Kent County Council

Local Aggregate Assessment 2017

May 2018

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Kent County Council LAA2017 (data for the calendar year 2016)

	2016 Sales (Mt)	Average (10 yr) Sales (Mt)	Average (3yr) Sales (Mt)	Trend (10 yr sales)	Trend (3 yr sales)	LAA Rate	Reserve as per end of 2016 (Mt)	Permitted Landbank current Reserves divided by sales	LAA Landbank based on current reserves and 10-year average	Capacity (Mtpa)	Comments
Soft Sand	0.507	0.584	0.425	⇩	⇧	0.584	9.20	18 plus	15.75	uncertain	The reserve base has increased as a consequence of further planning permissions. The LAA rate is the same as the 10-year average, given it is considered modelling to justify an increase in this metric is inherently unreliable, therefore the NPPF requirement as set out in paragraph 145 is considered the appropriate method to identify supply needs.
Sharp Sand & Gravel	0.259	0.571	0.223	⇩	⇩	0.571	2.71	10.46	4.75	uncertain	The reserve base has 'shrunk' since LAA 2016 (downward reserve estimation away from the 3.78mt of the AM 2015 data) as the re-evaluation of reserves must have been unrealistically reported in LAA 2016. The LAA rate is the same as the 10-year average, given it is considered modelling to justify an increase in this metric is inherently unreliable, therefore the NPPF requirement as set out in paragraph 145 is considered the appropriate method to identify supply needs.
All Sand & Gravel	0.766	1.16	0.70	⇩	⇩	N/A	11.9	15.53	10.25	N/A	
Crushed Rock	c	c	c	c	c	c	c	c	c	c	Kent has only two active hard rock sites producing aggregates; therefore, the agreed level of confidentiality would be breached if the figures were to be disclosed.
Recycled/ Secondary Aggregates	1.03	0.78	0.87	⇧	⇧	N/A	N/A	N/A		3.45	Sales of secondary and recycled aggregates (derived from both the C,D&E and industrial bye-products sectors) are increasing.
Marine Sand & Gravel	1.78	1.90	1.87	⇧	⇧	N/A	N/A	N/A		Approx. 7.30mtpa (recent loss of	Recent (the three-year trends) are increasing despite losses in operational capacity.

Rock Imports by Sea	0.453	0.390	0.411	⬇	⇧	N/A	N/A	N/A		Dunkirk Jetty Dover (0.1-0.35 mtpa)	Recent (the three-year trends) are increasing despite losses in operational capacity (Dunkirk Jetty).
Rail Depot Sales (Sand & Gravel)	0.029	0.047	0.028	⬇	⬇	N/A	N/A	N/A			The recent (last three year) trend is down though this is not by a significant degree. The 10-year average (2007-16) is 0.047 million tonnes, which is significantly lower.
Rail Depot Sales (Soft Sand)	0.0054	0.0065	0.0069	⬇	⬇	N/A	N/A	N/A			The recent trend (last 3 years) is down, the 10 year average (2007-16) is 0.0065 million tonnes which is higher than the recent average lowered trend.
Rail Depot Sales (Crushed Rock)	0.453	0.39	0.411	⇧	⇧	N/A	N/A	N/A			The 10-year average (2007-16) 390, 419 million tonnes is slightly higher than the recent three year average trend by only 0.021mtpa.
Commenta-ry	Landwon sharp sands and gravels are not being replenished and the landbank has slumped to well below, instead of being close to, the NPPF 7 year "at least" mark (the previous LAA of 2015 showed existing reserves as 3.79mt as a consequence of being re-evaluated at the time, this has subsequently reduced back to 2.71mt). The adopted Plan requirement is for 10.08mt plus 5.46mt (total 15.54mt) over 2015-30, as long as resources allow, clearly replenishment is not occurring from land-won resources. The Mineral Sites Plan process will determine what potential new landwon resources can be sustainably sourced that are deliverable to meet this need. LAA data will help inform this process. The soft sands permitted landbank of 9.2mt exceeds the NPPF "at least 7 year" requirement at this time. However, soft sand needs over the anticipated period of the Mineral Sites Plan (2019-30 plus 7 years giving 18 years in total) is a matter that will have to be determined with recourse to this LAA and subsequent data collected for 2017 in AM2018. Information on reserves and sales will change and thus further analysis will be necessary to determine the Plan requirement, as informed by the yearly ongoing LAA process. Imports over wharves is increasing for all aggregate types and imports of crushed rock is slightly increasing via railheads, though sand and gravels and soft sand rail imports are slightly decreasing. Lack of data for land-won hard rock continues to cloud the picture of how Kent's aggregate production overall is changing. Recycled and secondary aggregate production is increasing as a trend, the 2016 production reached over 1.0mt for the first time since 2007 when production was 1.3mt indicating potentially increased construction, demolition and excavation activity in Kent as well as increased utilization of this aggregate supply as land won sharp sands and gravel continue to deplete.										

Executive Summary

This is the fifth Local Aggregate Assessment Kent County Council has produced. It demonstrates that aggregate supply in Kent is provided by both imports and landwon materials. Unlike sharp sands and gravels, soft sands are predominantly landwon and this source cannot easily be substituted by recycled or secondary materials and little can be expected, apparently, from marine resources. Therefore, Kent will likely remain a significant supplier of landwon soft sands to its markets and others into the future. Sharp sands and gravels from the landwon resource are depleting with limited potential to meet NPPF landbank minimums. In the case of both soft sands and sharp sands and gravel it is considered that the appropriate LAA rate for Kent is that of the recorded 10-year sales average. Any estimated increases above this figure are not easily derived due to the inherent limitations in demand modelling at the county council scale. The use of the 10-year average is in accordance with the NPPF. Hard rock supply from the landwon resource is significant but actual levels are largely unknown due to the need to maintain confidentiality. Importation from marine resources for the sands and gravels and hard rock requirements is increasing as a share of the overall market (now 35%). Importation via wharves is expected to become the primary source of sharp sand and gravel supply in the future. Available wharf capacity is significant but vulnerable to losses as their locations often coincide with competing regeneration initiatives. The growth predictions in housing and infrastructure delivery and maintenance are indicative only, inherent modelling limitations necessitates that only a likely upward trend in demand can be identified. This will necessitate a robust safeguarding regime if a steady and adequate supply of aggregates, with emphasis on the sharp sands and gravels, to meet the objectively assessed needs is to be maintained.

1. Introduction

1.1 The purpose of this Local Aggregate Assessment (LAA) report for 2017 (based on 2016 sales data) is to detail the current and predicted situation in Kent with respect to all aspects of aggregate supply. The National Planning Policy Framework (NPPF)[1] sets out the requirement for local authorities to produce an annual LAA, stating 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 other mineral planning authorities based on a rolling average of 10 years sales data'*. This is Kent's fifth LAA and it's second since the adoption of the Kent Minerals and Waste Local Plan 2013-30 in July 2016 (KMWLP or the Plan). The KMWLP provides the main strategic objectives for minerals (and waste) planning policy in Kent until 2030.

1.2 Though the adopted Plan sets out the quantities of aggregates to be provided over the period of the Plan, this inevitably will be subject to change as more recent monitoring data, reported in the annual LAAs, is used to estimate the quantities required to maintain landbanks of 'at least 7 years' for sand and gravel and 'at least 10 years' for crushed rock. It is important to appreciate that the data available to the County Council is data that represents the past and the future predictions based on this data, together with assumptions of what may happen into the immediate in terms of production and estimates of reserves can cause a range of potential predictions on future needs to be able to be generated.

1.3 It is important to note that the data used in the preparation of this report predominantly comes from the annual monitoring of aggregates sales by Kent County Council on behalf of the South East England Aggregate Working Party (SEEAWP). The Aggregate Monitoring (AM) survey collects annual sales data from active mineral extraction sites, minerals wharves, minerals rail depots and recycled aggregate processing sites. Where there are less than three operational sites supplying a particular type of mineral, as in the case of Kent's landwon hard rock quarries, commercial confidentiality prevents the reporting of sales or reserves for any one site.

2. Land Won Aggregate

Geology of Kent

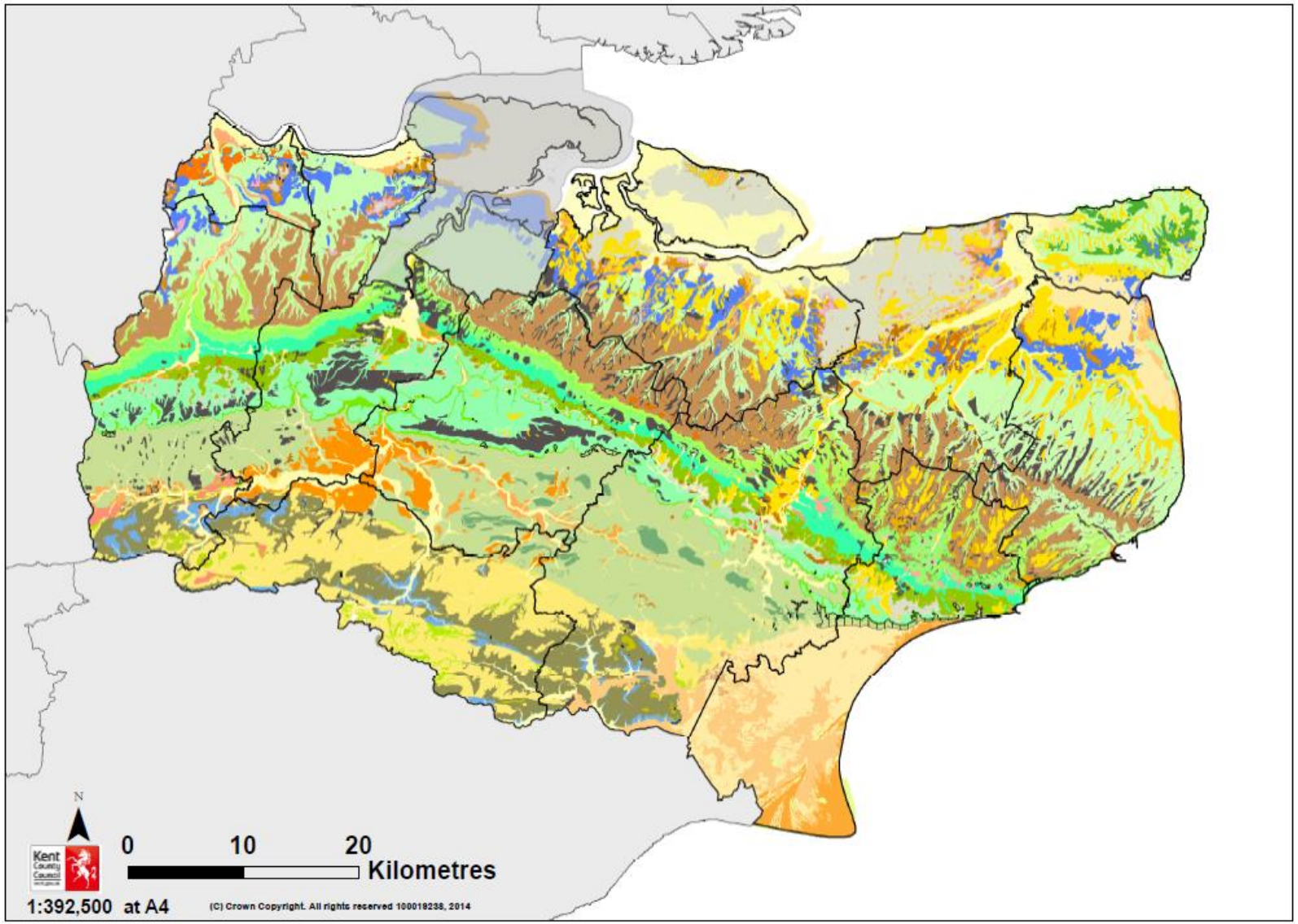
2.1 The geology of Kent is complex, see figure 1. Kent has a varied geology with several economically important naturally occurring aggregate forming mineral deposits. The most recent of which is the post glacial (Pleistocene epoch some 10,000 years ago)

[1] National Planning Policy Framework, paragraph 145 (DCLG, 2012): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

outwash (alluvial) river valley and terraced sand and gravels and storm beach sands and gravels (significantly at Lydd). The extensive soft sand ancient beach deposit (Folkestone Beds) is somewhat older, being part of the Lower Greensand Group of the Lower Cretaceous epoch (some 100-140 million years old).

2.2 Hard rock is also present in Kent, in the form of a significant thickness of a complex estuarine limestone formation. This rock can yield important building materials when crushed to form an aggregate (Kentish Ragstone). This material is also part of the Lower Greensand Group, forming part of what is called the Hythe Formation which was laid down prior to the Folkestone Formation, though still being within what is called the Lower Cretaceous epoch.

Figure 1: Geology of Kent both Solid and Superficial

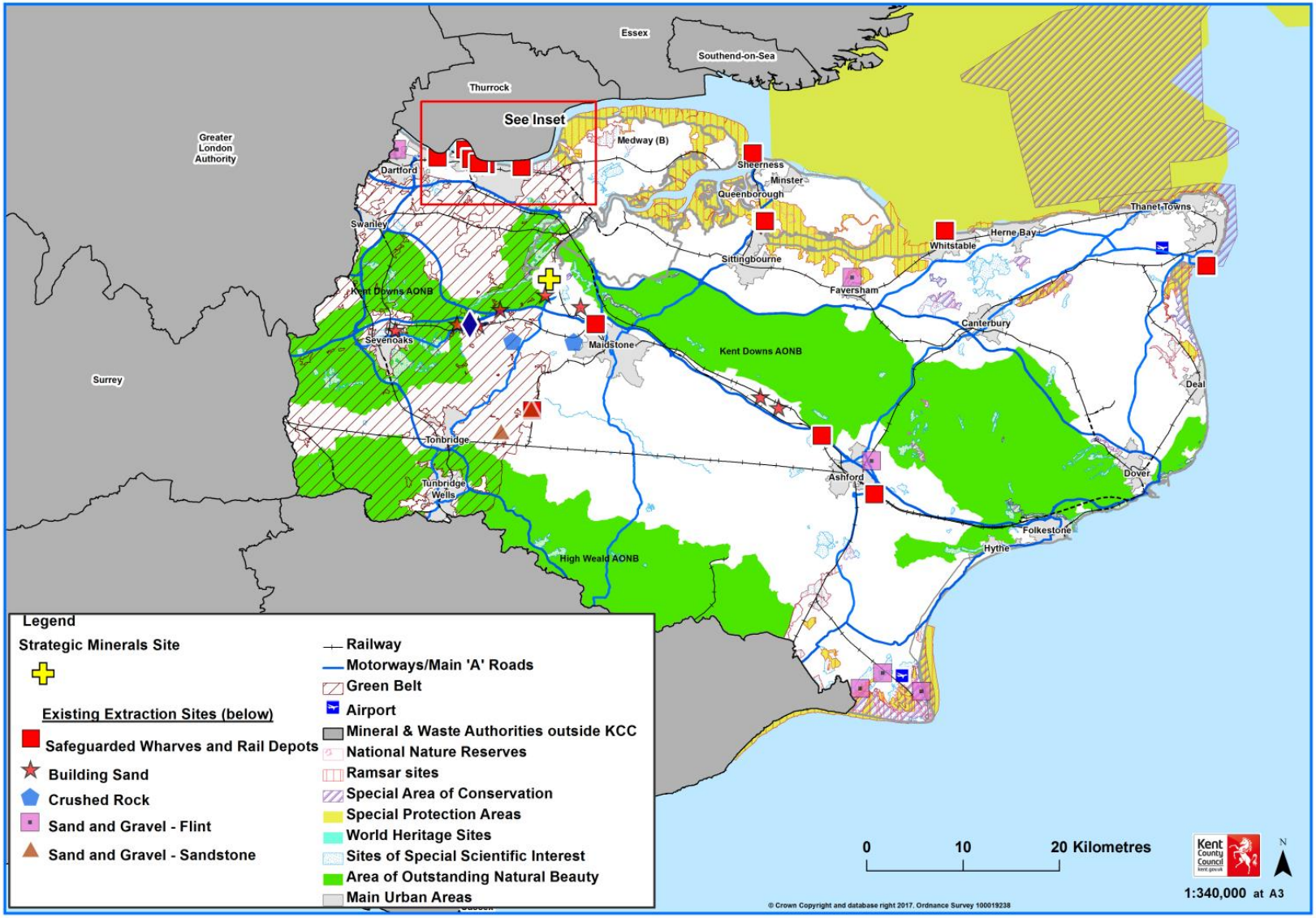


Legend: Geology of Kent

Permitted Sites Producing Aggregates in Kent

2.3 Historically much of Kent's landwon aggregate production has come from the main river valleys (they are the Medway, Great Stour and Darent) and the cuspate foreland at Lydd for sand and gravel supply while the area around Maidstone has supplied crushed hard rock. Soft and silica sands supply is associated with the Folkestone Beds that traverses the county from east to west, Figure 2 shows the location of the active quarries in in 2016 and the safeguarded mineral wharves and railheads that contribute to supply of primary aggregates.

Figure 2: Location of Active Quarries and Safeguarded Wharves and Rail Depots in 2016



2.4 Kent currently has two hard rock quarries producing crushed rock aggregate from the Hythe Formation (Kent Ragstone), seven soft sand quarries winning material from the Folkestone Beds and ten sharp sand and gravel quarries. The latter are generally the river terrace deposits that are associated with the county's main river valleys, though the cuspate foreland (storm beach) deposits at Lydd are also important sources of supply. Table 1 details these sites.

Table 1: Permitted Quarries in Kent, 2016

Site	Operator	Aggregate			Status
		Sand &Gravel	***Soft Sand***	**Hard Rock**	
Hermitage Quarry, Maidstone	Gallagher Aggregates Ltd	-	-	Yes	Active
Blaise Farm Quarry, West Malling	Hanson Aggregates Ltd	-	-	Yes	Active
Stone Castle Farm, Whetsted	*Lafarge Aggregates Ltd*	*Yes*	-	-	*Inactive*
Faversham Quarries, Faversham	*Brett Aggregates Ltd*	*Yes*	-	-	*Inactive*
Lydd Quarry, Lydd	Brett Aggregates Ltd	Yes	-	-	Active
Allens Bank, Lydd	*Brett Aggregates Ltd*	*Yes*	-	-	*Inactive*
Conningbrook Quarry	*Brett Aggregates Ltd*	*Yes*	-	-	*Inactive*
Highstead Quarry, Chislet	*Brett Aggregates Ltd*	*Yes*	-	-	*Inactive*
Denge Quarry, Lydd	Cemex UK	Yes	-	-	Active
Darenth & Joyce Green Quarry, Dartford	J Clubb Ltd	Yes	-	-	Active
East Peckham Quarry, East Peckham	J Clubb Ltd	Yes	-	-	Active
Joyce Green Quarry, Dartford	*Ingrebourne Valley Ltd*	*Yes*	-	-	*Inactive*
Aylesford Quarry, Aylesford	Aylesford Heritage Ltd	-	Yes	-	Active [2]
Addington Sand Pit (Wrotham Quarry)	Fern Aggregates	-	Yes	-	Active
Borough Green Sand Pit, Sevenoaks	Borough Green Sandpits Ltd	-	Yes	-	Active
Charing Quarry, Charring	*Brett Aggregates Ltd*	-	*Yes*	-	*Inactive*
Ightham sandpit (H&H Celcon)	H&H Celcon	-	Yes	-	Active
Lenham Quarry, Maidstone	Brett Aggregates Ltd	-	Yes	-	Active
Addington Sand Pit	Fern Aggregates Ltd	-	Yes	-	Active
Nepicar Sand Quarry	J Clubb Ltd	-	Yes	-	Active
Greatness Farm, Sevenoaks	Tarmac Ltd	-	Yes	-	Active

[2] No off site sales in 2016 though actively extracting and stockpiling remaining soft sand reserves.

Sand (Soft and Sharp) and Gravel and Hard Rock Production and Sales

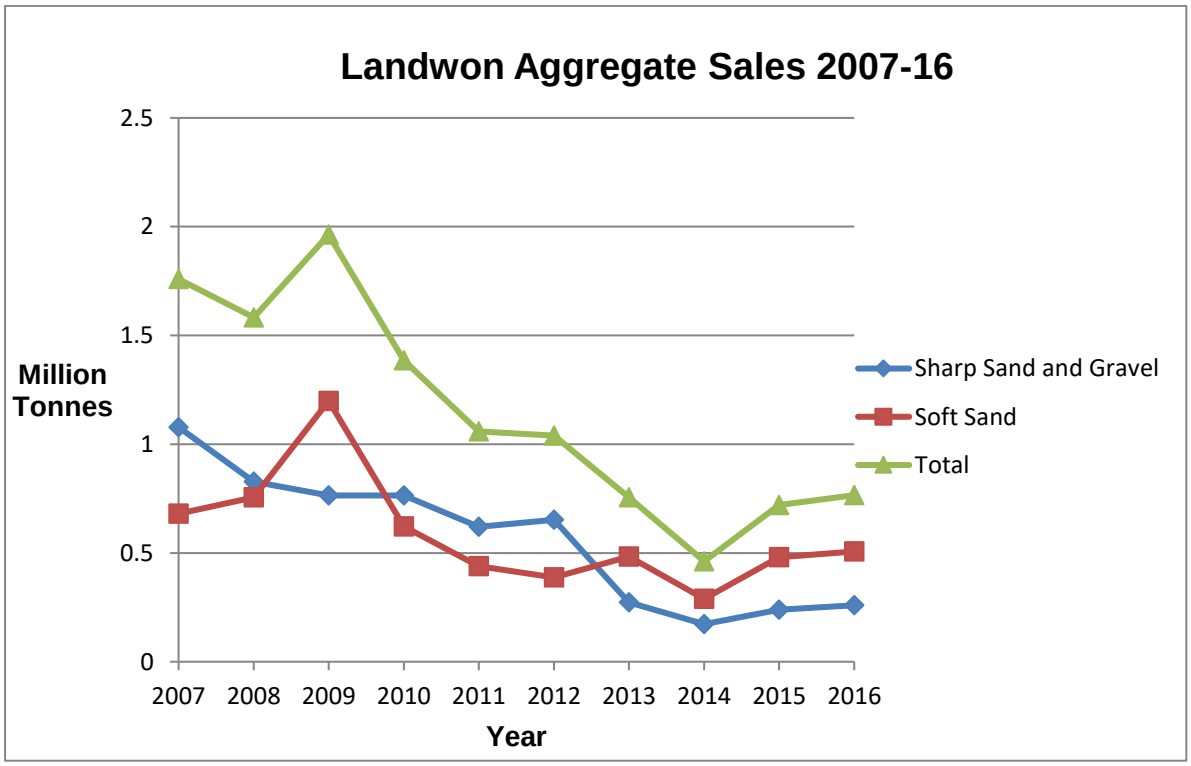
2.5 The sales of landwon sharp sand and gravel and soft sand in Kent since 2007 are shown in Table 2. The overall trend for both aggregate types is a reduction in recorded sales, though this is more pronounced for the sharp sand and gravels than the soft sands.

Table 2: Landwon Soft Sand and Sharp Sand and Gravel Sales in Kent, 2007-2016 (Million tonnes, Mt)

Year	Tonnes
2007	1,759,369
2008	1,582,798
2009	1,963,120
2010	1,385,497
2011	1,058,764
2012	1,040,031
2013	756,000
2014	564,699
2015	719,581
2016	797,828
Last 3-year average (2014-16)	**694,036**
Last 10-year average (2007-17)	**1,162,769**

Source: Aggregate Monitoring Surveys, 2007-2016

Figure 3: Sales of Landwon Sand and Gravel in Kent, 2007-16 (Million tonnes)



2.6 Sales of hard rock are not represented given the need to maintain confidentiality. The issue has not altered since the examination and subsequent adoption of the Plan. The assumption of 0.78mtpa has been used as a proxy for hard rock sales in Kent. This figure originated from the apportionment for hard rock production in Kent from landwon resources in the South East Plan. The Plan does not make any provision for additional hard rock reserves over the plan period given the significant extent of the permitted reserves in the county.

2.7 Figure 3 graphically represents the pattern of the landwon soft sand and sharp sand and gravel sales for the last ten years in Kent. The soft sand sales showed a marked peak in demand in 2009, when some 1.12mt was sold into the market and this then sharply declined in the following years with the lowest recorded sales in 2014 with 0.29 mt a fall of some 26%. Since 2015 sales have shown an upturn to around 0.50mtpa as demand has increased. Sharp sand and gravel sales have shown a similar overall decline, although without the 'spike' in demand seen in 2009 for the soft sands. In 2007 sales were above 1.0mt, this has declined to less than 0.50mt in 2012/13 and then has essentially remained in the 250,000 tonnes per annum range since 2015. There has been no indication of a return to the 10-year average sales of around some 0.50mtpa that has occurred with the soft sands.

2.8 Table 3 below shows the total current (2016 data) permitted landbank for the sands and sands and gravel landwon aggregates. The current adopted policy requirement for Kent is based on what the adopted Kent Minerals and Waste Local Plan 2013-30 Plan Policy CSM 2. This supply prediction was based on 2014 aggregate monitoring data. The emerging Minerals Sites Plan will have a new the landbank requirement prediction for both the soft sands and sharp sands and gravel. This LAA is based on 2016 monitoring data and will help inform what the level of landbanks will be needed over this Plan period until 2030 plus 7 years.

2.9 The current sharp sand and gravel landbank based on local requirements is calculated at 3.5 years, which is below the 7 year NPPF requirement. However, the more recently monitored landbank (2.71mt) when divided by the recent 10 year (2007-16) average sales data would be sufficient for 4.7 years. Whatever the yearly drawdown based on the averaged sales data is used it is clear that the landbank is below the at least 7 year NPPF requirement. It is considered that landbank figures for the sharp sands and gravels may well be demonstrating a decline in available resources based on geological scarcity. New reserves that would replenish the landbank for this aggregate mineral are not coming on stream This is not entirely unexpected given that the supply estimated in Policy CSM 2 is predicated with "…. *of at least seven years supply (5.46mt) will be maintained while resources allow*". The potential for Kent to be

able to provide any additional reserves of this aggregate is a matter that will be addressed through the Mineral Site Plan 2019-30 process. The identified Options Regulation 18 public consultation commenced in December 2017.

2.10 The soft sands permitted reserves increased to 9.2 mt in 2016 and the 10-year average has fallen back from 0.595 to 0.584, though the three year sales average (0.425mt) is showing an upturn in trend. This degree of available reserves are, and the averaged sales data for the last 10 years, is meeting the NPPF's requirement to have a landbank of "*at least 7 years*". The adopted Plan requirement spans a greater period and thus, at the time, the overall need was calculated at 15.60mt, with 5.0mt from new resources as sites allocated in the Mineral Sites Plan. The Regulation 18 public consultation on the Option sites for the Mineral Sites Plan shows that a total of 7.1mt of potential new soft sand reserves may be acceptable as new reserves from two promoted sites.

2.11 However, the Minerals Sites Plan, if adopted in 2019 will have an 18-year plan period (notionally 2019-30 plus 7 years) rather than a 24 year plan period of the adopted Plan (2013-30 plus 7 years). Thus, there is arguably a need for a lower amount of new soft sand provision than the 5.0mt required by the adopted Plan. This amount will be informed by the findings of this LAA and LAA2018 (that will have the 2017 data); essentially enough soft sand will have to be provided to meet the identified need to maintain the NPPF's requirement of a "*steady and adequate supply of aggregates*" over the Mineral Sites Plan period, this will be based on being able to meet at least the 10 year sales average per year over the respective Plan period. To come from the existing reserves currently permitted with any identified shortfall being addressed by new site(s) identified in the Mineral Sites Plan. The potential effect of increased development rates that are identified in the Kent local plan coverage and the number of infrastructure projects identified area are inherently difficult to model with any accuracy. It is considered that the 10-year average represents a reasonably reliable metric for the sites Plan period.

2.12 The Regulation 18 public consultation is currently ongoing and detailed technical assessment of all mineral site Options is yet to be completed. It is not known at this point how much of the currently promoted 7.1mt of new soft sand resources will be acceptable so as to be allocations in a Draft Mineral Sites Plan for a Regulation 19 Public Consultation.

Table 3: Kent Aggregate Reserves and Aggregate Landbank as of 2016 Data

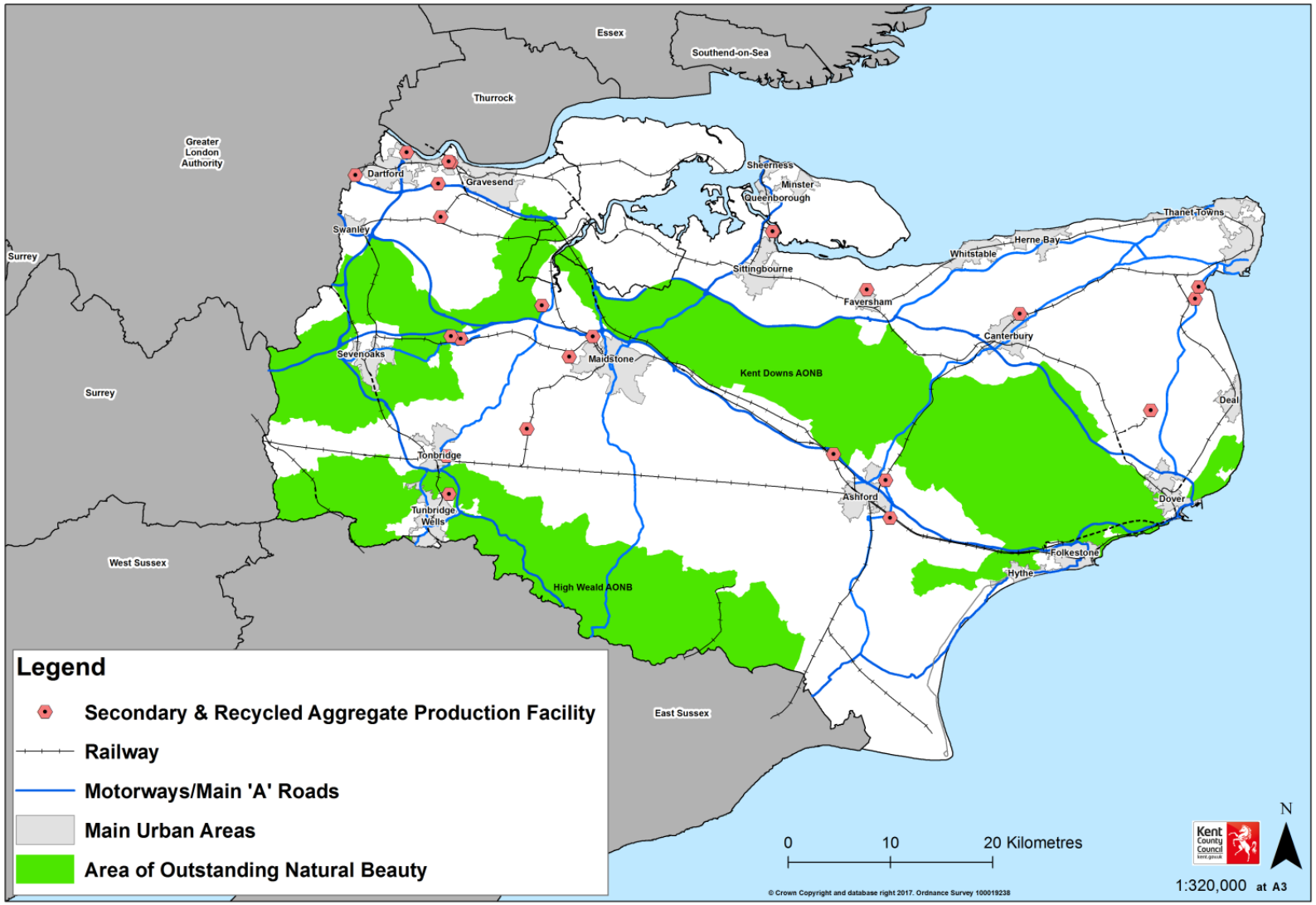
	Permitted Reserve (mt)	Current Landbank based upon Local Requirement (years)*	Current Landbank based upon 10yr average sales between 2007-2016 (years)	Landbank based upon 3yr average sales between 2014-2016 (years)	Current Landbank based upon 2016 sales alone (years)
Soft Sand	9.20	10	15.7	21.6	18.16
Sharp Sand & Gravel	2.71	3.5	4.8	12.1	10.40
Total	11.91	7	-	-	-

Source: Aggregate Monitoring Surveys data for years 2007-2016
*The local requirement is as set out in the adopted KMWLP 2013-30 Policy CSM 2 (and explanatory memoranda) for Sharp Sand & Gravel-13.26mt overall of while recourses allow and for Soft Sand-15.6mt overall

3. Recycled/Secondary Aggregates

3.1 Data pertaining to sales of recycled or secondary aggregates is collected yearly as part of the surveys carried out by mineral planning authorities. Figure 4 shows the location of all active recycled sites in operation in Kent at this time.

Figure 4: Location Map of Active Recycled and Secondary Aggregate Sites in Kent, 2016



3.2 The sales figures of the recycled and secondary aggregate in Kent are shown in Table 4 below. Kent has 24 sites engaged in producing recycled aggregates from the construction, demolition and excavation waste stream and secondary aggregates from industrial by-products. The response rate to the AM2016 survey was 79%. As was the case for AM2016 a significant producer of secondary aggregate did not participate in the survey, thus the sales data is likely to be significantly lower than actual sales that have occurred.

3.3 The significant non-participant site has an estimated capacity of 0.585mtpa. It may be the case that materials from this sector in Kent are over 1.0mtpa. Overall the sector has an estimated productive capacity of 3.45mtpa for the recycled aggregates and 0.46mtpa for secondary aggregates giving a total of 3.90 mtpa.

3.4 As a proportion of all aggregate sales (landwon hard rock assumed to be 0.78mt) the recorded sales from the recycled and secondary sector amount to some 16.7% of the total aggregate production in the County (this being some 6.17mt composed of all types of aggregates). This is essentially identical to that found by AM2016 where the recycled and secondary aggregate share of the overall aggregate supply market was 16.6%.

Table 4: Recycled and Secondary Aggregate Sales in Kent, 2007-2016 (Million tonnes)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Last 10-year average	Last 3-year average
Sales	0.96	0.55	0.90	0.71	0.77	0.67	0.84	0.73	0.84	1.03	0.80	0.86

Source: Aggregate Monitoring Surveys, 2007-2016

4. Wharves (Marine-won Sand and Gravel)

4.1 Kent has 9 active and safeguarded wharves located on the coast of Kent, the locations of which are shown in figure 2 on page 9. There are a further two safeguarded wharves that are inactive as wharves at present, they are Sheerness that is currently mothballed and Old Sun Wharf at Gravesend that is being used as a concrete manufacturing and batching facility, though as a potential wharf it is safeguarded. Since AM2016 Kent has lost wharf capacity in the range of 0.1 to 0.35 mtpa with the closure of Dunkirk Jetty at the Western Docks, Dover.

4.2 The level of marine-won sand and gravel sales at wharves in Kent is shown in Table 5 on page 16.

Table 5: Marine Sand and Gravel Sales in Kent, 2007-2016 (Million tonnes)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Last 10-year average	Last 3-year average
Sales	1.870	1.670	1.730	1.524	1.844	2.014	1.743	1.938	1.874	1.788	1.995	1.866

Source: Aggregate monitoring surveys, 2007-2016

4.3 Kent's wharf capacity, with the loss of Dunkirk Jetty, is currently in the order of 7.30mtpa. Imports over the wharves remains relatively stable, the bulk of the sand and gravel imports being of marine dredged origin with the 10 year and three year sales averages being essentially similar in magnitude though are up in comparison to those reported in LAA 2016. The ten year average in LAA 2016 was 1.816mt now it is 1.995mt, an increase of 9.8%. The three year average in 2016 (using 2015 data) was 1.852mt; this has increased to 1.870mt a 1% increase.

4.4 The marine deposits are mainly found in the English Channel and North Sea. These are defined sedimentary basins that are not being replenished, though they have a significant but finite, resource. The Crown Estate are responsible licensing extraction from the sea bed stated in 2012 (to the then Mineral Sites Plan, Preferred Options Consultation May 2012) the following:

- *Over 900 million tonnes of marine sand and gravel (aggregate) has been dredged from offshore seabed over the last 50 years and at least 1,250 million tonnes is available for sustainable supply of construction aggregate over the next 50 years and beyond. Currently marine sand and gravel supply some 20% of the county's demand.*

- *The marine aggregate resource available in the East Coast, Thames Estuary and East English Channel areas and which are used to supply Kent wharves is 994 million tonnes of which 31.25 million tonnes is permitted for extraction per annum. Kent wharves only received some 1.3 million tonnes (4.2% of total permitted per annum) in 2010, but increased in 2011 with 1.55 million tonnes (5%). There is therefore a long term viable and sustainable supply of marine dredged aggregate both for construction uses and for direct beach nourishment by vessel delivery.*

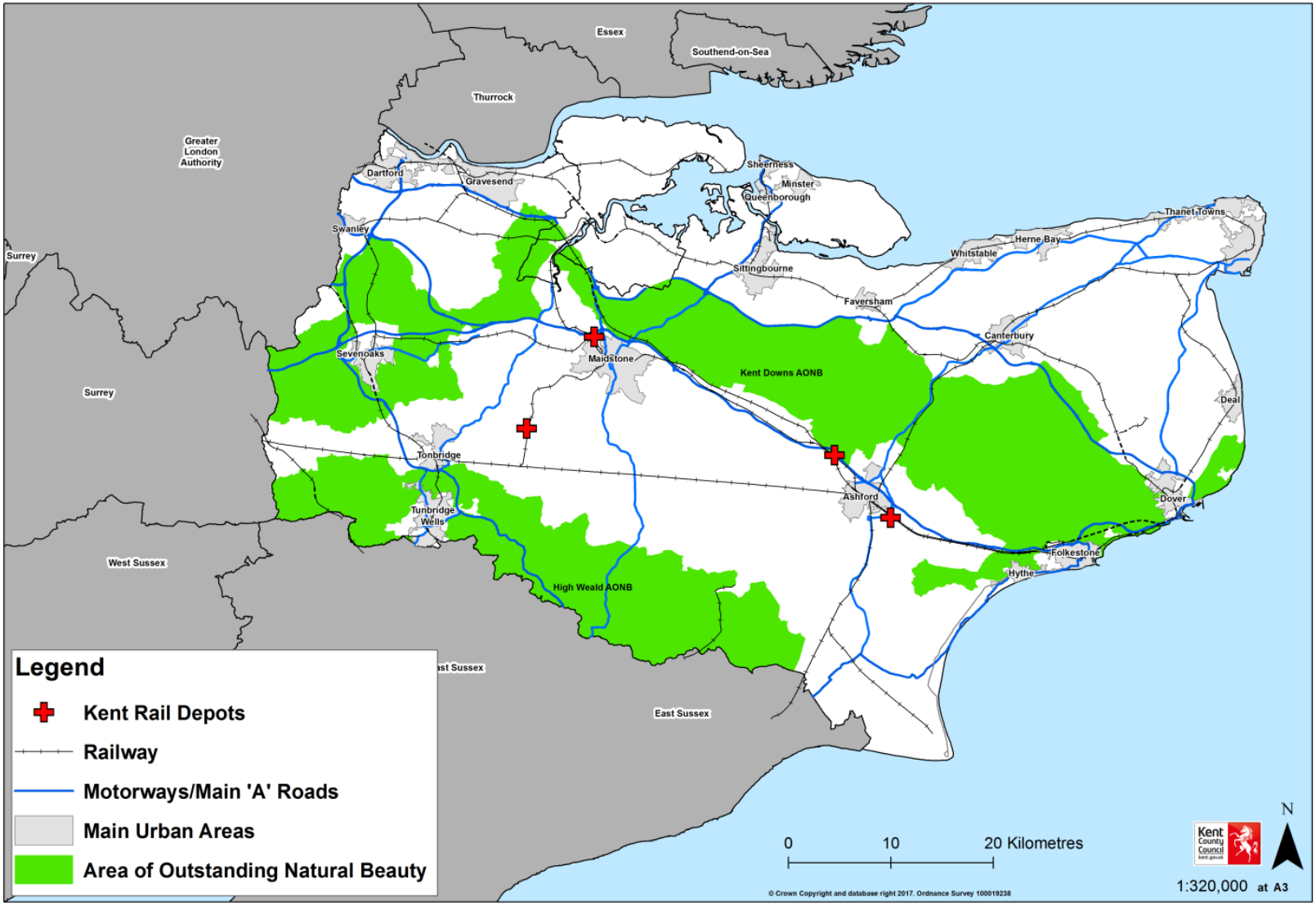
- *The current rate of extraction by all companies to all marine aggregate wharves in the UK and on the European mainland is some 45% of the quantities permitted per annum thus reinforcing the sustainability and long term viability and requirement of marine aggregate wharves in Kent.*

The area of the overall resource that supplies Kent, estimated as 994mt in 2011, is probably in the order of 935mt as of 2016 given the recorded landings in previous aggregate monitoring returns.

5. Crushed Rock

5.1 Kent has natural hard rock resources in the form of the Hythe Formation (Kentish Ragstone) that has traditionally been quarried in the Maidstone area, though not exclusively historically. Given that there are only two active sites confidentiality prevents a detailed report of sales in 2016. The proxy of 0.78mtpa has been used in past LAAs and during the formulation and examination of the Kent Minerals and waste local Plan 2013-30. There are no compelling grounds to depart from this proxy for the landwon fraction of hard rock supply in Kent. The current reserves significantly boosted by the addition of 16 million tonnes of ragstone (Hythe Formation limestone) in a westerly extension of Hermitage Quarry close to Maidstone in 2013. This material, in addition to reserves currently available at Blaise Farm Quarry are considered sufficient to more than meet the NPPF requirement of an at least 10 years hard rock landbank in Kent. In addition, substantial quantities of hard rock importation via wharves and railheads, Figure 2 on page 9 above shows (amongst other features) the safeguarded wharves and rail depots, Figure 5 below shows the railhead distribution only, for ease of clarity.

Figure 5: Location Map of Active Rail Depots in Kent, 2016



6. The crushed rock sales (from rail and sea imports) in Kent in 2016 were 1.506mt overall. When coupled together with the estimated landwon production Kent produced (though not necessarily consumed) some 2.3mt of crushed hard rock aggregate materials. Table 6 overleaf shows the total aggregate (of all primary types) importation into Kent since 2007 until 2016.

Table 6: Aggregate Sales from Rail Depots and Wharves in Kent, 2007-2016 (Million tonnes)

Year	Soft Sands	Sharp Sands and Gravel	Crushed Rock	Totals
2007	0.0138	2.13	1.56	3.70
2008	0.0097	1.97	1.28	3.26
2009	0.0150	1.76	1.02	2.80
2010	0.0182	1.67	1.01	3.23
2011	0.0160	2.01	1.17	2.89
2012	0.0230	2.18	0.70	2.91
2013	0.0152	1.77	0.87	2.66
2014	0.0098	1.97	1.07	3.05
2015	0.0288	2.06	1.38	3.50
2016	0.0079	2.05	1.50	3.56
Last 3-year average	**0.0155**	**2.03**	**1.32**	**3.37**
Last 10-year average	**0.0160**	**1.96**	**3.16**	**3.15**

Source: Aggregate Monitoring Surveys, 2007-2016

7. Total Aggregate Production in Kent in 2016

7.1 During 2016 the total primary and recycled/secondary aggregate production (including imports) are shown on Table 7 below.

Table 7: Total Aggregate Production in Kent during 2007-2016 (Million tonnes)

Year	Soft Sands Land-won	Soft Sands Imports	Sharp Sands & Gravel Land-won	Sharp Sands & Gravel Imports $	Crushed Rock landwon	Crushed Rock Imports	Secondary Recycled aggregates	Total
2007	0.68	0.0138	1.08	2.13	0.78	1.56	0.96	**7.20**
2008	0.75	0.0097	0.83	1.97	0.78	1.28	0.55	**6.20**
2009	1.20	0.0150	0.76	1.76	0.78	1.02	0.90	**4.65**
2010	0.62	0.0182	0.76	1.67	0.78	1.01	0.71	**5.60**
2011	0.44	0.0160	0.62	2.01	0.78	1.17	0.77	**5.80**
2012	0.39	0.0230	0.65	2.18	0.78	0.70	0.67	**5.40**
2013	0.48	0.0152	0.27	1.77	0.78	0.87	0.84	**5.00**

2014	0.29	0.0098	0.17	1.97	0.78	1.07	0.73	**5.00**
2015	0.48	0.0288	0.24	2.06	0.78	1.38	0.84	**5.80**
2016	0.51	0.0079	0.26	2.05	0.78	1.50	1.03	**6.14**
Total	**5.84**	**0.1574**	**5.64**	**19.57**	**7.80**	**10.55**	**8.00**	**56.78**
Last 3 yr average	**0.43**	**0.0155**	**0.203**	**2.03**	**0.78**	**1.32**	**0.87**	**5.65**
Last 10 yr average	**0.58**	**0.0156**	**0.564**	**1.957**	**0.78**	**1.055**	**0.80**	**5.68**

Source: Aggregate Monitoring Surveys, 2007-2016. $ denotes marine dredged and landwon sands and gravels via railheads and wharves

7.2 The data in Table 7 does not demonstrate actual consumption of aggregates in Kent from 2007 to 2016, as a degree of exportation out of Kent no doubt has occurred. Import and export balance survey work that can reveal the degree of aggregate consumption was last completed in a comprehensive form in 2009. Given the elapse of time (8 years) it would not be appropriate to place much reliance on the findings of AM2009. Further work on this matter was commissioned in 2014; the data is unpublished and available from the British Geological Survey. The data shows that Kent consumes 60-70% of all the aggregate produced in Kent (both as land-won and the imports of sand and gravel and crushed rock) and 10-20% of materials were exported to the wider South East. The data does not disaggregate between soft sand and sharp sands and gravels and thus has limitations in how it can be used to determine what is happening with these distinctly different materials serving distinctly different markets.

7.3 The production figures do show that sharp sands and gravel from the landwon sector have continued to maintain the observed pattern of decline. Imports of sharp sands and gravels (from marine and landwon sources) have shown a very slight decrease while secondary and recycled aggregates have passed the 1.0mtpa mark for the first time over the last 10 years.

8. Future Aggregate Supply

8.1 The housing targets and infrastructure projects that are likely to place an additional demand of future aggregate demand in Kent are shown on Table 8.

Table 8: Levels of Planned Housing and Infrastructure in Kent excluding Medway

Demand Generation	**Approximate Timelines**		
Dwellings	178,600 Additional homes 2011-2031		
Education	2017-20 Primary 21.5 FE[3] Secondary 36 FE	2020-23 Primary 62 FE Secondary 43 FE	2023-30 No data
Significant Infrastructure	**Up to 2030** A2 Bean and Ebbsfleet Junctions Lower Thames Crossing Bifurcation of Port Traffic and Ports Expansion (Dover significantly) Solution to Operation Stack and Overnight Lorry Parking Rail improvements to Thanet		

8.2 The planned level of dwellings has increased since LAA 2016, with an increase from 160,300 for the 2011-32 to 178,600 homes 2011-2031 and increase of 10.2%. The educational infrastructure has to match the increase in housing numbers. The area of greatest change over recent LAA demand projections is the increase in infrastructural development. Port expansion, east Kent rail connections and major highway schemes (A2 junction improvements) are additional to additional to the Lower Thames Crossing and the Paramount Park developments. Infrastructure maintenance would have to be commensurate with needs to maintain the network and ensure new schemes coming on stream by 2030-32 are also integrated and maintained.
Demand for aggregates in Kent for house building and concrete products for infrastructure and major projects are showing an increasing trend not decreasing over the Plan period. Modelling the actual quantum of demand

[3] FE denotes Form Entry

from this growth upturn is unreliable at the county council scale. Therefore, it is considered that the use of the latest 10-year sales averages are the most reliable metrics for considering demand over the emerging plan period, as this will average out the inevitable fluctuations in overall supply that will occur. Furthermore, sharp sand resource availability appears to be very attenuated in Kent currently. Whatever the metric used to identify a level of supply it is the availability of replenishing resources (that appear now limited) that will be the significant determinant of how land-won resources can respond to any objectively identified need.

Available Reserves or Landbanks

8.3 The 2016 data (AM2017) collected for Kent shows the reserves for the following aggregate mineral types as of the end of 2016:

- Soft sand 9,181,700 tonnes or 9.20 million tonnes
- Sharp sands and gravel 2,715,708 tonnes or 2.71 million tonnes
- Hard rock – confidential but significant planning permission for an additional 16 million tonnes was granted in 2013

8.4 These reserves are the estimates of all the respective mineral sites (soft sand and sharp and gravel) operating in Kent for the end of 2016. Therefore, the data is now out of date by another year of production, the magnitude of which will not be known until the data for 2017 is collected by AM2018, though reserves can be approximated for planning policy formulation purposes buy further reducing reserves by assuming at least the most recently recorded production figures prior to collation of more recent data.

Soft Sands

8.5 With regard to the soft sands the 2007-2016 ten year average is 584,308 tonnes this is down by 1.8% from that reported in LAA 2016. This gives a landbank of 15.7 years based on a reserve of 9.20 million tonnes. In simple terms this would give a 15.7 year landbank based on 2016 data at the end of 2016. However, if it is assumed that the available reserves have been reduced by 0.584 million tonnes (the 2016 data ten year average) between January 2017 to January 2018 the reserves could have reduced to 8.6 million tonnes as of late 2017. This reserve level would support a landbank of 10 years as of late 2017. The actual sales since 2005 are shown on Table 9.

8.6 Sales in 2016 were 506,663 tonnes, thus the upturn from the 2014 low of 289,087 tonnes appears to be occurring. Future growth in sales is anticipated given the potential for an increase in construction demand as discussed above.

Table 9: Landwon Aggregates Sales Soft Sands 2005-16

Year	Tonnes
2005	541,000
2006	621,215
2007	681,012
2008	755,590
2009	1,199,120
2010	621,573
2011	438,909
2012	387,746
2013	483,165
2014	289,087
2015	480,215
2016	506,663
Average last 10-years (2007-16)	**584,308**
Average last 3-years (2014-16)	**425,322**

Sharp Sands

8.7 With regard to the sharp sands and gravel there has been a marked fall in overall reserves from 3,791,880 tonnes to 2,715,708 a drop of over 28%. This appears to be due to the resurveying of reserves at a site that has resulted in a marked reduction of the economically available reserves.

8.8 Sales in 2016 were 259,550 tonnes, as observed with the soft sands the recovery in sales since the recent low point in 2014 appears to be continuing. However, the ten year average sales of 571,568 tonnes is down by 7.0% from that which was reported in LAA 2016, this being 615,124 tonnes. The sharp sand and gravel landbank based on the last 10 year sales average is 4.7 years. Table 10 below shows recorded tonnages of sales since 2005-16.

Table 10: Landwon Aggregates Sales Sharp Sands and Gravels 2005-16

Year	Tonnes
2005	1,171,000
2006	760,574
2007	1,078,357
2008	827,208
2009	764,000
2010	763,924
2011	619,855
2012	652,285
2013	273,000
2014	172,672
2015	239,366
2016	259,550
Average last 10-years (2007-16)	571,568
Average last 3-years (2014-16)	223,863

Hard Rock

8.9 Hard rock sales are restricted given that Kent production from the landwon resource is represented by only two sites. This falls below the minimum three required by agreement with the South East Aggregate Working Party (SEEAWP) that would allow the reporting of sales per year. Therefore, the current landbank is estimated using the adopted Plan's proxy for yearly sales, that being 0.78 million tonnes. Thus, gives a ten year average of the same figure. The 10 year landbank requirement remains 7.8 million tonnes.

8.10 The hard rock permitted landbank remains confidential, in LAA2016 it was estimated at over 48 million tonnes. Given another year of assumed production at 0.78 million tonnes the estimated landbank may be some 47.22 million tonnes available at Hermitage Quarry and Blaise Farm Quarry. Whatever the correct level of workable reserves that are presently available, it is a reasonable conclusion that they are significantly greater than 7.8 million tonnes this being the NPPF 10-year landbank requirement, or the adopted Plan's requirement of at least 20.5 million tonnes from the existing permitted resources.

Future Potential Resources

8.11 The County Council has initiated work on a Mineral Sites Plan, as required by the adopted Plan, to identify the required future resources to ensure a steady and adequate supply of minerals until 2030. Having conducted a Call for Sites exercise in late 2016 into early 2017 the County Council initially assessed the sites promoted by this exercise and is conducting a Mineral Sites Plan Options (Regulation 18) public consultation (19th December 2017 to 29th March 2018).

8.12 There are nine sites that are part of this consultation, two for soft sands and seven for sand and gravels. Table 11 below sets out the basic mineral supply characteristics of these sites.

Table 11: Mineral Sites Plan Option Consultation Sites for Land-won Aggregates

Site	Amount (mt)	Aggregate
Chapel Farm, Lenham	4	Soft sand
West Malling Sandpit, Ryarsh	3.1	Soft Sand (and 0.5mt of Silica sand)
Central Road, Dartford	0.9	Sand and Gravel
Joyce green Quarry, Dartford	1.5	Sand and Gravel
Lydd Quarry and Allen's Bank Extension, Lydd	3.1	Sand and Gravel
Moat Farm, Five Oak Green, Capel	1.5	Sand and Gravel
Postern Meadows, Tonbridge	0.23	Sand and Gravel

Stone Castle Farm Quarry Extension, Hadlow/Whetsted	1.0	Sand and Gravel
The Postern, Capel	0.5	Sand and Gravel
Total	16.33	7.1 mt Soft sand 8.73mt Sharp sand and gravel

Source: http://mylimehouse.kent.gov.uk/portal/

8.13 These potential sites are uncertain as to their deliverability and full economic potential. This will not be clear until detailed technical work has been conducted on the sites, post the current public consultation, to support a Regulation 19 Draft Mineral Sites Plan consultation. Therefore, significant weight cannot be attached to these sites that would act as replenishments to the respective landbanks. This is particularly the case for the sharp sands and gravel landbank where available reserves are below the NPPF minimum requirement by a significant (2.3 years) margin.

8.14 In addition to the landwon maintenance of landbanks to support a steady future supply of aggregate in Kent, Policy CSM 8 of the adopted Kent Minerals and Waste Local Plan 2013-30 states that sites will be identified in a Minerals Sites Plan to produce recycled and secondary aggregates to ensure a processing capacity of at least 2.7 million tonnes to maximise the availability of alternatives to marine-won and local land-won sand and gravel extraction. Current capacity of production in this sector is some 3.45 million tonnes per annum. Additional sites are therefore not needed at this time to meet the Plan's requirements.

Productive Capacity

8.15 For the first time a site capacity question was included as part of the Aggregate Monitoring 2017 (AM2017 to gather 2016 data) survey. By understanding current capability of sites, through capacity, it is hoped that this information can be used to assist planning for future demand. The results of this are shown in Table 12. This is the first year this type of information was collected so it is not possible to comment on any trends, this is something that will be reported on in the next LAA.

8.16 Whilst it is not possible to determine trends in capacity this year, it is possible to compare sales with capacity to understand void productive capacity currently in Kent. Table 12 indicates that for landwon sands and gravels aggregate supply, there is the potential for soft sand sales to be some 25% higher than currently recorded. For the sharp sands and gravels the situation is similar, with 22% of available production capacity unused. These landwon sites are currently producing at a rate of 75-78% of available capacity respectively. Changes in landwon aggregate sales are dictated by the needs of the construction sector.

8.17 It can be seen that currently there is some but limited future capacity to accommodate any increase in demand. Though with regard to recycled and secondary aggregates (and wharves) there is significant available headroom. There is a potential to provide almost an additional 2.8 million tonnes of secondary and recycled aggregates over the current demand of 1.03 million tonnes. In 2016 it is shown that there was a spare capacity of 73% for managing recycled and secondary aggregate.

8.18 It is worth noting that not all operators returned information on capacity, and therefore the capacity data provided is not entirely accurate.

Table 12: Total Sales and Estimated Production Capacity, 2016 (Million tonnes, Mt)

	Sales (mt)	Productive Capacity (mt)	% Sales/ Production
Landwon Aggregate			
• *Soft Sands*	0.50	0.66	75%
• *Sharp Sands and Gravels*	0.26	0.33	78%
Wharves	1.80	7.30	25%
Rail Depots	0.29	0.50	58%
Recycling/Secondary	1.03	3.90	27%

Source: Aggregate Monitoring Survey, 2016 and previous wharf capacity work undertaken to support the adopted Plan. Please note this was the first year that capacity data was collected from site operators, and as such, results should be treated with caution.

8.19 Capacity information will become increasingly important in future years, particularly in relation to wharves and rail depots. A recent study[4] by the Mineral Products Association suggested that nationally there could be a decrease in the demand for land-won aggregates over time as the resource depletes and is substituted significantly by marine-won aggregates. Kent has significant unused capacity in that the wharfage is operating only at a 25% capacity. It will be vital to ensure that the capacity of wharves in Kent continue to be safeguarded such that their operational capacity can be ramped up as the landwon sands and gravels deplete. The rail depots would appear to have less capacity headroom, though sufficient capacity to cope with an increase to ensure an adequate and steady supply of aggregate. Secondary and recycled aggregates are showing an increase in sales, though less certain in survey returns, the capacity has sufficient unused slack to ramp up production if more C,D&E waste becomes available to contribute to aggregate supply needs.

[4] Long-term aggregates demand & supply scenarios 2016-30, Mineral Products Association (2017)

9. Overall Conclusions and Review of the Local Aggregate Assessment

9.1 This LAA highlights that Kent is producing more aggregates, the upturn in sales of aggregate from the low point of 2013-14 when 5.0 million tonnes of aggregates per annum were being produced has continued, with 5.8 million tonnes in 2015 and 6.14 million tonnes in 2016. Of significance in the overall supply chain is the contribution from secondary and recycled aggregates that have for the first time climbed above 1.0 million tonnes per annum. As 1.03 million tonnes were recorded in 2016 the nearest year to this performance was 2007 with 0.96 million tonnes being produced. It should be borne in mind that not all producers participated in the aggregate monitoring exercise and so 1.03 million tonnes are probably an underestimate. Moreover, collected data suggests the sector is operating at only at 27% capacity, although again, due to data collection difficulties, the accuracy of this value is in doubt and there is probably significantly greater capacity available than is being utilised. However, as the supply of the construction, demolition and excavation sector varies an inbuilt overcapacity will cope with wide fluctuations of supply.

9.2 Of the landwon aggregates there is a similar pattern in that the low point of 2013-14 in production is now experiencing an upturn. The soft sand production from land-won resources in 2013 was some 0.29 million tonnes, in 2015 this had climbed to 0.48 million tonnes and in 2016 production is 0.51 million tonnes. Production is now running at 75% of site capacity which may mean that without additional sites, achieving levels of production to meet the demand levels that existed in 2006-10 (generally in the 0.5-0.6mt range) could be problematic.

9.3 The situation with regard to land-won sharp sands and gravels has only shown a modest upturn recover since 2014. With sales climbing from 0.17 million tonnes to 0.26 million tonnes by 2016. The current three year average sales value is 0.203 million and without substantive replenishment to regain an NPPF compliant ‘at least 7 year landbank’ (currently calculated as 4.7 million tonnes, while there is only 2.7 million tonnes available at this time) this may represent a more realistic level of production going forward. Production of land won sharp sand and gravel is running at 78% of available capacity, further indicating that there is a situation of depletion for this aggregate sector in the county as production plant is being more fully utilised and yet supply remains below the NPPF requirements. The sites identified in the County Council’s Mineral Sites Plan Options Regulation 18 Consultation (December 2017 to March 2018) could supply some 8.73 million tonnes, however this cannot be confirmed until the Plan is adopted, so limited weight may be attached to this value at this point in time. Sales of land-won crushed rock are assumed to be meeting market needs, though the continuing need to maintain confidentiality as the very

significant reserves available (one site gained a 16.2mt extension on the 11th July 2013) clouds the data and thus renders any conclusions somewhat speculative though given the probable reserve significant base it is reasonable to assume supply is adequate and will be going forward into the future.

9.4 It is considered that the 10 year sales average is the appropriate metric for forward projections of what the area can produce to maintain an adequate and steady supply of aggregates, for as long as resources allow, given the difficulties of accurate modelling at the county council scale and that the situation with regard to sharp sand and gravel replenishing resource availability is now attenuated. Any additional quantity over and above the 10 year average in the LAA rate would be both unreliable in the way it can be derived and in terms of the potential of the area's geological resources to respond to this demand. Thus, the National Planning Policy Framework requirement to use rolling 10 year sales data in the estimation of supply requirements together with 'other local information' (i.e. increasing scarcity for sharp sands and gravels in particular) is represented in the 10 year sales figure and this is used to represent the Kent LAA rate.

9.5 The role of Kent in supplying landwon aggregate within the wider South East is demonstrated by the National Survey results in the collection of import/export information, (this data is not published in final government aggregate monitoring reports though can be provided separately by BGS). This data shows that up to 20% of all landwon sands and gravels produced in Kent were consumed beyond the county in the wider South East. How this trend will change through time will be monitored, though due to the location of soft sand resources in constrained areas within the wider south east, it may well be the case that Kent's role in meeting needs outside its boundaries will potentially increase through time.

9.6 Importation of aggregates in the form of largely marine dredged sands and gravels and crushed rock continue to be very significant in overall supply terms, accounting for 3.55 million tonnes of the total 6.14 million tonnes produced overall in Kent in 2016. This accounts for almost 58% of total supply. In both cases the last three year sales averages are greater than the last 10 year sales average for imported crushed rock and marine dredged aggregates which clearly indicates that importation is becoming more important than the land-won alternatives in overall supply terms. Though soft sand is not generally supplied from marine won sources and so remains essentially a Kent land-won resource that is not being supplanted in the supply chain by imports to any great extent. The wharves in Kent are operating at 25% of their available capacity and, while this appears low, as the landwon reserves of sharp sands and gravels are depleted the need for marine dredged sands and gravels to meet identifiable and objectively assessed needs will increase. Therefore, any further losses in

wharves could have long term supply ramifications that could seriously impede the area's ability to meet the National Planning Policy Framework's requirement to maintain a steady and adequate supply of aggregates (see Section 145 of the NPPF). Continued robust safeguarding of the available wharf capacity in Kent is therefore considered imperative to securing this objective, especially in light of a recovery in demand for aggregates and with increased projections for housing and overall infrastructure into the future.