ANNEX 3

Oxfordshire Minerals & Waste Local Plan: Part 1 – Core Strategy (submitted 2015)

Evidence Base for Spatial Strategy Alternatives for Delivery of the Requirement for Sharp Sand and Gravel
Oxfordshire County Council – December 2016

A. Indicators of Distribution of Demand for Aggregates in Oxfordshire

Oxford is the biggest centre of population and employment in Oxfordshire and occupies a central location within the county, being readily accessible by road from most other parts of the county. The shape and geography of Oxfordshire, in particular the location of the river Thames with its limited crossing points and restrictions on many of the bridges, particularly upstream from Oxford, points to an analysis of demand for construction aggregate materials outside Oxford based on a subdivision of the county as follows:

- West Oxfordshire and Cherwell Districts (northern Oxfordshire); and
- Vale of White Horse and Southern Oxfordshire Districts (southern Oxfordshire).

Oxford City straddles these two parts of Oxfordshire and within a two-way split of the county can be assumed to contribute equally to each part.

The following analysis sets out four indicators of demand, split between northern Oxfordshire (West Oxfordshire and Cherwell Districts and the north half of Oxford City) and southern Oxfordshire (Vale of White Horse and South Oxfordshire Districts and the south half of Oxford City):

1. Forecast population growth 2013 – 2031;
2. Forecast housing growth 2013 – 2031;
3. Total employment 2011-2031;
4. Existing & planned provision of land for economic development 2014.

Table 1: Forecast population growth in Oxfordshire by District 2013 – 2031

District	Population 2016	% of total population	Population 2031(*)	% of total population	Population increase 2016–2031	% of total increase in population
Cherwell	147,713	21.6%	199,791	23.2%	52,078	29.6%
West Oxfordshire	109,149	15.9%	139,782	16.2%	30,633	17.4%
Oxford City (north 50%)	80,456	11.8%	86,219	10%	5,763	3.3%
SUB TOTAL	**337,318**	**49.3%**	**425,792**	**49.5%**	**88,474**	**50.2%**
South Oxfordshire	138,380	20.2%	174,973	20.3%	36,593	20.8%
Vale of White Horse	128,247	18.7%	173,547	20.1%	45,300	25.7%
Oxford City (south 50%)	80,456	11.8%	86,220	10%	5,764	3.3%
SUB TOTAL	**347,083**	**50.7%**	**434,740**	**50.5%**	**87,657**	**49.8%**
TOTAL	**684,401**	**100%**	**860,532**	**100%**	**176,131**	**100%**

(*) OCC Estimates, Oct 2016

Table 2: Forecast housing growth in Oxfordshire by District 2013 – 2031

District	Total number of houses 2011	% of total	Proposed number of houses per annum	Total number of proposed houses 2031	% of total	Housing increase 2011– 2031(*)	% of total increase
Cherwell	60,400	22%	1140	83,200	22%	27,200	27.2%
West Oxfordshire	45,990	17%	660	59,190	16%	15,950	15.9%
Oxford City (north 50%)	29,165	11%	700	43,165	12%	6,850	6.8%
SUB TOTAL	**135,555**	**50%**	**2,500**	**185,555**	**50%**	**50,000**	**50%**
South Oxfordshire	56,370	21%	775	71,870	19%	20,450**	20.4%
Vale of White Horse	50,980	19%	1,028	71,540	19%	22,760	22.7%
Oxford City (south 50%)	29,165	11%	700	43,165	12%	6,850	6.8%
SUB TOTAL	**136,515**	**50%**	**2,503**	**186,575**	**50%**	**50,060**	**50%**
TOTAL	**272,090**	**100%**	**5,003**	**372,130**	**100%**	**100,060**	**100%**

(*)Table 90 SHMA, April 2014 and as updated by the post SHMA strategic work programme 2016.

Table 3: Total employment in Oxfordshire by District, 2011-2031

District	2011	% of total jobs 2011	2021	% of total jobs 2021	2031	% of total jobs 2031	Growth in employment 2011-2031	% of growth 2011-2031
Cherwell	79,400	21%	91,400	21%	100,900	22%	21,500	24%
West Oxfordshire	45,700	12%	49,800	12%	53,500	11%	7,800	9%
Oxford City (north 50%)	61,600	16%	68,100	16%	73,800	16%	12,200	14%
Sub Total	**186,700**	**49%**	**209,300**	**49%**	**228,200**	**49%**	**41,500**	**47%**
South Oxfordshire	65,100	17%	71,400	17%	76,500	16%	11,400	13%
Vale of White Horse	67,200	18%	81,600	19%	90,200	19%	23,000	26%
Oxford City (south 50%)	61,600	16%	68,100	16%	73,800	16%	12,200	14%
Sub Total	**193,900**	**51%**	**221,100**	**51%**	**240,500**	**51%**	**46,600**	**53%**
Oxfordshire	**380,600**	**100%**	**430,500**	**100%**	**468,800**	**100%**	**88,200**	**100%**

Source: Tables B.1, C.1, D.1, E.1, F.1, G.1 Oxfordshire Economic Forecasting Report, Cambridge Econometrics, February 2014

Table 4: Existing & planned provision of land for economic development in Oxfordshire by District, 2014

District	Land for economic development 2011 - 2031 (hectares)	% of total
Cherwell	138.5	29.9%
West Oxfordshire	60	12.9%
Oxford City (north 50%)	34.19 (*)	7.4%
SUB TOTAL	**232.69**	**50.1%**
South Oxfordshire	33.47	7.2%
Vale of White Horse	163.97	35.3%
Oxford City (south 50%)	34.19	7.4%
SUB TOTAL	**231.63**	**49.9%**
TOTAL	**464.32**	**100%**

Source: Cambridge Econometrics, Economic Forecasting to Inform the Oxfordshire Strategic Economic Plan and Strategic Housing Market Assessment, Final Report for Vale of White Horse District Council and Partners 28 February 2014.

(*) Oxford City totals were 68.04ha + 0.38ha i.e. a site which doesn't include an increase net growth in floor space.

Section A. Conclusions

The four factors shown in the tables 1 – 4 above all indicate a nearly equal split in demand for construction aggregate materials between northern Oxfordshire (Cherwell, West Oxfordshire and north Oxford City) and southern Oxfordshire (Vale of White Horse, South Oxfordshire, south Oxford City) to 2031.

B. Table 5: Current Permitted Sand and Gravel Reserves with Estimated Annual Production Capacities and Rates of Depletion

(Individual quarry figures are confidential and therefore are not shown)

Broad Sand & Gravel Resource Area	Sites with permitted reserves remaining at start 2016	Estimated production rate (mtpa)	Estimated Sharp sand & gravel reserves, at start 2016 available over plan period (mt) (including permissions in 2016)	Reserves remaining at the end of each year of the Plan Period based on estimated annual production rates															
				2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Northern Oxfordshire (West Oxfordshire and Cherwell Districts)	Cassington Quarry (SRA 6)																		
	Stonehenge Farm, Stanton Harcourt (SRA 6)																		
	Gill Mill Quarry, Ducklington (SRA 6)																		
	Finmere Quarry (not in SRA)																		
Total northern Oxfordshire Permitted Reserves (mt)			**7.699 * (65%)**	**7.044**	**6.389**	**5.734**	**5.079**	**4.506**	**3.933**	**3.383**	**3.033**	**2.683**	**2.333**	**1.983**	**1.633**	**1.283**	**0.933**	**0.583**	**0.233**
Total northern Oxfordshire Production Capacity (mtpa)		**0.655 (55%)**		**0.655**	**0.655**	**0.655**	**0.655**	**0.573**	**0.573**	**0.550**	**0.350**	**0.350**	**0.350**	**0.350**	**0.350**	**0.350**	**0.350**	**0.350**	**0.350**
Southern Oxfordshire (Vale of White Horse and South Oxfordshire Districts)	Bridge Farm, Sutton Courtenay (SRA 5)																		
	Sutton Wick Quarry (SRA 5)																		
	Caversham Quarry extension (SRA 4)																		
	Thrupp Farm Quarry (Not in SRA)																		
	Moorend Lane, Thame (Not in SRA)																		
	Faringdon Quarry (Not in SRA)																		
Total southern Oxfordshire Permitted Reserves (mt)			**4.153 (35%)**	**3.628**	**3.103**	**2.458**	**2.218**	**1.878**	**1.588**	**1.298**	**1.008**	**0.718**	**0.428**	**0.138**	**0.058**	**0**	**0**	**0**	**0**
Total southern Oxfordshire Production Capacity (mtpa)		**0.535 (45%)**		**0.525**	**0.525**	**0.365**	**0.365**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.080**	**0**	**0**	**0**	**0**
Total Oxfordshire Permitted Reserves (mt)			**11.852 ***	**10.672**	**9.492**	**8.192**	**7.297**	**6.384**	**5.521**	**4.681**	**4.041**	**3.401**	**2.761**	**2.121**	**1.691**	**1.283**	**0.933**	**0.583**	**0.233**
Total Oxfordshire Production Capacity (mtpa)		**1.190**		**1.180**	**1.180**	**1.020**	**1.020**	**0.863**	**0.863**	**0.840**	**0.640**	**0.640**	**0.640**	**0.640**	**0.430**	**0.350**	**0.350**	**0.350**	**0.350**
LAA / Policy M2 annual provision requirement for sharp sand & gravel (mtpa)				**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**	**1.015**
Shortfall in Production Capacity (mtpa)				**-**	**-**	**-**	**-**	**0.152**	**0.152**	**0.175**	**0.375**	**0.375**	**0.375**	**0.375**	**0.585**	**0.665**	**0.665**	**0.665**	**0.665**

* Permitted reserves exclude 1.15 mt at Gill Mill Quarry assumed to be worked post 2031

C. Strategy Options / Reasonable Alternatives

Table 5 above shows the following:

The current split of permitted reserves available over the plan period is 65% in northern Oxfordshire (four sites) and 35% in southern Oxfordshire (six sites).

The current split of production capacity is 55% in northern Oxfordshire (four sites) and 45% in southern Oxfordshire (six sites).

The total estimated shortfall in production over the plan period (sum of annual production capacity shortfall figures) is 5.224 mt.

Estimated annual production capacity will fall below the LAA / Policy M2 annual provision requirement of 1.015 mtpa from 2020. In this year, the split in estimated annual production capacity is 66% in northern Oxfordshire (573,000 tpa) and 34% in southern Oxfordshire (290,000 tpa).

Based on current permitted reserves and estimated annual rates of production capacity, at the end of the plan period (end of 2031) only Gill Mill Quarry in West Oxfordshire District will remain in production, with an estimated production capacity of 0.35mtpa (and remaining permitted reserves of approximately 1.15 mt). All current permitted reserves in southern Oxfordshire are expected to have been worked before the end of the plan period (with production ceasing during 2027). In order to meet the annual provision requirement (LAA figure) of 1.015 mtpa, additional total annual production capacity of 0.665 mtpa will be required in the later part of the plan period (2028 – 2031).

Table 6 at the end of this paper, which provides details of the aggregate provision required over the plan period, shows that the current shortfall in permitted reserves of sharp sand and gravel over the plan period is 5.011 mt.

The Part 2 Plan – Site Allocations Document will allocate sites with an estimated tonnage of potentially workable mineral resource but the likely annual production capacity of sites will not be known, or will be uncertain. Therefore options for delivery of the additional requirement to meet the annual provision requirement (LAA figure) should be framed in terms of quantity of potentially workable mineral resource, which can be equated to area of land required, rather than potential additional annual production capacity. For the purposes of establishing and assessing the reasonable alternatives, the additional requirement for sharp sand and gravel (5.011 mt) has been rounded to 5 mt.

The information above points to the following four strategy options for provision of the additional requirement for sharp sand and gravel over the plan period to 2031, which were taken forward for consideration as reasonable alternatives.

Option	northern Oxfordshire	southern Oxfordshire	Balance of production capacity* at 2031 (mtpa)	
			northern (0.35mtpa remaining)	southern (0mtpa remaining)
1	**5.0 mt** (all of requirement)	**0.0 mt** (none of requirement)	**1.015 mtpa**	**0.0 mtpa**
2	**3.25 mt** (65% requirement)	**1.75 mt** (35% requirement)	**0.78 mtpa** (0.35 + 65% of 0.665)	**0.23 mtpa** (0 +35% of 0.665)
3	**1.25 mt** (25% requirement)	**3.75 mt** (75% requirement)	**0.52 mtpa** (0.35 + 25% of 0.665)	**0. 50 mtpa** (0 + 76% of 0.665)
4	**0.0 mt** (none of requirement)	**5.0 mt** (all of requirement)	**0.35 mtpa**	**0.665 mtpa**

* assumes % additional production capacity requirement is equal to % additional resource requirement

N.B. where a contribution to the additional requirement is provided for by an extension to an existing quarry, this assumes an 'increase' in production capacity, in that the production capacity that would have 'dropped out' through closure of the quarry will by virtue of the extension be continued further through the plan period.

Option 2 would continue the current split in permitted reserves, and consequent contribution to supply over the plan period between northern and southern Oxfordshire.

Option 3 would provide an approximately 50 / 50 split in production capacity between northern and southern Oxfordshire.

Options 1 and 4 are the extreme positions, which have been suggested by respondents to the plan.

Factors included in the assessment of reasonable alternatives

The assessment of the reasonable alternatives includes a detailed assessment of travel distance from potential mineral extraction areas to main market locations using the most appropriate lorry routes and the average area required from alternative potential mineral extraction areas to extract a given volume of aggregate. This is done by reference to the sites that have been nominated by mineral operators and landowners for possible allocation in the Part 2 Plan.

Table 6: Aggregate provision required over plan period 2014 – 2031

	Sharp Sand & Gravel (million tonnes)	Soft Sand (million tonnes)	Crushed Rock (million tonnes)
A. Annual Provision (from policy M2 / LAA)	1.015	0.189	0.584
B. Requirement 2014 – 2031 (A x 18 years)	18.270	3.402	10.512
C. Sales in 2014 and 2015	1.407	0.463	1.975
D. Remaining requirement (B – C)	16.863	2.939	8.537
E. Permitted Reserves at end 2015	12.487	1.594	8.597
F. Permissions granted from end 2015 to September 2016	0.515	0	0
G. Total permitted reserves available (from beginning 2016) (E + F)	13.002	1.594	8.597
H Estimated permitted reserves available to be worked during remainder of plan period (from beginning 2016 to end 2031)	11.852	1.594	8.597
I. Remaining requirement to be provided for in Plan (D – H)	5.011	1.345	0

Notes:

1. Permissions granted since end 2015 in row F comprise:
   Sharp sand and gravel:
   Extension to Sutton Wick Quarry (0.35 million tonnes) – permission granted 18 March 2016);
   Deeper working at Bridge Farm, Sutton Courtenay Quarry (0.165 million tonnes) – permission granted 17 May 2016.

2. The planning application for an extension to Gill Mill Quarry submitted in 2013 and permitted in 2015 is for the working of a total of 7.8 million tonnes of sharp sand and gravel (including 2.8 million tonnes previously permitted and 5.0 million tonnes in the extension area). Information in the application indicates this will be worked over 22 years from 2013, giving an average rate of working of approximately 0.35 million tonnes per annum. Mineral working at Gill Mill Quarry is therefore expected to extend beyond the end of the plan period (2031); of the total of 7.8 million tonnes, it is estimated approximately 6.65 million tonnes will be worked within the plan period and approximately 1.15 million tonnes will remain to be worked after 2031. The permitted reserves of sharp sand and gravel available to be worked during the plan period have therefore been reduced by 1.15 million tonnes, from 13.002 million tonnes (row G) to an estimated 11.852 million tonnes (row H).