

Joint West Sussex Minerals Local Plan

Assessment of Need for Aggregates:

Local Aggregate Assessment

March 2015



Working in Partnership



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Executive Summary

The National Planning Policy Framework (NPPF) requires Mineral Planning Authorities (MPA) to prepare an annual Local Aggregates Assessment (LAA) which is an evidence base document that sets out the potential demand and assessment of potential supply of aggregates within their area. A joint LAA is being prepared by West Sussex County Council (WSCC) and the South Downs National Park Authority (SDNPA) which will provide evidence for the Joint West Sussex Minerals Local Plan, which is currently being prepared.

Chapter 1: Introduction

This chapter explains the background to the Managed Aggregate Supply System (MASS) and the requirement for Mineral Planning Authorities to undertake LAA. It explains how the LAA will inform the preparation of the West Sussex Minerals Local Plan which is being prepared jointly by WSCC and the SDNPA and the consultation arrangements for the LAA.

Chapter 2: Aggregates in West Sussex

This chapter sets out the demand for, and supply of, aggregates in West Sussex from each different source in turn, the headline facts and figures are set out below:

Land won Sand and Gravel:

- Sales data available indicates sales have fallen by 70% between 2004 and 2013, plateauing since 2009;
- The ten year average sales figure between 2004 and 2013 is currently 439,569 tonnes;
- At the end of 2013/14, the total permitted reserve of land-won sand and gravel was 3,759,400 tonnes;
- The average split between soft sand and sharp sand and gravel over the past 10 years is 92:8;
- There is a total requirement of 7,472,673 tonnes over the plan period and a shortfall of 3,713,273 tonnes to be planned for through the MLP;
- Of total consumption of land won sand and gravel in West Sussex only 53,141 (10%) tonnes were imported;
- In total, 626,105 tonnes of sand and gravel (land-won and marine-won) were exported from West Sussex to other counties.

Secondary and Recycled Aggregates:

- Sales data available suggests that sales of recycled aggregates have been relatively stable since 2004, peaking at 630,00 tonnes in 2010 and may have fallen to 442,000 tonnes in the last three years;
- The average sales of recycled aggregate over the last 10 years is 534,000 tonnes.

Marine Won Sand and Gravel:

- 9.7 million tonnes (mt) of material is permitted for extraction per annum from licences within the 'South Coast Region' with additional permitted capacity of 6.3 mt per annum;

- Marine dredged landings to West Sussex over the last 10 years has been relatively stable with the exception of 2011 when landings increased by 37%;
- In 2013, 1.03mt of marine dredged aggregate was landed at wharves within Shoreham Harbour Port (Crown Estate data);
- According to the West Sussex Wharves and Railheads Study, within West Sussex, there is 1.88mt of potential import capacity at existing operational wharves for aggregates (marine dredged and land won aggregates by sea) compared with 1.68mt landed in 2013;
- Railheads in West Sussex have 1.38mt of potential capacity compared with 814,401 tonnes imported in 2013.

Hard (crushed) rock

- Marine dredged landings ceased in Littlehampton in 2005, although crushed rock continues to be landed for use at the coated road stone plant;
- 367,000 tonnes of crushed rock were imported to West Sussex. This comprised 75% of total crushed rock consumption (485,000 tonnes);
- West Sussex produced a small amount of crushed rock (chalk and sandstone) which was used for aggregate from a small number of building stone quarries (2009 Regional Aggregates Monitoring Survey);
- West Sussex is therefore a net importer of crushed rock.

Chapter 3: Total Aggregate Supply

This chapter summarises the supply of aggregates from the different sources and allows for comparison of the different supply options.

Chapter 4: Balance of aggregate supply, demand, opportunities and constraints.

This section provides an assessment of the balance between supply and demand, and the economic and environmental opportunities and constraints that might influence the situation.

Chapter 5: Conclusion

This chapter confirms that provision for aggregates, in line with the ten years sales figures, will be explored as part of the emerging West Sussex Minerals Local Plan. Monitoring of the figures, trends and sites set out within the LAA will be carried out as part of the Annual Monitoring Report.

1.0. Introduction

1.1. The Managed Aggregate Supply System

1.1.1. Aggregates are used for the construction of homes, commercial development and infrastructure. It is therefore important that nationally there is an adequate and steady supply to contribute to economic development and quality of life. The Managed Aggregate Supply System (MASS) has been the mechanism to ensure there has been an adequate supply of aggregates (sand, gravel and crushed rock) for over 35 years.

1.1.2. The MASS system was developed due to the geographical imbalance of aggregates and the need for Mineral Planning Authorities (MPAs) to make a contribution to the national need for aggregates as well as local supply. The MASS system has been reformed to deliver more decentralised power to MPAs following a more 'localist' approach. MPAs are now required to prepare a Local Aggregate Assessments (LAA) to assess the demand and supply of aggregates on an annual basis. LAA can be prepared jointly by more than one authority.

1.2. What is a Local Aggregate Assessment

1.2.1. The requirement for MPAs to prepare a LAA is set out in National Planning Policy Framework (NPPF) and National Planning Practice Guidance (NPPG). Paragraph 62 of the NPPG states that LAA should cover:

- A forecast of the demand for aggregates based on both the rolling average 10-year sales data and other relevant local information;
- An analysis of all aggregate supply options, as indicated by landbanks, mineral plan allocations and capacity data e.g. marine licences for marine aggregate extraction, recycled aggregates and the potential throughput from wharves;
- An assessment of the balance between demand and supply, and the economic and environmental opportunities and constraints that might influence the situation. It should conclude if there is a shortage or surplus of supply and, if the former, how this is being addressed.

1.3. West Sussex Minerals Local Plan

- 1.3.1. The West Sussex Minerals Local Plan was adopted in 2003. The Minerals Local Plan is now significantly out of date, and any evidence that it was based on is even more out of date. A new Plan is therefore required to take account of new government minerals planning policies (included in the NPPF), the establishment of the South Downs National Park Authority (in 2011) and other material changes in relation to the demand and supply of minerals in West Sussex.
- 1.3.2. West Sussex County Council and the South Downs National Park Authority have agreed to jointly prepare a Minerals Local Plan (MLP) – ‘the Plan’, which will cover the period to 2031. This will include: a vision; strategic objectives; a suite of strategic policies; strategic sites and development management policies.
- 1.3.3. This LAA is required to inform the preparation of the Plan by setting out a forecast of the unconstrained need for aggregates over the Plan period and indicating what other local issues are likely to influence the future ability of West Sussex to meet the future need. It will form part of the evidence base to support the Plan and will be included within the Annual Monitoring Report (AMR) to ensure that it is kept under review. Consultation on the draft MLP is not expected to take place until 2015. The LAA is updated on an annual basis.
- 1.3.4. The findings of the LAA will be considered alongside other evidence as the MLP is developed, in order to determine (through the Plan process) whether the need identified within the LAA can or cannot be met. Whilst the LAA ‘flags up’ potential constraints, the Plan making process will fully explore the constraints around individual sites and the level of mineral ‘need’ that can be met.

1.4. National and Regional Context

- 1.4.1. As well as preparing LAA, MPAs, including National Park Authorities, should plan for a steady and adequate supply of aggregates by participating in, and taking the advice of, the Aggregate Working Party (AWP). MPAs should also take account of the published National and Sub-National Guidelines on future provision of aggregates which should be used as a guideline when planning for the future demand for and supply of aggregates. As part of the sand and gravel resources are situated within the South Downs National Park, regard also needs to had to national policy on major development in National Parks (paragraph 116 of the NPPF). This requires a stringent assessment of major developments within these protected landscapes.
- 1.4.2. As part of MASS, the amount of land-won aggregates to be provided by each region was set out in the “National and Regional Guidelines for Aggregates

Provision in England 2005-2020" (June 2009). MPAs may decide, collectively, to plan for more or less than set out in the Guidelines based on their LAA but this must be supported by robust evidence and be properly justified, having regard to the local and national need.

- 1.4.3. The data used in this LAA is from the annual monitoring of aggregate sales in West Sussex on behalf of the South East England Aggregate Working Party (SEEAWP). The most recent survey was carried out in 2013.

1.5. Consultation Arrangements

In accordance with the NPPF and NPPG, this LAA has been subject to consultation with SEEAWP. It was also sent to the South West England Aggregate Working Party (SWEAWP); counties that receive or provide aggregates to West Sussex, the Coast to Capital Local Economic Partnership, the Local Nature Partnership and Natural England.

- 1.5.1. The consultation took place between 6 January 2015 and 23 February 2015. Comments received have been used to amend the LAA where necessary and possible.

2.0. Aggregates in West Sussex

- 2.0.1. West Sussex has the capability of supplying aggregates from a number of sources including:
- Extracting sand and gravel from the land (land-won)
 - Recycled and secondary aggregate;
 - Imported aggregate; and
 - Dredged sand and gravel from the sea bed (marine-won)
- 2.0.2. When planning for a steady and adequate supply of minerals, Mineral Planning Authorities have to consider all supply options (as set out above) when considering total aggregate supply and demand.
- 2.0.3. This LAA considers each supply option separately and then brings this together to consider the total aggregate supply picture. It then assesses the future balance between supply and demand – including the economic and environmental opportunities and constraints that might influence the situation.

2.1. Land-won sand and gravel

Geology and landscape

- 2.1.1. In broad terms, the county has a sequence of broad geological zones from the south to the north-east of the County; see **Map A1 in Appendix A**.
- 2.1.2. Sand is won from the Sandgate Formation and the Folkestone Formation which is worked in a number of locations in West Sussex. The variable grain size and low clay content mean that little or no processing is required to produce high quality construction sands or is used in the production of concrete. Gravel, of varying quality, and some sharp sand, is found to the south of the Downs in the south-east of the County.
- 2.1.3. Coarser, silty gravels lie over the chalk to the north of a line approximating to the route of the A27 and have been exploited in dry workings. Overlying the clay to the south, cleaner, better-sorted gravels have been exploited through wet working as evidenced by lakes around the eastern and southern fringes of Chichester. Gravel resources are clustered around Chichester and south of the Downs from the Funtington area in the west to Slindon in the east. The sharp sand and gravel deposits are primarily used to make concrete, concrete products or cement.
- 2.1.4. Minerals can only be worked where they occur and their extraction can potentially cause conflict through loss or changes to valued landscapes. The SDNP covers almost half the Folkestone Beds, and part of the gravel resource north of Chichester. The Chichester Harbour AONB designation includes a partial amount of

unconsolidated gravel. The extent of these landscape designations is shown in **Map A3, Appendix A.**

- 2.1.5. Much of the soft sand outside the SDNP has been worked or is currently being worked. The majority of remaining land-won soft sand resources therefore lie within the SDNP. Stakeholder engagement carried out in 2008/09 provided some information about the quality of sand and gravel resources outside the National Park. One operator advised that after some limited investigation (drilling boreholes etc.) of unconsolidated sand deposits, anything east of Steyning was found to be finer and dirtier deposits which may make extraction uneconomic on any significant scale and in the Storrington area, it was also noted that a lot of land is owned by the National Trust. This evidence is being re-examined, and new evidence sought as part of the development of the Joint Minerals Local Plan in order to fully explore the alternatives to soft sand from within the SDNP, having regard to the technical data and the protection from major development that the SDNP has under national planning policy.
- 2.1.6. With regard to gravel deposits, operators commented that it becomes much thinner to the south east and therefore uneconomic to work. At the western end of the deposit it was felt that any deposit south of the A27 would also be uneconomic.

Uses of land-won sand and gravel

- 2.1.7. Soft sand from the Sandgate Formation and the Folkstone Formation is worked in a number of locations in West Sussex. The variable grain size and low clay content mean that little or no processing is required to produce high quality building sands for mortar. Gravel of varying quality and some sharp sand is used concrete products for other construction purposes.

Past to current demand for land-won sand and gravel (sales)

- 2.1.8. Looking at past sales figures for land-won sand and gravel provides an indication of the contribution that this source of supply has made to the overall supply picture in West Sussex.
- 2.1.9. The ten years of land-won sales data is presented in Table 1 and Figure 1. This shows that sales have fallen from 784,000 tonnes to 276,692 tonnes (65%) over the ten year period since 2004 and have plateaued since 2009. The average sales figure over the 10 year period is 439,569 tonnes and for the past three years, sales have averaged at a much lower 281,564 tonnes. Notably, the average sales figure (439,569 tonnes) and sales since 2004 have been significantly lower than the apportionment for West Sussex that was set out in the South East Plan (910,000tpa). This is notwithstanding that at that time there was a high level of building going ahead despite the current relative downturn in the building infrastructure market. It is not possible to provide the split between soft sand and

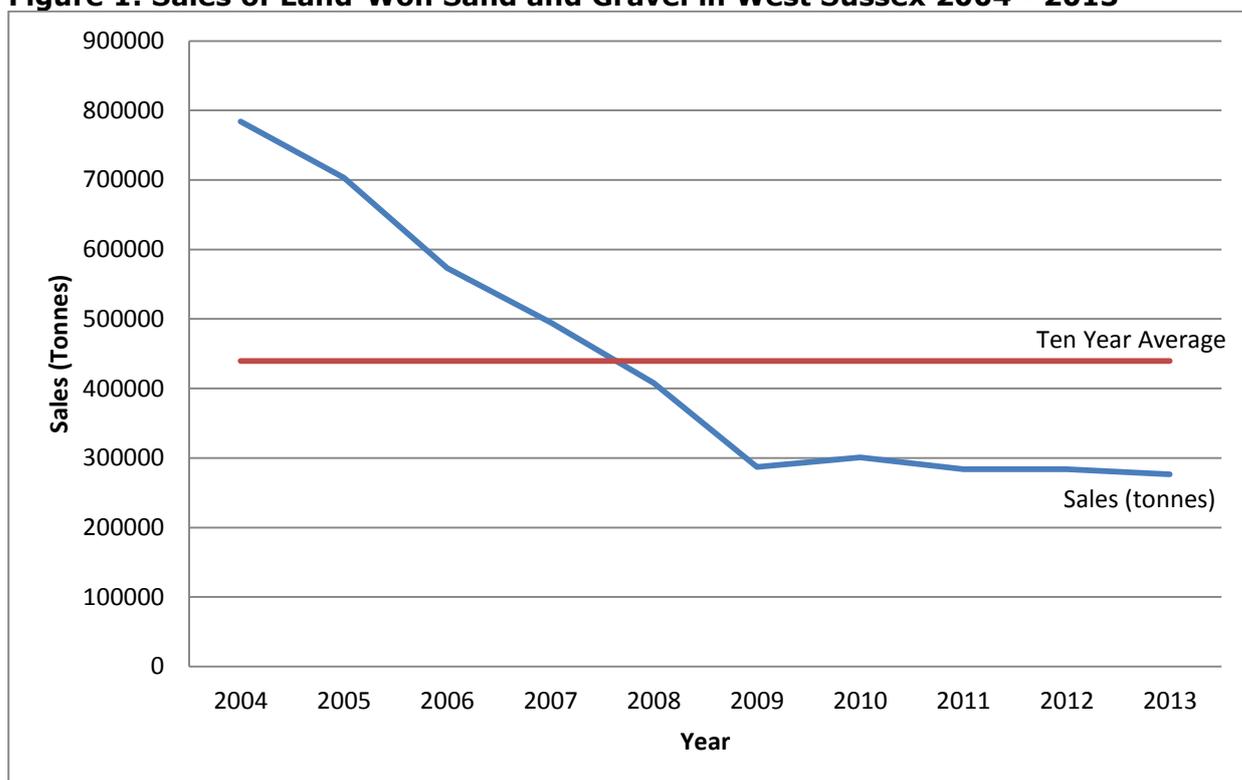
sharp sand and gravel for the year 2013/14 due to the operators advising there are confidentiality reasons, but the average split over the past 10 years is 92:8 (Soft Sand to Sharp Sand and Gravel).

- 2.1.10. The general pattern of decline in sales could be attributed to an increase in the supply of alternatives (secondary/recycled and marine dredged) replacing the need for primary aggregates and/or a reduction in development levels due to the economic downturn. Gross dwelling completions within West Sussex fell from 3,140 in 2007/08 down to 2,400 in 2012/13 (a 24% reduction) and there was a 32% drop in sand and gravel sales over the same period. However it should be noted that the figure was falling before the drop in gross housing completions began in 2008/09.

Table 1: Sales of Land Won Sand and Gravel in West Sussex 2004 – 2013

Year	Sales (tonnes)***
2004	784,000*
2005	703,000**
2006	573,000**
2007	495,000**
2008	408,000**
2009	287,000**
2010	301,000**
2011	284,000**
2012	284,000**
2013	276,692**
3 Year Average	281,564
10 Year Average	439,569
* Estimates based on past rates amended, as necessary, by information from site visits.	
** Estimates based on operator returns, supplemented where necessary by estimates based on past rates and information from site visits.	
*** The figures for soft sand and sharp sand and gravel have been amalgamated due to reasons of confidentiality.	

Figure 1: Sales of Land-Won Sand and Gravel in West Sussex 2004 - 2013



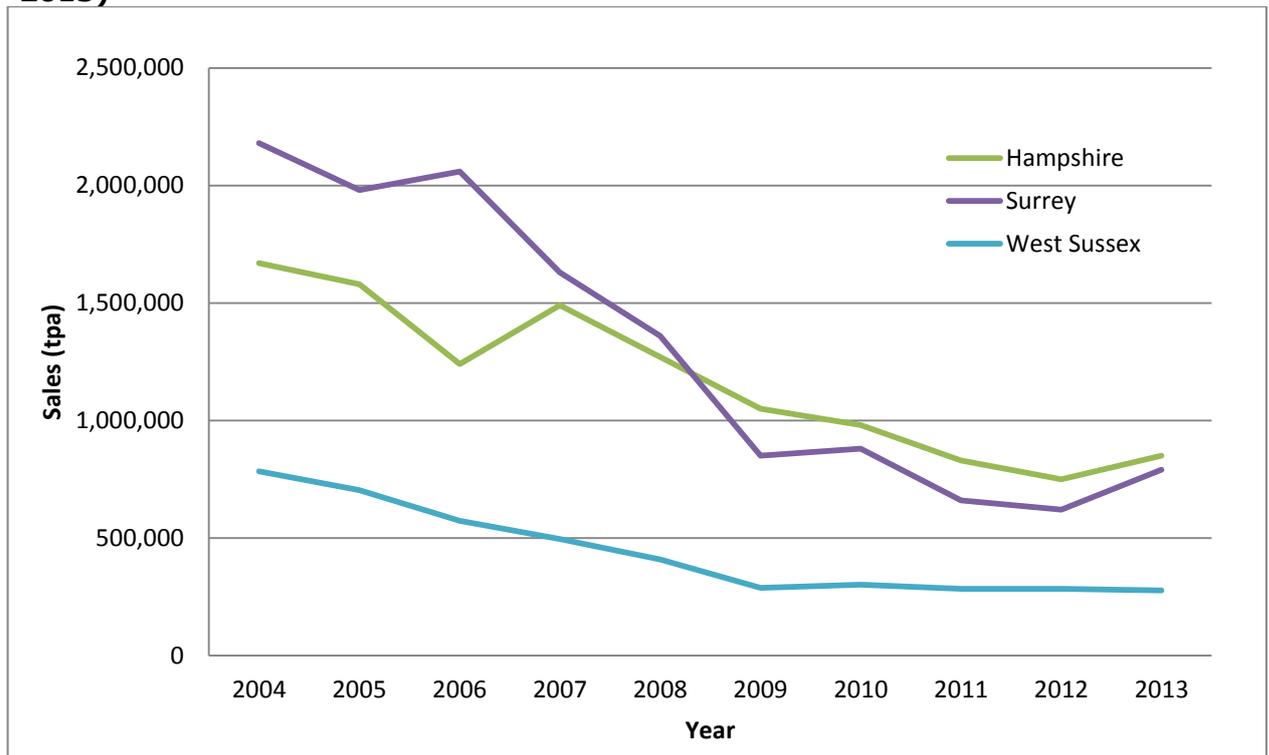
2.1.11. The fall in land won aggregate sales is replicated in neighbouring authorities, with Hampshire and Surrey also showing a downward trend in sales (Table 2 and Figure 2) and sales for the South East region as a whole which fell by 48% (10,405,000 tonnes to 5,399,000 tonnes) between 2004 and 2013¹ which covers the period before and after the economic downturn and therefore indicates that the link between sales and economic growth may not be clear cut. With regard to East Sussex, due to the number of sites, there are zero returns for over half of the 10 year period and the rest of the figures are confidential, therefore no figures are reported.

Table 2: Sales of Land-Won Sand and Gravel in Adjoining Authorities (2004 – 2013)

Year	Hampshire	Surrey
2004	1,670,000	2,180,000
2005	1,580,000	1,980,000
2006	1,240,000	2,060,000
2007	1,490,000	1,630,000
2008	1,270,000	1,360,000
2009	1,050,000	850,000
2010	980,000	880,000
2011	830,000	660,000
2012	750,000	620,000
2013	850,000	790,000
Ten Year Average	1,171,000	1,301,000
Three year Average	810,000	690,000

¹ SEAWP (2013) South East Aggregates Monitoring Report 2013.

Figure 2: Sales of Land-Won Sand and Gravel in Adjoining Authorities (2004 – 2013)



Current supply of land-won sand and gravel

2.1.12. The current supply of land-won aggregate in West Sussex comprises 7 sites, all of which were operating before the designation of the South Downs National Park which now forms part of the plan area. These are presented in Table 3 below and shown in **Map A2, Appendix A**. In 2013/14, the total permitted reserve of land won sand and gravel in West Sussex was 3,759,400 tonnes.

Table 3: Permitted Sand and Gravel Quarries in West Sussex (2013/14)

Soft Sand			
Location	Site	Operator	Status
SDNP	West Heath Quarry, West Harting, Petersfield	CEMEX UK Operations	Active - Winning and working of sand.
West Sussex	Rock Common Sandpit, Washington, Pulborough	Dudman Group Ltd.	Active - Sand extraction. Concrete batching plant. Aggregates recycling.
West Sussex	Sandgate Park Quarry, Water Lane, Sullington,	CEMEX UK Operations	Active - Winning and working of sand.

	Storrington		
West Sussex	Washington Sand Pit, Hampers Lane, Sullington	Britaniacrest Recycling Ltd.	Inactive - Permission granted for mineral extraction until December 2015.
West Sussex	Chantry Sand Pit, Chantry Lane, Storrington	Dudman Group Ltd.	Inactive – Holds permitted reserves.
Sharp Sand and Gravel			
West Sussex	Hambrook Gravel Pit	No current operator	Inactive – Permitted for gravel extraction.
West Sussex	Land at Kingsham, South of Chichester, Chichester, West Sussex, PO19 8XH	Dudman Group Ltd.	Unimplemented permission for gravel extraction.

NB: In accordance with the NPPG, mineral sites that are subject to a stalled review of their planning conditions have not been included.

Imports and exports of land-won sand and gravel

- 2.1.13. West Sussex imports and exports aggregates from surrounding MPAs, as well as from further afield. A national four-yearly aggregate minerals survey is conducted by the DCLG and the British Geological Survey (BGS) which includes analysis of the movements (imports and exports) of aggregates for each MPA in England and Wales. The data presented below comes from the last national survey (2009)² and from data obtained from the British Geological Survey (BGS). Due to confidentiality restrictions, import data figures were provided by BGS as a percentage range of total supply to provide an indication of the relative importance of each supplying Mineral Planning Authority. Another Aggregates Monitoring Survey (AMS) is planned for 2015 which will provide more up to date data on imports and exports for future updates of the LAA.
- 2.1.14. Table 4 shows that in 2009, West Sussex consumed 85% of total sand and gravel (land won and marine) sales within the county, the rest was exported. A total of 53,141 tonnes of sand and gravel was imported into West Sussex, approximately 10% of the total it consumed.

² South East Aggregates Working Party (February 2011). South East Annual Monitoring Report 2009.

Table 4: Origin/Destination of Sand and Gravel Consumed/Produced in W. Sussex

Origin/Destination	Imports (tonnes)	Exports (tonnes)
South East Region		
Berkshire	See note	229
Buckinghamshire	See note	0
East Sussex and Brighton and Hove	-	492,867
Hampshire and Isle of Wight	7,725 – 15,451 <i>(Approx. 90-95% from marine sand and gravel)</i>	64,091
Oxfordshire	See note	0
Kent and Medway	18,541 – 30,901 <i>(Approx. 90-95% from marine sources)</i>	25,427
Surrey	3,090 – 7,725	10,812
Sub Total	44,809	593,426 <i>(Approx. 90% from marine sources)</i>
Consumed in West Sussex	-	533,509
Outside South East Region		
Devon	See note	0
Dorset	See note	13,619
Essex	See note	0
Gloucestershire	See note	0
Somerset	See note	8,098
London	See note <i>(All from marine sources)</i>	10,206
Wiltshire	See note	756
Sub Total	8,332	32,908 <i>(Approx. 76% from marine sources)</i>
Overall Total imports/exports (excluding West Sussex consumption)	53,141	625,876 <i>(Approx. 86% from marine sources)</i>
<p>Source: Data obtained from the British Geological Survey and was based on the 2009 Aggregate Minerals Survey. The information for West Sussex Sand and Gravel contained an error which has been rectified here, thus the total exports figure (and consumed in West Sussex figures) are higher than that from the 2009 AMS.</p> <p><i>Note: For imports to W. Sussex, ranges are provided due to confidentiality restrictions. For outside the SE Region, a sub-total is provided. The total provided in the "subtotal" row shows what was imported to W. Sussex.</i></p>		

- 2.1.15. 625,876 tonnes (55%) was exported to other authorities, predominantly to its adjoining neighbours (East Sussex and Brighton and Hove, Hampshire and Surrey). East Sussex and Brighton and Hove received the greatest proportion (79% of total exports from West Sussex).

Summary:

- Sales of aggregates have fallen 65% from 784,000 tonnes to 276,692 tonnes since 2004;
- Average sales of aggregates over the last 10 years is 439,569 tonnes down from 503,700 tonnes in 2012/13;
- In 2013/14, the total permitted reserve of land-won sand and gravel was 3,759,400 tonnes;
- West Sussex consumed 85% of total sand and gravel (land won and marine) sales within the county;
- 55% of sand and gravel produced in the County (both landed at wharves, and land-won) was exported to other counties and a significant proportion to East Sussex, Brighton and Hove.

2.2. Secondary/Recycled Aggregates

- 2.2.1. The LAA is required to provide an assessment of the contribution secondary and recycled aggregates make to the supply of aggregates in the area. The definition of secondary and recycled aggregates is provided below:

Secondary Aggregates: These are usually by-products of other industrial processes not previously used in construction. Secondary Aggregates can be further sub-divided into manufactured and natural, depending on their source. Examples of manufactured secondary aggregates are pulverised fuel ash (PFA) and metallurgical slags. Natural secondary aggregates include china clay sand and slate aggregate (Source: WRAP website).

Recycled Aggregates: Material that has been extracted from the ground (as primary aggregate), but which has subsequently been used and recovered for re-use. It comprises material derived from construction and demolition wastes, such as builders' rubble, bricks and tiles, excavation waste (such as stone and rock) as well as material recovered from the road planing process.

Use of secondary and recycled aggregates

- 2.2.2. Recycled and secondary aggregates have a growing use in applications such as base layers for new developments and road construction, helping to reduce the

demand for primary aggregates. Higher quality recycled aggregates can also be used in the production of concrete and other construction materials.

Past and current demand for recycled and secondary aggregate

2.2.3. The recorded sales figures for recycled and secondary aggregate production in West Sussex are set out in Table 5 below. This shows that sales of recycled aggregates have been relatively stable since 2004, peaking in 2010 at 630,000 tonnes, with an apparent decline since that peak. However, it should be noted that the recording of recycled aggregate sales data has changed over the last ten years. Prior to 2013, estimates had been provided through the waste forecast reports using a methodology to estimate likely sales. In 2013, the data started to be collected as part of the annual monitoring surveys, however, not all operators returned estimates, and therefore this figure is likely to be higher. The increase corresponds to the fall in primary aggregate sales which started to decline in 2004 (table 1 and figure 1). Figures for recycled aggregates in Surrey and Hampshire show that there has been a general increase in sales of recycled aggregates over the 10 year period. The Authorities are not aware of any secondary recycled aggregate sites within West Sussex.

Table 5: Sales of Recycled Aggregates in West Sussex 2004 – 2013

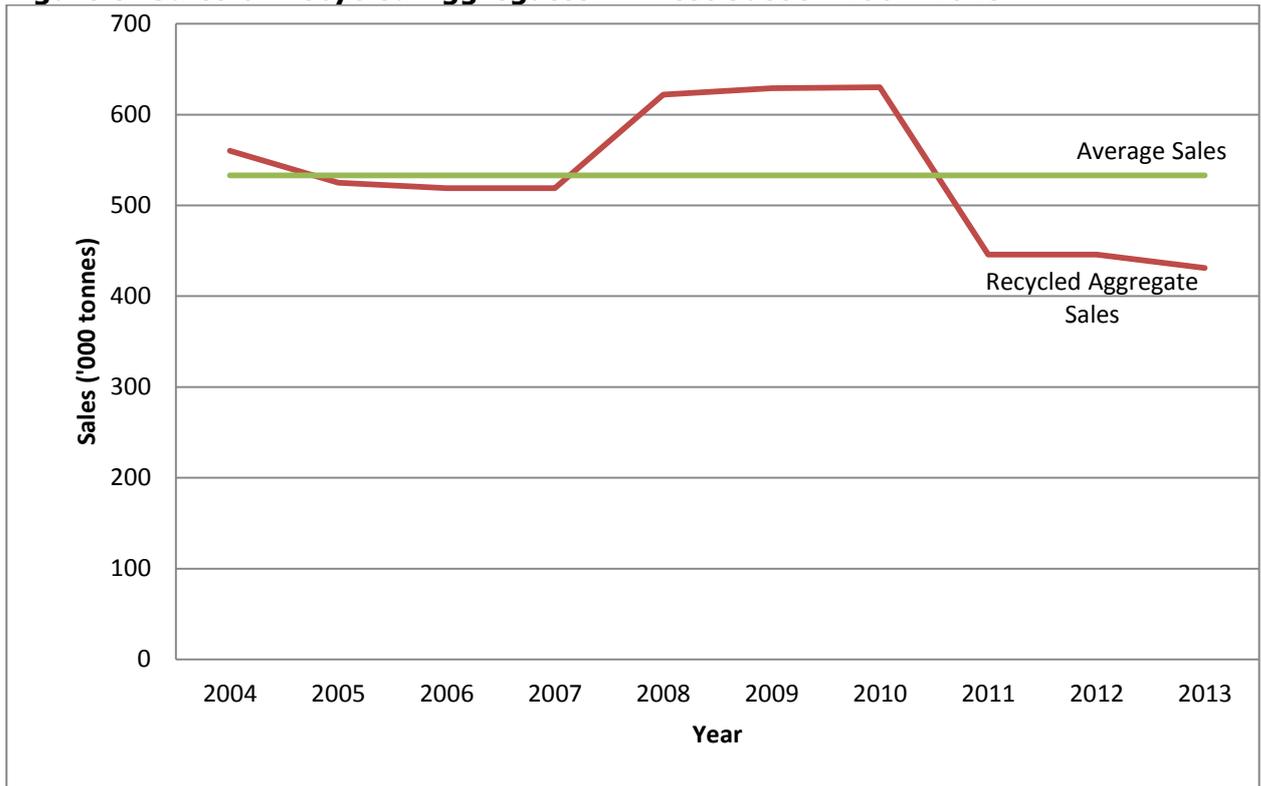
Year	Sales ('000 tonnes)
2004	560
2005	525
2006	519
2007	519
2008	622
2009	629
2010	630
2011	446*
2012	446**
2013	442***
3 Year Average	445
10 Year Average	534

*This figure was estimated as part of the work with the Waste Forecast Report. It provided a further breakdown of C&D waste to recycling and other management. Other management is the beneficial use of inert waste for landscaping projects, such as the restoration of former quarries.

**Due to the lack of information on 2012 data, this is a rolled forward estimate on 2011. All the sites at the time were active and thus it is expected that recycling continued at similar levels to the previous year.

***Figure is from data collected from aggregate recycling sites collected as part of the annual monitoring surveys. The figure is lower than previous estimates due to incomplete operator returns.

Figure 3: Sales of Recycled Aggregates in West Sussex 2004-2013



Current supply of recycled and secondary aggregates

- 2.2.4. The supply of recycled aggregates can be worked out by looking at the capacity of waste sites that have facilities to turn construction and demolition (C&D) waste into recycled aggregate.
- 2.2.5. In 2013/14 there were 14 sites within West Sussex that process waste to create recycled aggregates (Tables 6 and 7). A map of these sites is given in **Map A2, Appendix A**. These tables show that in 2013/14, the 14 sites provided a total capacity of 644,915tpa (459,065tpa + 185,850tpa) for recycling aggregates which would have been available for use as an alternative to primary aggregates. However, the actual figure for aggregate recycling in the County is likely to be significantly higher than this due to the use of mobile recycling facilities. This capacity is provided by either dedicated aggregate recycling sites (Table 6), or at transfer stations (Table 7).

Table 6: Permitted C&D Waste Recycling Sites

Authority	Site Name	Estimated Capacity (tonnes per annum)
WSCC	Brookhurst Wood Landfill, Horsham (Biffa)	25,000
WSCC	Crawley Goods Yard, Gatwick Road, Crawley (Day Group)	75,000
WSCC	Eastlands, Lewes Road, Scaynes Hill	5,000
WSCC	Hurstpierpoint Wastewater Treatment Works	16,065
WSCC	Maxi Skips, Polthooks Lane, Fishbourne	6,000
WSCC	New Monks Farm	20,000
WSCC	Portfield Quarry, Chichester (TJ Waste)	250,000
SDNP	Shoreham Cement Works, Dudman Aggregates Ltd	60,000
WSCC	Woodhorn Farm, Tangmere*	2,000
	Total	459,065

Table 7: Transfer Stations with Aggregate Recycling Capacity

Authority	Site Name	Estimate C&D Recycling Capacity (tonnes per annum)
WSCC	Ford Waste Management Facility, South Coast Skips Ltd	59,800 ⁽¹⁾
WSCC	Cox Skips, Burleigh Oaks Farm	48,000 ⁽²⁾
WSCC	Sussex Waste Recycling (Rabbit Skips)	65,000 ⁽³⁾
WSCC	Elbridge Farm, Chichester Road, Bersted	15,000 ⁽⁴⁾
WSCC	Former Brickworks, Langhurstwood Road	60,000 ⁽⁵⁾
	Total	247,800
	Estimated total recycling capacity at sites	185,850*

	<p>(1) Based on operator estimate that 85% of total capacity is C&D recycling (December, 2014 estimate).</p> <p>(2) Based on operator estimate that 60% of total capacity is C&D recycling (December, 2014 estimate).</p> <p>(3) Based on waste site returns information (2013 estimate).</p> <p>(4) Based on planning application information that 50% of total capacity will be C&D waste.</p> <p>(5) Based on planning application information that 30% of total capacity will be C&D waste.</p> <p>*Based on 75% of the total capacity at CD&E sites which is an average of the estimated recycling rate achieved at each site. Stakeholder engagement carried out during 2008/09 also revealed that CD&E recycling rates are between 70 and 80%.</p>
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Imports and exports of recycled and secondary aggregates

- 2.2.6. The Hampshire County Council LAA (2014) states that small volumes of recycled aggregate are being imported to Hampshire from West Sussex.

Summary:

- Sales of recycled aggregates were relatively stable, peaking at 630,000 tonnes in 2010. Sales have fallen in the last 3 years to 442,000 tonnes in 2013, however due to issues with data collection, this figure is likely to be higher;
- The average sales of recycled aggregate over the last 10 years is 534,000 tonnes;
- A total of 644,915tpa of capacity for recycled aggregates is likely to be available within the County (2014 estimate);
- The Authorities are not aware of any secondary aggregate sites within West Sussex.

2.3. Marine Won Sand and Gravel

- 2.3.1. West Sussex receives a steady supply of marine dredged sand and gravel to its wharves and this is a major source of primary aggregate and also a principal alternative source to land-won aggregate. National marine policy is contained within the Marine Policy Statement (MPS) which sets out a framework for preparing marine plans and taking decisions affecting the marine environment.

- 2.3.2. Work began on preparing the South Marine Plan in April 2013 and a consultation on the vision and objectives took place in July 2014. The 'South Plans Analytical Report' (SPAR) was published in June 2014. This document summarises the evidence and issues for the South Inshore and South Offshore marine plan areas. The South Marine Plan areas are the second busiest in England for marine

aggregate extraction, with a total area that is licensed for aggregate extraction of 155.47 square km.

- 2.3.3. West Sussex has two ports with wharves, Littlehampton and Shoreham. Although marine-dredged landings were received at Littlehampton in the past, these ceased in 2004 when the aggregate processing plant was removed. This leaves Shoreham as the only port for marine-dredged imports in the County.
- 2.3.4. Mineral rights for sand and gravel are owned by the Crown Estate. Marine-won sand and gravel landed in West Sussex is dredged from the channel in the 'South Coast' region which is the second largest dredging region in terms of permitted tonnages. There are licences allowing the extraction of 9.7 million tonnes per year, however, over the last 10 years, just under half of the permitted tonnages have been taken and there is currently permitted capacity to supply an additional 6.3 million tonnes per year. If approved, five further dredging applications in this area could also deliver permits for an extra 2.25 million tonnes per year (Crown Estate, 2014)³.

Use of marine-won aggregate

- 2.3.5. Marine-won aggregates from the South Marine Plan areas are used for building houses, transport infrastructure, replenishing beaches and improving coastal defences, as well as being exported to neighbouring European countries⁴. As marine and land won aggregates are geologically similar, they can be easily substituted for one another in many uses.
- 2.3.6. A publication on marine sands in mortars and screeds from the British Marine Aggregate Producers Association (BMAPA) states that the main difference between the majority of land-based sands and marine sands are the presence of chloride and shell. The publication states that there is occasionally resistance by specifiers and purchasers to resist the use of marine won sands due to their potential to include low levels of chlorides but concludes that marine sands show no aesthetic problems associated with sand source⁵.
- 2.3.7. The Marine Sand and Gravel Resources map produced by BGS and the Crown Estate shows the current and potential marine sand and gravel resources, as well as current license areas. This indicates that there are some areas of 'fine sand' within the South marine plan onshore and offshore areas, but that the currently licenced areas are in areas of coarse sand and coarse aggregate. The accompanying report states that the map delineates areas within which potentially workable minerals may occur but that this takes no account of planning constraints

³ Crown Estate (2014). Marine Aggregates Capability and Portfolio 2014

⁴ Crown Estate (2014). Marine Aggregates Capability and Portfolio 2014

⁵ British Marine Aggregate Producers Association

that may limit their working and that the economic potential of individual sites can only be proved by a detailed evaluation programme⁶.

Past to current demand for marine-won aggregate

2.3.8. Marine dredged landings to West Sussex over the last 10 years have been relatively stable with an increase in the last three years (Table 8), although nationally extraction has fallen in recent years reflecting the drop in economic output and the construction industry⁷. Marine dredged landings make a significant contribution to aggregate supply in West Sussex and neighbouring authorities (particularly East Sussex and Brighton and Hove) due to declining supplies from land-won sources in the area. The term 'landings' is used to describe the volume of aggregates that are delivered and stored at a wharf, whereas 'sales' indicates the volume of aggregates that are removed from the wharf in any one year.

2.3.9. Marine-dredged sand and gravel landings were relatively stable until 2011 when there was a marked increase. Sales of marine-dredged sand and gravel has broadly followed landings, until recent years when sales have been significantly higher (Table 8, Figure 4). The difference between the two figures reflect the changing market conditions which can lead to an increase or decrease in stock piles maintained at the wharves and has an important bearing on the capacity required.

Table 8: Landings and sales of sand and gravel at West Sussex Wharves and Railheads 2004-2013 (tonnes)⁸

Year	Landings of marine dredged sand and gravel (tonnes)	Sales of marine dredged sand and gravel from wharves (tonnes)	Sales of sand and gravel from railheads (tonnes)
2004	719,724	561,230	1,231
2005	815,439	745,620	73,800
2006	768,196	860,000	86,985
2007	817,207	849,348	164,635
2008	784,688	826,252	170,971
2009	755,018	872,267	225,304
2010	877,799	899,944	195,599
2011	1,203,574	1,213,356	88,845
2012	1,052,976	1,470,023	140,466

⁶ British Geological Survey (2013) The Mineral Resources of the English Channel and Thames Estuary

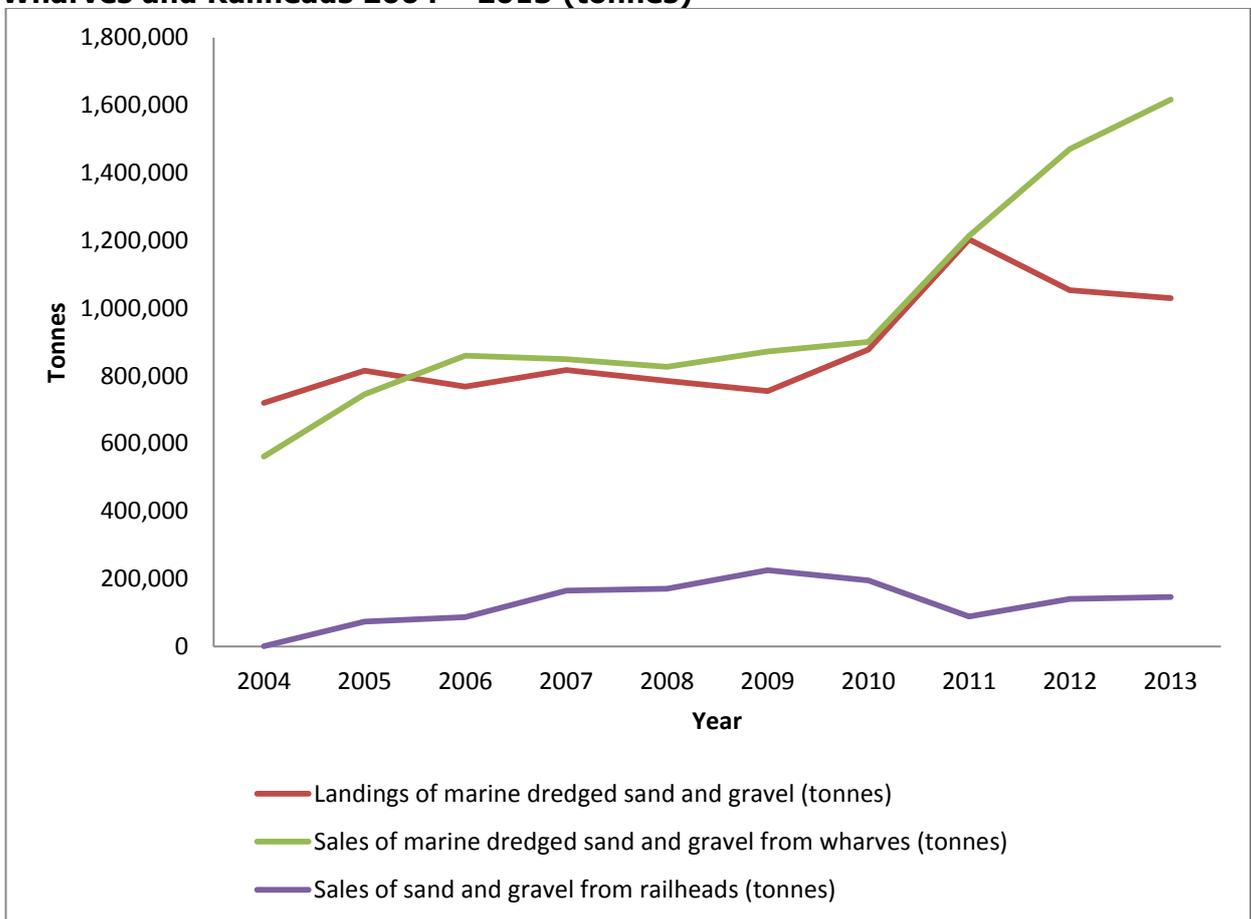
⁷ Crown Estate (2014). Marine Aggregates Capability and Portfolio 2014

⁸ Evidence is being gathered by the Authorities to understand why there are such large differences between sales and landings in 2012 and 2013.

2013	1,029,108	1,616,136	146,585
3 Year Average	1,095,219	1,433,171	375,899
10 Year Average	882,372	991,418	129,442

2.3.10. It is worth noting that the importation of marine won aggregate to Littlehampton ceased in 2004, as a result of the restrictions on shipping flexibility around spring tides, which meant that insufficient aggregate could be imported on the tides available. Therefore figures included in Table 8, from 2005 onwards, reflect imports of marine won sand and gravel to Shoreham only. 1,029,108 tonnes of marine dredged aggregates were landed at Shoreham Harbour in 2013 (Table 8).

Figure 4: Landings and sales of marine won sand and gravel at West Sussex Wharves and Railheads 2004 – 2013 (tonnes)



Current supply of marine-won sand and gravel

2.3.11. The wharves in West Sussex are primarily land marine-dredged sand and gravel, however, they also land some small amounts of crushed rock. The Authorities recently commissioned a new Wharves and Railheads Study⁹. The study provides an estimate of the potential maximum capacity that can be landed at wharves and

⁹ LUC (February 2014) West Sussex Wharves and Railheads Study.

railheads within West Sussex. The study concludes that wharves within West Sussex could have the maximum import capacity to land 1,885,000 tonnes of aggregate imports (marine dredged aggregates and land-won aggregates by sea). If this is compared with the data on sales from West Sussex wharves between 2004 and 2013 (1,767,692 tonnes), there would be a minimum surplus capacity of 117,308 tonnes. Although the wharves within Shoreham Harbour have reduced in number since the previous Wharves and Railheads Study in 2008, they still have additional capacity to handle more aggregate.

Imports and exports

- 2.3.12. The East Sussex Brighton and Hove LAA (2014) states that 70% of the total sand and gravel consumed in East Sussex and Brighton and Hove was supplied from West Sussex reflecting their reliance on imports of marine dredged sand and gravel landings to Shoreham Harbour. Imports and exports of marine-won sand and gravel occur between West Sussex and Hampshire.
- 2.3.13. Discussions with operators during 2008/09 revealed that aggregates delivered to wharves and railheads in West Sussex generally travel a distance of between 25-50 miles suggesting that their market area goes beyond the county boundary.¹⁰
- 2.3.14. With regard to railheads, imports have been steadily increasing over the 10 year period (Table 8 and Figure 4). The West Sussex Wharves and Railheads Study (2014) states that they could have a total maximum capacity of 1,380,000 tonnes. If this is compared to the maximum levels imported over the last 10 years (1,039,705 tonnes), there would be a surplus capacity of 340,295 tonnes.

Summary:

Marine Won Sand and Gravel:

- The South Marine Plan areas are the second busiest in England for marine aggregate extraction;
- 9.7mt of material is permitted for extraction per annum from licences within the 'South Coast Region' with capacity to supply an additional 6.3 million tonnes per year.

Wharves:

- Marine dredged landings to West Sussex has been relatively stable until a marked increase in 2011;
- According to the West Sussex Wharves and Railheads Study, within West Sussex, there is 1.88mt of potential import capacity at existing operational wharves for aggregates (marine dredged and land won aggregates by sea) compared with 1.68mt landed in 2013;
- In 2013, 1.03mt of marine dredged aggregate was landed at wharves within Shoreham Harbour (Crown Estate Data);
- Marine dredged landings ceased in Littlehampton in 2005, although

¹⁰ West Sussex County Council (2009). Background paper 4: Transportation of Minerals and Waste, Version 2.

crushed rock continues to serve the coated roadstone plant.

Railheads:

- Imports to West Sussex railheads have been steadily increasing over the last 10 years;
- West Sussex railheads have a potential capacity of 1.38mt compared with 814,401 brought into the county in 2013.

2.4. Hard (crushed) rock

2.4.1. West Sussex does not have any natural hard rock resources and therefore relies on imports of hard rock such as limestone and granite in order to meet demand for this type of aggregate.

Uses of crushed rock

2.4.2. Crushed rock is generally used for roadstone and rail ballast.

Past and current demand for crushed rock

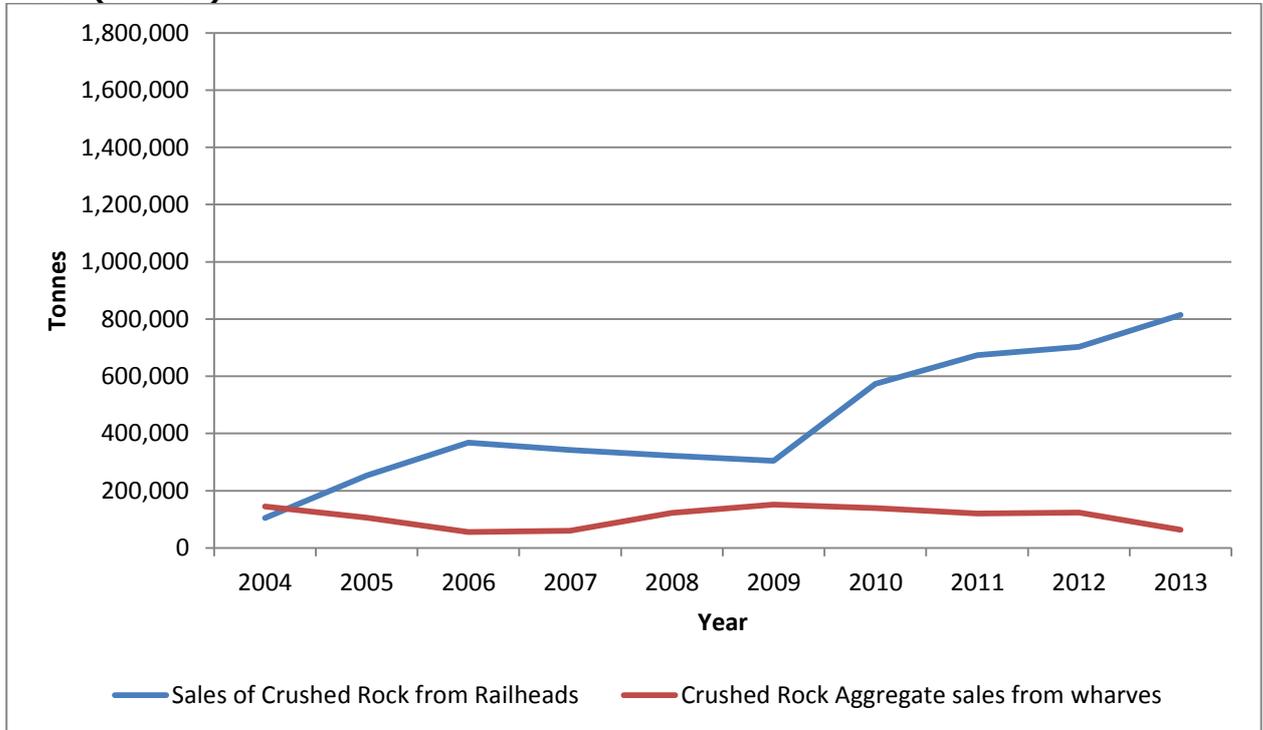
2.4.3. Sales of crushed rock from wharves have been more variable over the ten year period (Table 9) with a sudden drop experienced in 2013. Crushed rock sales from railheads have been steadily increasing since 2009.

Table 9: Sales of Crushed Rock at West Sussex Wharves and Railheads 2004-2013 (tonnes)

Year	Crushed Rock Aggregate sales from wharves (tonnes)	Sales of Crushed Rock from Railheads (tonnes)
2004	144,807	104,899
2005	105,429	253,380
2006	55,786	367,872
2007	59,999	341,953
2008	123,109	322,008
2009	151,556	304,481
2010	138,927	573,222
2011	120,428	674,140
2012	123,457	702,396
2013	63,000	814,401

3 Year Average	102,295	730,312
10 Year Average	108,649	445,875

Figure 5: Sales of Crushed Rock at West Sussex Wharves and Railheads 2004-2013 (tonnes)



Imports and exports of crushed rock

2.4.4. West Sussex relies predominantly on imports from outside the county to its wharves and railheads for its supply of crushed rock as Table 10 shows. Imports are predominantly from Somerset (60-65%) to railheads in West Sussex. Some of the crushed rock that is imported into West Sussex is exported by road to neighbouring counties (Table 10). However, according to the Annual Monitoring Survey, in 2009, West Sussex produced an amount of crushed rock (chalk and sandstone) which was used for aggregate from a small number of building stone quarries. A small quantity of crushed rock (0.01mt) imported to Hampshire by rail is exported into West Sussex and Surrey by road. Landings of marine dredged sand and gravel at Littlehampton Harbour ceased in 2004 but crushed rock imports continue to service the adjacent coated roadstone plant. Following a period of steady imports between 2008 and 2012, crushed rock imports dropped in 2013 (table 9).

Table 10: Origin/Destination of Crushed Rock Landed/Extracted in West Sussex

Origin/Destination	Imports (tonnes)	Exports (tonnes)
South East Region		
East Sussex Brighton and Hove		483
Hampshire and Isle of Wight		1,849
Kent and Medway		211
Surrey		6,735
Unknown but somewhere in the south east		49,280
Outside South East Region		
Somerset	291,000 – 315,250 (60-65% of total consumed – 485,000)	
Outside England and Wales	72,750 – 97,000 (15-20%)	
Derbyshire	24,250 – 48,500 (5-10%)	
North Somerset	4,850 – 24,250 (1-5%)	
Leicestershire	4,850 – 24,250 (1-5%)	
Yorkshire Dales National Park	4,850 – 24,250 (1-5%)	
Northumberland	<4,850 (<1%)	
Shropshire	<4,850 (<1%)	
Dorset	<4,850 (<1%)	
Powys	<4,850 (<1%)	
Total	367,000 (taken from total imports of crushed rock in AMS 2009)	58,558
Source: Data obtained from the British Geological Survey and was based on the 2009 Aggregate Monitoring Survey.		

Current supply of crushed rock

- 2.4.5. As set out earlier the wharves have capacity to land 1,885,000 tonnes of aggregate imports of marine-won sand and gravel and crushed rock. With regard to railheads, imports have been steadily increasing over the 10 year period (Table 9 and Figure 5). The West Sussex Wharves and Railheads Study (2014) states that they could have a total maximum capacity of 1,380,000 tonnes. If this is compared to the maximum levels imported over the last 10 years (1,039,705 tonnes), there would be a surplus capacity of 340,295 tonnes.

Summary:

- West Sussex is a net-importer of crushed rock with 75% of total crushed rock consumption (485,000 tonnes) imported, predominantly from Somerset;
- West Sussex produced a small amount of crushed rock (chalk and sandstone) which was used for aggregate from a small number of building stone quarries (2009 Regional Aggregates Monitoring Survey);
- Sales of crushed rock from railheads have been steadily increasing over the 10 years.

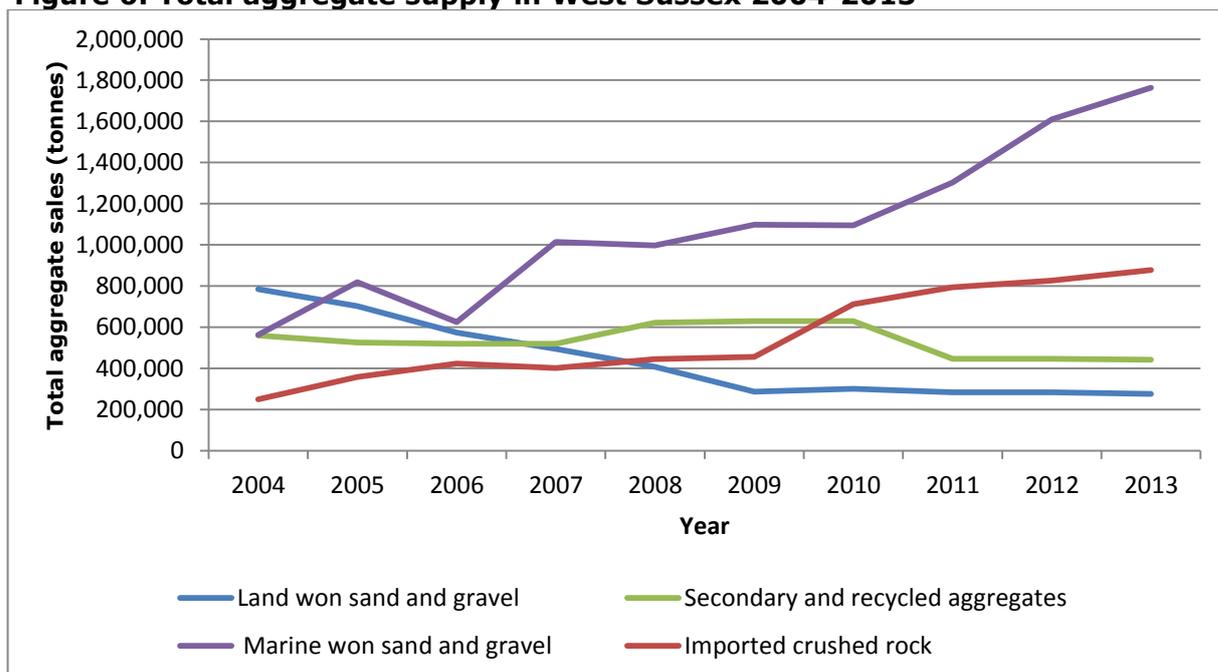
3.0 Total Aggregate Supply

3.0.1 The supply of aggregates in West Sussex is based on a balanced supply arising from different sources – as detailed in the above sections. This supply ensures that reliance is not placed on any one source. Table 11 below presents the 10-year average sales of each aggregate source in West Sussex and Figure 6 compares the total supply of each of these sources.

Table 11: Ten year average sales from each aggregate source

Year	Land won sand and gravel	Secondary and recycled aggregates	Marine won sand and gravel	Imported crushed rock	Total
2004	784,000	560,000	562,461	249,706	2,156,167
2005	703,000	525,000	819,520	358,809	2,406,329
2006	573,000	519,000	624,609	423,758	2,140,367
2007	495,000	519,000	1,013,983	401,952	2,429,935
2008	408,000	622,000	997,223	445,117	2,472,340
2009	287,000	629,000	1,097,571	456,037	2,469,608
2010	301,000	630,000	1,095,543	712,149	2,738,692
2011	284,000	446,000	1,302,204	794,568	2,826,772
2012	284,000	446,000	1,610,489	825,853	3,166,342
2013	276,692	442,000	1,762,721	877,401	3,358,814
3 Year Average	281,564	444,667	1,558,471	832,607	3,119,321
10 Year Average	439,569	533,800	1,088,632	554,534	2,618,545

Figure 6: Total aggregate supply in West Sussex 2004-2013



3.0.2 The average sales of aggregates over a 10-year and three-year period from each source are set out in Table 12 below.

Table 12: Total Aggregate Supply in West Sussex

Source of Aggregate	Average annual sales over 10 year period (tonnes)	Average annual sales over three period (2011-13) (tonnes)
Land won Sand and Gravel Sales	439,569	281,564
Secondary/Recycled Aggregates Sales	533,000	441,000
Wharves - Marine Dredged Sand and Gravel Sales	959,180	1,433,171
Wharves - Crushed Rock Aggregate Sales	108,649	102,295
Railheads - Marine Sand Gravel Sales	129,452	375,899
Railheads - Crushed Rock Aggregates Sales	445,885	730,312
Total	2,615,753	3,364,241

3.0.3 As explained in Chapter 2 earlier, the average sales figure for land-won sand and gravel over the 10 year period (2004-2013) is 439,569 tonnes. Taking an average over a 10 year period as a forecast of demand is considered a valid approach because the period is short enough to prevent distortion from historic sales, which are likely to have been higher. It also allows for short term peaks and troughs to be smoothed out when an average is calculated. The average sales over the last 3 years (2011-2013) have been even lower (281,564 tonnes) which could be attributed to a response to the economic downturn or indicative of demand being met from alternative sources (e.g. marine dredged sand and gravel).

4.0. Balance of aggregate supply, demand, opportunities and constraints

4.0.1. This section provides an assessment of the balance between supply and demand, and the economic and environmental opportunities and constraints that might influence the situation.

4.1. Future Aggregate Supply

4.1.1. The supply related factors for land-won sand and gravel are the current operating quarries, their production capacity and reserves and availability and acceptability of future land-won resources, particularly having regard to National Park status covering part of the Plan area. In relation to marine-won sand and gravel, the continuation of supply will be influenced by the South Marine Plan and the capacity of wharves to land aggregates, and the capacity of railheads to move aggregates. The supply of crushed rock relies on continued production elsewhere in the country and on the ability of wharves and railheads to supply imported crushed rock. West Sussex also relies on the ability of quarries outside West Sussex to supply sand and gravel, albeit in small quantities. The supply of secondary and recycled aggregates depends on the supply of source material and suitable sites to process the material.

Future land-won supply options

4.1.2. Future land-won supply can partly be met by existing permitted sites. The 'landbank' provides an indication on when the supply from existing sites will run out.

4.1.3. National policy requires MPAs to maintain a landbank for sand and gravel of at least seven years. Longer periods may be appropriate to take account of the need to supply a range of types of aggregates, locations of permitted reserves relative to markets, and productive capacity of permitted sites.

4.1.4. Para. 145 of the NPPF states that landbanks should be used as an indicator of the security of aggregate minerals supply and to indicate the additional provision that needs to be made for new aggregate extraction and alternative supplies in mineral plans.

4.1.5. Within West Sussex, the permitted reserve is 3,759,400 tonnes and therefore the current landbank is 8.5 years ($3,759,400 \div 439,569$) if it is based on the last 10 years of sales, as advised by the NPPG. The landbank of 8.5 years is an indication that further mineral allocations will be required through the MLP to meet future demand over the plan period.

Potential Supply from Allocated Sites

4.1.6. Table 13 sets out the allocated sites in the Minerals Local Plan, 2003, (MLP) that have not come forward to date. Although the Lavant sites were refused at planning

committee in March 2009, they remain allocated in the MLP (2003) and are therefore shown in the table below. The Authorities are aware that the landowner has sold the land but retained the mineral rights and an application for a non-mineral use has been submitted. These sites are therefore thought to be undeliverable, but will be reassessed as part of the MLP.

4.1.7. Although there are existing allocations within the Minerals Local Plan (2003) with a potential reserve of 7,010,700 tonnes, the Lavant sites, Westhampnett and Dunford Rough are unlikely to come forward due to issues of deliverability. If these sites were removed, the potential yield from remaining allocated sites would be 1,300,700 tonnes. However, there is no certainty that the remaining sites would come forward and they would need to be re-assessed as part of the preparation of the MLP.

Table 13: Allocations in the Minerals Local Plan (2003)

Authority	Allocation (resource)	Potential yield (tonnes) set out in 2003 MLP	Updated yield in 2014 (tonnes)
SDNP	Dunford Rough (sand)	2,920,800	0*
WSCC	Woodmancote (gravel)	449,700	449,700
WSCC	Westhampnett (gravel)	388,800	0**
WSCC	Slades Field (gravel)	851,400	851,000
WSCC	Lavant (gravel)	2,400,000	0***
Total		7,010,700	1,300,700
<p>* This site is deemed undeliverable due to restrictive covenants and access difficulties. ** The landowner has stated that the site will no longer be available for extraction. *** Following the refusal of planning permission for mineral extraction in 2009, the landowner has sold the land, but retained the mineral rights. A planning application for a non-minerals use has been submitted.</p>			

Potential constraints to future land-won supply

4.1.8. Minerals can only be worked where they are found. The site selection process being undertaken for the Joint Minerals Local Plan is highlighting issues associated with already limited options for viable and deliverable land-won sand and gravel resources. This may limit further land-won extraction in the future. The issues include:

- Environmental and landscape designations
- Water resources; and
- Communities and amenity

4.1.9. West Sussex has a number of environmental and landscape designations, including the South Downs National Park which is afforded the highest level of protection. These designations can restrict, and may continue to restrict, opportunities for future minerals development, particularly in regard to land-won extraction. Consideration of future supply from within the South Downs National Park will be through the MLP process. This will include an assessment whether there are 'exceptional circumstances' and a 'public interest' that would justify the allocation of new or extended sand quarries within the South Downs National Park. This

assessment will include looking at the alternative sources of supply from outside designated areas and will require a positive dialogue with adjoining and more distant authorities to establish potential alternative supplies. It will also include assessing the potential resource outside the SDNP but still within West Sussex, although as has been previously mentioned, the industry has raised concerns about the viability of this resource. As set out below, it will also assess the potential for marine-won sand.

- 4.1.10. Similarly, floodplains, Source Protection Zones (SPZs), secondary and principal aquifers, groundwater depth, geology and smaller abstractions are also constraints which need to be taken into consideration when identifying suitable sites for mineral extraction. The site selection process for the MLP will take all of these issues into account.
- 4.1.11. As an illustration, the proposed aggregate sites on the long-list (see Minerals Sites Study, 2014) are subject to the following constraints (**Appendix A, Map A3** shows the constraints).

Table 14 : Constraints affecting potential sites in West Sussex

Constraint	Number of sites (out of 24 total sites)
National Park	11
Local Wildlife Site/Site of Importance for Nature Conservation	5
Site of Special Scientific Interest	1

- 4.1.12. Minerals development should not have a significant impact on communities if they are designed, managed and located appropriately. However, concerns may still be raised about the potential impacts of noise and dust, as well as associated lorry movements, particularly at the planning application stage. Such issues need to be addressed to ensure that minerals development does not significantly impact the amenity of local communities. The site selection process for the MLP will also take the impact on communities into account, and the Plan will also contain policies to make sure that the impact on communities and amenity is prevented, minimised or mitigated to an acceptable level.
- 4.1.13. Soft sand has specific applications for which concreting and other aggregate materials are unsuitable, and is most commonly used in mortar and in asphalt for road construction and repair. The South Downs Soft Sand Study (2012) states that the Crown Estate 'believe that there is potential for marine sources to provide viable 'soft' sand as an alternative to land based quarrying'. However, further work is required to determine whether this is a realistic option within the Plan period, this will include discussions with the Crown Estate, British Marine Aggregate Producers Association, and marine aggregate operators.

Marine dredged future supply options

- 4.1.14. A study carried out for the Crown Estate into the marine aggregate market forecasts a potential national demand for marine aggregates of 29 million tonnes

per year by 2030, with the importance of marine sand increasing over the coming years, alongside continuing demand for recycled and secondary aggregates. Current national estimates suggest that there are 21.5 years of primary marine aggregate production permitted in London and the South East (supplied by the East Coast, Thames Estuary and East English Channel).¹¹ It further states that the South Coast region supplies both UK projects (70%) and export markets (16%) and has a reserve life of 20.43 years.¹² The Marine Aggregates Capability Report 2014 recognises that marine aggregates are likely to become more important in the supply chain as pressure on land-won aggregate reserves increased.

- 4.1.15. In recent years, imports to wharves and railheads have been increasing and have been supplying aggregates, particularly sharp sand and gravel to West Sussex and neighbouring authorities, in lieu of falling land-won supply. Although the number of wharves and railheads has reduced in recent years, evidence suggests that they still have additional capacity to handle more aggregates (see table 15). The evidence presented in Chapter 2 of this LAA also shows that there is potentially significant additional marine reserves and capacity to land dredged material at wharves at Shoreham Harbour.
- 4.1.16. Further work will be carried out as part of the preparation of the MLP to consider the factors that may influence the supply and demand for aggregates over the life of the Minerals Local Plan.

Table 15: Surplus Capacity at Wharves and Railheads

	Maximum Potential Capacity (tonnes)	Demand based on 10 year average sales (tonnes)	Maximum imports over last 10 years (tonnes)	Difference
Wharves	1,885,000	1,067,829	1,767,692	Between 117,308 and 817,171 surplus capacity
Railheads	1,380,000	575,337	1,039,705	Between 340,295 and 804,663 capacity
Total	3,265,000	1,643,166	2,807,397	

¹¹ Crown Estate (2014). Marine Aggregates Capability and Portfolio 2014

¹² Crown Estate (2014). Marine Aggregates Capability and Portfolio 2014

Recycled and secondary future supply options

- 4.1.17. Estimated capacity at existing sites (estimated to be 642,915tpa) exceeded sales of recycled aggregate in 2013 and average sales of recycled aggregates over the last 10 years.
- 4.1.18. With regard to recycled aggregates, there is estimated to be surplus capacity. At its peak, recycled aggregate sales have been 630,000 tonnes indicating that capacity in the past has been higher than current estimates. The temporary nature of sites means that supply can often respond to demand relatively quickly. The West Sussex Wharves and Railheads Study (2014) states that there is little opportunity for any significant further increase in the proportion of construction aggregate likely to be derived from this sector.
- 4.1.19. The future availability of recycled aggregates is likely to be inextricably linked to the overall rates of construction activity and economic growth and whether there is sufficient capacity to manage peaks in the source of supply. The safest assumption is that it will rise and fall in a similar way to overall demand and will thus have a neutral impact on the demand for primary aggregates.

Crushed rock future supply options

- 4.1.20. The ability of the wharves and railheads to provide sufficient capacity to maintain supply of crushed rock into West Sussex is set out in the section on marine-won sand and gravel.
- 4.1.21. Positive dialogue with adjoining and more distant authorities will be needed to check and maintain security of supply of crushed rock. This should be enabled through good practice, aggregate working party arrangements and Duty to Cooperate requirements.

4.2. Future Aggregate Demand

- 4.2.1. If the 10 year sales figure for land won sand and gravel is used to calculate the annual average apportionment for West Sussex, over a plan period to 2031, this would produce a total requirement of 7,472,673 tonnes and a shortfall of 3,713,273 tonnes which would need to be planned for through the MLP (Table 16). Although there are existing allocations within the MLP (2003) with a potential reserve of 7,010,700 tonnes, if the undeliverable sites were excluded, the potential yield from remaining allocated sites would be 1,300,700 tonnes. However, there is no certainty that the remaining sites would come forward and they would need to be re-assessed as part of the preparation of the MLP. Based on the current calculations and a continuation of current supply patterns, there will be a need to plan for future requirements of land won sand and gravel which will require a search for suitable sites to be undertaken through the review of the MLP which is currently being prepared. However this preparation is being undertaken in the light

of changing market practices which may reduce the need for land won sand and gravel, the designation of the South Downs National Park and the potential for aggregates to be supplied from alternative sources. If the shortfall required to make up the land won contributions is not identified in the MLP there may be more demand for import capacity at wharves and railheads.

Table 16: Land Won Sand and Gravel Provision 2014 – 2031

	Sand and Gravel Quantities (tonnes)
Permitted Reserve	3,759,400
Total requirement 2014-2031 based on 10 years average sales (439,569)	439,569 x 17 = 7,472,673
Shortfall	7,472,673 - 3,759,400 = 3,713,273

Other Relevant Local Information

- 4.2.2. In accordance with paragraph 62 of the NPPG, a forecast of the demand for aggregates has been based upon the rolling average of 10-year sales data which is explained earlier. However, demand should not solely be based upon this and the LAA should look at 'other relevant local information' such as planned construction and house building. MPAs should also look at average sales over the last three years in particular to identify the general trend of demand as part of the consideration of whether it might be appropriate to increase supply.

Planned Infrastructure

- 4.2.3. Table 17 sets out planned housing growth based on the local plans of local planning authorities in West Sussex. Although these plans are at different stages in development, some having been adopted, the annual requirements of Arun District Council, Chichester District Council, Crawley Borough Council and Worthing Borough Council have been rolled forward up to 2031. The total number of dwellings planned in West Sussex is 53,586 to 2031. If realised, this would represent an increase of 10.5% in annual completions compared to the period 2004/05 – 2013/14 (average of 2,694 per annum).

Table 17: Planned Housing in West Sussex (2013 – 2031)

Local Authority	Planned Housing (per annum)
Adur	182
Arun	580
Chichester	435*
Crawley	330
Horsham	650
Mid Sussex	530
Worthing	200
South Downs National Park	70
Total	2,977

*CDC's Local Plan is currently undergoing examination and this figure may increase.

4.2.4. Due to the movement of aggregates across administrative boundaries, it is necessary to take account of future planned housing in neighbouring authority areas. The expected changes to housing delivery are presented in Table 18 and show that, with the exception of Surrey, all the neighbouring authorities are planning for an increase in housing delivery. In particular, Brighton and Hove and East Sussex are planning for 21.4% and 5.5% increases in housing delivery respectively, which is likely to place demand on aggregates imported into wharves at Shoreham Harbour as stated.

Table 18: Expected Changes to Housing Delivery

Local Authority	Average completions per annum (2004/05-2013/14)	Average planned housing per annum (2014-2031)	Percentage Change
Brighton & Hove	501	608	21.4%
East Sussex	1,410	1,487	5.5%
Hampshire	5,815	6,172	6.1%
Surrey	3,106	2,977	-4.2%
West Sussex	2,694	2,977	10.5%
Average	2,705	2,844	7.9%

4.2.5. With regard to potential future demand from other planned construction, a number of projects in West Sussex have been identified from the National Infrastructure Plan (2013) and other local sources. There is no guarantee that these infrastructure projects will go ahead but it is an indicator of possible future demand for aggregates in the future.

West Sussex

- The A23 Handcross to Warninglid trunk road improvement scheme – currently under construction and due to be completed in April 2015¹³;
- Gatwick Capital investment programme currently underway ¹⁴;
- Improvements to the A27 (Chichester Bypass) – announced by the Government in June 2013¹⁵;
- A27 corridor (including Arundel and Worthing) – Government announcement in 2013 to tackle hotspots¹⁶;
- Nine schemes were identified in 2013/14 through the West Sussex Strategic Transport Investment Programme (STIP) all, but one, are currently subject to feasibility work but require further funding. A further nine schemes have been prioritised in 2014/15.

¹³ HM Treasury (2013). National Infrastructure Plan 2013.

¹⁴ HM Treasury (2013). National Infrastructure Plan 2013.

¹⁵ HM Treasury (2013). National Infrastructure Plan 2013.

¹⁶ HM Treasury (2013). National Infrastructure Plan 2013.

4.2.6. Although there is no certainty about where aggregates will be supplied from, due to the fact that there is a history of exporting aggregates to neighbouring authorities (see Chapter 2), it is likely and probable that major infrastructure projects from neighbouring authorities may place a demand on aggregates originating in West Sussex. A summary of possible projects that may import aggregates from West Sussex is included below:

Hampshire¹⁷

- Navitus Bay off-shore Wind Project, South Hampshire;
- Strategic Developments in Whitehall and Borden, Welborne and Aldershot and Whiteley, Hampshire;
- Urban Regeneration in Portsmouth and Southampton, Hampshire.

East Sussex and Brighton and Hove¹⁸

- Rampion Windfarm, Newhaven, East Sussex;
- Shoreham Harbour Development Area – Upgraded flood defence and highways;
- Brighton marina flood defences;
- Development at City College;
- Development at University of Brighton and University of Sussex;
- Expansion of health facilities at Royal Sussex County Hospital;
- Eight strategic development areas in the Brighton and Hove City Plan;
- 29,000 dwellings and 428,000 square metres of employment floorspace proposed in East Sussex;
- Infrastructure Delivery Plans for East Sussex – education, library, health treatment, sports and leisure provision, coast and flood protection, wastewater treatment and sewer provision;
- A number of strategic road improvements in East Sussex including phase 2 of the Newhaven Port Access Road.

4.2.7. The West Sussex Wharves and Railheads Study (2014) states that the overall scale of future demand for primary aggregates in West Sussex is likely to be significantly higher than that indicated by the 10 year historical sales figures from all supply sources. It states that there is evidence that overall sales of primary aggregate within West Sussex is growing at a faster rate than in other parts of the South East and appear to have bucked the national trend, having been unaffected by the recession. The list of upcoming infrastructure projects listed above suggests that development levels are likely to increase in the future which would increase demand for aggregates. There is no information on the quantities of aggregates that these projects may require; therefore it is difficult to provide an exact figure of the increase in demand for aggregates. Further work is expected to be carried out as part of the evidence base for the MLP to quantify this.

¹⁷ Hampshire, Portsmouth, Southampton, New Forest and South Downs National Park Local Aggregate Assessment (2014)

¹⁸ East Sussex, South Downs and Brighton and Hove Draft Local Aggregate Assessment (2014)

4.2.8. A Soft Sand Study¹⁹ carried out on behalf of the South Downs National Park highlighted that although sales of land won sand and gravel decreased between 2002 and 2009, soft sand sales did not show a comparative downward trend. This information was based on regional and local data. The study also looked at more recent sales trends for Great Britain from the Minerals Products Association, which showed that after 2009, sales have recovered, with a more marked recovery in the South East. Industry feedback also suggests that demand is expected to increase over the next 2-3 years. This evidence will be checked and updated through the development of the MLP.

Summary:

- There is a total requirement of 7,472,673 tonnes over the plan period and a shortfall of 3,713,273 tonnes to be planned for through the MLP;
- Part of the future need can be met from existing permitted reserves (3,759,400 tonnes) and the 'landbank' for sand and gravel in West Sussex is 8.5 years;
- The potential yield from existing allocations in the MLP total 1,300,700 tonnes as some sites are not considered to be deliverable;
- 17 out of the 24 sites on the MLP 'long list' of potential sites are subject to landscape and wildlife constraints including: National Park, SSSI, Local Wildlife Site, Site of Importance for Nature Conservation;
- Marine aggregates are likely to become more important in the supply chain as pressure on land-won aggregate reserves increases;
- There is estimated to be surplus capacity for the supply of recycled aggregates in West Sussex;
- A number of major infrastructure projects and an increase in housing development is planned in West Sussex and neighbouring authorities which are likely to increase demand for aggregates in West Sussex.

5.0. Conclusion

5.0.1 In accordance with the NPPF and NPPG, a forecast of the demand for aggregates has been based on rolling the average of 10 year sales data (439,569 tonnes). This equates to a need to plan for a total 7,47,673 tonnes over the plan period (to 2031). This is considered to be a valid approach as the last 10 years include periods of economic growth and decline. Sales of sand and gravel have been falling over the last 10 years and the 3 year average sales figure (281,564 tonnes) indicates that sales have fallen even further recently. Further work is due to be carried out as part of the MLP to examine the evidence for aggregate demand which will inform the 2015 LAA.

¹⁹ Capita Symonds (2012). South Downs National Park: Soft Sand Study.

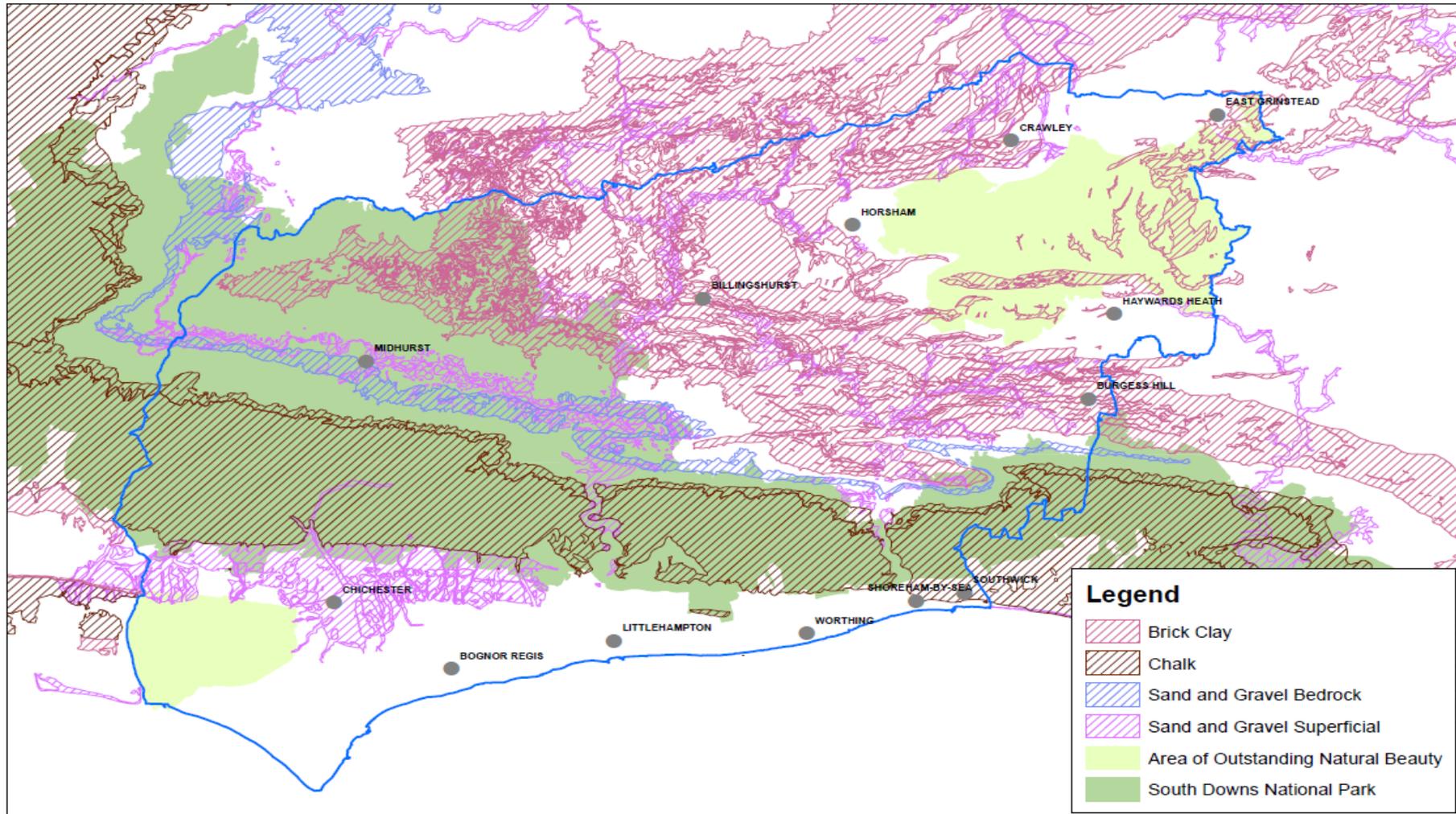
- 5.0.2 The MLP will also consider the balance between the supply options for the future when further evidence about the alternatives to land-won soft sand supply from within the SDNP has been gained and work has progressed on understanding the other environmental constraints that may restrict land-won supply.
- 5.0.3 There is also a need to consider whether there should be a split in the amount that is to be planned for to meet specific market needs. Previous discussions with stakeholders revealed that a split would be appropriate as they are distinct products and that a ratio should be determined from historic data but incorporating flexibility. This will be considered further through the MLP, and in particular in relation to the exceptional circumstances test for major development within a National Park.
- 5.0.4 Although there are five remaining sites allocated in the MLP, three of these are considered to be undeliverable and there has been no indication to date that the remaining sites are likely to come forward in the imminent future. There is therefore a need to reassess these sites through the MLP and allocate sites to meet future demand.
- 5.0.5 West Sussex, and neighbouring authorities, are reliant on imports to its wharves and railheads for crushed rock and marine sand and gravel. Imports of marine won sand and gravel to the county appear to have been compensating for reduced land-won sand and gravel extraction and this trend is likely to continue due to the constraints of developing land-won sites. It will be important to safeguard wharves and railheads through the MLP to ensure continuity of supply and the evidence shows that there is surplus capacity which could help to meet future increases in demand.
- 5.0.6 The future availability of recycled aggregates is likely to be inextricably linked to the overall rates of construction activity and economic growth, so it is likely to have a neutral impact on the demand for primary aggregates. Sales of recycled aggregates are well below the capacity in the County, therefore sites should have the ability to respond to increases in demand over time.

5.1. Proposed Monitoring Arrangements

- 5.1.1. Provision for the land-won and other elements of this LAA will be made in the MLP which is to be prepared jointly with the South Downs National Park Authority. The LAA will form a key piece of the evidence that will underpin the MLP and provide evidence of the demand for aggregates for West Sussex. The LAA will be updated on an annual basis as part of the Annual Monitoring Report.

Appendix A: Maps

Map A1: Geological Zones in West Sussex



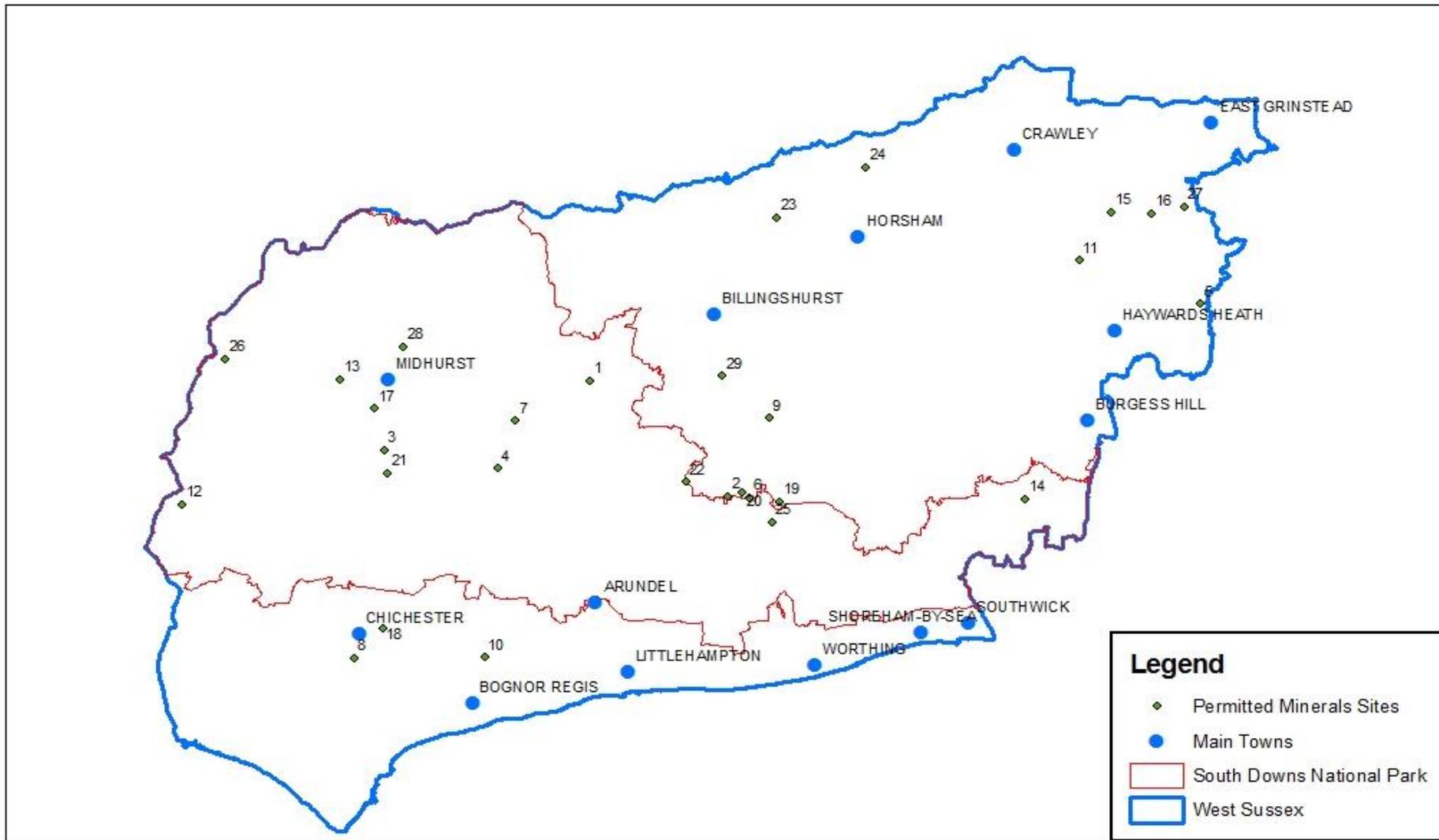
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Geological Zones in West Sussex

1:225,000



Map A2: Location of Mineral Sites in West Sussex



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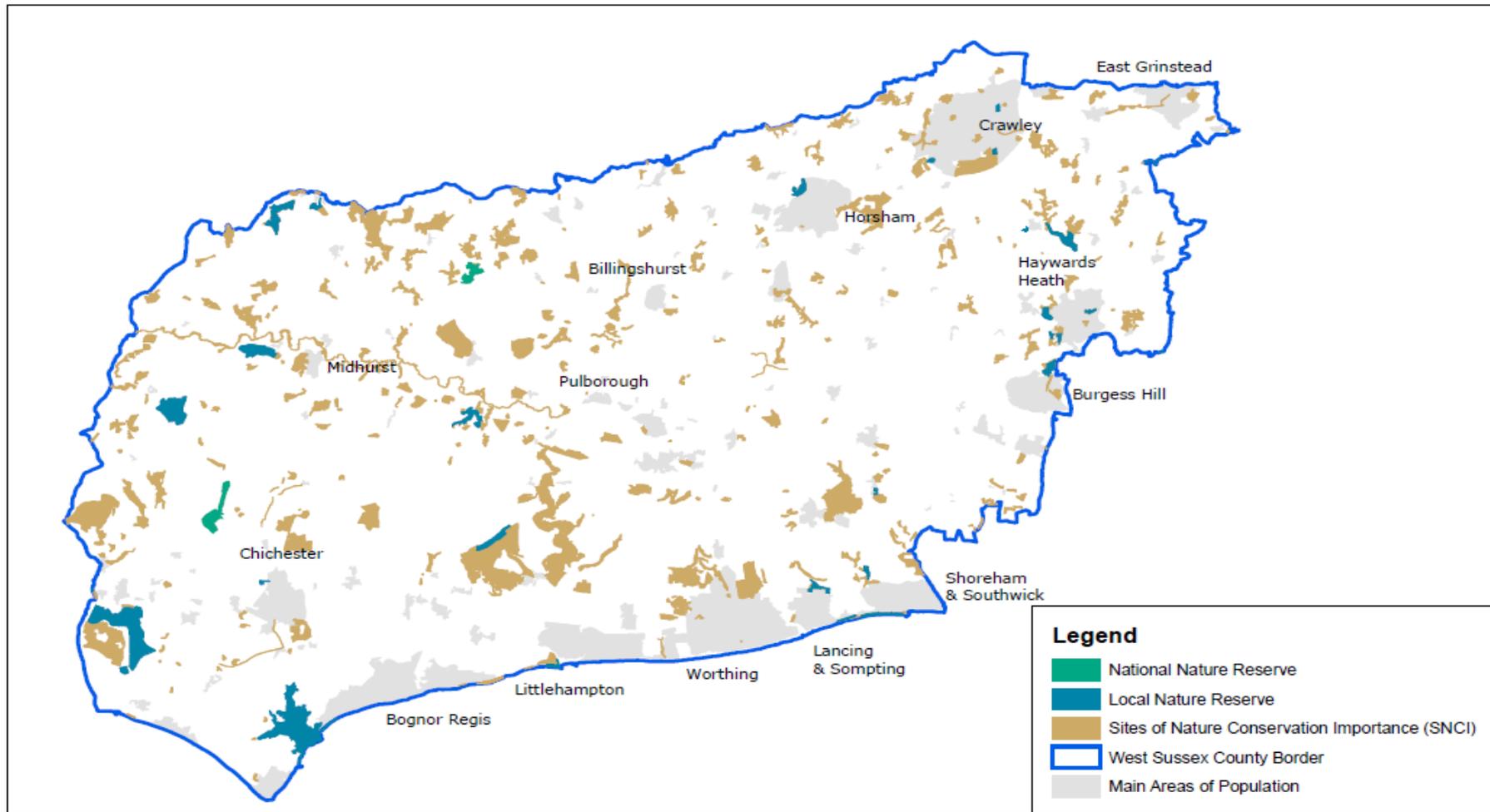
Permitted Mineral Sites in West Sussex

1:334,217



Site reference number	Site Name	Mineral type/activity	SDNPA/WSCC	Active/Inactive
1	Bognor Common Stone Quarry	Sandstone	SDNPA	Active
2	Chantry Lane Quarry	Sand	WSCC	Inactive
3	Cocking Lime Works	Chalk	SDNPA	Inactive
4	Duncton Chalk Quarry	Chalk	SDNPA	Active
5	Freshfield Lane Brickworks	Clay	WSCC	Active
6	Hampers Lane Sandpit	Sand	WSCC	Active
7	Heath End	Sand	SDNPA	Active
8	Kingsham	Gravel	WSCC	Not yet commenced
9	Laybrook Brickworks	Clay	WSCC	Active
10	Lidsey Oil Site	Oil production	WSCC	Active
11	Lower Stumble Wood	Oil Exploration	WSCC	Permitted May 2014
12	Markwells Wood	Oil Exploration	SDNPA	Active
13	Minsted Sandpit	Sand	SDNPA	Active
14	Newtimber Chalk Works	Chalk	SDNPA	Active
15	Paddockhurst Stone Pit	Sandstone	WSCC	Inactive
16	Philpotts Quarry	Sandstone	WSCC	Active
17	Pitsham Brickworks	Clay	SDNPA	Active
18	Portfield Quarry	Recycling	WSCC	Active
19	Rock Common Sandpit	Sand	WSCC	Active
20	Sandgate Park Quarry	Sand	WSCC	Active
21	Singleton Oilfield	Oil Production	SDNPA	Active
22	Storrington Oilfield	Oil Production	WSCC	Active
23	Theale Farm Stone Quarry	Sandstone	WSCC	Active
24	Warnham and Wealden Brickworks	Clay	WSCC	Active
25	Washington Chalk Quarry	Chalk	SDNPA	Inactive
26	West Heath Quarry	Sand	SDNPA	Active
27	West Hoathly Brickworks	Clay	WSCC	Active
28	Winter's Pit	Sandstone	SDNPA	Active
29	Wood Barn Farm	Oil Exploration	WSCC	Inactive

Map A3: Landscape and Nature Constraints in West Sussex



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Map 3 - Nature Reserves and SNCI

1:332,631



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