

Local Aggregates Assessment 2011

(MSSD-12)

Dorset County Council
Bournemouth Borough Council
Borough of Poole

January 2013

Revision 1 – incorporating the Local Aggregates Assessment Schedule of Amendments (MSSD-12a)

Contents

Contents	2
Background	3
Introduction – Aggregates in Bournemouth, Dorset and Poole.....	4
Marine Dredged Aggregate.....	5
Crushed Rock.....	5
Recycled Aggregate.....	5
A Local Approach to Determining the Apportionment	6
Land-won sand and gravel	6
Sales.....	6
Exports to and Imports from Bournemouth, Dorset and Poole.....	9
Landbanks.....	10
Crushed Rock.....	11
Sales.....	11
Production – local land-won.....	12
Exports from and Imports to Bournemouth, Dorset and Poole.....	12
Crushed Rock Landbank.....	13
Rail Imports.....	13
Road Imports of crushed rock	14
Marine Dredged Sand and Gravel	14
Recycled/Secondary Aggregate.....	16
Total Aggregate Supply.....	18
Future Production.....	19
Capacity for additional production.....	19
Local land-won sand and gravel and crushed rock	20
Rail Imported crushed rock.....	21
Road imported crushed rock	21
Marine dredged sand and gravel.....	21
Recycled aggregates	21
Comment.....	21

Background

- 1.1. Aggregates (sand and gravel and crushed rock) are the most commonly used minerals in the UK and are essential for the sustainable development of a modern economy through the construction of hard infrastructure such as roads, airports, schools, houses and hospitals.
- 1.2. Aggregates are usually defined as hard granular materials used in construction, and which may be natural, manufactured, or recycled. Natural (or primary) aggregate is obtained from mineral sources subject only to processing through crushing and sizing. Manufactured (or secondary) aggregate is of mineral origin, but which has resulted from industrial processes, such as furnace slag. Recycled aggregates result from the processing of inorganic materials previously used in construction, for instance construction and demolition waste.
- 1.3. Paragraph 145 of the National Planning Policy Framework states that:

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

- *preparing an annual Local Aggregate Assessment, either individually or jointly by agreement with another or other mineral planning authorities, based on a rolling average of 10 years sales data and other relevant local information, and an assessment of all supply options (including marine dredged, secondary and recycled sources);*
- *making provision for the maintenance of landbanks of at least 7 years for sand and gravel and at least 10 years for crushed rock, whilst ensuring that the capacity of operations to supply a wide range of materials is not compromised.*

It also requires that the advice of the relevant Aggregates Working Party should be taken into consideration in the preparation of the Local Aggregates Assessment (LAA).

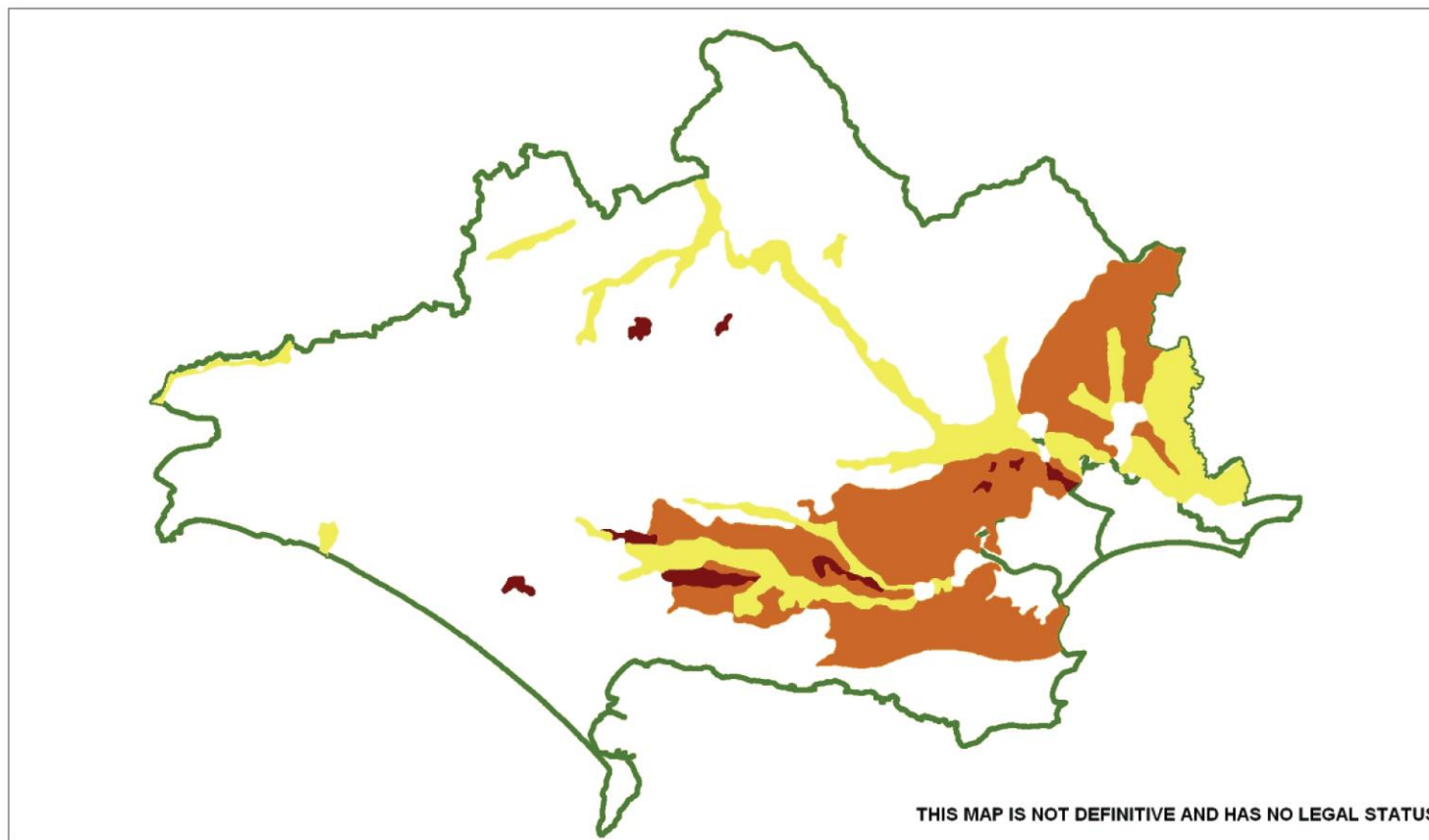
- 1.4. The LAA for the Dorset authorities – Dorset County Council, Bournemouth Borough Council and Borough of Poole – is set out in this document. It is intended to:
 - *describe aggregate production and use in Bournemouth, Dorset and Poole*
 - *assess where aggregate produced in Dorset is sent to*
 - *describe how the Bournemouth, Dorset and Poole Minerals Strategy's policies and proposals will affect aggregate production*

Introduction – Aggregates in Bournemouth, Dorset and Poole.

1.5. Three naturally occurring types of aggregate are produced in Dorset: land-won sand and gravel, marine dredged sand and gravel (dredged off the Isle of Wight and landed at Poole) and crushed limestone rock. Crushed rock is also imported into Bournemouth, Dorset and Poole, as is sand and gravel. Recycled aggregates are also produced in Dorset. The Local Aggregates Assessment will review each of these.

Sand and Gravel

1.6. The adjacent map shows the distribution of sand and gravel deposits in the county. Firstly the Plateau Gravels are found capping many of the hills and ridges in a broad zone stretching from the north of Dorchester to Wareham and around the fringes of Poole, Bournemouth and Wimborne. Only isolated pockets now remain available, the majority already being worked out, built upon or of ecological importance.



1.7. Valley or river gravel is found in the valleys of the Piddle, Frome, Stour and Avon, and in the north west of the

<p>Sand and Gravel Deposits</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Key</td> <td></td> </tr> <tr> <td style="padding: 2px;">Valley Gravel</td> <td style="text-align: center; width: 20px;"></td> </tr> <tr> <td style="padding: 2px;">Plateau Gravel</td> <td style="text-align: center;"></td> </tr> <tr> <td style="padding: 2px;">Sand Deposits</td> <td style="text-align: center;"></td> </tr> </table>	Key		Valley Gravel		Plateau Gravel		Sand Deposits		<p>Ref:</p> <p>Cent X: 377520 Cent Y: 100276</p>	<p style="font-size: small;">GEOGRAPHICAL INFORMATION SYSTEMS</p> <p style="font-size: x-small;">© Crown Copyright 2007. Photos © UK Perspectives.com 2005. © Dorset County Council 2007. OS licence number: 100018790.</p>
Key										
Valley Gravel										
Plateau Gravel										
Sand Deposits										

county, the Axe. There has only been limited working of these areas in the past.

- I.8. Solid sand deposits of the Poole Formation are found in south east Dorset. They comprise a series of upward fining sequences, becoming finer grained with increasing silt content towards the south east. The large variations in particle size enable a wide range of products to be produced, but their unpredictable distribution presents difficulties. They form the most important source of sand in Dorset.
- I.9. The ball clay resource is also located within the Poole Formation with sand (and gravel) often forming a deep overburden over the clay. Permissions can be granted for the extraction of this mineral, in advance of, or alongside or after, the ball clay extraction. This sand and gravel is considered to be a secondary aggregate if it needs to be removed to access the ball clay. If sand/gravel is extracted below the limit of the ball clay, it is considered a primary aggregate. The emerging Minerals Strategy proposes restrictions on the extraction of this sand and gravel resource associated with ball clay within the Dorset Area of Outstanding Natural Beauty (AONB).
- I.10. Of the mineral planning authorities in the south-west, Dorset is the largest producer of sand and gravel. Production in 2011 was 1.52 million tonnes (mt). Sand and gravel from Dorset is supplied to south-east England, including London, and elsewhere in the south-west.

Marine Dredged Aggregate

- I.11. A further source of aggregate lies offshore, south-west of the Isle of Wight, and comprises deposits of sand and gravel which are dredged and brought ashore at Poole. These deposits are considered to be fluvial, fluvio-glacial, or beach deposits formed during glacial episodes within the last 2 million years when sea levels were lower. Reserves are significant, with landings contributing around 60,000 to 70,000 tonnes per annum (tpa).

Crushed Rock

- I.12. Both Purbeck and Portland contain reserves of limestone rock famous for its use as a building or monumental stone. Crushed aggregate and armour stone is produced alongside dimension stone from the quarries on Portland. Each of the operational quarries has reserves of dimension stone offcuts and wastage which can be used as aggregate. The mines also provide offcuts and wastage that can be crushed for aggregate use. There is one quarry in Purbeck producing limestone for crushing. Average annual production of crushed rock averages around 0.27mt.
- I.13. Crushed rock from quarries in the Mendips has in the past been imported by rail into Hamworthy, in Poole. Annual imports averaged 100,000 tonnes. Although the rail depot is not currently operational, it may in the future be brought back into use should conditions justify this. Crushed rock is also imported into Dorset by road.

Recycled Aggregate

- I.14. Recycled aggregate is obtained from construction, demolition and excavation waste which has been processed. Processing varies, but can include sorting, crushing, washing and mixing with land-won aggregate. Data held on the amount of recycled aggregate produced, where it is produced and what it is used for is more limited than for other types of aggregate but recent survey work indicates that an average of 240,000 tonnes per annum (tpa) is currently produced. This is used primarily for construction fill, although the more processed material can be used in higher specification applications.

A Local Approach to Determining the Apportionment

- 1.15. The apportionment is the annual amount of land-won sand and gravel that a mineral planning authority is committed to planning/providing for. The apportionment for any mineral planning authority was formerly set through the Managed Aggregates Supply System (MASS), based on guideline figures set by Government. Guideline apportionment figures published in June 2009 and covering the sixteen year period 2005-2020 required the former South West region to make provision for 85 mt of sand and gravel over the sixteen year period. This was a reduction from the previous 2003 figure of 106mt. The 2009 guidelines resulted in a reduced sub-regional apportionment for Dorset, compared with the previous 2003 figures. Based on the historic proportional contributions to supplies averaged over the period 2004-2008, the annual apportionment figures for sand and gravel fell from 2.27 million tonnes per annum (mtpa) to around 1.97mtpa. For crushed rock, they fell from 0.48 mtpa to 0.30 mtpa.
- 1.16. This approach changed with the introduction of the Localism Act, and the National Planning Policy Framework (NPPF) (paragraph 145) requires that Mineral Planning Authorities base future mineral requirements on a rolling average of sales over a ten-year period and other relevant local information, including an assessment of other supply options. For sand and gravel, total sales during the period 2002 to 2011 (the last 10 years) amounted to approximately 15.78 mt, an annual average of 1.58 mt. For crushed rock, the current 10 year average figure is 0.27 mtpa. The 'rolling basis' of the methodology set out in the NPPF means that the appropriate annual supply for aggregates will be regularly revised by the Minerals Planning Authority through the LAA.
- 1.17. These figures are included in the Minerals Strategy, to be tested through the Examination and (if found sound) adopted with the Minerals Strategy.

Land-won sand and gravel

Sales

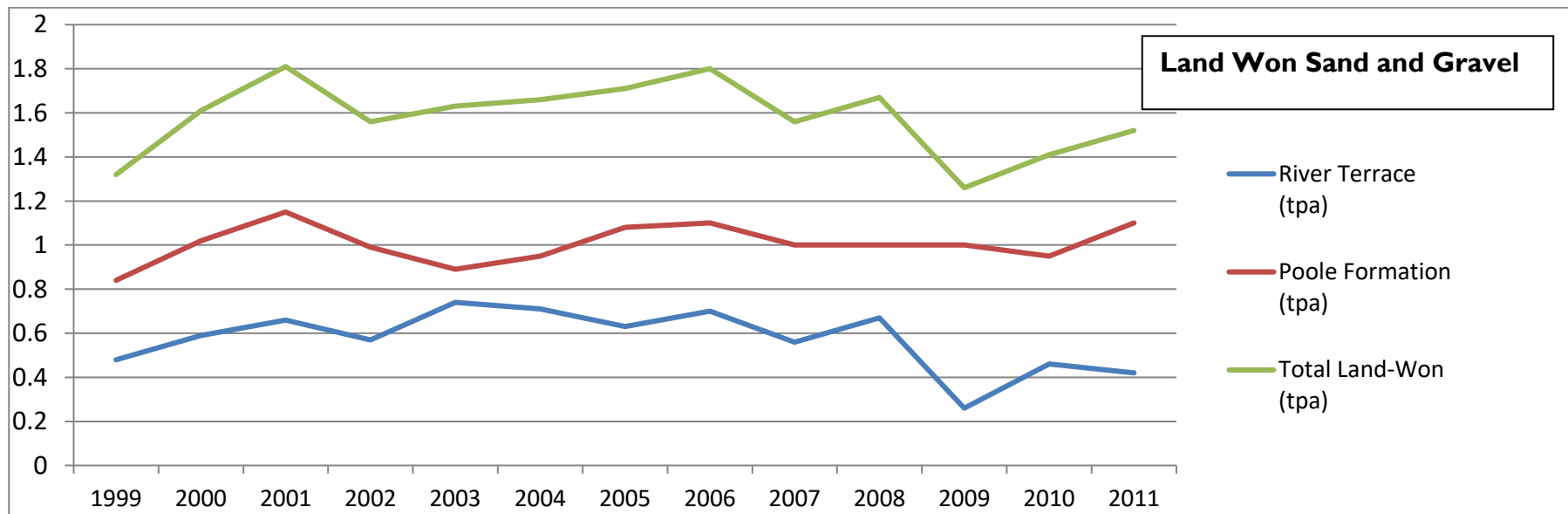
- 1.18. Sales of land-won sand and gravel produced in Dorset over the 12 year period from 1999 are set out in Table 1 below. Although there has been some reduction in production in recent years, the general trend is for fairly steady levels of production with consistently higher levels of production of Poole Formation sand over River Terrace sand and gravel. At no time was production in excess of the then current apportionment figure (which was 2.27 mtpa for most of the period, reducing to 1.97 mtpa with a proposed further reduction to 1.58 mtpa, the latter based on average sales).
- 1.19. Overall land-won sand and gravel production for the south west sub-national area has declined from 5,791,000 tonnes in 2001¹ through to 5,264,000 tonnes in 2005 to 3,638,000 tonnes in 2009. This represents a 37% decline, compared to a 22% decline for Dorset for the same time period. The fact that Dorset's decline is less than that of the sub-national area indicates that Dorset is a significant provider of land-won sand and gravel beyond its boundaries and continues to supply sand and gravel while output from other producers is declining. The reason for Dorset's maintenance of production, compared with the fall outside of Dorset is not clear, but could be due to the reserves in Dorset permitting maintenance of supply while declining supplies elsewhere are reflected in declining supply figures. In 2010, Dorset remained the main production area and accounted for about 46% of sales in the south-west. Approximately 43% of the south west's reserves were held at sites in Dorset.

¹ Collation of the results of the 2001Agg Mineral Survey for England and Wales (Prepared by British Geological Survey on behalf of ODPM 2001). Similarly for the 2005 and 2009 reports, though these were commissioned by Department for Communities and Local Government.

Table 1: Land-won sand and gravel sales 1999 – 2010.

Aggregates		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	AVERAGES
Land Won Sand and Gravel	River Terrace	0.48	0.59	0.66	0.57	0.74	0.71	0.63	0.7	0.56	0.67	0.26	0.46	0.42	0.57
	Poole Formation	0.84	1.02	1.15	0.99	0.89	0.95	1.08	1.1	1	1	1	0.95	1.1	1.01
Sub-Total land-won sand and gravel		1.32	1.61	1.81	1.56	1.63	1.66	1.71	1.8	1.56	1.67	1.26	1.41	1.52	1.58

(figures in millions of tonnes)



Production - Land-won sand and gravel is currently supplied from the following quarries.

Table 2: Permitted sand and gravel quarries in Dorset.

Site	Operator/Owner	Mineral primarily produced
Binnegar Quarry	Raymond Brown	Sand (Poole Formation)
Dorey's Pit	Holme Estate	Sand (Poole Formation)
Henbury Pit	M B Wilkes	Sand (Poole Formation)
Hines Quarry	Hanson	Sand (Poole Formation)
Hyde Quarry	Hanson	Sand (Poole Formation)
Masters North and South	Holme Sand & Ballast	Sand (Poole Formation)
Tatchells Quarry	Aggregate Industries	Sand (Poole Formation)
Trigon Hill	Giles Sturdy	Sand (Poole Formation)
Warmwell Quarry	Aggregate Industries	Sand (Poole Formation)
Avon Common	Tarmac	River Terrace - sharp sand and gravel
Chard Junction Quarry	Aggregate Industries	River Terrace - sharp sand and gravel
Hurn Court Farm	New Milton Sand & Ballast	River Terrace - sharp sand and gravel
Moreton Pit	G Crook & Sons	River Terrace - sharp sand and gravel
Woodsford Quarry	Hills Quarry Products	River Terrace - sharp sand and gravel

Exports to and Imports from Bournemouth, Dorset and Poole.

Table 3: Land-won sand and gravel imports to and exports from Bournemouth, Dorset and Poole – based on 2009² figures.

Location	Sub-national Area	Destination of exports & relative proportions exported	Source of supply and relative proportion from that supply
Somewhere in Greater London	London	c. 5%	0%
West London			
Berkshire	South East	<1%	0%
Hampshire and IOW		c. 7% (102,000)	9.8% (68,000)
Kent and Medway		0.0%	0%
Oxfordshire		<1%	0%
Surrey		0.0%	0%
West Sussex		<1%	c. 2%
Somewhere in South East		<2%	?
Avon		<5%	0%
Cornwall	<1%	0%	
Devon	South West	<10% (92,000)	<1%
Dorset		c. 47% (640,000) remains in Dorset	c. 90% (most land-won sand and gravel used in Dorset is locally sourced)
Gloucestershire		<2%	c. 2%
Somerset		c. 20% (290,000)	0%
Wiltshire		c. 3% (37,000)	<1%
Somewhere in South West		<2%	?
Shropshire		West Midlands	<1%
WLS4 South East Wales	Wales	<1%	0%
WLS5 Remainder of South Wales			
Totals		1,350,165 tonnes land-won sand and gravel produced in Bournemouth, Dorset and Poole in 2009	696,000 tonnes land-won sand and gravel consumed in Bournemouth, Dorset and Poole in 2009

² Collation of the Results of the 2009 Aggregate Minerals Survey for England and Wales: British Geological Survey, May 2011 (Department for Communities and Local Government, Welsh Assembly Government); Personal communication from Dr. Joseph Mankelov, British Geological Survey: 22 June, 2012. Duty to cooperate interaction with Hampshire County Council, Somerset County Council, Wiltshire County Council and Devon County Council.

- I.20. Approximately half of the land-won sand and gravel produced in Dorset is used within the county (including Bournemouth and Poole), with the rest being exported to other parts of the country. The main recipients of exported material are Somerset, Hampshire, Devon and Wiltshire, followed by London and assorted other authorities in the south of England. Of the material consumed within Dorset, by far the majority is produced within Dorset. There are limited imports from other authorities, with the largest source being Hampshire followed by Gloucestershire and West Sussex and Devon and Wiltshire.
- I.21. The 2009 Aggregate Minerals Survey (AMS) commissioned by the Department for Communities and Local Government (CLG) and undertaken and coordinated by the British Geological Survey (BGS) provided broad land-won sand and gravel import and export figures for MPAs/ regions. The data within the AMS along with additional information obtained directly from the BGS has provided further information on imports into Dorset. These are set out in Table 3 above, which shows that overall Dorset is a net exporter of land-won sand and gravel, supplying Hampshire and other authorities.

Landbanks

- I.22. To maintain the necessary level of provision, the Mineral Planning Authority will ensure that there is a stock of planning permissions which will satisfy the annual supply requirement for a period of at least 7 years. This is the landbank – the total remaining quantity of mineral reserve with planning permission for extraction. At the end of 2011, there were just over 17.5 mt of permitted sand and gravel reserves in Dorset. At the current 10-year average level of production (1.58 mtpa) this would last approximately 11 years if no further permissions were granted:

Permitted Reserves / Level of Provision = Remaining landbank

17.5 mt / 1.58 mtpa = 11.1 years

- I.23. This shows that at the start of 2012 the Dorset landbank was approximately 11.1 years, but as production continues this figure will fall unless more permissions are granted.
- I.24. This figure comprises the landbank for both Poole Formation sand and river terrace sand and gravel. Poole Formation sand and river terrace/plateau sand and gravels have different properties and uses, and it is considered appropriate to monitor their supply separately. Further analysis makes it possible to identify separate landbanks. At the end of 2011, estimated reserves for River Terrace aggregate were approximately 7.6 mt and estimated reserves for Poole Formation aggregate were approximately 9.9 mt. The average annual supply figure of 1.58 mtpa at the end of 2011 can be split pro rata as follows, on the basis of average production levels between 2003 and 2011:
- 36% for river terrace/plateau sand and gravel ($1.58 \times 36\% = 0.57$ mtpa)
 - 64% for Poole Formation sand ($1.58 \times 64\% = 1.01$ mtpa)
- I.25. When these separate apportionments are applied to the 2011 reserves, this gives indicative landbanks of around 13.3 years for River Terrace/plateau sand and gravel and almost 10 years for Poole Formation sand. This exercise will be repeated annually to identify possible shortfalls in provision. The Mineral Planning Authorities will maintain a separate landbank for both Poole Formation and river terrace aggregate equivalent to at least 7 years' supply in each case.

Crushed Rock

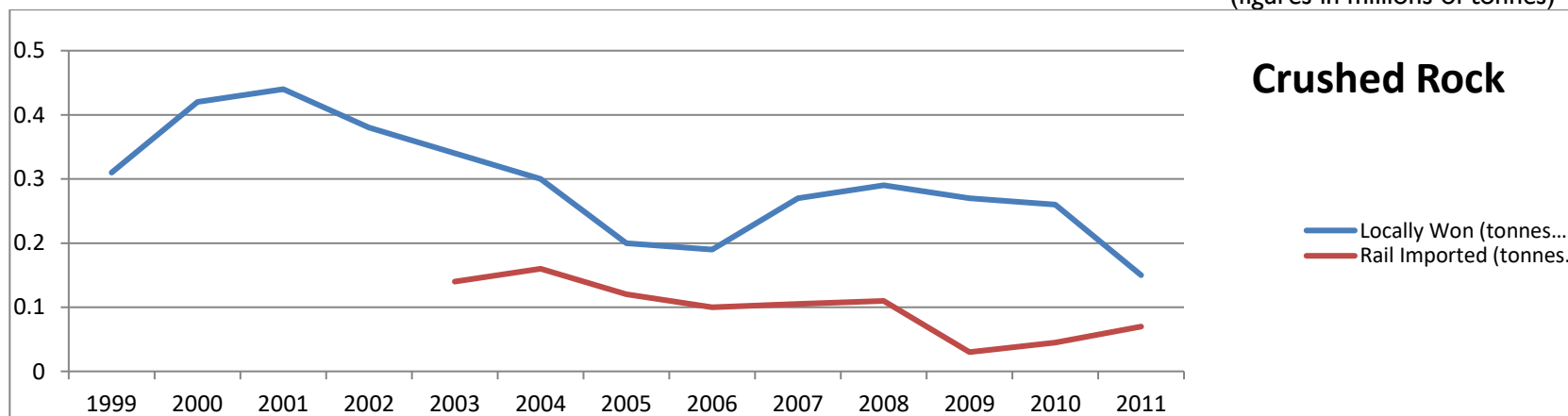
Sales

- I.26. The Jurassic Limestone is generally regarded as a weak or softer rock than Carboniferous Limestone and is normally unsuitable as a concreting aggregate. Stone to be crushed for aggregate production is either waste stone resulting from production of dimension stone, certain other types of stone not suitable for dimension stone or stone from the cherty series, which forms the deepest quarried bed on Portland and is only suitable for crushing. Extraction of stone from the cherty series results in a deeper void space in the quarry once extracted. The sole aggregates quarry in the Isle of Purbeck is Swanworth Quarry, near Worth Matravers, which produces crushed rock from Portland Beds.
- I.27. Sales of crushed rock produced in Dorset over the 12 year period from 1999 are illustrated in Table 4 and Figure 4 below. As with sand and gravel, although there has been some reduction in production in recent years, the general trend is for fairly steady levels of production. At no time is production in excess of the apportionment figure (0.78 mtpa, reducing to 0.48 mtpa with a further proposed reduction to 0.27 mtpa). The Minerals Strategy proposes a level of crushed rock provision of 0.27 mtpa, based on the current 10 year rolling average.

Table 4: Crushed Rock Production and Imports 1999 – 2010.

Aggregates		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	AVERAGES
Crushed Rock	Produced locally	0.31	0.42	0.44	0.38	0.34	0.3	0.2	0.19	0.27	0.29	0.27	0.26	0.15	0.27
	Rail Imported	Not available				0.14	0.16	0.12	0.1	0.1	0.11	0.03	0.05	0.07	0.10
Sub-total - crushed rock		0.31	0.42	0.44	0.38	0.48	0.46	0.32	0.29	0.27	0.4	0.3	0.305	0.22	0.35

(figures in millions of tonnes)



I.28. Overall crushed rock production for the south west sub-national area has declined from 26,518,000 tonnes in 2001 through to 22,238,000 tonnes in 2005 to 17,206,000 tonnes in 2009³. This represents a 35% decline, compared to a 39% decline for Dorset for the same time period. Dorset’s production is therefore in line with a more general decline in crushed rock production.

Production – local land-won

I.29. Table 5 below sets out the quarries/mines currently producing crushed rock. Most are located on Portland, with one on Purbeck. Swanworth Quarry on Purbeck extracts and crushes stone from the Portland beds. Much of the current extraction on Portland takes place under a large composite planning permission granted in 1951, covering around two thirds of the plateau forming the top of the island. Extraction of dimension stone is the primary focus of the quarries/mines, and crushed rock is essentially a by-product, utilising the stone not suitable for dimension stone. This permission for quarrying lasts until 2042.

I.30. Crushed rock from Portland can be divided into two categories:

- Primary aggregate – derived from crushing of the cherty series, which underlies the dimension stone beds
- Secondary aggregate – derived from the overburden and waste stone from the dimension stone quarrying and masonry processes

I.31. The cherty beds lie under the Portland dimension stone beds, and are only suitable for crushing for aggregate use. Although a valuable source of aggregate, working of the cherty beds prolongs the period before the quarry can be restored and makes restoration at or near ground level more difficult.

Table 5: Permitted crushed rock production sites in Dorset.

Site	Operator/Owner	Location
Coombefield Quarry; Perryfield Quarry; Broadcroft Quarry	Stone Firms Ltd	Portland
Bowers Mine and Quarry; Jordan's Mine and Inmosthay Quarry; Independent	Albion Stone Ltd	Portland
Swanworth	Suttle Stone Quarries	Purbeck
Admiralty Quarry (Crooks)	G Crook & Sons	Portland

Exports from and Imports to Bournemouth, Dorset and Poole.

I.32. In 2009, 693,000 tonnes of crushed rock were consumed in Dorset⁴. Of this, approximately 40% was produced in Dorset, 55% was imported from Somerset and Powys and Devon each supplied between 1% and 5%. By far the majority of the crushed rock produced in Dorset remains in Dorset (in 2009, 96%). Wiltshire (c.3%) and Hampshire (c. 1%) received the highest level of exports, outside of Dorset.

³ Collation of the results of the 2001 Agg Mineral Survey for England and Wales (Prepared by British Geological Survey on behalf of ODPM 2001). Similarly for the 2005 and 2009 reports, though these were commissioned by Department for Communities and Local Government.

⁴ Collation of the results of the 2009 Aggregates Mineral Survey for England and Wales (Prepared by British Geological Survey on behalf of Department for Communities and Local Government.)

I.33. Prior to the closure of the Hamworthy aggregate rail depot, the majority of the crushed rock imported into Bournemouth, Dorset and Poole came from Whatley Quarry in Somerset. It was imported by rail and by road. A much smaller amount of crushed granite from Northern Ireland is imported annually, to the Port of Poole, for use at an asphalt production plant in Poole.

Crushed Rock Landbank

I.34. The Mineral Planning Authority is required by the National Planning Policy Framework (paragraph 145) to maintain a 10-year landbank of crushed rock. Total sales in 2011 were approximately 150,000 tonnes and the 10 year average of production from 2002 to 2011 is approximately 0.27 mtpa. A conservative estimate of the remaining reserves of crushed rock is approximately 13 mt, which corresponds to a landbank of around 48 years, at a consumption level of 0.27 mtpa.

$$13 \text{ mt} / 0.27 \text{ mtpa} = 48 \text{ years}$$

I.35. This is well beyond the life of the emerging Strategy and it is therefore considered that there is no need to identify any further sources of crushed rock at the present time. It is possible that further reserves, including waste stone on Portland, may be identified during the plan period.

Rail Imports

I.36. There is a rail depot at Hamworthy in Poole which, prior to its closure in 2012, received crushed limestone from Whatley Quarry in Somerset for local distribution and use. Imports included washed limestone sand, a 20-5 concrete sand, type 1 fill and 40mm scalplings. Hamworthy Depot also imported sand from Masters Quarry for blending purposes and was a recycling centre accepting inert waste for crushing, screening and general sale. The main uses for the aggregate were the local market, Hanson in-house concrete plants and other concrete product sites. The level of imports of crushed rock varied, as illustrated in Table 6 below, from a high in 2004 to around 50,000 tonnes more recently. Although the depot at Hamworthy is currently not operational, the facility remains and its re-opening remains an option should the operators wish to resume imports.

Table 6: Rail depot imports

2003	2004	2005	2006	2007	2008	2009	2010	2011	AVERAGE
0.14	0.16	0.12	0.1	0.1	0.1	0.11	0.05	0.07	0.1

(figures in millions of tonnes)

I.37. Opportunities for the establishment of additional rail depots are limited. In the north, where the Salisbury-Exeter line passes in and out of Dorset, the Mendip quarries are relatively close, but road links are more direct. The north-south single line from Yeovil to Dorchester passes through a rural area with limited opportunity and need for such a facility. Work is being undertaken to increase capacity on the main line from London to Weymouth. Possible establishment of new depots along this line will continue to be investigated and encouraged by the Mineral Planning Authority.

I.38. For dispatching sand to London, sidings at Wool serve as a railhead to load sand extracted at Warmwell Quarry near Dorchester. Approximately 100,000 tonnes of sand are sent by rail annually. Warmwell has only a limited remaining reserve, so it is not known how long this level of export can be maintained, unless Aggregate Industries develop a successor site or other companies use these sidings.

Road Imports of crushed rock

I.39. Crushed rock is also imported to Bournemouth, Dorset and Poole by road, primarily from Somerset. It is more difficult to obtain accurate figures for amount of road imports. As noted, of the 693,000 tonnes of crushed rock consumed in Bournemouth, Dorset and Poole in 2009, some 55% came from Somerset⁵. In 2009, approximately 30,000 tonnes were imported by rail to Hamworthy Depot, this implies that approximately 350,000 tonnes were imported by road from Somerset. It is likely that much of this rock came in as reverse loads in lorries taking sand and gravel to Somerset from Dorset (in 2009, this was approximately 290,000 tonnes). In 2011, Whatley Quarry had a reserve of in excess of 100 mt, so there is confidence that this level of supply can be maintained over the plan period.

Marine Dredged Sand and Gravel

I.40. Marine dredged sand and gravel is extracted from the sea bed from licensed areas off the coast of Hampshire, the Isle of Wight and West Sussex. Marine dredged aggregates are landed at a wharf in the Port of Poole. Marine aggregates make a relatively small but important contribution to the overall need for minerals in Dorset. Until the economic downturn impacted, landings were around 100,000 tonnes per annum. Landings are currently down to 60,000 to 70,000 tonnes per annum. Sales of marine dredged sand and gravel in Bournemouth, Dorset and Poole for the past 10 years are set out in Table 7 below.

I.41. The mineral rights for marine sand and gravel are owned by the Crown Estate, up to the edge of the continental shelf. Dorset receives most of its dredged marine aggregates from the ‘South Coast’ region. Crown Estate Minerals Planning Briefing Note Issue 3 May 2012 (MPBN)⁶ indicates that there is some 87.5 mt of good quality permitted reserves (at sand and gravel ratio of 50:50) in the ‘South Coast’ region. The Crown Estate MPBN also states that there are an additional 13 licences currently under consideration in the South Coast and East English Channel Region.

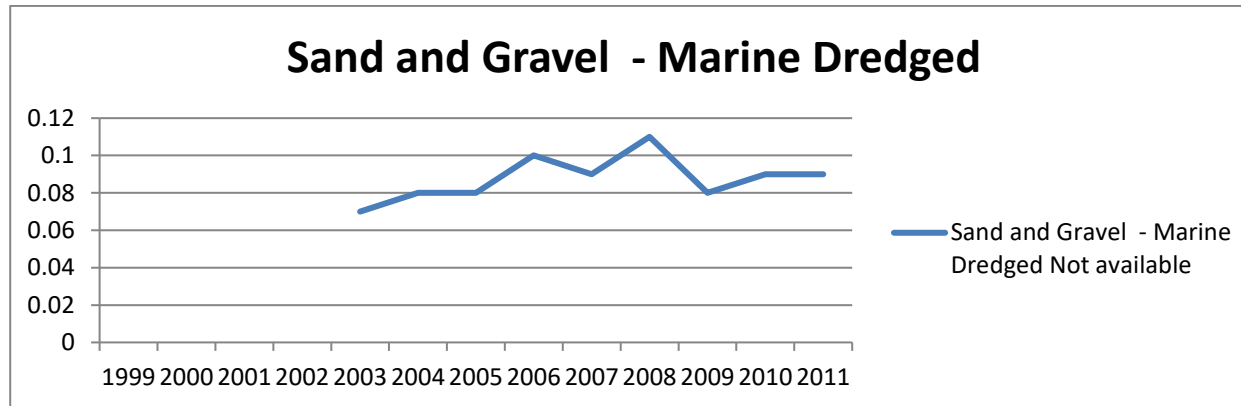
Table 7: Marine dredged sand and gravel landings in Bournemouth, Dorset and Poole

2003	2004	2005	2006	2007	2008	2009	2010	2011	AVERAGE
0.07	0.08	0.08	0.1	0.09	0.11	0.08	0.09	0.09	0.09

(figures in millions of tonnes)

⁵ Collation of the Results of the 2009 Aggregate Minerals Survey for England and Wales: British Geological Survey, May 2011 (Department for Communities and Local Government, Welsh Assembly Government); Personal communication from Dr. Joseph Mankelov, British Geological Survey, 22 June, 2012; Duty to cooperate interaction with Hampshire County Council, Somerset County Council, Wiltshire County Council and Devon County Council.

⁶ See Examination Library reference MSDCC55



- I.42. Dredging is subject to a system of licensing. The licensed areas (see figure above) from which minerals are dredged and imported into Dorset have a total permitted tonnage of 9.75 mtpa, of which in 2010 only 3.66 mt were removed. It is considered that capacity remains to continue a steady supply of landings of up to 100,000 tpa within the plan period in order to contribute to the overall need for aggregates in Dorset. The Mineral Planning Authority will safeguard the facility at Poole Port to enable and encourage landings and processing to continue.
- I.43. The principal constraints on the level of marine landings during the plan period are the production capacity to dredge and deliver the material to the wharves, security of port access (loss of wharves), channel and berth restrictions and the road transport system away from the wharf. Without expansion, there is currently limited additional capacity at Poole Wharf. Landings are considerably constrained by the capacity of the wharf - 4,000 tonnes is the maximum load that can be landed at any one time and total storage capacity of processed material is around 10,000 tonnes. Despite these capacity issues, substantial marine aggregate reserves remain along the South Coast and eastern English Channel for the long term.
- I.44. Marine dredged sand/gravel is used for concreting purposes, and is also used for beach replenishments. Between 2005 and 2010 3.32 mt of marine sand was pumped directly onto the beaches at Bournemouth, Sandbanks, Poole and Swanage. It is understood that further beach recharge is being considered for Bournemouth and West Bay in the coming years. This method of beach recharge requires no land transportation.
- I.45. With limited spare capacity at Poole wharf, there is little flexibility to deliver additional resources of marine dredged aggregates into Dorset unless the wharf were to be used as a trans-shipment wharf. This is where large articulated lorries take material directly from the ships for onward processing. This could be an option if increased supplies of aggregates are needed in the future and other sources constrained.
- I.46. In 2009, of the landings of marine dredged sand and gravel at the Wessex Wharf in Poole, 43% remained in Bournemouth, Dorset and Poole, 34% was exported to other destinations in the South West and 23% was exported to the South East. Of the 39,000 tonnes of marine sand and gravel consumed in

Dorset in 2009⁷, more than 85% was landed directly in Dorset while Hampshire/West Sussex supplied between 5% and 10% of this amount. A very small amount was imported from Somerset.

- I.47. This indicates that at most Bournemouth, Dorset and Poole imported some 4,000 tonnes of marine dredged sand and gravel in 2009, while it exported approximately ten times this amount. Although Bournemouth, Dorset and Poole are net exporters of marine dredged sand and gravel, the figures involved are all relatively small and not considered of great significance – apart from indicating the role of Bournemouth, Dorset and Poole in supplying sand and gravel to surrounding (and beyond) authorities.

Recycled/Secondary Aggregate

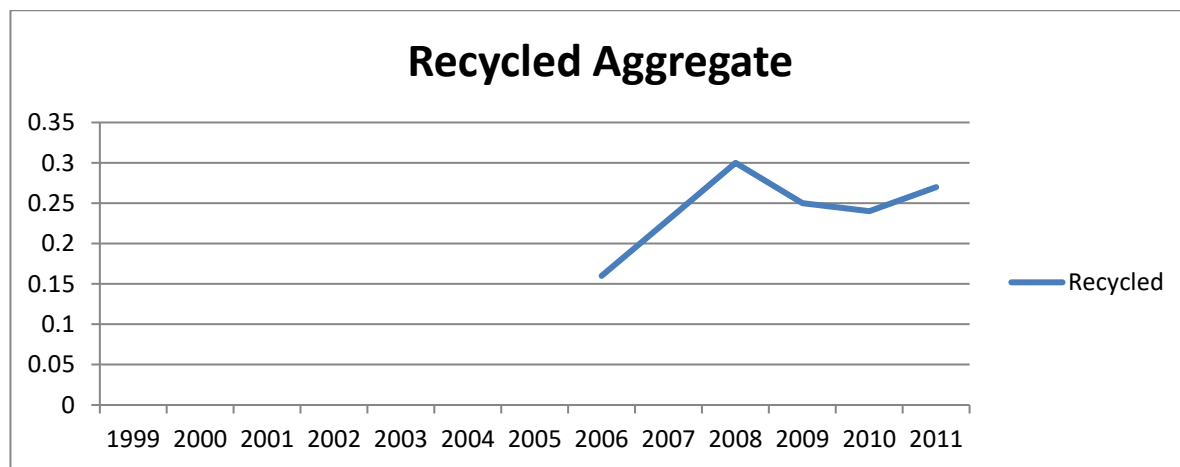
- I.48. Recycled aggregates are construction, demolition and excavation (CDE) wastes which can be re-used as aggregates, usually after some form of processing such as screening, washing or blending with primary aggregate. CDE waste includes crushed brick, concrete, soils and sub-soils and road planings. These materials may be used as they are, to provide bulk fill for construction projects or combined with primary (i.e. land-won or marine) material to manufacture concrete or material suitable for road surfacing and for re-use in materials for sea defences. These combined materials are known as hybrid aggregates.
- I.49. Secondary aggregates are materials that are produced as industrial by-products, such as spent foundry sand, crushed glass, fragmented plastic or rubber, that can be used as aggregates. They can also be produced as a result of other mineral operations, such as the sand lying above ball clay which requires removal in order to gain access to the clay.
- I.50. Data for the production of recycled and secondary aggregates is limited, and less reliable than that for other types of aggregate. Survey work undertaken by Dorset County Council of known aggregates recycling sites in the Plan area provides more relevant and accurate information on output, capacity and the nature of facilities within the county. Information indicates that total average output over the past five years has been in the region of 0.24 mt per year (see Table 8 below). By comparison, the total permitted capacity for aggregate recycling production is over 580,000 tonnes.
- I.51. Results show that there are thirteen known aggregate recycling sites of varying scales, which produce between them a variety of washed aggregate, fill material and soils. Five of the sites can be regarded as strategic facilities, with either a capacity or average output of 50,000 tonnes or more. Although potential capacity is significantly higher than average sales, this does not mean that these higher levels will be realised. It is likely that most material suitable for recycling is already being recycled and CDE arisings are unlikely to increase significantly.

⁷ Collation of the results of the 2009 aggregate minerals survey for England and Wales (British Geological Survey, Department for Communities and Local Government, Welsh Assembly Government: May 2011)

Table 8: Recycled and Secondary Aggregate Production Bournemouth, Dorset and Poole

2006	2007	2008	2009	2010	2011	AVERAGE
0.16	0.23	0.3	0.24	0.24	0.27	0.24

(figures in millions of tonnes)



Total Aggregate Supply

1.52. Overall supply of aggregates in Bournemouth, Dorset and Poole is from a variety of sources – land-won sand and gravel, crushed rock, recycled aggregates, marine dredged aggregate and wharf/rail depot imports – as shown in Table 9.

Table 9: Summary of Aggregates Production in Bournemouth, Dorset and Poole (Figures in million tonnes)

Aggregates		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	AVERAGES
Sand and Gravel Land Won	River Terrace	0.48	0.59	0.66	0.57	0.74	0.71	0.63	0.7	0.56	0.67	0.26	0.46	0.42	0.57
	Poole Formation	0.84	1.02	1.15	0.99	0.89	0.95	1.08	1.1	1	1	1	0.95	1.1	1.01
Sub-Total land-won sand and gravel		1.32	1.61	1.81	1.56	1.63	1.66	1.71	1.8	1.56	1.67	1.26	1.41	1.52	1.58
Apportionment levels		2.78	2.78	2.78	2.78	2.27	2.27	2.27	2.27	2.27	2.27	1.97	1.97	1.97	1.58 proposed
Crushed Rock – land won		0.31	0.42	0.44	0.38	0.34	0.3	0.2	0.19	0.27	0.29	0.27	0.26	0.15	0.27
Apportionment levels		0.78	0.78	0.78	0.78	0.48	0.48	0.48	0.48	0.48	0.48	0.3	0.3	0.3	0.27 proposed
Crushed Rock - Rail Imported		-	-	-	-	0.14	0.16	0.12	0.1	0.1	0.11	0.03	0.05	0.07	0.10
Marine Dredged Sand and Gravel		-	-	-	-	0.07	0.08	0.08	0.1	0.09	0.11	0.08	0.09	0.09	0.09
Recycled Aggregates		-	-	-	-	-	-	-	0.16	0.23	0.3	0.24	0.24	0.27	0.24
Total production		?	?	?	?	2.18	2.2	2.11	2.35	2.15	2.48	1.89	2.05	2.1	2.18

Notes – Table 9.

- (a) Figures in million tonnes.
- (b) 1999 to 2002 land won sand and gravel figures sourced from SWRAWP Annual Reports 1999 - 2002.
- (c) Land-won sand and gravel 'split' between Poole Formation and River Terrace for 1999 to 2002 is estimated based on average proportional split for the years 2003 to present.

Future Production

Capacity for additional production

- I.53. Table 9 indicates generally steady production of each category of aggregate, with land won sand and gravel comprising by far the greatest share of aggregate produced. Dorset maintains production of aggregate with significant amounts of land-won sand and gravel exported at a time when many other authorities are reporting a drop in aggregate production.
- I.54. The strategy for aggregate production is to maintain a level of production that will allow Dorset to meet its needs and also supply land-won sand and gravel to other authorities. These figures indicate that there is capacity for Bournemouth, Dorset and Poole to maintain production of aggregates, for local markets and for export. Whether this is in fact possible will be determined through the production of the Minerals Sites document.
- I.55. The amount of sand and gravel that will need to be provided for through the Mineral Sites Document can be calculated as;

Annual production figure x Years of the plan (2011 to 2028) - Existing Permitted Reserves 2011 = Requirement for new sites

$$(1.58 \text{ mt} \times 17 \text{ years}) - 17.5 \text{ mt} = 9.36 \text{ mt}$$

- I.56. There will be a need to identify new sand and gravel sites containing at least 9.36 mt in the Mineral Sites Document. Every effort will be made to ensure an appropriate split in provision, based on past trends, between sand from the Poole Formation and sand and gravel from river terrace or plateau deposits in order to avoid shortages of particular types of aggregate.
- I.57. The Minerals Strategy suggests that it will be possible to supply this level of land-won sand and gravel from within Bournemouth, Dorset and Poole, despite the high level of environmental constraints affecting future mineral working. Evidence from the 'call for sites' undertaken in 2006/07 indicates that there are likely to be enough sites to meet this level of production. A further 'call for sites' and more assessment work, including sustainability appraisal, will test the deliverability of this level of provision.
- I.58. Deliverability of annual aggregate supply is a key issue. It is not enough to simply identify a lump sum figure which is adequate to meet future needs over the long term - the Mineral Sites Plan must demonstrate with reasonable certainty that the appropriate annual level of production can be achieved year upon year. This may require identification of more than the minimum level of future production.
- I.59. Table 10 provides a comparison of average annual production or level of import for each source of aggregate based (with one exception) on 2011 levels, against an estimate of maximum annual production or level of import, to indicate where there could be potential for increased provision. This shown in the 'Balance' column. No figure is given for rail imports, as there are currently none or for road imports as there is no limit set on these (apart from whatever the market will bear) and it is difficult to monitor these year by year.

Table 10: Comparison of Current Production Levels and Capacity for Bournemouth, Dorset and Poole (figures in tonnes per annum.)

Aggregate Type/Source	2011 Production/Imports	Potential maximum production/imports	Balance
Land-won sand and gravel	1,520,000	1,580,000 ¹	+60,000
Crushed Rock – local land won	150,000	270,000 ¹	+120,000
Crushed Rock – rail imports	70,000	150,000 ³	?
Crushed Rock – road imports	c. 300,000 (2009 estimate)	300,000 ²	?
Marine dredged sand and gravel	90,000	100,000 ²	+10,000
Recycled Aggregates	240,000	c. 500,000 ⁴	+260,000
Totals	2,370,000+	2,900,000+	+450,000

Notes – Table 10.

¹ Potential capacity values for land-won sand and gravel and for crushed rock have used the current rolling 10 year average as set out in the Submission Minerals Strategy.

² Estimate based on past production.

³ Based on peak past production – **from 2013 rail depot is not operational, but facilities remain.**

⁴ Estimated from permitted capacity.

Local land-won sand and gravel and crushed rock

1.60. For local land won sand and gravel, there is capacity for increase in two ways. Firstly, current production is less than the current annual supply figure (the rolling 10-year average) so there is capacity in the short to medium term for production to increase to the level of whatever the current rolling 10-year average is. Secondly, since the rolling 10-year average figure will vary annually depending on production, should production consistently increase this will be reflected in the annual capacity figure – increasing production will result in an increasing production capacity level. This provides flexibility for increased production in the medium to longer term, although sustained increases could begin to place unacceptable environmental and social pressures on the local environment and would trigger a review of the Mineral Planning Authority’s approach to aggregate provision.

1.61. The same applies to local-produced crushed rock, with the exception that the landbank is larger which will limit the pressure for new permissions in the short to medium term.

Rail Imported crushed rock

I.62. For rail imported crushed rock, as noted earlier the potential currently exists for the depot to be re-opened, but until that happens there is no capacity for any provision from this source.

Road imported crushed rock

I.63. It is difficult to put a firm figure on levels of input from road imported crushed rock as the amount brought in will depend largely on the market. Given that it is likely that Somerset will maintain its production of crushed rock and provided the demand exists in Dorset and supply from Somerset by road is the cheapest option, there is arguably no limit (at least, in terms of the available aggregate supply) to the amount of aggregate that will come in by road.

Marine dredged sand and gravel

I.64. Under current arrangements there is limited scope for the increased production from this source. The limits are primarily due to limited capacity at the wharf. No significant increases are expected here.

Recycled aggregates

I.65. Possibly the biggest potential capacity is in recycled aggregates. Although the potential for increase exists in terms of permitted capacity, to achieve this increased supply will rely on the market for the product and availability of material to be processed.

Comment

I.66. Table 10 indicates that there is likely to be capacity for increased production of aggregate produced or supplied to Bournemouth, Dorset and Poole, and the strategy of aggregate production of the Submission Minerals Strategy can be achieved. This approach (particularly regarding provision of land-won sand and gravel and crushed rock) will be rigorously tested during the production of the Minerals Sites document.