URS

Scott Wilson

Oxfordshire Minerals and Waste Development Framework

Sustainability Appraisal/Strategic Environmental Assessment

Aggregates Apportionment Options
July 2011

Revision Schedule

SA Report – Aggregates Apportionment

July 2011

Rev	Date	Details	Prepared by	Reviewed by	Approved by
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1 Introduction

1.1 Oxfordshire Minerals and Waste Development Framework

Oxfordshire County Council ('the Council) is preparing a Minerals and Waste Development Framework (MWDF) for Oxfordshire. The Minerals and Waste Core Strategy Development Plan Document (MWDPD) will form a key part of the MWDF and will provide a strategic vision and overall strategy for meeting known and anticipated minerals and waste development requirements in Oxfordshire to 2030.

1.2 Minerals Supply

To inform the preparation of the emerging minerals supply policies, the Council commissioned consultants Atkins to produce a robust local assessment of the quantities of sand and gravel and crushed rock that need to be supplied from local quarries over the period to 2030. The assessment also included the potential supply of secondary and recycled materials.

Further background information on the assessment and the final consultants' report can be found on the Council's website – www.oxfordshire.gov.uk.

1.3 Sub-regional Apportionments

Four methods of predicting future aggregates demand in Oxfordshire were adopted by consultants Atkins. These together with the related sub-regional apportionment levels are shown in table 1.1 below. The table also includes the Council's recommended apportionment (which is based on the average of outcomes of the Atkins Report methods 2 and 4) and the current South East Plan Apportionment.

Table 1.1 Sub regional apportionment levels considered

Sub regional apportionments	Sand and gravel	Crushed rock	Secondary & recycled aggregates
Atkins Method 1: 2003 Sub regional apportionment methodology on regional total of 11.12 mtpa	**1.53**	**n/a**	**n/a**
Atkins Method 2: median past sales with smoothing	**1.29**	**0.62**	**0.64**
Atkins Method 3: housing proxy for demand	**1.58**	**0.81**	**0.88**
Atkins Method 4: population proxy for demand	**1.23**	**0.64**	**0.69**
OCC preferred/recommended (Cabinet Feb 2011) Average of outcomes of methods 2 and 4 (Atkins Jan 2011)	**1.26**	**0.63**	**0.67**
SE Plan (May 2009) Apportionment	**1.82**	**1.0**	**0.9**

1.4 Sustainability Appraisal

URS/Scott Wilson was commissioned by Oxfordshire County Council to undertake an independent Sustainability Appraisal incorporating Strategic Environmental Assessment[1] (hereby referred to as SA) of the above apportionment levels. SA seeks to identify the economic, social and environmental impacts of plan options/policies and suggests ways to avoid or minimise negative impacts and maximise positive ones.

1.5 Approach to SA of Apportionment Options

The approach adopted for the SA focused on testing the sustainability of the various apportionment levels. There are 6 levels of provision as shown in table 1.1 in section 1.3 above. As some of these levels are very similar, it was agreed to group them together to form single appraisal options as shown in table 1.2 below.

Table 1.2 Apportionment Options grouping *(similar figures are shown in the same colour)*

Sub regional apportionments	Sand and gravel (mtpa)	Crushed rock (mtpa)	Secondary & recycled aggregates (mtpa)
Atkins Method 1: 2003 Sub regional apportionment methodology on regional total of 11.12 million tonnes per annum (mtpa)	1.53	n/a	n/a
Atkins Method 2: median past sales with smoothing	1.29	0.62	0.64
Atkins Method 3: housing proxy for demand	1.58	0.81	0.88
Atkins Method 4: population proxy for demand	1.23	0.64	0.69
OCC preferred/recommended (Cabinet Feb 2011) Average of outcomes of methods 2 and 4 (Atkins Jan 2011)	1.26	0.63	0.67
SE Plan (May 2009) Apportionment	1.82	1.0	0.9

[1] As required through the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations).

This approach resulted in the following appraisal options (based on average figures).

1.5.1 Sand and gravel

- **Option 1** - apportionment levels 1.23mtpa, 1.26mtpa and 1.29mtpa (average 1.26mtpa)
- **Option 2** - apportionment levels 1.53mtpa and 1.58mtpa (average 1.55 mtpa)
- **Option 3** - apportionment level 1.82mtpa

The sharp sand and gravel figures are further sub-divided between sharp sand and gravel and soft sand on the basis of recent past production (80% sharp sand and 20% soft sand) as follows:

Sharp Sand:

- **Option 1 -** 1.01mtpa (80% of 1.26mtpa)
- **Option 2 -** 1.24mtpa (80% of 1.55mtpa)
- **Option 3-** 1.46mtpa (80% of 1.82mtpa).

Soft Sand:

- **Option 1 -** 0.25 mtpa (20% of 1.26mtpa)
- **Option 2 -** 0.31mtpa (20% of 1.55mtpa)
- **Option 3-** 0.36mtpa (20% of 1.82mtpa)

1.5.2 Crushed Rock

- **Option** 1 - apportionment levels 0.62mtpa, 0.63mtpa and 0.64mtpa (average of 0.63mtpa)
- **Option 2** - apportionment level 0.81mtpa
- **Option 3** - apportionment level 1mtpa

1.5.3 Secondary and Recycled Aggregates

- **Option 1** - apportionment levels 0.64mtpa, 0.67mtpa, 0.69mtpa (average 0.67mtpa)
- **Option 2** - apportionment level 0.88mtpa and 0.9mtpa (average 0.9mtpa)

In order to undertake a comprehensive SA, the spatial implications of the various options were considered. These allowed for the SA to identify ***broadly*** the potential impacts of working aggregates in the identified areas. The detailed methodology applied to the different aggregate types is discussed in the appraisal sections for sharp sand and gravel (chapter 2), soft sand, crushed rock and secondary and recycled aggregates (chapter 3).

It should be noted that the MWDPD will set out the overall strategy for the location of mineral workings in Oxfordshire. This will provide a basis for the identification of specific sites in the Minerals Sites Allocations DPD. Due to the strategic nature of the MWDPD which only identifies broad areas, it is not possible to address detailed site specific issues at this level. However, the SA has taken into account the available data and provided a robust strategic assessment of potential impacts associated with the various apportionment options. This approach follows the requirements in Article 5.2 of the SEA Directive which states that:

"The environmental report shall include information that may reasonably be required taking into account current knowledge and methods of assessment, the contents and level of detail in the plan or programme, and its stage in the decision-making process"

The sustainability appraisal was based on a combination of professional judgement, analysis of baseline data gathered in the Scoping Report and other available background information. It takes account of both potential positive and negative effects, and also considers other impact dimensions, including whether the effects are primary, secondary, direct, indirect, permanent, short-term, medium-term, long-term or cumulative (the term cumulative effects is also used to describe synergistic and secondary effects).

The SA objectives that form the appraisal framework (including sub-objectives and indicators) are shown in the table below and are derived from the MWDF Scoping Report.

Table 1.3 the SA Framework

SA Objective	Appraisal Criteria/Sub-objectives	Possible Indicators
1. To protect, maintain and enhance Oxfordshire's biodiversity and geodiversity including natural habitats and protected species	Will the MWDF protect, maintain and enhance UK BAP Priority Habitats?	Number of permitted applications for minerals and waste development which include a restoration scheme which contributes to the objectives of Oxfordshire Habitats Plans for the creation of calcareous grasslands, lowland acid grassland and reedbeds
		Number of planning applications which have an impact on designated sites or BAP habitats
	Will the MWDF conserve and enhance internationally, nationally and regionally important sites of nature conservation importance?	Number of permitted applications which result in restoration of favourable/favourable recovering condition or buffering of designated areas through appropriate habitat creation.
	Will the MWDF protect, maintain and enhance UK BAP Priority Species?	Number of permitted applications for minerals and waste development which include a restoration scheme which contributes to the objectives of Oxfordshire Species Plans.
	Will it contribute to the aims of the Conservation Target Areas?	Contribution of the MWDF policies to Conservation Target Areas for restoration of minerals and waste management sites.
	Will it protect and conserve geological SSSIs and RIGs?	Number of permitted applications which include conditions for the protection or enhancement of RIGS or

SA Objective	Appraisal Criteria/Sub-objectives	Possible Indicators
		geological SSSIs.
2. Protect and enhance landscape character, local distinctiveness and historic and built heritage	Will the MWDF conserve and enhance Oxfordshire's AONBs & their settings and take into account guidelines associated with specific landscape types?	Number of permitted applications for Minerals and Waste development which include conditions for the protection or restoration of statutory or non-statutory landscape designations.
	Will the MWDF protect and enhance the historic and prehistoric environment of Oxfordshire?	Number of permitted applications for Minerals and Waste development which include conditions for the protection or enhancement of the historic and prehistoric environment in Oxfordshire.
3. To maintain and improve ground and surface water quality	Will the MWDF affect groundwater quality?	Number of permitted applications affecting source protection zones 2 and 3 Number of permitted applications which assess the risk of contamination of groundwater
	Will the MWDF affect surface water quality?	Number of sites within 50m of a watercourse
		Number of permitted applications requiring abstraction licences
4. To improve and maintain air quality to levels which do not damage natural systems	Will the MWDF lead to increased traffic congestion in built up areas?	Number of permitted applications with routeing agreements which avoid AQMAs Survey of trip generation to civic amenity sites
	Will the MWDF lead to increased dust and/or odours?	Number of complaints relating to dust/odours
5. To reduce greenhouse gas emissions to reduce the cause of climate change	Will the MWDF lead to a decrease in production of greenhouse gases such as methane?	Proportion of waste and aggregates transported by rail or water Quantity of biodegradable wastes landfilled
6. To mitigate Oxfordshire's vulnerability to flooding, taking account of climate change	Number of sites that are permitted within flood risk zone as identified by PPS25.	Number of permitted sites for minerals and waste development within the flood plain (flood zone 3a/) Number of mineral restoration schemes identified for flood attenuation
7. To minimise the impact of transportation of aggregates and waste products on the local and strategic road network	Will the MWDF reduce distances travelled by road?	Distances travelled by road from new applications to settlements (waste) or markets Number of sites with rail/water access

SA Objective	Appraisal Criteria/Sub-objectives	Possible Indicators
	Are sites in the MWDF well located in relation to surrounding settlements for waste, or minerals for markets?	Number of sites with suitable access to appropriate roads
	Will the waste facilities or mineral operation serve local needs?	
	Does the MWDF facilitate HGV routeing agreements and developer contributions for infrastructure improvements?	
8. To minimise negative impacts of waste management facilities and mineral extraction on human health	Will the MWDF have impacts which could have a harmful effect on human health?	Number of permitted applications for mineral or waste development within 250m of sensitive receptors (settlements)
9. To minimise the negative impacts of waste management facilities and mineral extraction on people and local communities	Will the MWDF result in loss of amenity through visual impact, noise, dust or vibration for local communities?	Number of sites for mineral or waste development within 250m of sensitive receptors (settlements)
	Will the MWDF provide opportunities for enhancement of local amenity and access to the countryside?	Number of permitted applications with restoration conditions which enhance local amenity and /or improve access to the countryside.
10. To protect, improve and where necessary restore land and soil quality	Will the MWDF affect high grade agricultural land?	Area of high grade agricultural land lost to minerals and waste development
	Will the MWDF lead to soil pollution or contamination?	Incidences of land contamination related to minerals and waste development
11. To contribute towards moving up the waste hierarchy in Oxfordshire.	Will the MWDF policies reduce the amount of waste produced?	Amount of waste arising in Oxfordshire
	Will the MWDF encourage re-use, recycling/composting and recovery?	Amount of waste recycled and recovered
12. To promote efficient use of natural resources and avoid unnecessary sterilisation of mineral resources	Will the MWDF encourage use of secondary and recycled aggregates, and make provision for these sites?	Number of permitted applications for secondary and recycled aggregate developments.
	Does the MWDF encourage minimising the area of land take per tonne of mineral aggregate produced?	

SA Objective	Appraisal Criteria/Sub-objectives	Possible Indicators
	Will the MWDF avoid sterilising mineral resources by preventing unnecessary development on or near to mineral resources?	Identification of mineral safeguarding areas in the MWDF
	Will the MWDF promote dialogue between local authorities to ensure valuable mineral resources are not sterilised by non-minerals development?	Evidence of cross-boundary liaison meetings
13. To support Oxfordshire's economic growth and reduce disparities across the county.	Will the MWDF generate new jobs for the county?	Number of direct jobs created in the waste/mineral sector per year
	Will the MWDF support and encourage the growth of small and medium size business?	Number of new mineral and waste permissions
	Will the MWDF encourage the provision of more locally based skills and facilities?	

2 Sharp sand and Gravel

2.1 Options Considered and Methodology

For sharp sand and gravel, the Council has identified the areas that have the potential to provide deliverable sites during the plan period to meet the various apportionment levels (1.01mtpa, 1.24mtpa and 1.46mtpa). These are shown in table 2.1 together with the likely distribution of production rate per year for each area.

The existing areas of working (Lower Windrush Valley – LWV, Eynsham/Cassington/Yarnton - ECY- and Caversham) can potentially provide capacity throughout the period to 2030 and are therefore included in all the options.

However, information from the Council indicates that the Sutton Courtenay area is only likely to be in production up to around 2020 and following this period, additional areas have been identified including Cholsey, Clifton Hampden and Stadhampton to potentially provide further resources in the south of the county when reserves at Sutton Courtenay are exhausted. Under options 2 and 3, these areas would need to provide additional resources before 2020 as shown in the table below. *(The figures shown in italics indicate where either (not both) of the areas could be worked).*

Table 2.1 Sharp sand and gravel apportionment options – potential production areas

Options	LWV	ECY	Caversham	Sutton Courtenay	Cholsey	Clifton Hampden	Stadhampton
Upto 2020							
1	0.5	0.18	0.13	0.33	x	x	x
2	0.5	0.18	0.13	0.33	0.2	x	x
3	0.5	0.18	0.13	0.33	0.2	*0.25*	*0.25*
2020-2030							
1	0.5	0.18	0.13	x	0.2	x	x
2	0.5	0.18	0.13	x	0.2	*0.25*	*0.25*
3	0.5	0.18	0.13	x	0.2	0.25	0.25

The anticipated rates of production in table 2.1 are based on rates of working under existing permissions or proposed rates of working in site nominations in these areas. For example, it is assumed that 0.5 million tonnes sand and gravel will be produced annually from sites in the Lower Windrush Valley during the plan period, and that 0.33 million tonnes sand and gravel will be produced in the Sutton Courtenay area up to 2020.

When testing the sustainability implications of the various levels of provision for sharp sand and gravel, the following methodology was applied:

- Strategic natural and built environment designations were mapped for each broad area to identify potential constraints associated with working each area. These were based on the

issues covered by the SA objectives (as identified in the MWDF Scoping Report) and include – nature conservation designations, landscape designations, archaeological and built heritage designations, ground water and rivers. In addition, the road and rail networks and nearby settlements were also mapped (maps are provided in Appendix 1).

- The SA also took into account other sustainability issues covered by the SA framework including potential impact on greenhouse gas emissions, potential impacts on quality of life and human health, restoration opportunities and impacts on the local economy.

2.2 Sustainability Appraisal of Broad Areas

The sections that follow provide an overview of potential impacts associated with working in each of the identified areas based on the application of the above methodology:

LWV – This is an existing area for sand and gravel extraction situated in West Oxfordshire. This area has been extensively modified by mineral extraction for more than 60 years and is expected to continue to be in production during the plan period. Environmental designations identified within this area include a site of Scientific Special Interest (SSSI) and Scheduled Ancient Monuments. The River Windrush flows through the area and low flow has been identified as an issue by the Environment Agency. To mitigate against adverse effects associated with the identified issues, further assessment of potential impacts including mitigation measures where relevant should be undertaken at the site selection and planning application stages.

Some parts of the broad area lie within flood zone level 3b, and although sand and gravel extraction is considered to be compatible development in the flood plain, mitigation measures should be put in place to minimise the risk of flooding. Infrastructure associated with sand and gravel extraction should however not be located within the functional flood plain.

The area is accessed via the A415 leading onto the A40. The A40 is identified as suffering congestion in the MWDF Scoping Report. Maintaining working at the same level as current works can mitigate against further increases in HGV traffic in these area. However, HGV traffic would still have some negative effects in terms of green house gas (GHG) emissions, air and noise pollution.

This area is close to existing markets for sharp sand and gravel and has the advantage of having existing infrastructure to support extension of sites. Working in this area also offers potential restoration benefits for the surrounding communities through provision of nature conservation and recreational opportunities. There are several Conservation Target Areas (CTA) in the Lower Windrush Valley, and the area offers an opportunity for mineral restoration to contribute to landscape scale creation of UK Biodiversity Action Plan priority habitats[2].

As stated before, there has been extensive working in the past in this area. This has had significant impact on the local landscape and on traffic. Continued working in this area is therefore likely to lead to negative cumulative impacts on the surrounding communities including visual and landscape impacts, traffic (including air and noise pollution) and GHG emissions associated with road transportation.

Summary:

- Potential for negative impacts on nature conservation and heritage designations (depending on the location of sites).
- Potential impacts on River Windrush

[2] http://www.oncf.org.uk/biodiversity/cta.html

- Potential risk of flooding
- Transport impacts (air and noise pollution).
- GHG emissions.
- Positive economic and restoration impacts.
- Overall negative cumulative impacts on amenity in the long term (visual, landscape, traffic, noise and air quality).

ECY – The Eynsham/Cassington/Yarnton sand and gravel extraction area is an existing area of mineral extraction. To the south of the area are some environmental designations including a Special Area of Conservation and a SSSI. The River Evenlode and the River Thames also flow through the area. Potential adverse effects on these receptors will need to be considered at the site selection and planning application stages and mitigation measures provided where appropriate. Although sand and gravel extraction is considered to be compatible development in the flood plain, mitigation measures should be put in place to minimise the risk of flooding (and associated infrastructure should be located outside of the high flood risk areas). Ground water issues have been identified in Cassington and future working in this area should take account of these issues to ensure that continued production does not lead to adverse effects.

Continued working in these areas will lead to traffic impacts on the A40 and the A44 (the A40 is noted as already experiencing congestion in the MWDF Scoping Report). The area does not offer potential for use of alternative transport to road and therefore there is no potential to mitigate against GHG emissions. Continuing working in this area could have some economic benefits as the area is close to existing markets and existing infrastructure can be used to support further working and restoration offers potential for recreational benefits for the local communities.

Continued working however has potential for negative cumulative impacts over time including on the local environment (landscape, ground water) as well as on the local communities for example through traffic congestion especially around Cassington where there has been intensive working in the past.

Summary

- Potential negative impacts on SSSI, SAC and River Evenlode/River Thames depending on the location of sites.
- Transport impacts on the A40 and A44.
- GHG emissions.
- Positive economic and restoration impacts.
- Overall negative cumulative effects on environment and local communities in the long term (visual and landscape, ground water, traffic).

Caversham – This area lies to the south of the County at the border with Reading and is an existing mineral working area. There are no constraining nature conservation designations in the area. However, a large part of the area is underlain by a major aquifer and River Thames flows through the area. Potential negative effects on the aquifer and the River should be addressed during site selection and planning application stages. Large parts of the area lie within a high risk flood zone (3b), however, mineral working is compatible development and no significant effects are envisaged. Increased working has potential for negative effects on the road network including on the B478 and the A4155. The area has no potential for use of

alternative transport modes and therefore does not provide scope to mitigate against GHG emissions associated with road transportation. Working in this area has some beneficial effects in terms of using existing infrastructure and is well located close to markets in Reading. It also offers potential for restoration benefits to the communities. Working in this area however has potential for cumulative negative effects including on the water environment, visual and local landscape, noise and transport in the long term.

Summary

- Potential impacts on ground water and River Thames.
- Transport impacts on the B478 and A4155 (congestion, air and noise pollution).
- GHG emissions.
- Economic and restoration benefits.
- Potential for negative cumulative effects (visual and landscape, water, transport, air quality and noise).

Sutton Courtenay - This area lies to the south east of Oxfordshire and is an existing area for site and gravel extraction. The area is largely unconstrained by strategic nature conservation designations although there is a Scheduled Monument to the south west of the area. The River Thames flows through the area to the north and some parts of the area lie within high flood risk zone 3b. The area is well located in close proximity to markets with a good road infrastructure. However, potential transport impacts on the road network should be considered especially on the B401.Transporting materials by road also leads to GHG emissions. There is an aggregates rail depot and siding close to the current area of extraction, although at present this is used to import aggregates for onward sale rather than to export them. Working in this area offers some economic benefits as it is close to markets and has existing infrastructure. There is also potential for restoration benefits for the local communities. The area is proposed to be worked up to 2020. Potential negative cumulative effects (traffic, landscape and visual) would be in the short/medium term and reduce post 2020.

Summary:

- Potential impacts on scheduled ancient monuments and River Thames depending on location of sites.
- Economic and restoration benefits.
- Transport impacts on the B4016.
- GHG emissions.
- Potential negative cumulative effects (visual, landscape and transport) in the short-medium term (to 2020).

Cholsey – This area is in South Oxfordshire District, south of Wallingford. It is largely unconstrained by strategic nature conservation, historic and landscape designations. The River Thames flows through the area and potential negative effects on the River should be should be considered during site selection and planning application stages. This area is well located in relation to markets (Oxford, Didcot and Wantage). Infrastructure improvements would be required to support working in this area as it is not an existing minerals extraction area. The area is well linked with good access to the lorry route network (A329 and A4074). However, moving materials by road has potential for negative transport impacts (air, noise and congestion) as well as GHG emissions. A historic railway line which uses steam and diesel

trains lies adjacent to the area but is unlikely to be of use to transport aggregates. Introducing mineral working in this area could have potential for negative amenity effects on the local community depending on the proximity of sites to sensitive receptors. Potential amenity impacts should be adequately addressed before commencement of works to ensure there are no adverse effects on sensitive receptors. Restoration of sites could offer some beneficial community effects in the future depending on the proposed after uses.

Summary

- Potential impacts on the River Thames.
- Well located close to markets.
- Significant investment in infrastructure required.
- Potential transport impacts on the A4130 and A4074.
- Potential negative amenity effects on local communities.
- Potential restoration benefits in the longer term depending on proposed future land uses.

Clifton Hampden- Clifton Hampden lies to the east of Abingdon in South Oxfordshire. This area is largely unconstrained by presence of strategic designations. The area is well located close to the markets (Oxford, Didcot, Wantage, and Grove) but significant investment in infrastructure would be required as this area is not an existing mineral working area. Access is likely to be via the A415 on to the A4074 and although these are suitable for HGVs, there is potential for negative transport impacts (air and noise pollution, congestion) as HGVs would either have to travel through Clifton Hampden village, or Abingdon town centre, or go over the bridge over the Thames and go through Sutton Courtenay village. The railway line passes adjacent to the area but there is unlikely to be an opportunity to use it to transport aggregates. Introducing mineral working in this area has potential for negative amenity effects on the local community depending on the proximity of sites to sensitive receptors (houses, schools etc). Potential amenity impacts should be adequately addressed before commencement of works to ensure there are no adverse effects on sensitive receptors. Restoration of sites could offer some beneficial community effects in the future; restoration proposals include agriculture, lakes and habitat creation. .

Summary

- Well located close to markets.
- Significant investment in infrastructure required.
- Potential transport impacts on the A415 and A4074.
- Potential negative amenity effects on local communities (traffic, visual, air quality and noise) depending on location of sites.
- Potential restoration benefits in the longer term depending on proposed future land uses.

Stadhampton - This area is in South Oxfordshire District, north of Wallingford. It is largely unconstrained by strategic nature conservation and landscape designations. The River Thame flows through the site and potential negative effects on the river should be considered during site selection and planning stages to mitigate against likely adverse effects. The area is well located close to markets – Oxford, Didcot and Wallingford but significant investment in infrastructure would be required as this area is not an existing mineral working area. Access is likely to be via a haul road on to the A4074 with potential for negative transport impacts (air and noise pollution, congestion) as well as GHG emissions. This area is further from areas of

planned development such as Didcot than the Cholsey area; lorries would have to use the A4074, the Wallingford bypass and the A4130 to reach Didcot. Introducing mineral working in this area has potential for negative amenity effects on the local community depending on the proximity of sites to sensitive receptors (houses, schools etc). These impacts should be adequately addressed before commencement of works to ensure there are no adverse effects on sensitive receptors. Restoration of sites could offer some beneficial community effects in the future depending on the proposed after uses.

Summary

- Well located close to markets
- Significant investment in infrastructure required
- Potential transport impacts on the A4074
- Potential negative amenity effects on local communities
- Potential restoration benefits in the longer term depending on proposed future land uses

2.3 Sustainability Appraisal of Options

This section summarises the potential impacts associated with each of the sharp sand and gravel options based on the issues identified in section 2.2 above.

2.3.1 Sharp Sand and Gravel Apportionment Option 1

This option is based on working in the existing areas of LWV, ECY, Caversham and Sutton Courtenay. The Sutton Courtenay area is expected to cease production around 2020.The Cholsey area would be brought in to production post 2020. The table below shows the proposed annual distribution of working in the identified areas.

Table 2.2 Option 1- Potential distribution of working (mtpa)

Option 1	LWV	ECY	Caversham	Sutton Courtenay	Cholsey
Upto 2020	0.5	0.18	0.13	0.33	x
2020-2030	0.5	0.18	0.13	x	0.2

Sustainability Appraisal Summary

Nature conservation – Potential negative impacts within LWV and ECY due to presence of nationally important designations (SSSI, SAC).

Landscape character – potential for local visual and landscape impacts in all areas depending on the location of sites.

Historic and built heritage – Potential for negative impacts in LWV and Sutton Courtenay due to presence of Scheduled Monuments.

Ground and surface water – Potential impacts on ground water in LWV, ECY and Caversham. Potential impacts on Rivers Windrush (LWV), River Evenlode (ECY) and River Thames (Caversham, Sutton Courtenay - up to 2020 and Cholsey post 2020).

Air quality – Potential for air pollution associated with HGV movements in all the areas.

Green house gases – GHG emissions in all the areas due to transportation of materials by road

Floodrisk – Some parts of the proposed production area lie within high flood risk zones (LWV, ECY, Caversham and Sutton Courtenay). However, sand and gravel extraction is considered to be compatible development. Supporting infrastructure would however be at risk from flooding and should be located away from the high risk areas.

Transport - Potential for negative transport impacts on the A40 (LWV, ECY), A 44 (ECY), A4155/B478 (Caversham) and B4016/A4130 (Sutton Courtenay – up to 2020). Post 2020, there is potential for negative transport impacts along the A4130 and A4074 associated with working in Cholsey.

Restoration – LWV and ECY offer opportunities for landscape wide restoration schemes. There are extensive Conservation Target Areas within the Lower Windrush Valley and there is extensive scope for restoration on as landscape scale, to contribute to national Biodiversity Action Plan targets. Other areas have potential for beneficial restoration impacts depending on the preferred land uses. Oxfordshire County Council encourages restoration to nature conservation and where land suitable for agriculture, it may be appropriate to restore to farmland.

Local Economy – All the areas are well located close to the markets and providing investment and job opportunities which support the local economy.

Cumulative effects – Due to continued working in LWV, ECY, Caversham there is potential for long-term cumulative effects on the environment and on the local communities. These include visual and local landscape impacts, air and noise pollution from HGV movements, traffic congestion, GHG emissions and impacts on the water environment. In Sutton Courtenay, cumulative effects would be felt in the short-medium term (to 2020) after which production is planned to cease in this area.

2.3.2 Sharp Sand and Gravel Apportionment Option 2

Option 2 is based on working in the existing areas of LWV, ECY, Caversham and Sutton Courtenay and Cholsey. Post 2020, additional production would be required following the closure of Sutton Courtenay. This option proposes to either bring Clifton Hampden or Stadhampton in to production during this period.

Table 2.3 Option 2 - Potential distribution of working (mtpa)

Option 2	LWV	ECY	Caversham	Sutton Courtenay	Cholsey	Clifton Hampden	Stadhampton
Upto 2020	0.5	0.18	0.13	0.33	0.2	x	x
2020-2030	0.5	0.18	0.13	x	0.2	*0.25*	*0.25*

(The figures shown in italics indicate where either (not both) of the areas could be worked).

Option 2 is similar to option 1 in - terms of potential impacts relating to LWV, ECY, Caversham and Sutton Courtenay (therefore option 1 impacts above apply). However, this option includes introducing working in Cholsey before 2020 and introduction of either Clifton Hampden or Stadhampton post 2020. This would have the additional potential impacts as follows:

- Potential negative impacts on A4130 /A4074 (Cholsey- pre-2020 to 2030) and/or A415/A4074 (Clifton Hampden - 2020-2030) **and/or** A4074 (Stadhampton – 2020-2030).
- Significant investment in infrastructure in the Cholsey **and/or** Clifton Hampden/ Stadhampon which could lead to local job creation and support to the local economy
- Potential negative amenity effects for communities around Cholsey **and/or** Clifton Hampden/Stadhampton depending on the location of sites.

Compared to option 1, this option would lead to more working in the Cholsey area early on in the plan period and additional working from **either** Clifton Hampden or Stadhampton.

2.3.3 Sharp Sand and Gravel Apportionment Option 3

Option 3 is based on working in the existing areas of LWV, ECY, Caversham, Sutton Courtenay and Cholsey. To meet the higher apportionment level, working in either Clifton Hampden or Stadhampton would be required before 2020 and both areas would be brought into production post 2020.

Table 2.4 Option 3 - Potential distribution of working (mtpa)

Option 3	LWV	ECY	Caversham	Sutton Courtenay	Cholsey	Clifton Hampden	Stadhampton
Upto 2020	0.5	0.18	0.13	0.33	0.2	*0.25*	*0.25*
2020-2030	0.5	0.18	0.13	x	0.2	0.25	0.25

(The figures shown in italics indicate where either (not both) of the areas could be worked).

Option 3 is similar to options 1 and 2 in terms of potential impacts relating to LWV, ECY, Caversham and Sutton Courtenay (**therefore the sustainability impacts identified for option 1 for these areas apply to option 3).** However, this option includes introducing working in Cholsey before 2020 and **either** Clifton Hampden or Stadhampton before 2020 and continuing working in both Clifton Hampden and Stadhampton post 2020). This would have the following SA impacts:

- Potential negative impacts on A4130/A4074 (Cholsey – pre 2020 -2030) and/or A415/A4074 (Clifton Hampden -pre 2020 -2030) and/or A329/A4074 (Stadhampton pre 2020 -2030).
- Significant investment in infrastructure in the Cholsey, Clifton Hampden and Stadhampon which could lead to local job creation and support to the local economy.
- Potential negative amenity effects for communities around Cholsey and/or Clifton Hampden/Stadhampton depending on the location of sites.

Compared to option 1 and 2, this option would lead to more working in Cholsey **and/or** Clifton Hampden/Stadhampton early on in the plan process (pre – 2020) and additional working from **both** Clifton Hampden and Stadhampton leading to more areas being worked post 2020.

2.3.4 Summary of Findings

In the early part of the plan period, all options would include working in the existing areas of LWV, ECY, Caversham and Sutton Courtenay. Option 1 would introduce working in Cholsey

post 2020 following closure of works at Sutton Courtenay. Option 2 would introduce production in Cholsey earlier (before 2020) and either Clifton Hampden or Stadhampton post 2020.

Option 3 like option 2 would also introduce working in Cholsey early on in the plan period as well as an additional resource area either in Clifton Hampden or Stadhampton. Post 2020, both Clifton Hampden and Stadhampton would be in production to meet the option 3 apportionment level.

Overall, all options have potential for some impacts on the environment as well as on the surrounding communities. However, option 3 includes working in more areas and early on in the plan period which means it is likely to have more sustainability impacts in the short/medium and longer term as identified above compared to options 1 and 2.

3 Other Aggregates

3.1 Soft Sand

For soft sand, three sub-regional apportionment levels have been identified (0.25mtpa, 0.31mtpa and 0.36mtpa). The Council has identified that the strategy for soft sand working will be to concentrate production in the three existing areas as follows:

- South east of Faringdon
- Tubney/Marcham/Hinton Waldrist
- Duns Tew

3.1.1 Sustainability Appraisal Methodology

For the three apportionment levels considered, production would be met in the above identified areas. The sustainability appraisal of the soft sand apportionment options focused on identifying the key potential impacts associated with working in each area and providing an overall commentary on how the options perform in sustainability terms.

3.1.2 Sustainability Appraisal Findings

Key issues identified for the broad areas proposed include:

- **Nature conservation** – there are SSSIs close to all the identified areas. The Tubney/Marcham/Hinton Waldrist area is also close to Cothill Fen SAC.
- **Historic designations** - There are Scheduled Monuments close to the Tubney/Marcham/Hinton Waldrist area.
- **Landscape** - None of the identified sites is within AONB, however, there is potential for local visual and landscape impacts depending on the location of sensitive receptors
- **Transport** - It is not envisaged that soft sand working in any of the identified areas would lead to significant increases in HGV traffic. However, there is potential for some negative impacts from increased traffic on the local roads including on the B4030/A260 (Duns Tew) and on the A420, A417, and B4508 (south east Faringdon and the Tubney/Marcham/Honton Walrdist area).
- **Local economy** - Working in the identified area provides some positive economic benefits and allows for use of existing infrastructure and networks.
- **Cumulative effects** - In the long-term, there is potential for cumulative negative effects on the environment and local communities although these are not envisaged to be significant due to the quantities of soft sand produced.

The above issues are relevant for all of the apportionment levels and should be considered in detail at the site selection and planning application stages to ensure there are no adverse effects. The SA does not identify significant differences between the options as the overall difference in tonnage is not considered to be significant. However, generally, low levels of production are likely to be associated with fewer overall environmental impacts compared with higher production levels, although higher production levels may reduce the need to import aggregates by road and the attendant environmental impacts. Therefore the lowest apportionment option (0.25mtpa) is considered as likely to have lesser overall sustainability impacts compared to the higher options (0.31mtpa and 0.36mtpa).

3.2 Crushed Rock

For crushed rock, the various apportionment levels (0.63mtpa, 0.81mtpa and 1mtpa) would be met from working in the three existing areas as follows:

- North of Bicester to the east of the River Cherwell
- South of the A40 near Burford
- South east of Faringdon

3.2.1 Sustainability Appraisal Methodology

The sustainability appraisal of crushed rock apportionment options focused on identifying the key potential impacts associated with working in each area and providing an overall commentary on how the options are likely to perform.

3.2.2 Sustainability Appraisal Findings

The following potential sustainability issues have been identified for the proposed broad areas:

- **Nature conservation** – The area north of Bicester (Ardley) and the areas east of Faringdon are constrained by the presence of SSSIs
- **Historic designations** – There are scheduled ancient monuments within the area north of Bicester and close to the area east of Faringdon.
- **Landscape** – there are no strategic landscape designations in any of the areas. However, there is potential for local landscape and visual impacts depending on the location of sites relative to sensitive receptors.
- **Transport** – Increased working in any of the areas could have some local traffic impacts.
- **Cumulative effects** - Continued working in the existing areas will result in cumulative effects over time on the local communities including on landscape and local amenity – noise, air, and dust and traffic impacts. However, these are not expected to be significant due to the proposed levels of working.

To ensure that there are no adverse effects, these issues should be addressed in detail during the site selection and planning application stages.

The above identified issues are relevant to the three apportionment levels. For the purposes of this appraisal, it has been assumed that a higher production rate has potential for greater overall negative environmental and community effects compared to the lesser apportionment options (however, it should be noted that the overall difference is unlikely to be significant as the difference between the three options is not considered to be significant and that increasing the level of provision may have positive economic effects and may reduce the need to import some crushed rock into Oxfordshire.

3.3 Secondary and Recycled Aggregates

Two apportionment options were considered for the provision of secondary and recycled aggregates (0.67mtpa, 0.9mtpa).

3.3.1 Sustainability Appraisal Methodology

For secondary and recycled aggregates, the location of facilities is not yet known. The principle of the strategy for secondary and recycled aggregates provision is to make provision for permanent sites and for temporary facilities at aggregate quarries and inert waste landfill sites. It is not possible for the sustainability appraisal to take in to account the spatial implications of the above apportionment options. The approach adopted when appraising the secondary and recycled aggregates was to test them against the SA objectives and provide a commentary on the overall sustainability impacts associated with making provision based on the two options.

3.3.2 Sustainability Appraisal Findings

There was uncertainty when assessing potential impacts on SA objectives relating to the natural and built environment (nature conservation, historic environment, landscape, air quality, water, flood risk and soil) due to the fact that it is currently not known where sites for aggregates recycling will be located in the County. It is expected however that the potential impacts on sensitive receptors would be adequately assessed at the planning application stage when more details on the location of sites is available.

Both options supported the SA objective on promoting efficient use of natural resources with the higher option (0.9mtpa) judged to have a greater beneficial impact due to the high level of provision that would be provided. The two options would also be supportive of the local economy.

4 Conclusion

This section draws from the appraisal findings in chapters 2 and 3 and includes the overall appraisal findings for the various aggregates apportionment options.

4.1 Sharp Sand and Gravel

Generally, the greater the level of provision for sand and gravel working, the greater the short term negative impact on the environment, particularly on landscape, biodiversity, water environment and air quality. As the level of provision increases, more areas in south Oxfordshire are identified to meet the greater level of need. This will have a negative local impact on the local environment in these areas. Working three areas in the south of the county may have a cumulative impact on road safety, congestion and road maintenance if HGV vehicles from three sites are all using the road network in south Oxfordshire.

However, there are potentially two positive effects on the environment; these are that at a county scale, minerals will be provided closer to markets in the south of the county, thus reducing the mineral miles travelled and the attendant environmental impacts, and secondly that although greater levels of provision are being met, this will not lead to an increase of working in west Oxfordshire, or of the attendant cumulative impacts in this area where there has already been extensive working.

The social impact of the increase in the level of provision is generally to increase the number of local communities which are affected by sand and gravel working. This may lead to a negative impact on local amenity, road safety, noise, dust and visual impact of working for these communities. Again, increasing the level of provision for sand and gravel will have the effect of continuing working in west Oxfordshire, but increasing the impact on communities in south Oxfordshire.

The economic impacts of increasing the levels of provision for sand and gravel would be to continue the supply of aggregates from west Oxfordshire, but to create new sources of supply in south Oxfordshire, nearer to planned development in the south of the county.

4.2 Soft Sand

The SA does not identify significant differences between the options as the overall difference in tonnage is not considered to be significant. However, generally, low levels of production are likely to be associated with fewer overall environmental impacts compared with higher production levels. Therefore the lowest apportionment option (0.25mtpa) is considered as likely to have lesser overall sustainability impacts compared to the higher options (0.31mtpa and 0.36mtpa).

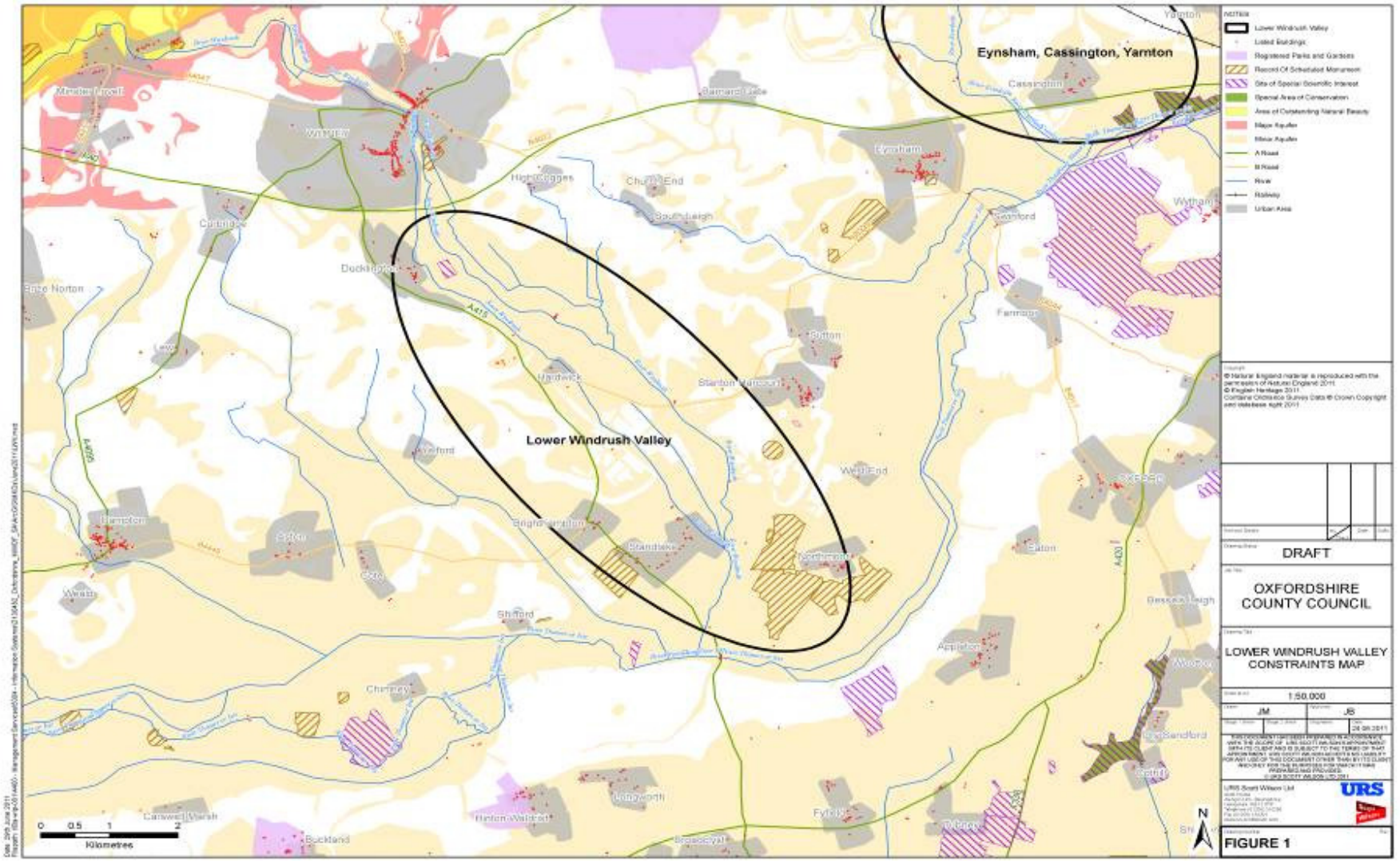
4.3 Crushed Rock

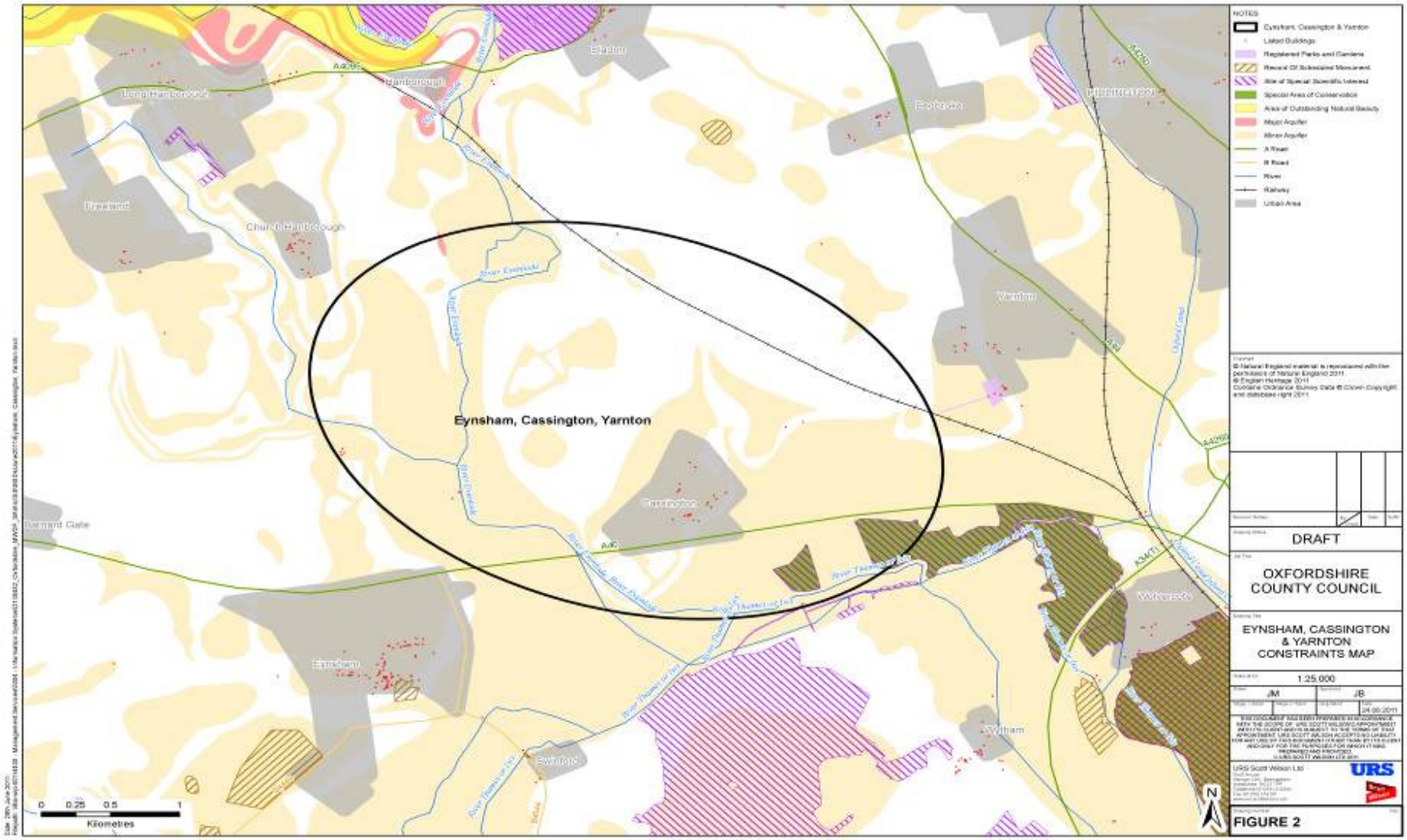
For the purposes of this appraisal, it has been assumed that a higher crushed rock production rate has potential for greater overall environmental and community effects compared to the lesser apportionment options (however, it should be noted that the overall difference is unlikely to be significant as the difference between the three options is not considered to be significant).

4.4 Secondary and Recycled Aggregates

Both options promote efficient use of natural resources with the higher option (0.9mtpa) judged to have a greater beneficial impact due to the high level of provision that would be provided. The two options are also supportive of the local economy.

Appendix 1 Sharp Sand and Gravel Maps


Eynsham, Cassington, Yarnton
Lower Windrush Valley
DRAFT
OXFORDSHIRE COUNTY COUNCIL
LOWER WINDRUSH VALLEY CONSTRAINTS MAP
1:50,000
JM
JS
24.06.2011
FIGURE 1
0 0.5 1 2
Kilometres
N


Eynsham, Cassington, Yarnton
Kilometres
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0.5
1
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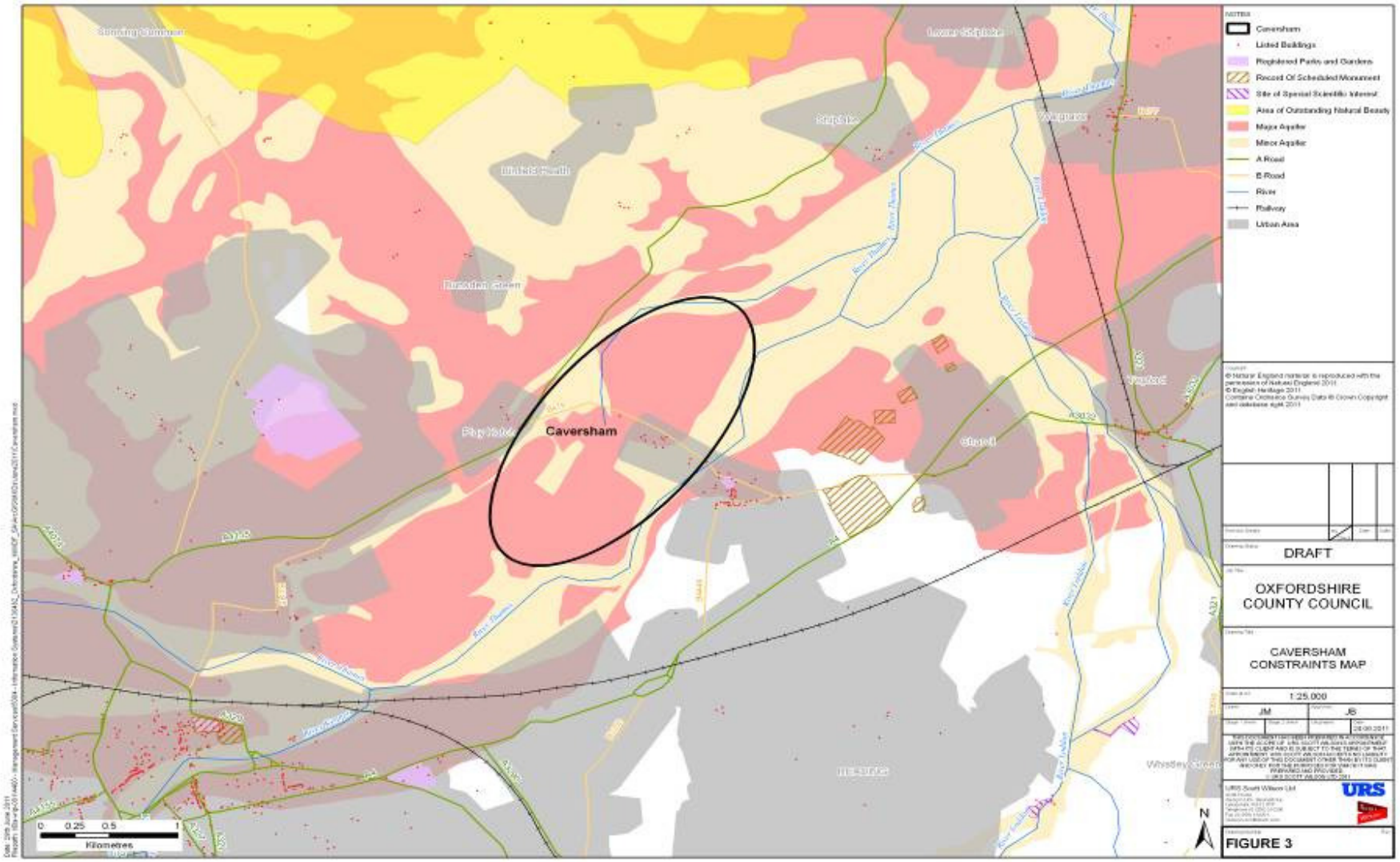
DRAFT
OXFORDSHIRE
COUNTY COUNCIL
EYNSHAM, CASSINGTON
& YARNTON
CONSTRAINTS MAP
1:25,000
FIGURE 2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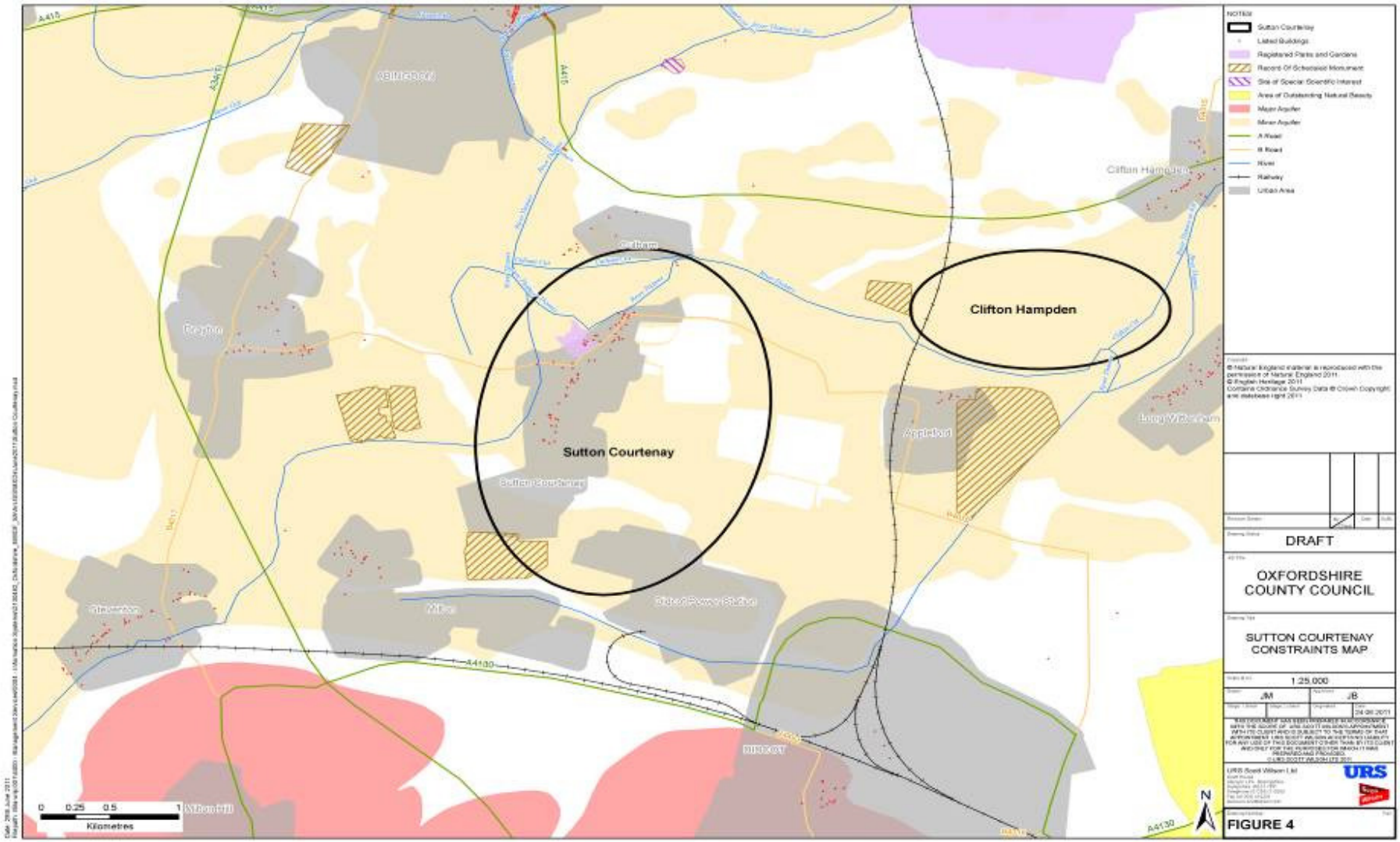
DRAFT
OXFORDSHIRE COUNTY COUNCIL
CAVERSHAM CONSTRAINTS MAP
1:25,000
FIGURE 3


Sutton Courtenay
Clifton Hampden
A415
A4130
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Kilometres
N
NOTES
Sutton Courtenay
Listed Buildings
Registered Parks and Gardens
Scheduled Monument
Site of Special Scientific Interest
Area of Outstanding Natural Beauty
Major Aquifer
Minor Aquifer
A Road
B Road
River
Railway
Urban Area
DRAFT
OXFORDSHIRE COUNTY COUNCIL
SUTTON COURTENAY CONSTRAINTS MAP
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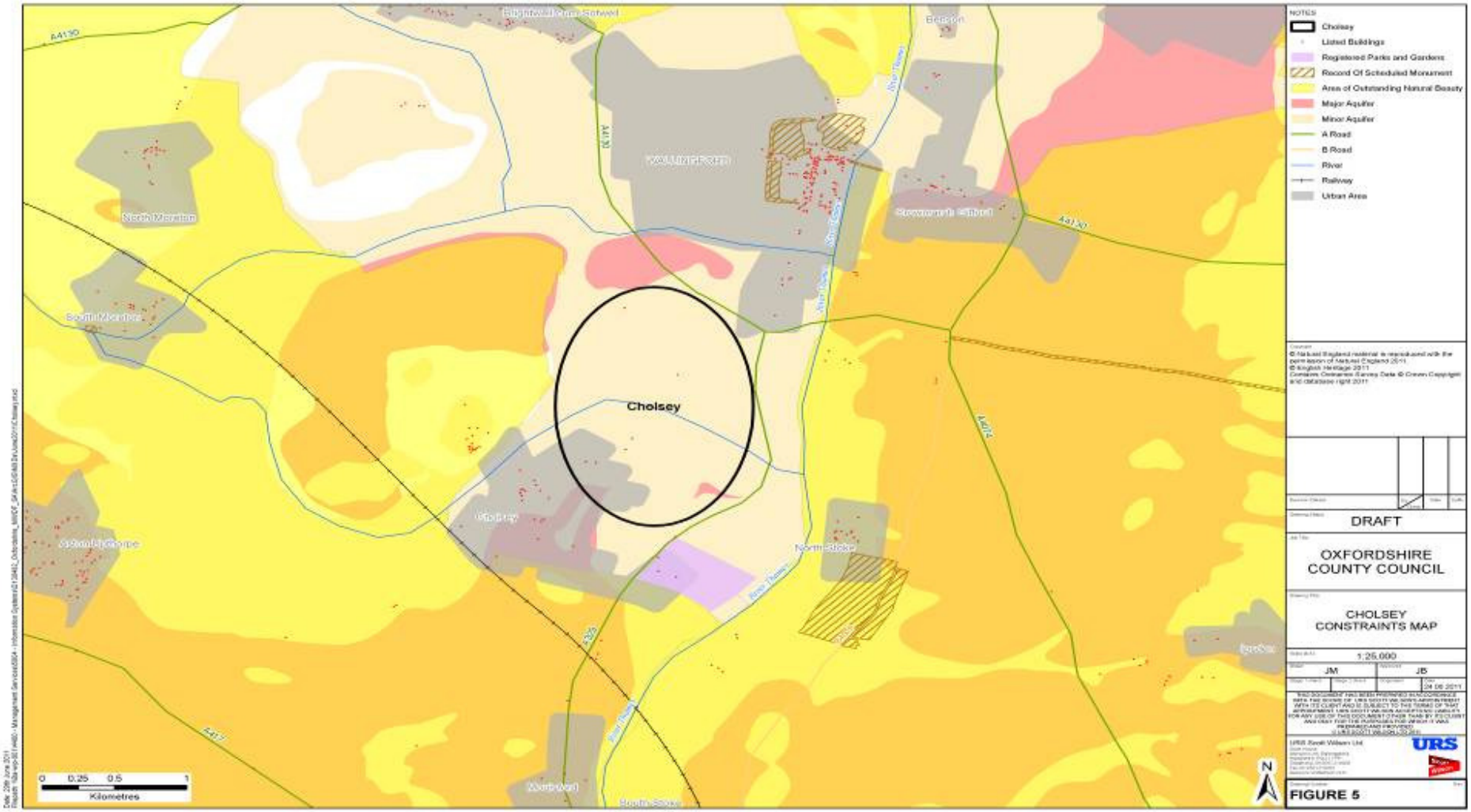
FIGURE 4


NOTES
Cholsey
Listed Buildings
Registered Parks and Gardens
Record Of Scheduled Monument
Area of Outstanding Natural Beauty
Major Aquifer
Minor Aquifer
A Road
B Road
River
Railway
Urban Area
Cholsey
A4130
A329
A417
A4074
0 0.25 0.5 1
Kilometres
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DRAFT
OXFORDSHIRE COUNTY COUNCIL
CHOLSEY CONSTRAINTS MAP
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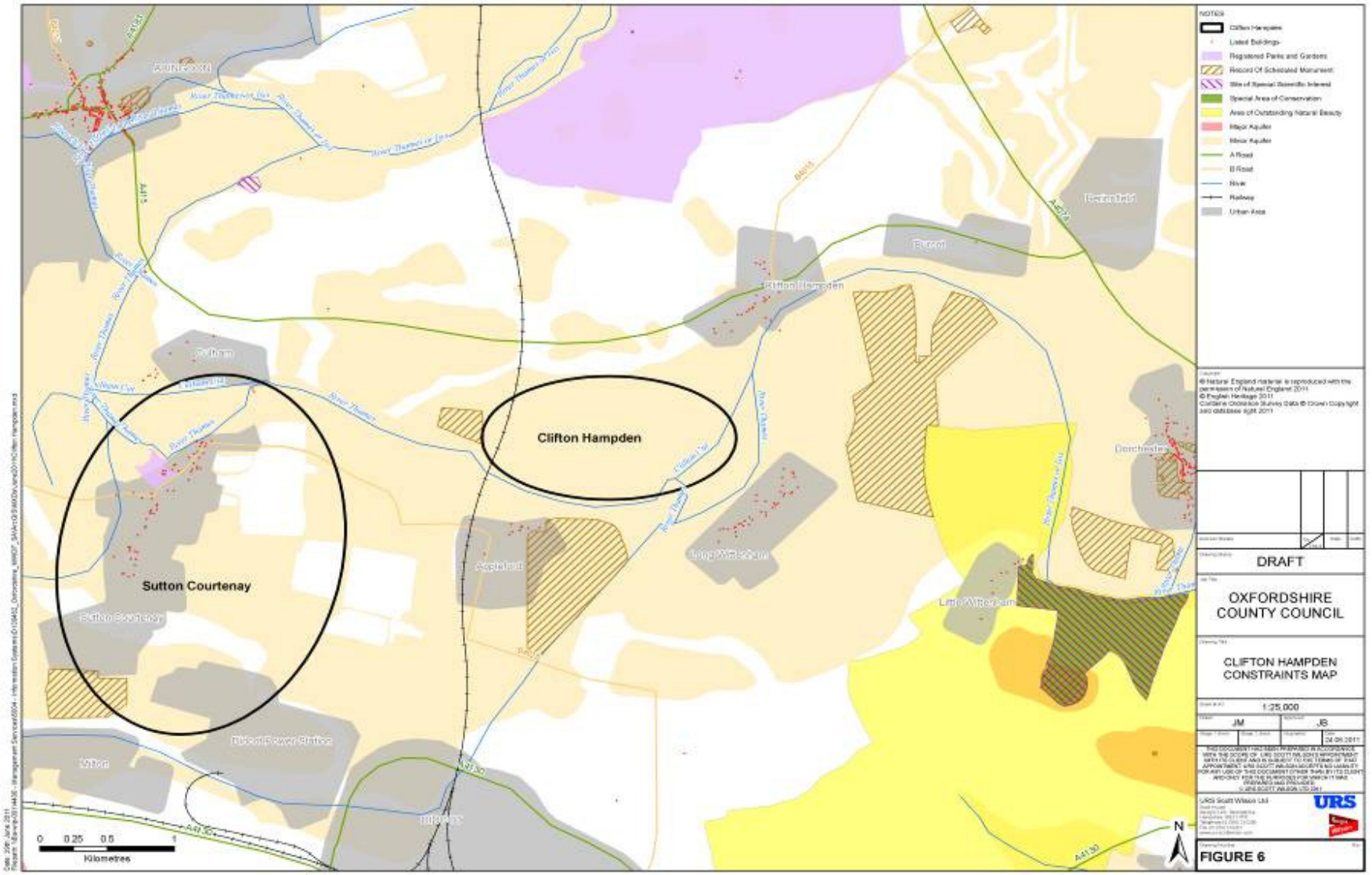
FIGURE 5


Clifton Hampden
Sutton Courtenay
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OXFORDSHIRE COUNTY COUNCIL
CLIFTON HAMPDEN CONSTRAINTS MAP
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FIGURE 6
Kilometres
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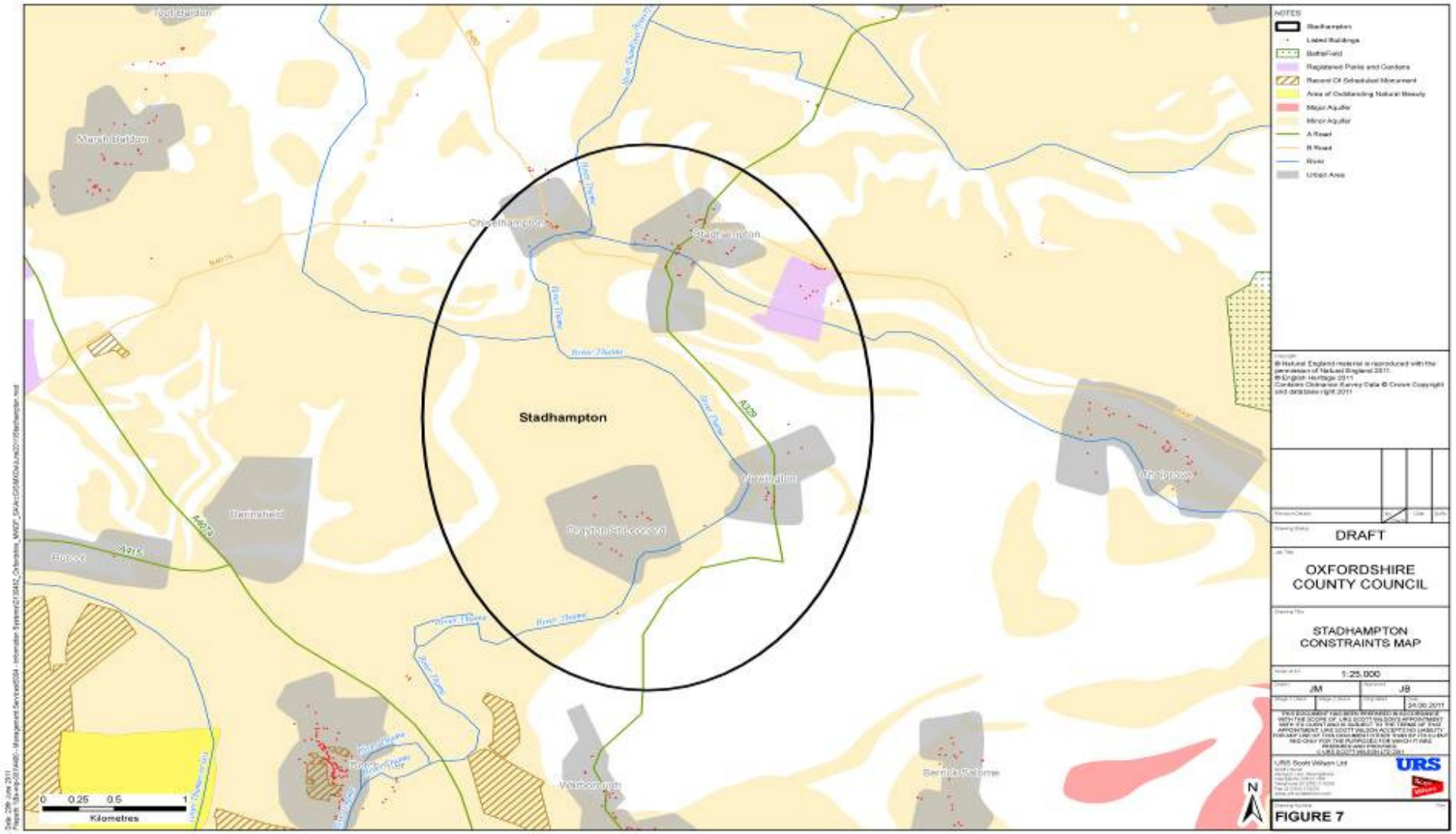
Stadhampton
DRAFT
OXFORDSHIRE COUNTY COUNCIL
STADHAMPTON CONSTRAINTS MAP
1:25,000
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24.06.2011
URS
FIGURE 7
0 0.25 0.5 1
Kilometres
N