across this rural and unspoiled landscape. Fullamoor Farm House and the 4 properties to the east all have views. The setting to the adjacent SAM and to Fullamoor Farmhouse would be adversely affected in the long term.</td><td>Raw landscape would have some planting around water bodies in establishment phase and agricultural areas would be restored. The medium sensitivity combined with a still raw landscape represented by a ‘Medium’ change would lead to significant residual impact.
The new water body is cut into the terrace landscape and will look incongruous within this character type. The final field pattern leaves larger fields to the west of the site than the baseline landscape.</td><td>Agricultural landscape would be restored albeit with a more expansive field pattern. The character of landscape would be partially restored by this stage though the influence of the adjacent gravel pit and water body would be dominant pending the maturation of the associated planting. Silt ponds, which would be hazardous areas and would need robust invasive safety fencing, would remain as a long lasting legacy.</td></tr>
<tr><td colspan="2">Large adverse</td><td>Medium adverse</td><td>Small
Medium/Small adverse</td></tr>
<tr><td>Potential Significance of Landscape Effect</td><td colspan="2">Major adverse</td><td>Moderate adverse</td><td>Minor
Moderate/Minor adverse</td></tr>
<tr><td>Effective Mitigation Measures</td><td colspan="2">Progressive restoration, but significant impacts would be evident throughout the operational period within this LCA. Views from within this LCA to Wittenham Clumps and the AONB would be lost or marred by the workings.</td><td>Landscape would be mostly raw and in early establishment phase with little maturity ie to new hedges or shelter belts compared to baseline landscape. West of site would benefit from early planting.</td><td>Agricultural areas would be restored albeit with a more expansive field pattern. Planting and water bodies would be establishing and reaching early maturity in a changed character of a gravel pit landscape.</td></tr>
</table>

Magnitude after Mitigation	*Medium* Large adverse	*Negligible* Medium/Small adverse	*Small Beneficial* Small adverse
Predicted Significance of residual landscape effect	*Moderate* Major adverse	*Negligible/Minor* Moderate/Minor adverse	*Minor Beneficial* Minor adverse

4.14 Table 3

<table>
<tr><td>Receptor</td><td colspan="5">Lowland Village Farmlands, taking account of the setting to the AONB.</td></tr>
<tr><td rowspan="2">Sensitivity</td><td>Susceptibility of Receptor to Specific Change</td><td colspan="2">Area will not by physically disturbed but between Long Wittenham and Appleford landscape is unspoiled and relatively vulnerable. LVIA states that changes could affect the character of the receptor. My judgement Medium/high</td><td rowspan="2">Susceptibility of Receptor to Change</td><td rowspan="2">Medium
High/Medium</td></tr>
<tr><td>Value attached to Landscape</td><td colspan="2">An agricultural and recreational landscape important as the setting to the AONB and Conservation Area to Long Wittenham – Medium Value. My judgement Medium/high</td></tr>
<tr><td rowspan="4">Magnitude of Change</td><td colspan="5">Interaction between proposals and landscape receptors</td></tr>
<tr><td colspan="2">During working operations</td><td>At final restoration</td><td colspan="2">15 years after restoration</td></tr>
<tr><td colspan="2">Site/scale/duration and reversibility</td><td>Site/scale/duration and reversibility</td><td colspan="2">Site/scale/duration and reversibility</td></tr>
<tr><td colspan="2">The landscape within this area on the south of the River Thames is characterised by a terrace of elevated land that provides views across the valley and towards the site. (VPs18 and 19). (contrary to the findings of the LVIA). To the west the existing mineral workings around Sutton Courtenay dominate the landscape and the cumulative impact (for example from footpath 106.08/10) of a further extensive area of quarry to the north of the Thames between Appleford and Long Wittenham will extend the perception of a landscape dominated by this land use.</td><td>Loss of the baseline landscape shelter belts will have left the views into the LCA open and denuded. Early planting may have started to address this loss, but there will be a lack of maturity and the landscape will be significantly altered compared to the baseline.</td><td colspan="2">The vegetation around the new water body will by this time be reaching early maturity and the views from this LCA will once again start to be more enclosed, providing a backdrop to the river Thames.</td></tr>
<tr><td colspan="2">Small
Medium adverse</td><td>Small
Medium adverse</td><td colspan="2">Negligible
Small adverse</td></tr>
<tr><td>Potential Significance of Landscape Effect</td><td colspan="2">Minor
Major/Moderate adverse</td><td>Minor
Major/Moderate adverse</td><td colspan="2">Negligible
Moderate/Minor adverse</td></tr>
<tr><td>Effective Mitigation Measures</td><td colspan="2">Early mitigation may begin to make some difference after 5-10 or so years after planting.</td><td>Early mitigation should begin to make some difference after 5-10 or so years after planting</td><td colspan="2">Vegetation becoming more effective to restore enclosure and to screen views.</td></tr>
<tr><td>Magnitude after Mitigation</td><td colspan="2">Negligible
Medium/Small adverse</td><td>Negligible
Small adverse</td><td colspan="2">Negligible</td></tr>
<tr><td>Predicted Significance of residual landscape effect</td><td colspan="2">Negligible
Moderate/Minor adverse</td><td>Negligible
Moderate/Minor adverse</td><td colspan="2">Negligible</td></tr>
</table>

4.15 Table 4

Receptor	Vale Farmlands. Not included in LVIA Assessment tables.			
Sensitivity	**Susceptibility of Receptor to Specific Change**	Some direct impact due to access route to quarry. Other detractor is busy A415 road. Elevated terrace landscape with views to the south and to distant horizons including the AONB. Medium	**Susceptibility of Receptor to Change**	Medium
	Value attached to Landscape	An agricultural landscape forming the edge to the valley landscape to the south. Medium		
Magnitude of Change	**Interaction between proposals and landscape receptors**			
	During working operations	**At final restoration**	**15 years after restoration**	
	Site/scale/duration and reversibility	**Site/scale/duration and reversibility**	**Site/scale/duration and reversibility**	
	This landscape is elevated compared to the location of the site and some views are possible towards the proposed quarry and the associated plant (VPs 10 and 12). The local landscape is characterised by intensive agriculture and also by intrusive features such as the busy Abingdon Road and by the imposing Culham Science Centre. There is a direct impact on this landscape due to the location of the quarry access road that leads from the A415 into the site, and the proposed bunding either side of the road.	New planting around the northern silt lagoons will need to mature but planting lining the access road if carried out at the start of operations would have some beneficial effect. The changed gravel pit landscape within the River Meadowlands are more remote but will be visible in some views.	As the new planting around the silt lagoons and the gravel pits matures the impacts will diminish from this LCA – though fencing to silt ponds are likely to still be an issue.	
	Medium adverse	Small adverse	Negligible	
Potential Significance of Landscape Effect	Moderate adverse	Minor adverse	Negligible	
Effective Mitigation Measures	As above	As above	As above	
Magnitude after Mitigation	Medium adverse	Small adverse	Negligible	
Predicted Significance of residual landscape effect	Moderate adverse	Minor adverse	Negligible	

Conclusions for Landscape Impacts

4.16 I have identified 4 landscape character types (receptors) that will be affected by the quarrying operations. The applicant's LVIA considered that the Vale Farmlands landscape type was low in value and it was not considered further. I considered the Vale Farmland landscape to be of medium sensitivity as, despite the detractors of the Abingdon Road and Culham Science Centre, the underlying landscape is not unattractive and provides the setting to Clifton Hampden and Burcot. It also provides the setting to the river valley landscapes to the south.

4.17 The effects on landscape fabric are set out in the applicant's LVIA figures for various losses of hedges and footpaths which are countered with figures for their replacement. Overall the same length of hedge is replaced as is lost. A significant additional length of public footpath is provided within the finished restoration proposal – mostly comprising walks around the gravel pits. The LVIA also mentions the period of change to be 10 years. This seems to me to be an underestimate (my para 4.9) in that the maturity of the landscape will be lost very quickly in terms of the loss of the existing tree screens and hedgerows, but the restoration of the landscape to a similar state of maturity will means a period of change significantly greater than 10 years.

4.18 Assuming that the east part of the site is completely restored in say 13 years' time from now, then the new planting will not be reaching any degree of maturity for at least 10 years after that. This would mean that the landscape would be disrupted by the quarrying operation until around 2030, and then in a period of recovery until around 2045. This period represents a long term change to the landscape and amenity value of the site. The restoration to a water body with walks around will have other attributes and may provide for other uses such as water sports. This proposal however would put more pressure on the landscape and would further erode the tranquil and rural nature of the Thames corridor as stated in the SODC Landscape Assessment. More uses would mean more car parking and access requirements. The proposals drawing shows a car park located in the heart of the site encouraging car usage and access as soon as the proposals are completed.

4.19 The applicant's LVIA states what the impacts are on the unmitigated landscape. It then explains the various mitigation measures. However the conclusions reached in the applicant's LVIA are that the mitigation is so effective at the time of final restoration that the impacts are reduced to Minor or negligible. My conclusions are that in comparing the site at this stage with the baseline landscape, this level of residual impact is underestimated. The agricultural areas would be back to their former levels and could be back in production and new hedgerows would be planted as 40-60cm high transplants. Early planting would have some impact depending on its age and would be beneficial along the west boundary and Thames Path in particular. Nevertheless the

landscape would still retain an immaturity and rawness that would dominate the landscape character for some time.

4.20 For the River Meadowlands my conclusions are that the Magnitude of Change would be Small as the water body margins establish and a more natural look evolves, albeit there would still be a total change to the underlying landscape type. However the residual impact remains Moderate as the new extensive water body would be the dominant feature radically altering the landscape character in this highly sensitive landscape type. Other new and urbanising features such as fencing plus after uses such as sailing and fishing with associated car parking and activity would bring an unwelcome intrusion to the rural and tranquil landscape.

4.21 The applicant's LVIA finds that the residual impacts would be Minor Beneficial which is a significantly different conclusion. However the applicant's LVIA also finds that immediately after completion of the operations the residual effect is Negligible or Minor Adverse. My conclusions are that the impacts would remain as Major at this stage given the newness of the landscape that has emerged from the industrial scale activity and the immaturity of any planting that will have completed the restoration. The new water body is large and will be dominant and is likely to look incongruous in its setting even when mature vegetation is able to soften its appearance and screen its large scale.

4.22 For the Terrace Farmlands, the residual effects on the landscape are considered to be Minor Adverse compared to the applicant's LVIA conclusion of Minor Beneficial. The mature screening of Sandy Bury and associated shelter belts create significant screening and enclosure now and these will be lost. Other hedges will also be lost. It will be many years before the new planting achieves the degree of screening equivalent to the baseline landscape. The openness of the agricultural fields to the south of Fullamoor Farmhouse is actually left greater than the current position with fewer field boundaries being replaced. The large silt ponds would be left in situ after restoration and would represent a possible hazardous feature for people and animals if these are not fenced off. The new water body to the east of the site occupies part of this landscape character type. The water body is cut into the terrace side and is an alien addition to the existing landscape.

4.23 Within the Lowland Village Farmlands on the south side of the Thames, the effects are likely to be mitigated sooner with impacts being reduced, from VP19 for example, by the early planting at the west end of the quarry. Impacts after completion are still considered to be Moderate or Minor but after 15 years this would reduce to Negligible. The applicant's LVIA by contrast shows there to be no significant impact (Negligible) even during the working operations. Given the intermittent tree planting shown in the restoration proposals plan this conclusion would seem to be highly optimistic. This also ignores the fundamental loss to the landscape structure and screening within the site

resulting in a dramatic change and deterioration in the landscape character that will be apparent from the Lowland Village Farmlands.. The Thames corridor itself provides some residual screening that affords this landscape type with some shielding from the quarry but the initial loss of Sandy Bury and mature shelter belts would be a significant long term effect.

4.24 The impacts from the Vale Landscape to the north of the site are also less significant due to the elevation and partial screening of this landscape from the landscape to the south and the quarry. However some views are possible including those from residents south of the A415 and from the road itself, and therefore the impacts during the works are recorded as Moderate to Minor at completion. After 15 years the residual impact would be Negligible. The applicant's LVIA discounts this landscape as having significant impacts (para 2.34 of the LVIA) due to its lack of any landscape designations, the fact that the principal landscape elements are not rare, and it has a low scenic value. By contrast I considered the landscape to be of medium sensitivity as, despite the detractors of the Abingdon Road and Culham Science Centre, the underlying landscape is not unattractive and provides the setting to Clifton Hampden and Burcot. It also provides the setting to the river valley landscapes to the south.

4.25 The impacts on the AONB are likely to be evident but it is difficult to judge the level of significance. The initial loss of the mature vegetation and the opening up of the site as the operation moves west to east across the site may well be evident to the naked eye from Wittenham Clumps. The extent and degree of significance of the view is difficult to determine but with the loss of all the existing vegetation on the site the landscape and intervisiblity of the site with the wider (and especially the elevated AONB) landscape will increase substantially. My VP 16 shows the horizontal extent of the site. The setting to the AONB is perhaps more of an issue with some views of the Clumps being seen in the same views as the quarry. Some of these potential views (for example my VP9) are lost due to the permanent diversion of footpaths as a result of the quarry operation. Even at this distance this is an impact on the AONB setting. Other views along the Thames Path with the quarry in the view are likely to be possible. The applicant's LVIA concludes that there are no significant impacts on the AONB or its setting but there is no evidence provided to demonstrate that this is the case.

4.26 In terms of cumulative effects the sands and gravels operations west of Appleford and east of Sutton Courtenay have some significance when considering the continuation of this land use just 1.5km away to the east. The quarry may not be in the same view but the perception of people living and working in the area or of people using the landscape for recreation may be of a landscape dominated by this land use. The land east and west of Appleford will be affected by this fact. The perception of the many thousands of train passengers using the elevated Oxford line each day will potentially have views in

both directions of this quarrying activity dominating the landscape which together with existing views of gravel workings further north on the railway line at Radley will also contribute to a sense of landscape dominated by this use on the approach to Oxford. The applicant's LVIA considers the cumulative impacts to be Negligible.

5 Visual Assessment

Introduction

5.1 The visual impact assessment is a separate exercise to the landscape impact assessment. It consists of assessing the impact on views into and out of the proposed development. The impact takes into account the location of the viewpoint, its sensitivity, the importance of the view and the magnitude of change to the view that the development represents. My assessment also takes account of the extent of the view as perceived by the receptor.

5.2 The importance of the view is a balance of how visible the site is and by whom it is viewed. Also important is whether any negative changes can be mitigated.

Methodology

5.3 Potential viewpoints have been determined from topographical maps and footpaths walked and sites visited to determine the general zone of visual influence of the site on these locations and to begin the assessment of visual impact.

5.4 Private viewpoints have not generally been accessible except for at Fullamoor Farmhouse and Stable House, and all viewpoints (apart from within the site itself) have been taken from public points of access. From a desk top study of maps the likely visual receptors have been narrowed down.

5.5 A representative selection of viewpoints is presented here with the locations chosen where there is likely to be most potential impact. Each viewpoint site is assessed with respect to the sensitivity of the users and the magnitude of the change experienced. Refer to Figure 2 for the Viewpoint (VP) locations and photos from the viewpoints are contained in Appendix A (Viewpoints). All photos are taken with a fixed 50mm equivalent focal length lens approximating to the human eye. A number of viewpoints are common to both my assessment and the viewpoints presented within the LVIA.

Overall Visibility and Zone of Visual Influence

5.6 A ZTV of Zone of Theoretical visibility map has been provided by the applicant (C6_LAN_011). This shows the site to be relatively well contained and the significant angle of views are cited to be greater than 1.2 degrees of vertical view. This restricts the main views to within the scope of what I have also considered to be the likely significant zone of visual influence where impacts would be most significant.

5.7 Of critical importance is the degree of screening afforded by existing vegetation or vegetation introduced as part of the restoration scheme. It is important to realise that the applicant has also examined views in the summer months and the permeability of the vegetation in the views put forward by the applicant and myself increases considerably in the winter. If the applicant has relied on the fact that the worst views correspond to those put forward in the LVIA (ie summer views) and that there has not

been an appreciation of the conditions in the winter months then this would partly explain why the conclusions generally underplay the impacts compared to my analysis.

5.8 Also the cross sections provided in the applicant's LVIA assume that the summer vegetation prevents a lower angle of view when often this is not the case. Most of the vegetation around the site has gaps and views would generally permit views of the quarry. Views along the Thames Path (VP5) or from Fullamoor Farm (VP1) illustrate this. Paragraph 3.41 of the Applicant's Archaeology and Cultural Heritage report also makes specific reference to the views from Fullamoor Farmhouse.

Survey Dates

5.9 The site visit was made during clear conditions during the winter months of February and March 2016 and this therefore represents the worst case scenario in terms of the effectiveness of screening vegetation.

Impacts on Receptors

5.10 In this analysis and in common with best practice public viewpoints and public routes and paths are considered the most sensitive locations as the users are moving slowly and most likely using and valuing the view as recreation. Residences with permanent views can also be in this category. Less sensitive receptors include outdoor sports facilities and outdoor spaces associated with places of work as users are not generally enjoying views as their prime activity. Road and transport corridors are considered lower sensitivity as the landscape experience is transitory and the user's focus is mainly on the activity of driving. The point is made later in the report however that for the train users on the nearby railway there would be many thousands of receptors every day which increases the overall importance of the view. Also boat users on the Thames are particularly sensitive receptors as they are specifically there to enjoy their journey and surroundings.

PROWs

5.11 The countryside around the site has a number of rights of way within 3km radius of the site. Due to the relatively flat site topography there are a number of PROWs which will have uninterrupted views toward the site.

5.12 All public rights of way are considered to have relatively high sensitivity to visual impact.

5.13 Table 5 indicates the main visual receptors and locations where I consider views are possible. Visibility has been assessed with a combination of site survey and desk study using aerial photography and OS mapping. Figure 2 shows a range of photographs taken on a site visit in February and March 2016 demonstrating views from the PROWs.

5.14 The most significant of these PROWs is the Thames Path National Trail. The Thames Path is a long distance walking trail, following England's best known river for 184 miles

(294 Km) as it meanders from its source in the Cotswolds through several rural counties and on into the heart of London. VPs 5, 6 and 20 are located along the Thames National Trail. The Thames National Trail runs along the southern application site boundary and due to the flat topography and lack of vegetation to screen views to the site the impact upon these views is Major (same as LVIA) as there are open views to the site.

5.15 The proposals will constitute a high degree of change to that which exists at present. The applicant's LVIA states that '*the length of the Thames Path affected by the proposed quarry is relatively short in length at approximately 800 metres and unlikely to represent a significantly adverse visual intrusion for long distance walkers'*. This 800m length is where the quarry is closest to the path (my VP5 and 20). VPs 6 and 21 also show open views towards the quarry boundaries where early planting may take place but will take some time to become effective.

5.16 Elements such as the processing plant, concrete plant, conveyors and plant operating on the site will all be visible. There will also be the issue of noise emanating from the site that will be a further factor in eroding the tranquillity and amenity values of this National Trail. VPs 5, 6, 20 and 21 showing views towards the site and the relationship of the path to the site clearly show that the length affected is much longer than 800m (2.7km).

5.17 After restoration impacts would gradually reduce as the landscape becomes more enclosed and the new water bodies are screened. The underlying landscape would however remain fundamentally changed and new recreational uses would be introduced (sailing and fishing) bringing new pressures and increased visitors, cars and other cumulative visual effects. Overall the visual impacts are judged to reduce to Minor after 15 years (LVIA states this to be a Minor Beneficial effect).

5.18 No direct views are possible from Clifton Hampden Lock itself though views from the Thames Path nearby are possible.

5.19 The existing path within the site itself (171/15/20) will be lost as a result of the quarry resulting in a long term impact for local users (my VPs 8 and 9). No comparable view is provided in the LVIA to demonstrate the loss of this amenity – particularly with regards to loss of the view to the AONB as previously mentioned under landscape impacts and the setting to the AONB.

5.20 The paths on the south side of the Thames (106/1/10 and 106/2/10) will have views from a slightly elevated location (my VPs 18 and 19). There are also partial views from near to the edge of Appleford. These would be Major/Moderate or Moderate reducing to Negligible at year 15 after completion. The LVIA concludes that the impacts would be

Moderate reducing to Negligible.

Residents

5.21 Table 5 summarises my assessment of the effects of the development on local residents.

5.22 Apart form Fullamoor Farmhouse and Stable House, views have been assessed without gaining access to the properties and some assumptions have had to be made on the potential visibility from property and surrounding land. For example it has not been possible to ascertain if there are views from upper floor windows. Residential receptors have been assessed by estimating impacts on individual properties or on groupings of property based on a nearby viewpoint or site visit to a location nearby.

5.23 The residential properties on High Street (Thameside Cottage, Finches Cottage, Thames View Cottages, Willow Cottage, Little Place and The Orchard) lie 250-500m away from the application site boundary. There is a thick band of vegetation of trees and hedges which currently creates a sense of enclosure between the application site and these properties. However, it has not been possible to ascertain if there are views from upper floor windows and if the vegetation is seasonal.

5.24 At the Vineyard residential property on High St oblique views from upper floor windows would be possible. Impacts are predicted to be Moderate reducing to Negligible. The track along the north of the site continues with some further residential properties. Warren Farm Cottage overlooks the site has a direct open view as there is no vegetation to screen the proposals and the topography is flat. Impacts are predicted to be Moderate/Major reducing to Negligible. South Cottage has possible views towards the concrete plant on the site and would experience up to Moderate impacts (LVIA says Minor) reducing to Negligible at 15 years.

5.25 Fullamoor Farmhouse lies close to the application site boundary (155m away) and the boundary of the property directly adjoins the northern edge of the site. The residential property will experience open and expansive views to the application site both from the ground floor, garden and from the upper floors. The intrusive earth bunding introduces an incongruous feature into the view that will completely dominate these views. This combined with the loss of the mature poplar trees and extended trees screen on the horizon will have a significant adverse impact. Moderate/Major (LVIA says Moderate) reducing to Negligible. There is no viewpoint provided by the LVIA from this property though the Applicant has contacted the owners and has been given permission to visit the house.

5.26 4 properties east of Fullamoor Farmhouse have Moderate/Major impacts (LVIA says Moderate) with some views of the bunding south of Fullamoor Farm and oblique views to the east part of the site. Impacts are predicted by the LVIA to reduce to Negligible

after 15 years which I do not disagree with.

5.27 The garage and forge Clifton Hampden would have elevated views out over the east side of the quarry. Predicted effects would be Moderate/Minor (LVIA says Minor), reducing to Negligible. There is no viewpoint provided by the LVIA from this property.

Public transport routes

5.28 I have also considered views from the public transport routes in Table 5. VP13 is from near to the Great Western Main Railway Line but does not convey the potential view from a train. There is no viewpoint provided by the LVIA from this receptor. The railway line is elevated significantly above the application site. The significance of effect of this is at least Moderate as the views of the application site would be extensive and will be seen by many rail passengers every day for 10-11 years. Early planting on the west boundary would not be as effective for these views as the railway is elevated above the flood plain.

5.29 The A415 Abingdon Road runs adjacent to the northern application site boundary. Again the road is elevated (up to 58-59m AOD) compared to main part of the application site at 52m AOD so the road offers potential views to the application site. However, there is mostly a thick barrier of vegetation screening views of the application site from the A415. The significance of impacts would generally be Moderate reducing to Negligible. My VP 12 shows the extent of the site in the winter view compared to the applicant's LVIA view (Viewpoint 7) taken slightly further back showing a telegraph pole dominant in the foreground and with a summer view. The LVIA also concludes that the impacts would be Moderate reducing to Negligible.

5.30 Boat users travelling along the river will generally be lower down in the landscape with views screened out by the river banks and associated vegetation. Boat users with elevated cabins are likely to have glimpsed if not open views for this reach of the river. The applicant's LVIA does not consider these sensitive receptors.

Cumulative Impact Assessment

5.31 Normally an LVIA would take into account the cumulative effects of other existing and proposed quarries. The Cumulative Assessment includes consideration of effects of the proposed quarry development together with any existing and proposed quarries within the study area.

5.32 Two types of Cumulative Effects would normally be considered. These include:

5.33 Intervisibility - where the influence of existing and proposed quarries will overlap and impact on landscape character and where visual amenity receptors will simultaneously have views of more than one development of this kind.

5.34 Sequential - where a viewer will gain progressive views of two or more quarries along

the course of a route. The quarries may not be intervisible, but can combine to have a cumulative impact on the viewer as they move through the landscape sustaining intermittent views. This may change the perception of the landscape character to an area dominated by quarries.

5.35 Cumulative effects are likely to be perceived mostly from those receptors using the Thames Path. I have estimated that the quarry will be visible or in very close proximity (within 25-35m) of Thames path receptors for 2.7km. It is likely that long distance hikers will also experience the close proximity of the Sutton Courtenay workings too (a sequential effect) estimated to be a further kilometre of possible views. The applicant's LVIA dismisses this possibility and describes the impacts as Negligible.

5.36 Train users will experience the effect of being able to see both quarries from the same location and given the large numbers of receptors passing through on this route this is a significant factor. Further extensive areas of gravel workings are also immediately adjacent to the railway a short distance to the north adding to the perception of a landscape dominated by this activity.

5.37 Future uses of the landscape such as sailing and fishing on the new water body would bring new pressures such as car parking, as access road, new storage buildings and a level of activity previously absent in this landscape. Visual impacts and loss of amenity would be likely to increase thus representing a further cumulative effect that would result from the change to land use.

5.38 Table 5. Significance of Visual Effects

Visual Assessment Residential receptors are separated out later in the table. VP indicates where the view is illustrated. See Viewpoint Locations Figure 2. **NOTE: All LVIA views are taken in summer. Winter views are significantly different.**

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
PRoWs and Public Roads								**With mitigation the impacts reduce over time.**
VP3	Abingdon Road A415 0.4km	Low	Low	**Low**	Low	Low	**Low**	**Minor adverse** Transitory views from road users. Views include distant views to Wittenham Clumps At Completion: Negligible Residual Effects after 15 years: Negligible
VP9	PROW centre of site no 171/15/20 (actual route used as the definitive alignment is under cultivation. 0km	Medium	High	**Medium/High**	High	Medium	**Medium/High**	**Major/Moderate adverse** Large flat and open fields with intermittent distant tree screening. Near to concrete plant. View to Wittenham Clumps and AONB on skyline lost At Completion: **Moderate/Major adverse** Residual Effects after 15 years: **Minor adverse**
VP11	PROW centre of site. No 171/15/20 0km	Medium	High	**Medium/High**	High	Medium	**Medium/High**	**Major/Moderate** Large flat and open fields with intermittent distant tree screening. Near to concrete plant. View to Wittenham Clumps and AONB on skyline lost At Completion: **Moderate/Major adverse** Residual Effects after 15 years: **Minor adverse**

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
VP4	PROW centre of site no 171/15/20	Medium	High	**Medium/High**	High	Medium	**Medium/High**	**Major/Moderate adverse** Large flat and open fields with intermittent distant tree screening. Near to concrete plant and to large 10m high screen mounding. View to Fullamoor Farm House. At Completion: **Moderate/Minor adverse** as area returned to agriculture, but uncharacteristic silt ponds will be in the view. Residual Effects after 15 years: **Minor/Negligible adverse**
VP5	Thames Path No 171/8/10 0.05km	High	High	**High**	High	Medium	**Medium/High**	***Major (LVIA)*** **Major adverse** On southern edge of site. Thames Path slightly elevated allowing good views towards centre of site beyond clipped hedges and tree belts. This view demonstrates the harm that the quarry is likely to have on visual amenity for these receptors. At Completion: **Moderate adverse**. The LVIA states 'fully restored to agriculture' but the view will be just be to the large new water body with new planting. The proposals are for small boat sailing introducing a level of activity not previously experienced in the rural and tranquil riparian landscape. Residual Effects after 15 years: *Minor Beneficial (LVIA)*

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
								Minor adverse
	Clifton Hampden Lock .022km	Medium/ High	High	**High**	Low/ Negligible	Low	**Low/ Negligible**	**Low/Negligible** No direct view from lock, though nearby views are possible from footpaths a short distance away. At Completion: Negligible Residual Effects after 15 years: Negligible
VP6	Thames Path No 171/8/10 0.23km	High	High	**High**	Medium	Medium	**Medium**	**Major/Moderate adverse** Views to east end and to concrete plant. At Completion: **Moderate adverse** Residual Effects after 15 years: **Minor adverse** Water bodies may seem incongruous cut in to the river terrace landscape
Near to VP 6	Thames Path No 171/8/10 and Bridge House Caravan Park 0.36km	High	High	**High**	Medium /High	Medium	**Medium/High**	**Major adverse** Views to east end and to concrete plant. Open river bank side location from Caravan park directly to the site. At Completion: **Moderate adverse** Residual Effects after 15 years: **Minor adverse**. Water bodies may seem incongruous cut in to the river terrace landscape
VP7	PROW Clifton Hampden no 171/15/10 0.19km	Medium	High	**Medium/High**	Medium	Medium	**Medium/High**	**Major/Moderate adverse** From footpath. Views to east end and nearby views towards to concrete plant. Major impact for duration of the works and the only mitigation proposed appears to be a

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
								hedgerow at the quarry boundary. Soil storage mounds will be in view from Phases 7A and 7B. At Completion: **Minor adverse** Residual Effects after 15 years: Negligible
Nr VP8	PROW, Clifton Hampden no 171/15/10 0.km	Medium	High	**Medium/High**	Medium/ High	Medium	**Medium/High**	**Major/Moderate** View from footpath. Views to south and to Wittenham Clumps and AONB At Completion: Moderate Residual Effects after 15 years: Minor
VP12	Abingdon Road A415 0.2km	Medium	Low	**Medium/Low**	Medium/ High	Medium/high	**Medium/High**	**Moderate adverse** Transitory views from road users, but elevated and prominent especially in winter view. LVIA shows summer view. At Completion: **Minor adverse** Residual Effects after 15 years: Negligible
VP13	Thames Path nr to Railway line – London-Oxford Railway Line 690m	High	High	**High**	Low	Medium/Low	**Low**	**Moderate adverse** Thames path users have obscured views. Railway users have open views from elevated embankment right across site. At Completion: **Moderate adverse** Residual Effects after 15 years: Minor
VP14	From B4016 road Quarry workings at	Medium/ Low	Low	**Low**	Low/ Negligible	Low	**Negligible**	**Negligible** Workings are dominant in the view. Wittenham Clumps clearly visible. The

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
	Sutton Courtenay							existing Sutton Courtenay concrete plant is also visible from this location. At Completion: Negligible Residual Effects after 15 years: Negligible
VP15	From B4016 road Quarry workings at Sutton Courtenay 1km	Medium/Low	Low	**Low**	Low/ Negligible	Low	**Negligible**	**Negligible** Quarry workings are dominant in the view. Wittenham Clumps clearly visible. The existing Sutton Courtenay concrete plant is also visible from this location. At Completion: Negligible Residual Effects after 15 years: Negligible
VP16	Wittenham Clumps 2.44km	High	High	**High**	Low	Low	**Low**	**Moderate adverse** AONB, SSSI and Scheduled Monument (Castle Hill). Views are remote at 2.4km or greater, but the large extent of quarry workings on the river plain extend across a wide angle of the view and extend into the existing quarry workings. 2 concrete plants will be in the view. The scarring of the landscape will be discernible, particularly in the winter view and when screening vegetation on the site is removed. At Completion: **Minor adverse** Residual Effects after 15 years: Negligible
VP17	Footpath between White Lees and Hill	Medium	High	**Medium/High**	Low	Low	**Low**	**Moderate/Minor** The view is remote and mostly filtered by layers of trees. The scarring of the landscape may be discernible, particularly

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
	Farm no 283/6/10 3.67km							in the winter view and when screening vegetation on the site is removed. At Completion: Negligible Residual Effects after 15 years: Negligible
VP18	PROW No 106/1/20 0.3km	Medium/ High	High	**Medium/High**	High	Low	**Medium/Low**	**Moderate adverse** South of site. Partial view from elevated terrace to open fields (west and south extent of site) Possible views from properties at edge of Appleford. At Completion: **Moderate/Minor adverse** Residual Effects after 15 years: Negligible
VP19	PROW No 106/1/20 0.1km	Medium/ High	High	**Medium/High**	High	Medium	**Medium/High**	***Moderate (LVIA)*** **Major/Moderate adverse** South of site. Partial view from elevated terrace to open fields (west and south extent of site) At Completion: **Moderate/Minor adverse** Residual Effects after 15 years: Negligible
VP20	Thames Path No 171/8/10 0.1km	High	High	**High**	High	Medium	**Medium/High**	**Major adverse** On open south west edge of site. View to open fields (west and south extent of site). Early planting will begin to screen views will take some time to become effective. At Completion: **Moderate adverse**. Landscape will remain an immature appearance at this stage and the complete change in the landscape will be

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
								incongruous in the short to medium term. The proposals are for small boat sailing introducing a level of activity not previously experienced in the rural and tranquil riparian landscape. Residual Effects after 15 years: Minor
Residential Receptors Distance to receptor								
VP1 0.1km	Fullamoor Farmhouse	Medium	High	**Medium/High**	Medium/ High	Medium/Low	**Medium**	***Moderate (LVIA)*** **Major/Moderate adverse** Extensive elevated views from property and garden, despite some filtering trees. Impact from change to landscape, loss of distant trees on horizon and introduction of bunds in foreground. LVIA conclusion does not take account the intrusion into the view of the storage and screening bunds. At Completion: **Minor adverse** Residual Effects after 15 years: Negligible
0.2km Use photo back	Lower Town Farm House Track property-	Medium	High	**Medium/high**	Medium	Medium/Low	**Medium/Low**	**Moderate adverse** Grade II Listed Building with oblique views from upper floor windows At Completion: **Minor adverse** Residual Effects after 15 years: Negligible
.2km	The Vineyard	Medium	High	**Medium/high**	high	Medium/high	**Medium/high**	**Major/Moderate** Oblique and direct views from upper floor windows At Completion: **Minor adverse**

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
								Residual Effects after 15 years: Negligible
0.18km	South Cottage	Medium	High	**Medium/High**	Medium	Medium/Low	**Medium/Low**	***Minor (LVIA)*** **Moderate adverse** Views possible to concrete plant from garden At Completion: **Minor adverse** Residual Effects after 15 years: Negligible
VP2 0.17km	No 1 Field View	Medium	High	**Medium/High**	Medium/ High	Medium/Low	**Medium**	***Moderate (LVIA)*** **Major/Moderate adverse** Extensive elevated and oblique views from property and garden, particularly in winter despite some filtering trees (Grass hill Covert). Impact from change to landscape, loss of distant trees on horizon and introduction of bunds in foreground. At Completion:**Minor adverse** Residual Effects after 15 years:
VP2 0.17km	No 2 Stable House	Medium	High	**Medium/High**	Medium/ High	Medium/Low	**Medium**	***Moderate (LVIA)*** **Major/Moderate adverse** Extensive direct elevated views from rear of property and garden, particularly in winter despite some filtering trees. Impact from change to landscape, loss of distant trees on horizon and introduction of bunds in foreground. At Completion: **Minor adverse** Residual Effects after 15 years: Negligible

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
VP2 0.17km	No 3 – The Old Dairy	Medium	High	**Medium/High**	Medium/ High	Medium/Low	**Medium**	***Moderate (LVIA)*** **Major/Moderate** Extensive direct elevated views from rear of property and garden, particularly in winter despite some filtering trees. Impact from change to landscape, loss of distant trees on horizon and introduction of bunds in foreground. At Completion: **Minor adverse** Residual Effects after 15 years: Negligible:
VP2 0.17km	No 4 Long Meadow	Medium	High	**Medium/High**	Medium/ High	Medium/Low	**Medium**	***Moderate (LVIA)*** **Major/Moderate adverse** Extensive elevated and oblique views from property and garden, particularly in winter despite some filtering trees (Grass Hill Covert). Impact from change to landscape, loss of distant trees on horizon and introduction of bunds in foreground. At Completion: **Minor adverse** Residual Effects after 15 years: Negligible
VP10 0.18 km	The Garage Forge, and residence Clifton Hampden	Medium	High	**Medium**	Medium	Medium	**Medium/**	***Minor (LVIA)*** **Moderate adverse** Elevated views from property and surrounds, despite some filtering trees At Completion: **Minor adverse** Residual Effects after 15 years: Negligible
0.05km	Warren Farm Cottage Lower	Medium	High	**Medium/high**	High	Medium	**Medium/High**	**Major/Moderate adverse** Overlooking the site and in the immediate view.

Visual Receptor	Location and distance from site boundary of quarry	Imp of view	Sensitivity of receptor	Sensitivity of Receptor (Nature of Receptor)	Magnitude of change	Extent	Aggregate Magnitude of Change (Nature of Effect)	Significance of Effect Derived from combining the Aggregate Sensitivity with the Aggregate Magnitude of Change
	Town Farm Track property							At Completion: **Minor adverse** Residual Effects after 15 years: Negligible

Conclusion for Visual Impacts

5.39 The assessments of impact on visual receptors provide a benchmark of anticipated effects on a range of receptors

5.40 The main significant effects are those experienced by users of public rights of way enjoying the amenity and recreational values of the landscape and by residents who have chosen to live in and enjoy the views provided by this rural and tranquil landscape. Views from the A415 are not so significant. Many thousands of receptors every day would experience at least Moderate impacts. Also boat users on the Thames are particularly sensitive receptors and they may also experience at least Moderate or Major/Moderate impacts as they slowly pass the site.

5.41 As demonstrated by the ZTV, the worst visual effects are experienced by those close to the site and that is where the most sensitive receptors are that have been assessed. It follows therefore that these receptors on the Thames Path (for 2.7km) for the paths crossing the site (diverted and not longer available as an amenity) and the path to the south of the river between Long Wittenham and Appleford, all experience Moderate, Moderate/Major or Major impacts during the quarrying operations. These impacts will be felt for up to 13 years which is a long term impact.

5.42 It is acknowledged that some impacts will be reduced due to early planting as progressive restoration is implemented, thought the immaturity of the planting will mean that residual impacts remain for some considerable time.

5.43 Once the operations are completed the impacts will reduce as mitigation measures gradually become more effective in screening views and restoring the more enclosed character of the landscape. As this process will take numbers of years the residual impacts may remain at a significant level reducing in time to minor or negligible levels.

5.44 I have assessed impacts from 10 residential receptors, which are summarised as 7 Major/Moderate, and 3 Moderate. The duration of the impacts will vary according to the locations of the properties and their views of particular phases of the operations. This will relate also to the measures put in place in terms of early planting and how effective this becomes. A brief specification of this planting is provided as part of the applicant's Planning Statement. In the case of Fullamoor Farmhouse, the intrusive earth bunding introduces an incongruous feature into the view that will completely dominate the views. This combined with the loss of the mature Poplar trees and extended tree screen on the horizon will have a significant adverse impact.

5.45 Longer term, the restoration of the landscape back to agriculture will reduce the impacts considerably. However the retention of the silt ponds with intrusive safety fencing in close views to Fullamoor Farmhouse and 4 nearby properties and to footpath users will be a residual impact in terms of new features within the landscape. The development

of the new planting around the other water bodies will, in time, restore the view to these properties, but this will take many years to achieve this.

6 Conclusions

Landscape Impacts

6.1 The impacts on the River Meadows landscape are of major significance. For approximately 2.7km the landscape will permanenty and fundamentally altered in character. The rural and tranquil riparian character will undergo extensive destruction north of the river with the loss of mature shelter belts and hedgerows with the consequential opening up of views to a new quarry with processing plant, concrete plant, conveyors and operating plant. The operational impact will be for a long duration of more than 10 years and will have a longer effect pending any new planting reaching maturity. The operational impacts and subsequent restoration proposals will lead to a landscape being dominated along this stretch of this highly sensitive landscape type by quarrying operations or the after effects thereof.

6.2 Other significant effects will also apply to the adjoining landscapes directly in terms of the Terraced Farmland and Vale Farmland Landscape Type and indirectly for the Lowland Village Farmlands types. The impacts imposed on these landscapes (River Thames Corrider in particular) are directly contrary to the advice provided within the SODC landscape assessment to avoid development within the unspoilt floodplain. Also that development would be visually prominent and that further recreational development associated with former gravel pits would be incompatible with nature conservation interests and would therefore be undesirable.

6.3 The new water bodies will look incongruous and out of character. The success of the restoration will also depend very much on the detail of the landscape resoration proposals and the quality of the implementation and subsequent aftercare and management of the intended habitats.

6.4 The applicant's LVIA underplays the landscape impacts compared to my conclusions. It assumes that the early planting to progressively restore the landscape will be successful in assimilating this large scale new landscape feature into its surroundings by establishing quickly and without the planting itself or the incongruous water bodies being out of character.

6.5 The agricultural restoration is more straightforward and the landscape within the Terraced Farmland is more easily repaired to its former state, albeit, it would appear, with a more expansive field pattern. Uncharacteristic silt ponds would also remain as a legacy feature in the landscape.

6.6 Other impacts may include adverse effects to the setting to the historic landscape as set out in the responses by Historic England and the County Archaeologist and on the setting to the AONB. Views to Wittenham Clumps will be lost or marred by also having

the quarry in the view.

Visual Impacts

6.7 In visual terms some of the conclusions reached by the LVIA are similar to my own. However the LVIA does not address some viewpoints such as the loss of amenity to the footpath within the site or the possible views from either the train or from boat users which ignores the possible impacts on thousands of people every day on the former and on smaller numbers but very sensitive receptors for the latter. There is no LVIA viewpoint either from Fullamoor Farmhouse which has been identified as a historic building and whose setting will be significantly affected by the quarry and no viewpoint from the neighbouring residential barns.

6.8 In my assessment views from the Thames Path will experience Moderate/Major to Major adverse effects over a length of path of up to 2.7km. Paths within the site will be lost. Views from the south of the river will be significant initially but will be likely to reduce with time as planting matures.

6.9 10 residential properties have significant impacts initially reducing with time as land is restored and planting matures. Impacts nevertheless last for several years or for the duration of the quarrying operation. Fullamoor Farmhouse has impacts resulting from the soil bunds that are placed south of the property and around the processing and batching plants which are incongruous and which will last for the duration of the quarrying operation. The silt ponds will endure beyond the restoration of the site as hazardous areas with intrusive safety fencing around them. The applicant's Archaeology and Cultural Heritage report acknowledges that the setting to Fullamoor Farm House is affected to a Minor degree. My own findings have concluded that the visual impact on this property and therefore also on its setting is Major/Moderate.

6.10 Receptors from the main line railway to the west of the site will have significant views towards the west end of the quarrying operation which will open up as the phases develop to the whole site. These receptors will be above the general level of the land and will be unlikely to be screened initially by early planting.

6.11 Cumulatively, the proposed quarry will contribute to this landscape along the Thames Corridor being dominated by quarrying activity.

Summary of Conclusions

6.12 To conclude, I refer back to the SODC Landscape Assessment which captures the key characteristics of the landscape. The assessment defines the landscape character in this area as having a strong degree of coherence, with the River Thames providing a strong unifying influence. The quarry will destroy this coherence and will create a fragmented and disrupted landscape. Low intervisibility will be transformed into high intervisibility due to loss of mature trees. A rural and tranquil landscape (with 'arcadian'

qualities) will be changed to an industrialised quarry landscape. Overall I support the view that 'large-scale development of any kind will be inappropriate within open countryside areas and along the river corridors'. That 'development would generally be inappropriate within the unspoilt floodplain pastures', and 'that further recreational development associated with the former gravel pits is generally incompatible with nature conservation interests and therefore undesirable'. My conclusions are that the landscape and visual impacts on this sensitive river corridor landscape are unacceptable over the long period of the quarry operation and restoration and that even after the restoration is complete the legacy landscape will remain out of character within its context.

Bibliography

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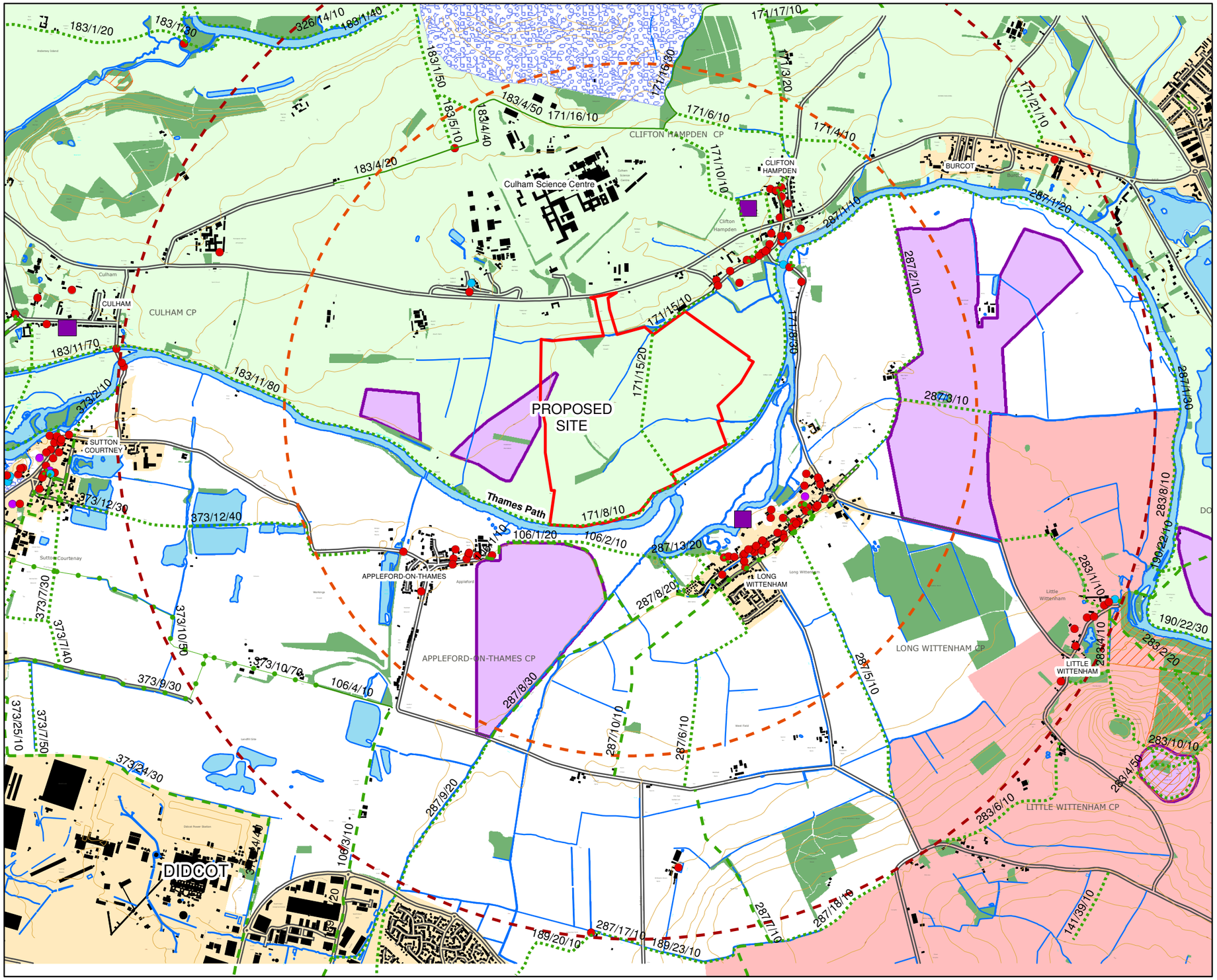
- AONB Position Statement on Setting (Development Affecting the Setting of the North Wessex Downs AONB – October 2012)



0 750 1,500 Meters

N

Legend

- 3km Radius Study Area
- 2km Radius Study Area

Rights of Way

- Footpath
- Bridleway
- Byway
- Site Boundary
- Conservation Areas

Listed Buildings

- Grade I
- Grade II*
- Grade II
- Contour Line
- Water Line
- Building Area
- Road Line
- SSSI
- Listed Park
- Settlement Area
- Water Area
- Woodland Area
- Scheduled Monument
- AONB
- GREEN BELT

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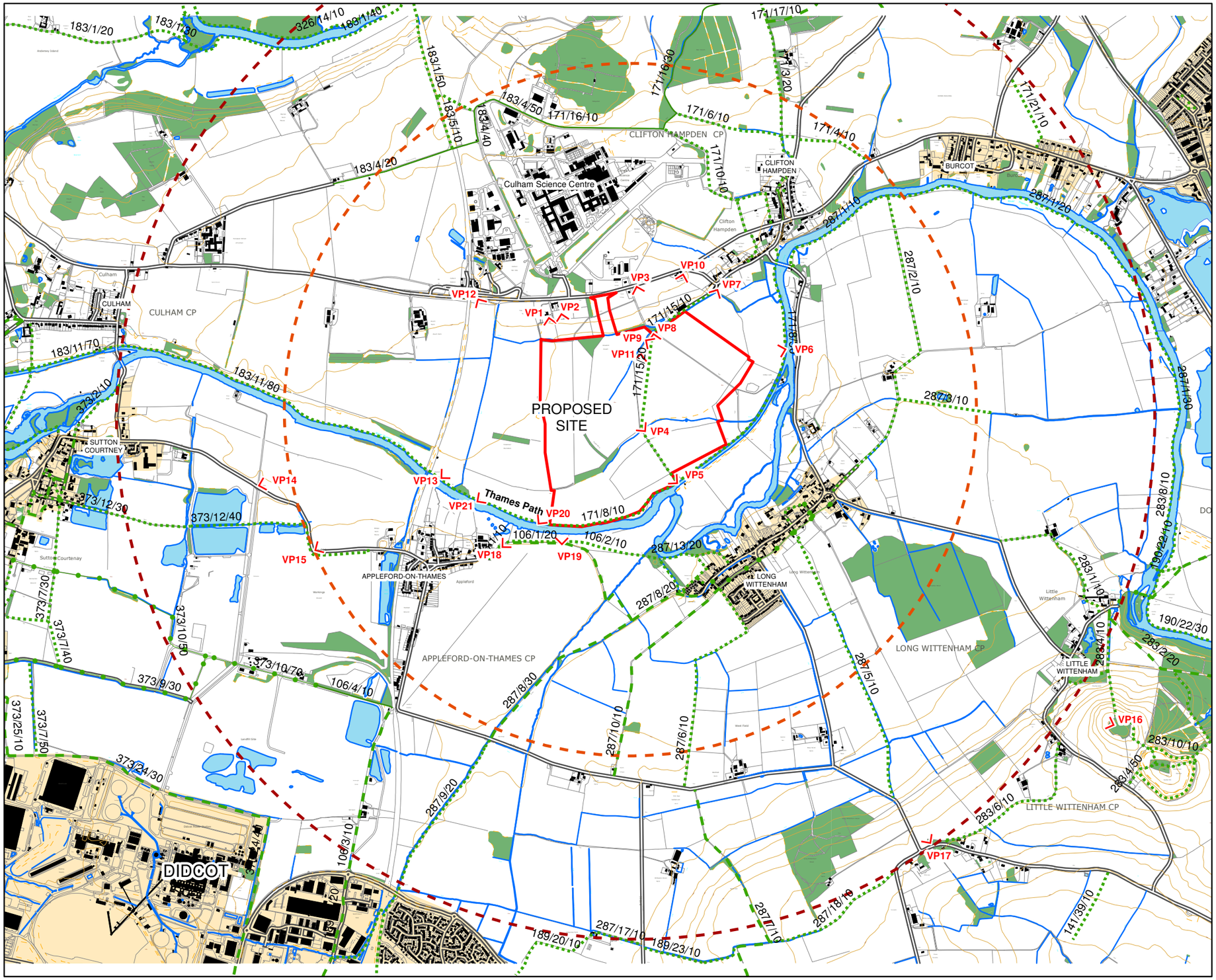
Figure 1:
Site Location and Statutory Designations



N

Legend

- Photo Locations
- 3km Radius Study Area
- 2km Radius Study Area

Rights of Way

- Footpath
- Bridleway
- Byway
- Site Boundary
- Contour Line
- Water Line
- Building Area
- Road Line
- Settlement Area
- Water Area
- Woodland Area

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Figure 2:
Photo Locations

Proposed New Quarry Development at Clifton Hampden

Appendix A

Viewpoints

28 April 2016

ANTHONY STIFF ASSOCIATES

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Prepared by Anthony Stiff BSc MA CMLI

28th April 2016

Photos

VP1 - View from Fullamoor Farm.

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VP2 - View from Stable House.

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Photos

VP3 - View from A415 near to South Cottage.

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VP4 - View from public path 171/15/10 within site to the north.

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VP5 View from the Thames Path.

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VP6 View from Thames Path.

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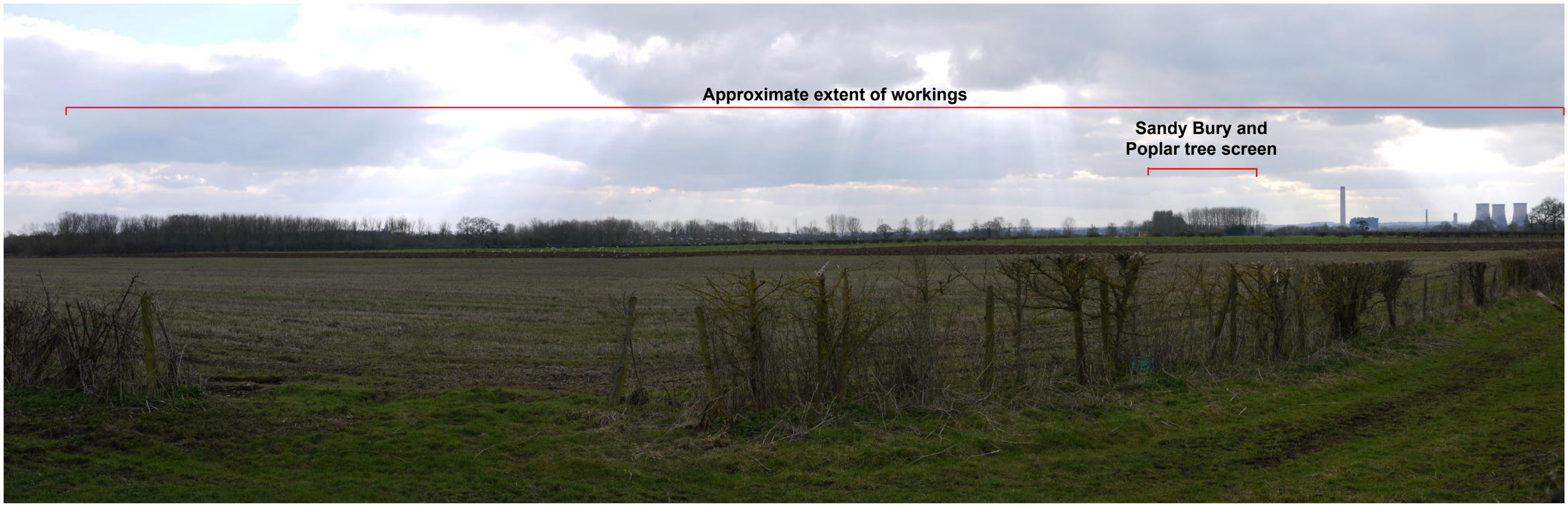

VP7 From the edge of Clifton Hampden.

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VP8 View from public path 171/15/10 within the site.

VP9 View from public path within the site towards Wittenham Clumps and the AONB.

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VP10 View from Clifton Hampden Garage and Forge.

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VP11 View from within the site on public path 171/15/10.

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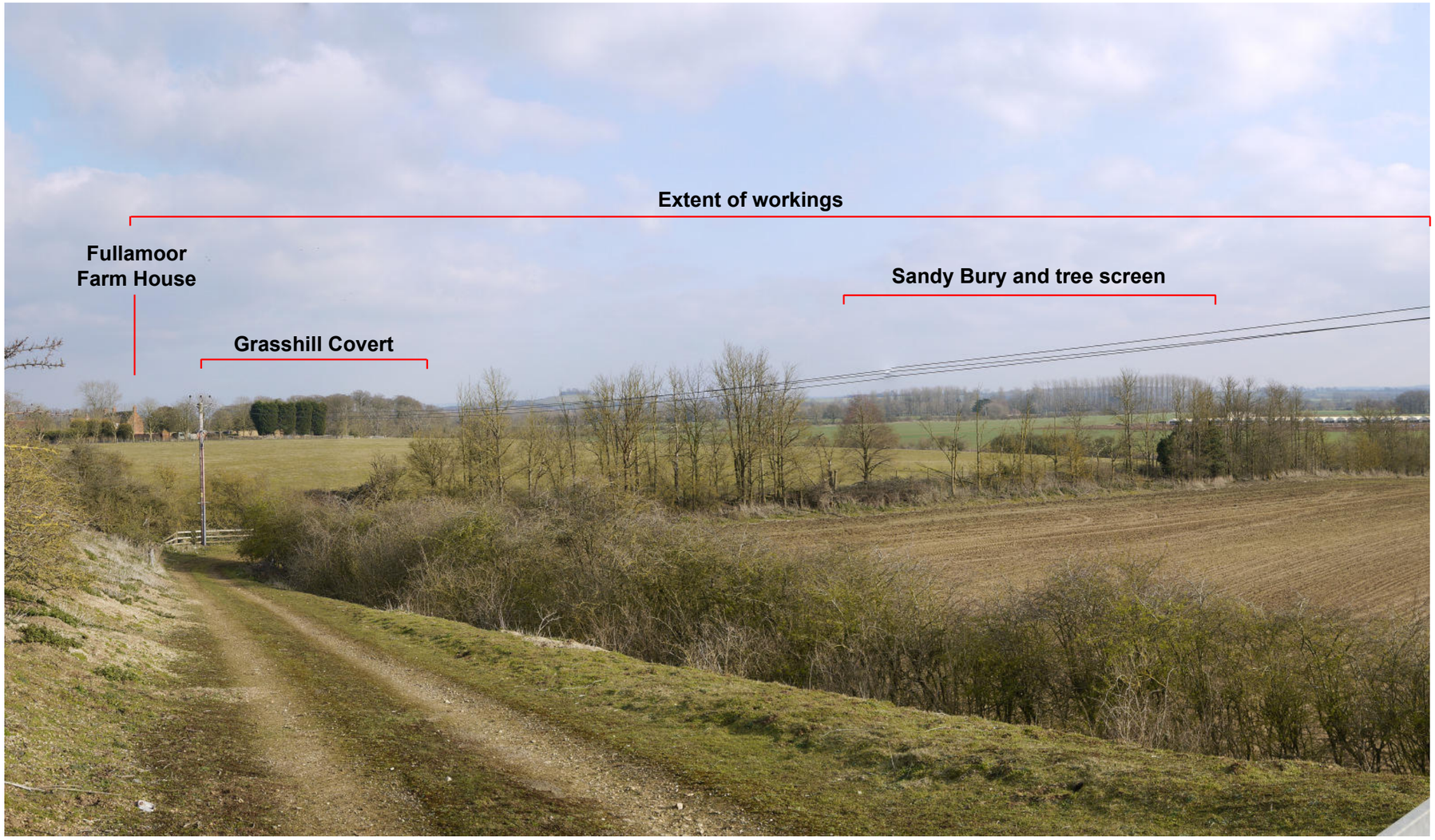

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VP12 View from the A415.

VP13 View from near the railway line.

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VP14 View of existing quarrying operations west of Appleford.

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ANTHONY STIFF ASSOCIATES
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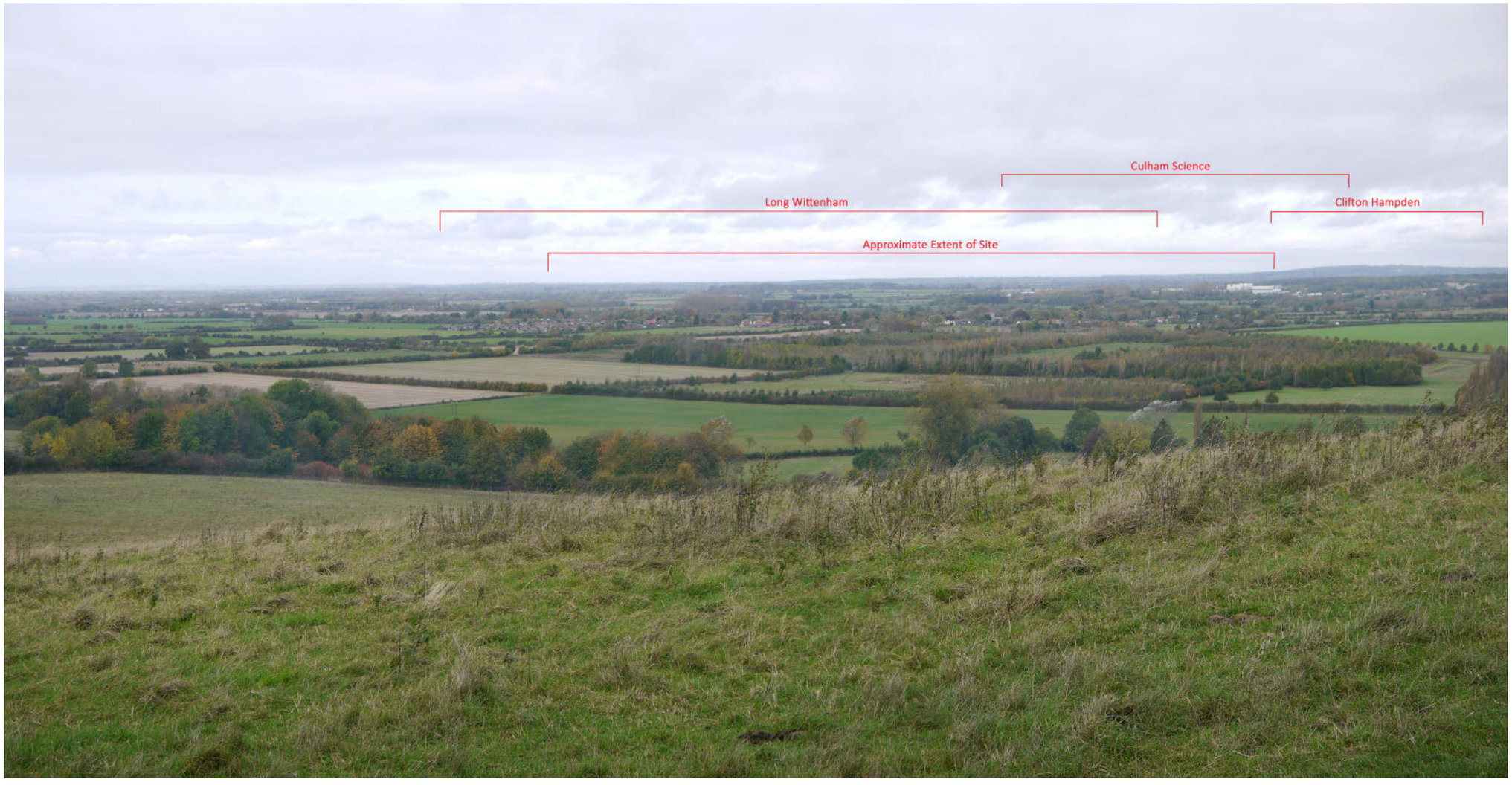
VP15 View of existing quarrying operations west of Appleford.



VP16 View to the north west from Wittenham Clumps.

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VP17 View from public path 283/6/10

ANTHONY STIFF ASSOCIATES
See Landscapes Differently

VP18 View from just east of Appleford on footpath 106/8/10.

ANTHONY STIFF ASSOCIATES
See Landscapes Differently

VP19 View from footpath 106/8/10 south of the site.

ANTHONY STIFF ASSOCIATES
See Landscapes Differently

VP20 View from Thames Path.

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See Landscapes Differently

ANTHONY STIFF ASSOCIATES
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VP21 View from Thames Path.

APPENDIX 5

SURVEY OF TREES

Clifton Hampden and Burcot Parish Council
Fullamoor Farm House
Clifton Hampden
Abingdon
Oxfordshire
OX14 3DD

Our Ref. Mason Wildlife Survey 25/04/2016

01865 407226
07941263819
07802254479
ian_jaqi@btinternet.com

Dear Clifton Hampden and Burcot Parish Council,

Further to my visit on 25/04/2016, I now submit my basic Wildlife Survey Report for the 10 trees identified by yourself around the proposed the Quarry.

Yours sincerely,

Sam Greenwood Dip Arb L4 (ABC)

Wildlife Survey of trees identified on the site of the proposed development at Fullamoor Quarry , Clifton Hampden, OX14 3DD.

Prepared for: Clifton Hampden and Burcot Parish Council

Site: The proposed Quarry development to the rear of Fullamoor Farm House, Clifton Hampden, OX14 3DD.

Prepared by: Sam Greenwood Dip Arb L4 (ABC)

Date of inspection: 25th April 2016

Weather Conditions: Fair

There are a total of 25 pages for the survey plus a 'site specific' Wildlife Assessment.

OS: Group of trees in the hedgerow area: 539944
OS: Beginning of the public footpath: 539948.

Terms of reference:

1.1 This report was requested by Clifton Hampden and Burcot Parish Council

1.2 We are instructed to comment on the trees identified to us by Clifton Hampden and Burcot Parish Council during the site visit on the 25th April 2016. Within the remit of this survey, no other trees were considered.

1.2.1 To carry out a basic wildlife survey on the trees identified to us.

1.2.2 To identify potential hazards and establish severity.

1.2.3 To make recommendations for remedial work to help improve and ensure survival of the wildlife habitat.

1.2.4 To prioritise any remedial works.

1.2.5 To ensure the duty of care is observed by the tree owners and to provide recommendations for any work deemed necessary to prevent a failure of this duty.

1.2.6 To give an indication of cost of tree work.

Limitations

2.1 The content of the report is valid for a period of one year from the date shown above.

2.2 The report is for the sole use of the client and its reproduction or use by anyone else is forbidden unless written consent is given by the author.

2.3 This is an Arboricultural report and as such, no reliance should be placed on comments relating to buildings or soil data.

2.4 Visual Tree Assessment techniques were used from ground level.

Ecology & Legislation:

3.1 The Wildlife & Countryside Act 1981 and Countryside & Rights Of Way Act 2000 make it an offence to kill or injure any wild bird, or take, damage or destroy any nest in use or being built

3.2 The same acts make it an offence to kill or injure any bat or damage or destroy any bat roost.

3.3 In addition, native (especially veteran) trees have vital symbiotic relationships with many and varied life-forms and organisms some of which can only exist in the ecosystems that surround old native trees. The decayed parts of such trees are often an important element in this ecosystem.

3.4 It is therefore vital that any contractor that is employed to undertake any recommendations in this report must take precautions to ensure that all work is completed within relevant legislation & guidelines to protect the wildlife and the environment.

Survey Headings:

Estimated DBH & Height:
The diameter at breast height in millimetres and overall tree height in metres are estimated visually without using measuring instruments.

Comments:
Any notable features of the trees or external factors affecting the trees. For the purposes of condition comments and pruning, deadwood refers to dead wood greater than 10mm in diameter. Major deadwood refers to greater than 50mm in diameter.

Recommendations:
Tree works recommended to be undertaken at this stage. All work must be completed in line with BS3998 2010 'Recommendations for Tree Work'.

Urgency
Urgency of the works it depicted in months, this gives a clear indication of how soon the works should be carried out.

Inspection Freq:
If a greater frequency of inspection than standard is recommended it will be noted. We recommend an inspection frequency by a qualified Arboriculturalist of every 30 months.

If the inspection frequency is noted as 'NA', a frequency is not deemed applicable due to the recommendations for that tree i.e. tree removal.

Wildlife/habitat value
The value a tree holds in regards to potential habitation by wildlife, some of which are protected.

Wildlife Considerations

Due consideration must be given to the legislation and recommendations regarding the protection of bats, nesting birds, and the tree itself as an important habitat.

Native Veteran trees have vital symbiotic relationships with many varied types of life forms and organisms, some of which are extremely rare and can only exist in the ecosystem that surrounds very old native trees. The decayed parts of such trees are often an important element in this.

Wildlife Survey of trees identified on the site of the proposed development at Fullamoor Quarry , Clifton Hampden, OX14 3DD.

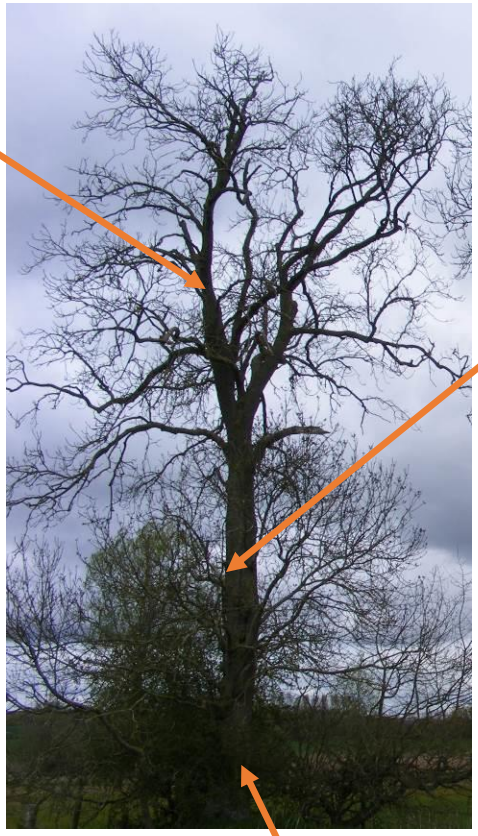
25th April 2016

Prepared by:
Ringrose Tree Services Ltd
Blagrove Lodge
Fox Lane
Wootton
OX13 6DE

Ringrose Tree Services

Tree Number: T1	**Species:** Ash	**Age Class:** Over Mature	**DBH:** 450mm
Height: 12m	**Location:** Edge of field, adjacent to public footpath.		

Woodpecker hole on North side at 10 metres with evidence of usage. Visible scuff markings on bottom of hole and smoothing of sides.



Old Inonotus hispidus bracket on main stem at 3m to 6m, above the bracket is a partially occluded strip wound, both of these signs suggest that the stem is hollow at this point. It is unknown as to what degree the stem is hollow, however this characteristic is ideal habitat for bats and birds.

- The tree is within a hedgerow running through the middle of two large fields, this tree is ideal habitat for bats as they commonly roost adjacent to open areas.
- The tree is adjacent to the public footpath, the risk of failure due to the basal cavity is moderate, however the pathway has low usage and a reduction in height would mitigate and maintain the wildlife value.

Significant hollow at base of tree on track side, measuring 300mm wide x 600mm deep x 300mm high. This cavity is great habitat and shelter for Bats and small mammals.

Recommendations

If works are carried out to help maintain the wildlife value, we would recommend that the Ash tree is **reduced by 3m, leaving the woodpecker hole intact for future usage.**

Inspection Frequency: Standard (18 Months)
Wildlife/habitat value: High
Urgency: 9 Months
Price Guide: £300.00 + Vat

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Ash**
Site Inspected By	**Sam Greenwood**	**Height**	**12m**
Tree Number	**T1**	**Age Class**	**Over Mature**

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

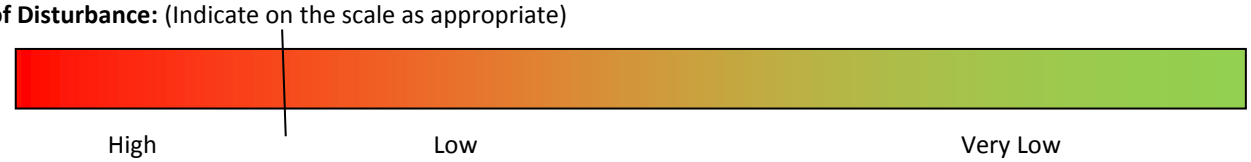
Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes	X	Rot holes down	X	Rot holes up	X	Cavities	X	Loose bark	X
Crevices	X	Bird/bat boxes/nests		Cracks	X	Split/broken limbs	X	Ivy/dense tree canopy	

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard		Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point	X	Other	

Risk of Disturbance: (Indicate on the scale as appropriate)



High Low Very Low

Further Action Required: (Tick as appropriate)

Inspect tree further	X	Seek qualified assistance	X	Notification required	
No further action required		Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

The tree needs to be inspected by a qualified Bat Specialist to ascertain if the tree has any Bats present in the cavities throughout the tree.

Tree Number: T2	**Species:** Oak	**Age Class:** Mature	**DBH:** 400mm
Height: 12m	**Location:** In hedgerow, adjacent to a farmland.		

Comments

- The tree is Ivy clad to 10m, Ivy harbours habitat for many forms of wildlife such as nesting birds, spiders and squirrels.
- There is multiple deadwood throughout the crown, this deadwood is potential habitat for beetles and many other invertebrates.
- As seen in the photo to the right, there is an existing bird's nest at the top of the crown.

Recommendations

To maintain the wildlife value of this tree, **No works should be carried out at the time of inspection.**

Inspection Frequency: Standard (18 Months)
Wildlife/habitat value: Moderate.

Urgency: N/A

Price Guide: N/A

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Oak**
Site Inspected By	**Sam Greenwood**	**Height**	**12m**
Tree Number	**T2**	**Age Class**	**Mature**

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

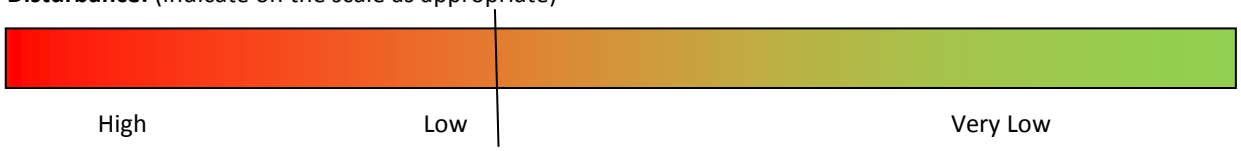
Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes		Rot holes down		Rot holes up		Cavities		Loose bark	X
Crevices	X	Bird/bat boxes/nests		Cracks		Split/broken limbs	X	Ivy/dense tree canopy	X

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard		Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point		Other	

Risk of Disturbance: (Indicate on the scale as appropriate)



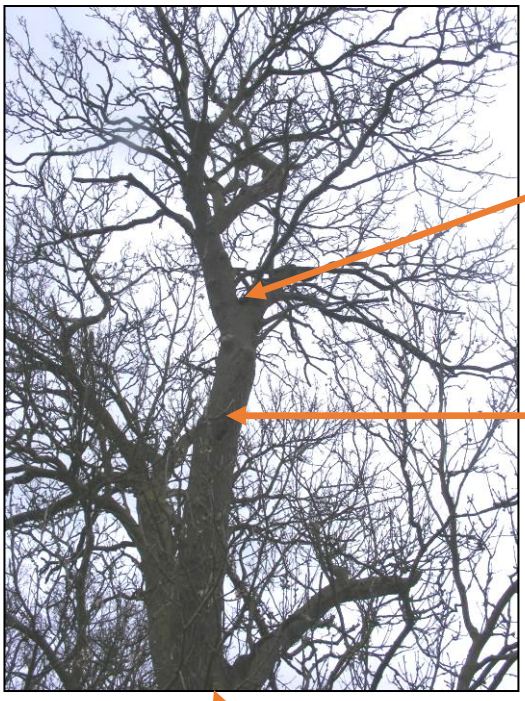
Further Action Required: (Tick as appropriate)

Inspect tree further		Seek qualified assistance		Notification required	
No further action required	X	Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

Visible signs of wildlife is the one nest and there is other trees nearby with more Ivy cover.

Tree Number: T3	**Species:** Ash	**Age Class:** Over Mature	**DBH:** 300mm
Height: 12m	**Location:** Edge of field in hedgerow		



Historic storm damage at 8m on East side, with small cracks and cavity, measuring 100mm high x 50mm wide, depth unknown. This size cavity is ideal habitat for roosting bats and nesting birds.

Woodpecker holes at 6m on the Eastern side, ideal habitat for nesting birds. The edges of the hole are smooth and the bottom is scuffed, suggesting that the hole is inhabited.

Significant cavity at base of tree on south side measuring 300mm wide x 250mm high x 400mm deep, this cavity creates habitat and shelter for bats and small mammals.

Recommendations
To maintain the wildlife value of this tree, **No works should be carried out at the time of inspection.**

Inspection Frequency: Standard (18 months)

Wildlife/habitat value: High

Urgency: N/A

Price Guide: N/A

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Ash**
Site Inspected By	**Sam Greenwood**	**Height**	**12m**
Tree Number	**T3**	**Age Class**	Over Mature

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes	X	Rot holes down	X	Rot holes up	X	Cavities	X	Loose bark	X
Crevices	X	Bird/bat boxes/nests		Cracks	X	Split/broken limbs		Ivy/dense tree canopy	

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard		Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point		Other	

Risk of Disturbance: (Indicate on the scale as appropriate)

Further Action Required: (Tick as appropriate)

Inspect tree further	X	Seek qualified assistance	X	Notification required	
No further action required		Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

The tree needs to be inspected by a qualified Bat Specialist to ascertain if the tree has any Bats present in the cavities throughout the tree.

Tree Number: T4	**Species:** Ash	**Age Class:** Dead	**DBH:** 450mm
Height: 12m	**Location:** Edge of field in hedgerow		

The tree is dead, however it is not dangerous because it doesn't pose a risk to anyone in its current surroundings, the tree isn't within falling distance of the public footpath. The tree has very high wildlife value due to the brittle and weak nature of the wood. The branches will be naturally shed, creating cracks and cavities for bats and birds. Woodpeckers will use the tree for a food source looking for grubs and also for nesting. There are existing cavities that will continue to decay. The tree will be full of grubs, beetles and a multitude of different invertebrates.

Historic storm damage at 7m on stem, measuring 200mm high x 100mm wide, depth unknown. This is ideal habitat for bats, it is up high and easily accessed from the open farmland.

Significant adjoining cavities at ground level, with ascending decay, this is ideal habitat for bats and also rabbits and other small mammals.

Recommendations:
To maintain the wildlife value of this tree, **No works should be carried out at the time of inspection.**

Inspection Frequency: Standard (18 Months)
Wildlife/habitat value: High
Urgency: N/A
Price Guide: N/A

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Ash**
Site Inspected By	**Sam Greenwood**	**Height**	**12m**
Tree Number	**T4**	**Age Class**	**Dead**

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes		Rot holes down	X	Rot holes up		Cavities	X	Loose bark	X
Crevices	X	Bird/bat boxes/nests		Cracks	X	Split/broken limbs	X	Ivy/dense tree canopy	

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard		Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point	X	Other	

Risk of Disturbance: (Indicate on the scale as appropriate)

Further Action Required: (Tick as appropriate)

Inspect tree further	X	Seek qualified assistance	X	Notification required	
No further action required		Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

The tree needs to be inspected by a qualified Bat Specialist to ascertain if the tree has any Bats present in the cavities throughout the tree.

Tree Number: T5	**Species:** Oak	**Age Class:** Over Mature	**DBH:** 600mm
Height: 12m	**Location:** Edge of field in hedgerow		

Multiple major deadwood throughout the crown with cracks and splits, which would be suitable for small bat roosts.

Historic lightning strike on eastern side of the tree from ground level to the top. The strip of dysfunctional wood has multiple cracks which like the deadwood, will be suitable for small bat roosts.

Recommendations:
To maintain the wildlife value of this tree, **No works should be carried out at the time of inspection.**

Inspection Frequency: Standard (18 Months)

Wildlife/habitat value: Moderate

Urgency: N/A

Price Guide: N/A

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Oak**
Site Inspected By	**Sam Greenwood**	**Height**	**12m**
Tree Number	**T5**	**Age Class**	**Over Mature**

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes		Rot holes down		Rot holes up		Cavities		Loose bark	X
Crevices	X	Bird/bat boxes/nests		Cracks	X	Split/broken limbs	X	Ivy/dense tree canopy	

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard		Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point		Other	

Risk of Disturbance: (Indicate on the scale as appropriate)

Further Action Required: (Tick as appropriate)

Inspect tree further	X	Seek qualified assistance		Notification required	
No further action required		Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

This tree has been struck by lightning, it has a long crack running down the length of the tree; this crack is large enough to be inhabited by Bats.

Tree Number: T6	**Species:** Oak	**Age Class:** Over Mature	**DBH:** 600mm
Height: 12m	**Location:** Edge of field in hedgerow		

Multiple major deadwood throughout the crown with cracks and splits, these would be suitable for small bat roosts.

Multiple major dead stubs and historic pruning wounds at 3-4m with cracks and splits, these would be suitable for small bat roosts.

The base of the tree has a cavity on the eastern side.It has a small opening that widens further into the tree. This sort of basal decay on a tree next to farmland is ideal habitat for small mammals such as rabbits and vole.

Recommendations:
To maintain the wildlife value of this tree, **No works should be carried out at the time of inspection.**

Inspection Frequency: Standard (18 Months)

Wildlife/habitat value: Moderate

Urgency: N/A

Price Guide: N/A

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Oak**
Site Inspected By	**Sam Greenwood**	**Height**	**25/04/2016**
Tree Number	**T6**	**Age Class**	Over Mature

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes		Rot holes down		Rot holes up	X	Cavities	X	Loose bark	X
Crevices	X	Bird/bat boxes/nests		Cracks	X	Split/broken limbs	X	Ivy/dense tree canopy	

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard		Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point		Other	

Risk of Disturbance: (Indicate on the scale as appropriate)

Further Action Required: (Tick as appropriate)

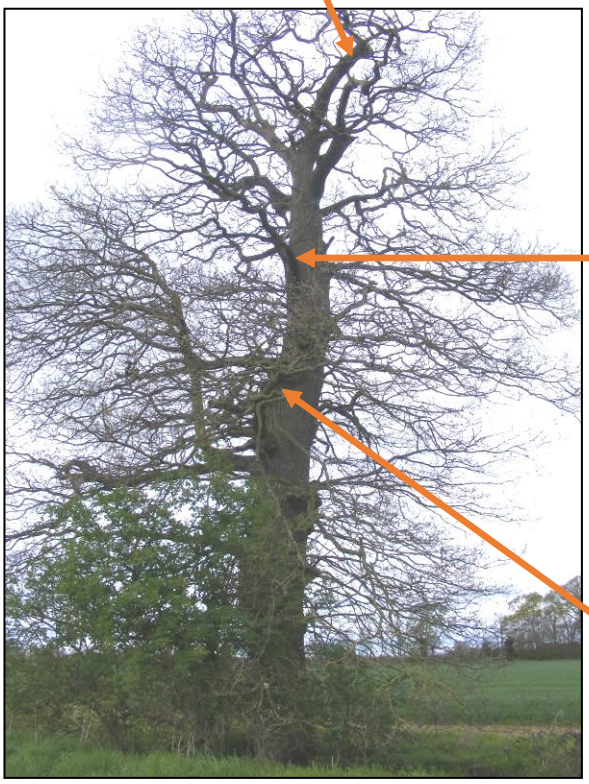
Inspect tree further	X	Seek qualified assistance		Notification required	
No further action required		Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

The cracks in the large stubs will need to be inspected to ascertain if there are any bats present.

Tree Number: T7	**Species:** Oak	**Age Class:** Over Mature	**DBH:** 700mm
Height: 12m	**Location:** Edge of field in hedgerow, adjacent to public track		

Major deadwood at the top of the tree



Significant historically decayed storm damage at 6m on eastern side with black staining. This cavity is ideal habitat for bird nesting.

Two significantly decayed cavities at 5m on north and west sides of the main stem, the cavities adjoin creating a hollow in the stem at that point. The decay ascends up the stem, however it is not known if the decay descends down the stem as well. This cavity with a large opening and ascending decay on a tree next to a field is the type of habitat that is suitable and preferred by bats. Birds will also use this type of cavity to roost.

Recommendations

The end weight should be reduced on the decayed branch at 6m by 2m to help retain the cavity and reduce the risk of failure as the cavity hollows over time.

Inspection Frequency: Standard (18 months)

Wildlife/habitat value: High

Urgency: 9 Months

Price Guide: £90.00 + vat

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Oak**
Site Inspected By	**Sam Greenwood**	**Height**	**12m**
Tree Number	**T7**	**Age Class**	**Over Mature**

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes		Rot holes down	x	Rot holes up	x	Cavities	x	Loose bark	x
Crevices	x	Bird/bat boxes/nests		Cracks	x	Split/broken limbs	x	Ivy/dense tree canopy	

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard		Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point	x	Other	

Risk of Disturbance: (Indicate on the scale as appropriate)

Further Action Required: (Tick as appropriate)

Inspect tree further	X	Seek qualified assistance	X	Notification required	
No further action required		Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

The cavity at 5m meets most of the criteria that a bat will look for when selecting a roost.

Tree Number: T8	**Species:** Oak	**Age Class:** Over Mature	**DBH:** 800mm
Height: 12m	**Location:** Edge of field in hedgerow, adjacent to public track		

There is multiple deadwood throughout the crown, this deadwood is full of splits and cracks suitable for smaller bats to roost in.

Cavity on limb over pathway at 6m, the heartwood has decayed and left a good habitat for bats to use.

Significant historic strip/tear wound from 5m to 7m, there are multiple cracks and splits down the dysfunctional wood, these cracks and splits are large enough to house small bat roosts.

Recommendations:
To maintain the wildlife value of this tree, **No works should be carried out at the time of inspection.**

Inspection Frequency: Standard (18 Months)

Wildlife/habitat value: High

Urgency: N/A

Price Guide: N/A

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Oak**
Site Inspected By	**Sam Greenwood**	**Height**	**12m**
Tree Number	**T8**	**Age Class**	**Over Mature**

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes		Rot holes down	X	Rot holes up	X	Cavities	X	Loose bark	X
Crevices	X	Bird/bat boxes/nests		Cracks	X	Split/broken limbs	X	Ivy/dense tree canopy	

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard		Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point		Other	

Risk of Disturbance: (Indicate on the scale as appropriate)

High Low Very Low

Further Action Required: (Tick as appropriate)

Inspect tree further	X	Seek qualified assistance	X	Notification required	
No further action required		Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

The tree needs to be inspected by a qualified Bat Specialist to ascertain if the tree has any bats present in the cavities throughout the tree.

Tree Number: T9	**Species:** Oak	**Age Class:** Over Mature	**DBH:** 1000mm
Height: 13m	**Location:** Edge of field in hedgerow, adjacent to public track		

Historic storm damage at three points in the upper crown on the east side from 10m, shown in the above photo, these wounds all have cavities that would be ideal bat roosting habitat. They have small openings with larger cavities inside the branches.

Historic storm damage at 7m on limb overhanging the pathway, it has decayed heartwood, which is orientated towards an open field with no obstructions; this is set up to accommodate bats and birds that fly in off the field very well.

Recommendations:
To maintain the wildlife value of this tree, **No works should be carried out at the time of inspection.**

Inspection Frequency: Standard (18 Months)

Wildlife/habitat value: High

Urgency: N/A

Price Guide: N/A

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Oak**
Site Inspected By	**Sam Greenwood**	**Height**	**13m**
Tree Number	**T9**	**Age Class**	**Over Mature**

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes		Rot holes down	X	Rot holes up	X	Cavities	X	Loose bark	X
Crevices	X	Bird/bat boxes/nests		Cracks	X	Split/broken limbs	X	Ivy/dense tree canopy	

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard		Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point		Other	

Risk of Disturbance: (Indicate on the scale as appropriate)

Further Action Required: (Tick as appropriate)

Inspect tree further	X	Seek qualified assistance	X	Notification required	
No further action required		Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

The tree needs to be inspected by a qualified Bat Specialist to ascertain if the tree has any bats present in the cavities throughout the tree.

Tree Number: T10	**Species:** Oak	**Age Class:** Veteran	**DBH:** 800mm
Height: 10m	**Location:** Edge of field in hedgerow, adjacent to public track		

Major deadwood throughout crown, with cracks and splits large enough to house roosting bats.

Major dead stub at 3m on north side. Deadwood has cracks and splits large enough to house roosting bats.

- When inspecting this tree, bat 'chirping' was heard coming from roughly 4m.

To maintain the wildlife value of this tree, **No works should be carried out at the time of inspection.**

Inspection Frequency: Standard (18 Months)

Wildlife/habitat value: High

Urgency: N/A

Price Guide: N/A

Wildlife Disturbance Assessment

To be completed if ever it is suspected that the tree(s) could be a habitat for wildlife

Date of Visit	**25/04/2016**	**Species**	**Oak**
Site Inspected By	**Sam Greenwood**	**Height**	**10**
Tree Number	**T10**	**Age Class**	**Veteran**

Site Condition: (Tick as appropriate)

Residential		Commercial		Industrial		Park	
Garden		Open Space	X	Woodland/forest		Single tree	

Potential Habitat for Wildlife Presence: (Tick as appropriate)

Woodpecker holes		Rot holes down	X	Rot holes up		Cavities	X	Loose bark	X
Crevices	X	Bird/bat boxes/nests		Cracks	X	Split/broken limbs	X	Ivy/dense tree canopy	

Signs of Wildlife Presence: (Tick as appropriate)

Droppings		Wildlife seen/heard	X	Dark/oily marks at entrance	
Use of bat detector		Black staining at potential entrance point		Other	

Risk of Disturbance: (Indicate on the scale as appropriate)

Further Action Required: (Tick as appropriate)

Inspect tree further	X	Seek qualified assistance	X	Notification required	
No further action required		Carry on with the proposed work		Other	

Justification: (Justify your decision in respect of further action)

'Squealing' from the bats was heard during the inspection, which confirms that there are bats present within the tree. The bats exact location is unknown, however a further inspection needs to be carried out by a qualified bat specialist to carry out a more in depth inspection and assessment.

Site Specific Wildlife Assessment

Site Address	Proposed Quarry development site, Clifton Hampden	Date	25.04.2016
		Time	10:30am
Contact Name	Sam Greenwood	Contact No.	01865 735235

Site Characteristics

Woodland		Wood pasture		Coppice		Hedgerow	X
Heathland		Moor		Sand dune		Coastal	
Marsh		Still water		Water course	X		
Unimproved grassland		Intensive agriculture		Park/Garden		Residential	
Industrial		Commercial		Highway			
Other							

Species Potential

Mammals

Badger		Bat	X	Dormouse		Otter	
Red squirrel		Water vole		Wildcat			

Reptiles and Amphibians

Smooth snake		Sand lizard		Great crested newt		Natterjack toad	
Pool frog							

Birds (note species concerned below)

Woodpecker, Barn Owl, Sparrow, Swallow, Thrush.

Typical Occupation Indicators

Physical observation	X	Physical nests	X	Roost site entrance		Cavities	X
Fissures, tears etc	X	Staining		Noise	X	Droppings	
Bedding		Foodstuffs		Insect activity		Loose bark	X
Ivy	X	Other					

No species indicators: works may proceed with care	
Further more detailed inspection (detail features requiring consideration below)	X

Cavities, splits and cracks throughout the Oak and Ash trees need to be inspected by a professional Bat Specialist as the likelihood of a roost is high.

Notes

There is a high amount of potential bat roosts and bird nesting spots throughout most of the trees, these are identified in the tree survey. Some of the potential roosting spots may already have bats inside them, a squealing noise was heard coming from within one tree during an inspection, the inspection was carried out in the morning which is when you would be likely to hear bats. The precise location is unknown at this time.

Signed		Print	Sam Greenwood

APPENDIX 6

A NEW MAP OF THE COUNTY OF OXFORD DATED 1797

From A New Map of the County of Oxford *dated 1797, by Richard Davis, topographer to His Majesty, showing the Dorchester Hundred with the meander in the Thames and the positions of Clifton Hampden and Burcot on the north bank.*

APPENDIX 7

REVIEW OF THE TRANSPORT ASSESSMENT AND ES CHAPTER 8

26 May 2016

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Kenilworth
Warwickshire CV8 1BT

Tel 01926 746 820
www.eastp.co.uk

Suzi Coyne
Suzi Coyne Planning
60 Blenheim Drive
Oxford
OX2 8DQ

Dear Suzi,

Transport Related Concerns with Hills Quarries Products Environmental Statement for the proposed Fullamoor Quarry near Clifton Hampden

Coles Easdon Consultants Limited (CEC) has produced a Transport Assessment (TA) and an Environmental Statement Chapter on Transport and Access for the proposed new Fullamoor Quarry at Clifton Hampden in South Oxfordshire. I have reviewed these documents and I have serious concerns about the assessments undertaken which I set out in this letter.

The first issue that I have identified is that the TA and ES Chapter are not produced to an adequate standard or scope. The other issues identified then follow from this main flaw. I therefore start by looking at the scoping process used by CEC.

Scoping

Hills prepared a scoping document and first spoke to OCC Highways in April 2014. The April 2014 scoping note states for traffic that:

"The site will have a new dedicated access onto the A415. A transport assessment will research the local highway network reviewing traffic figures, highway capacity, the impact of the quarry, including existing traffic movements which will be replaced and new traffic movements on the highway network, and safety issues."

OCC Highways responded to this (and an initial meeting) by stating that:

"This general scope is acceptable, but it should be noted that the Transport Assessment will need to be compliant with the Department for Transport's Guidance on Transport Assessment. It will also need to incorporate the following specific items:

> *Identification of likely vehicle routings whilst making the commitment to exclude quarry related HGVs from passing through Abingdon town centre;*
> *Assessment of the impact of quarry traffic on the A415 between the proposed quarry access and the A4074 in the east, to include detailed capacity analysis at its junctions with the B4015 at Clifton Hampden and the A4074 at Berinsfield;*
> *A diagram demonstrating acceptable visibility splay for the proposed site access;*
> *A diagram demonstrating acceptable swept path movements through the access for all vehicle types that will use it;*
> *A statement of how the footpaths passing through the site will be maintained or re-provided;*
> *Present traffic flow figures in a format compatible with that required for noise and air quality calculations."*

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Stephen Adams MSc m 07789 228 785
Stephen.adams@eastp.co.uk

CEC then states in its final TA (February 2016) that:

"Subsequent to that meeting in April 2014, a Technical Note (June 2014) was prepared by CEC that provided an update to the proposals as well as forming the basis for agreeing the following matters in advance of the preparation of this TA:

- *the form and design of the proposed vehicular access arrangement from the A415;*
- *the HGV trips to be expected on a day to day basis as derived from the predicted material extraction rates and proposed concrete batching facility;*
- *the assignment and routing of HGVs to the local highway network;*
- *local committed development proposals to be considered in our analysis;*
- *no offsite junction capacity analysis is required; and*
- *extent of analysis of the five-year accident record."*

So between the initial April 2014 meeting and June 2014, it can be seen that in particular the need to consider any highway capacity analysis has been "scoped out". Additionally, the TA describes the HGV routing which takes 35% of HGVS through Abington – in direct contradiction to OCC Highways April 2014 advice:

"to exclude quarry related HGVs from passing through Abingdon town centre."

HGV assignment is described at paragraph 6.11 of the TA and it is stated that:

"Hills have confirmed the appropriateness of this assignment and it has been agreed as acceptable by OCC Highways."

The key piece of information referred to by Hills, the June 2014 Technical Note, has not been provided with any of the planning documents and so is unavailable for examination. It is assumed that this technical note provides justification for not following OCC Highways advised routing and not considering offsite junction capacity assessment.

Note that an assumed 35% of HGV movements through Abingdon and to the west or south does not appear to be supported by a needs based argument. In fact, no justification for this assignment is given in the TA for this assignment other than Hills has confirmed it as appropriate.

Even if key transport and traffic issues were scoped out through mutual agreement, omission of this information from the final TA and ES is a serious flaw. This makes understanding the assessment very difficult. This, together with the non-conformity with Guidance on Transport Assessment, leads to a series of flaws that makes the conclusion of the transport assessment and other elements of the ES (namely Air Quality) meaningless.

Guidance on Transport Assessment

OCC Highways requested that the TA use the Department for Transport's Guidance on Transport Assessment (DfT TA Guidance 2007). This is still widely used as a framework for assessing transport although it was withdrawn on 22 October 2014. The guidance has been replaced with NPPF guidance and so I have concentrated on this replacement guidance. Nevertheless, the DfT TA Guidance should have been used unless this request was specifically withdrawn in June 2014, which I think unlikely as the Guidance was still extant at that time.

The National Planning Policy Guidance (NPPG) states (paragraph 014 of Transport Assessments and Statements) that the scope of a TA:

"may identify the need for associated studies or may feed into other studies. However care should be taken to establish the full range of studies that will be required of development at the earliest opportunity as it is unlikely that a Transport Assessment or Statement in itself could fulfil the specific role required of a transport element of an Environmental Impact Assessment where this is required. Particular attention should be given to this issue where there are environmentally sensitive areas nearby and where the proposal could have implications for breach of statutory thresholds in relation to noise and air quality either as a result of traffic generated by the site or as a consequence of the impact of existing traffic on the site under consideration."

The Guidance on information that should be included then states (paragraph 015 of Transport Assessments and Statements) that the following should be considered when settling scope of the proposed assessment:

- data about current traffic flows on links and at junctions (including by different modes of transport and the volume and type of vehicles) within the study area and identification of critical links and junctions on the highways network;
- an assessment of the likely associated environmental impacts of transport related to the development, particularly in relation to proximity to environmentally sensitive areas (such as air quality management areas or noise sensitive areas);

The TA and ES Chapter prepared do not follow this guidance because:

- No data about current traffic flows on links or at junctions is presented and no critical links are identified (despite OCC Highways identifying for the applicants "the A415 between the proposed quarry access and the A4074 in the east, to include [..] its junctions with the B4015 at Clifton Hampden and the A4074 at Berinsfield"); and
- No mention at all in the TA or the ES of Air Quality or environmentally sensitive areas despite this being a fundamental issue for consideration in a Transport Assessment as set out in DfT and NPPF Guidance.

I discuss these omissions and the consequences of them below.

Existing Road Network Operation and Impact Analysis

The NPPF identifies the need to consider current traffic flows on links and junctions and identification of critical links. This is fundamental to a TA as without traffic data or consideration of traffic characteristics clearly no assessment of traffic is possible. The TA dismisses the need to assess local junction capacity, stating that a June 2014 Technical Note formed the basis for agreeing with OCC Highways that "no offsite junction capacity analysis is required". Even if this is the case, the lack of information on why this omission was agreed means that the TA and ES Transport chapter are fundamentally flawed.

I have myself visited the site in the afternoon peak period and experienced typical local traffic conditions. I have also undertaken surveys of the local road network with the help of BACHPORT who are opposed to the development. I append the survey data and analysis to this letter. My survey and personal experience demonstrate that the A415 Abingdon Road junction with the High Street and B4015 Oxford Road suffers severe congestion in the morning and evening weekday peak periods. This congestion means significant queueing between 7:30am and 9:30am in the morning and 4pm and 6pm in the evenings, or a total of 4 hours per weekday. During these times queues are observed to extend for more than 1km from Clifton Hampden past the proposed access location for periods of 1 to 2 hours (ie. for most of the two hour morning and evening peak periods).

Analysis of the queuing and signal operation (as shown in my appended spreadsheet) shows:

- Average cycle time at the Clifton Hampden A415/B4015 staggered junction is 160 seconds in the morning peak period and 190 seconds in the evening peak period;
- Average capacity of the eastbound approach on the A415 is 21 vehicles per cycle or 461 vehicles per hour in the morning and 26 vehicles per cycle or 492 vehicles per hour in the evening;
- A queue often extends 1.2km past the proposed access and this represents an approximate 200 vehicle queue;
- It will take a driver just under 30 minutes to get from the back of this queue through the traffic lights (based on the observed capacities);
- The eastbound approach to the signals consists of two narrow lanes (circa 2.25m each) with the offside lane for right turn traffic and nearside for straight ahead;
- Right turning traffic frequently blocks the predominant straight ahead movement and HGVS and buses or other large vehicles will block through traffic when other traffic is turning; and
- Analysis suggests that cycles which are blocked result in on average a 7 vehicle loss of capacity per cycle in the morning peak period and 13 vehicle loss of capacity in the evening peak period.

None of this information or any analysis at all of this junction is presented in the TA or ES chapter. It is simply inconceivable that a Transport Assessment may be considered adequate when it fails to mention a queue that takes an estimated 30 minutes to traverse that passes the proposed entrance for up to 4 hours per weekday.

I have made a preliminary estimate of what impact the Quarry might have on this queue and existing delays. CEC estimate that on average 3 HGVs per hour will be added to eastbound traffic. This amounts to one HGV every 20 minutes. By my estimates this is two HGVS actually queuing to get through the eastbound approach for 4 hours of the weekday. If we assume (as is observed to be the case) that each HGV blocks traffic when it reaches the junction, then this will on average reduce capacity for those cycles by 7 vehicles in the morning and 13 vehicles in the evening. If you then add on the impact of the queuing HGV itself, then I estimate the impact of 3 HGVS per hour to be a loss in capacity of 24 vehicles or 28 passenger car units (pcus) per hour in the morning and 42 vehicles or 46 pcus per hour in the evening. These are reductions in capacity (or impacts) of 5% in the morning and 8.5% in the evening. These are significant impacts. I estimate an additional queue due to these impacts of about 170 to 280m in the morning and evening peaks respectively. This is more than sufficient to take queues back beyond the Science Centre access. These impacts will add possibly 10% or more to every ones' journey times in these periods, perhaps adding 3 minutes or more to every drivers' journey time.

This analysis is based upon averages of 3 HGVS per hour in the eastbound direction only. It does not consider:

- Hourly Variation – if 4 HGVS arrive in one hour this will increase impact by 33%;
- HGV arrivals from the west (Abingdon) direction, who will be delayed before being able to turn right into the new access if the queue passes the proposed new access location as it is predicted to do during peak periods; and
- Other approaches to the Clifton Hampden signals – I have analysed only one approach as an example – but there are other congested A415 links and junctions that the Quarry is likely to be demonstrably impacting upon, were an adequate assessment to be undertaken.

The analysis suggests that for significant proportions of the weekday, there will be eastbound queuing past the proposed new access. This has implications on the operation of the new access including:

- Additional delays on HGV arrivals from the west (Abingdon) direction as described above; and
- Safety concerns for HGVs turning right out to join a queue of traffic, or turning right in to leave a queue of traffic.

It is concerning that HGVs waiting to leave the site towards the east will have to wait for eastbound queuing vehicles to leave a suitably large gap before pulling out. This is unlikely to happen and so HGVs will be encouraged to pull out onto the A415 to try to force a space in the queue whilst blocking westbound fast-moving traffic. This potential situation is clearly unsafe.

HGV Routing and Air Quality

The TA and ES Chapter fail to mention Air Quality at all. I recognize that there is a separate Air Quality Assessment, but because the TA does not mention Air Quality and fails to identify traffic data correctly (as requested by OCC Highways and as set out in the guidance), it calls into question the accuracy of the Air Quality Assessment. It seems clear to me that original objections to HGV traffic through Abingdon from various stakeholders, including Oxfordshire Highways, were due at least in part to environmental concerns. These concerns are not discussed at all in the TA or ES Chapter.

The Air Quality report makes use of Annual Average Daily Traffic (AADT) and this is calculated as movements averaged over a day which is significantly lower than actual expected HGV traffic on a day when the Quarry would be operating. For example, on Bridge Street on a typical weekday there will be an expected 36 lorry movements. But the Air Quality reports says:

"CEC estimates that there would be 26 vehicle movements to the west of the quarry entrance and these would pass through Abingdon"

This is highly misleading – it should say 26 movements per day on average over the year – or it should say 36 movements – which is what there would actually be on a typical day when the Quarry is operating.

Abingdon is designated an Air Quality Management Area (AQMA). The Air Quality Report suggests that for links in an AQMA for development outside the threshold for an assessment is an increase due to development of greater than 25 HGVS per day. It is not clear if the assessed 26 is valid and whether it should in fact be 36 per day as this would be what would be typically experienced.

In my opinion, because the TA and ES Chapter do not follow NPPF or DfT guidance and discuss Air Quality, it is difficult to understand the relationship between transport assigned traffic and Air Quality Assessment traffic. Therefore, it is difficult to identify whether the latter assessment is using the correct data.

Accident Analysis

The accident data used in the TA is not consistent and parts of it are not up to date and are incorrect. The section of the TA at paragraph 3.32 about accidents in close proximity to the site is incorrect in that it refers to an accident at the Abingdon Road/Zouch Farm junction. Local residents are aware that this accident actually took place about 150m east of the proposed access, not at Zouch Farm which is about 0.5km west. This serious accident was the result of a queuing car doing a U-Turn at the point where the Farmyard and the access road to the lock meet the A415. This serious accident and two slight accidents, noted by the TA, relate to queuing traffic.

It is not unusual for accident data to be incorrectly coded, and so the serious accident location may not have been correctly identified. Nevertheless, the correct location close to the access and the fact that queueing traffic was a factor identified in causing it suggests that:

- The TA is incorrect in its statement (paragraph 3.33) that the Road along which the site access is proposed has a good safety record; and
- There is an identified issue with accidents relating to queuing traffic that is likely to be significantly exacerbated by the development which will not only increase queues but will add potentially unsafe turning HGV traffic across the queue.

There has been a further serious accident just east of the previous serious accident on the 21st of February 2014 which local residents are aware of but appears not to have been recorded in the data presented to March 2014 in the report.

The issue of accident data highlights again the deficiencies of the TA in not properly assessing existing traffic conditions. If the existing local traffic queues had been adequately acknowledged, then it would perhaps have led to a more valid assessment of local accident risk, local accident risk factors and potential development impacts on accident risk.

In my view it is not surprising that there is a link between local congestion and queues and accidents because drivers are likely to get frustrated in queues that may take up to 20-30 minutes to traverse and there is likely to be a risk of accident where you combine potentially fast moving traffic in one direction against stationary traffic in the opposite direction. The assessment fails to identify this risk and in my view the proposed development will cause a significant adverse impact on accident risk in the site access vicinity. This is particularly true when you consider the possible blocking of fast moving westbound traffic as HGVs try to join a slow moving eastbound queue of traffic.

Summary and Conclusions

The CDC TA and ES Transport Chapter are fundamentally flawed. They:

- do not follow NPPF or DFT Guidance on Transport Assessment;
- Omit key data on HGV traffic;
- Omit any mention of Air Quality Management Areas;
- Do not identify relevant traffic conditions including failing to note that the site access will be obstructed by queuing 4 hours daily during weekday peak periods;
- Do not undertake any relevant assessment of impacts including omitting to assess:
    - Local junction capacities and impacts of development on queues and delays; and
    - Safety implications on the proposed access of HGVs turning into queuing traffic.
- Fail to identify Air Quality data meaning that the Air Quality Assessment is difficult to understand;
- Incorrectly assess local accident data including failing to link existing queues to existing accident risk and therefore failing to identify the potential adverse impact of development on accident risk; and
- Dismiss many of these aspects through reference to scoping details that are not provided in the reports and so do not allow any independent scrutiny.

Based upon this review I believe that the information available is incomplete and misleading and does not allow the application to be determined and it should therefore be refused.

Yours sincerely

Paul Silcock
Director EAS Transport Planning

APPENDIX 8

EMAIL OF 2 AUGUST 2011

Best regards
Suzi

From: Partridge, Lois - Environment & Economy - ESPCC [mailto:Lois.Partridge@Oxfordshire.gov.uk]
Sent: 02 August 2011 09:24
To: Suzi Coyne
Cc: Day, Peter - Environment & Economy - ESPCC
Subject: RE: CAGE

Suzi,

Thanks for your email; I'll try to go through each bullet point.

SG-17 Land at Culham has not been taken forward because of the issues with access from the site. If HGVs turn right out of the site and go through Clifton Hampden to reach the A4074, they would be contributing to congestion and there would be a significant impact on local amenity. If HGVs turned left, they would have to either go through Abingdon town centre or go over the bridge to Sutton Courtenay and go through Sutton Courtenay village, with a similar impact on local amenity. The preliminary site assessment does not highlight the more subjective criteria of impact on local communities particularly well, the only transport criterion being proximity to the main road network.

The archaeological report for SG-09, prepared by Hugh Coddington, is attached. It describes the presence and extent of the archaeological assets on the site and highlights the presence of assets which are of equivalent significance to scheduled sites.

I attach scanned nomination forms for SG-09, SG-13, SG-17, SG-41, SG-42, and SG-59, as requested.

We don't have a copy of the borehole investigations carried out by D K Symes in 1992, but I have written to Martin Layer at Smiths to request a copy for our records and to forward to you.

As you are probably aware, a minerals sites document was published in 2007. Cholsey parish council submitted a response to the inclusion of two sites, SG-33 and SG-46. SG-46, which was land identified by the council as having potential resources but no nomination, has since been withdrawn from the potential list of sites available. Both of the parish council's responses were submitted by Gill Williams, on behalf of Ian Miles. The council was advised at that time that the proposed strategy was not sufficiently spatial and therefore, following the publication of the revised PPS 12 guidance in 2008, work started again on development of the options during 2008 and 2009.

Cholsey parish council was invited to attend both of the workshops which we held for parish councils to discuss our development of the mineral strategy options. The first invitation was issued in December 2009 to Mr Miles, the clerk to Cholsey PC; Mr Mark Gray attended the workshop at Benson in March 2010. This was a facilitated workshop at which officers gave a presentation on the initial set of draft options for minerals extraction. Delegates then had the opportunity to comment on these options; these comments were captured by the facilitators and a full report of the workshop was prepared. This is on our website:

http://www.oxfordshire.gov.uk/wps/portal/publicsite/councilservices?WCM_GLOBAL_CONTEXT=http://apps.oxfordshire.gov.uk/wps/wcm/connect/occ/Internet/Council+Services/Environment+and+planning/Planning/Planning+

Home > Council services > Environment and planning > Planning > Planning policy > Minerals and waste policy

The workshop attended by Mr Gray at Benson was one of a series of three we held around the county; three further workshops were held in July 2010 when the options had been revised. Mr Gray attended the further workshop at Benson in July 2010 on behalf of Cholsey Parish Council. The format of the workshops was the same as in March, and again the report form the workshop and the presentation given is on the website. At both of these workshops, the Cholsey area was included in the possible options for future working.

I will be in touch shortly when I have heard back from Martin Layer, but in the meantime I hope this provides all the information you need.

Regards,

Lois

Lois Partridge
Planning Policy Officer
Oxfordshire County Council
Speedwell House
Speedwell Street
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OX1 1NE

01865 815398

From: Suzi Coyne [mailto:suzi.coyne@ntlworld.com]
Sent: 01 August 2011 14:28
To: Partridge, Lois - Environment & Economy - ESPCC
Subject: CAGE

Dear Lois

We have been looking at the various proposed sites for further sand and gravel extraction in South Oxfordshire and have a couple of queries, which I hope you might be able to help with.

- SG-17 Land at Culham seems to score quite positively, but has not been taken forward. Are there any other issues limiting this site not referred to in the site assessment table?
- SG-09 Land N of Drayton St Leonard and SG-42 Nuneham Courtenay are coloured red on archaeology grounds in the site assessment table. It is clear from the table that part of this score for SG-42 is Nuneham Courtenay Park, however, please could you clarify what the level of archaeological interest is that otherwise affects these sites, and how much of each of the sites is affected by the constraint.

In addition I would be grateful if you could provide copies of the following information:

- The nomination forms for sites SG-09; SG-59; SG-13; SG-17; SG-41 and SG-42.
- Borehole investigation by D.K Symes ref 8892 March 1989. ARC Ref; 92/4 April 1992 – as referred to under the Geological Investigation section of the site nomination form for SG-33 dated January 2006.
- Details of the manner in which Cholsey Parish Council have been involved in the various stages of evolvement of the minerals core strategy, i.e. when they have been invited to comment; on which document/proposal; whether they have been invited to any meetings or presentations etc.

Many thanks for your help.

APPENDIX 9

REVIEW OF ES CHAPTERS 2 AND 3 ON HYDROGEOLOGY AND FLOOD RISK

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BACHPORT
Clifton Hampden Parish Council

c/o
Suzi Coyne Suzi Coyne Planning
60 Blenheim Drive
Oxford
OX2 8DQ

By email: suzi.coyne@ntlworld.com

GWP Report No: 160419

Our ref: sc250516.docx
Your ref:

25 May 2016

Dear Ms Coyne

Water Related Concerns with Hills Quarries Products Environmental Statement for the proposed Fullamoor Quarry near Clifton Hampden

Please find below a written summary of matters of concern pertaining to water management issues and the proposed development of a sand and gravel pit on the River Thames floodplain west of Clifton Hampden. By necessity this letter represents an initial review of the Planning Applicant's submission and does not consist of a detailed critique of the documentation available on the Oxfordshire County Council website.

The matters of concern have been separated into two types: Fundamental Issues and Areas of Inadequacy. Fundamental Issues refer to those of such significance that these could in themselves potentially be grounds for refusal of the planning permission. Areas of Inadequacy refer to weaknesses or omissions in the submitted environmental statement which are currently in adequate, but which we would expect a competent and appropriately advised Planning Applicant to address in due course.

1. Fundamental Issues

The Sequential Test reported in the submission excludes all mineral sites larger than 3 Million tonnes, despite the current site under consideration being estimated at 4 Million tonnes in the Preliminary Site Assessment Report. It is nonsensical to exclude larger sites, as these can be worked only in part, or provide the opportunity for subsequent quarry expansion. The Sequential Test is therefore not fit-for-purpose, with other sites > 3 Million tonnes being available with smaller total percentage areas in the floodplain.

The floodplain numerical model is not capable of accurately predicting floodplain levels to within the predicted changes (up to 30mm) reported by the Applicant. The Environment Agency reported its model to have an accuracy of +/- 250mm, the LiDAR data used for topographic data has an accuracy of +/- 150mm, the use of differing Manning's Roughness Coefficients (to reflect vegetation status *et al*) introduces a natural seasonal variance of +/-200mm according to the Applicants own hydraulic modelling sensitivity analysis, changing the boundary conditions of the model also alters flood levels by up to 290mm, blockage analysis on the bridges raises flood water levels by more than 1.00m. Given the hydraulic model predicts areas of increased flood level within the floodplain, the uncertainty over the model predictions provides no certainty of reduced flood risk to properties currently susceptible to flooding.

It is important to note that properties at Clifton Hampden already suffer from flooding and therefore any variation in the current floodplain geometry is likely to have an effect on these residents. The concern of uncertainty in the flood prediction modelling is therefore not only one of increased potential flood risk but of actual flood risk – that is to say, there is no freeboard for error.

The Applicant's hydraulic modelling shows increases in flow velocity around the upstream and downstream edges of both the operational phase pit voids as well as the restored lakes and across the river bank during

times of flood. These will result in increased risks of erosion and mobilisation of sediment in these areas. There is a consequential likelihood of annual erosion, and given the intended long term duration of the restored surface, of eventual loss of the bank and consequential severance of the Thames Path.

There is also a substantial increase in the 'Danger for All' hazard areas (hazard being defined as depth of water multiplied by velocity) identified along and north of the Thames Path for the operational and restoration phase.

Given the predicted increases in water flow velocity arriving at the site, passing around the site and leaving the site towards Clifton Hampden, it is difficult to see how this increase in velocity (which appears to double in some instances) does not manifest itself as an increased flood risk to this area, despite the marginal predicted reduction in flood levels.

The flood risk assessment does not include an evaluation of the cumulative effect of the proposed development in conjunction with the future Didcot-to-Culham Relief Road and River Thames Crossing. It is understood the preferred road alignment currently passes through the Applicant's proposed site area. There are likely to be complex floodplain flood interactions between these two developments, which the Applicant has explicitly decided not to consider within the planning application. This is unreasonable.

2. Areas of Inadequacy

There are three main areas of water impact which require consideration as part of any environmental statement, these are: Surface Water (pluvial/rainfall) Run-Off Management; Groundwater; and Fluvial (river) Flooding. These are considered each in turn below.

2.1 Surface Water Run-Off Management

There is negligible consideration of the increased storm run-off that will be generated from the low permeability restored agricultural lands nor any description (outline design) of the necessary storm water attenuation to maintain the pre-development Green Field Run-Off Rate from site.

If groundwater infiltration approaches are proposed for these storm waters, this increase in groundwater recharge needs to be assessed as part of the groundwater flood risk assessment.

2.2 Groundwater

The Lower Greensand aquifer will have to be de-watered in the excavated pit floor to prevent upward heave and mobilisation of sands into the pit base.

No site investigation data has been collected from site for the Lower Greensand aquifer – no groundwater levels, nor permeability or storage data, nor water quality data.

No local well inventory has been undertaken of local properties. BACHPORT has identified 15 wells currently in use in the surrounding settlements of Clifton Hampden, Burcot and Appleford, some of which will be abstracting groundwater from the gravel plain and some from the Lower Greensand. None of appear to have been assessed for impact. The impact assessment undertaken by the Applicant appears to have been restricted to just those wells and boreholes identified from the local Environmental Health officer and Environment Agency records and a chance meeting with the residents of Fullamoor Farmhouse.

The pumping tests of the sand and gravel aquifer are unreasonably short (2 hours duration only), are inadequate for the purpose of investigating long term de-watering and did not attempt to measure the response in the Lower Greensand aquifer.

Details provided of the numerical groundwater modelling are inadequate. There are, however, some obvious concerns with the modelling work presented. These are highlighted below.

The numerical groundwater model does not extend beyond the area of the Floodplain Gravels. The Lower Greensand aquifer actually extends more than 3km north of the site, 3km west of the site and 3km east of the site. The operational phase pit de-watering and restoration phase groundwater flow truncation and flooding risk have not been assessed for the Lower Greensand aquifer beyond the area of the Floodplain Gravels. This needs to be undertaken.

There is no consideration of the consequences of lowering of groundwater levels during dewatering or raising of groundwater levels after restoration on the Scheduled Ancient Monument west of the site.

There is no detailed description of groundwater flooding risk mitigation where groundwater levels will rise close to existing ground level and impair surrounding agricultural land productivity.

There is no detailed consideration of the adequacy of the land restored using site derived low permeability materials specifically with respect to waterlogging, for its intended future use as agricultural fields,.

2.3 Fluvial Flooding

The original Environment Agency 1-Dimensional (1D) Model was found to be unstable and not fit-for-purpose by the Applicants consultants.

A revised 1D linked to a 2-Dimensional Model of the northern floodplain of the River Thames predicts changes in flood water level up to 30mm but over wider areas of inundation than previously estimated by the Environment Agency.

The 2-Dimensional Model does not consider the floodplain south of the River Thames including the villages of Appleford and Long Wittenham, nor does the 2-Dimensional Model extend to all of Clifton Hampden or Burcot or beyond. It is unclear why the Applicant considers properties in these areas not be afforded the same level of assessment as those within the northern floodplain. It is entirely possible properties further downstream of Clifton Hampden could be affected by the proposed changes to the floodplain morphology.

An allowance of 20% increase in peak flows has been used for climate change. Guidance for the Thames Region currently suggests this should be 25% on average.

There is no consideration of whether flood event duration has increased for flood water levels considered to be within the baseline – duration of flooding is a critical factor in the extent of damage caused to property, as well as closure of transport routes.

There is no consideration of the impact of site boundary fences, signage, gates and other security related infrastructure on the impediment of flood flows, including the effect of flow impediment due to debris collection and capture on the fence lines.

There is no consideration of silt re-mobilisation risks during flooding events which enter the silt lagoon locations during the operational and/or restoration periods.

There is no consideration of scour erosion from the pits during operation or scour erosion from the restored lakes during river flooding inundation, with regard to the impacts on water quality.

There is no consideration of the stability and erosion risk to quarry and lake restoration faces/slopes during flood water inundation.

There is no outline design or stability assessment of the flood bund proposed to separate the excavated site from river flooding, when the 'high ridge' has been removed through excavation, nor how such a ridge will be reinstated given the on-site derived materials available for restoration.

It is difficult to understand the details and differences in each of the proposed excavation phases, the exact locations and lateral extents of bunds and stockpiles, and how these relate to the hydraulic modelling reported upon for selected phases only. A table is requested detailing which and where bunds, stockpiles, ponds, lagoons, mobile and static plant are located and within which flood zones, cross-referenced to the relevant hydraulic model output drawings. In particular it is unclear how noise/acoustic/visual bunds have been integrated into the hydraulic model, as well as soil and sub-soil tips and the ever changing volumes of stock piles.

Consequently it currently is unclear whether there is loss of floodplain storage in each phase, at what elevations this has occurred, and whether any compensation storage has been provided. This should be clearly described for each and every phase, along with drawings to demonstrate the storage loss and gains, in incremental 0.1m elevation bands.

Please do not hesitate to contact me further for clarifications on the above, or to request a more detailed evaluation of the documentation provided.

Yours sincerely

Clive Carpenter
BSc (Hons) MSc FGS C.Geol MCIWEM C.WEM EurGeol AMAE
Partner
Head of Water Resources

APPENDIX 10

REVIEW OF ES CHAPTER 5 AGRICULTURE

FULLAMOOR QUARRY. ENVIRONMENTAL STATEMENT. LAND AND MINERAL (24TH FEBRUARY 2016). REVIEW OF CHAPER 5, AGRICULTURE

1.INTRODUCTION

This document presents a review of the agricultural assessment undertaken by Reading Agricultural Consultants Limited (RAC) and presented as Chapter 5 of the Environmental Statement prepared to support an application for a new quarry ('Fullamoor Quarry') at Clifton Hampden.

In preparing this review, consideration has been given to the relevant legislation and policy.

1.1 Background

National land use development policies set out in the National Planning Policy Framework (NPPF) seek to safeguard scarce natural resources in the long-term national interest. Consequently, policies for development in the countryside give protection to the best and most versatile agricultural land, defined as Grades 1,2 and 3a in the Agricultural Land Classification.

Paragraph 112 of the NPPF advises local planning authorities to take into account the economic and other benefits of the best and most versatile land, and where significant development of agricultural land is necessary, local planning authorities should seek to use poorer quality land in preference to higher quality land.

The submitted OMWLP Part 1 Core Strategy January 2016 policy C6 also states *the permanent loss of best and most versatile agricultural land will only be permitted where it can be shown that there is a need for the development which cannot reasonably be met using lower grade land, taking into account other relevant considerations.*

Town and Country Planning (Development Management Procedure) Order 2015 requires Natural England to consider proposals which individually or cumulatively involve more than 20ha of best and most versatile agricultural land.

Accordingly the Environmental Statement should review the use of the agricultural land for mineral development, in particular opportunities for using poorer quality agricultural land in preference to higher quality land; and assess the continued availability of the basic soil resource for restoration. The statement is also required to take into account the impact on the current landowners farm holdings.

1.2 Assessment methodology

The RAC report relied on in this chapter and presented in Appendix 5A states the assessment of land quality has been carried out according to the MAFF revised guidelines 1988 (Appendix 5A 4.1.1)

RAC carried out a survey of 103 soil profiles on the 160ha put forward in the 2014 Scoping Opinion for the wider area including this site. The survey was conducted using an Edelman auger and spade. Of these 103 samples, 73 soil profiles are within the site proposed in this application. There is no mention of any pit investigations.

Appendix 5A, paragraph 4.1.4 states "the areas of the different ALC grades are given in Table 2 and mapped in Figure RAC 6133-2". Table 2 refers to the wider site of 160ha.

An estimate of the land grades for the area of this site is provided in Ch5, Table 5.6 and refers to Figure 5.2 which cannot be found. It is presumed the figures provided in Table 5.6 and Table 2 of the Appendix were derived from drawing RAC 6133:2 which presents a map of the land grades presumably derived from the soil samples.

A review of the information presented is made in the following section.

2. REVIEW OF BEST AND MOST AGRICULTURAL LAND AT FULLAMOOR

2.1 MAFF approach to Agricultural Land Classification (ALC)

The Ministry of Agriculture, Fisheries and Food (MAFF) issued guidelines and criteria for grading Agricultural Land in October 1988.

The guidance states grading of agricultural land must take into account the main climatic factors (temperature and rainfall), site factors (gradient, micro-relief and flood risk) and the soil characteristics (texture, structure, depth and stoniness). These climatic, site and soil factors result in varying degrees of constraint on agricultural production. They can act either separately or in combination, the most important interactive limitations being soil wetness and droughtiness.

The MAFF guidance states "*the principle physical factors influencing agricultural production are climate, site and soil. These factors together with interactions between them form the basis for classifying land into one of five grades".* The guidance goes on to say "w*hen classifying land the overall climate and site limitations should be considered first as these can have an overriding influence on the grade"*.

Despite this clear guidance the report prepared by RAC and used by Land and Mineral Management presents no consideration of the overall climate, site and soil factors on the site. The assessment of land grade appears to have been based solely on the information taken from the soil samples.

The following sections review the information according to the MAFF guidance from the information provided by the applicant.

2.2 Climate, Site and Soil limitations at Fullamoor Quarry

Climatic limitations
Appendix 5A Table 1 provides the information to assess the climate limitations of the site. The average annual rainfall is noted at 599mm and accumulated temperature at 1461 at the survey site. The combination of these parameters gives a climactic profile of Grade 1 in the MAFF guidance Figure 1 (ie: there is no climatic limitation on the land grade at the site). There is no note of any microclimatic factors at the site such as exposure, poor aspect or frost risk that would affect the overall climatic limitation and lower the grading.

Site limitations
Site factors cover gradient, micro-relief and flood risk. Appendix 5A paragraph 2.1.2 describes the site as *topography is flat to very gently undulating* and therefore the gradient is assumed to be 7 degrees or less, consistent with a grading of Grade 1-3a according to the MAFF guidance. There are no recorded complex changes of slope angle and direction to cause issues with mirco-relief that would change this grading. A large portion of the site is in flood zone 2 and 3. Flood risk would conform to the summer and winter flood risk profiles for land grades 1-3a in MAFF Table 2.

Soil limitations
Soil factors include an assessment of the soil type (texture and structure), depth, stoniness and chemical fertility. Four types of topsoil are found on the site shown in drawing RAC 6133.3, and are noted to be sandy clay loam, clay loam, stony sandy loam or clay. Topsoils with loamy sand are not eligible for Grade 1 classification but these do not exist on the site. The soils are of adequate depth and there is insignificant stoniness in each of the 14 soil samples provided in Appendix 5A to limit the grade of land in any of the samples to a land grade of less than 3a according to MAFF guidance Table 5. There are no chemical limitations noted. The soil factors would therefore provide an overall classification of Grade 1-3a.

Summary
Based on the factors for climate, site and soil limitations the overriding land classification for this site would be Grade 1- 3a which is “best and most versatile agricultural land”.

These factors are the only basis for comparison with alternative sites, since detailed soil profiles are generally not available at the site level. To accord with policy it would be necessary for this application to justify the need for this development on the grounds the mineral supplied cannot reasonably be met using lower grade land elsewhere, taking into account these factors and any other relevant considerations.

2.3 Interactive Limitations at Fullamoor Quarry

The MAFF guidance states a degree of variability in physical characteristics within a discrete area is to be expected. The physical limitations which result from interactions between climate, site and soil are soil wetness, droughtiness and erosion. Soil wetness and droughtiness can be influenced by the management of the soils.

Drawing RAC 6133-2 in Appendix 5A presents a mapped interpretation of the land grades present at the site. It is presumed this map is generated from the droughtiness and wetness measures from the soil samples but this is not made clear. Paragraph 4.1.2 states *the principal restriction on agricultural land quality in this area is a droughtiness limitation* and in paragraph 4.1.3 it notes the soils by the river are *limited to no better than subgrade 3b due to restricted workability, being a combination of wetness and heavy clay topsoil texture.*

Soil Wetness
Soil wetness takes into account the climatic regime (using field capacity days FCD), soil water regime (wetness class), and the texture of the top 25cm of soil (type of soil). The MAFF guidance provides a method for assessment of wetness class in the field. The data supporting the wetness class stated in paragraph 2.3.3 has not been provided and therefore there is insufficient evidence presented to agree the assessment of soil wetness across the site.

Droughtiness
The MAFF guidance on droughtiness states *the severity of the limitation in an area depends on the relationship between the soil properties and climatic factors. These relationships are complex and the degree of moisture stress varies from year to year according to the weather*. Droughtiness in soils can be improved by adding organic matter to the soils and/or by irrigation.

Soil profiles and droughtiness calculations for 14 of the 103 initial soil profiles is presented in Appendix 5A. Of these, only 5 are within the proposed site boundary; and only 3 are within the areas that will be disturbed for mineral extraction (samples R44, R51 and R81).

One of these, R44, is profiled as Grade 3b but is noted within an area mapped as Grade 2 on drawing RAC 6133-2. Similarly, of the 2 samples presented in the

undisturbed area of the site one of these, R13, is profiled Grade 2 but noted within land mapped as Grade 3a. This demonstrates the variability within the site and the difficulty in interpreting the land grade.

From the limited data made available it is not possible to verify the land grades presented and relied on for this assessment. As the assessment requires some degree of interpretation of the data from the soil samples this is highly unsatisfactory.

Soil wetness and droughtiness can usually be confirmed by information from the farmer. No information has been provided on crop management and yields, and if any work has been done to improve the soils using organic matter and irrigation in recent years. It is therefore difficult to substantiate the mapping of the land grades presented in drawing RAC 6133-2 in Appendix 5A.

Summary
Overall, there is insufficient data presented on either of the interactive limitations to support the interpretation of the land grades presented in this chapter in Table 5.6 and relied on for the basis of assessment on the potential impact on agricultural land in the environmental statement.

2.4 Farming Records at Fullamoor Quarry

"Fulmoor Farm" is noted on "A new map of the County of Oxford" created in 1797 by Richard Davis. Fullamoor Farm was sold on the open market for the first time in the early 1980's from the Clifton Estate whose ownership of the farm dates back to the period when the map was created.

The sale papers from the 1980's were prepared jointly by Knight, Frank & Rutley and Smith -Woolley. The land comprising this site is recorded in these papers as part of *"Lot 1 Fullamoor Farm, a predominantly Grade II Arable and Stock Farm, about 368 acres"*. The land is further described, noting *"soil fertility has been enhanced over the years"* and *"the soil is a free-draining, sandy loam over gravel, principally classified as Grade II with the land close to the river being more alluvial and is capable of producing first class cereal or grass crops"*. The sale papers also note *"exploration work has recently been carried out and it been found that a borehole for irrigation would be feasible"*. The farm was bought, together with the other lots comprising a total of 947 acres, and farmed until 1995 by the late Mr James Veitch.

The farm was sold by Mr Veitch in 1995, again in lots; this time the farm was broken up and the land subject to this planning application was acquired by the current landowners. The sales papers from the 1995 sale were prepared by Knight Frank International. In the summary description it is stated:

The sale of Fullamoor Farm provides the opportunity to acquire, arguably the finest commercial arable and dairy farm to become available in Oxfordshire in recent years".

The farmland is further described as

The land is predominantly Grade II and has the River Thames as it's southern boundary, where some mooring rights are let. The quality of the farm is renowned, and it is currently the Drayton Farming Club champion, and the Reserve Champion farm for Oxfordshire and Berkshire

A book on Clifton Hampden was published in 2000 by the late local historian Sheila Llewellyn titled "The View from the Bridge", based on research and interviews with the inhabitants of the village including Mr Veitch. In the book the following is recorded:

Fullamore Farm (once known as Upper Clifton Farm) is of historic interest, for outside the Clifton Estate it has always made a great contribution to the area. Fullyngemorefurlonge is recorded from records of 1408, and the Lathams farmed there for over a century, at least four generations of them from the 1700's to the 1900's (p118).

The land of Fullamore Farm is extremely good, "best quality earth" according to the late James Veitch …he took on its 1,200 acres, soon becoming leader of Oxfordshire farmers, and taking over as Chairman of the Berks, Bucks and Oxon branch of the NFU, the coveted wheat championship under his belt (p119).

There are some observations on the current productivity of the land in Chapter 5. Paragraph 2.9 notes *previous market garden activity on the site is indicative of high quality topsoils.* Paragraph 2.13 notes *over most of the site the soil is of high quality, is of medium texture or of light clay and is permeable, free draining and is of a type highly productive for agriculture*. Paragraph 2.14 notes some land to the west of the site is being used for rearing outdoor pigs (an intensive operation of 30 portable sheds started in 2012); this land however is not within the area of the planning application and is not of relevance.

The nature and scale of agricultural land uses on the site have been established from the landowners but none of this information has been presented (paragraph 1.27).

Summary
Overall these statements on the quality and productivity of the land are at odds with the classification by RAC of 51% of the site as grade 3b as set out in Table 5.6. The former farm records and the longevity of the farm through the centuries would suggest, irrespective of recent soil wetness and droughtiness

observations, this land would be classified as "best and most versatile" agricultural land in Oxfordshire.

3.0 IMPACT ON FARM HOLDINGS

The site currently comprises arable land which forms part of two separate farm holdings, the landowners of which own and occupy extensive areas of agricultural land in South Oxfordshire. The two landowners purchased the land in 1995 when Fullamoor Farm was sold.

The applicant (Hills) informed representatives from Clifton Hampden Parish Council at a meeting in November 2015 that Hills had agreed a "land deal" to purchase all of the land (160 ha, including the land proposed in the Scoping Opinion but not applied for in this permission) from the landowners.

The impact on the two farm holdings has been assessed in this chapter. However as the applicant intends to purchase the land the information provided is not relevant on the sensitivity of the farm holdings - clearly the landowners do not wish to retain a landholding interest in the land post extraction at this time.

4.0 RESTORATION TO AGRICULTURE

The site comprises 100 ha of agricultural land, of which 76 ha of land will be disturbed for mineral extraction, and 24 ha will be used for soil storage on the west of the site and a flood protection area on the east of the site.

Of the 76 ha of land disturbed, 23.5ha (30%) will be restored to agriculture (paragraph 3.8). The applicant states the amount of 'best and most versatile land' grades 2-3a that will be disturbed will extend to approximately 33 ha (paragraph 3.9) and therefore the overall loss of "best and most versatile agricultural land" is limited to just under 10 ha (paragraph 3.32). The impact on the land resource is assessed as low.

There is insufficient evidence provided to support the statement that 33ha of best and most versatile land only is being disturbed as detailed in the earlier part of this report. The MAFF agro-climatic classifications would grade all 76ha of disturbed land as "best and most versatile". Therefore the amount of land completely lost is potentially 52.5ha which means the land resource has a "high" impact on the land resource.

There is an implicit assumption in the chapter that the 23.5ha of restored agricultural land will remain "best and most versatile" after the mineral has been extracted if soil management best practice is followed. Paragraph 3.14 notes the type of soil resources on site are *assessed as being of medium sensitivity to*

movement and handling, and the potential effect on the soil resource is major/moderate adverse.

However soil handling and storage usually cause some degeneration of the soils inevitably leading to some lowering of the soil grade on restoration. No working phase drawings showing the movement and handling of topsoils during site working are provided or the volume and length of time of each extraction phase topsoils are stored for. Therefore there is insufficient information provided to determine the amount of soil handling and the overall impact on the soils. Generally, there is a loss of up to one grade on restoration ie soils of Grade 2 are usually restored to Grade 3a etc. The applicant has not provided sufficient evidence to support its statement that the 23.5 ha restored to agriculture will remain "best and most versatile" agricultural land.

Furthermore, Chapter 2 of the Environmental Statement "Hydrogeology" mentions the potential for a rise in groundwater levels within the areas restored to agriculture, with the potential for waterlogged conditions (paragraph 7.30). This is because the previously free draining sands beneath the existing soils will be replaced with overburden which is generally a mix of silt and clay which are inclined to hold water. No assessment has been made of the cumulative impact of changes to the groundwater levels on the quality of the restored land; any water-logging will likely reduce the land grade by at least one level or more.

There is therefore insufficient evidence to state that all of the 23.5ha of restored land will remain best and most versatile land; and that there will only be a loss of 10ha of best and most versatile agricultural land at the site overall. Until more information is provided it should be assumed that 76ha of "best and most versatile land" has been affected and potentially lost.

5. **CONCLUSIONS**

The MAFF guidance states climate and site have an overriding influence on the grade of land and should be considered first when grading land. Using the MAFF principles for assessing climate, site and soil limitations, all of the site is assessed as "best and most versatile agricultural land" of grade 2-3a.

This land grade is supported by evidence presented in sales particulars for the farm in the 1980's and 1995 and from evidence documented by a local historian. "Fullamoor Farm" has been farmed for several centuries confirming it's historic value to agriculture. Current descriptions of the general soils further support this view that the land is of high value to agriculture.

The MAFF categorisation from climate and site factors is the only means to compare proposed sites for mineral development, as soil samples are not readily available. This development therefore must be seen as"best and most versatile"

agricultural land for the purposes for comparing sites for mineral development. No assessment has been provided on alternative sites (which may have lower grade of agricultural land) to justify the need for this development as required by national and local policy.

Wetness and droughtiness has been observed in some of the soil samples. It is not possible to establish from the sample data provided in the appendix the interpretation of land grades represented in drawing RAC 6133:2 presented in Appendix 5A. Both droughtiness and wetness can be influenced through farm management and need to be assessed alongside farming activity. For example droughtiness can be improved by adding organic matter. Therefore the amount of best and most versatile land that has been graded 2-3a from the soil samples cannot necessarily be relied on.

The restoration plan has not taken into account cumulative impacts on changes in hydrology and soil handling on the restored agricultural land grade. Therefore the estimate of the amount lost of best and most versatile agricultural land on restoration cannot be relied on. Until further evidence is forthcoming it should be assumed that up to 76ha of best and most versatile agricultural land could be lost which means this proposed development is high sensitivity and a major adverse impact.

Further information, including full information on the soil samples taken by RAC together with information on recent farm management and yields is required to establish the amount of best and most versatile agricultural land that is on the site, how much is under extraction, and how much could subsequently be lost if this development was granted.

APPENDIX 11

REVIEW OF ES CHAPTER 10 BIODIVERSITY

FULLAMOOR QUARRY. ENVIRONMENTAL STATEMENT. LAND AND MINERAL (24TH FEBRUARY 2016). REVIEW OF CHAPER 10, BIODIVERSITY

1.INTRODUCTION

This document presents the results of a review of the biodiversity assessment undertaken by AD Ecology Limited and presented as Chapter 10 of the Environmental Statement prepared to support an application for a new quarry at Clifton Hampden.

In preparing this review, consideration has been given to the following guidance and requirements.

- Relevant legislation and policy.
- Applicable responses received during the process of scoping.
- The requirements set out in the following document: **Guidelines for Ecological Impact Assessment in the UK and Ireland** (Chartered Institute of Ecology and Environmental Management, Second Edition, January 2016).

The proposed development has the potential to result in significant impacts due to the very large area of land in the countryside, located adjacent to the River Thames, that would be directly impacted by mineral excavations and auxiliary activities. Direct impacts associated with the proposed development include the following:

- direct land take, comprising 76 hectares of land primarily in agricultural use, for mineral extraction;
- additional land take, comprising a further 28 hectares also primarily in agricultural use, as a result of soil and overburden storage, access and ancillary purposes;
- the loss of 2,350 metres of hedgerow[1] including 2,070 metres of species-rich hedgerows (as a result of excavations);
- the removal of a large area of woodland (although a clear figure specifying the area of woodland that will be removed cannot be found within the Environmental Statement).

[1] The Landscape and Visual Impact Assessment refers to the loss of 1,800 linear metres of hedgerows.

2.REVIEW

2.1 Wintering Birds

Improved grassland adjacent to the River Thames and within the south of the proposed development site is recognised locally as a being of interest for wintering waterfowl. Assemblages of large numbers of geese, including greylag and Canada geese, and swans are regularly noted roosting and feeding in this area during the winter months.

Two wintering bird surveys were undertaken as part of the biodiversity assessment in December 2013 and March 2014. It is noted that additional wintering bird surveys were prevented by '*much of the study area being underwater following high rainfall and subsequent high river levels throughout January and February 2014*'. A '*paucity of birds*' was reportedly recorded during these two surveys. No assemblages of waterfowl were noted during either of the two wintering bird surveys.

Two surveys are considered insufficient to facilitate the collection of representative data regarding the use of the site by wintering birds. Surveys should be undertaken ideally on a fortnightly basis (or, possibly monthly) from September to the end of March (to enable the identification of migrating birds). It is concluded that the information in the biodiversity assessment is therefore insufficient to assess the actual interest of the site for wintering and migrant birds.

2.2 Breeding Birds

Under the Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000, all wild bird species together with their nests and eggs are protected. It is illegal to take, damage or destroy a wild bird's nest while it is being used or built. In addition to the protection afforded to wild birds, rare or vulnerable species listed on Schedule 1 to the Wildlife and Countryside Act 1981 (for example, the barn owl) receive enhanced protection when breeding.

As part of the biodiversity assessment, two surveys were undertaken, on 12th May and 19th June 2014. It is not clear if the proposed development site was surveyed in full or, as indicated in the text, a 'linear transect' only. The British Trust for Ornithology (BTO) Breeding Bird Survey (BBS) recommends a minimum of four surveys, each visit commencing at dawn, to record the numbers and species present. Two surveys are considered insufficient to facilitate the collection of data regarding the use of the site by breeding birds. Breeding bird surveys should have been undertaken throughout the breeding bird season, from March to August, ideally during both 2014 and 2015. Data should be mapped to facilitate the identification of those areas of key relative value for breeding birds and to enable the assessment of ecological impacts associated with the proposed development. Consideration should have been given to the occurrence of nests occupied by those species listed in Schedule 1 of the Wildlife and Countryside Act (including Kite which was noted as nesting in scrub in Field 7).

Due to the lack of survey data, there is no appropriate assessment of the impacts of the proposed developments on breeding birds. The removal of 2,350 meters of hedgerows and a large area of woodland as a result of excavations has the potential to significantly affect the breeding bird value of the site. In summary, there is no quantification of the impact of the proposed development on breeding birds in terms of numbers and diversity and impacts on vulnerable or protected species.

Despite the relative lack of data, it is noted that the proposed quarry excavation area is of 'District site value' for breeding birds. This level of interest is not reflected in the subsequent ecological impact assessment which states that the impact on birds is 'neutral (refer to Paragraph 5.2.6).

2.3 Otters

The otter (*Lutra lutra*) is fully protected by national law. They are also a European-protected species. As such, they are protected under Schedule 5 of the Wildlife and Countryside Act 1981 and Schedule 2 of the Conservation (Natural Habitats & c.) Regulations 1994. It is illegal to damage or destroy its breeding site or resting place, or deliberately to capture, kill, injure or disturb an otter.

Existing records indicate that streams and ditches within the site of the proposed development have the potential to support otters. There is anecdotal evidence from local residents regarding sightings of otters within the boundary of the site.

Paragraph 5.10 of the biodiversity assessment notes that the 'small stream running through the centre of the site will be lost as a consequence of gravel extraction' and that this stream 'may support both otter and water vole'. No further assessment of this impact is presented.

2.4 Bats

All bat species, their breeding sites and resting places are fully protected by national law. They are also a European-protected species. As such, they are protected under Schedule 5 of the Wildlife and Countryside Act 1981 and Schedule 2 of the Conservation (Natural Habitats & c.) Regulations 1994.

The proposed development site has the potential to support bats due to the following considerations:

- the presence of a mosaic of large areas of potentially-suitable foraging habitat including woodland, the watercourse of the River Thames and grassland;
- the occurrence of woodland and numerous mature trees which could provide roosting and/or breeding sites;
- the presence of the River Thames which may act as a corridor for bat movement.

An assessment of the potential for trees and buildings/structures to support roosting bats was reportedly undertaken during the Phase 1 ecological survey undertaken on 2nd July 2013. There is no evidence that systematic bat surveys have been undertaken as part of the EcIA although it is noted that 'the data search indicates that three species of bat were present in the wider area and could potentially utilise the site' for roosting and foraging, including:

- noctule bat (*Nyctalus noctula*);
- common pipistrelle bat (*Pipistrellus pipistrellus*);
- brown long-eared bat (*Plecotus auritis*).

Further, it is noted in the assessment that 'there are some mature trees including ash, oak and crack willow which have 'moderate to good potential for roosting bats'.

Relevant guidance[2] specifies that bat surveys should be undertaken to support planning applications that involve the following.

- '*Felling, removal or lopping of woodland; field hedgerows and/or lines of trees with connectivity to woodland or water bodies; old and veteran trees that are more than 100 years old; mature trees with obvious holes, cracks or cavities, or which are covered with mature ivy (including large dead trees).*

- *Proposals affecting water bodies in or within 200 m of rivers, streams, canals, lakes, reedbeds or other aquatic habitats*'.

Given that the proposed development will result in the felling and removal of large areas of woodland and hedgerows, and is located within 200 m of the River Thames, detailed surveys should be undertaken to provide adequate information to enable:

- Oxfordshire County Council to assess the likely affects of the proposed development on bat species and to identify and stipulate any further information required on necessary mitigation, compensation or enhancement measures in order to maintain the Favourable Conservation Status of the species;

- An informed decision to be taken as to whether a European Protected Species mitigation licence should be applied for;

- Natural England to determine an application for a European Protected Species license to allow the lawful disturbance of bats or the damage/destruction to their roosts.

[2] Bat Surveys: Good Practice Guidelines, 2nd edition. Bat Conservation Trust 2012.

2.5 Restoration Strategy

The proposed restoration scheme described in the biodiversity assessment includes the creation of the following wetland habitats:

- 24.5 hectares of open water;
- 6.7 hectares of reed marsh;
- 6.6 hectares of reed marsh/wet woodland;

The creation of these new habitats, together with other initiatives, is highlighted as key biodiversity benefits associated with the proposed development that would offset any residual affects associated with the loss of hedgerows etc. However, the proposed restoration scheme presented in the biodiversity assessment does not take into consideration the need to discourage species which have the potential to give rise to bird strike hazard, due to the proximity of RAF Benson. This requirement is noted in Chapter 1 of the Environmental Statement but not in the biodiversity assessment. Paragraph 6.39 of Chapter 1 states the following:

'*Areas of wetlands that have the potential to attract various species of birds dependant on the nature of the wetland. The proposal is to create habitats which will encourage wildlife but will not encourage larger or flocking birds that could create a hazard to air traffic from RAF Benson. Upon restoration, a bird management plan to minimise any bird strike hazard will be implemented. This will be agreed with the Defence Infrastructure Organisation and will be secured by means of a legal agreement*'.

Possibly the key potential nature conservation benefit associated with the creation of open water is the provision of new habitat for wildfowl and waders. The restoration strategy would appear, therefore, to have the potential to encourage the use of these habitats by large number of birds notably over-wintering and migrant populations of geese and swans and resident populations of gulls. Given the location of the proposed development site adjacent to the River Thames, a key corridor for bird migration, the open water would be well placed to be used by migrant and over-wintering bird populations. This would appear to directly conflict with the commitment by the applicant to agree with the Ministry of Defence a bird management scheme to be secured by legal agreement (refer to Paragraph 5.52 and 6.39 of Chapter 1 of the Environmental Statement).

The proposed initiatives to be undertaken to minimise bird hazard for traffic are presented in Chapter 6, Bird Strike Hazard Assessment. Proposed initiatives include the following.

- Preventing the successful breeding of geese, gulls and cormorants on site, for example by destroying eggs;
- Preventing the successful breeding of grey heron by managing the next site through habitat manipulation;

- Preventing formation of a starling roost, such as cutting back reeds in winter or tree removal;
- The use of bird scarers;

The bird control initiatives listed above would, as is their purpose, minimise the long-term potential ornithological value of the restored site for breeding, wintering and migrant bird populations.

2.6 Cumulative Ecological Issues

There is no reference to the potential for cumulative biodiversity impacts to occur as a result of the construction and operation of other planned and proposed projects within the vicinity of the development site. The document, Guidelines for Ecological Impact Assessment in the UK and Ireland Second Edition (CIEEM, January 2016) states that the following developments should be considered:

- Proposals for which consent has been applied which are awaiting determination;
- Projects which have been granted consent but which have not been started or are under construction;
- Proposals which have been refused permission but which are subject to appeal;
- Proposed projects that will be implemented by a public body but for which no consent is needed from a competent body.

The need for the consideration of cumulative impacts was raised as a requirement during the scoping process by Natural England, Culham and Appleford Parish Councils and Burcot and Clifton Hampden Parish Council. The assessment of cumulative ecological impacts would need to consider (among other planned and proposed developments) the planned expansion of Culham Science Centre, local housing proposals and the new road and river crossing.

3. CONCLUSIONS

The following issues have been noted in the review of the biodiversity assessment prepared as part of the Environmental Impact Assessment of the proposed development. Issues are listed in order of priority with the most important concern listed first.

- The biodiversity assessment concludes that the proposed development will be positive due, primarily, to the implementation and management of a restoration scheme including the creation of reedbeds and a large area (24.5 hectares) of open water. The restoration scheme presented and assessed in the Biodiversity Assessment makes no reference to, and takes no account of, the legal requirement to discourage large or flocking birds that could create a hazard to air traffic from RAF Benson. The associated management requirements are directly contradictory in nature. One would encourage birds to the restored site; the other requires the deterrence of birds away from that same site. The current restoration scheme is not sustainable, therefore. In addition, the requirement to deter birds

from the newly-created habitats, including the use of bird scarers and the management of the heronry to prevent breeding by herons, could result in a significant adverse impact to existing birds and other wildlife that currently use the site. The need to implement techniques to deter birds from the open water, in particular, could therefore have a net detrimental impact on the existing nature conservation value of the site rather than the positive one currently described.

- There is no consideration or assessment of the bird management plan, required to deter 'larger or flocking birds' from the site, in the biodiversity assessment. As noted above, the bird management plan has the potential, by its very nature, to result in significant adverse impacts to the long-term nature conservation interest of the restored site.

- The biodiversity assessment does not adequately assess the likely affects of the proposed development on bats. Despite records of three species of bat using the site, and visual inspections suggesting that some mature trees having good potential for roosting bats, no bat surveys have been undertaken to support the assessment. Given the absence of survey information, it is not possible to assess the impact of the proposed development on this European Protected Species and the associated requirement for mitigation, compensation or enhancement measures.

- There is no consideration of the potential for cumulative ecological impacts to arise as a result of the combined effects of the proposed development with other planned and proposed developments within the vicinity of the site. The need for the consideration of cumulative impacts was raised by a number of organisations, including Natural England, during the scoping process.

- The biodiversity does not adequately assess the likely affects of the proposed development on otters. Given the absence of survey information, it is not possible to assess the impact of the proposed development on this European Protected Species and the associated requirement for mitigation, compensation or enhancement measures.

- The biodiversity assessment does not adequately assess the likely affects of the development on breeding or wintering birds. Insufficient surveys have been undertaken to assess the occurrence of wintering bird species, and associated numbers, and the breeding bird use of the site. Due to the paucity of background data, it is not possible to assess the impacts of the proposed development particularly the impact of habitat loss. As noted previously, no assessment has been made of the adverse impact of the bird management plan on existing birds using the restored site.

APPENDIX 12

REVIEW OF ES CHAPTER 6 BIRD STRIKE HAZARD ASSESSMENT

FULLAMOOR QUARRY. ENVIRONMENTAL STATEMENT. LAND AND MINERAL (24TH FEBRUARY 2016). REVIEW OF CHAPER 6, BIRD STRIKE HAZARD ASSESSMENT

1.INTRODUCTION

1. Background

Birdstrikes are a significant cause in the loss of civil aviation and military aircraft and associated lives. Due to these risks, the UK government has established eight nautical mile (13 km) safeguarded zones around major civil and all military aerodromes. Within this zone any planning application which has the potential to increase birdstrike risk to aircraft must be referred to either the Ministry of Defence (MOD) for military airfields or the aerodrome manager for civil airfields.

Different bird species pose different risks to aircraft[1]. In general, large bird species are more likely to cause damage due to their greater mass. Birds that live in flocks pose a greater risk than solitary birds because simultaneous impacts increase the chance that a bird may hit a vulnerable part of the aircraft. When assessing the potential impact of a new wetland on birdstrike risk, a key issue is not estimating the numbers and species of birds likely to be attracted but also their likely behaviour. The frequency with which birds move to and from a wetland is a key issue as this increases the possible risk of collision with an aircraft.

The proposed development site is located adjacent to the River Thames, approximately 9.5 km to the northwest of RAF Benson. The proposed development site is therefore located within the statutory aerodrome safeguarding zone, as defined in the *Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) Direction 2002*.

RAF Benson comprises a support helicopter base and is home to Puma and Merlin HC3 and HC3a helicopters and the Tutor T1 Aircraft. It is also the base for the Air Ambulance, civilian Police and Air Experience Flight. In 2015, the initial training for the Chinook Force moved to RAF Benson; a total of six Chinook helicopters are now based at the site.

1.2 Purpose of the Review

This document presents the results of a review of the bird strike hazard assessment undertaken by AD Ecology Limited and presented as Chapter 6 of the Environmental Statement prepared to support an application for a new quarry ('Fullamoor Quarry') at Clifton Hampden. In particular, comments are presented on the assessment of the

[1] Taking account of aviation hazards in the development of a Wetland Vision for England, Dr John Allen, Birdstrike Avoidance Team, Central Science Laboratory, York.

potential for an increased risk to aircraft based at RAF Benson as a result of the proposed creation of a large wetland as part of the restoration of Fullamoor Quarry.

In preparing this review, consideration has been given to the following requirements.

- Relevant legislation and policy.
- Applicable responses received during the process of scoping.

2.REVIEW

2.1 Helicopter Use of the Proposed Development Site

Paragraph 7.5 notes that the proposed development site 'is not located directly under a flight path…therefore the study area is in a low risk location'.

No published information is available regarding the movement of helicopters from RAF Benson but anecdotal evidence from local residents confirms that the study area is well used by military helicopters, particularly pairs of low-flying Chinooks, with the aircraft frequently appearing to follow the route of the River Thames. Aircraft are frequently noted flying low over the development site on a regular basis, including conducting training exercises in groups of two or three aircraft .

It is also understood that there is significant aircraft movement between RAF Benson to the south east of the proposed development site, and RAF Brize Norton to the north west. The proposed development site is located on the route of the direct line between these two facilities.

2.2 Bird Interest within the Study Area and Wider Landscape

Section 5 of the bird strike hazard assessment describes the ornithological interest of the proposed development site. The assessment, summarised in this section of the Environmental Statement and described in more detail in Chapter 10 ('Biodiversity'), is considered to potentially significantly underestimate the ornithological interest of the site. In particular, arable land adjacent to the River Thames and within the south of the proposed development site is recognised locally as being of interest for wintering waterfowl. Assemblages of large numbers of geese, including greylag and Canada geese, and mute swans are regularly noted roosting and feeding in this area. These assemblages were not noted during the two wintering bird surveys undertaken in December 2013 and March 2014 to support the ecological assessment of the proposed development site. It is noted in Chapter 10 ('Biodiversity') that additional wintering bird surveys were prevented by '*much of the study area being underwater following high rainfall and subsequent high river levels throughout January and February 2014*'.

Further, there is inconsistency in the description of the ornithological interest of the proposed development site between the bird strike hazard assessment presented in Chapter 6 and the biodiversity assessment in Chapter 10. Paragraph 3.39 of the biodiversity assessment states that the proposed quarry excavation area 'has a District site value' in terms of breeding birds recorded. This ornithological value of the site in not reflected in the description in Section 4 of the bird strike hazard assessment which suggests that the proposed development site has limited interest in terms of breeding and wintering bird assemblages.

No overflying bird surveys, to assess existing bird movements over the proposed development site, were undertaken as part of the assessment.

In the consideration of other sites of interest within the area, no consideration is given to the very large numbers of gulls that visit the landfill site, operated by FCC Environment, at the nearby village of Sutton Courtenay, for feeding purposes.

2.3 Restoration Strategy

The proposed restoration scheme described in the biodiversity assessment, in Chapter 10 of the Environmental Statement, includes the creation of the following wetland habitats:

- 24.5 hectares of open water;
- 6.7 hectares of reed marsh;
- 6.6 hectares of reed marsh/wet woodland.

In Chapter 10 ('Biodiversity'), the creation of these new habitats, together with other initiatives, is highlighted as key biodiversity benefits associated with the proposed development that would offset any residual affects associated with the loss of hedgerows and other habitats as a result of the proposed quarrying operations.

Possibly the key potential nature conservation benefit associated with the creation of open water is the provision of new habitat for waterfowl (wildfowl and waders). The restoration strategy would appear, therefore, to have the potential to encourage the use of these habitats by large number of birds notably passage and over-wintering populations of geese and swans and resident populations of gulls. The creation of large areas of reedbeds has the potential to attract roosting starlings.

Given the location of the proposed development site adjacent to the River Thames, a key corridor for bird migration, the open water would be well placed to be used by migrant, passage and over-wintering bird populations. The proposed initiatives to be undertaken to minimise the potential for birds to use the restored site are presented in the bird management plan and include the following.

- Preventing the successful breeding of geese, gulls and cormorants on site, for example by destroying eggs.

- Preventing the successful breeding of grey heron by managing the nest site through habitat manipulation.

- Preventing formation of a starling roost, such as cutting back reeds in winter or tree removal.

- The use of bird scarers.

- The use of goose proof wire fencing around the edge of all waterbodies.

The bird strike assessment concludes that the bird control initiatives listed above would prevent breeding by geese, gulls and cormorants, prevent the formation of starling and gull roosts, disperse geese, starlings and other birds and prevent breeding by grey heron. However, it is considered unlikely that the above initiatives would prevent the use of the site by passage birds unless bird monitoring and/or the use of bird scarers, was undertaken on a daily basis at key times of year. Bird monitoring is currently proposed to be undertaken on monthly basis from September to March, dropping to two visits during April and August.

3. CONCLUSIONS

The scope of the surveys undertaken is considered insufficient to facilitate the evaluation of the existing ornithological interest of the proposed development site. Although flooding reportedly prevented the completion of wintering bird surveys in January and February 2014, additional surveys could have been undertaken in 2015. Further wintering bird surveys are therefore required together with the completion of overflying bird surveys, to assess existing bird movements over the proposed development site.

There is inconsistency between the results of the bird strike hazard assessment, presented in Chapter 6, and the biodiversity assessment in Chapter 10. The biodiversity assessment states that the proposed quarry excavation area 'has a District site value' in terms of breeding birds recorded. This ornithological value of the site in not reflected in the bird strike hazard assessment which suggests that the proposed development site has very limited ornithological interest.

The restoration scheme, including the creation of reedbeds and a large area (24.5 hectares) of open water, has the potential to attract birds to the restored site. Due to the location of the proposed development site adjacent to the River Thames, it is considered possible that the large area of open water, created as a key component of the restoration plan, could attract large and/or flocking birds, particularly during the passage periods.

APPENDIX 13

REVIEW OF THE ES IN CONSIDERATION OF CUMULATIVE IMPACTS

FULLAMOOR QUARRY. ENVIRONMENTAL STATEMENT. LAND AND MINERAL (24TH FEBRUARY 2016). REVIEW OF THE ASSESSMENT OF POTENTIAL IN-COMBINATION AND CUMULATIVE IMPACTS

1.INTRODUCTION

This document presents the results of a review of the consideration of the potential for cumulative impacts to arise in the Environmental Statement prepared to support an application for a new quarry at Clifton Hampden.

In preparing this review, consideration has been given to the following guidance and requirements.

- Relevant legislation and policy.
- Applicable responses received during the process of scoping.
- The requirements set out in the following document: **Guidelines for Ecological Impact Assessment in the UK and Ireland** (Chartered Institute of Ecology and Environmental Management, Second Edition, January 2016).

Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011[1] specifies information for inclusion in Environmental Statements. Part 1 of the Regulations requires the consideration of the following:

'3. A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the ***inter-relationship*** *between the above factors.*

4. A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, ***cumulative****, short, medium and long-term, permanent and temporary, positive and negative effects of the development..'*

2. IN-COMBINATION EFFECTS

There is no consideration in the Environmental Statement of the potential for direct in-combination effects to occur to sensitive receptors.

For example, residents in close proximity to the proposed development site, including potentially residents of Appleford, Clifton Hampden and Long Wittenham, are likely to be affected by various aspects of the proposed development including:

[1] Statutory Instrument 2011 No. 1824

- Dust;
- Limitations of access to, and use of, footpaths;
- Landscape impacts;
- Noise from quarry operations;
- Noise from traffic movements;
- Noise from bird scarers;
- Visual impacts;
- Traffic impacts;
- Plant flood lighting.

Other potential receptors likely to be subject to direct in-combination impacts comprise amenity users of the River Thames and the associated Thames Path, and the existing Rights of Way. These receptors include large numbers of walkers, cyclists, anglers and boat traffic. Direct in-combination impacts could arise as a result of the following environmental aspects of the proposed development:

- The change in land use from agricultural to industrial operations;
- Dust;
- Limitations of access to, and use of, footpaths;
- Landscape impacts;
- Noise from quarry operations;
- Noise from bird scarers;
- Visual impacts.

Cyclists, pedestrians and other road users using the footway and highway along the A415 also have the potential to be affected by in-combination impacts. Direct in-combination impacts could be experienced by road users as a result of the following environmental aspects of the proposed development:

- Dust;
- Landscape impacts;
- Noise from quarry operations;
- Noise from traffic movements;
- Visual impacts to the highway;
- Traffic impacts.

The Scheduled Monument also has the potential to be affected by in-combination impacts. Direct in-combination impacts could be experienced by the Scheduled Monument as a result of the following environmental aspects of the proposed development:

- Landscape and visual impacts especially to its in-combination setting with surrounding SAMs especially south of the River Thames at Appleford and east at Northfield Farm LW.

Birds that currently roost and feed on arable land adjacent to the River Thames towards the south of the proposed development site have the potential to be impacted by measures implemented as part of the bird management scheme to deter birds from using the restored site, notably open water and reedbeds. No consideration is given in the biodiversity assessment (Chapter 10) to the adverse impacts of the Bird Management Pan set out in Chapter 6 (Bird Strike Hazard Assessment).

In the Environmental Statement, no consideration is given to the potential for, or significance of, in-combination impacts to sensitive receptors. Rather, the significance of impacts is only assessed on an issue-specific basis thereby potentially under-estimating the significance of in-combination impacts on sensitive receptors. The need for additional mitigation measures to off-set the potential for in-combination impacts, or reduce their significance to an acceptable level, is also therefore not addressed.

3. CUMULATIVE IMPACTS WITH OTHER PLANNED AND PROPOSED PROJECTS

Cumulative impacts are those that are likely to arise when the development proposals are considered in relation to other planned or proposed developments. Individually, the effects of a single development may be of minor significance but when assessed in-combination with other proposals the overall significance could be greater than the sum of the effects of the individual developments.

There is no consistent or systematic assessment of the potential for cumulative biodiversity impacts to occur as a result of the construction and operation of other planned and proposed projects within the vicinity of the development site. The document, Guidelines for Ecological Impact Assessment in the UK and Ireland Second Edition (CIEEM, January 2016 states that the following developments should be considered:

- Proposals for which consent has been applied which are awaiting determination;
- Projects which have been granted consent but which have not been started or are under construction;
- Proposals which have been refused permission but which are subject to appeal;
- Proposed projects that will be implemented by a public body but for which no consent is needed from a competent body.

The need for the consideration of cumulative impacts was raised as a requirement during the scoping process by Natural England, Culham and Appleford Parish Councils and Burcot and Clifton Hampden Parish Council.

Based on consideration of proposed and planned developments within the vicinity, the assessment of cumulative impacts would need to take account of the following (together with other planned and proposed developments, to be agreed in consultation with Oxfordshire County Council).

- The planned expansion of Culham Science Centre, comprising 50% employment expansion to support the Science Vale, additional new buildings; increase in road traffic and other forms of access using public transport, foot or cycle including railway users.

- Local housing proposals, including the Berinsfield expansion, developments at Clifton Hampden and Burcot, (including the possible redevelopment of land adjacent to the village hall and allotments to create a new surgery and up to 30 houses to provide for young and old village residents and a new village hall on the recreation ground), new housing development at Culham Station; and the planned upgrade of Culham railway station.

- New Road Crossing and Clifton Hampden Relief road. A new road and Thames crossing is being considered to link Didcot and the Culham Science Centre. The Environmental Statement refers to the fact that possible road lines have been considered by Hills in preparing the area of extraction and processing. The proposed road and river crossing has the potential to result in significant environmental impacts during both the construction and operational phases. There is also significant potential for cumulative impacts to arise as a result of the road/river crossing and the proposed development due to their proximity and scale.

Examples of the non-systematic approach to the identification and assessment of cumulative impacts undertaken in the Environmental Statement are presented below.

- The hydrology and hydrogeology assessment (pages 37 and 57, Chapter 2) refers to the potential impacts of climate change and the new road on flood risk but no quantitative assessment is undertaken.

- The flood risk assessment (page 14, Chapter 3) refers to the potential impact of the new road on flood risk but no quantitative assessment is undertaken.

- The cultural heritage assessment (page 40, Chapter 4) refers to the road development. The assessment states **'Suffice to say the development of any of the options would not have an onerous cumulative effect on the buried archaeological resource**'. However, there is no assessment of information to support this statement. It also appears to potentially contradict the following statement '*It is worth noting that one of the proposed alignments of the new road would pass between the western boundary of the restored site and cross part of the Scheduled Monument at Fullamoor Plantation. There would not be a cumulative effect as the impacts of the gravel site are taken to resolve to neutral*

at the end of the restored phase of the development'. Again, there is no information to back up this statement. There is the potential for indirect cumulative impacts to occur to the Scheduled Monument on a consecutive basis (e.g. as a result of hydrological changes and disturbance, for example).

- The agriculture assessment (Chapter 5) makes no reference to the potential for cumulative impacts with other planned and proposed developments. No assessment is therefore undertaken.

- The bird strike hazard assessment makes no reference to the potential for cumulative impacts with other planned and proposed developments. No assessment is therefore undertaken.

- The landscape and visual impact assessment (pages 25 and 37, Chapter 7) refers only to cumulative impacts with the existing sand and gravel workings and earthworks at Didcot Power Station. No reference is made to the proposed adjacent road and river crossing which has the potential to result in significant cumulative landscape and visual impacts with the proposed development..

- The noise assessment (page 20, Chapter 9) refers to the new road and river crossing and states that 'the increased road traffic noise would tend to mask the noise from the extraction and processing operations'. No consideration is given to the impact of 'creeping ambient' i.e. the overall increase in background noise levels or the cumulative impact on sensitive receptors. A similar qualitative approach is adopted in relation to the expansion of the Culham Science Centre.

- The biodiversity assessment (Chapter 10) makes no reference to the potential for cumulative impacts with other planned and proposed developments. No assessment is therefore undertaken.

- The dust and air quality assessment (page 19, Chapter 12) refers to the potential for cumulative impacts from the new road, the development of Culham Science Centre and the Grundon Waste Management development at New Barn Farm. The assessment concludes that '*potential cumulative dust impacts are considered to be localized and of negligible significance with appropriate mitigation'*. No quantitative assessment is undertaken to support this statement.

3. CONCLUSIONS

The Environmental Statement does not adequately assess the potential for in-combination and cumulative impacts to arise.

Additional assessment is required to quantify the in-combination effects of predicted impacts on key stakeholders, notably residents to the north of the proposed development site, users of the Thames, the Thames Path and the Rights of Way, users of the A415 and the Scheduled Monument. Additional mitigation measures may need to be developed to

offset the significance of in-combination impacts or to reduce them to an acceptable level.

There is no systematic or consistent consideration of cumulative impacts in the Environmental Statement. A cumulative impact assessment is therefore required to be undertaken of the impact of the proposed development in combination with other planned and proposed developments. The cumulative impact assessment should encompass the following.

- The identification of those planned and proposed developments that have the potential to result in cumulative impacts with the proposed development, including the provision of a map to indicate the location of other developments in relation to the proposed development site.

- The identification of the potential for cumulative impacts to arise, for all technical areas considered, in a consistent manner.

- The **quantitative** evaluation of cumulative impacts and the development of additional mitigation measures, where required, to minimise the significance of such impacts.