

West of England Local Aggregates Assessment

January 2015

Bath & North East
Somerset Council



Contents

1.	Introduction.....	3
2.	Aggregates in the West of England.....	4
3.	Aggregate Supply and Demand.....	7
	Crushed Rock	7
	Sand and Gravel	11
	Marine dredged Sand and Gravel	11
	Recycled Aggregates	13
	Total Aggregate Supply	14
4.	Future Aggregates Supply.....	15
	Appendix A	
	Data Methodology for Recycled Aggregates.....	18

1.0 Introduction

- 1.1 Aggregates are the most commonly used minerals in the UK and are essential to a modern economy. They provide the critical raw material for built development and other construction, manufacturing and the maintenance of infrastructure, through their use as concrete, mortar, finishes, roadstone, constructional fill and railway ballast.
- 1.2 Aggregates can refer to any granular material formed from a natural rock substance, although principally aggregate minerals are sand and gravel and crushed rock. They come in a variety of forms, each with their own characteristics and properties, which determines their many uses.
- 1.3 There are three sources of supply of aggregates – primary, secondary and recycled. The majority of aggregate demand is met from primary sources. This involves extracting material directly from the ground and dredging from the sea floor. There are significant geographical imbalances in the occurrence of suitable natural aggregate resources and the areas where they are most needed.
- 1.4 The National Planning Policy Framework (NPPF) paragraph 145 requires an annual Local Aggregate Assessment (LAA) to be produced by Mineral Planning Authorities (MPAs) in order to plan for a steady and adequate supply of aggregates.
- 1.5 This document is the LAA for 2014 for the West of England and has been prepared jointly by Bath & North East Somerset Council, Bristol City Council, North Somerset Council and South Gloucestershire Council, the four unitary authorities which together comprise the West of England (WoE) sub region. The LAA is part of the evidence base to inform the Local Plan of each of these four authorities.
- 1.6 It is logical that the LAA has been produced for the WoE area by its constituent authorities. The four authorities have historically worked very successfully together on projects in the WoE, such as preparation of the Joint Waste Core Strategy, the Strategic Housing Market Assessment, and the work of the West of England Local Enterprise Partnership (LEP). The authorities have continued and built on this close working relationship in preparing the LAA
- 1.7 Also, the local authorities for the land-won aggregate producing areas in the WoE, South Gloucestershire and North Somerset, have worked together closely in planning for future aggregate provision, to meet the sub regional apportionments that have historically been set for the former Avon, (WoE) area. For confidentiality reasons, owing to the low number of quarry operators in the individual districts, figures for production and permitted reserves have usually been amalgamated for the West of England in the South West Aggregates Working Party (SWAWP) annual reports. This further underlines the logic of a LAA for the WoE.

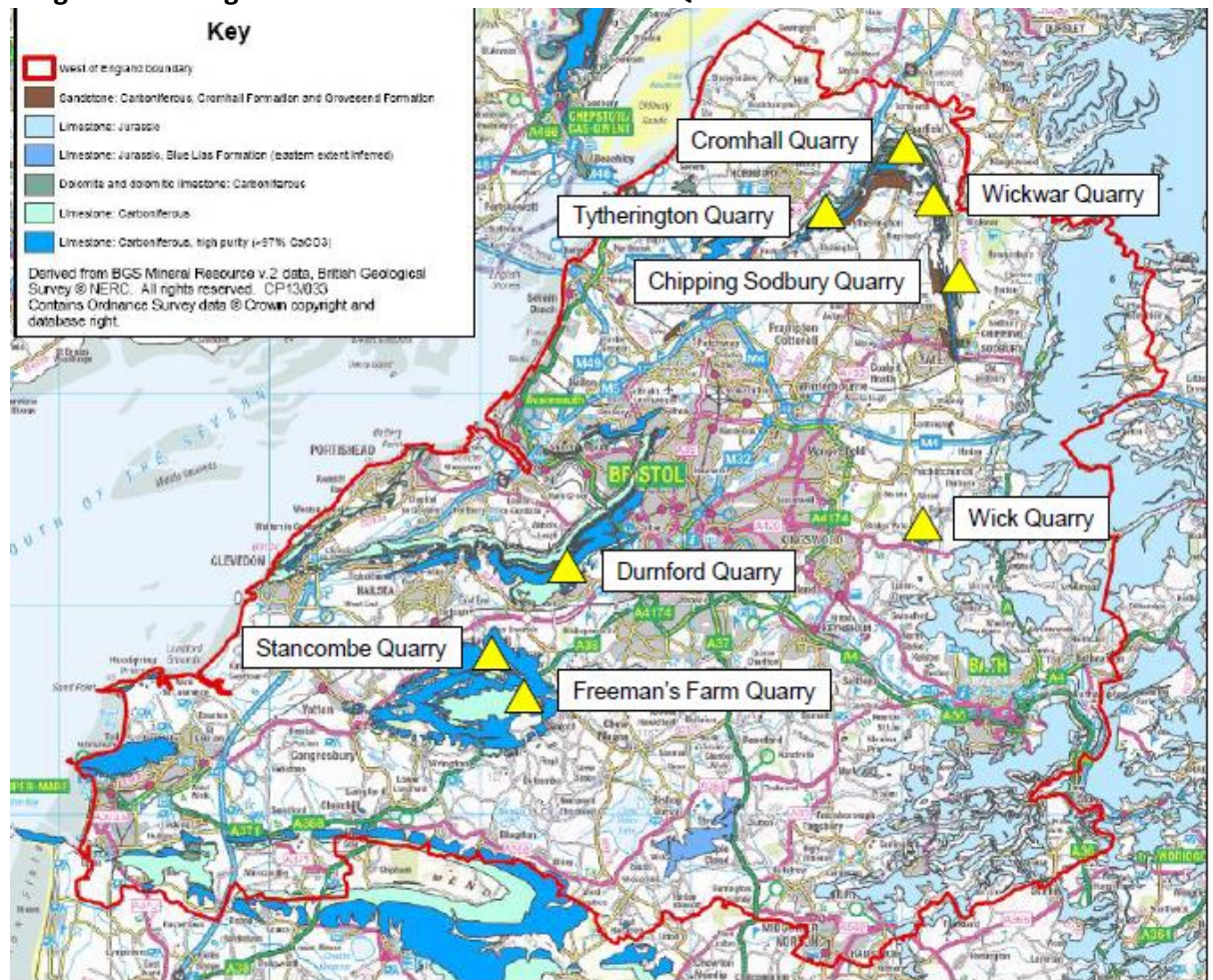
2.0 Aggregates in the West of England

- 2.1 The West of England has a long history of mineral working, not only for use as aggregate, but also for industrial purposes, brick manufacture and building stone. Today's mineral activity is dominated by working of the Carboniferous Limestone for use as a roadstone and construction aggregate. There are no sand and gravel resources of commercial value in the West of England.
- 2.2 Carboniferous Limestone is worked from quarries in South Gloucestershire and North Somerset. The quarries are mostly capital intensive units, producing added value aggregate products in addition to screened aggregates (e.g. coated roadstone, concrete blocks). However in South Gloucestershire, Cromhall Quarry has had its plant removed, and while it has extensive permitted reserves it has been inactive for 20 years. Tytherington Quarry has not been worked since 2010 as a result of the downturn in the economy. In 2013 Wick Quarry was sold to a private individual. Although there are a limited amount of reserves remaining, no decision has been taken as to its future use.
- 2.3 Within the West of England, there are eight quarries with extant planning permissions and permitted reserves, as set out in Table 1.

Table 1 – Crushed Rock Quarries in the West of England

Site	Geological Formation	Operator
Active Quarries		
Stancombe Quarry, near Backwell, N Somerset	Clifton Down	LafargeTarmac
Freemans Farm, near Barrow Gurney, N Somerset	Clifton Down Limestone	CEMEX
Durnford Quarry, near Long Ashton, N Somerset	Clifton Down Limestone	Lafarge Tarmac
Chipping Sodbury Quarry, S Glos	Black Rock - Clifton Down Limestone	Hanson
Wickwar Quarry, S Glos	Clifton Down Limestone	CEMEX
Inactive Quarries		
Tytherington Quarry, S Glos	Black Rock Limestone – Burrington Oolite	Hanson
Cromhall Quarry, S Glos	Clifton Down Limestone	Hanson
Other Quarries (with reserves but future undetermined)		
Wick Quarry, S Glos	Gully Oolite - Clifton Down Limestone	Formerly CEMEX

The location of these quarries is shown in Figure 1.

Figure 1. Geological formations and Crushed Rock Quarries

- 2.4 Although quarry activity has now ceased, Carboniferous Sandstone has been worked in modest quantities in both South Gloucestershire and North Somerset for use as High Specification Aggregate (HSA). This aggregate is used in road wearing courses and as road surface chippings in areas where high levels of skidding resistance and aggregate durability are required. Only a limited range of natural resources are capable of yielding material which meets the specification requirements for such high quality aggregates. A Government sponsored research project by Symonds Travers Morgan in the early 1990s identified the Mangotsfield Formation of the Pennant Sandstone in the West of England, along with the Pennant Sandstone resource in South Wales, as the two most promising potential resources in England and Wales of HSA in the highest Polished Stone Value (68+) category. There is no known interest in working the HSA resources in the West of England.
- 2.5 There are no active quarries producing aggregates in Bristol or Bath and North East Somerset.

2.6 **Managed Aggregate Supply System**

The government has produced national planning practice guidance on minerals, including a section on the Managed Aggregate Supply System (MASS), which “seeks to ensure a steady and adequate supply of aggregate mineral, to handle the significant geographical imbalances in the occurrence of suitable natural aggregate resources, and the areas where they are most needed” .

Historically mineral planning authorities have planned to make provision for aggregates based on the apportionment of the sub national (aka regional) amounts periodically identified in the Government’s National and Regional Aggregates Guidelines.

- 2.7 The Guidelines published in June 2009¹ include a requirement for the South West to make provision for 412 million tonnes of crushed rock over the period 2005-2020.
- 2.8 The South West Regional Aggregates Working Party (SWRAWP) subsequently apportioned the 412 million tonnes between the mineral planning authorities in the region and put this forward to DCLG. For the West of England, the sub-regional apportionment for crushed rock over the period 2005 – 2020 is 79.10 million tonnes, which equates to 4.94 million tonnes (mt) per year.
- 2.9 With the introduction of the Localism Act and the National Planning Policy Framework (NPPF), mineral planning authorities (mpas) are now required to plan for a steady and adequate supply of aggregates by preparing an annual Local Aggregates Assessment (LAA) based on a rolling average of sales over a 10 year period and other relevant local information, including an assessment of all aggregate supply options. Mpas should make provision for the land-won and other elements of their LAA in their mineral plans.

¹ DCLG (2009) National and regional guidelines for aggregates provision in England 2005-2020. London: HMSO.

<http://www.communities.gov.uk/publications/planningandbuilding/aggregatesprovision2020>

3.0 Aggregate Supply and Demand

Crushed rock

Sales/ production

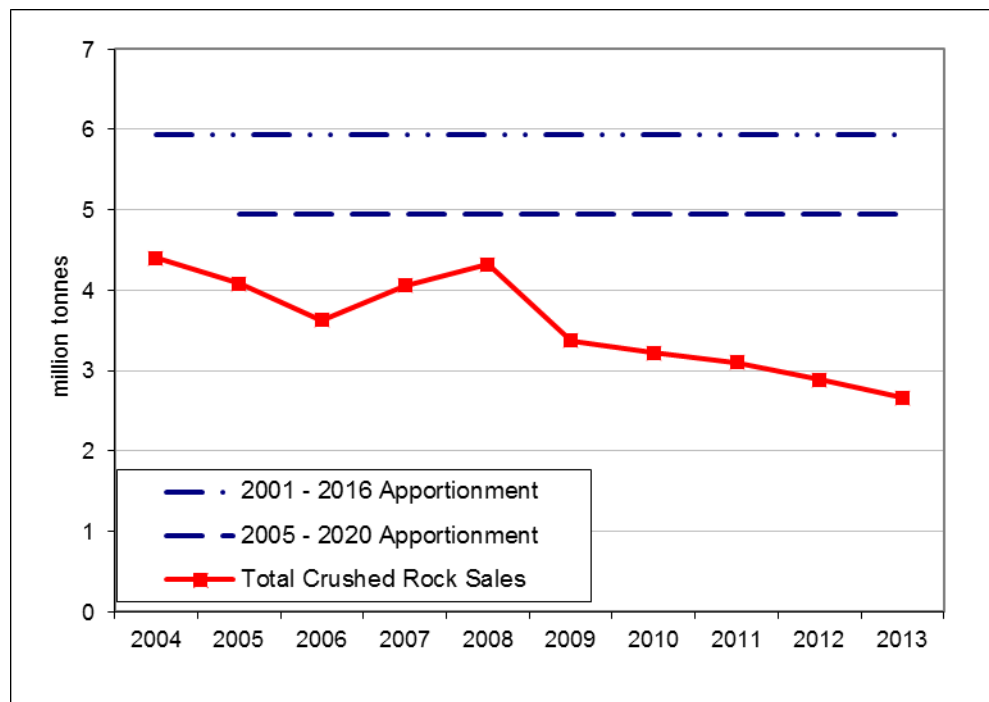
- 3.1 The West of England is a significant producer of crushed rock in the South West, being the next highest producer of crushed rock after Somerset. Sales over the 10 year period 2004 – 2013 are shown in Table 2 below. Where published, the breakdown between the unitary authorities of South Gloucestershire and North Somerset is shown.

Table 2 – Crushed Rock sales in the West of England 2004 – 2013 (million tonnes)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Ave.
Sales	4.4	4.08	3.63	4.06	4.32	3.37	3.22	3.1	2.89	2.66	3.57
<i>South Glos</i>	n/a	2.35	n/a	n/a	n/a	1.75	n/a	n/a	n/a	n/a	n/a
<i>North Som</i>	n/a	1.73	n/a	n/a	n/a	1.62	n/a	n/a	n/a	n/a	n/a

Source: SWRAWP Annual Report

- 3.2 The table shows a general trend of gradually falling sales, with a particularly marked fall since 2008, largely reflecting the recession. Crushed rock production for the South West declined from 20,580,000 tonnes in 2004 to 17,890,000 tonnes in 2013. This represents a 13% decline, compared to a 40% decline for the West of England for the same time period.
- 3.3 Figure 2 provides a comparison between the West of England's sales figures over the period 2004 to 2013 and the area's sub regional apportionments during this period. As can be seen, throughout this period, total crushed rock sales do not meet the level of sub regional apportionment given to the West of England in any year.

Figure 2 – Comparison of Sales 2004 – 2013 and the sub-regional apportionment

Imports and Exports

- 3.4 The 2009 AM Survey showed that the West of England consumed 1.957 million tonnes of crushed rock, although this figure may have been as high as 2.495 million tonnes. This uncertainty concerns 0.538 million tonnes from several quarries in the West of England, for which the only information is that it went somewhere in the South West.
- 3.5 Because of the cost of transporting aggregate long distances it is reasonable to assume that a significant proportion of this aggregate would have been consumed in the West of England. In the absence of further data, for the purposes of this LAA, we have assumed that 50% was consumed in the West of England, and that 50% was consumed elsewhere. The adjusted figure for the consumption of crushed rock within the West of England in 2009 is therefore 2.226 million tonnes.
- 3.6 Movements of crushed rock in and out of the West of England are not self-balancing (Table 3), and the West of England is a significant net exporter of crushed rock, exporting 1.153 million tonnes more crushed rock than is imported.

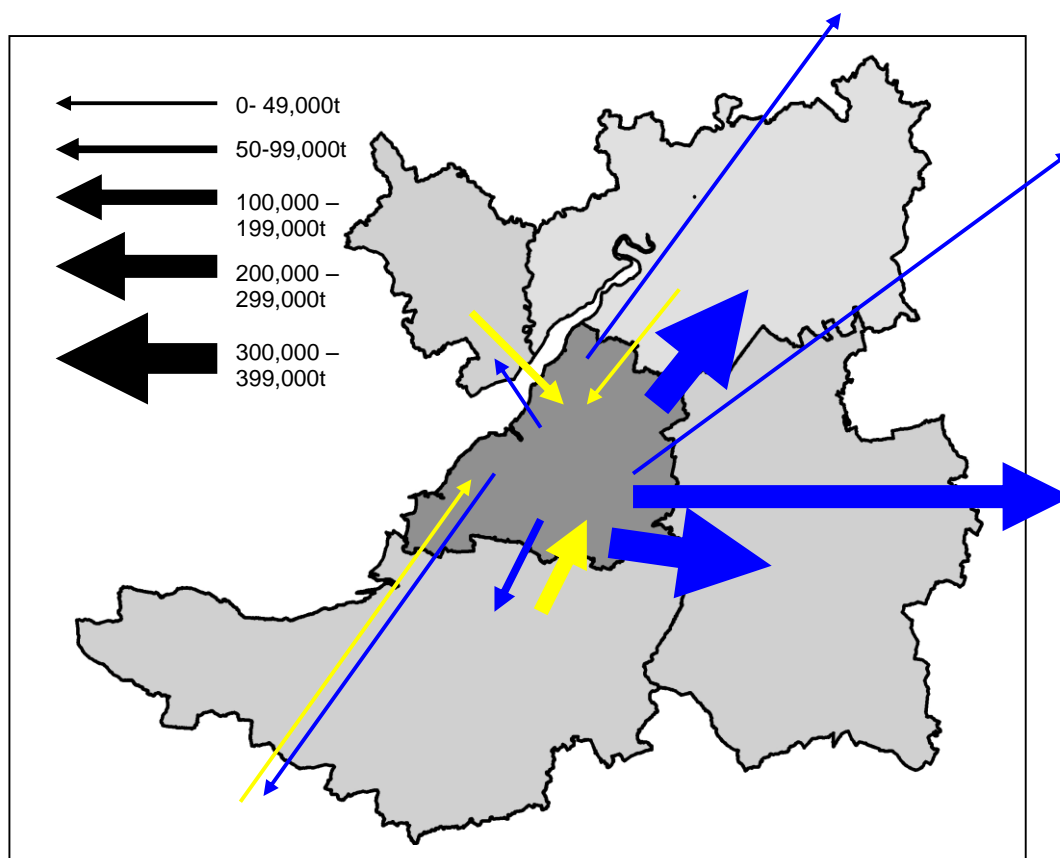
Table 3 – West of England Crushed Rock Imports and Exports 2009

Region	Origin	Import amount (tonnes)	Export amount (tonnes)
South West	Gloucestershire	c10,000	328,718
	Wiltshire		305,426
	Somerset	c110,000	98,900
	Dorset, Devon & Cornwall	c7,000	45,558
	Unknown, but somewhere in the South West		268,947
South East	Oxfordshire		170,973
	Berkshire		53,963
	Hampshire & Isle of Wight		14,651
	West Sussex		10,794
	Elsewhere in the South East		1,978
West Midlands			20,057
London			11,830
East of England			2,943
South Wales		c60,000	1,598
East Midlands			532
Unknown			2,963
TOTAL		187,000	1,339,831

- 3.7 Around 92% of the crushed rock consumed in the West of England is produced locally. The quarries in South Gloucestershire export a greater percentage of crushed rock outside of the West of England than the quarries in North Somerset (56% compared to 22%). Better access to the motorway network and closer proximity to the markets of Gloucestershire, Wiltshire and the South East probably account for this. Although not directly comparable, as the figure for the West of England included Somerset, these export percentages largely reflect the situation in the AM2005 survey.
- 3.8 In addition, some crushed rock is imported into the region, principally from Somerset and South Wales. Also, approximately 100,000 tonnes of High Specification Aggregate was imported from Ireland through Royal Portbury Dock (SWRAWP Report 2009), although the actual destination(s) of this aggregate is not known.
- 3.9 The cross border movement of aggregates is a feature of the industry, but the degree to which it takes place and the particular areas involved may change because demand and supply are dynamic. It is very difficult to predict how the industry would respond if individual quarries close. The situation would be uncertain and it is unreasonable for quarry operators and Mineral Planning

Authorities to speculate. What mpas can do, however, is show the areas where there are likely to be opportunities for mineral development through allocations in minerals plans, so that the industry is fully aware of these opportunities should it seek to respond. Work is underway on the Policies, Sites and Places Plan for South Gloucestershire, and the Sites and Policies Local Plan for North Somerset. These plans are being prepared in consultation with the industry and operators of existing quarries will have the opportunity to comment and seek to ensure that issues such as productive capacity are taken into account.

Figure 3a - Crushed Rock Imports and Exports 2009



- 3.10 Although one of the quarries (Tytherington) is rail linked, in recent years all the crushed rock produced in the West of England has been transported by road.

Landbank

- 3.11 Estimated crushed rock reserves in the WoE as at 31 December 2013 are 144.47 million tonnes. This gives a landbank of 29.2 years based on the sub regional apportionment (4.94mt) undertaken by SWRAWP. When landbank calculations are based on average annual production over the 10 year period 2004 – 2013 (3.57 mt) the landbank is extended to 40.46 years. The significance of these figures is considered in paragraphs 4.6-4.11 below.

Sand and Gravel

- 3.12 The West of England does not have any commercially viable sand and gravel resources and therefore relies on marine and imported sand and gravel to meet the demand.

Imports

- 3.13 In 2009, land-won sand and gravel imports into the West of England totalled 83,000 tonnes. 75% of this aggregate was imported from elsewhere in the South West, principally Dorset, with around 14% imported from North Lincolnshire, 7% from Hampshire and Berkshire, and 4% from Worcestershire.

Table 4 – West of England Sand and Gravel Imports 2009

Region	Origin	Import amount (tonnes)
South West	Dorset	c54,000
	Gloucestershire, Wiltshire & Devon	c8,000
East Midlands	North Lincolnshire	c12,000
South East	Hampshire & Berkshire	c6,000
West Midlands	Worcestershire	c3,000
TOTAL		83,000

Marine dredged sand and gravel

- 3.14 The government's UK Marine Policy Statement 2011 (paragraph 3.5.1) states that "marine sand and gravel makes a crucial contribution to meeting the nation's demand for construction aggregate materials". The main source of sand and gravel in the West of England is marine-won, although it is predominantly sand as this reflects the market demand. This material is dredged from the Bristol Channel, and landed at Avonmouth. The sand is predominantly used for building and concreting. The small percentage of gravel dredged is mainly used as concreting aggregate, although a small amount is used with sand as fill.
- 3.15 The mineral rights for marine sand and gravel are owned by the Crown Estate, up to the edge of the continental shelf. Avonmouth receives all of its dredged marine aggregate from the Crown Estate's 'South West' region in the Bristol Channel. The dredged aggregate in this 'region' is landed at a number of wharves, and while Avonmouth is the port that receives the largest proportion of this aggregate, the wharves in South Wales together land the majority of the aggregate from the 'region'.

3.16 Landings of marine sand and gravel at Avonmouth since 2004 are set out in the following table.

Table 5 - Marine dredged sand and gravel landings at Avonmouth 2004-2013 (million tonnes)

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Ave.
0.42	0.47	0.51	0.62	0.53	0.34	0.30	0.33	0.35	0.34	0.42

Source: Crown Estate

3.17 Dredging is subject to a system of licensing. The Crown Estate Marine Aggregates: Capability and Portfolio 2013 indicates that the licensed areas in the Bristol Channel have a total permitted tonnage of 3.1 million tonnes per annum, although in 2013 only 1.03 million tonnes was removed. In addition, there are 3 current licence applications under consideration which could deliver a further 1.8 million tonnes per annum. However, these licences are at the western end of the Bristol Channel and, therefore, aggregate landings from these areas would be more likely to be in South Wales.

Figure 3b – Licensed Dredging Areas - Crown Estate South West



3.18 In 2009, of the marine aggregate landed at Avonmouth, 66% remained in the West of England, 23% was exported elsewhere in the South West and 10% was exported outside of the region. Of the total amount of sand and gravel consumed in the West of England, 73% was marine sand and gravel.

- 3.19 The Crown Estate Minerals Planning Briefing Note Issue 3 May 2012 indicates that the wharf infrastructure in the 'South West' region is well established and can cope with the tonnage currently delivered and any future tonnage uplift. It is considered, therefore, that there is capacity at Avonmouth to continue a steady supply of landings of at least 650,000 tpa, in order to contribute to the overall need for aggregates in the West of England. North Somerset and Bristol City Councils will safeguard the port facilities at Avonmouth and Royal Portbury Docks, to encourage landings and processing to continue.

Recycled Aggregates

- 3.20 In the West of England recycled aggregate production largely derives from the reprocessing of the 'hard inert' elements of construction, demolition and excavation material (CDE waste), such as concrete, bricks, stone, road planings, rail ballast and glass. Recycling of CDE waste in the West of England is undertaken at fixed recycling sites and temporary construction sites. The fixed sites are generally waste transfer stations and quarries which handle and recycle a range of wastes. Aggregates from these sites are either sold on the open market and/or used in the production, at the same site, of materials such as concrete. At temporary construction sites, mobile plant is used to process materials arising from demolition on the site, for use either on the same site (e.g. as construction fill or hardcore) or for sale off-site.
- 3.21 Robust data on arisings of CDE waste and the quantities of recycled aggregates derived from it are difficult to obtain, particularly for sub-regional level. Estimates have therefore been developed from national and regional surveys and assumptions made about the proportions produced in the West of England. This is detailed in Appendix A with Table 6 below setting out the estimated sales figures for the past ten years. However, the results can only be regarded as very crude estimates, taking account of the assumptions, which are set out in the Appendix. For example they include the assumption that for years when data is not available, the proportion of the CDE waste arising in the South West which is recycled as aggregate is consistent with the proportion for England, and that the proportion of South West recycled aggregate which is processed in the West of England is the same from 2003 onwards (that being the only date for which data is available). Therefore the results should be considered with these points in mind. The West of England authorities will try to establish more relevant and accurate information for the West of England to inform future iterations of the LAA.

Table 6 – Estimated Sales of Recycled Aggregates in the West of England 2004 - 2013 (million tonnes)

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Ave.
0.81	0.81	0.82	0.82	0.84	0.68	0.68	0.68	0.68	0.68	0.75

(For methodology see Appendix A)

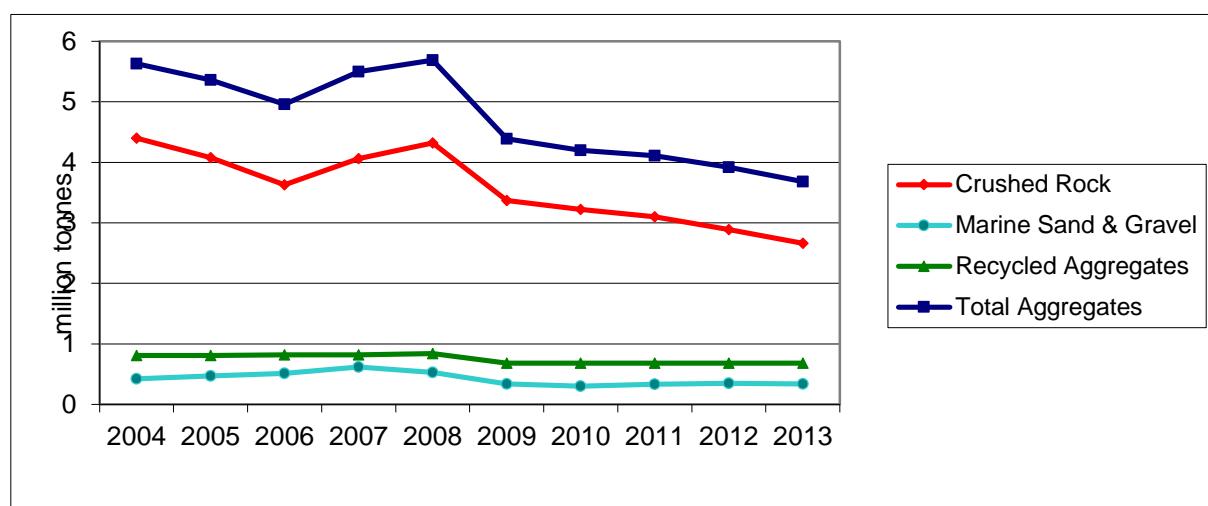
Total Aggregates Supply

3.22 The overall supply of aggregates in the West of England is from a variety of sources – locally land-won crushed rock, recycled aggregates and marine dredged aggregate– as shown in Table 7. This data doesn't take account of imports and exports.

Table 7 – Estimated Sales of Aggregates in the West of England 2004 - 2013

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Ave 2004-2013
Crushed Rock	4.4	4.08	3.63	4.06	4.32	3.37	3.22	3.1	2.89	2.66	3.57
Marine Sand & Gravel	0.42	0.47	0.51	0.62	0.53	0.34	0.30	0.33	0.35	0.34	0.42
Recycled Aggregates	0.81*	0.81*	0.82*	0.82*	0.84*	0.68*	0.68*	0.68	0.68	0.68	0.75
Total	5.63	5.36	4.96	5.50	5.69	4.39	4.20	4.11	3.92	3.68	4.74

Figure 4 – Total Aggregate Sales in the West of England 2004 - 2013



4.0 Future Aggregates Supply

- 4.1 The National Planning Policy Framework (NPPF) requires that LAAs are “based on a rolling average of 10 years sales data and other relevant local information, and an assessment of all supply options (including marine, secondary and recycled sources)”. It is expected by the NPPF that mpas will make provision for the land-won and other aggregates sources identified in their LAA in their local/minerals plan. DCLG ‘Guidance on the Managed Aggregate Supply System’ provides further guidance on the content of LAAs. This guidance suggests the use of the National Infrastructure Plan as part of the “relevant local information” used to supplement the 10 years sales data.
- 4.2 Major infrastructure projects under construction or in the pipeline, within or close to the West of England, include the M4/M5 Smart Motorway Project, Electrification of the Great Western Rail line, North Fringe to Hengrove Rapid Transit Scheme, Avonmouth Deep Sea Container Terminal and Hinkley Point C Power Station. The National Infrastructure Plan will be monitored as an influence on demand for aggregates within the West of England.

Crushed Rock

- 4.3 As indicated in Table 2, the 10 year average of crushed rock sales in the West of England between 2004 and 2013 is 3.57 million tonnes.
- 4.4 However both South Gloucestershire and North Somerset Councils in their Core Strategies have identified crushed rock requirements using the WoE sub-regional apportionment figure of 79.10 million tonnes for the period 2005 – 2020, and extrapolating this figure to 2026. Using this figure, the annualised requirement is 4.94mt.
- 4.5 The Core Strategy requirements reflect a splitting of the West of England figure 60:40 between North Somerset and South Gloucestershire, to reflect past sales, with South Gloucestershire taking the higher percentage. Historically the other unitary districts in the WoE, Bath and North East Somerset and Bristol City Council have never made a significant contribution to aggregates supply in the South West, due to the scale and nature of the mineral operations and the geology of those areas. It is considered that this is likely to continue. South Gloucestershire and North Somerset have extensive permitted reserves of aggregates and together have historically made provision for the sub regional apportionment.
- 4.6 Paragraph 3.11 above shows that the landbank for crushed rock is over 29 years based on the sub regional apportionment (4.94mt) undertaken by SWRAWP, and over 40 years based on the 10 year sales average of 3.57mt. By both calculations the landbank is well beyond the life of both the South Gloucestershire and North Somerset Core Strategies, which go forward to 2027 and 2026 respectively. In both cases the 10 year landbank for crushed rock could theoretically be maintained beyond 2030, without additional reserves being permitted.
- 4.7 However this assumes various factors, such as that all the permitted reserves are readily deliverable. In North Somerset a quarry operator has provided

information stating that permitted reserves are constrained. (Further details are set out in a North Somerset Council evidence paper <http://consult-ldf.n-somerset.gov.uk/consult.ti/spdraft/consultationHome>)

- 4.8 Also the permitted reserves are not evenly distributed between quarries and between North Somerset and South Gloucestershire.
- 4.9 The emerging Policies, Sites and Places Plan for South Gloucestershire and Sites and Places Plan for North Somerset will address deliverability and distribution of permitted reserves, together with other factors which could affect a steady and adequate supply of aggregates.
- 4.10 As a result of work already undertaken in North Somerset, the emerging Sites and Policies Plan is looking to carry forward part of an existing Preferred Area, south of Stancombe Quarry, already identified in the adopted Mineral Working in Avon Local Plan, having regard to constraints affecting existing reserves at the quarry.
- 4.11 Similarly, in South Gloucestershire, the emerging Policies, Sites and Places Plan is proposing to roll forward two existing Preferred Areas in the South Gloucestershire Minerals and Waste Local Plan, and considering a new allocation at Wickwar Quarry.

Marine Sand and Gravel

- 4.12 Comparison of actual and licensed rates of dredging within the Bristol Channel indicates that there is scope for a significant increase in the volume of marine sand and gravel to be achieved. The wharf infrastructure at Avonmouth has capacity to handle up to double the rate of current production. The availability of these wharves should be safeguarded in Local Plans.

Recycled Aggregates

- 4.13 The level of supply of recycled aggregates is influenced by the volume of arisings of CDE waste and the proportion of this waste that is recycled for aggregate use. A potential constraint on increased production is the availability of adequate capacity at recycling facilities located in close proximity to sources of CDE waste and markets for the recycled aggregates derived from that waste.
- 4.14 Further information will be sought on the distribution and capacity of fixed CDE waste recycling facilities and the level of recycling activity in the West of England.

Transportation Infrastructure

- 4.15 The availability of wharves at Avonmouth docks that handle or could handle aggregates, should be safeguarded through relevant Local Plans. Similarly, railheads that have been or could be used for the transport of aggregates to and from the West of England by rail should be safeguarded to maintain their potential. The only railhead which has been used in recent years for the transport of aggregates is at Tytherington Quarry. This is safeguarded by South Gloucestershire Council. Consideration will be given to the

appropriateness of safeguarding other railheads to recognise and maintain their potential for the transport of aggregates

Implications for individual Mineral Planning Authorities

4.16 Since the distribution of mineral resources and supporting infrastructure across the West of England is uneven, Table 8 provides a summary of the issues identified above and identifies the MPA(s) to which each is relevant

Table 8 - Implications of the Local Aggregate Assessment for West of England MPAs

	Bath & North East Somerset	Bristol City	North Somerset	South Gloucestershire
Safeguarding/provision of crushed rock reserves and processing capacity			▲	▲
Safeguarding of wharf capacity for marine aggregates		▲	▲	
Maintaining processing capacity for recycled aggregates	▲	▲	▲	▲
Safeguarding of rail infrastructure for movement of aggregates	?	?		▲

Appendix A

Data Methodology for Recycled Aggregates

A.1 Figures for sales of recycled aggregates produced at national and regional levels are heavily qualified as there is no systematic and consistent data collection equivalent to the AMRI or Aggregate Minerals surveys. Robust and consistent data on sales of recycled aggregates at the sub-regional level are difficult to obtain due to the diversity of recycling facilities and their frequently temporary nature. However, periodic surveys undertaken on behalf of the Government provide regional data that, combined with assumptions about the proportions accounted for by the West of England, allow estimates to be made.

Table A.1- Summary of the national, regional and estimated West of England figures for arisings of CDE waste and production of recycled aggregates.

	2001	2003	2005	2008	2009	2010
England CDE waste	88.89	90.93	89.63	94.55	76.97	77.38
England Recycled Aggregates	36.47	39.60	42.07	43.52	34.82	34.82
England Recycled Aggs as % of CDE waste	41.0%	43.6%	46.9%	46.0%	45.2%	45.0%
SW CDE waste	12.62	10.00	9.48	10.02*	8.16*	8.20*
SW CDE waste as % of England CDE waste	14.2%	11.0%	10.6%	10.6%*	10.6%*	10.6%*
SW Recycled Aggs	2.80	4.47	4.45*	4.61*	3.69*	3.69*
WoE Recycled Aggs	n/a	0.82*	0.81*	0.84*	0.68*	0.68*

Note: asterisks indicate estimates

A.2 In estimating figures for the West of England the following assumptions have been made:

- as no relevant regional figures are available after 2005, it is assumed that the South West accounted for the same proportion of England's CDE waste arisings

from 2008 onwards as in 2005 (10.6%). Therefore for 2008 onwards, that % has been applied to England CDE waste to give estimated SW CDE waste;

- due to a lack of relevant figures after 2003, it is assumed that from 2005 onwards the proportion of the CDE waste arising in the South West which is recycled as aggregate is consistent with the proportion for England. Therefore for 2005 onwards SW recycled aggregates have been calculated on that basis, using the England figures.
- that recycled aggregates in the West of England represented 18.3% of the total recycled aggregates in the South West for all survey years from and including 2003², that being the one date for which data is available. (2003 figure is calculated from data in DCLG (2007) Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005 - Construction, Demolition and Excavation Waste: Final Report, London: HMSO.)

A.3 The two main trends that can be detected in the figures are:

- broadly downward rates of total CDE waste arisings nationally and in the south west, potentially reflecting more efficient site management practice that reduces waste generation, together with the downturn in the economy and consequent reduction in construction activity; and
- the upward national trend in the proportion of CDE waste that is recycled for aggregate use from 2001 to 2005, reflecting the fiscal measures of the Landfill Tax and Aggregates Levy, although this appears to have levelled off since 2005.

A.4 The estimated figures suggest that production of recycled aggregates in the West of England has been relatively steady between 2003 and 2008, since when production has dropped in response to the reduced availability of CDE waste and the reduced demand for aggregates generally.

A.5 To provide a ten year average for comparison with other aggregate streams, the figures for recycled aggregates in the West of England in Table A.1 have been adapted by assuming a steady rate of change between years for which figures have been calculated (e.g. assuming that production of recycled aggregates in the West of England in 2004 was the mean of the figures for 2003 and 2005, (i.e. 0.815 million tonnes, rounded down to 0.81mt), and that the figures for 2006 and 2007 were the mean of the figures for 2005 and 2008, (ie: 0.825mt, rounded down to 0.82mt.) Unfortunately, due to the lack of data post 2010, it is very difficult to make estimates for 2011, 2012 and 2013, other than simply assuming continuation of the 2010 estimate for recycled aggregate of 0.68mt in those later years.

A.6 These assumptions result in the following estimated figures for sales of recycled aggregates in the West of England:

² South West Regional Assembly (2005) Technical and Strategic Assessment of Aggregate Supply Options in the South West Region

2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
0.82	0.81	0.81	0.82	0.82	0.84	0.68	0.68	0.68	0.68	0.68

Sources of waste data for Table A.1

ODPM (2002) Survey of arisings and use of construction and demolition waste in England and Wales in 2001. London: HMSO

<http://webarchive.nationalarchives.gov.uk/20080206120644/http://www.communities.gov.uk/archived/publications/planningandbuilding/surveyarisings>

ODPM (2004) Survey of Arisings and Use of Construction, Demolition and Excavation Waste as Aggregate in England in 2003. London: HMSO.

<http://webarchive.nationalarchives.gov.uk/20120919132719/www.communities.gov.uk/documents/planningandbuilding/pdf/surveyarisings2003.pdf>

DCLG (2007) Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005 - Construction, Demolition and Excavation Waste: Final Report. London: HMSO.

<http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/publications/planningandbuilding/surveyconstruction2005>

Defra (undated) Construction and demolition waste, England – Total waste generation 2008-2010. [online] Available at:

<http://www.defra.gov.uk/statistics/environment/waste/wrfg09-condem/>

WRAP (2010) Construction, demolition and excavation waste arisings, use and disposal for England 2008.

http://aggregain.wrap.org.uk/templates/temp_agg_publication_details.rm?id=2298&publication=9526

South West Regional Assembly (2005) Technical and Strategic Assessment of Aggregate Supply Options in the South West Region.

http://www.southwest-ra.gov.uk/nqcontent.cfm?a_id=1215&tt=swra