Kent County Council

Local Aggregate Assessment 2018

October 2018

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Tables and Figures

Kent County Council LAA2018 (using data for the calendar year 2017)

	2017 Sales (Mt)	Average (10 yr) Sales (Mt)	Average (3yr) Sales (Mt)	Trend (10 yr sales)	Trend (3 yr sales)	LAA Rate Mt	Reserve as per end of 2017 (Mt)	Permitted Landbank (current Reserves divided by current sales)	LAA 7-year Landbank based on 10-year sales average	Productive Capacity (tpa)	Comments
Soft Sand	519,414	568,131	502,097	⬇	⇧	0.568	8,848,820	17 years	3,976,917 tonnes which gives a 15.57-year NPPF landbank at 2017	895,000	The reserve base has decreased due to further extraction in 2017 without replenishment. 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. The recorded permitted reserves will fall below the 7-year NPPF landbank minimum in some 6 to 7 years time at the current 10-year average sales extraction rate.
Sharp Sand & Gravel	151,165	472,303	216,694	⬇	⬇	0.472	3,695,500	24 years	3,306,121 tonnes which gives a 7.8-year NPPF landbank at 2017	1,101,000	The reserve base has grown from 2.71mt in 2016 to 3.69mt in 2017 given a re-evaluation of reserves that now confirms the division of soft sand and sharp sand and gravels. 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. There is limited headroom in the permitted reserves (3.69mt) above the minimum NPPF 7-year landbank requirement (3.31Mt), falling sales in 2017 continues the trend observed in 2016 and the 24 years landbank life based on 2017 sales and reserves at end 2017 is unrepresentative of actual requirement to meet local and national policy.
All Sand & Gravel (land-won)	670,579	1,040,434	718,791	⬇	⇧	N/A	12,544,320	N/A	N/A	N/A	This information demonstrates that Kent produces a significant quantity of land-won aggregate though the 10-year average is in decline, this being due to the reductions in sharp sand and gravel sales.

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	906,373	794,981	926,774	⬇	⇧	N/A	N/A	N/A	N/A	4,188,000	Sales of secondary and recycled aggregates (derived from both the C, D & E waste and industrial by-products sectors) slightly decreased in 2017 compared to 2016. However, the underlying trend is increasing given the three-average increase.
Marine Sand & Gravel (mt)	1.773	1.790	1.812	⬇	⬇	N/A	N/A	N/A	N/A	Approx. 7.30mtpa	The very slight decreases in the last 3-year and 10-year averages shows that the importation of marine sand and gravel is essentially static since 2016. Only 121 tonnes of marine imports were sold as soft sand.
Rock Imports by Sea	1,057,785	773,905	1,028,877	⇧	⇧	N/A	N/A	N/A	N/A		Previously the LAA2017 dashboard misreported hard rock imports via wharves as rail head imports. In 2016 the 10-year average was 0.77Mt and the 3-year average was 0.91Mt. The increase in sales in 2017 is demonstrating an upturn in hard rock imports via wharves.
Rail Depot Sales (Sand & Gravel)	24,214	45,537	27,465	⬇	⬇	N/A	N/A	N/A	N/A	500,000 (estimated)	Both the three year and ten-year sales average trend, when compared to that of LAA2017 is down, though this is not by a significant degree. Essentially importation of sands and gravel via railheads is static.
Rail Depot Sales (Soft Sand)	8,212	6,495	6,383	⬇	⬇	N/A	N/A	N/A	N/A		Both the three year and ten-year sales average trend, when compared to that of LAA2017 is down, though this is not by a significant degree. Essentially importation of soft sand via railheads is static. What is more important to note is that importation of soft sands via rail heads is insignificant in comparison to Kent's land-won extraction.
Rail Depot Sales (Crushed Rock)	468,785	383,560	442,289	⬇	⇧	N/A	N/A	N/A	N/A		The most recent 10-year average is only very slightly lower than that reported in LAA2017, the three-year average has slightly increased, essentially importation via railheads of crushed rock is static.
Commentary	The land-won resource continues to be important for soft sand and hard rock. The sharp sand and gravel resource is depleting and the increase in reserves is due to re-survey and re-evaluation of the permitted reserves rather than replenishment with new reserves. Land-won sharp sand and gravel is reducing in importance though production has migrated over the administrative boundary and thus this trend is somewhat exaggerated in the three-year sales averages. Importation of marine dredged materials very slightly decreased (wharves) though remains significant as does hard rock importation. Rail Depot hard rock importation is rising and sand and gravel importation only slightly declining.										

Executive Summary

This is the sixth Local Aggregate Assessment Kent County Council has produced. It demonstrates that aggregate supply in Kent is provided by both imports and indigenous land-won materials. Unlike sharp sands and gravels, soft sands are predominantly a land-won resource and this material cannot easily be substituted by recycled or secondary materials and apparently little can be expected in the short to medium term, from marine resources. Therefore, Kent will likely remain a significant supplier of land-won soft sands to markets within and beyond Kent, into the future. Sharp sands and gravels from the land-won resource are depleting, with limited potential to meet NPPF landbank minimums into the future.

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 land-won resource is significant but actual levels are unable to be reported 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. Available wharf capacity is significant but vulnerable to losses as their locations often coincide with competing regeneration initiatives. Any 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 2018 (based on 2017 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: a) preparing an annual Local Aggregate Assessment, either individually or jointly, to forecast future demand, based on a rolling average of 10 years' sales data and other relevant local information, and an assessment of all supply options (including marine dredged, secondary and recycled sources)'*. This is Kent's sixth LAA and it's third 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. Work on the Kent Minerals Sites Plan, to identify sites to deliver the adopted Plan's supply objectives, is ongoing currently.

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, as 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 that which represents the past and the future predictions based on this data and it will be therefore subject to variation given that there are unknowns in terms of reserve re-evaluations and production rates.

1.3 It is also 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 operators of active mineral extraction sites, minerals wharves, minerals rail depots and recycled and secondary aggregate processing sites in the county. 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.

[1] National Planning Policy Framework, paragraph 207 (DCLG, July 2018):

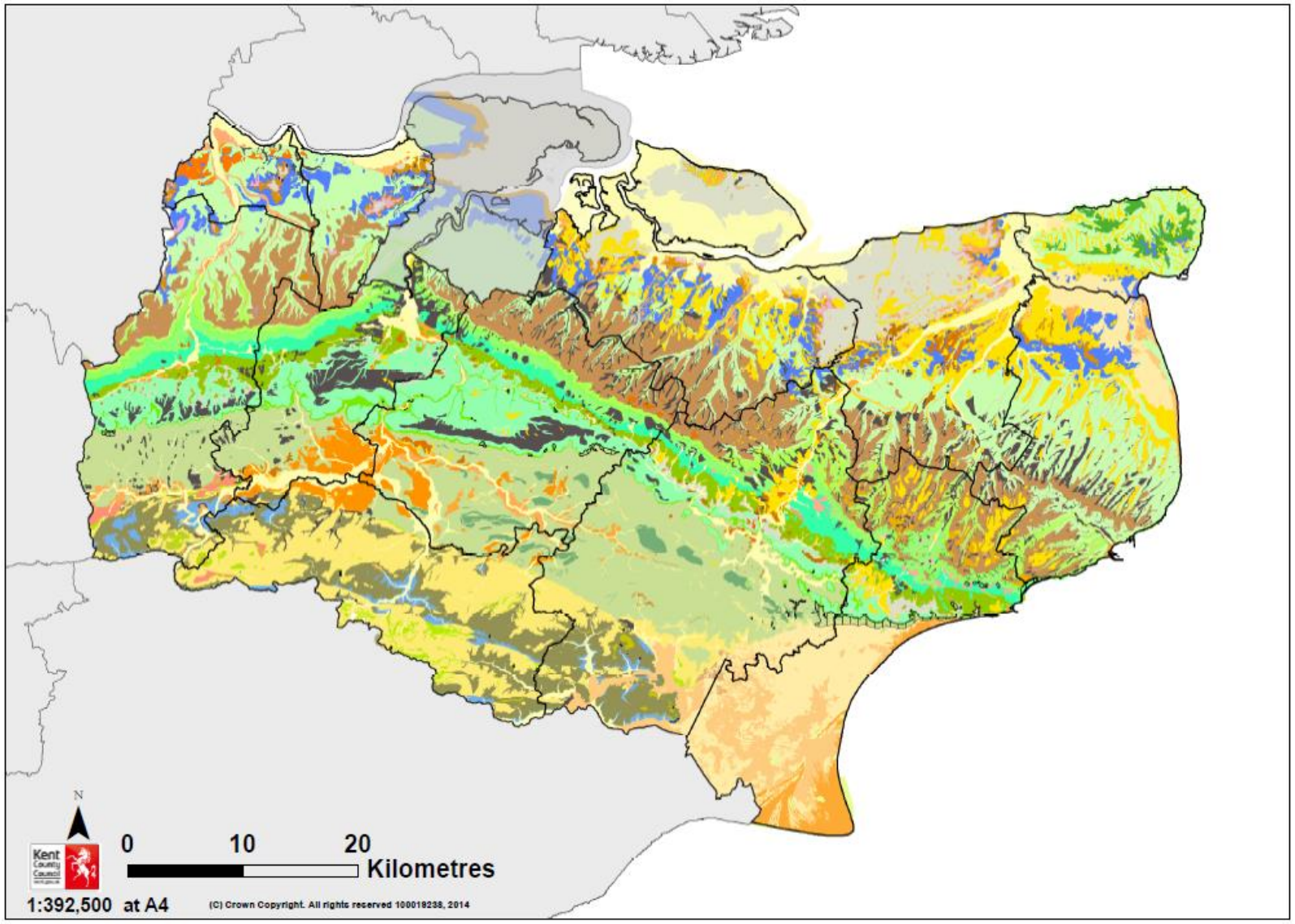
2. Land Won Aggregate

Geology of Kent

2.1 The geology of Kent is a complex array of solid crustal and superficial geological units, see Figure 1. Kent has several economically important naturally occurring aggregate forming mineral deposits. The most recent of which is the post glacial (Pleistocene epoch of some 10,000 years ago) 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

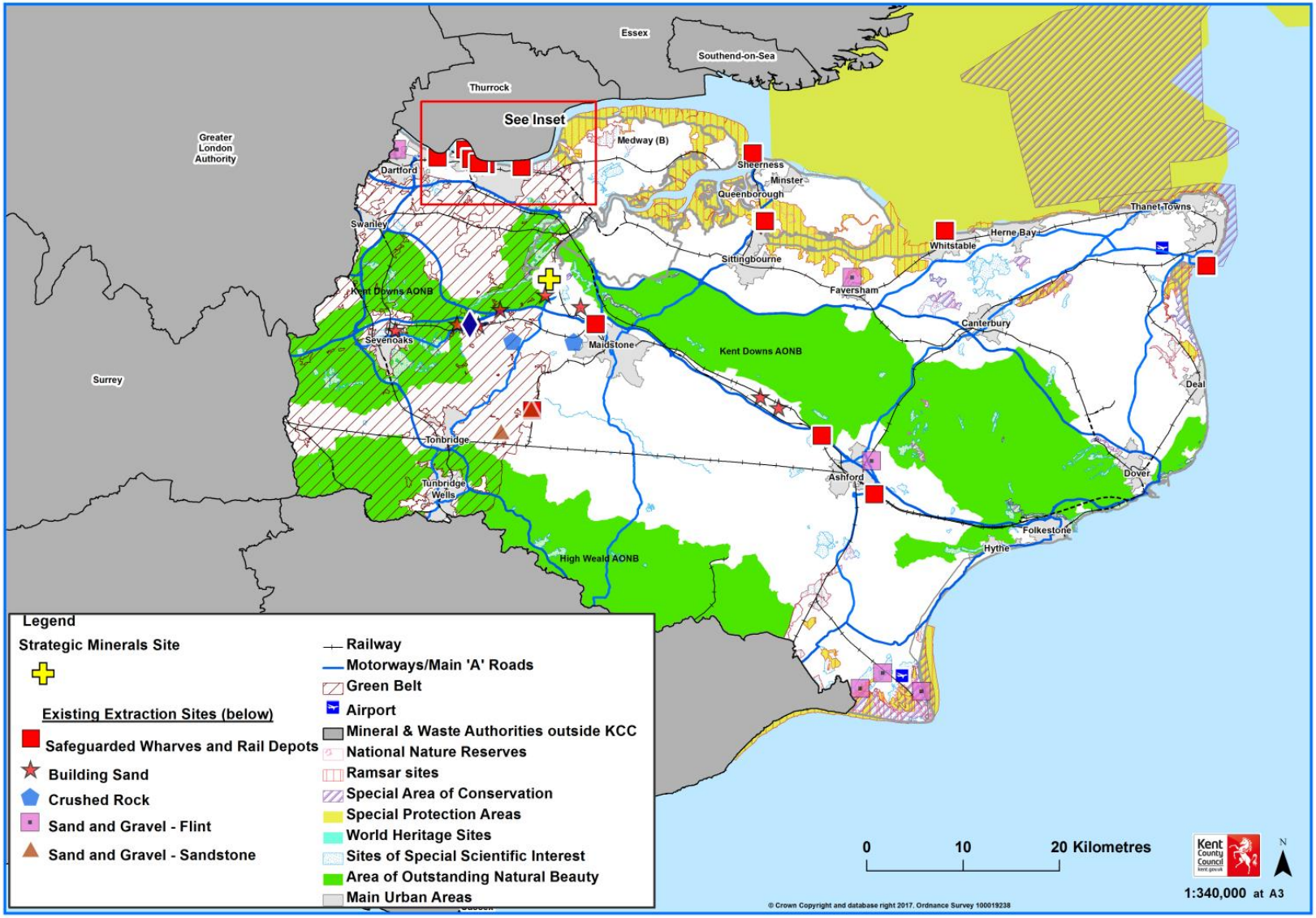


Legend: Geology of Kent

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 and Dungeness for sand and gravel supply while the area around Maidstone has supplied crushed hard rock. Soft (and silica) sand supply is associated with the Folkestone Beds, this significant unit traverses the county from east to west following the northern slopes of the Wealden basin. Figure 2 shows the location of the county's active quarries in in 2017 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 2017



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 extracting from the river terrace deposits that are associated with the county's main river valleys, though the cuspate foreland (storm beach) deposits at Lydd and Dungeness also provide a source of supply. Table 1 details these sites.

Table 1: Permitted Quarries in Kent, 2017

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*[2]
Aylesford Quarry, Aylesford	Aylesford Heritage Ltd	-	Yes	-	Active [3]
Addington Sand Pit (Wrotham Quarry)	Fern Aggregates	-	Yes	-	Active
Borough Green Sand Pit, Sevenoaks	Borough Green Sandpits Ltd	-	Yes	-	Active
Burleigh Farm, Charing	*Brett Aggregates Ltd*	-	*Yes*	-	*Inactive*
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] Planning permissions to erect a new plan site and to extend the life of the extraction site until 2024 were granted planning permission subject to pre-commencement conditions in 2018

[3] No off-site sales in 2018 of soft sand though actively extracting a sand and gravel-based material for construction fill purposes

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

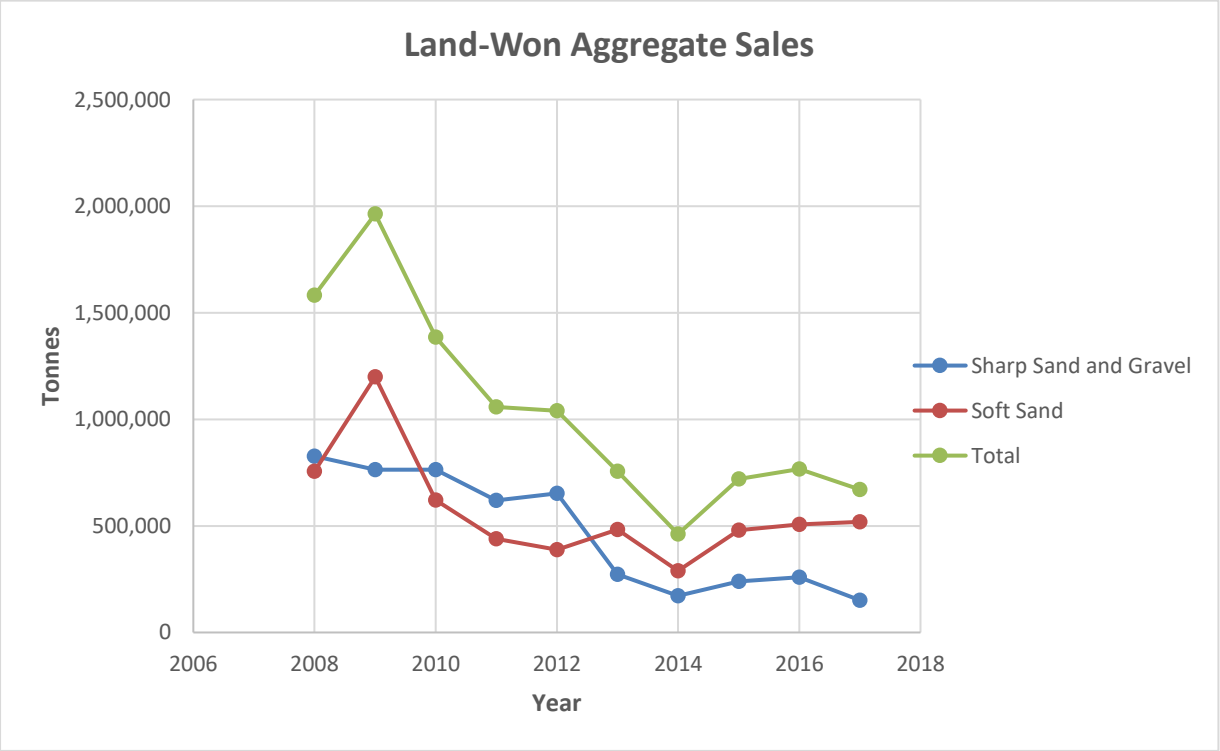
2.5 The sales of land-won sharp sand and gravel and soft sand in Kent since 2008 are shown in Table 2. The overall trend for both land-won aggregate types is a reduction in recorded sales, though this is significantly more pronounced for the sharp sand and gravels than the soft sands, as will be illustrated later.

Table 2: Landwon Soft Sand and Sharp Sand and Gravel Sales in Kent, 2008-2017 (Million tonnes, Mt)

Year	Tonnes
2008	1,582,798
2009	1,963,120
2010	1,385,497
2011	1,058,764
2012	1,040,031
2013	756,000
2014	461,759
2015	719,581
2016	797,828
2017	670,579
Last 3-year average (2015-17)	**718,791**
Last 10-year average (2008-17)	**1,040,434**

Source: Aggregate Monitoring Surveys, 2008-2017

Figure 3: Sales of Landwon Sand and Gravel in Kent, 2008-17 (Tonnes)



2.6 Sales of hard rock are not represented here given the need to maintain confidentiality. The issue has not altered since the 2015 Independent Examination and subsequent adoption of the Plan in 2016. The assumption of 0.78mtpa was, and continues to be, used as a proxy for hard rock sales in Kent. This figure originated from the apportionment for hard rock production in Kent from land-won resources in the South East Plan. The adopted 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 at this time.

2.7 Figure 3 graphically represents the pattern of the land-won soft sand and sharp sand and gravel sales for the last ten years in Kent. Since 2015 sales have continued to show an upturn as demand increased up to 2016 (797,828 tonnes), sales then slightly dropped back in 2017 (670,579 tonnes). 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 of 0.29 mt; a fall of some 26%. 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 0.83mt, this has declined to less than 0.50mt in 2012/13 and then has essentially remained in the 250,000 tonnes per annum range up to 2016. The sales in 2017 markedly fell to 151,165 tonnes (that will be demonstrated further on in this report when examining the sharp sand land-won sales patterns specifically). There is no indication of a return to the 10-year average sales of around some 0.50mtpa.

2.8 Table 3 below shows the total current (2017 data) permitted landbank for the sands and sands and gravel landwon aggregates. The current adopted policy predicted requirement for Kent is set out in Policy CSM 2 of the adopted Kent Minerals and Waste Local Plan 2013-30 Plan. This supply prediction was based on 2014 aggregate monitoring data. The emerging Minerals Sites Plan is based on the updated landbank requirement prediction for both the soft sands and sharp sands and gravel set out in this LAA.

2.9 The current sharp sand and gravel landbank based on local requirements is calculated at 4.73 years, which is below the 7-year NPPF requirement of the adopted Plan's 10-year average of 0.78mt times 7 years (giving 7.8mt). The recently monitored landbank (3.69mt (an increase since 2016 due to available reserve recalculations)) in 2017 when divided by the recent 10-year (2008-17) average sales data (0.472mt) is sufficient for 7.8 years, as stated above. However, whatever the yearly drawdown figure based on the averaged sales data is used, it is clear that the landbank is below the at least 7-year NPPF requirement at this time. It is considered that landbank figures for the land-won sharp sands and gravels may well be demonstrating a decline in available resources based on geological scarcity that has become increasingly apparent. New reserves that would replenish the landbank for this aggregate mineral are

not coming on stream. Output from one significant Kent quarry has been lost to the consideration of Kent's aggregate assessment due to extraction passing over an administrative boundary (Lydd Quarry). As has been stated before, this is not unexpected given that the supply requirement estimated in adopted Policy CSM 2 is caveated as follows"…. *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 type is a matter that will be addressed through the Minerals Sites Plan 2019-30 process that is ongoing at this time.

2.10 The soft sands permitted reserves have reduced to 8.85mt in 2017 due to continued production and the 10-year average has reduced from 0.584mt in 2016 to 0.568mt in 2017, though the three-year sales average (0.502mt) is showing an upturn in trend that was observed in the 2016 data. This degree of available reserves, when applying the 10 year averaged sales data requirement calculation is meeting the NPPF's requirement to have a landbank of "*at least 7 years*". In that the available landbank is 15.5 years. However, the adopted Plan requirement spans a greater time period and thus, at that 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 (late 2015 into early 2016) on the Option sites for the Mineral Sites Plan suggested that around 7.1mt of potential new soft sand reserves might be available from two promoted sites, however, the yield, and suitability, of these sites for allocation has yet to be confirmed.

2.11 A Kent Mineral 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 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 (LAA2018) and LAA2019 (that will be based on 2018 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. This to come from the existing reserves currently permitted with the 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 predicted number of infrastructure projects, are inherently difficult to model with any accuracy and in light of this 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 ceased in March 2018 and the detailed technical assessment of all mineral site Options is to be completed soon. Confirmation of the suitability of the originally promoted 7.1mt of new soft sand

reserves (two sites, one at Ryarsh and one at Lenham) that are considered acceptable for allocation will be detailed in a Pre-submission Mineral Sites Plan that will be published for representations on soundness (Regulation 19 stage - anticipated in early 2019).

Table 3: Kent Aggregate Reserves and Aggregate Landbank as of 2017 Data

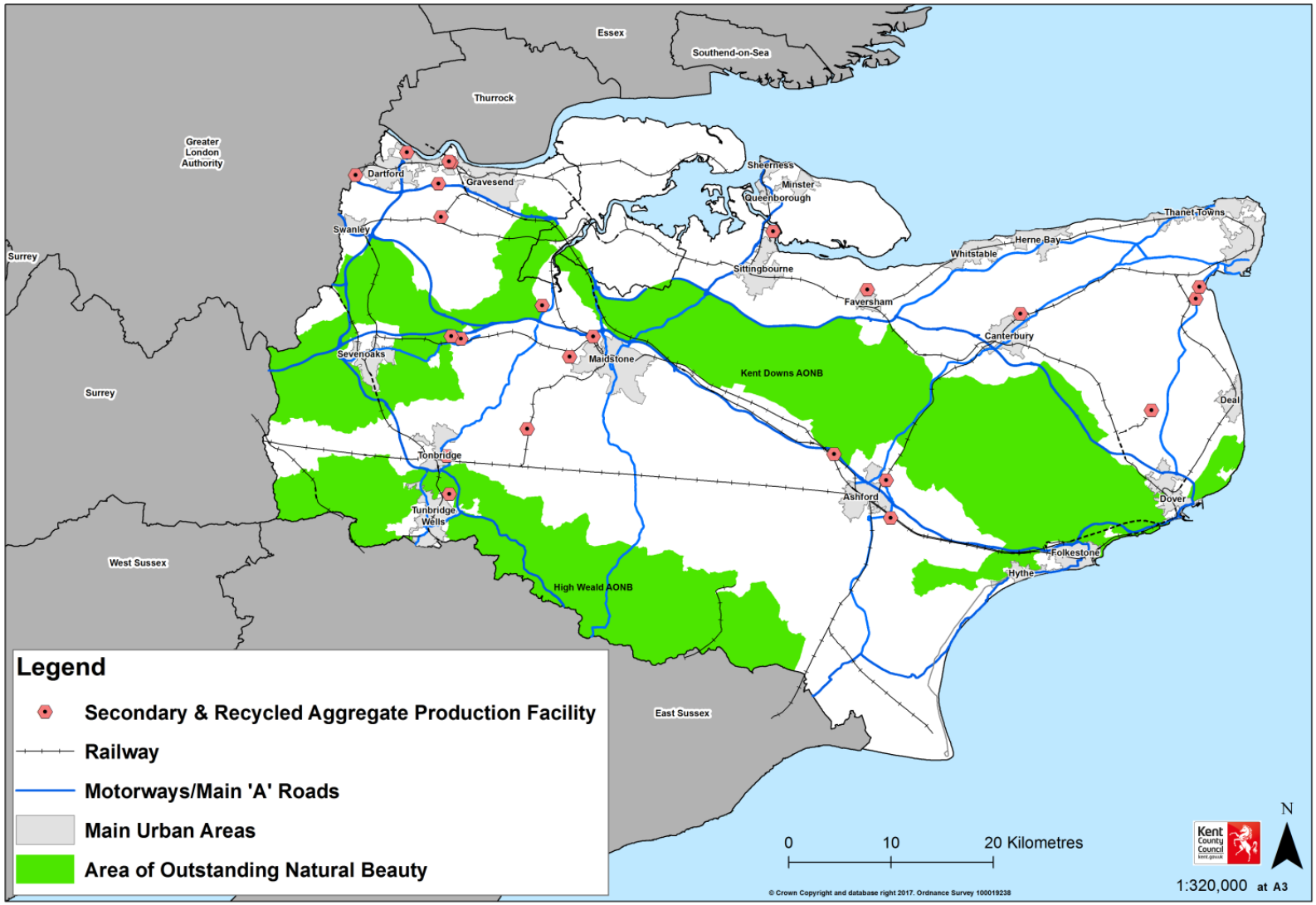
	Permitted Reserve (mt)	Current Landbank based upon adopted KMWLP Policy Requirement (years)*	Current Landbank based upon 10yr average sales between 2008-2017 (years)	Landbank based upon 3yr average sales between 2015-2017 (years)	Current Landbank based upon 2017 sales alone (years)
Soft Sand	8.85	13.6	15.57	17.63	17.03
Sharp Sand & Gravel	3.69	4.73	7.8	17.03	24.4
Total	12.54	-	-	-	-

Source: Aggregate Monitoring Surveys data for years 2008-2017
*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 (some 0.78mtpa) overall of while recourses allow and for Soft Sand- 15.6mt (some 0.65mtpa) overall as based on the 10-year average sales data of the adopted Plan

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, 2017



3.2 The sales figures of the recycled and secondary aggregate in Kent are shown in Table 4 below. Kent has 23 sites engaged in producing recycled aggregates from the construction, demolition and excavation waste stream and secondary aggregates from industrial by-products. As was the case for AM2017 a significant producer of secondary aggregate did not participate in the survey, thus the reported sales data is likely to be significantly lower than actual sales that have occurred. 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.

3.3 As a proportion of all land-won aggregate sales (land-won hard rock assumed to be 0.78mt), the recorded sales from the recycled and secondary sector amount to some 38.4% of the total annual land-won aggregate production in the County (this being some 2.356mt). When considering all aggregate production, including land-won, marine and railhead imports (a total of 7.39mt recorded in 2017), the recycled and secondary sector amount to some 12.27%, a reduction to that recorded in AM2017 where the recycled and secondary aggregate share of the overall aggregate supply market was 16.6%. This reduction does not appear to be significant, or to be indicative of a substantive change in the sector's behaviour as the 0.90mt production in 2017 is not greatly different from that of the recorded 3-year average of 0.93mt.

Table 4: Recycled and Secondary Aggregate Sales in Kent, 2008-2017 (Million tonnes)

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	3-year average	10-year average
Sales	0.55	0.90	0.71	0.77	0.67	0.84	0.73	0.84	1.03	0.90	0.93	0.79

Source: Aggregate Monitoring Surveys, 2008-2017

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. The recorded loss of Dunkirk Jetty at the Western Docks, Dover (capacity in the range of 0.1 to 0.35 mtpa) in AM2016 has not been replaced.

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

Table 5: Marine Sand and Gravel Sales in Kent, 2008-2017 (Million tonnes)

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	3-year average	10-year average
Sales	1.670	1.730	1.524	1.844	2.014	1.743	1.938	1.874	1.788	1.773	1.812	1.790

Source: Aggregate monitoring surveys, 2008-2017

4.3 Kent's wharf capacity, with the loss of Dunkirk Jetty, is currently in the order of 7.30mtpa. Imports over the wharves continues to remain relatively stable, the bulk of the sand and gravel imports being of marine dredged origin with the ten-year and three-year sales averages being essentially similar in magnitude though are slightly down in comparison to those reported in LAA 2017. The previous ten-year average (2007 to 2017) was 1.7995mt now it is 1.790mt, indicating a negligible change in sales. The three-year average in 2017 (using 2016 data) was 1.866mt; this has also decreased, and in 2017 sales were 1.812mt also a negligible reduction.

4.4 The marine deposits are mainly found in the English Channel and North Sea. These are defined sedimentary basins that are not being actively replenished by aggregate inputs, 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.*

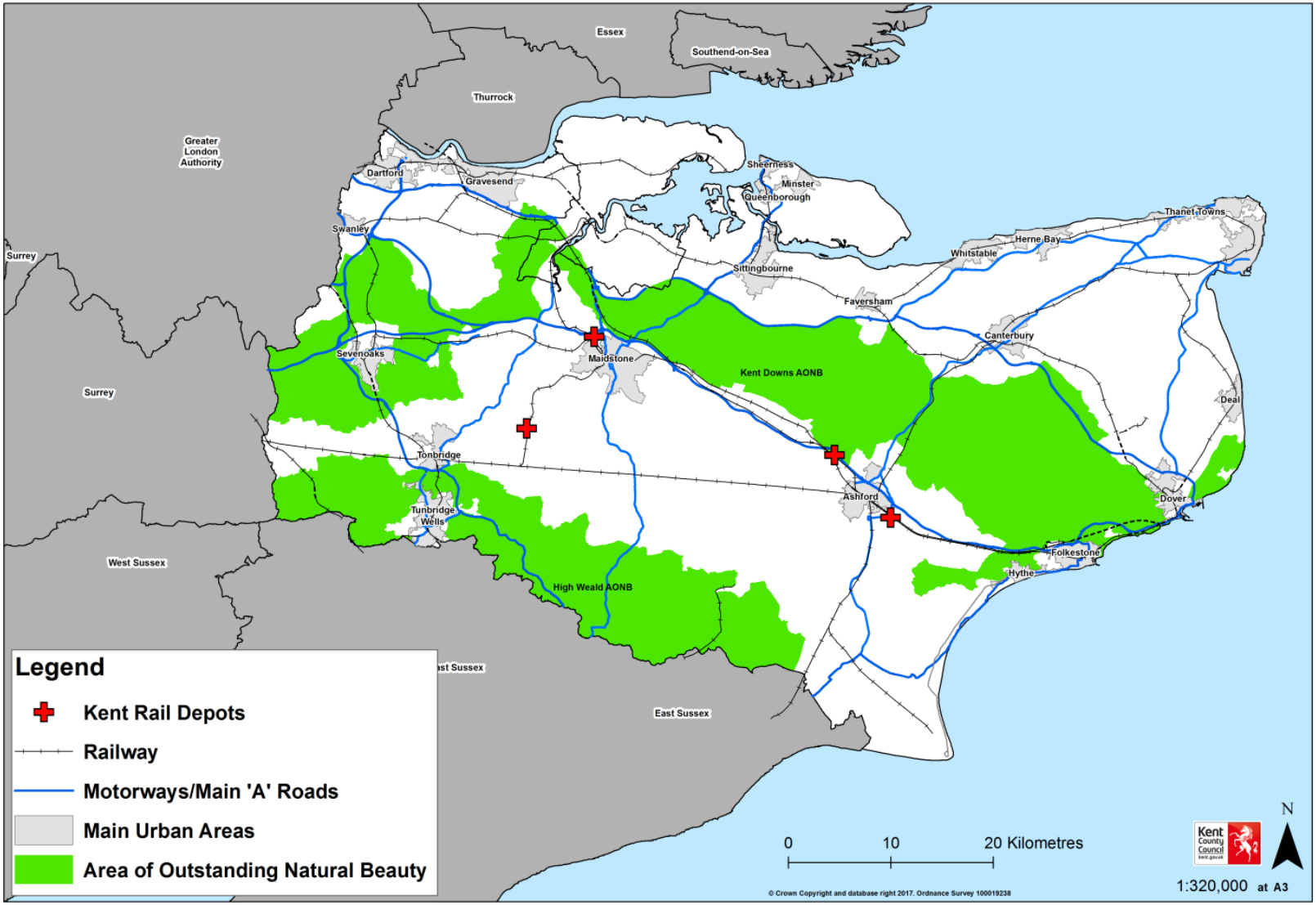
- *The current rate of extraction by all companies to all marine aggregate wharves in the UK and on the European mainland is some 45% of the quantities permitted per annum thus reinforcing the sustainability and long term viability and requirement of marine aggregate wharves in Kent.*

The area of the overall resource that supplies Kent, estimated as 994mt in 2011, is probably in the order of 933mt as of 2017 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 in Kent then 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 7 above shows (amongst other features) the safeguarded wharves and rail depots, Figure 5 on page 18 shows the railhead distribution only, for ease of clarity.

Figure 5: Location Map of Active Rail Depots in Kent, 2017



6. The crushed rock sales (from rail and sea imports) in Kent in 2017 were 1.53mt overall. When coupled together with the estimated landwon production Kent produced (though not necessarily consumed) some 2.31mt of crushed hard rock aggregate materials. Table 6 below shows the total aggregate (of all primary types) importation into Kent since 2008 until 2017.

Table 6: Aggregate Sales from Rail Depots and Wharves in Kent, 2008-2017 (Million tonnes)

Year	Soft Sands	Sharp Sands and Gravel	Crushed Rock	Totals
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
2017	0.0099	1.80	1.53	3.34
Last 3-year average	0.0155	1.97	1.47	3.47
Last 10-year average	0.0153	1.92	1.153	3.12

Source: Aggregate Monitoring Surveys, 2008-2017

7. Total Aggregate Production in Kent in 2017

7.1 During 2017 the total primary and recycled/secondary aggregate production (including imports) are shown on Table 7 below.

Table 7: Total Aggregate Production in Kent during 2008-2017 (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
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**
2017	0.52	0.0098	0.15	2.19	0.78	1.53	0.91	**6.09**
Total	**5.68**	**0.1534**	**4.71**	**19.63**	**7.80**	**11.53**	**7.95**	
Last 3 yr average	0.50	0.0155	0.22	2.1	0.78	1.47	0.93	
Last 10 yr average	0.57	0.0153	0.47	1.96	0.78	1.15	0.76	

Source: Aggregate Monitoring Surveys, 2008-2017. $ 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 within Kent from 2008 to 2017, as a degree of exportation out of Kent no doubt has occurred. In addition imports to users in Kent by road are generally not picked up. Import and export balance survey work that can reveal the degree of aggregate consumption (to a reasonable degree of accuracy) was completed in a comprehensive form in 2009. Given the elapse of time (9 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 80-90% 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 in 2014. 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. However due to the relative paucity of sharp and gravel reserves in Kent it is highly likely that exports of soft sand exceed those of any exports of land won sharp sand and gravel.

7.3 The production collated 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 fallen back below the 1.0mtpa mark in 2016 but remained the next highest figure for the last 10 years in 2017.

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	In Kent: 178,600 Additional homes 2011-2031 (this is based on 2014 ONS data, once the 2016 data is available this figure may be revised) Ebbsfleet Garden City: A planned development of up to 15,000 homes and 45,000m^2 of commercial floor space		
Education	2017-20 Primary 21.5 FE[4] Secondary 36 FE	2020-23 Primary 62 FE Secondary 43 FE	2023-30 No data
Significant Infrastructure	Up to 2030 in Kent 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		

[4] FE denotes Form Entry

8.2 The planned level of dwellings has not increased since LAA 2017, an estimated 178,600 homes 2011-2031 remains the working figure, though once the 2016 Office of National Statistics (ONS) becomes available this may change. The educational infrastructure has to match the increase in housing numbers. The Ebbsfleet Garden City, though not part of Kent's housing provision, is essentially within Kent and is so proximate to sources of supply it should be part of the overall demand consideration. The area of greatest change over recent LAA demand projections is the increase in infrastructural development, as reported in LAA2017. Port expansion, east Kent rail connections and major highway schemes (A2 junction improvements) are additional to the planned Lower Thames Crossing and the potential Paramount Park development. 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. The demand for aggregates in Kent for house building and concrete products for infrastructure and major projects is showing an increasing trend (given the upturn in the last three years sales average of land-won building sands and railhead and wharf imported crushed rock) and there are no obvious indications that this trend will reverse. Any impact of Brexit in 2019 will likely become apparent in LAA2020.

8.3 However, it is considered that modelling the actual quantum of demand 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. Though the loss of land-won production to East Sussex should be understood and allowed for. 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

8.4 The 2017 data (AM2018) collected for Kent shows the reserves for the following aggregate mineral types *as of the end* of 2017:

- Soft sand 8,848,820 tonnes or 8.85 million tonnes;
- Sharp sands and gravel 3,695,500 tonnes or 3.69 million tonnes (this having significantly increased from 2.71 million tonnes in 2016 due to a re-evaluation of one site's remaining reserve [that was not counted before due to lack of data] to distinguish the difference between soft sands and sharp sands and gravel, the conclusion was that soft sands were in fact available in negligible quantities);
- Hard rock – confidential but significant planning permission for an additional 16 million tonnes was granted in 2013.

8.5 These reserves are the estimates of all the respective aggregate mineral sites (soft sand, sharp and gravel, hard rock) operating in Kent for the end of 2017. Therefore, the data is now (late 2018) out of date by another year of production, the magnitude of which will not be known until the data for 2018 is collected by AM2019, though reserves can be approximated for planning policy formulation purposes by further reducing reserves by assuming at least the most recently recorded production figures and the last three-year averages prior to collation of more recent data.

Soft Sands

8.6 With regard to the soft sands the 2008-2017 ten-year average is 568,131 tonnes per annum, this is down by 2.73% from that reported in LAA 2017. Though the three-year trend is displaying an upturn, this has increased from 425,322 tonnes per annum in 2016 to 502,097 tonnes per annum in 2017. The 10-year average gives a landbank of 15.6 years based on a reserve of 8.85 million tonnes. In simple terms this would give a 17 year landbank based on 2017 sales. If this reserve base is assumed to have been reduced by 0.568 million tonnes (the 2017 data ten-year average) between January 2017 to January 2018 the reserves could have reduced to approximately 8.3 million tonnes by the end of 2018 (the actual sales will not be known until AM2019 is conducted). The recorded sales since 2005 are shown on Table 9 below.

8.7 Soft sand sales in 2017 were 519,414 tonnes, the important point to note is that the upturn from the 2014 sales low of 289,087 tonnes first noticed in 2015-16 appears to be continuing. 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 2005-17

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
2017	519,414

Average last 10-years (2008-17)	**568,131**
Average last 3-years (2015-17)	**502,097**

Sharp Sands

8.8 The marked fall in overall reserves from 3,791,880 tonnes to 2,715,708 tonnes observed in 2016 has largely been reversed, this being due to confirmation of available reserves from the sharp sands and gravel landbank do not have a soft sand component. Recorded reserves as of the end of 2017 were 3,695,500 tonnes.

8.9 Sales in 2016 were 259,550 tonnes, in 2017 they markedly fell to 151,165 tonnes. The ten-year average sales of 571,568 tonnes recorded in 2016 has dropped to 472,303 tonnes in 2017. The sharp sand and gravel landbank based on the last 10-year sales average is 7.8 years. Table 10 below shows recorded tonnages of sales since 2005-17.

Table 10: Landwon Aggregates Sales Sharp Sands and Gravels 2005-17

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
2017	151,165
Average last 10-years (2008-17)	**472,303**
Average last 3-years (2015-17)	**216,694**

Hard Rock

8.10 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.

8.11 The hard rock permitted landbank remains confidential, in LAA2016 it was estimated at over 48 million tonnes. Given another 2 years of assumed production at 0.78 million tonnes the estimated landbank may be some 46.44 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

8.12 The County Council continues to progress 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. The Call for Sites exercise in late 2016 into early 2017 resulted in several sites covering aggregate and other mineral types coming forward. The County Council initially assessed the sites promoted that accord with the objectives of the adopted Plan. This exercise identified those sites that could go forward to a Mineral Sites Plan Options (Regulation 18) public consultation (19th December 2017 to 29th March 2018).

8.13 The nine sites that were part of this consultation (two for soft sands and seven for sand and gravels) are set out on Table 11 below. The results of this consultation will be part of the ongoing Detailed Technical Assessment process that is being compiled in late 2018 to inform a Pre-submission Mineral Sites Plan Regulation 19 publication anticipated in early 2019.

Table 11: Mineral Sites Plan Option Consultation (Regulation 18 stage) 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	2-1.5	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/

8.14 Given that the potential sites are yet to be fully determined (in terms of deliverability and full economic potential) at the time of writing significant weight cannot be attached as to whether these sites that would act as replenishments to the respective aggregate landbanks. Though the 3.69 million tonnes landbank for sharp sands is now over the NPPF 7 year minimum (this being 3.3 million tonnes at based on the a ten-year average of 0.472 million tonnes) this is somewhat artificial, as the fall in sales since 2016 is due to the production of a notable site moving over the Kent administrative boundary into East Sussex where production has continued and serves both a Kent and East Sussex market. Therefore, it remains the case that the need to plan for additional resources is justified. Moreover, the requirements of the adopted Kent Minerals and Waste Plan (Policy CSM 2), that will be addressed in the Kent Mineral Sites Plan will require significantly greater quantities of sharp sand and gravel aggregates *"…while resources allow*." Up until 2030 (plus 7 years).

8.15 In addition to the maintenance of landwon 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 4.2 million tonnes per annum (greater than that reported in 2017). Additional sites are therefore not needed at this time to meet the adopted Plan's requirements.

Productive Capacity

8.16 Aggregate Monitoring 2017 (AM2017 to gather 2016 data) survey included productive capacity for the first time. This understanding of current capability of sites, through capacity, will be a tool that can be used to assist planning for future demand. The results of this are shown in Table 12. This is the second year this type of information was collected, it is not possible to comment on any identifiable trends, though comparison to the previous 2016 data in LAA2017 can be attempted.

8.17 Given that this is only the second year that capacity has been recorded it is not possible to determine any firm trends in capacity, though there are changes to that which was recorded last year, it may be that greater familiarity with the issue of capacity is working its way through the aggregate monitoring with greater reporting accuracy in the data returns. However, it is possible to compare sales

with capacity to understand underutilised or 'void' productive capacity currently in Kent. Table 12 indicates that for land-won sands and gravels aggregate supply the soft sand sales represents some 58% of the current permitted productive capacity currently recorded, in LAA2017 the figure was 75%. It is assumed that the difference is greater accuracy in estimation of the productive capacity at 0.89mtpa rather than 0.66mt recorded in LAA2017.

8.18 For the sharp sands and gravels the 'voided' capacity is large the situation is significant, as the productive capacity is now recorded as 1.10mtpa while sales have fallen in Kent given the migration of productive area across the administrative boundary of Kent and East Sussex. Therefore, sales are recorded at only 14% of this productive capacity in Kent, leading to a distortion of the real situation. In LAA2017 the sharp sands and gravel sales were running at 0.78% of available productive capacity, which was very probably an understatement at the time.

8.19 With regard to recycled and secondary aggregates there is significant available headroom, also the recorded productive capacity has grown from 3.90mtpa as reported in LAA2017 to 4.18mtpa. There is a potential to provide almost an additional 3.3mtpa secondary and recycled aggregates over the current demand of some 0.91 million recorded tonnes.

8.20 Kent's wharves are being more intensively used, productive capacity is still at the 7.30mtpa point, therefore available additional capacity remains significant (at 58%) but not at the very attenuated degree reported in LAA2017 when there was an apparent 75% additional capacity 'void'. Rail depots are operating at full capacity with sales matching the recorded productive capacity.

Table 12: Total Sales and Estimated Production Capacity, 2017 (million tonnes per annum, mtpa)

	Sales (mt)	Productive Capacity (mtpa)	% Sales/ Production
Land-won Aggregate			
• *Soft Sands*	0.519	0.89	58%
• *Sharp Sands and Gravels*	0.151	1.10	14%
Wharves	3.075	7.30	42%
Rail Depots	0.500	0.50	100%
Recycling/Secondary	0.906	4.18	22%

Source: Aggregate Monitoring Survey, 2017 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.

8.21 Capacity information will become increasingly important in future years, particularly in relation to wharves and rail depots. A recent study[5] 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 still has significant unused capacity in that the wharfage is operating only at 58% 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 appear to have reached maximum operating capacity with no more headroom, while the secondary and recycled aggregates are showing a slight decrease in sales there is significant capacity to be further utilised if sufficient market demand ramps up production.

9. Overall Conclusions and Review of the Local Aggregate Assessment

9.1 This LAA highlights that Kent is producing slightly less aggregates in 2017 than in 2016. However, the overall difference is slight (6.09mt as opposed to 6.14mt in 2016). Moreover, given that land-won sharp sands and gravel sales are in all probability artificially low, given that a certain quantum of production has migrated over the administrative boundary of Kent into East Sussex. Therefore, it is probably the case that sales of aggregates (of all types) in 2017 are largely the same as that of 2016. 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 essentially been maintained, with 5.8 million tonnes in 2015, 6.14 million tonnes in 2016 and a similar if not greater amount in 2017. Of continued significance in the overall supply chain is the contribution from the secondary and recycled aggregates sector, this climbed above 1.0 million tonnes per annum in 2016 and fell back slightly in 2017 to 0.91 million tonnes. This remains the highest level of production since 2008 save for the 2016 high of 1.03 million tonnes. It should be borne in mind that not all producers participated in the aggregate monitoring exercise and so the 0.91 million tonnes value is probably an underestimate. The collected data suggests the sector is operating at only at only 22% of the available capacity. Due to data collection difficulties, the accuracy of this value is in doubt, though higher than that recorded for 2016. There is probably greater capacity available than is being reported. This is not to be entirely unexpected as the supply of material from the construction, demolition and excavation sector varies, an inbuilt overcapacity will enable the industry to cope with wide fluctuations of supply over time.

9.2 Of the land-won aggregates production is now experiencing an upturn in sales of soft sand and an apparent downturn for the sharp sands and gravels. The soft sand production from land-won resources in 2013 was some 0.29 million tonnes,

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

in 2015 this had climbed to 0.48 million tonnes and in 2016 production was 0.51 million tonnes, in 2017 this slightly climbed to 0.52 million tonnes. The 10-year average has fallen back slightly from 0.584 million tonnes per annum in 2016 to 0.568 in 2017, though the three-year sales average has climbed from 0.425 million tonnes per annum to 0.50 million tonnes per annum. This is significant in that it shows an underlying increase in demand. Production is now running at 58% of permitted capacity, though this is apparently less than in 2016 when it was recorded that sites were operating at 75% of the permitted available capacity the estimated full productive capacity is now considered to be higher at 0.89 million tonnes per annum, not 0.66 million tonnes per annum as stated in the previous LAA2017.

9.3 The situation with regard to land-won sharp sands and gravels has only shown a modest upturn recovery since 2014 until 2016. With sales climbing from 0.17 million tonnes to 0.26 million tonnes by 2016. In 2017 sales are recorded as having fallen back significantly to around 0.15 million tonnes per annum. The current three-year average sales value is has slightly fallen to 0.223 million tonnes per annum and the 10-year average has fallen from 0.571 million tonnes per annum in 2016 to 0.472 million tonnes per annum in 2017. As explained above, the advent of a quantum of production migrating across the administrative boundaries of Kent into East Sussex is obscuring the fact that Kent is being supplied by this source and thus consumption in Kent from its land-won reserves in all probability has not changed, sales data will not reveal this. Available reserves, however have increased due to re-evaluation of the permitted reserves at a site that distinguished between sharp sands and gravel and soft sand objectively (no soft sands at the site were confirmed) this confirmed a Kent overall reserve of 3.69 million tonnes rather than the 2.71 million tonnes reported in LAA2017.

9.4 An NPPF compliant '*at least 7 year landbank'* (currently calculated as 3.31 million tonnes) is only apparently available at this time given that the sales data has to be recorded for the administrative area in which it was raised. Given that Kent has 'lost' production to East Sussex this ten-year average and thus the resulting 7-year landbank are artificially low. The 10-year sales average reported in LAA2017 of 0.571 million tonnes per annum may represent a more realistic level of Kent production going forward. This would give a 7-year landbank requirement of 3.99 million tonnes. The available reserves continue to remain below this level at this time.

9.5 Production of land won sharp sand and gravel was recorded as running at 78% of available capacity in 2016, currently this is recorded as 14% the disparity is partly due to the significant increase in the estimated productive capacity, in 2016 this was recorded as 0.33 million tonnes per annum. This figure is recorded as 1.10 million tonnes per annum in 2017. However, without new reserves

replenishing this increase in recorded productive capacity is academic, the reserves situation demonstrates that depletion for this aggregate sector in the county is continuing.

9.6 The sites identified in the County Council's Mineral Sites Plan Options Regulation 18 Consultation (December 2017 to March 2018) and now being assessed for potential allocation, could potentially supply some 8.73 million tonnes. However, this cannot be relied upon 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) continues to cloud the reserves 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.

9.7 The County Council remains of the view 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. The situation with regard to the lack of replenishment to the sharp sand and gravel resource has continued, though offset to a certain extent by the re-evaluation of available reserves that has resulted in another million tonnes being available. 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.

9.8 The role of Kent in supplying land-won aggregate (of all types) 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 into the future with further surveys.

9.9 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 3.72 million tonnes of the total 6.09 million tonnes produced overall in Kent in 2017. This accounts for almost 61% of total supply in 2017, up by 3% from that of 2016. For both aggregate types the last three-year sales

averages are greater than the last 10-year sales average. This clearly indicates that importation is increasing in importance compared to the land-won alternatives in overall supply terms. Though soft sand is not generally supplied from marine won sources (in negligible quantities compared to land-won supply) and so remains essentially a Kent land-won resource that is not being supplanted in the supply chain by imports to any great extent.

9.10 The wharves in Kent are operating at 42% of their available capacity and, an increase of 17% on 2016. It is anticipated that as the landwon reserves of sharp sands and gravels are further depleted the need for marine dredged sands and gravels (and potentially land-won materials from elsewhere) to meet identifiable and objectively assessed needs will increase. Therefore, any 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 207 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 increases in demand for imported aggregates and with the potential increases in projections for housing (dependant on new ONS data) and overall infrastructure requirements into the future.