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Contents

West Berkshire Council Local Aggregate Assessment 2019 DASHBOARD									
	Sales (t) & Trend 2018	**Average 10 year Sales (t) 2009-2018 & Trend**	**Average 3 year Sales (t) 2016-2018 & Trend**	**LAA Rate (t)**	**Reserves (t)**	**Landbank (years)**	**Allocations (years)**	**Capacity (t)**	**Comments**
Sharp Sand and Gravel	33,177 ⇩	154,801 ⇩	73,387 ⇩	189,233	2,627,500	13.8	N/A	90,000*	Sales at lowest level seen in West Berkshire. Reserves level around 2.63 million tonnes. Previous year's LAA rate recommended to remain in place.
Soft Sand	21,792 ⇧	33,906 ⇩	10,344 ⇩	43,730	15,000	0.3	N/A	15,000*	Sales and reserves both very low. WB's only soft sand site worked out in 2019. Previous Year's LAA rate recommended to remain in place.
All Sand and Gravel	54,969 ⇩	188,707 ⇩	83,730 ⇩	232,964	2,642,500	11.3	N/A	105,000*	Level of sales continues to decline. Sales at lowest level seen in West Berkshire. Reserves level around 2.64 million tonnes. Previous year's LAA rate recommended to remain in place.
Crushed Rock	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No hard rock producing sites in West Berkshire.
Recycled Aggregates	321,699 ⇧	275,679 ⇧	337,020 ⇧	337,020 (3 yr average)	N/A	N/A	N/A	669,250	Survey data only available from 2012 – 2018. Potential capacity level well above sales. Sales are more than double the predicted WB demand level. No supply issues identified.
Secondary Aggregates	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No sites producing notable quantities of secondary aggregates in West Berkshire.
Marine Sand and Gravel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No wharf sites so zero landings in West Berkshire (some marine material imported by rail).
Rock Imports by Sea	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No wharf sites so zero landings in West Berkshire.
Rail Depot Sales (Sand and Gravel)	110,212 (based on 3yr average) ⇧	78,726 (first 10 yr avg. so no trend)	110,212 ⇧	110,212	N/A	N/A	N/A	1,026,500	Annual data cannot be released without breaching confidentially agreements – sales data based on 3 year average. Sales of marine sand and gravel and 3 year average increasing. LAA rate based on previous 3 years' sales average.
Rail Depot Sales (Crushed Rock)	901,198 ⇧	580,278 (first 10 yr avg. so no trend)	822,164 ⇧	822,164	N/A	N/A	N/A		2018 sales data includes estimates based on 2017 sales for two operators who did not respond. Sales at highest level seen in previous 10 years. Both sales, 10 year and 3 year average increasing. LAA rate based on previous 3 years' sales average.
General Comments	2018 saw a further decline in sales of land-won construction aggregates due to declines in reserves in the number of operational sites, and an increase in sales of rail imported aggregates such as marine sand and gravel and crushed rock. Sales of recycled aggregates increased slightly in 2018 compared with 2017. Landbanks indicate a pressing need for soft sand - to be addressed through the new Minerals and Waste Local Plan. Although the landbank suggests healthy reserves of sharp sand and gravel, the majority of this is bound up in a single site that has yet to commence production, and hence limiting available production capacity. Indication that rail depots are operating near capacity, although some uncertainty due to one operator not supplying an estimate of capacity and one operator estimating capacity at below actual sales. No supply/capacity issues identified for recycled aggregates. * Sand and gravel capacity figures are based on combination of theoretical outputs as limited by the amount of remaining permitted reserve.								

1.0 Executive Summary

1.1 Background

1.1.1 The National Planning Policy Framework (NPPF) places a requirement on mineral planning authorities to prepare an annual local aggregate assessment (LAA). This is the seventh LAA that has been produced for West Berkshire and it has been produced in line with the approach set out in paragraph 207 of the NPPF and the Guidance provided in the National Planning Policy Guidance Website (NPPG). Consideration has also been given to the POS/MPA guidance on the production of LAAs (as updated May 2017), and South East Aggregates Working Party (SEEAWP) Supplementary Guidance on Local Aggregates Assessments[1].

1.1.2 This LAA covers the period to the end of 2018. The LAA considers the demand and supply issues around the four main sources of construction aggregates that are sold in West Berkshire: land won sand and gravel from quarry sites, recycled aggregates (primarily produced at waste sites), and hard rock and marine sand and gravel that is imported to rail head sites. This LAA also aims to provide an assessment of the current state of the mineral landbank in West Berkshire and predict the future provision of mineral resources that needs to be met by the emerging West Berkshire Minerals and Waste Local Plan (MWLP).

1.2 Aggregates in West Berkshire

1.2.1 West Berkshire's main construction aggregate deposit is sharp sand and gravel, suitable for most types of concreting purposes, and therefore an important material for the construction industry. There are also deposits of soft sand (building sand), suitable for use in making mortars and plasters.

1.2.2 Recycled aggregates created from the treatment of construction and demolition wastes are also produced in West Berkshire. In 2018, there were a number of permitted construction and demolition waste recycling facilities in operation, mostly operating under permanent permissions. There are no notable sources of secondary aggregates in the district.

1.2.3 The geological composition in West Berkshire means that the area needs to import supplies of crushed rock, as there are no sources of crushed rock in the authority area. This is done through the main aggregate railheads at Theale, where three are currently operational (one depot is utilised by two operators, resulting four depot 'sites'). Small volumes of marine dredged sand and gravel are also known to be imported into West Berkshire, through the district's rail depots.

1.3 Land Won Sand and Gravel

1.3.1 Sales of land won aggregates in West Berkshire have been declining over the past decade, and this is reflected in the 10 year sales average which has been declining in turn. In 2018 it was 154,801 tonnes for sharp sand and gravel and 33,906 tonnes for soft sand (188,707 tonnes for combined sand and gravel).

1.3.2 The factors influencing supply for land won sand and gravel were: sites in West Berkshire producing construction aggregates, and levels of reserves. From this, it was shown that despite a relatively large reserve base, operational production capacity is limited in West Berkshire, and may prove to constrain supply in the district. Environmental constraints are also relevant, as much of the northern area of

[1] http://documents.hants.gov.uk/see-awp/SEEAWP-SuppLAAGuidance-July2019.pdf

West Berkshire, where the main deposits of soft sand have historically been worked, lies within the North Wessex Downs Area of Outstanding Natural Beauty (AONB).

1.3.3 Other relevant local information was also considered as to whether it might be appropriate to deviate from the past 10 year sales average in planning for the supply of construction aggregates in West Berkshire. Growth factors considered were: population change, economic/national construction/national aggregates forecasts, infrastructure projects, local industry, environmental constraints, decline in operational aggregate sites and reserves in West Berkshire and alternative aggregates. It was considered that future demand for aggregates is likely to be incremental in nature, not likely to be above that in the previous 10 years and therefore adequately captured in a rolling 10 year sales average. In addition, environmental constraints and alternative aggregate supplies were not considered to be significant enough to require a revision of the 10 year sales average.

1.3.4 However, the decline in aggregate producing sites and reserves in West Berkshire has been considered to have supressed sales in relation to demand in recent years and particularly in 2018. This is due to the fact that only three sites were operational in 2018, and two of these sites were nearing the end of their available reserves. Therefore, it is considered that relying on the past 10 year sales average may not be sufficient to plan for a steady and adequate supply of sand and gravel West Berkshire. Due to this, it is recommended that the previous 2018 LAA rates should remain in place (189,233 tpa for sharp sand and gravel and 43,730 tpa for soft sand). This situation will need to be monitored in future to determine whether these rates remain appropriate, particularly if additional sites become operational and levels of sales again increase.

1.3.5 In assessing the balance between supply and demand, separate landbanks were calculated, which show that the sharp sand and gravel landbank in West Berkshire is 13.8 years, and the soft sand landbank is 0.34 years. Additional sources of these aggregates, particularly soft sand, will need to be secured in order to maintain a steady and adequate supply as required by the NPPF. Therefore it is considered important to continue to develop the West Berkshire Minerals and Waste Local Plan that will include the identification of potential sites for future extraction. An additional need for approximately 935,000 tonnes of sharp sand and gravel, and 794,000 tonnes of soft sand has been identified over the Plan period 2036.

1.4 Recycled Aggregates

1.4.1 Levels of sales are shown to have been increasing since 2008, and in 2018 were 321,669 tonnes; estimates of consumption have been more variable. Supply options considered were sources of construction and demolition waste and production capacity at recycled aggregate facilities. It is understood that construction and demolition waste has historically been imported for treatment in West Berkshire, indicating that supply of raw materials to produce recycled aggregate has not historically been an issue. It is considered that the most appropriate way to meet increasing demand, and encourage the supply of recycled aggregates, is to ensure adequate provision is made to meet recent levels of sales (3 year average). This equates to a level of need for capacity to recycle 337,020 tonnes of aggregates per annum. The current operational capacity to produce recycled aggregates in West Berkshire is 669,250 tonnes per annum. This indicates that there are no capacity issues which would hinder being able to meet current demand.

1.5 Rail Imported Crushed Rock and Marine Aggregates

1.5.1 West Berkshire does not produce any crushed rock indigenously, nor are there any marine landing sites. As such, these aggregates are imported to the rail depots within the district at Theale. Sales of both crushed rock and marine aggregates have been shown to be increasing since 2009. The 10 year sales average for crushed rock is 580,278 tonnes, and the 3 year average is 822,164 tonnes. The LAA rate is recommended as the 3 year average sales of 822,164 tpa. The 10 year sales average for marine sand and gravel is 78,726 tonnes, and the 3 year average is 110,212 tonnes. The LAA rate is recommended as the 3 year average sales of 110,212 tpa.

1.5.2 Crushed rock is mainly imported from Somerset, and no supply issues have been identified with this arrangement. Marine aggregates are mainly imported from landings at London Wharves, and although no supply issues have been identified, the continued safeguarding of London wharves and infrastructure will be necessary to ensure the security of this supply. In terms of capacity at West Berkshire's rail depots, estimated capacity (1,026,500 tonnes) is above the combined LAA rates for rail imported crushed rock and marine sand and gravel (932,376 tonnes). However, when considered against levels of sales in 2018 (1,011,410 tonnes of crushed rock and marine sand and gravel), the depots appear to be operating close to capacity. Therefore, it will be essential to safeguard this infrastructure in future to ensure current levels of sales are able to be maintained in order to satisfy demand.

2.0 Introduction

2.1 The purpose of a Local Aggregate Assessment (LAA) is to assess the demand for, and supply options of construction aggregates for a Mineral Planning Authority area, to ensure that an appropriate provision of these minerals can be maintained, as required in paragraph 207 of the Revised National Planning Policy Framework (NPPF) (2018)[2]:

'Minerals planning authorities should plan for a steady an adequate supply of aggregates by:

(a) preparing an annual Local Aggregate Assessment, either individually or jointly, to forecast future demand, based on a rolling average of 10 years' sales data and other relevant local information, and an assessment of all supply options…'

2.2 Local Aggregate Assessments have been produced by West Berkshire Council since 2013. This LAA covers the calendar year of 2018 and the assessment provided in this report follows the approach set out in paragraph 207 of the NPPF and the accompanying Planning Practice Guidance (NPPG)[3]. Consideration has also been given to the POS/MPA LAA Guidance document[4] and the SEEAWP Supplementary Guidance on Local Aggregates Assessments[5].

2.3 The data used in the preparation of this report predominantly comes from the annual monitoring of aggregate sales in West Berkshire for the South East Aggregates Aggregate Working Party (SEEAWP). The Aggregates Monitoring (AM) survey collects annual sales data from active mineral extraction sites, minerals wharves, minerals rail depots and recycled aggregate processing sites. Additional data used, where relevant, includes the following sources:

- The Annual Minerals Raised Inquiry Survey, previously undertaken by the Department for Communities and Local Government (DCLG), which sets out sales of each type of mineral in Great Britain;
- The 4-yearly Aggregate Minerals Surveys on the sales, movement, consumption and permitted reserves of aggregate minerals undertaken by the British Geological Survey (BGS) on behalf of DCLG;
- Annual Monitoring Reports and LAAs prepared by Mineral Planning Authorities; and
- Data and information on mineral resources held by the BGS and the Crown Estate.

2.4 This LAA provides an assessment of the current state of aggregate minerals in West Berkshire, comprising land-won sand and gravel and soft sand, recycled aggregates, and rail-imported marine sand and gravel and crushed rock. This will be used to inform the emerging Minerals and Waste Local Plan (MWLP) covering the period to 2036[6]. Therefore there is an estimate for the provision of an appropriate aggregate mineral landbank over the plan period to assist the plan-making process. It is intended that the LAA will be updated annually to be used as a means of calculating the landbank in subsequent years, and this would be a material consideration in the assessment of planning applications during the plan period, as well as being an indicator in the review process, as to whether the adopted Plan, or individual parts of the Plan need to updated[7].

[2] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf
[3] http://planningguidance.planningportal.gov.uk/blog/guidance/minerals/planning-for-aggregate-minerals/
[4] http://www.planningofficers.org.uk/POS-Library/POS-Good-Practices/Practice-Guidance-on-The-Production-and-Use-of-Local-Aggregate-Assessments_536.htm
[5] http://documents.hants.gov.uk/see-awp/SEEAWP-SuppLAAGuidance-July2019.pdf
[6] The plan period may alter over the course of the consultation upon and development of the West Berkshire Minerals and Waste Local Plan but for the purpose of this local aggregate assessment a plan period to 2036 has been assumed.
[7] Reviews at least every five years are a legal requirement for all local plans (Regulation 10A of the Town and Country Planning (Local Planning) (England) Regulations 2012).

3.0 Land Won Sand and Gravel

3.1 Geology and Landscape in West Berkshire

3.1.1 The bedrock geology of West Berkshire is characterised by four main geological formations: Bagshot Beds, Reading Beds, London Clay and Chalk.

3.1.2 The superficial geology of West Berkshire includes deposits of sand and gravel comprising:

- Plateau Gravel
- Valley Gravel

3.1.3 The geology in West Berkshire produces the following type of construction aggregates:

- Sharp Sand and Gravel (suitable for most types of concreting purposes)
- Soft Sand (also called building sand, suitable for mortars and plasters)

3.1.4 Geologically speaking, sharp sand and gravel is a very recent deposit. It is predominantly found along the Kennet River valley, and also in river terrace deposits, which are the remnants of raised floodplains. Soft sand is much older, and in West Berkshire it principally occurs in the Reading Formation, a bedrock deposit outcropping in the higher ground above the Kennet Valley. The Formation is predominantly clay bearing, but also contains sand beds.

3.1.5 Much of the northern area of West Berkshire, where the main deposits of soft sand have historically been worked, lies within the North Wessex Downs Area of Outstanding Natural Beauty (AONB).

3.1.6 Information on the general extent of the deposits of sand and gravel, chalk and clay in West Berkshire is shown in the simplified geological map in Figure 3.1, which also shows the locations of active quarries, recycled aggregate sites and aggregate rail depots.

3.2 Demand Indicators

Production/Sales

3.2.1 When determining the rate at which demand is to be satisfied by a steady and adequate supply of aggregates, the NPPF (para 207) requires this to be based on an assessment of the 10 years rolling sales average and other relevant local information. Planning guidance also suggests that the 3 year average is considered to identify whether it might be appropriate to increase supply (PPG Minerals Paragraph: 064 Reference ID: 27-064-20140306).

3.2.2 The past 10 years' sales of sharp sand and gravel and soft sand are shown in Table 3.1 and represented in Figure 3.2, and the 10 year and 3 year sales averages are shown in Table 3.2.

3.2.3 Separate sharp sand and gravel and soft sand sales have been published since 2016. Sales figures were previously combined due to confidentiality issues, and sales figures prior to 2016 are still combined to protect the confidentiality of past operators.

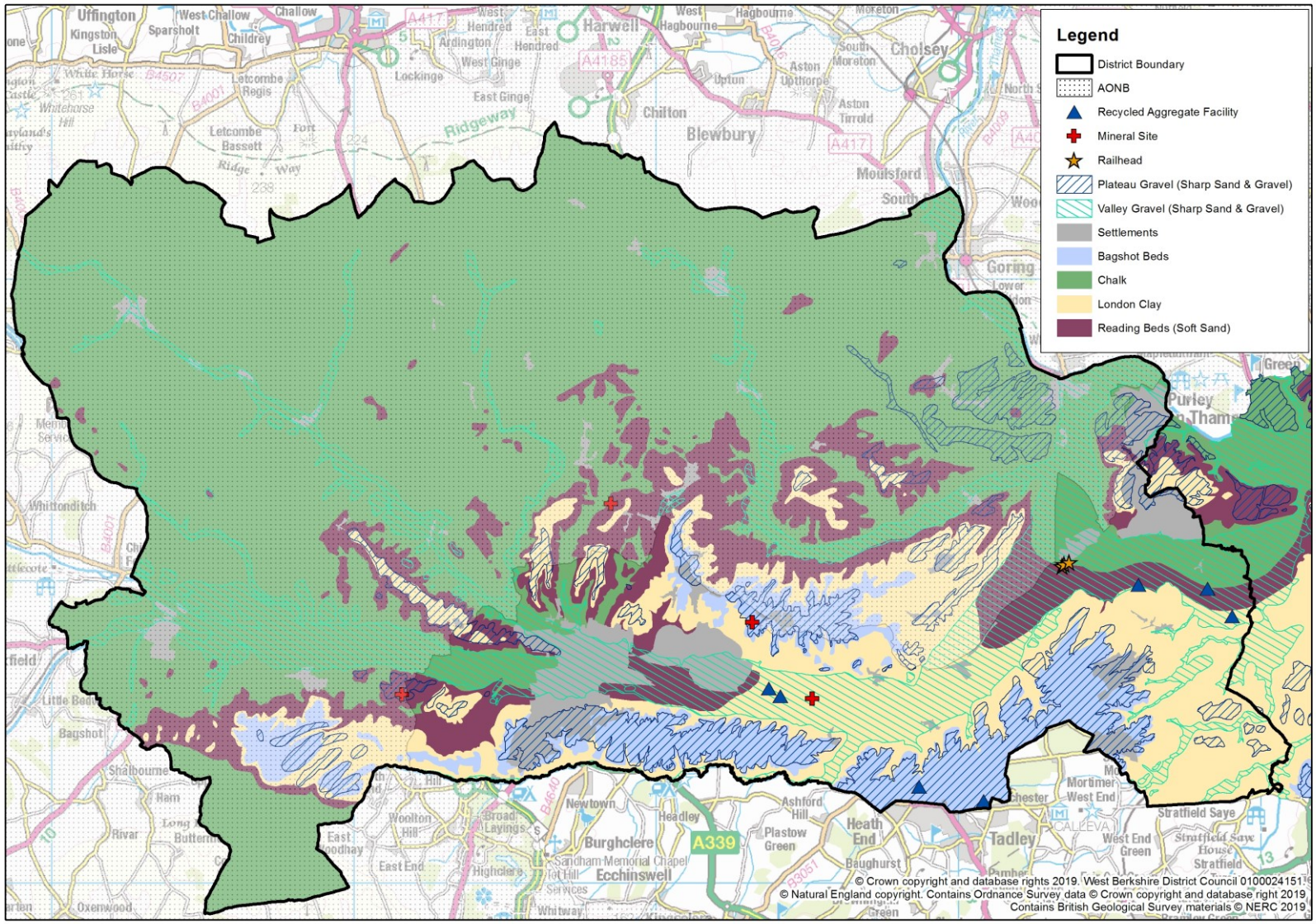


Figure 3.1 - Geology Resources and Mineral Infrastructure in West Berkshire

Table 3.1 - Past 10 Year Construction Aggregate Outputs in West Berkshire

Year	Sharp Sand and Gravel	Soft Sand	Total
2009	confidential	Confidential	384,143
2010	confidential	Confidential	264,614
2011	confidential	Confidential	244,975
2012	confidential	Confidential	234,006
2013	confidential	Confidential	198,745
2014	confidential	Confidential	157,205
2015	confidential	Confidential	152,188
2016	104,990	7,185	112,175
2017	81,993	2,054	84,047
2018	33,177	21,792	54,969

Source: West Berkshire Council Aggregates Monitoring Surveys.

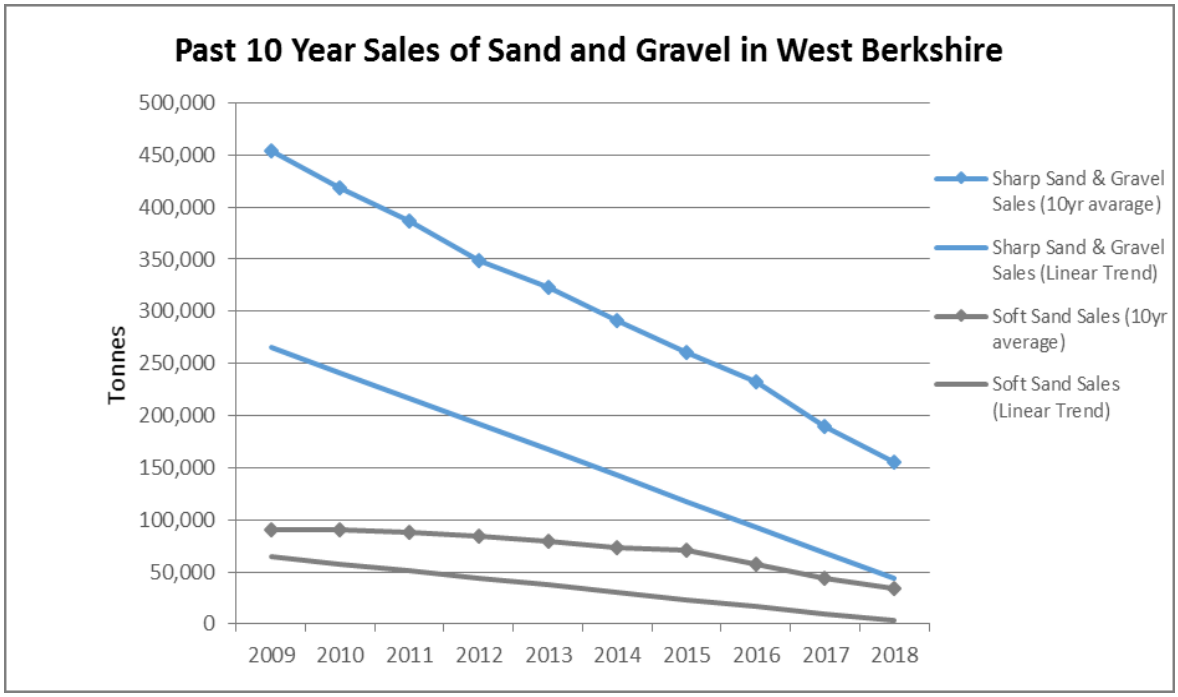


Figure 3.2 - Linear Trend for Past 10 Years Sales and Actual 10 Year Average Sales of Sharp Sand and Gravel and Soft Sand in West Berkshire. Source: West Berkshire Council.

3.2.4 Figure 3.2 illustrates that, in recent years the level of sales of sharp sand and gravel and soft sand have been below the rolling 10 year average of sales. The rolling 10 year average of sales for both aggregates and sales of sand and gravel have also declined markedly in recent years.

3.2.5 The past 10 year average and past 3 year average of sales for soft sand, sharp sand and gravel and total sand and gravel are shown in Table 3.2. The 3 year averages for both sharp sand and gravel and soft sand are below the 10 year averages, and therefore do not serve to indicate that supply should be increased.

Table 3.2 – Ten and 3 Year Averages for Land Won Sharp Sand and Gravel and Soft Sand

2009 - 2018	10 Year Sales Average	3 Year Sales Average
Sharp Sand and Gravel	154,801	73,387
Soft Sand	33,906	10,344
Combined	188,707	83,730

3.2.6 The pattern of primary aggregate output decline in West Berkshire generally reflects the pattern of overall decline in primary aggregate outputs seen in the wider South East from 2008 - 2013. However, in recent years (2013 – 2018) sales in the South East have been increasing (Figure 3.3), whereas sales in West Berkshire have continued to fall. This is likely due to the closure of extraction sites and depletion of reserves in the remaining operational sites in the district.

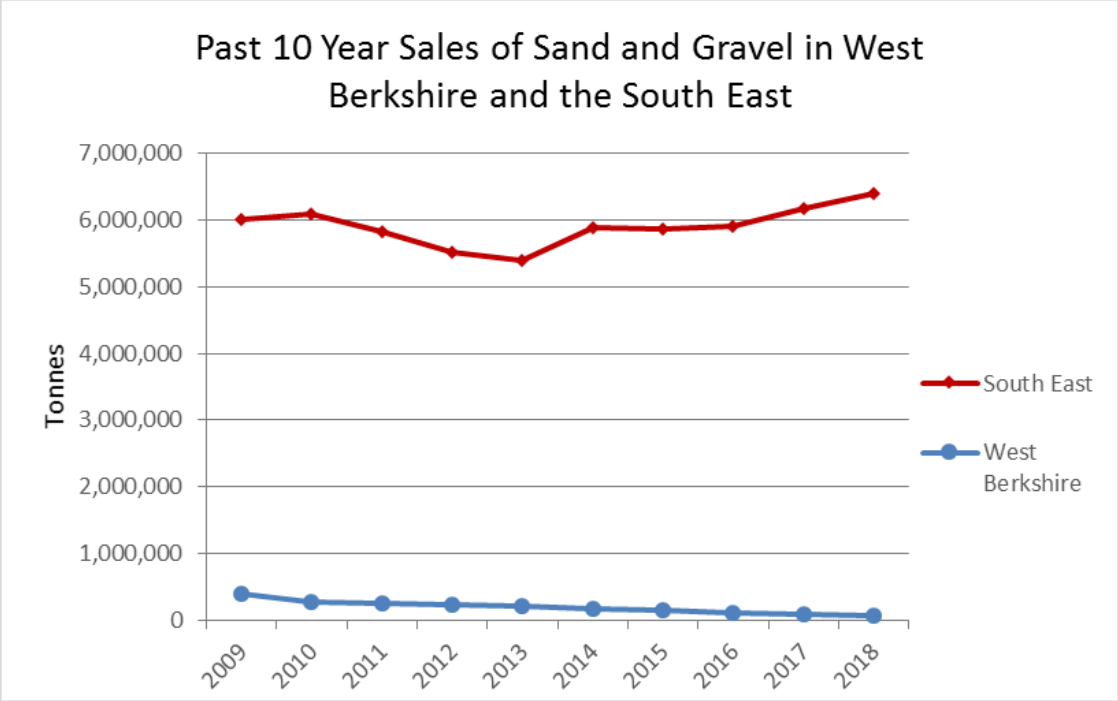


Figure 3.3 - South East Sales of Sand and Gravel. Source: South East England Annual Monitoring Report (2018).

Imports/Exports

3.2.7 There are cross boundary movements of construction aggregates which are dictated by market demands, ensuring that the types of aggregates available to the local construction industry are in line with the types of aggregates that it needs, at the time it is needed and in the quantity required. In general, however, it is assumed that each Mineral Planning Authority is working to ensure a degree of net self-sufficiency of mineral provision within their authority area which allows for relevant amounts of mineral to move across boundary areas to meet specific market demands.

3.2.8 Imports and exports reflect part of the demand situation for construction aggregates within an MPA area. This is because imports reflect demand within the area that has not been met indigenously, and exports reflect demand for aggregates in another area that have not been supplied from within that area. Together, sales, imports and exports generate the total consumption within an MPA area (primary sales + imports – exports = total consumption).

3.2.9 Import/export and consumption data is only available every 4 years when data is published by the Department for Communities and Local Government as part of the Aggregate Minerals (AM) survey undertaken by the British Geological Survey (BGS), the most recent being in 2014. The data from these surveys is generally only reported at the Berkshire-wide level and sand and gravel data is also combined rather than having separate figures for sharp sand and gravel and soft sand.

3.2.10 The summary of import/export and consumption data for Berkshire in 2009 & 2014 is shown in Table 3.3. This table shows that sales and imports of sand and gravel increased from 2009 to 2014, however export figures also increased and therefore overall consumption dropped. It also shows that in 2009 and 2014 Berkshire was a net exporter of sand and gravel, as sales figures were above consumption figures, and in 2014 they were nearly double total consumption.

Table 3.3 – Sand and Gravel Import/Export and Consumption Data for Berkshire 2009 & 2014

	Sales	Imports	Exports	Consumption
2009	840,000	298,000	331,000	807,000
2014	1,051,000	353,000	803,000	601,000

3.2.11 The sources of land won sand and gravel consumed in Berkshire in 2014 are shown in Table 3.4. Clearly, a high proportion of sand and gravel consumed came from Berkshire itself (West Berkshire and Windsor and Maidenhead).

Table 3.4 - Sources of Land Won Sand and Gravel Consumed in Berkshire 2014

Source MPA	Percentage	Tonnes
Indigenous		
Berkshire		
West Berkshire	20-30%	120,200 – 180,300
Windsor and Maidenhead	20-30%	120,200 – 180,300
Imports		
South East		
Hampshire	10-20%	60,100 – 120,200
Oxfordshire	10-20%	60,100 – 120,200
Surrey	1-10%	6,010 – 60,100
Buckinghamshire	1-10%	6,010 – 60,100
Kent	<1%	<6,010
South Downs National Park,	<1%	<6,010
West Sussex	<1%	<6,010
Elsewhere		
Wiltshire	10-20%	60,100 – 120,200
Gloucestershire	1-10%	6,010 – 60,100
Cambridgeshire	1-10%	6,010 – 60,100
Hertfordshire	1-10%	6,010 – 60,100
Devon	<1%	<6,010
Central Bedfordshire	<1%	<6,010
Essex	<1%	<6,010
Total Indigenous Consumption		**248,000**
Total Imports		**353,000**
Total Consumption		**601,000**

Source: AM 2014 Source of Primary Aggregates by Sub-region – Percentage Categories (2016), BGS.

3.2.12 Table 3.4 shows that 248,000 tonnes (41%) of sand and gravel consumed in Berkshire in 2014 originated from Berkshire Authorities, and 353,000 tonnes (59%) was imported. The main sources of sand and gravel from outside the county in 2014 were Hampshire, Wiltshire and Oxfordshire – all neighbouring authorities.

3.2.13 The destinations of exports from West Berkshire in 2014 are shown in Table 3.5. It can be seen that the majority of exports from West Berkshire are consumed elsewhere in Berkshire or elsewhere in the South East, with smaller amounts being consumed in Hampshire, Surrey, Oxfordshire, Wiltshire and Swindon, Warwickshire, London and West Sussex.

Table 3.5 – Sand and Gravel Exports from West Berkshire in 2014

Destination of Minerals Won from West Berkshire	Tonnes
Berkshire	120,116 – 180,249
Unknown but somewhere in the South East	7,690 – 76,900
Hampshire and the Isle of Wight	<8,820
Surrey	<7,630
Oxfordshire	<7,590
Wiltshire and Swindon	<5,390
Warwickshire	<4,750
Unknown but somewhere in Greater London	<1,280
West Sussex	<990

Source: AM 2014 Source of Primary Aggregates by Sub-region - Percentage Categories (2016), BGS.

Consumption

3.2.14 Consumption figures for primary aggregates, including land won sand and gravel can only be obtained every four years when import/export data is published by the Department for Communities and Local Government as part of the Aggregate Minerals (AM) survey undertaken by the British Geological Survey (BGS). The most recently undertaken survey was in 2014. Additionally, this data is not available at the West Berkshire level as the main reporting unit is for the former county of Berkshire.

3.2.15 The most recent survey indicates that consumption of land-won sand and gravel has decreased on a Berkshire-wide level from 2009 to 2014 (from 807,000 tonnes to 601,000 tonnes). Although these figures are only accurate at a Berkshire-wide level it is likely that West Berkshire has generally followed this trend. It is therefore possible to estimate consumption of sand and gravel within West Berkshire based on its proportion of the Berkshire-wide population in 2009 (18.0%) and 2014 (17.7%). This equates to 145,620 tonnes of land-won sand and gravel consumed within West Berkshire in 2009, and 106,377 tonnes consumed in 2014 (Table 3.6).

Table 3.6 - Estimates of Sand and Gravel Consumption in West Berkshire 2009 and 2014.

Sand and Gravel Consumption	2009	2014
Berkshire – AM Survey Total	807,000	601,000
West Berkshire – Proportion of Berkshire Estimate (based on AM survey)	145,620	106,377

Source: Collation of the Results of the 2014 Aggregate Minerals Survey 2009 and 2014 Survey (Table 11), British Geological Survey, ONS.

3.2.16 In terms of soft sand, several methods to estimate consumption in West Berkshire have been provided in Appendix C. These estimates range from 4,662 – 31,788 tonnes per annum. In terms of sharp sand and gravel, if the estimates of soft sand consumption are removed from the total estimate of West Berkshire sand and gravel

consumption in Table 3.6 (106,377 tonnes in 2014), this equates to between 74,589 and 101,715 tonnes per annum for sharp sand and gravel consumption.

3.2.17 A further method of estimating consumption can be calculated by using the proportion of sand and gravel consumed per head of population in Great Britain, and applying this to West Berkshire. This has been calculated for 2017 (the most recent year for which data is available) and is shown in Table 3.7 below. This shows that the estimated level of sand and gravel consumption in West Berkshire in 2017 was 152,649 tonnes.

Table 3.7 - Estimate of Sand and Gravel Consumption in West Berkshire in 2017

Sand and Gravel Sales in Great Britain	61,811,000[8]
Great Britain Population	64,169,395[9]
Sand and Gravel Consumption per head in Great Britain	0.96
West Berkshire Population	158,473[7]
Estimated Sand and Gravel Consumption in West Berkshire	152,649

3.2.18 If estimated levels of consumption of soft sand consumption provided in Appendix C (4,662 – 31,788 tonnes) are removed from the estimate of sand and gravel consumption in Table 3.7, this equates to between 120,861 and 147,987 tonnes of estimated sharp sand and gravel consumption.

3.3 Supply Options

Sites

3.3.1 Most of the primary construction aggregates won from sites within West Berkshire are processed by the operator, either on-site or at a central processing facility nearby, and sold directly for use in the construction industry.

3.3.2 Over the past two decades, West Berkshire has seen a decline in the number of sites producing land won primary aggregates alongside the decline in sales. This is also reflected in a Berkshire-wide drop in the number of active sand and gravel sites over the same period. In 2001, there were 13 quarries in operation in West Berkshire producing primary aggregates and in 2018 this had dropped to three active[10] sites.

3.3.3 Table 3.8 provides details of the operational sites in West Berkshire, and also 'inactive' site (sites with permission for mineral extraction, but where they either have not yet commenced, or reserves remain but were not worked in 2018). Operational sites are also shown on Figure 3.1.

[8] UK Minerals Yearbook 2018 Edition (BGS) https://www.bgs.ac.uk/mineralsuk/search/downloadSearch.cfc?method=viewDownloadsByCategory&panelNumber=4

[9] ONS Population Mid-year Estimates (2017): https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland

[10] Active site is defined in this LAA as a site with planning permission for construction aggregate extraction where minerals have been worked during the year being reported upon.

Table 3.8 - Active and Inactive Sand and Gravel Sites in West Berkshire (2017)

Site Name	Site Operator	Type of Aggregate	Site Notes	Comments
Active				
Kennetholme Farm	Grundon	Sharp Sand & Gravel	Preferred Area in RMLP 2001. Minerals are processed at the adjacent Colthrop processing plant	Planning permission granted in 2002. Production started in 2009 and continues. There is no tonnage limit on annual output (although there is a limit (200,000 tpa) on the adjacent processing plant). There are circa 10,000 tonnes of reserves remaining (31.12.18 – based on operator returns). Extension of time granted (2 years) August 2019 to extend time for final extraction and restoration of the site.
Harts Hill	Grundon	Hoggin – lower quality sand and gravel used as fill and generally sold as dug.	Materials are transport to the processing plant at Colthrop.	Small operation. Application to extend the period of working was approved in 2018. There is no tonnage limit on annual output, although there is a maximum number of HGV's (25 per day, limiting output to circa 140,000 tpa). Reserves of 150,000-tonnes remaining (31.12.18 – based on operator returns). Extraction permitted to 31st December 2020.
Copyhold Farm	Raymond Brown	Soft Sand	In AONB. Granted consent on the basis that the majority of the mineral would supply the Marley tile factory, however it is unclear whether this remains the case.	Approved under RMLP policy 15. Commenced production in 2006. Extension approved under RMLP policy 15 to provide materials for Beenham. An additional extension of approximately 40,000 t was permitted in 2017. Conditions limit the production output to 60,000 tpa. Reserves of 15,000 tonnes remaining (31.12.18 – based on operator returns). Site worked out in 2019.
Inactive				
Craven Keep	Earthline	Sharp Sand & Gravel	-	Inactive, small remaining reserve of 55,000 tonnes, with two years remaining for extraction.
Moores Farm	Caversham Project Management Ltd.	Sharp Sand gravel	-	Active inert waste recycling facility, however inactive in terms of mineral extraction. Small remaining reserve of approximately 10,000-15,000 tonnes required to be extracted by 31st December 2023. No limit on production.

Lower Farm, Wasing[11]	Lafarge Tarmac & Marley	Sharp Sand & Gravel	-	Extraction of 2.4 mt of sharp sand and gravel at a rate of 200,000 tpa. The planning permission has been implemented but extraction has yet to commence.

Source: West Berkshire Council - Planning application information and annual Aggregates Monitoring Surveys.

Reserves

3.3.4 Figure 3.4 shows that reserves declined markedly from 2001, to an all-time low in 2012. However, the granting of planning permission for the extraction of 2.4 million tonnes (mt) of sharp sand and gravel from Lower Farm at Wasing in 2013 has dramatically increased the amount of available reserves in West Berkshire (although this permission has been implemented, extraction has yet to commence on this site).

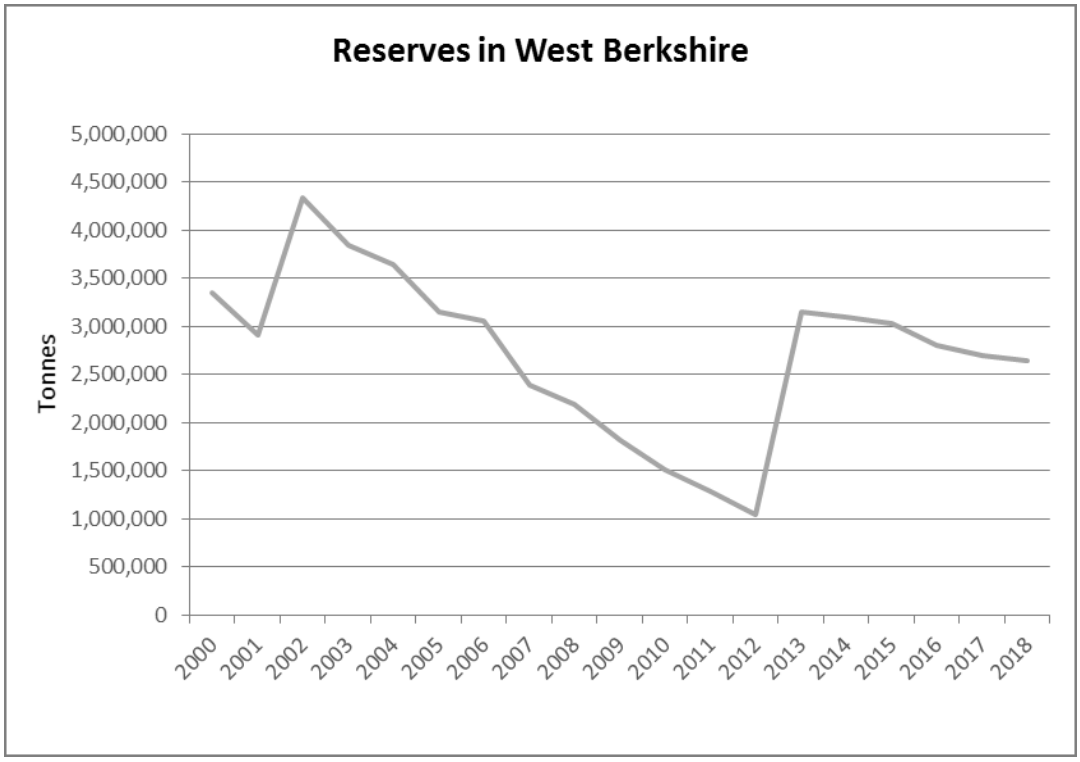


Figure 3.4 – Aggregate Reserves in West Berkshire. Source: West Berkshire Council - Annual Aggregates Monitoring Surveys.

3.3.5 Whilst Figure 3.4 does indicate that there is a significant level of permitted reserves in West Berkshire at present, it has to be noted that the majority of these reserves are located in a single site that has been implemented but has yet to commence production. Permitted reserves at the end of 2018 totalled 2,642,500 tonnes, the majority of which were sharp sand and gravel, with 15,000 tonnes of soft sand.

[11] http://publicaccess.westberks.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=M4U2FVRD0EA00

4.0 Recycled and Secondary Aggregates

4.1 Recycled and Secondary Aggregates in West Berkshire

4.1.1 Recycled aggregates are obtained from the processing of construction and demolition waste and secondary aggregates are aggregates derived as a by-product of other quarrying, mining or industrial operations.

4.1.2 Recycled aggregates have historically been used in low grade construction applications, such as fill, but it is understood that this situation is changing due to advances in the recycling industry. This matter will be kept under review, as advances in recycling techniques, such as aggregate washing facilities and advances in sorting, screening and blending operations can facilitate the production of a higher quality material, which may be able to replace more and more primary minerals. Such washing facilities have been permitted at sites in West Berkshire. In addition, construction techniques are also evolving to ensure that the minimum amount of primary material is utilised.

4.1.3 There are no known sources of notable secondary aggregates within West Berkshire. However, there are a number of energy from waste facilities currently operational in relative proximity to West Berkshire, such as Ardley Energy from Waste plant in Oxfordshire and Colnbrook (Lakeside) Energy from Waste plant in Slough. These facilities produce Incinerator Bottom Ash (IBA) which can be recycled for use as aggregate.

4.2 Demand Indicators

Production/Sales

4.2.1 The data sources for recycled aggregate for the south east are regarded as ‘less robust’ than the information collected for primary aggregates. The figures are collected yearly, as part of the aggregate monitoring survey carried out by each Mineral Planning Authority, but the response rate for these surveys is often lower than the response rate for primary aggregates, and does not include monitoring of aggregate generation from mobile plants. As such, the results should be treated with caution and should be relied upon as no more than a ‘reasonable indication’ of what is taking place.

4.2.2 The output/sales of recycled aggregates in 2018 totalled 321,699 tonnes, while 60,595 tonnes of material for non-aggregate uses (landfill engineering/restoration material, and soils) was also produced.

4.2.3 As can be seen from Figure 4.1, recycled aggregate sales in West Berkshire have been increasing over the last 10 years for which data is available. There was a larger increase between 2015 and 2016, which has not continued, but if this 2016 figure is taken as an anomaly, recycled aggregate sales have still continued to rise over the 10 year period. The average of sales for this period is 275,679 tonnes, an increase of approximately 57% from 2009. The past 3 year average is 337,020 tonnes, and reported sales in 2018 (321,699) were more than double those of 2009.

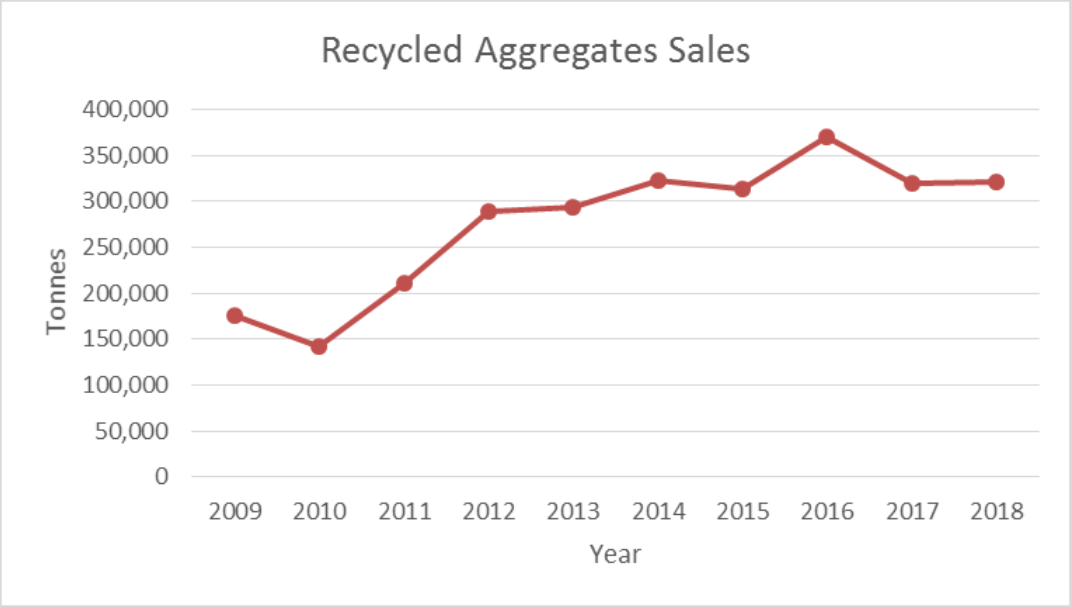


Figure 4.1 - Recycled Aggregate Sales in West Berkshire. Source: West Berkshire Council Aggregate Monitoring Survey Returns (2012 – 2018) and DEFRA methodology of 89% treated C&D waste (2008 – 2011).

Recycled Aggregate Utilisation

4.2.4 A further method for estimating the use of/demand for recycled aggregates in West Berkshire can be made by applying a national rate of utilisation of recycled aggregates, as a proportion of total aggregates used in the construction industry. Recycled and secondary aggregates are estimated to represent approximately 30% of the total market for aggregates in Great Britain[12] and in 2018 it was 30%[13].

4.2.5 The national rate of utilisation percentages have been applied to the estimated total primary aggregate consumption figures for West Berkshire (sand and gravel and crushed rock), to calculate an estimate of the amount of recycled aggregate consumed in West Berkshire. This method has also been used to estimate a combined primary and recycled aggregates consumption estimate for West Berkshire. This has shown (Appendix A) that in 2017 (the most recent year for which data is available), an estimated 186,575 tonnes of recycled aggregate was consumed in West Berkshire.

4.2.6 The estimated consumption figure for recycled aggregates of 186,575 tonnes is significantly lower than 2018 sales figures for recycled aggregates (321,679 tonnes), suggesting that the remainder is exported out of the district. Therefore in order to provide the recycled aggregate capacity required to continue recent levels of sales it is recommended to use an average of sales rather than estimates of consumption to determine future demand and encourage supply of these aggregates.

4.2.7 The last 10 year average of sales of recycled aggregates is 275,679 and the average for the last 3 years is 337,020 tonnes. Given the national priority to first seek to take account of the contribution recycled aggregates can make to the supply of materials before considering extraction of primary materials, (NPPF para 204) it would be

[12] Long-term Aggregates Demand and Supply Scenarios, 2016 – 2030 (Mineral Products Association) http://www.mineralproducts.org/documents/MPA_Long_term_aggregates_demand_supply_scenariors_2016-30.pdf

[13] Sustainable Development Report 2018 (Mineral Products Association) https://mineralproducts.org/documents/MPA_SD_Report_2018.pdf

prudent to use the higher of these figures (3 year average) in planning for the supply of recycled aggregates.

4.3 Supply Options

Construction and Demolition (C&D) Waste Arisings

4.3.5 In March 2012, DEFRA published a new methodology[14] that can be used for estimating total construction and demolition waste generation, which was developed in partnership with other agencies and industry bodies and used only existing data sources. An attempt has been made to apply that methodology to West Berkshire using available data sources in the Local Waste Assessment 2019 (based on 2017 data). The methodology estimates that approximately 384,443 tonnes of CDE waste was produced in West Berkshire in this year (see Appendix B for methodology). The estimates of CDE waste since 2013 using this methodology have fluctuated between around 300,000 – 425,000 tonnes (Table 4.2), suggesting supply of raw materials to provide recycled aggregates is not constrained.

Table 4.2 - Estimates of CDE Waste in West Berkshire based on modified 2012 DEFRA Methodology.

Year	CDE Estimate (tonnes)
2013	348,380
2014	306,130
2015	365,322
2016	425,614
2017	384,443

4.3.7 Due to the fact that there are no restrictions upon the movement of C&D waste across administrative boundaries and that excavation waste is less able to be recycled for use as aggregate, it is considered that the volume of construction and demolition waste sold as recycled aggregates in West Berkshire is considered a more representative figure to ensure that adequate capacity is planned for, rather than the amount of CDE waste arising in the district, as also concluded in paragraph 4.2.7.

Sites

4.3.8 At the end of 2018, West Berkshire had eight sites with planning permission to manage inert waste and produce recycled aggregates. Their planning status, sales, and theoretical operational capacities are shown in Table 4.3. Seven of the sites were operational in 2018. The location of recycled aggregate facilities in West Berkshire are shown on Figure 3.1.

4.3.9 Table 4.3 shows that the level of actual recycled aggregates production is significantly lower than the theoretical levels of production capacity. This is likely to be due to the fact that some of the sites do not deal exclusively with the production of recycled aggregates, and not all inert waste treated at such sites is suitable for recycled aggregate use. In addition this data excludes any recycled aggregate production on development sites, through the use of mobile plant.

[14] Methodology for Estimating Annual Waste Generation from the Construction, Demolition and Excavation Sectors in England, March 2012, DEFRA https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/119680/CDE-generation-methodology.pdf

Table 4.3 - Recycled Aggregate Facilities in West Berkshire

Site Name	Recycled Aggregate produced (tonnes)	Recycled Aggregate Production Capacity (tpa)	Status at End of 2018
Reading Quarry Recycling	195,292	275,000	Operational
Whitehouse Farm	84,738	150,000+	Operational
Theale Quarry WRTF	8,300	90,000	Operational
Colthrop, Avon site	18,279	93,000	Operational
Colthrop, Grundons	2,593	10,000	Operational
Moores Farm	12,497	35,000	Operational
Old Stocks Farm	0	16,250	Operational
Copyhold WTS *	0	75,000+	Non-operational
Total Operational Capacity		**669,250+**	
Total Permitted Capacity		**744,250+**	
Total Recycled Aggregates Produced in 2018	**321,699**		

Sources: Based on data from WBC, WDI and Planning permissions

Capacity estimate based primarily on WBC (operator returns), and permit information, or planning permission information

Key:

* Temporary planning permission

+ Some figures will include skip waste, recycling and construction and demolition processing

4.3.10 Other construction and demolition waste recycling is likely to be undertaken by mobile plant at construction sites, and this processing is unrecorded. In addition, the Beenham Tile factory crushes 'non specification' concrete tiles for re-use in the production of new tiles (which are mixed with primary aggregate) such that recycled aggregate is being used to directly replace primary aggregates in this process. Similarly, the asphalt plant at Theale uses a proportion of road planings in the production of new asphalt, directly replacing the use of primary aggregates in the manufacturing process. Such volumes are not captured in this LAA.

5.0 Rail Imported Crushed Rock and Marine Aggregate

5.1 Aggregate Rail Depots in West Berkshire

5.1.1 All counties in the UK have to import aggregates from elsewhere, as the available geology within each county means that no single minerals planning authority area produces the exact profile of types of aggregate, in the exact amount consumed therein. The geological composition in West Berkshire means that the area needs to import supplies of crushed rock, as there are no sources of crushed rock in the authority area. Crushed rock is imported into the district through the rail depots located at Theale. Small volumes of marine dredged sand and gravel are also known to be imported into West Berkshire through the district's rail depots. West Berkshire's aggregate rail depots are shown on Figure 3.1.

5.1.2 Prior to 2016 there were two "aggregate depots" in West Berkshire - one a depot importing crushed rock that is used to produce asphalt, the other a road to rail aggregates depot that imports primarily hard rock, together with some sand and gravel that is subsequently exported by road with the exception of what is used on-site at concrete batching plants.

5.1.3 From 2016, there were effectively four aggregates depot 'sites', as the depot importing crushed rock for asphalt is now utilised by two different operators, with separate sales figures. In addition, one depot that previously imported cement has begun to import raw aggregates for the manufacture of concrete and for onward transportation. As such, this site is also now able to be included in sales figures for imported aggregates.

5.2 Demand Indicators

Sales/Imports

5.2.1 As explained previously, West Berkshire does not produce any crushed rock indigenously, nor are there any marine landing sites. As such the only 'sales' figures for these aggregates are recorded at the rail depots within the district. Therefore, these figures are also import figures.

5.2.2 Actual returns for the sales at these depots have historically been confidential due to them being commercially sensitive when there were only two rail depots operating within the District. As such, sales were estimated as a proportion of Berkshire-wide sales[15]. However, in 2016 there were effectively four aggregates depot 'sites' operating within West Berkshire, and therefore, West Berkshire specific figures for crushed rock can be obtained from this year onwards. However, sales of rail imported marine sand are still confidential due to the fact that not all depots were importing this aggregate.

5.2.3 In 2018, 901,198 tonnes of crushed rock was sold at the district's depots, up from 836,524 tonnes in 2017. Sales of crushed rock and marine sand and gravel since 2009 are shown on Figure 5.1. This shows that sales of both aggregates have been increasing over this period. The 10 year sales average for crushed rock in 2018 was 580,278 tonnes, with a 3 year average of 822,164 tonnes. For marine sand and

[15] Two out of the three rail depots operating in the former county of Berkshire were located in West Berkshire. Making the assumption that prior to 2016 approximately two thirds of the mineral imported by rail into the former county of Berkshire is imported for onward sale into West Berkshire, this equates to approximately 287,000 tonnes of crushed rock sold in West Berkshire in 2009, and 774,000 in 2014. In 2011, separate monitoring obtained a Berkshire-wide figure for sales from aggregate rail depots within the county, again allowing an estimate of the amounts sold within West Berkshire. This was 504,000 tonnes for crushed rock.

gravel the 10 year sales average in 2018 was 78,726 tonnes with a 3 year average of 110,212 tonnes.

5.2.4 Due to commercial confidentiality, sales of marine sand and gravel prior to 2011 have been estimated as a proportion of Berkshire-wide sales[16]. Sales figures since 2011 are based on the past three year sales average.

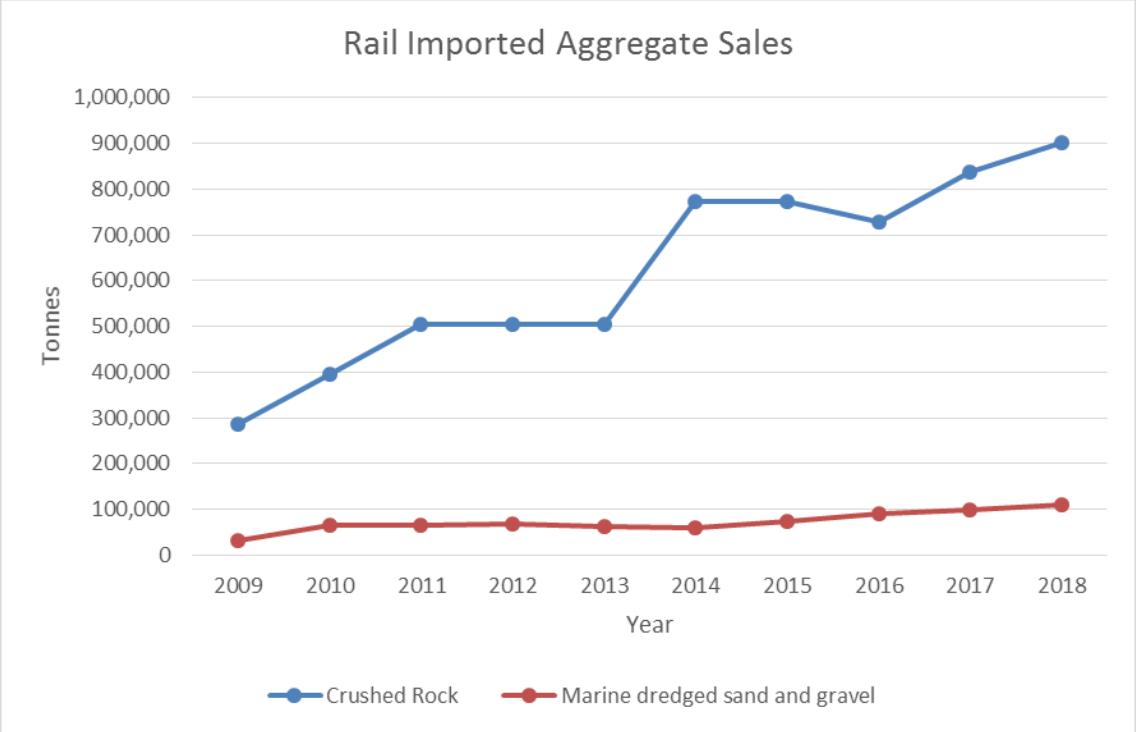


Figure 5.1 - Sales of Rail Imported Crushed Rock and Marine Aggregate at Rail Depots in West Berkshire. Source: Collation of the Results of the 2014 Aggregate Minerals Survey (2009 & 2014), BGS, West Berkshire Council.

Consumption

5.2.5 Historic movements of rail-imported aggregates into the former county of Berkshire have been captured every four years as part of the aggregates monitoring survey undertaken by the Department for Community of Communities and Local Government and published by the British Geological Survey. The amount of crushed rock and marine sand and gravel imported is also the same as the amount consumed, as neither of these aggregates are produced indigenously. The most recent data from AM 2009 and AM 2014 is outlined in Table 5.1.

5.2.6 It is possible to estimate consumption of rail imported aggregates in West Berkshire based on its proportion of the Berkshire-wide population in 2009 (18.0%) and 2014 (17.7%). This is shown in Table 5.1, which also shows that consumption of both marine sand and gravel and crushed rock has increased from 2009 – 2014.

[16] Two out of the three rail depots operating in the former county of Berkshire were located in West Berkshire. Making the assumption that prior to 2016 approximately two thirds of the mineral imported by rail into the former county of Berkshire is imported for onward sale into West Berkshire, this equates to approximately 64,000 tonnes of Marine sand sold in West Berkshire in 2009.

Table 5.1 - Rail Imported Aggregate Consumption in Berkshire and estimated West Berkshire Consumption 2009 & 2014.

	2009	2014
	Marine Sand and Gravel (tonnes)	
Berkshire Consumption	98,000	152,000
Est. West Berkshire Consumption	17,640	27,360
	Crushed Rock (tonnes)	
Berkshire Consumption	861,000	1,161,000
Est. West Berkshire Consumption	152,397	205,497

Source: Collation of the Results of the 2014 Aggregate Minerals Survey (2009 & 2014), BGS. Table 10, ONS.

5.2.7 The demand for hard rock and marine aggregate imports is likely to be driven, to some degree, by major mineral utilising businesses within West Berkshire, demanding such aggregates to be imported into the area to meet their specific market need for the end product i.e. asphalt. These specific market forces are likely to result in an inflated mineral demand within West Berkshire above that needed for the level of consumption for the area i.e. for house building, general construction etc. In addition, due to the fact that there are a limited number of rail depots in Berkshire, it is assumed that some of the material imported into Theale is then transported by road to other Berkshire Unitaries, or even surrounding authorities such as Hampshire. Therefore the 'demand' as indicated by the level of aggregate sales at West Berkshire rail depots, is likely to be higher than the actual level of consumption of these aggregates in West Berkshire. However, it will be important to continue to plan for the current level of sales to ensure that existing supply arrangements are able to be fulfilled.

5.3 Supply Options

Imports

5.3.1 In July 2016, BGS supplied data for the consumption of primary construction aggregates in 2014 by sub-region, identifying the source MPAs which the aggregates came from (Table 5.2).

Table 5.2 - Sources of Crushed Rock Imported into Berkshire 2014

Source MPA	Percentage	Tonnes
Somerset County Council	70-80%	812,700 – 928,800
North Somerset Council, South Gloucestershire Council, Leicestershire County Council, Shropshire Council, Powys, Rhondda, Cynon, Taf (Taff), outside England and Wales.	1-10%	11,610 – 116,100
Cornwall Council, Devon County Council, Gloucestershire County Council, Oxfordshire County Council, Cambridgeshire County Council, Yorkshire Dales National Park, Neath Port Talbot.	<1%	<11,610
Total		1,161,000

Source: AM 2014 Source of primary aggregates by sub-region - percentage categories (2016), BGS.

5.3.2 Table 5.2 shows that Somerset is the dominant source of crushed rock for Berkshire (70-80%), with smaller amounts coming from other sources around the UK. The most

recent Somerset LAA (fourth edition, incorporating data from 2006 – 2015[17]) states that there are approximately 380 million tonnes of permitted reserves for crushed rock and a landbank of at least 28.4 years at the end of 2015. The LAA acknowledges that Berkshire is among the counties importing the largest amount of crushed rock from Somerset due to limited indigenous supply and high development demand, together with the available rail connections. The rail capacity in Somerset is indicated to be sufficient and with capacity to increase the amount moved by rail subject to demand. In addition, production capacity from crushed rock quarries within Somerset stands at over 21.8 million tonnes. Thus there does not appear to be any supply issues with continuing to source crushed rock from Somerset. Safeguarding existing capacity within West Berkshire for the importation of crushed rock will be important to ensure these flows are able to continue in future.

5.3.3 The sources of marine sand and gravel imported into Berkshire in 2014 and approximate proportions of total imports are outlined in Table 5.3. Most comes from landings at wharves in London.

Table 5.3 – Sources of Marine Sand and Gravel Imported into Berkshire 2014

Source MPA	Percentage	Tonnes
Greater London – East	60-70%	91,200 – 106,400
Hampshire	20-30%	30,400 – 45,600
Medway	10-20%	15,200 – 30,400
Kent	1-10%	1,520 – 15,200
West Sussex	<1%	<1,520
Total		152,000

Source: AM 2014 Source of primary aggregates by sub-region - percentage categories (2016), BGS.

5.3.4 The London Aggregate Assessment (2016)[18] indicates (p.8) that the three marine regions supplying London and the South East would be able to maintain supplies to London and South East Market for 24.7 years at current extraction rates. Therefore there does not appear to be a supply issue with imported marine aggregates. However, the London LAA does highlight that the safeguarding of wharves and railheads will potentially be an issue with increased pressure from development. If these infrastructure assets are lost, capacity to transport these aggregates could be restricted.

[17] http://www.somerset.gov.uk/policies-and-plans/plans/somerset-minerals-plan/minerals-plan/?entryid100=59555&p=10
[18] https://www.london.gov.uk/sites/default/files/london_laa_2016.pdf

6.0 Overview of Aggregate Sales

6.1 The sales of land-won sand and gravel, recycled and secondary aggregates and rail imported crushed rock and marine sand and gravel are shown in Figure 6.1, which shows the changes in the overall aggregate mix seen in West Berkshire in recent years.

6.2 There has been a general decline in sales of land won sand and gravel extracted from within West Berkshire alongside a general increase in recycled aggregate production, and the relatively static level of marine imported aggregates. Since 2012 the level of recycled aggregates produced in West Berkshire has exceeded the level of primary aggregate sales, suggesting that the shortfall in the supply of primary aggregates could be being replaced by the production and sale of recycled aggregates. However, as previously mentioned, recycled aggregates are not able to substitute for all aggregate uses. There is also a possibility that further marine aggregate may be able to be imported into West Berkshire to supplement the need for indigenous resources. This obviously has its own environmental impacts and sustainability issues.

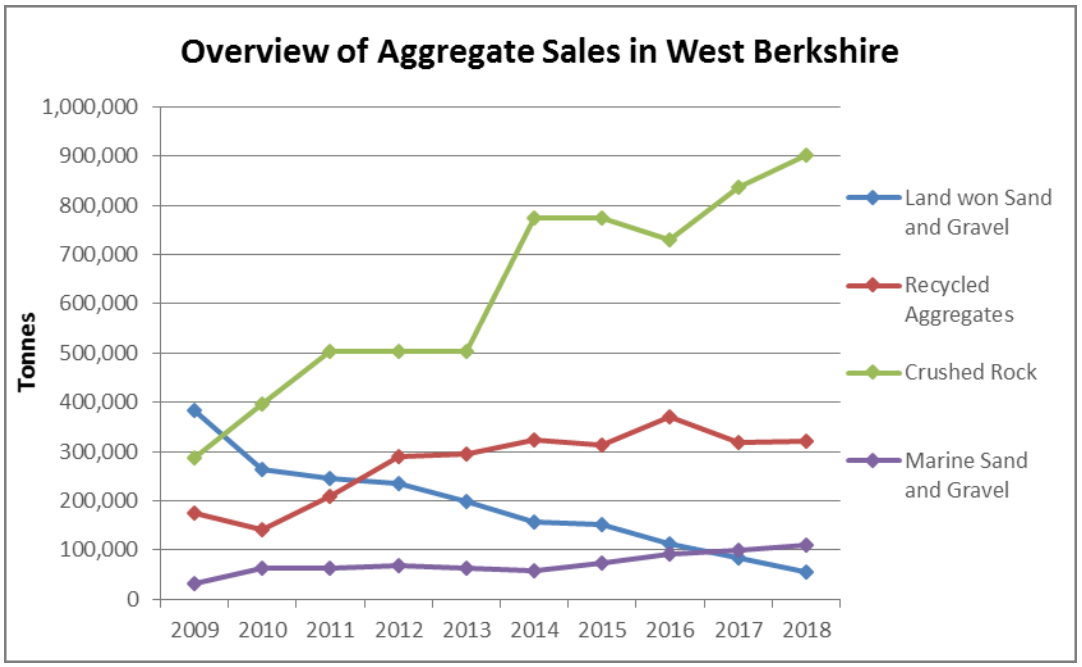
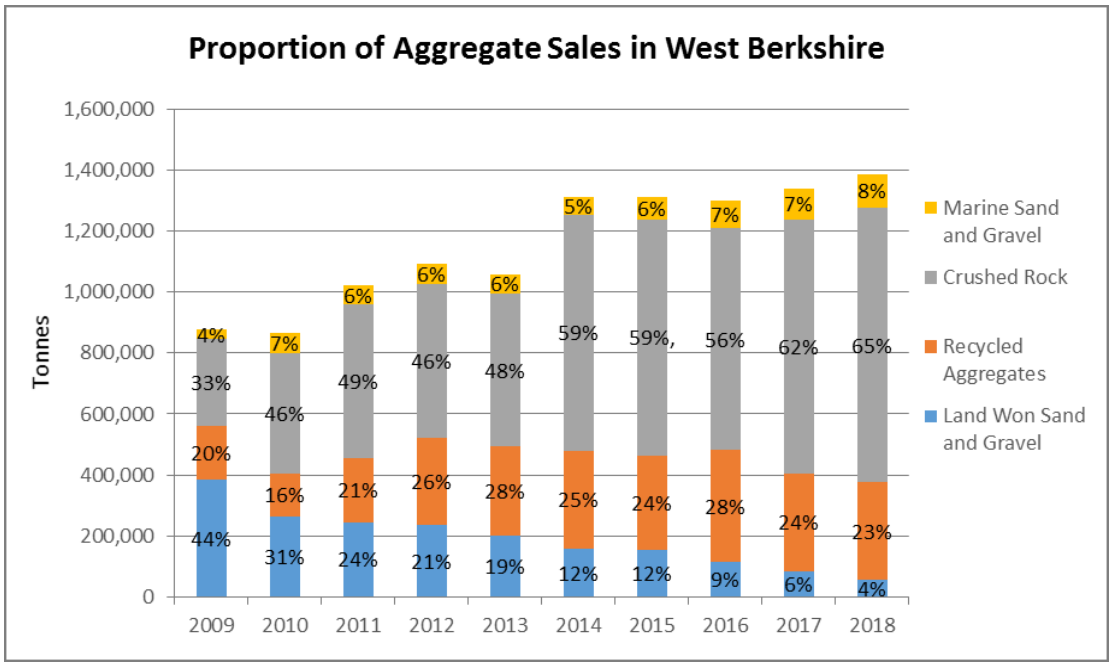


Figure 6.1 – Overview of Aggregate Sales in West Berkshire 2008 - 2018. Sources: West Berkshire Council Aggregates Monitoring Survey, Collation of the Results of the 2014 Aggregate Minerals Survey (2009 & 2014), BGS and South East England Aggregate Working Party Monitoring Report (2018), SEEAWP.

6.3 Figure 6.2 shows how the composition of aggregates sold within West Berkshire has changed in recent years. It can be seen that the sale of rail imported crushed rock, marine sand and gravel and sales of recycled aggregates have all increased proportionally since 2009. At the same time, sales of land won aggregates (sand and gravel) have been decreasing proportionally (from 44% in 2009 to 4% in 2018).

Figure 6.2 – Proportion of Aggregate Sales in West Berkshire.



Sources: West Berkshire Council Aggregates Monitoring Survey returns, Collation of the Results of the 2014 Aggregate Minerals Survey (2009 & 2014), BGS and South East England Aggregate Working Party Monitoring Report (2018), SEEAWP.

7.0 Future Aggregate Supply

7.1 Future Demand

7.1.1 This section looks at factors that may be associated with a change in the demand for aggregates in West Berkshire in future.

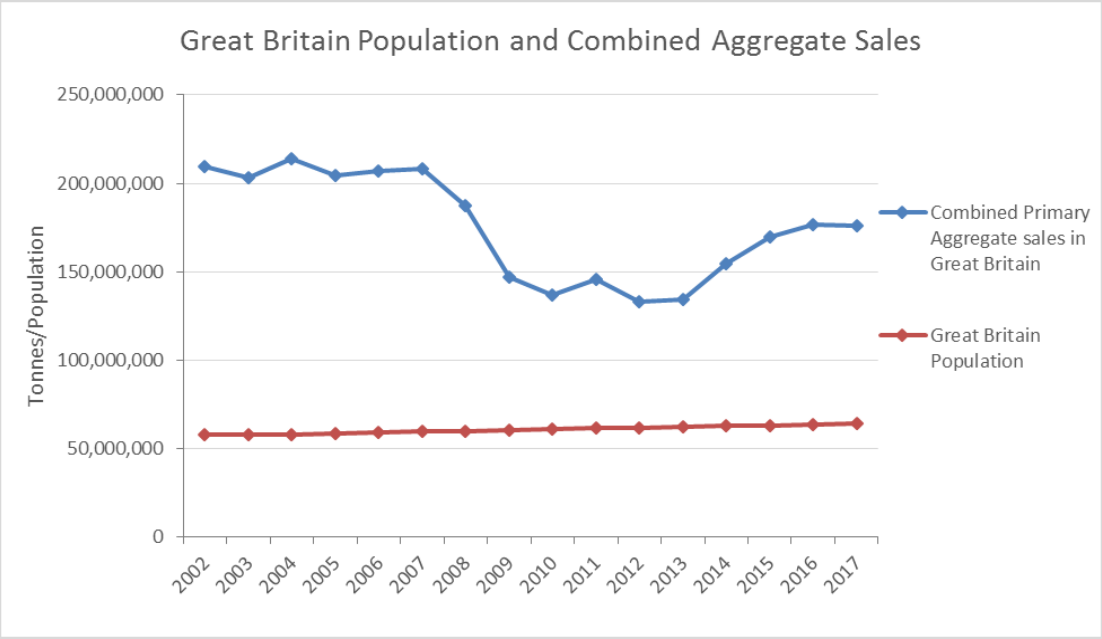
Population Change

7.1.2 Looking at trends in population growth and aggregate usage can be considered in assessing future demand for aggregates and population projections can give an indication of possible household growth and wider overall demand.

7.1.3 Figure 7.1 shows the England population growth and primary aggregate sales over the period 2002 – 2017. This shows that population growth was 0.76% per annum on average. Aggregate sales varied, but have generally decreased over this time. Therefore there does not appear to be a relationship between recent population growth and aggregate sales in England.

7.1.4 The population in England is forecast to grow 0.47% on average per year from 2016 – 2041 and the population in West Berkshire is forecast to grow 0.30% on average per year over the same period[19]. These future levels of growth are lower than historic population growth from 2002 - 2017. Therefore, it is not considered that the steady increase in population in future will significantly alter the demand for aggregates, over what has been identified in using the past 10 year sales average.

Figure 7.1: England Population and Combined Primary Aggregate Sales 2002 – 2015



Source: ONS, Annual Mineral Raised Enquiries 2002 – 2014 (DCLG), Annual Minerals Yearbook 2018 (BGS).

Household Growth

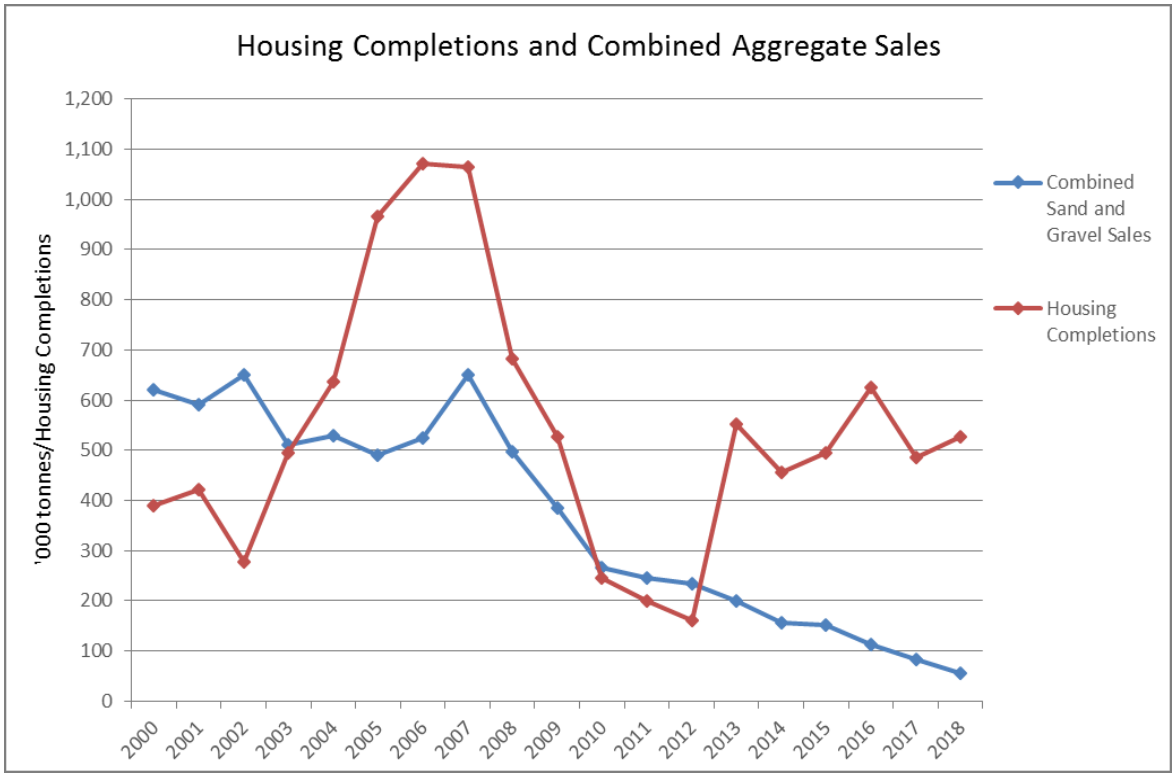
7.1.5 The adopted West Berkshire Core Strategy (July 2012) contains proposals for the delivery of at least 10,500 homes over the plan period (2006 – 2026) at a rate of

[19] ONS Population projections: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/localauthoritiesinenglandtable2

525 net additional dwellings per annum. This rate of house building corresponds with the historic average rate of construction over the period since 2000.

7.1.6 Net housing completions and aggregates sales since 2000 are shown on Figure 7.2. It can be seen from this that there does not appear to be a direct link between aggregate outputs and house building, particularly since 2013. If it was assumed that the level of housing provision in West Berkshire was to remain at a similar level, this planned provision is considered unlikely to result in a significant alteration in the demand for aggregates in West Berkshire.

Figure 7.2 - Housing Completions and Aggregate Sales in West Berkshire.



Source: West Berkshire Council Annual Monitoring Report (Housing) 2017, and West Berkshire Council.

7.1.7 The 2018 NPPF introduced a standard method for assessing local housing need (LHN), based on household projections with an affordability adjustment. The standard methodology to use the 2014-based household projections as the starting point for calculating LHN, which gives West Berkshire a LHN of 551 dwellings per year. This figure does not produce a housing requirement figure but will be used as a starting point to inform the Local Plan Review. This may slightly increase the provision for housing in the district, which in turn may increase the level of demand for aggregates in West Berkshire. However, there does not appear to be a direct linkage between housing provision and primary aggregate demand as shown in Figure 7.2.

Economic Forecasts

7.1.8 Economic forecasts are considered to be useful for providing an overall contextual picture and an indication of potential aggregate demand.

7.1.9 The Thames Valley Berkshire Strategic Economic Plan[20] identifies an average increase in GVA from 2000 – 2010 of 2.6%. The average increase from 2010 – 2020 is predicted to be 1.8%, and from 2020 – 2025 is 2.6%.

7.1.10 The Office for Budgetary Responsibility forecasts for GDP until 2023 are[21]:

	2019	2020	2021	2022	2023
GDP % change	1.2	1.4	1.6	1.6	1.6

7.1.11 HM Treasury comparison of independent GDP forecasts[22] indicate growth of:

	2019	2020	2021	2022	2023
GDP % change	1.2	1.3	1.6	1.7	1.7

7.1.12 Other estimates of GDP growth in 2019-2020 are similar, with PwC estimating 1.4% growth in 2019, and 1.3% in 2020[23], and the OECD estimating 1.2% in 2019 and 1.0% in 2020[24]. The continued suppression of growth is attributed to uncertainty associated with the United Kingdom leaving the European Union ('Brexit').

7.1.13 The forecasts indicate on the whole a trend of slow growth, and uncertainty over the impact of Brexit on the economy and the effect on growth. Therefore any increases in demand for aggregates as a result of growth in the economy are likely to be captured in the 10 year sales average over time.

National Construction Forecasts

7.1.14 The Office for National Statistics produce a monthly bulletin (Construction Output in Great Britain)[25] detailing estimates of output in the construction industry. Construction output is an important economic indicator and is also used in the compilation of the output measure of gross domestic product (GDP). The estimates of construction output since 2014 are shown in Figure 7.3, which shows that construction output has been increasing since 2014. Construction output in June 2019 is 18% above the output seen in 2014, an increase of 3.6% per year.

[20] http://www.thamesvalleyberkshire.co.uk/getfile/Public%20Documents/Strategic%20Economic%20Plan/TVB%20SEP%20Consultation%20Draft%20low%20res.pdf?inline-view=true

[21] Economic and Fiscal Outlook March 2019 (OBR): https://cdn.obr.uk/March-2019_EFO_Web-Accessible.pdf

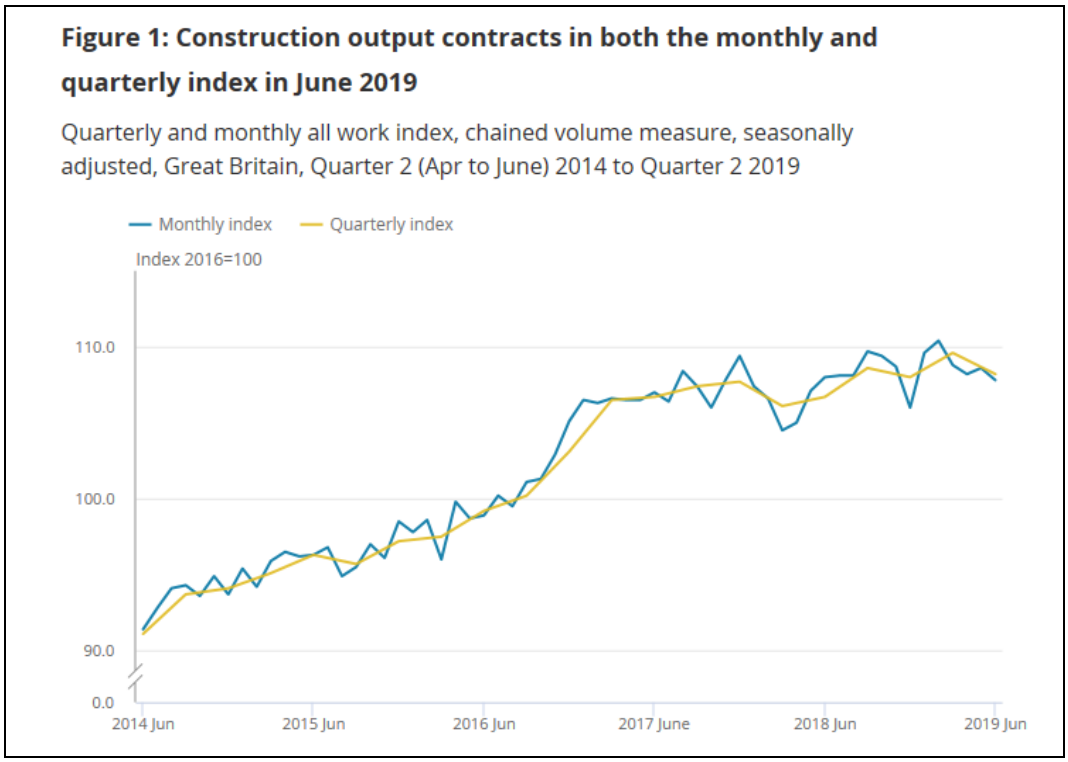
[22] Forecasts for the UK Economy: A comparison of independent forecasts, August 2019 (HM Treasury): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/826488/Forecomp_August_2019.pdf?_ga=2.85104857.1113197251.1566550415-1828591632.1527675976

[23] UK Economic Outlook, July 2019 (PwC): https://www.pwc.co.uk/services/economics-policy/insights/uk-economic-outlook.html

[24] United Kingdom Economic Forecast Summary, July 2019 (OECD): http://www.oecd.org/eco/outlook/united-kingdom-economic-forecast-summary.htm

[25] Construction output in Great Britain: June 2019 https://www.ons.gov.uk/businessindustryandtrade/constructionindustry/bulletins/constructionoutputingreatbritain/june2019#construction-output-in-june-2019

Figure 7.3: Construction Output in Great Britain 2014 – 2019



Source: ONS[26]

7.1.15 The Construction Products Association, in its Construction Industry Forecasts 2019 - 2021[27] predict that construction output will grow by, -0.4% in 2019 and 1.4% in 2020. Office and factory output is forecast to fall 11% and 15% respectively in 2019, with further falls of 4% and 10% respectively in 2020.

7.1.16 The MPA have also published projected construction growth figures for the South East indicating an annual growth rate of 1.1% a year for the five years 2018 – 2022[28]. This growth rate is generally below the national construction growth rates since 2014, outlined in 7.1.14.

7.1.17 Although increases in construction output are likely to increase demand for aggregates, these increases are predicted to be incremental, and are not regarded to be considerably different from the preceding 10 year period. Therefore these changes are likely to be accommodated in the 10 year sales average.

National Aggregate Forecasts

7.1.18 The Mineral Products Association (MPA) produces a regular medium-term (three-year) market forecast for construction materials. The MPA considers that the prospects for construction activity over the next two to three years are mixed, due uncertainty relating to Brexit, but are forecasting that mineral products markets will grow by 4% for primary aggregates over the period 2018 – 2020[29].

[26] Construction output in Great Britain: June 2019https://www.ons.gov.uk/businessindustryandtrade/constructionindustry/bulletins/constructionoutputingreatbritain/june2019

[27] https://www.constructionproducts.org.uk/news-media-events/news/2019/april/construction-forecasts-revised-down-due-to-prolonged-brexit-uncertainty/

[28] Construction & Markets – South East - November 2018, (MPA).

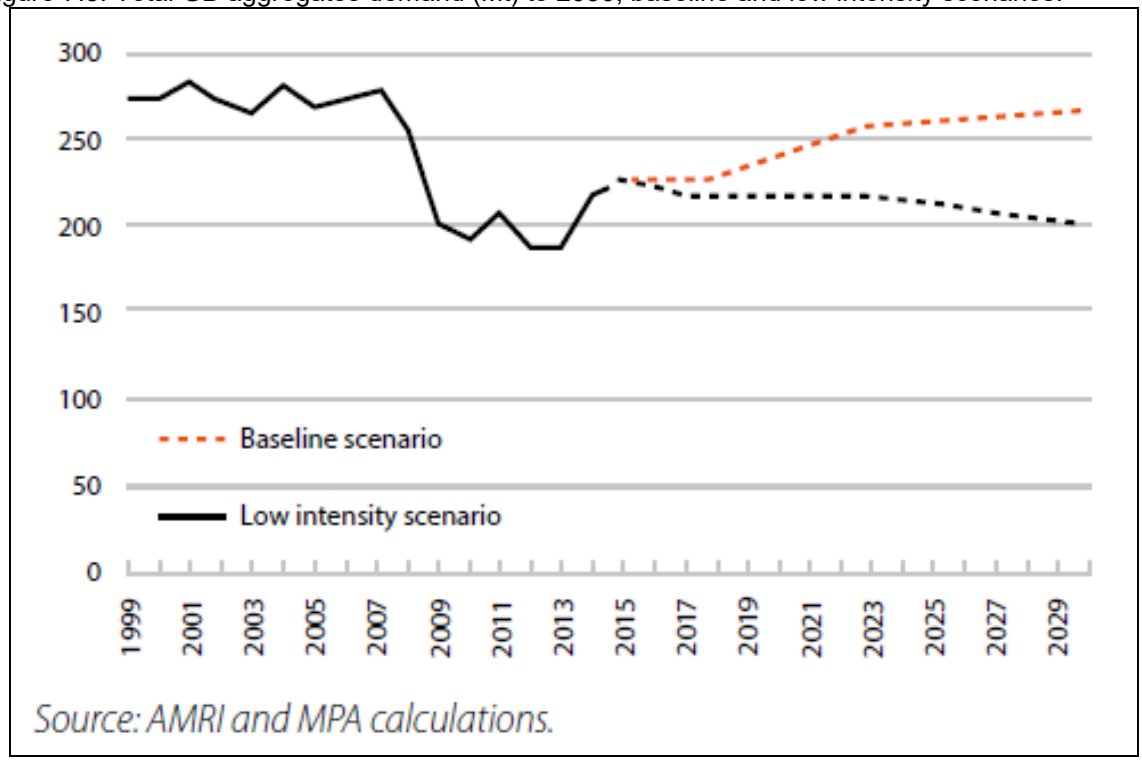
[29] Mineral Products Association Profile of the UK Mineral Products Industry, 2018 (MPA) https://mineralproducts.org/documents/Facts-at-a-Glance-2018.pdf

7.1.19 The MPA has also produced long-term aggregates demand & supply scenarios, 2016-30[30]. Whilst the scenarios are estimated national demands, it is considered that they most accurately reflect the situation in the south east.

7.1.20 The report studied two scenarios in order to estimate future demand for aggregates:
1. Baseline Scenario
2. Low Material Intensity Demand Scenario

7.1.21 The baseline scenario assumed that material intensity (volume of aggregates used per £1,000 spent) remains flat at its 2018 level, and growth is in line with economic and population growth. It predicted that demand for aggregates would increase steadily until 2030, but still not quite reach pre-recession levels (shown in Figure 7.5). The low intensity scenario assumed a decline in material intensity of 1.8% per annum, reflecting increases in resource efficiency in construction. This scenario predicted that demand would steadily decrease until 2030.

Figure 7.5: Total GB aggregates demand (Mt) to 2030, baseline and low intensity scenarios.



Source: Long-term aggregates demand & supply scenarios, 2016-30, MPA.

7.1.22 Although there is considerable uncertainty with long-term forecasting, the indications suggest slow incremental growth in the demand for aggregates, that does not indicate significant growth above that associated with the previous 10 years. Therefore these changes are likely to be accommodated in the 10 year sales average.

Infrastructure Projects

7.1.23 At a local level, the West Berkshire Core Strategy (2012) identifies a number of infrastructure schemes to be implemented over the plan period, including:-

[30] Long-term aggregates demand and Supply Scenarios, 2016–30 (MPA): http://www.mineralproducts.org/documents/MPA_Long_term_aggregates_demand_supply_scenariors_2016-30.pdf

- Junction improvements along the A339 in Newbury, at Monks Lane, at the A343 Andover Road, and at the A34 / A343 south interchange.
- Rail and highway improvements at Newbury Racecourse Road Site.
- Improvements to Newbury Station.
- Various upgrades to existing electricity and gas infrastructure across West Berkshire.
- Upgrades to existing waste water infrastructure across West Berkshire, notably at Newbury/Thatcham and Sandleford Park.
- Sustainable Urban Drainage Systems.

7.1.24 In addition, the Thames Valley Berkshire Strategic Economic Plan sets out infrastructure priorities of the Local Enterprise Partnership. West Berkshire schemes include:

- Newbury – Kings Road Link Road
- Newbury – Sandleford Park, strategic housing allocation requiring supporting infrastructure including schools, highway improvements and provision for retail facilities in the form of a local centre and business employment
- Newbury – Railway Station Improvements
- Theale - Park and Rail at Theale Station at Programmed Entry Level and a business case is being worked on.

7.1.25 This represents a commitment to an ongoing level of development over the plan period. Other development proposals which may (have) placed demand on greater aggregates supply within West Berkshire most recently include:

- development at Atomic Weapons Establishment, Burghfield,
- the regeneration of Thatcham town centre, and
- the mixed development scheme at Newbury racecourse.
- Market Street redevelopment (Predominantly residential, some mixed use development).

7.1.26 To understand the wider demand for aggregates, based on construction, the National Infrastructure Delivery Plan 2016-2021 (NIDP) has been considered. This provides a strategic overview of UK infrastructure investment to 2020-21.

7.1.27 The NIDP identifies several construction projects within 20-40 miles[31] of West Berkshire, including:

- Smart Motorway – M4 Reading to London
- Development associated with Crossrail
- Electrification of the Great Western Mainline (including the line between Reading and Newbury) (complete 2019)

7.1.28 Other largescale projects taking place in the South East include High Speed 2 (HS2) rail and Expansion at Heathrow. A review is currently underway into HS2[32], and plans for expansion at Heathrow are progressing with a consultation on construction proposals taking place in June 2019[33]. These projects may place

[31] A distance of 20 - 40 miles is suggested because this is the estimated distance over which the majority of the aggregate types produced in West Berkshire (recycled aggregates and land won sharp sand & gravel) are likely to be transported (however soft sand is understood to travel further).

[32] Independent review of HS2 https://www.gov.uk/government/news/government-announces-independent-review-into-hs2-programme

[33] Construction Proposals: Building an Expanded Heathrow (June 2019) https://aec.heathrowconsultation.com/documents/construction-proposals/

demands on large quantities of mineral in surrounding areas resulting in minerals from further away being used to make up such increases in local demand.

7.1.29 Together these national and local construction projects will require a range of aggregates amounting to on-going demand that will need to be met through the supply of sand and gravel, crushed rock and recycled aggregates in the years ahead.

Local Industry

7.1.30 In respect of existing mineral users, the Beenham Tile Factory, located on the A4 approximately midway between Newbury and Reading, uses approximately 100,000 tonnes per annum of sand and gravel. This tile factory is a strategic facility that manufactures concrete tiles that are used in developments across the whole of the South East of England. The rail linked asphalt plant in Theale is also a major user of primary aggregates in West Berkshire and is understood to utilise approximately 350,000 tonnes per annum of primary mineral (imported crushed rock). However like the tile factory, whilst some of the "product" manufactured will be used within West Berkshire a significant proportion is also exported for use in the surrounding area. This tile factory and asphalt plant have both operated for decades, and whilst it is assumed that these facilities will continue to place a level of "demand" on mineral resources in the authority, this level of demand is not anticipated to increase significantly, and therefore the "need" for these industries will be captured in the past 10 year sales.

Summary

7.1.31 It is apparent that the demand for aggregates in West Berkshire is likely to be driven by a variety of both local, and wider than local factors, such as economic growth, housing growth and other development projects within and around the authority area. In addition existing industrial processes that utilise large volumes of aggregates also continue to inflate the level of demand for aggregates in West Berkshire. However, it is considered that there are no clear identifiable factors that may result in a significant alteration to the level of need in West Berkshire for construction aggregates in the foreseeable future over that identified over the past 10 year period.

7.2 Environmental Constraints

7.2.1 Approximately 74% of the administrative area of West Berkshire is located within the North Wessex Downs Area of Outstanding Natural Beauty (AONB). Much of the northern area of the district, where the main deposits of soft sand have historically been worked, lies within the AONB (see Figure 3.1).

7.2.2 Whilst mineral extraction is not excluded from such areas, the NPPF states that when determining planning applications for major development (including major mineral development) in Areas of Outstanding Natural Beauty, National Parks and The Broads, great weight should be given to the conservation of the landscape and scenic beauty, as well as conservation of wildlife and cultural heritage, and that permission should not be granted unless in exceptional circumstances, and where it can be demonstrated to be in the public interest (paragraph 172). Consideration of all supply options will need to be undertaken in demonstrating exceptional circumstances in this test. Therefore, this is a relevant local factor that could affect the availability of supply of soft sand going forward.

7.2.3 The NPPF also confirms that landbanks of non-energy minerals should, as far as is practical, be maintained from sites outside such national level designations including AONBs (paragraph 205 a).

7.2.4 However, the NPPF also indicates at paragraph 204 (b) that mineral planning authorities should aim to source minerals supplies indigenously.

7.2.5 The emerging West Berkshire Minerals and Waste Local Plan will need to consider how to meet demand for soft sand over the plan period in light of the constraints of the AONB. However, in line with National Policy, it is not considered an absolute constraint such as to warrant adjusting the 10 year sales average.

7.3 Decline in Operational Aggregate Sites and Reserves in West Berkshire

7.3.1 Of relevance to the future supply of aggregate minerals in West Berkshire is the significant decline in aggregate producing mineral sites and declining reserves in operational sites in the district in recent years. In 2006, there were eight operational sand and gravel sites in West Berkshire, and in 2018 there were just three sites in production. In 2019, this has dropped to two. Consequently, sales of land won aggregates within the district have also declined noticeably in recent years.

7.3.2 Therefore, consideration should be given to whether the decline in sales in recent years due to the declining reserves in active quarries has suppressed sales to such a degree that a departure from the 10 year average is considered necessary. The 10 year sales average for sharp sand and gravel in 2018 was 154,801 tonnes, and for soft sand was 33,906 tonnes. The combined 10 year sales average for sand and gravel was 188,707.

7.3.3 It is known that the sites in production in West Berkshire in 2018 were nearing the end of their permitted reserves, and therefore sales of sand and gravel were much lower than if the sites had been operating at normal levels. This has acted to suppress sales of sand and gravel in 2018, in relation to anticipated demand. Total sand and gravel sales in 2018 were 54,969 tonnes, far below estimated consumption levels of 152,649.

7.3.4 Estimates of consumption have been considered in order to determine whether the 10 year sales averages are an appropriate level at which to plan for the future supply of aggregates in the district.

7.3.5 Total sand and gravel consumption in West Berkshire was estimated to be 152,649 tonnes in 2017 (the most recent year for which data is available). This is below the 10 year sales average for sand and gravel of 188,707 tonnes, which would seem to indicate that planning for this level of supply would be sufficient to enable resources to be identified in order to satisfy local use of these aggregates and also enable a small contribution to be made to wider aggregate supply. However when looked at separately, estimates of soft sand and sharp sand and gravel consumption are far closer to their respective 10 year sales averages, as outlined below.

7.3.6 In terms of soft sand, estimates of consumption range from 4,662 – 31,788 tonnes per annum (Appendix C), and the higher figure is just below the 10 year sales average for soft sand of 33,906 tonnes. This indicates that using the 10 year sales average may only just be adequate to ensure supplies are planned for in order to satisfy local demand, and would not make a significant contribution to the wider supply of this aggregate.

7.3.7 In terms of sharp sand and gravel, estimates of consumption range from 120,587 and 147,713 tonnes per annum. The higher of these figure is just within the 10 year sales average for sharp sand and gravel of 154,801 tonnes. As with the case for soft sand, this indicates that using the 10 year sales average for sharp sand and gravel may only just be adequate to ensure supplies are planned for in order to satisfy local demand, and would not make a significant contribution to the wider supply of this aggregate.

7.3.8 Therefore, it is considered that relying on the past 10 year sales average may not be sufficient to plan for a steady and adequate supply of sand and gravel, based on the fact that the number of aggregate producing sites, reserves in these sites and corresponding sales have reduced in recent years in West Berkshire. The previous LAA rates for sand and gravel in the 2018 LAA were set at 189,233 tonnes for sharp sand and gravel, and 43,730 tonnes for soft sand (232,964 tonnes for total sand and gravel). These levels are more sufficient to meet estimated levels of consumption. Therefore, it is considered that due to the fact that the current 10 year averages for sharp sand and gravel may not be sufficient to plan for an adequate supply of sand and gravel in the district that the previous 2018 LAA rates should remain in place. This situation will need to be monitored in future to determine whether these rates remain appropriate, particularly if additional sites become operational and levels of sales again increase.

7.4 Alternative Aggregates

7.4.1 Recycled aggregates will potentially reduce the need for primary aggregates in the future, although there are only limited uses for which these can substitute and therefore there will always be a requirement for some land-won aggregate within the district. This matter will be kept under review as advances in recycling techniques can facilitate the production of a higher quality material, which may be able to replace more and more primary minerals.

7.4.2 There is also a possibility that further marine aggregate may be able to be imported into West Berkshire to supplement the need for indigenous resources. The amount of marine sand and gravel imported into Berkshire increased from 2009 to 2014, and although it will not be possible to know for certain whether this trend continues until the next aggregate minerals survey is undertaken, marine aggregates have been increasing in supply over time nationally, so it is probable that this will continue.

7.4.3 The demand for primary aggregates and alternative aggregates are reflected in their respective past 10 year sales averages. Where it is more economic, or practical to use recycled and secondary aggregates in preference to primary materials, the market will decide this. Therefore, if the demand for primary aggregates is decreasing, then this will be reflected by a declining 10 year average of sales. Similarly, if the demand for alternative aggregates is increasing proportionally, then this will be reflected in an increasing 10 year average of sales. These market changes over time would be reflected in the 10 year sales average approach, and therefore are not considered significant enough to warrant an identified departure from this.

7.5 LAA Rates

Land Won Sand and Gravel

7.5.1 In addition to utilising the 10 year average approach to assessing future demand for aggregate, National Planning Guidance[34] suggests that Mineral Planning Authorities should look at average sales over the last 3 years in order to determine whether it might be appropriate to increase supply. The three year average figures for all aggregates are significantly below the 10 year average figures (Table 7.1), which suggests that there has not been a recent increase in the sale of aggregates such that a higher figure than the 10 year sales average should be used determine the rate at which minerals should be planned for. In fact, consideration of the most recent three years sales averages indicates that sales are likely to continue at a lower level in the short term at least.

Table 7.1 Ten Year and Three Year Sales Averages for Sand and Gravel

	10 Year Sales Average (tonnes)	3 Year Sales Average (tonnes)
Sharp Sand and Gravel	154,801	73,387
Soft Sand	33,906	10,344
Total Sand and Gravel	188,707	83,730

7.5.2 As outlined in section 7.3, it is considered that relying on the past 10 year sales average may not be sufficient to plan for an adequate supply of sand and gravel, based on the fact that the number of aggregate producing sites, reserves in these sites and corresponding sales have reduced in recent years in West Berkshire. Therefore, it is recommended that the previous 2018 LAA rates should remain in place for 2019; these are shown in Table 7.2. This situation will need to be monitored in future to determine whether these rates remain appropriate, particularly if additional sites become operational and levels of sales again increase.

Recycled Aggregates

7.5.3 The last 10 year average of sales of recycled aggregates is 275,679 and the average for the last 3 years is 337,020 tonnes. Given the national priority to first seek to take account of the contribution recycled aggregates can make to the supply of materials before considering extraction of primary materials, (NPPF para 204) it would be prudent to use the higher of these figures (3 year average) in planning for the supply of recycled aggregates. Therefore, this is the recommended LAA rate for these aggregates outlined in Table 7.2.

Rail Imported Aggregates (Marine Sand and Gravel and Crushed Rock)

7.5.4 For rail imported marine sand and gravel, sales have been increasing over the preceding 10 years (Figure 5.1). The 10 year sales average for this aggregate is 78,726 tonnes and the 3 year average is 110,212 tonnes. In terms of ensuring there is sufficient rail capacity available for the importation of these aggregate, it would be prudent to use the higher of these figures in planning for future supply. Therefore

[34] Minerals Planning Practice Guidance: Paragraph 064 Reference ID: 27-064-20140306. https://www.gov.uk/guidance/minerals

110,212 tonnes is recommended as the LAA rate for this aggregate, as outlined in Table 7.2.

7.5.5 For crushed rock, sales have also been increasing over the preceding 10 year period. The 10 year sales average for this aggregate is 580,278 tonnes and the 3 year average is 822,164 tonnes. As with marine sand and gravel, in order to ensure sufficient rail capacity is available for the importation of this aggregate it would be prudent to use the higher of these figures in planning for future supply. Therefore 822,164 tonnes is recommended as the LAA rate for this aggregate, as outlined in Table 7.2.

All Aggregates

7.5.6 Therefore, after consideration of the future demand for aggregates within West Berkshire, and factors affecting supply in the district, the following LAA Rates are proposed in Table 7.2:

Table 7.2: 2019 LAA rates

	LAA Rate (tpa*)
Land Won Sharp Sand and Gravel	189,233
Land Won Soft Sand	43,730
Total Sand and Gravel	232,964
Recycled Aggregates	337,020
Marine Sand and Gravel (Rail Imported)	110,212
Crushed Rock (Rail Imported)	822,164

*Tonnes per annum

8.0 Balance between Supply and Demand

8.1 Land-Won Sand and Gravel

Landbank

8.1.1 The balance between supply and demand can be shown in one way by the calculation of the 'landbank' of supply for land won aggregate minerals. The landbank is based on the amount of remaining reserves (supply) and a given extraction rate (demand). The NPPF requires that a landbank of at least 7 years is maintained for sand and gravel (para 201).

8.1.2 The total permitted reserves at the end of 2018 stood at approximately 2,642,500 tonnes, of which 15,000 tonnes was for soft sand. Based on the LAA rates, the landbank for sharp sand and gravel at the end of 2018 was 13.8 years, for soft sand was 0.34 years and for combined sand and gravel was 11.3 years (shown in Table 8.1). The landbank based on the 10 and 3 year sales averages has also been included for comparison.

Table 8.1 - West Berkshire Landbank Calculations 2018 (years)

2018	Sharp Sand and Gravel	Soft Sand	Total Sand and Gravel
LAA Rate (tpa)	189,233	43,730	232,964
10 Year average	154,801	33,906	188,707
3 year average	73,387	10,344	83,730
Remaining Reserves	2,627,500	15,000	2,642,500
Landbank based on LAA Rate	13.8 years	0.3 years	11.3 years
Landbank based on 10 year average	17.0 years	0.4 years	14.0 years
Landbank based on 3 year average	35.8 years	1.5 years	31.6 years

8.1.3 Table 8.1 shows that the landbank, based on the LAA Rate is above the required 7 years for sharp sand and gravel and total sand and gravel. However, it is significantly below 7 years for soft sand. If the level of sales of construction aggregates in West Berkshire remains at the level seen in more recent years (3 year average), then the permitted reserves of sharp sand and gravel would last much longer, although the landbank for soft sand still remains far below the required 7 years, indicating that additional reserves of this aggregate are required in order to maintain a 'steady and adequate supply' in line with NPPF paragraph 207.

Production Capacity

8.1.4 Production capacity is also a relevant factor in assessing the balance between supply and demand. If the ability to produce the LAA rate from sites within the district is not available, then it will not be able to achieve a 'steady and adequate supply' of aggregates as required by the NPPF. A list of sites and their production capacities are listed in Table 8.2.

8.1.5 The 2018 level of annual production from operational sites (combined sand and gravel) in West Berkshire was estimated at 105,000 tonnes, which is far below the LAA requirement for combined sand and gravel of 232,964 tonnes per annum. However, inactive sites have the potential to contribute to a further 237,500 tonnes per annum, in which case this rate could be met. However, whether inactive sites are able to resume/start production to meet future demand is not certain, and unless other sites come forward through the planning process, the LAA rate may not be achieved in the near future.

Table 8.2 - Estimated Production Capacity in West Berkshire

Site Name	Type of Aggregate	Comments	Capacity (tonnes)
Active			
Kennetholme Farm	Sharp Sand & Gravel	Capacity of 200,000tpa on adjacent processing plant, but site capacity constrained by remaining reserves.	10,000
Copyhold Farm	Soft Sand	Conditions limit the production output to 60,000 tpa, but capacity constrained by remaining reserves.	15,000
Harts Hill	Hoggin	There is no tonnage limit on annual output, although there is a maximum number of HGV's (25 per day, limiting output to circa 140,000 tpa). Reserves of circa 150,000) tonnes remaining (based on operator returns) to be worked by 31st December 2020.	80,000
Total Operational Capacity			**105,000**
Inactive			
Craven Keep	Sharp Sand & Gravel	Inactive, small remaining reserve of 55,000 tonnes, with two years permitted for extraction.	27,500
Moores Farm	Sharp Sand & Gravel	Active inert waste recycling facility, however inactive in terms of mineral extraction. Small remaining reserve of approximately 10,000-15,000 tonnes required to be extracted by 31st December 2023. No limit on production.	12,500
Lower Farm, Wasing[35]	Sharp Sand & Gravel	Extraction of 2.4 mt of sharp sand and gravel at a rate of 200,000 tpa. Extraction yet to commence.	200,000
Total Non-operational Capacity			**237,500**
Total Permitted Capacity			**342,500**

8.1.6 These figures show that current operational capacity in West Berkshire is limited by the amount of remaining available reserves at active sites and suggests that production capacity is a significant factor that could affect the balance of supply to the county. However, when taking into account currently permitted but inactive reserves (for sharp sand and gravel) the production capacity would be sufficient to

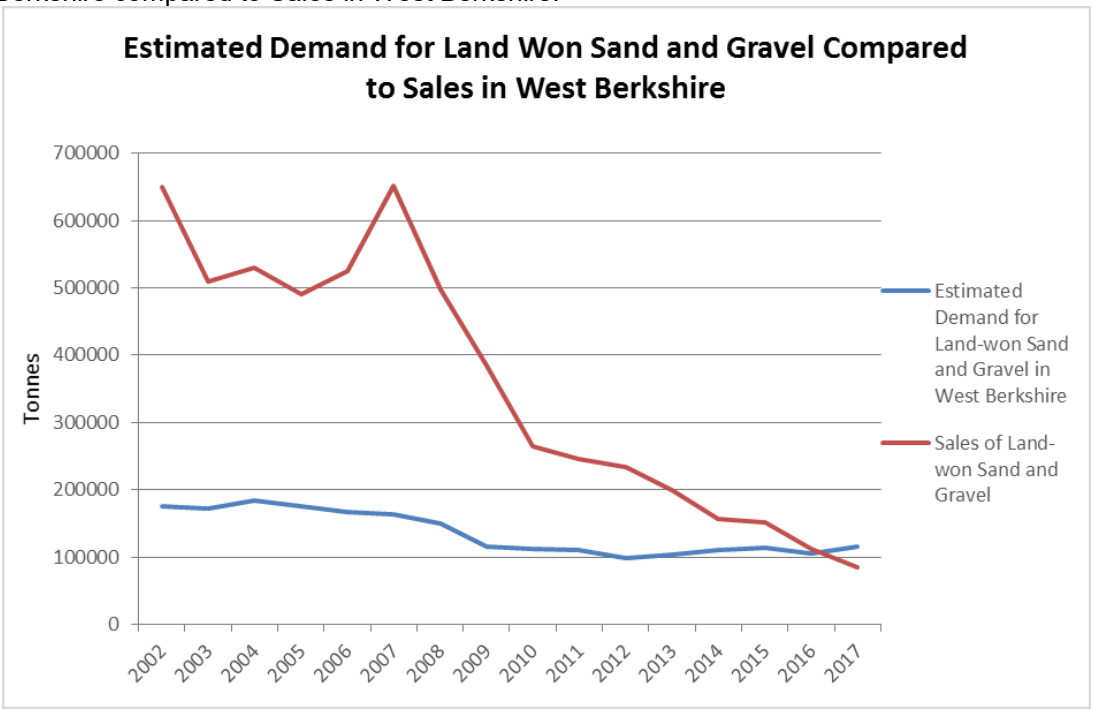
[35] http://publicaccess.westberks.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=M4U2FVRD0EA00

meet the LAA rate for this aggregate. Production of soft sand would still be constrained by remaining permitted reserves.

Estimated Demand Compared to LAA Rate

8.1.7 Perhaps the most obvious way to demonstrate the balance between supply and demand is by comparing demand (consumption) with sales. This has been done for land won sand and gravel from 2002 – 2017 (the most recent year for which data is available) in Figure 8.1.

Figure 8.1 – Estimated Demand for Land-won Sand and Gravel Aggregates in West Berkshire compared to Sales in West Berkshire.



Sources: West Berkshire Council Aggregates Monitoring Survey returns, ONS population data, Annual Mineral Raised Enquiry Surveys (2002 – 2014). MPA Mineral Products Industry at a Glance (2016 – 2018)

8.1.8 Figure 8.1 shows that in West Berkshire, sales of land-won sand and gravel have consistently been above estimated levels of consumption until approximately 2016, when estimated demand was higher than sales within the district. This demonstrates that West Berkshire is likely to have moved position from being a net exporter of sand and gravel historically, to being a net importer in recent years.

8.1.9 This highlights the importance of continuing to develop the MWLP to include the identification of potential sites for future mineral extraction to enable the LAA rates for land won sand and gravel to be realised, as these have been demonstrated as being able to meet anticipated demand.

When New Primary Aggregate Producing Sites are Likely to be Required

8.1.10 To assist in determining when new sites may be required, an estimate has been made of the production levels from current permitted sites year on year, along with the estimated remaining reserves. In doing so, certain assumptions have had to be made about when sites are in production, in order to obtain a view on how reserves will deplete.

8.1.11 In carrying out this approach it is apparent that it will be challenging for West Berkshire to currently meet the chosen LAA rate, unless additional sites come forward, or inactive sites resume/commence production. The results of this analysis are shown in Tables 8.3 and 8.4.

Table 8.3 – Estimated Future Outputs and Reserves – Sharp Sand and Gravel

Year	Total Reserves at Start of Year	Land-bank in Yrs	Total Estimated Production*	LAA Rate	Yearly Reserve Surplus/ Shortfall**	Yearly Production Surplus/ Shortfall
2018			33,177	189,233	1,302,869	-156,056
2019	2,627,500	13.88	90,000	189,233	1,212,869	-99,233
2020	2,537,500	13.41	110,000	189,233	1,102,869	-79,233
2021	2,427,500	12.83	227,500	189,233	875,369	38,267
2022	2,200,000	11.63	200,000	189,233	675,369	10,767
2023	2,000,000	10.57	200,000	189,233	475,369	10,767
2024	1,800,000	9.51	200,000	189,233	275,369	10,767
2025	1,600,000	8.46	200,000	189,233	75,369	10,767
2026	1,400,000	7.40	200,000	189,233	-124,631	10,767
2027	1,200,000	6.34	200,000	189,233	-324,631	10,767
2028	1,000,000	5.28	200,000	189,233	-524,631	10,767
2029	800,000	4.23	200,000	189,233	-724,631	10,767
2030	600,000	3.17	200,000	189,233	-924,631	10,767
2031	400,000	2.11	200,000	189,233	-1,124,631	10,767
2032	200,000	1.06	200,000	189,233	-1,324,631	10,767
2033	0	0	0	189,233	-1,324,631	-189,233
2034	0	0	0	189,233	-1,324,631	-189,233
2035	0	0	0	189,233	-1,324,631	-189,233
2036	0	0	0	189,233	-1,324,631	-189,233

* Actual production figure for the 2018 year. Assumes that from 2019 all inactive sites also commence production.

** Based on maintaining a 7 year landbank

Table 8.4 – Estimated Future Outputs and Reserves – Soft Sand

Year	Total Reserves at Year End	Land-bank in Yrs	Total Estimated Production*	LAA Rate	Yearly Reserve Shortfall**	Yearly Production Shortfall
2018			21,792	43,730	-291,110	-21,938
2019	15,000	0.34	15,000	43,730	-306,110	-28,730
2020	0	0	0	43,730	-306,110	-43,730
2021	0	0	0	43,730	-306,110	-43,730
2022	0	0	0	43,730	-306,110	-43,730
2023	0	0	0	43,730	-306,110	-43,730
2024	0	0	0	43,730	-306,110	-43,730
2025	0	0	0	43,730	-306,110	-43,730
2026	0	0	0	43,730	-306,110	-43,730
2027	0	0	0	43,730	-306,110	-43,730
2028	0	0	0	43,730	-306,110	-43,730

2029	0	0	0	43,730	-306,110	-43,730
2030	0	0	0	43,730	-306,110	-43,730
2031	0	0	0	43,730	-306,110	-43,730
2032	0	0	0	43,730	-306,110	-43,730
2033	0	0	0	43,730	-306,110	-43,730
2034	0	0	0	43,730	-306,110	-43,730
2035	0	0	0	43,730	-306,110	-43,730
2036	0	0	0	43,730	-306,110	-43,730

* Actual production figure for the 2018 year.
** Based on maintaining a 7 year landbank.

8.1.12 These calculations indicate that the current level of permitted reserves of sharp sand and gravel (at the end of 2018/start of 2019) are projected to be sufficient to maintain a 7 year landbank until 2026, however after this date the landbank is likely to fall below the required 7 year level. For soft sand, the landbank is only 0.34 years at the current LAA rate. A further 291,110 tonnes of soft sand would be required to obtain the minimum landbank required.

8.1.13 Tables 8.3 and 8.4 also show that the existing permitted estimated site production levels are such that the level of production from the consented sites in West Berkshire would struggle to achieve the LAA rate. These matters could prove to constrain future development and inhibit the ability for West Berkshire to maintain the same level of demand moving forward unless new sites are permitted or inactive sites become operational.

8.1.14 The future mineral reserve need for the plan period 2018 to 2036[36] based on the LAA rate is outlined in Table 8.5.

Table 8.5 - Aggregate Mineral Requirement in West Berkshire 2018 - 2036

	Sharp Sand and Gravel	Soft Sand	Total
LAA Rate	189,233	43,730	232,964
Total Requirement (2018 – 2036)	3,595,427	830,870	4,426,297
Sales 2018	33,177	21,792	54,969
Permitted Reserves	2,627,500	15,000	2,642,500
Remaining Requirement	**934,750**	**794,078**	**1,728,828**

8.1.15 When the level of already permitted reserves is deducted from the requirement from 2018 to 2036 based on the LAA rate, plus accounting for sales in 2018, there is a need for approximately an additional 1.7 million tonnes of sand and gravel over the plan period (935,000 tonnes of sharp sand and gravel and 794,000 tonnes of soft sand.

8.1.16 It is noted that the Replacement Minerals Local Plan for Berkshire (RMLP) sets out a number of preferred areas, designed to meet the needs of that plan. There remain two sites identified in the adopted RMLP located in West Berkshire estimated to

[36] The plan period may alter over the course of the consultation upon and development of the West Berkshire Minerals and Waste Local Plan but for the purpose of this local aggregate assessment the plan period has been assumed to be to 2036.

contain circa 1,700,000 tonnes of sharp sand and gravel that have not yet been worked, or been the subject of planning applications. There is no certainty over whether these sites will ever be worked (and indeed having been allocated for over 15 years and no application having been forthcoming it seems unlikely). Therefore, the West Berkshire MWLP does not take these reserves into account, and is proposing to provide for the complete requirement identified over the plan period.

8.1.17 In respect of land won primary aggregates, it is apparent that there is a need for new sites to come forward if West Berkshire is to maintain an ongoing steady and adequate supply of primary construction aggregates at the identified requirement rate. Therefore it is considered important to continue to develop the MWLP that will include the identification of potential sites for future extraction.

8.2 Recycled and Secondary Aggregates

8.2.1 The level of recycled aggregates estimated to have been produced, and also consumed, within West Berkshire is understood to have increased over the past decade.

8.2.2 The overall potential operational construction and demolition waste recycling capacity in West Berkshire in 2018, as indicated by industry surveys is some 669,250 tonnes. A large proportion of this capacity remains available for future growth, as the majority of this capacity is for permanent operations. The level of output of recycled aggregates in 2018 was 321,669 tonnes, which is significantly above the estimated level of consumption of recycled aggregates in West Berkshire of 186,575 tonnes (see Appendix A). Therefore, it is estimated that the volume of recycled aggregates produced in West Berkshire is supporting a demand that extends beyond the authority area. The level of construction and demolition recycling capacity of 669,250 tonnes per annum in West Berkshire is such that it is understood that construction and demolition waste is being imported into the authority, where it is processed to create recycled aggregates that are then used in West Berkshire, or exported. This has been confirmed through conversations with operators.

8.2.3 Therefore, there does not appear to be an issue with the balance of supply to deliver the demand for recycled aggregates in West Berkshire.

8.3 Rail Imported Crushed Rock and Marine Sand and Gravel

Rail Depot Capacity

8.3.1 As previously mentioned, from 2016 there were effectively four aggregates depot ‘sites’ operating within West Berkshire, an increase from two such sites prior to this. As such, actual capacity figures are now able to be published, rather than estimates as has been the case previously.

8.3.2 Operator returns for 2018 suggest that the capacity at West Berkshire’s rail depots was in the region of 1,026,500 tonnes (although it is likely to be in excess of this as one of the site capacities is estimated based on the sales figure provided, and one operator recorded sales of 50,000 tonnes above the stated capacity).

8.3.3 When considered against the proposed LAA rates for rail imported crushed rock and marine sand and gravel (822,164 and 110,212 tonnes respectively), the available rail depot capacity (1,026,500 tonnes) suggests that this infrastructure is sufficient to maintain these rates (932,376 tonnes total), and also accommodate some growth in future. However, when considered against 2018 sales (1,011,410 tonnes of crushed rock and marine sand and gravel), the depots appear to be operating close to

capacity (although there is some uncertainty over this capacity as one operator has stated that their capacity is ‘unknown’ so capacity at this site has been estimated based on sales and another operator has recorded sales at 50,000 tonnes above the stated capacity, indicating a greater capacity than estimated). Nevertheless, it will be essential to safeguard this infrastructure in future to ensure current levels of sales are able to be maintained in order to satisfy demand.

9.0 Conclusions

9.1 West Berkshire has seen declining sales of land won sand and gravel won in West Berkshire over the last ten years. In 2018, they accounted for only 4% of all aggregate sales in the district. There are no local considerations which indicate that the demand for sand and gravel in West Berkshire will increase significantly in the near future, or over the projected plan period. However, the number of active sites and remaining reserves in these sites has decreased in West Berkshire over recent years, and as a result the 10 year average of sales is no longer considered sufficient to plan for a steady and adequate supply of sand and gravel as required by the NPPF. **Therefore it is considered that that the previous 2018 LAA rates should remain in place for 2019 (189,233 tpa for sharp sand and gravel and 43,730 tpa for soft sand). This situation will need to be monitored in future to determine whether these rates remain appropriate, particularly if additional sites become operational and levels of sales again increase.**

9.2 This LAA concludes that, **at the end of 2018, West Berkshire had a landbank of 13.8 years for sharp sand and gravel and 0.34 years for soft sand.** This indicates severe supply issues for soft sand. It is expected that the landbank for sharp sand and gravel will remain above 7 years until approximately 2026. New minerals sites should therefore be sought to ensure that an adequate and steady supply of primary construction aggregates is available. This is being progressed strategically via the emerging West Berkshire Minerals and Waste Local Plan which will identify sites for mineral extraction. Speculative planning applications for new sites or extensions could also be received in the short term. If sales remain lower than the LAA rate for an extended period of time (as indicated by the 3 year average of sales), then the reserves will inevitably last for a greater period of time.

9.3 Based on the LAA rates in this LAA, **additional mineral reserve need for the plan period to 2036 has been estimated at approximately 935,000 tonnes for sharp sand and gravel and 794,000 tonnes for soft sand**.

9.4 Recycled aggregates sales in 2018 were 321,699 tonnes, which accounted for 23% of total aggregate sales in West Berkshire. It is considered that the most appropriate way to meet increasing demand for recycled aggregates, and encourage their supply in line with sustainability objectives, is to ensure adequate provision is made to meet recent levels of sales (3 year average). **This equates to a level of need for recycled aggregates of 337,020 tonnes per annum. The current operational capacity to produce recycled aggregates in West Berkshire is 669,250 tonnes per annum.** This indicates that there are no capacity issues that would hinder the ability to meet demand.

9.5 With regard to rail based imports it is clear that the volume of primary aggregates imported into West Berkshire by rail is significant, and estimated to account for just over 70% of the total aggregates sales in 2018. Sales of crushed rock from West Berkshire rail depots in 2018 was 901,198 tonnes, and sales of marine sand and gravel are estimated at 110,212 tonnes. Sales of these aggregates have been increasing since 2009. **The LAA rates for these aggregates are based on the past 3 year average of sales and equate to 822,164 tpa for crushed rock and 110,212 tpa for marine sand and gravel. Sales of both aggregates in 2018 were 1,011,410 tonnes.** The capacity at West Berkshire's rail depots in 2018 was in the region of 1,026,500 tonnes which **indicates that the depots appear to be operating close to capacity when considered against 2018 sales. Therefore, it will be essential to safeguard this infrastructure in future to ensure current levels of sales are able to be maintained in order to satisfy demand.**

10.0 Consultation

10.1 The production of an LAA is a requirement set out by the NPPF and its content is guided by the NPPF and National Planning Practice Guidance (NPPG). The NPPF requires that West Berkshire has regard to the views of the South East Aggregate Working Party (SEEAWP) in the production of the LAA, and SEEAWP will therefore be consulted on the draft document.

10.2 In addition, the South West Aggregates Working Party, the London Aggregates Working Party and the following bodies will also be consulted on the draft LAA, either because they are neighbouring authorities, or it is considered that there is a specific flow of aggregates between West Berkshire and their respective areas:

Reading Borough Council
Slough Borough Council
Bracknell Forest Council
Royal Borough of Windsor and Maidenhead
Wokingham Borough Council
Wiltshire Council
Oxfordshire County Council
Hampshire County Council
Buckinghamshire County Council
Surrey County Council
Gloucestershire County Council
Somerset County Council
Hertfordshire County Council
Leicestershire County Council
Shropshire Council
North Somerset Council
South Gloucestershire Council
Rhondda, Cynon Taff County Borough Council
Powys County Council

10.3 The results of this consultation are set out below along with any changes undertaken as a consequence of the consultation process outlines in *italics.*

10.4 Gloucestershire County Council notes that there were movements of sand and gravel and crushed rock from Gloucestershire into West Berkshire during 2014 and can confirm that the ranges quoted within the document are consistent with the Gloucestershire Local Aggregates Assessment. *No changes required as a result of this feedback.*

10.5 The Joint Central and Eastern Berkshire Authorities acknowledge the linkages between West Berkshire and Central and Eastern Berkshire within the LAA. In addition, a soft sand study was undertaken earlier this year to identify where soft sand is supplied from to Central and Eastern Berkshire, as there are no deposits within the plan area. This confirmed that historically, soft sand was supplied from West Berkshire into the plan area. It is acknowledged that there are currently no active sites in West Berkshire and due to the constraints this is likely to be the case in the future. However, any new provision could likely lead to cross boundary movements into Central and Eastern Berkshire due to a lack of suitable resources in the area. Possible typo in 3.1.4 – 'Kenner River Valley'. *Typo corrected to Kennet River Valley. Comments noted, but no changes to LAA required as a result of this feedback.*

Appendix A: Estimate of West Berkshire Primary, Recycled & Total Aggregate Consumption 2006 - 2017

Year	Primary Aggregate Sales in Great Britain (Sand and Gravel and Crushed Rock)	Great Britain Population	Great Britain Primary Aggregate Consumption per head (t)	West Berkshire Population	Est. West Berkshire Estimated Primary Aggregate Consumption	Estimated Recycling Percentage for Great Britain[37]	Estimated Recycled Aggregate Consumption (t)	Est. Total Primary and Recycled Aggregate Consumption for West Berkshire (t)
2006	207,137,000	59,083,854	3.51	149,153	522,903	25%	174,301	697,204
2007	208,078,000	59,557,392	3.49	150,086	524,361	25%	174,787	699,148
2008	187,256,000	60,044,620	3.12	151,020	470,973	27%	174,196	645,169
2009	146,812,000	60,467,153	2.43	151,954	368,939	28%	143,476	512,415
2010	136,639,000	60,954,623	2.24	152,888	342,722	28%	133,281	476,002
2011	145,943,000	61,470,827	2.37	153,822	365,202	29%	149,167	514,368
2012	132,930,000	61,881,396	2.15	154,486	331,858	29%	135,548	467,405
2013	134,358,000	62,275,929	2.16	155,394	335,257	28%	130,378	465,634
2014	154,552,000	62,756,254	2.46	155,732	383,527	29%	156,652	540,178
2015	169,969,000	63,258,413	2.69	157,460	423,079	29%	172,807	595,886
2016	176,851,000	63,785,917	2.77	158,576	439,663	29%	179,581	619,244
2017	176,280,000	64,169,395	2.75	158,473	435,342	30%	186,575	621,917

Source: AMRI Surveys 2002 – 2014, BGS Minerals Yearbook 2018, ONS (population data)

[37] Average difference between total aggregates and recycled aggregate for Great Britain, Market summary 1955 to 2012, MPA 2013 (email dated 16th August 2013).
MPA Sustainable Development Reports: https://mineralproducts.org/sustainability/reports.html

Appendix B: Estimate of West Berkshire Recycled Construction, Demolition and Excavation Waste 2013 - 2017

Table Modified Defra (2012) Methodology for Estimating CDE Waste Arising in West Berkshire 2013 – 2017

	2013	2014	2015	2016	2017	Notes
Waste dealt with by transfer & treatment facilities:	**28,498**	**24,804**	**28,673**	**50,083**	**27,029**	
Transfer	16,653	17,816	16,264	31,065	11,200	Only included input to transfer sites outside of West Berks, because the onward movement of waste from these facilities will no longer record West Berkshire as the origin. Waste to transfer facilities within West Berks will be covered by final disposal/treatment in other steps. Source: WDI
Treatment	3,782	2,100	3,926	10,143	5,217	Only included sites outside of West Berks, as waste recycled as product (aggregates, soil) within West Berks included in Step 4. Source: WDI
MRS	2,399	2,817	1,702	1,283	1,040	Source: WDI
CDE waste recoded as Ch. 19 12 12 at transfer facilities and disposed.	5,664	2,071	6,781	7,592	9,572	Included transfer facilities within plan area to account for waste that is received as Ch. 17 and recoded as 19 12 12. This was done by applying the proportion of CDE waste from West Berkshire at transfer sites within West Berks managing Ch. 17 waste and producing Ch. 19 waste to the total 19 12 12 output. Source: WDI
Waste deposited to	**149,435**	**103,672**	**162,916**	**174,396**	**168,966**	

land:						
Landfill	83,652	101,341	51,897	78,373	87,019	Source: WDI
On/In land	65,783	2,331	111,019	96,023	81,947	Includes waste managed at formerly exempt sites. Source: WDI
Waste dealt with under Exemptions	21,200	21,200	21,200	21,200	21,200	The most common exemption dealing with CDE waste is a 'U1' exemption which allows use of waste to be used in construction without requiring a permit. A report produced for WRAP[38] estimated the mean value for U1 exemptions is 600t. The nature of these exemptions is that they are generally only used once, i.e. as a one-off exercise. The number of U1 exemptions in West Berkshire was obtained from the Environment Agency's Register of Waste Exemptions.[39] Each registration lasts for 3 years, and so the total number of exemptions registered in the last 3 years was calculated (106) and multiplied by 600. This was then divided by three to give an approximate annual estimate, giving the figure shown.
Waste recycled as aggregate	149,247	156,454	152,533	179,935	167,248	Estimated from aggregates monitoring survey (including that recycled for non-aggregate use, e.g. construction fill) by multiplying total recycled product with estimated percentage originating in West Berkshire). Source: SEEAWP Aggregate Monitoring Surveys/Authority Annual Waste Surveys.
TOTAL (tonnes)	**348,380**	**306,130**	**365,322**	**425,614**	**384,443**	

[38] WRAP, (2013). *Review of the factors causing waste soil to be sent to landfill, 2007 to 2011.* [online] Available at: http://www.wrap.org.uk/sites/files/wrap/CIS101-301%20Final%20Report%20final%2017%20april%2013.pdf [Accessed 05 Feb 2019].
[39] Environment Agency, (n.d.a.). *Register of Waste Exemptions.* [online] Available at: https://environment.data.gov.uk/public-register/view/search-waste-exemptions [Accessed 05 Feb 2019].

Appendix C: Soft Sand Consumption Estimates

These methods outline alternative approaches to estimating the level of consumption of soft sand within West Berkshire.

Method 1: Projected Housing and Other Construction Demand – Estimate from Construction Materials

In terms of future demand for housing in West Berkshire, the latest AMR suggests that there is a need to deliver an additional 525 dwellings per annum to meet the target of at least 10,500 homes in West Berkshire over the 20 year plan period (to 2026) set out in the adopted Core Strategy.

The West Berkshire Council AMR 2017 confirms that the average number of bedrooms per household in West Berkshire is 3 (based on 2011 census data). The West Berkshire Council AMR 2013 confirmed that the majority of dwellings in West Berkshire built in 2012/13 were 4 or more bed houses (table 4.23). However this table in the AMR also confirms that around 80% of all properties completed in 2012/13 were smaller than 3 bed houses, being 2 and 1 bed houses and 2 and 1 bed flats.

As such it has to be recognised that there are a significant number of semi-detached properties, terraced properties and flats, all of which would use less mortar by virtue of a reduction in exterior walls and a significant number of houses that have less than 3 bedrooms. Therefore the use of a 3 bed detached property is considered by the Authority to be a robust approach that is more likely to over-estimate the demand for building sand based on housing completions.

Using an online construction material calculator[40] the has Council calculated that volume of building sand required to construct a 3 bed detached house with walls 8.6 by 5.6 by 5.8 is 15 tonnes.

However it is accepted that not all housing constructed will have the same level of need for building sand with some properties requiring more building sand and some requiring less. In addition some builders use the “industry standard” of 4 parts building sand to 1 part cement to produce mortar, others use a ratio of 5:1 (this worse case approach has been used to derive the 15 tonnes figure). It is also accepted that there will be an element of wastage and adjustments conversions of net volumes to gross volumes.

The Council considers that a figure of 15 tonnes of building sand for the construction of an “average house” is a suitably robust and likely to be a more generous figure than the actual average volume required to construct a new dwelling.

Using the figure of 15 tonnes of building sand required per dwelling this equates to a need for around 7,875 tonnes of building sand per year to achieve the requirements of the adopted West Berkshire Core Strategy (using the 525 dwellings per annum target).

West Berkshire Council is in the process of reviewing the Local Plan, which will assess and seek to meet the housing and employment needs of the authority to 2036. Work on the plan is underway and it is likely it will result in a need to enhance the planned provision for housing (the Local Housing Need figure, based on the 2014 – based household projections, gives West Berkshire a LHN of 551 dwellings per year. If the figure of 551 new dwellings per

[40] https://source4me.co.uk/calculate_brick_mortar.htm

year is used this would equate to a demand for around 8,265 tonnes of building sand per year to achieve these requirements.

The Council recognises that new housing is only one element of demand for construction aggregates. Other demand from non-housing development such as infrastructure and industrial and commercial buildings and repair and maintenance of existing infrastructure places a demand on aggregates. The ONS Output in the Construction Industry dataset[41] shows that on average over the period 2008 – 2018, housing accounted for 26% of the value of construction output in Great Britain and other non-housing development accounted for 74% of the value of construction output (these figures include repair and maintenance). Using this to estimate the demand for soft sand from non-housing development amounts to 22,413 tonnes at 525 dwellings per year, and 23,523 tonnes at 551 dwellings per year.

In total, this would equate to demand for between **30,288 tonnes** (at 525 dwellings per year) and **31,788 tonnes** (at 551 dwellings) of soft sand in the district.

Method 2: Projected Housing and Other Construction Demand - Estimate from UK Soft Sand Demand

The Minerals yearbook published by BGS (2015 Edition) confirms that in 2014[42] the UK produced 171,400,000 tonnes of aggregates (see Aggregates table on page 14) and it goes on to confirm at page 62 that 6,960,000 tonnes of building sand was consumed in the UK in 2014). This equates to around 4%, as such it could be broadly stated that it is therefore reasonable to assume that of all aggregates required in the UK around 4% is building sand. No further updated information is available.

As discussed the most up to date evidence for housing demand in West Berkshire suggests there is a need to deliver 551 homes per year to meet future demand. Using a generic figure of 55 tonnes of aggregates required per dwelling (midway between the 50 - 60 tonnes quoted by BGS and the MPA) this would equate to 30,305 tonnes of aggregates per year needed to deliver this level of new housing.

Using 30,305 tonnes of aggregates per year for new housing to calculate demand for aggregates from non-housing construction, (74% of total value of construction output as detailed in Method 1), would amount to 86,253 tonnes. In total this would equate to demand for 116,558 tonnes of aggregates in the district.

Using the estimates of total aggregate consumption in West Berkshire based on a proportion of Great Britain aggregate consumption as outlined in Appendix A, this equates to a demand of 435,342 tonnes of aggregates in 2017.

As detailed above, it is estimated that approximately 4% of all aggregates used is building sand and as such the demand for soft sand for West Berkshire using this calculation method would equate to between **4,662 – 17,414 tonnes** per annum.

Method 3: Using Population to Calculate Demand

Another way to calculate demand is to use population as a proxy to demand. Based on the fact that the population of West Berkshire is circa 0.249% of the population of Great Britain in 2014, then if this percentage (rounded up to 0.25%) is applied to the total building sand

[41] https://www.ons.gov.uk/businessindustryandtrade/constructionindustry/datasets/outputintheconstructionindustry
[42] https://www.bgs.ac.uk/mineralsuk/search/downloadSearch.cfc?method=viewDownloadsByCategory&panelNumber=4

(including both building sand for construction and asphalting) sales in Great Britain in 2014 (6,960,000) then this would equate to a demand for **17,400 tonnes** per annum.

If this calculation is revisited to remove the building sand used in asphalting (1,170,000 tonnes) then this suggests that the level of demand at the UK level for building sand of the type found in West Berkshire, would be in the region of 5,912,800 tonnes. Taking the approach that the population of West Berkshire is 0.25% of the total population of the UK suggests that the level of demand for Soft Sand in West Berkshire is **14,475 tonnes**.

Glossary

Term	Definition
AMR	Authority Monitoring Report
Alternative Aggregates	A grouping of Secondary and recycled aggregates
AONB	Area of Outstanding Natural Beauty
AWP	Aggregate Working Party
BGS	British Geological Survey
C&D	Construction and Demolition waste
CDEW	Construction, Demolition and Excavation waste
DCLG	Department of Communities and Local Government
DEFRA	Department of Environment, Food and Rural Affairs
EA	Environment Agency
Land won Aggregates	Primary construction aggregates won from land (quarried)
LAA	Local Aggregate Assessment
LAA 2013	LAA covering the 10 year period ending in 2012 (published in 2013)
LAA 2014	LAA covering the 10 year period ending in 2013 (published in 2014)
Marine Aggregates	Primary construction aggregates won from the sea (dredged)
MASS	Managed Aggregate Supply System
MPA	Mineral Planning Authority
Mt	Million tonnes
Mtpa	Million tonnes per annum
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance Website
NWDAONB	North Wessex Downs AONB
ONS	Office of National Statistics
Recycled Aggregates	Aggregate materials recovered from construction and demolition processes and from excavation waste on construction sites.
RMLP	Replacement Minerals Local Plan for Berkshire
Secondary Aggregates	Aggregates derived as a by-product of other quarrying and mining operations, including colliery spoil, china clay waste, slate waste; power station ashes, incinerator ashes and similar products.
S&G	Sand and Gravel
SEEAWP	South East England Aggregate Working Party
SWAWP	South West Aggregate Working Party
SEERA	South East England Regional Assembly
SEP	South East Plan
SSSI	Site of Special Scientific Interest
Tpa	Tonnes per annum
UA's	Unitary Authorities
WBMWLP	Emerging West Berkshire Minerals and Waste Local Plan
WDI / EA WDI	Waste Data Interrogator / Environment Agency Waste Data Interrogator.