

Local Aggregate Assessment 2025 With 2015-2024 Survey Data June 2026



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Dashboard Summary - Kent County Council LAA 2025

(using data for the calendar year 2024)

Aggregate Mineral Type (and origin: land-won, marine dredged and imports)	2024 Sales in tonnes or mt	Average (10 yr.) Sales in tonnes or mt	Average (3 yr.) Sales in tonnes or mt	Trend (10 yr. sales)	Trend (3 yr. sales)	LAA Rate or APR mtpa	Assumed Reserve (as per end of 2024) in tonnes or mt	LAA or APR Rate based Landbank	Productive Capacity	Local Plan Allocations	Notes
Soft Sand (excluding silica sand)	550,874	485,463 or 0.485mtpa	483,727 or 0.483mtpa			0.485mtpa	4,471,838 or 4.472mt	9.22 years	Estimated as 1.045mtpa (as reported in 2022 and 2023; survey return was incomplete in 2024)	Chapel Farm 3.2mt	The ten-year sales average has slightly increased (5.69%) and the three year sales average has fallen (1.03%) by an insignificant amount. Land-won supply remains the dominant form of supply for this aggregate type. Current landbank levels exceed NPPF baseline requirements.
Sharp Sand & Gravel	117,729 or 0.118mtpa	151,167 or 0.151mtpa	108,124 or 0.108mtpa			0.151mtpa	2,239,607 or 2.239mt	14.8 years	Estimated as 0.75mtpa (as reported in 2021, 2022 and 2023 survey was incomplete this data was not provided, no 2024 update)	Stonecastle Quarry (extension), Moat Farm. 2.5mt	Reserves have continued to decline; there has been no further planning permissions. Extraction is in a decay curve and both the 10-year and 3-year sales averages continue to drop leading to an artificially long landbank life.

Aggregate Mineral Type (and origin: land-won, marine dredged and imports)	2024 Sales in tonnes or mt	Average (10 yr.) Sales in tonnes or mt	Average (3 yr.) Sales in tonnes or mt	Trend (10 yr. sales)	Trend (3 yr. sales)	LAA Rate or APR mtpa	Assumed Reserve (as per end of 2024) in tonnes or mt	LAA or APR Rate based Landbank	Productive Capacity	Local Plan Allocations	Notes
Crushed Rock (land-won)	1,377,021 or 1.377mt	1,165,789 or 1.166mt	1,320,248 or 1.32mt	↑	↓	The APR is the 6 year sales average of 1.336mtpa	12,132,484t	9 years	Estimated as 2.0mtpa as reported in 2021 (2022 survey did not provide this data, no 2024 update)	None at this time	Land-won hard rock continues to show 1.0mtpa+ rates of sales and this has had a marked effect on the remaining life of reserves, despite being considerable are now insufficient to maintain the NPPF minimum of 10 years. Additional reserves will be required to maintain the landbank.
Recycled and Secondary Aggregates	934,000	0.905mt	0.897mt	↑	↓	N/A	N/A	N/A	Estimated as the same as 2021, at 1.834mtpa recycled and 50ktpa secondary Total 1.884mtpa though this is under reported 4.0mtpa is considered more reliable overall	N/A	Poor participation of AM24 led to estimations for recycled and secondary aggregate sales in 2024. The general trend of sales remains apparently similar at just below but close to 1.0mtpa. This appears to be a consistent trend over the last 10-year period.

Marine Imported Sand & Gravel (excluding land-won)	1,031,234	1.706mt	1.588mt			N/A	N/A	N/A	Theoretical maximum wharf capacity for all aggregates is approx. 7.30mtpa according to the 2010 joint Medway and Kent study, while the recorded 2022 capacity is reported as 8.210mtpa, compared to 6.34mtpa in 2021, 2022 and 2023 no recorded changes for 2024.	N/A	There has been a relatively significant drop in sales, from 1.79mt in 2023 to 1.03mt in 2024. Though the overall long-term trend, as shown in the 10-year sales average.
Marine Imported Crushed Hard Rock	1,440,513 or 1.44mt	1.137mt	1.52mt			N/A	N/A	N/A		N/A	Sales in 2024 marginal fell from 1.47mt in 2023 to 1.44mt. A similar fall occurred in 2022. This has caused both the 10 and 3-year sales averages to be marginally reduced. However, since 2020 sales have ranged from 1.11mt to 1.77mt.
Rail Depot Sales (Sand & Gravel)	16,344	22,822	15,028			N/A	N/A	N/A		N/A	Importation from this sector remains insignificant in overall supply of this aggregate type and is showing a decline, though in 2023 a high of 28,075 tonnes of sales were recorded, a level not seen since 2018. In 2024 this had reduced by almost 50%

Rail Depot Sales (Soft Sand)	13,921	7,004	7,028			N/A	N/A	N/A	2.225mtpa (essentially no change from previously reported capacity)	N/A	Importation from this sector remains insignificant overall for soft sand supply, though sales in 2022 were higher than in 2021 (2,890 tonnes). In 2023 there were zero sales of this aggregate from rail depots. The 2024 sales increased and altered the 10- and 3-year sales averages, though in overall supply terms remains insignificant.
Rail Depot Sales (Crushed Hard Rock)	316,769	443,691	345,218			N/A	N/A	N/A		N/A	Importation from this sector remains insignificant in overall supply of this aggregate type.

Commentary

As a result of the adoption of the Kent Minerals and Waste Local Plan 2024-39 in 2025, this Local Aggregate Assessment reflects the periods 2023 and 2024. There is no LAA 2024.

Soft sand: reserves continue on a downwards trend from 2021, with a permitted reserve of 4.47mt in 2024. There has been no replenishments in terms of new planning permissions in 2023 or 2024 and the LAA/Annual Provision Rate (APR) has shown a decrease from that of 2022 at 0.475mtpa to 0.459mtpa in 2023, with a marginal increase to 0.485mtpa in 2024. Available reserves have decreased from 4.635mt in 2023 to 4.47mt in 2024, a fall of around 3.5%. The 'at least 7-year landbank' (calculated at 3.395mt) will be maintained until an estimated period up to 2035, assuming an additional 3.2mt identified in the Kent Mineral Sites Plan and currently the subject of a live planning application comes forward. There is no forecasted exhaustion of supply during the Plan period which extends to 2039.

The anticipated further reserves from the allocation in the adopted Kent Mineral Sites Plan at Chapel Farm (3.2mt) will be required to achieve supply over the plan period. There may also be 'windfall' sites of further soft sand in the region of some 1mt from the Kent borough and district local plan allocated sites within the Folkestone Formation over the KMWL Plan period that would further mitigate against the need to identify additional reserves at this time. This approach was accepted by the Local Plan Inspector in 2024.25 who examined the KMWLP 2024-39 and found it sound.

Land-won sharp sand and gravels: as has been reported in previous LAAs, this aggregate supply remains a depleting resource in Kent. The reduction in the LAA/APR rate (now 0.151mtpa as of the end of 2024) has the effect of apparently increasing the landbank life. However, as extraction and Kent based sales reduce, supply to meet demand will be increasingly met by importation. As a result, the landbank of almost 15 years does not truly represent demand, nor consumption in Kent. The reserves in 2024 have been re-evaluated to 2.24mt, up from the 1.36mt in 2023 though arguably this is not significant. The landbank is being 'extended' by a low and decreasing LAA/APR rate as sales decrease, giving the impression of the existence of an adequate landbank and being greater than the at least 7-years requirement. The reality is that this land-won resource in Kent is in depletion. Productive capacity in 2024 (same as 2022 and 2023) is estimated as 0.75mtpa, lower than the recorded 0.85mtpa in 2020, and the 1.15mtpa in 2018 (unrecorded in 2019). This illustrates the decline of this sector in its importance. The 2.5mt allocations in the adopted Mineral Sites Plan 2020 will, if they come forward, make a contribution more than sufficient to meet that need identified from Kent's 'at least' land-won sand and gravel resources.

Land-won crushed rock: in years prior to 2020, sales and reserves data was considered confidential, given the number of sites within the county. The operator has however waived confidentiality to ensure that the matter of hard rock supply over the remainder of the adopted Plan period can be fully considered. As of the end of 2024, the permitted reserves of 12.13mt is estimated to be significantly insufficient over the

anticipated adopted Plan period. A 6-year LAA/APR rate is appropriate for this resource, with the 6-year sales average (LAA/APR rate) slightly increasing to 1.336mtpa. The effect of changes to the Plan period and the LAA/APR rate will be that an additional 19.9mt is now required to provide a 10-year maintained landbank over the 2024-39 plan period.

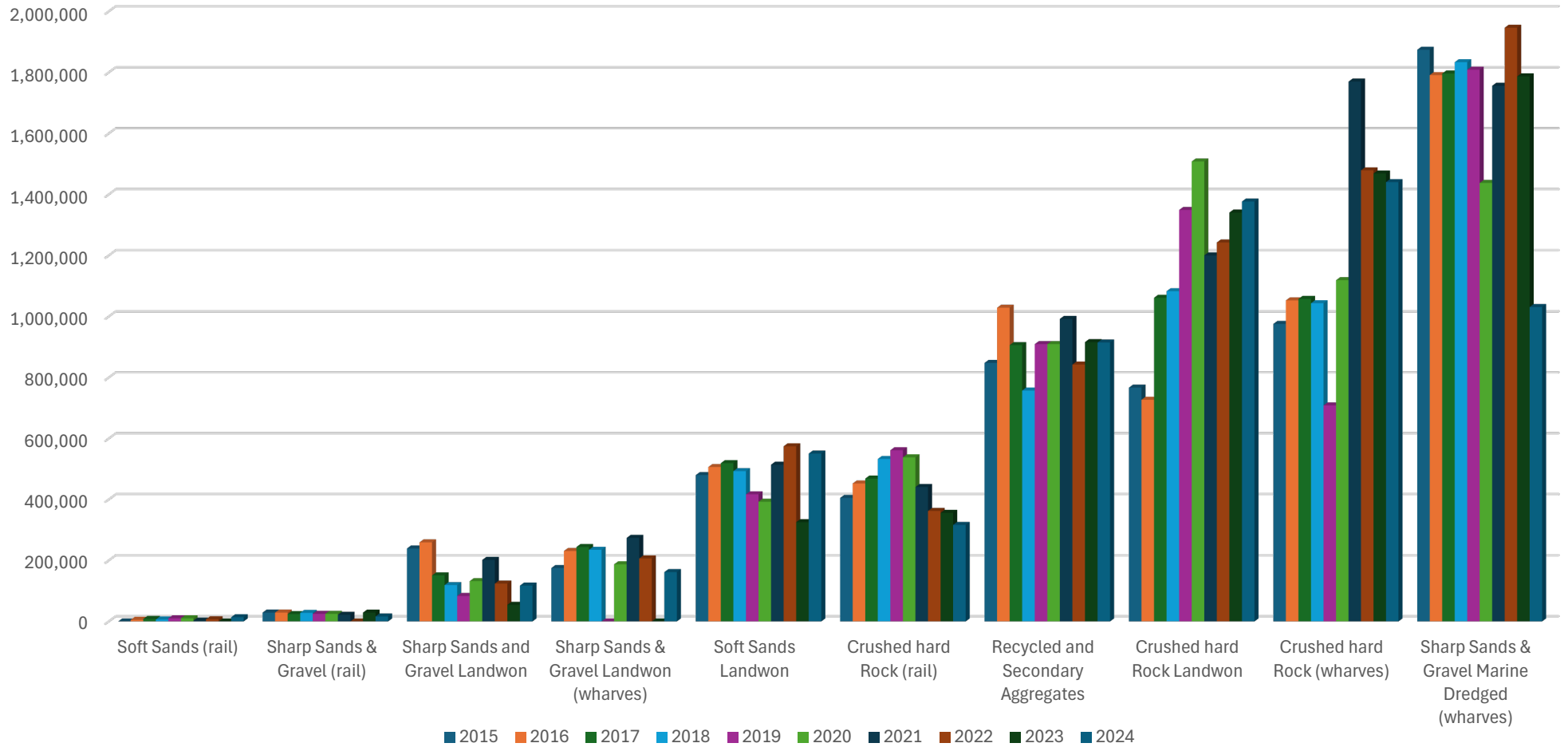
Marine importation of sand and gravels: wharves remain an essential part of overall supply; the 2019-20 fall off in sales was reversed in 2021 and the sector showed increases in 2022-23. In 2024 sales slightly decreased to 1.031mt but remained at historic levels. Overall productive capacity is anticipated to have remained the same. Potential wharf capacity loss at Northfleet due to redevelopment pressure (Harbourside application in Gravesham Borough Council awaits a decision by the Secretary of State as a departure from the adopted Development Plan). **Hard crushed rock wharf importation** was 1.44mt in 2024.

Rail depot: sales continue to remain relatively insignificant in overall supply terms of all aggregate types. The hard rock rail imports fell in 2021 to below 0.5mt and continue to fall being 0.36mtpa in 2022 and 0.356mt in 2023 and falling again to 0.317mtpa in 2024, the lowest sales record in the 2015-24 period. Sand and gravel sales from rail depots are even less important with no years showing sales above 30k tonnes between 2015-24. Soft sand sales similarly are insignificant; there were zero sales in 2023, and just 14k tonnes in 2024. Whilst there appears to be significant estimated headroom capacity in both rail and wharves facilities, this does not consider practicable operational limitations and complexity and the inter-connectedness of the Importation system. Significant headroom capacity is required to maintain flexibility and resilience of the overall importation system.

Recycled and secondary: aggregate sales in 2021 were almost 1mtpa. In 2022 this fell back slightly to 0.842mt and increased in 2023 to 0.916mt. They have remained constant at 0.934mt in 2024. However, due to consistently poor survey return engagement, this sector's contribution in overall supply is considered to have a greater productive capacity than that reported, and so the value estimated for 2023 and 2024 is less than a theoretical maximum capacity value of 4mtpa as described by the Council's waste needs assessment work.

Summary: Overall, the contribution of the recycled/secondary sector to the supply of aggregate materials is less than that from the area's primary land-won reserves, though demand is increasingly being met by importation, with particular regard to sand and gravels and crushed rock imports. Though land-won crushed rock is not insignificant at some 1.377mtpa sales recorded in 2024. Rail importation is not as significant as an importation mode. Wharves are by far the most important capacity type in meeting Kent's aggregate supply in 2024. Of the land-won sector, soft sands remain important as imports of this aggregate mineral are insignificant, indicating that substitution from artificial or marine sources is not possible or practicable. Similarly, land-won hard rock reserves are important and are currently insufficient to meet identified needs over the Plan period. The graph below illustrates the overall magnitude of each sector in overall supply.

Total Aggregate Sales (all types) in Kent 2015-24 (tonnes)



Executive Summary

This is the twelfth Local Aggregate Assessment (LAA) produced by Kent County Council. It is based on aggregate monitoring data for the years 2015-24. As in previous LAA reports, this report demonstrates that aggregate supply in Kent is provided by both imports and indigenous land-won materials. However, unlike sharp sands and gravels, soft sands (Folkestone Formation, a crustal geological unit) are predominantly a land-won resource and cannot easily be substituted by recycled or secondary materials. It also appears that little supply can be expected in the short to medium term from marine resources: only 20,556 tonnes were sold from wharves in 2023 and zero tonnes in 2024, a negligible element of the overall marine-won supply. Therefore, Kent will likely remain a significant supplier of land-won soft sands to markets within and, to an extent, beyond Kent.

In the case of both land-won soft sands and sharp sands and gravels, it is considered that the appropriate 'LAA Rate' or 'Annual Provision Rate (APR)' for Kent remains the recorded 10-year sales average, while for hard crushed rock the 6-year sales average is considered to be the appropriate LAA Rate/APR. Any estimated increases above these figures are not easily or reliably derived, due to the inherent limitations in forecast modelling at the county scale. Moreover, the use of the 10-year average as a main determinant for calculating landbanks and future aggregate requirements is in accordance with the National Planning Policy Framework (NPPF) 2024. For land-won hard (crushed) rock, however, the latest 6-year sales average is considered to be the appropriate determinant, given that sales have significantly increased in the 2018/19 to 2023/24 period to 1.0+mtpa.

Soft sand reserves have decreased from 4.635mt in 2023 to 4.47mt in 2024, although productive capacity has not significantly altered. Sufficient reserves exist to meet the Kent Minerals and Waste Local Plan's (KMWLP) 2024-39 requirements in maintaining an 'at least 7-year landbank' (NPPF baseline requirement) to at least 2033. As the Plan period ends in 2039, there would be available reserves at this point. Given the reduced and then almost flatlined predicted housing trajectory to 2040, and the current low-growth economic conditions, seeking to identify additional soft sand local plan allocations for a potential shortfall that may become apparent in the mid to late 2030s is considered premature at this time, particularly given the potential contribution from windfall sites. Moreover, the position will be reviewed regularly through the LAA process and the statutory required five-year plan reviews that will occur to 2039, which will afford sufficient time to address any identified shortfall.

With regard to the land-won sharp sands and gravel resource, the evidence continues to demonstrate that these superficial deposits are depleting and that the County's permitted reserves are not being replenished. Although reserves were revised following some re-evaluation, the permitted reserves, together with low sales, currently give a 15-year landbank, double the NPPF 'at least 7-year' landbank requirement. There is limited potential for Kent to meet the actual demand for this aggregate type from land-won resources, as demand appears to be increasingly met from importation, predominantly over wharves. The apparently extended life of the landbank over the adopted Local Plan review period to 2039,

with a projected surplus, is more a consequence of reduced annual sales depressing the Local Aggregate Assessment Rate/Annual Provision Rate (LAA Rate/APR) than evidence of a landbank meeting future needs. However, the replenishment of 2.50mt from the adopted Minerals Sites Plan 2020 allocations, subject to planning permission, would make a contribution to overall need, although it is not anticipated that this will reverse the trend towards greater reliance on importation, mainly from marine resources via wharves, for this aggregate mineral.

The hard rock supply from the land-won resource in Kent remains significant. The reserves and their depletion rate were subject to confidentiality in the past, given that there are only two operational sites¹. This was waived by the operator to allow the supply of this aggregate to be reported through the LAA process and discussed more openly in the public domain. The accelerated drawdown of reserves, due to high recent rates of extraction, has led the County Council to conclude that additional resources, comprising some 19.9mt of additional land-won allocation over the adopted Plan period to 2039, are required to maintain a steady and adequate supply of land-won crushed rock. If this is not possible through allocation(s) in a site plan and subsequent planning permission(s), increased importation would have to make up the difference to meet current and potential increases in demand for crushed rock over the Plan period.

Importation of sands and gravels from marine resources showed a marked decline in 2019, followed by a recovery in 2020 that essentially continued into 2022 and 2023. This pattern was also displayed by hard (crushed) rock imported to wharves, although a slight decline in 2023 is noted. Rail importation, despite available capacity, continues to be underutilised and remains relatively insignificant in overall supply terms, although hard rock is more prominent than other aggregate types.

Hard crushed rock wharf importation reached a record high of 1.77mt in 2021. This declined only marginally to 1.48mt in 2022 and 1.47mt in 2023, and by 2024 was 1.44mt. However, the pattern of 1.0+mtpa of hard crushed rock via wharves has been consistent since 2020. Rail importation of this aggregate type similarly fell back from 0.44mt in 2021 to 0.361mt in 2022, and then to 0.356mt in 2023. In 2024, sales were recorded as 0.317mt. Although sales have shown a declining trend, this is marginal and rail imports of hard crushed rock have yet to fall below 0.30mtpa. Marine sand and gravel importation at the end of 2024 was 1.031mt, a fall from 1.787mt in 2023. Apart from the 2024 reduction to 1.031mt, the sector has not been lower than 1.44mtpa since 2020; in 2022, 1.95mt of sales were recorded. Rail importation of sand and gravel has all but ceased, although this may be unrepresentative of future supply given that rail importation of this aggregate mineral has been in the 25-30ktpa range since 2015. Importation of soft sand remains a negligible contributor to the overall supply of this aggregate mineral compared with the dominance of land-won supply in Kent.

Importation accounts for almost double the amount supplied by the land-won sector.

¹ The South East England Aggregates Working Party (SEEAWP) approach is not to report sales where fewer than three sites are operating in an area producing the same type of aggregate, as this could reveal commercially confidential information.

Available wharf capacity is significant and has not materially altered in terms of available headroom. However, mineral importation wharves are considered essentially irreplaceable; if lost, the overall importation system would lose resilience and flexibility for the future. Any system requires a degree of overcapacity to enable a degree of 'redundancy' to be compensated for while the system recovers. Loss of physical wharf space would compromise this flexibility. Moreover, mineral wharf locations are potentially vulnerable to alternative development pressure, as their locations can coincide with competing local regeneration initiatives. Safeguarding both modes of importation into the future will therefore be imperative to maintain the security of aggregate supply. Recycled and secondary aggregates showed a fairly consistent pattern of sales: 0.90mt in 2020, almost 1.0mt in 2021, a slight decline to 0.84mt in 2022, an increase to 0.91mt in 2023, and a further modest increase to 0.934mt in 2024. The contribution from this sector to overall supply appears static.

Growth predictions for housing, infrastructure delivery and maintenance, and the needs of the wider South East area are indicative at best in terms of forecasting aggregate demand. The sales data demonstrates that overall construction aggregate demand remains in the 6.0mtpa range and there are no indications that this will materially change. Any attempt to model changes to aggregate demand based on predictions for housing and infrastructure development is considered inherently unreliable. Moreover, housing growth² in Kent, based on the Kent local authorities' objectively assessed needs, is now showing an overall decline to 2040 compared with previous trajectories based on 2021 estimates. The Government's growth agenda may cause these predictions for Kent to be revised; however, irrespective of the level of growth occurring in the county and within neighbouring areas supplied by Kent, a robust safeguarding regime for mineral importation facilities will be necessary if a steady and adequate supply of aggregates is to be maintained to meet objectively assessed needs.

1. Introduction

- 1.1. The purpose of this Local Aggregate Assessment (LAA) report for 2025 is to detail the current and predicted situation in Kent with respect to all aspects of aggregate supply. This is Kent County Council's twelfth LAA and the seventh since the adoption of the Kent Minerals and Waste Local Plan 2013-30 in July 2016. This Plan, referred to as the Plan or KMWLP, was partially reviewed, mainly in relation to waste-related policies, with the Kent Minerals and Waste Local Plan Early Partial Review being adopted in 2020. The Plan was subsequently subject to a Full Review in 2024 and adopted in 2025. The KMWLP 2024-39 provides the main strategic objectives for minerals and waste planning policy in Kent until 2039. The Kent Mineral Sites Plan 2020, which identifies land-won mineral sites (currently one soft sand and two sharp sand and gravel sites) to deliver the adopted Plan's supply objectives, was adopted in September 2020. The Full Review of the KMWLP demonstrated that there was a need

² These forecasts are based on housing data available up to 31 March 2021, and Population estimates, fertility, mortality, and migration rates provided by the Office of National Statistics up to mid-year 2020 and do not take into account the impact of COVID-19 on the population.

to identify further provision for hard (crushed) rock. This, in turn, will inform the statutory five-year review of the Kent Mineral Sites Plan 2020.

- 1.2. The LAA data is relevant to an understanding of supply and demand. Monitoring data is used to estimate the quantities required to maintain landbanks of 'at least 7 years' for land-won sands, including soft sand of the Folkestone Formation separately, and gravel, and 'at least 10 years' for land-won hard crushed rock at any one time. This requirement is identified in the Kent Minerals and Waste Local Plan 2024-39, as required by the National Planning Policy Framework (NPPF, 2024). It is important to recognise that the data available to the County Council represents past sales and available reserves. This data has been gathered by the County Council and informs predictions of future need to meet the NPPF's requirements over the Plan period to 2039. It is based on collected data, which is subject to change over time, given the unknowns in terms of potential future permitted reserve re-evaluations and changes to production and sales rates over any plan period.
- 1.3. It is also important to note that the collected data used in the preparation of this report is informed by the Annual Monitoring (AM) of aggregate sales, conducted by Kent County Council on behalf of the South East England Aggregate Working Party (SEEAWP) for 2024 sales data. The AM survey collects annual sales data from operators of active mineral extraction sites, mineral wharves, mineral rail depots, and recycled and secondary aggregate processing sites in the county of Kent. Where there are fewer than three operational sites supplying a particular type of mineral, as in the case of Kent's land-won hard rock quarries (which, when crushed, produce a usable aggregate), commercial confidentiality restrictions typically prevent the reporting of sales or reserves. However, given the need to understand hard (crushed) rock aggregate supply over the Plan period to 2039, this confidentiality restriction has been lifted.

2. Aggregate Forming Minerals in Kent

2.1. Geology of Kent

- 2.2. The geology of Kent comprises a complex solid crustal stratigraphy overlaid by superficial geological deposits that are generally well mapped and understood, due to previous work by the British Geological Survey (BGS) (see Figure 1). Kent has several economically important, naturally occurring aggregate-forming mineral deposits. The most recent of these are the post-glacial outwash, alluvial river valley and terraced inland sand and gravel deposits from the Pleistocene epoch, around 10,000 years ago. Coastal depositional processes formed storm beach sands and gravels, significantly, but not limited to, those found in the area around Lydd and the cusplate foreland of Dungeness. These were deposited on land and, once sea levels rose at the end of the last glaciation, became 'active' again in the sedimentary basin of the North Sea and English Channel areas. The extensive 'soft' sands, and the 'pure' silica sands that have fewer other mineral contaminants such as iron oxide minerals, are somewhat older ancient beach deposits. These form part of the Folkestone Formation,

within the Lower Greensand Group of the Lower Cretaceous epoch, between approximately 100 and 140 million years ago.

- 2.3. The soft sands, so called because of their high degree of roundness and consistent particle size, are found in the Folkestone Formation. This is a significant stratigraphic crustal unit, characterised by well-sorted, medium to coarse-grained, weakly cemented sandstones. It is considered to be a shallow marine beach deposit. The formation outcrops at Folkestone and runs along the base of the North Downs landscape feature in an east-west trend, forming part of the northern slopes of the Wealden Basin. The formation passes by the main settlements of Ashford, Maidstone and Sevenoaks before running into East Sussex. The silica sands are found in association with the soft sands and reflect changes in deposition, from water-laid environments to windblown (aeolian) deposits, although the nature of the material as a coastal sand deposit is not essentially different.
- 2.4. Important and extensive deposits of hard rock are also present in Kent, in the form of a significant thickness of complex estuarine limestone. This rock, Kentish Ragstone, can yield important building materials and, when crushed, can be used as an aggregate. This material is also part of the Lower Greensand Group, forming part of the Hythe Formation, which was laid down prior to the Folkestone Formation, although still within the Lower Cretaceous epoch. In the east of the county there is also deep Carboniferous Limestone and coal measures. The coal is a carbonaceous deposit that was deep mined in the East Kent Coalfield, with mining ending in 1989. The associated limestone could, theoretically, also be mined as an aggregate-forming mineral. However, this would require very significant investment that is likely to be unviable at a local scale, very possibly requiring a national and/or international market to support the necessary investment.
- 2.5. Other economic minerals present in Kent, but which are not aggregate-forming, include brickearth, clay and chalk. The LAA does not report on these materials, although they are addressed in the Authority Monitoring Report (AMR).

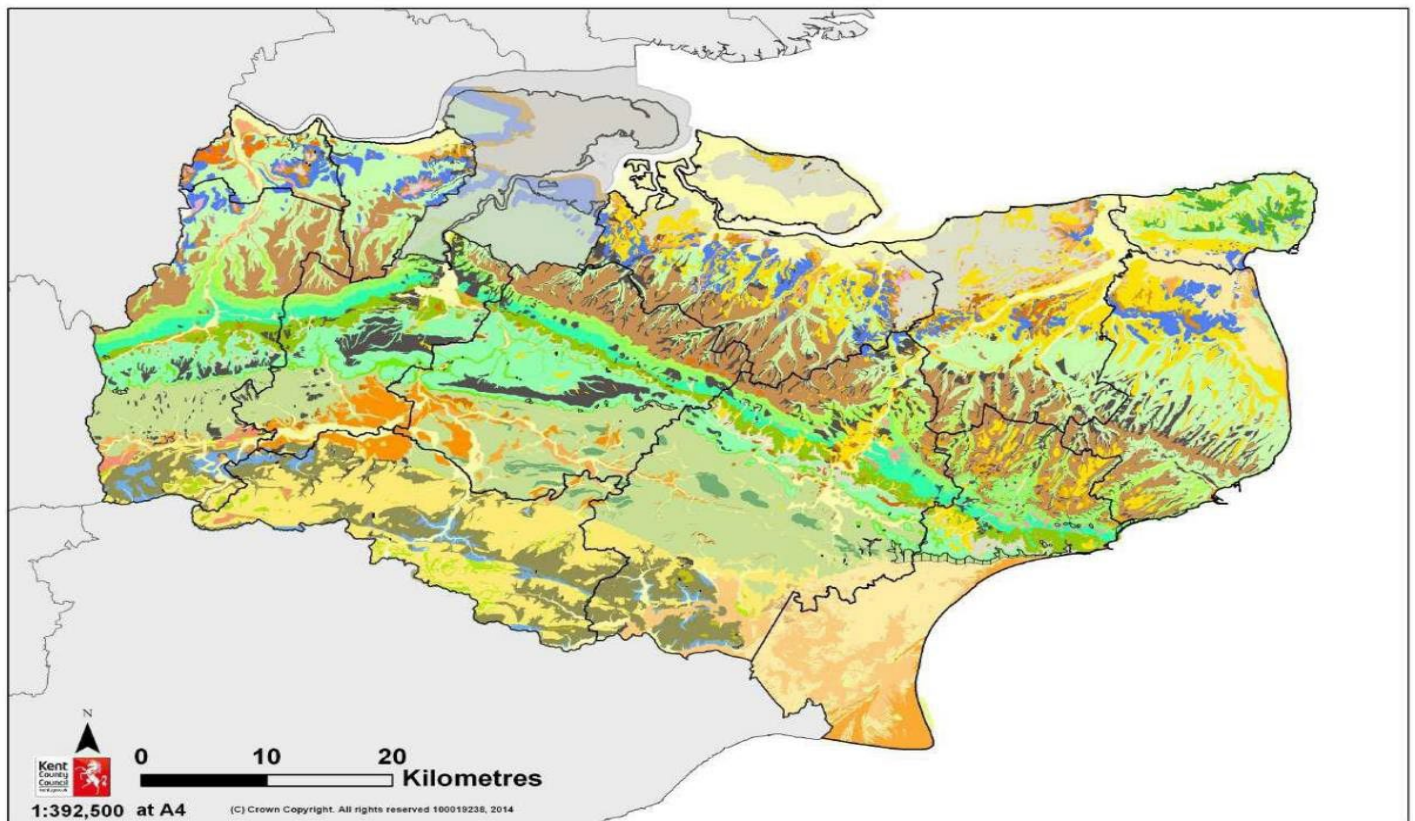


Figure 1: Geology of Kent both Solid and Superficial

Legend: Geology of Kent

<u>Superficial (Drift) Deposits of Kent</u>	<u>Solid Geology of Kent</u>
- Landslip - Blown Sand - Marine Beach / Tidal Flats - Storm Gravel Beach Deposits - Marine (Estuarine) Alluvium (Clay) (Sand (Sand & Gravel)) - Calcareous Tufa - Alluvium - Dry Valley & Nailbourne Deposits - Peat - Brickearth - Undivided Flood Plain Gravel 1st Terrace River Gravel 2nd Terrace River Gravel 3rd Terrace River Gravel 4th Terrace River Gravel 5th Terrace River Gravel 1st/2nd Terrace River Gravel 2nd/3rd Terrace River Gravel 4th/5th Terrace River Gravel - Taplow Gravel - Boyn Hill Gravel - Head - Coombe Deposits - Head Brickearth - Head Brickearth (Older) - Head Brickearth 1st Terrace - Head Gravel - Plateau Gravel - Clay-with-Filints - Sand in Clay-with-Filints - Disturbed Blackheath Beds	- Mineral & Waste Authorities outside KCC - Lenham Beds - Bagshot Beds - Claygate Beds - London Clay - Blackheath / Oldhaven Beds - Woolwich Beds - Thanet Beds - Bullhead Bed - Upper Chalk - Middle Chalk - Melbourne Rock - Lower Chalk (Glauconitic Marl) - Upper Greensand - Gault Clay - Lower Greensand - Folkestone Beds - Sandgate Beds - Hythe Beds - Atherfield Clay - Weald Clay - Sand in Weald Clay (/Sandstone) - Large 'Paludina' Limestone - Small 'Paludina' Limestone 'Cyrene' Limestone - Clay Ironstone - Undifferentiated Clay & Limestone - Hastings Beds - Upper Tunbridge Wells Sand - Upper - Cuxfield Stone - Lower Grinstead Clay - Ardingley Sandstone - Lower Tunbridge Wells Sand - Tunbridge Wells Sand - Clay in Tunbridge Wells Sand - Grinstead Clay - Wadhurst Clay - Sand in Wadhurst Clay - Ironstone in Wadhurst Clay - Ashdown Beds

3. Analysis of Supply

3.1. Provision of Secondary/Recycled Aggregates

- 3.2. National policy requires Mineral Planning Authorities to take into account the contribution that secondary aggregates, i.e. those derived from by-products of mining or industrial processes, and recycled aggregates make to the supply of construction materials before considering the extraction of primary materials (see paragraph 216 of the National Planning Policy Framework). There is no local target for the production of secondary or recycled aggregates in the Kent Minerals and Waste Local Plan, although Policy CSM 8: Secondary and Recycled Aggregates requires processing capacity to be maintained to allow the production of at least 2.7 million tonnes per annum.
- 3.3. A recurring observation of previous LAA reports has been the difficulty of monitoring the quantity of aggregates derived in Kent from the processing of industrial by-products, including metallurgical waste from a facility in Kent, and those derived from construction, demolition and excavation (CD&E) wastes. To provide some context, however, figures from the Environment Agency's Waste Data Interrogator 2024 (updated 24 September 2024) show that, of the 1,018,112 tonnes of CD&E waste handled in Kent, 0.884 million tonnes (mt) underwent some form of physical treatment or processing at a material recovery facility, and may have resulted in the production of recycled aggregate. In addition, it is assumed that at least 50,000 tonnes of secondary aggregates were derived from metallurgical slags originating in Kent. Nationally, evidence suggests that 30% of total aggregate consumption is supplied from sources of recycled and secondary aggregates (refer to 'Construction Aggregates Supply in Great Britain: Primary, Recycled and Secondary Aggregates in 2022', produced by the Mineral Products Association), but the estimated local figure is probably lower because it does not account for recycling carried out at non-licensed sites.

4. Provision of Land-won Aggregates

4.1. Folkestone Formation (Soft Sand)

- 4.1.1. Table 1 below shows the total current (2024) permitted reserves, landbank and recorded sales for soft sands extracted in Kent over the period 2015-24.

Table 1: Land-won Soft Sand Sales and Reserves and Landbank in Kent, 2015-2024 (tonnes)

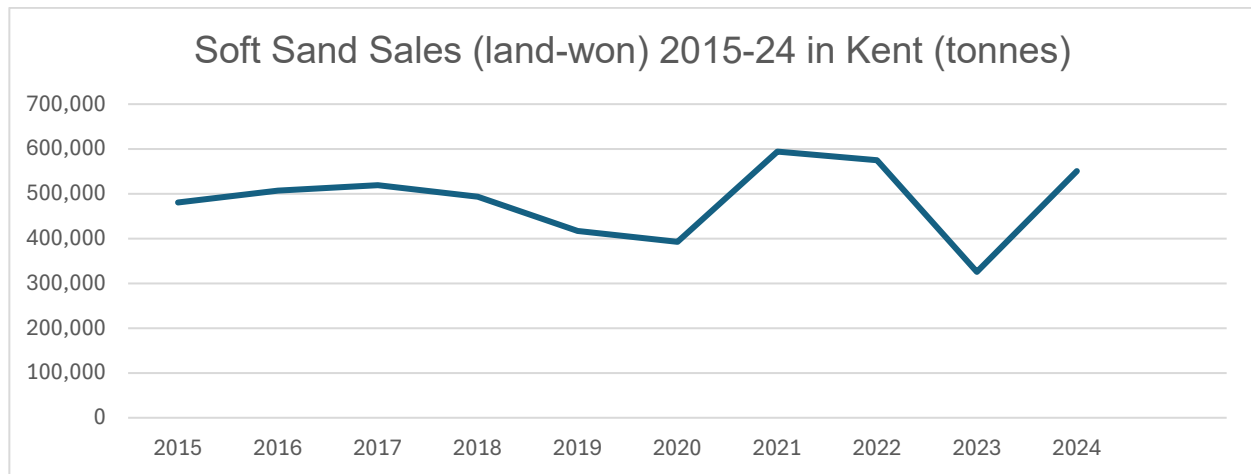
Year	Soft Sand Sales Tonnes	Reserves as of end of 2024 (tonnes)
2015	480,215	4,471,838 or 4.472mt
2016	506,663	
2017	519,414	
2018	493,179	
2019	417,027	
2020	392,850	
2021	594,099	
2022	575,685	
2023	325,624	
2024	550,874	
Last 3-year average (2022-24)	0.484mt	
Last 10-year average (2015-24)	0.485mt	

Source: Aggregate Monitoring Surveys, 2015-2024

4.1.2. In 2021, sales were at the highest level recorded during the last 10-year period.

Following this 'high water' mark, sales declined, with 2023 being the lowest year in the period 2015 to 2024. This appears to be reversing, as 2024 sales were similar to the 2021 recorded high. However, the 10-year average sales value (LAA Rate/APR) has increased from 0.459mtpa to 0.485mtpa. Permitted reserves have shown a consistent decrease from the 9.34mt recorded in 2020, to 6.225mt in 2021, 4.635mt in 2023 and 4.47mt in 2024. The County Council was advised that a re-evaluation error in 2020 led to an inflated overall reserve figure for that year. The continued decline in observed sales, which led to a reduction in the 10-year average from 0.542mtpa in 2018 and 0.417mtpa in 2019 to 0.441mtpa in 2020, came to a halt in 2021. Moreover, the LAA Rate/APR increased to 0.456mtpa in 2021 and 0.475mtpa in 2022, and has now increased again in 2024. While the change in the 10-year sales average is important, the reduction in the reserve base is more significant. The landbank of 21 years at the end of 2020, when applying the 10-year average sales data (the LAA Rate/APR), has now commensurately reduced to 9.22 years in 2024. However, the soft sand reserves currently accord with the NPPF requirement to maintain a landbank of "at least 7 years". Figure 2 overleaf shows soft sand sales graphically for 2015-24, demonstrating greater volatility in the 2019-24 period.

Figure 2: Soft Sand Sales (tonnes) 2015-24



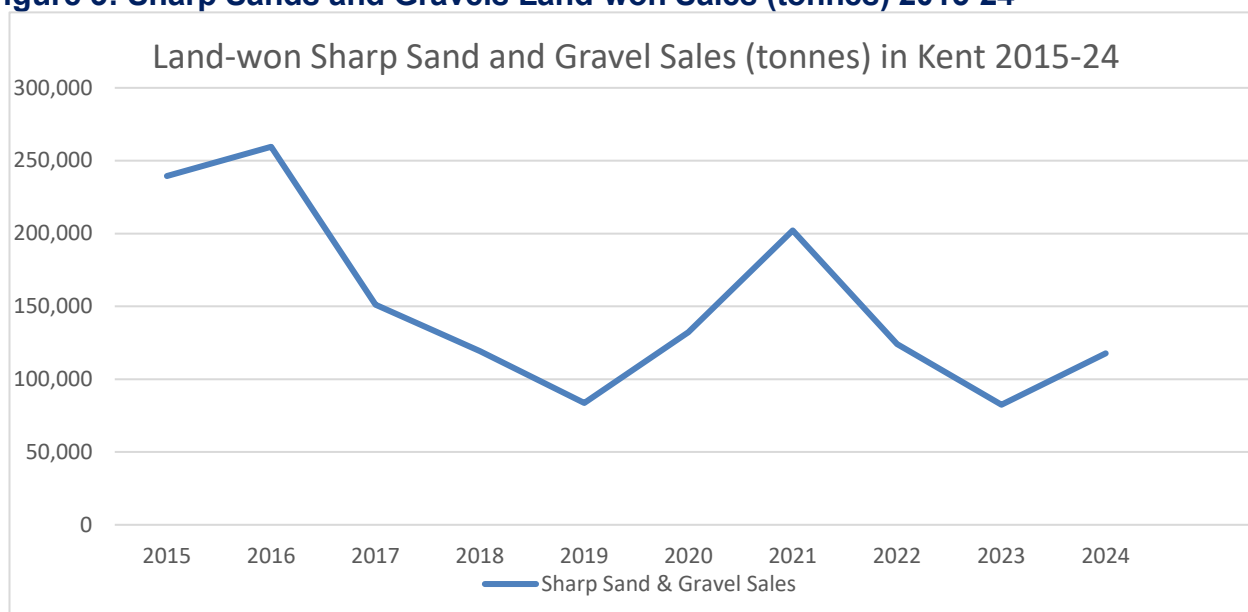
4.2. Sand and Gravel (Superficial Deposits)

- 4.2.1. The most recently monitored reserves (2,239,607 tonnes) in 2024, divided by the recent 10-year (2015-24) average sales data (used to define the LAA/APR rate of 0.151mtpa), indicate that there is sufficient reserve for almost 15 years, greater than the 'at least' 7 years required by the National Planning Policy Framework 2024 (NPPF). However, as stated in previous LAA reports, whatever yearly drawdown figure is used, it is considered that the landbank figures for the land-won sharp sands and gravels demonstrate a continuing decline in available reserves (with no replenishing new reserves being permitted), based on both geological scarcity and what can be sustainably sourced in the county. New reserves that would replenish the landbank for this aggregate mineral are not coming forward as new planning permissions; this is again the position in 2024.
- 4.2.2. This has been the case for some years and, while development of sites allocated in the adopted Mineral Sites Plan (2.50mt) would improve supply, this would only partially mask the established declining resource pattern. Output from one significant Kent quarry is no longer active in terms of minerals raised in Kent, as extraction moved into East Sussex some time ago, with the last practicable reserves in Kent apparently lying beneath the existing plant site. The sales from the 'imports' from East Sussex to the Kent-based processing site were counted by both mineral planning authorities as representing a 50% split of the material, as sales into Kent and East Sussex respectively. Table 2 below shows the recorded sales of land-won sharp sands and gravels for 2015-24, with Figure 3 showing the data graphically.

Table 2: Land-won Sharp Sand and Gravel Sales in Kent, 2015-2024 (tonnes)

Year	Sharp Sands and Gravel Tonnes	Reserves as of end of 2024 (tonnes)
2015	239,366	2,239,607 or 2.24mt
2016	259,550	
2017	151,165	
2018	119,259	
2019	83,709	
2020	132,231	
2021	202,022	
2022	124,200	
2023	82,442	
2024	117,729	
Last 3-year average (2022-24)	0.108mt	
Last 10-year average (2015-24)	0.151mt	

Source: Aggregate Monitoring Surveys, 2015-2024

Figure 3: Sharp Sands and Gravels Land-won Sales (tonnes) 2015-24

4.2.3. The actual overall consumption of sharp sands and gravel material in Kent remains unrecorded in any detail through the AM process, as the specific areas where the materials are used are not required to be recorded. This is partially addressed by the more extensive surveys conducted approximately every decade, which attempt to map aggregate movements from different mineral planning authority administrative areas. These more detailed analyses consider imports and exports across the SEEAWP area and assist in demonstrating where consumption has occurred. Although the combined recording of soft sands and sharp sands and gravels, and of Kent with Medway, has been a complicating characteristic of past surveys, the 2024 survey has differentiated between these two areas. It can reasonably be concluded that the LAA Rate/APR Rate (now 0.151mtpa) for this material is currently not fully reflective of demand in Kent for land-won sharp sand and gravel. This metric is, in all probability, far too low, as it gives an 'inflated' landbank duration of 15 years based on lower sales, which is likely to be unrelated to the true demand and consumption in Kent and is, in all

probability, increasingly being met by importation. However, given that the estimate of supply requirements in the currently adopted Policy CSM 2 is caveated with “at least equal to a 7-year supply ... will be maintained throughout the Plan period for as long as reserves and potential resources allow”, this is not an unexpected conclusion.

- 4.2.4. The policy wording is an explicit acknowledgment of the geological scarcity of this type of aggregate deposit in Kent, coupled with the material planning considerations that determine what level of resources can be sustainably allocated for future supply in local plans. If the landbank life were to truly represent demand, the landbank of current reserves and 2.5mt from the adopted Mineral Sites Plan allocations (September 2020) would not maintain the landbank in line with NPPF requirements. Given the low LAA Rate/APR figure, the actual and potential reserves together would result in a degree of surplus over the extended Plan period. This is a misleading conclusion, reflecting the diminishing importance of land-won supply overall rather than indicating that aggregate from sand and gravel resources is unimportant. Moreover, the Government’s growth agenda may result in increased output from the land-won sector of this aggregate type in the future, in conjunction with increased importation.

4.3. Hard Rock (Hythe Formation)

- 4.3.1. Of the two hard rock resources in Kent, Carboniferous Limestone and the Hythe Formation limestone (known as Kentish Ragstone), only the Hythe Formation (Kentish Ragstone) has given rise to crushed rock aggregate supply in Kent. This has traditionally been quarried in the Maidstone area, though not exclusively so, where the Boughton Lens under the Sevenoaks Lens yields high-quality rock that can be crushed to form a high-specification aggregate and can also provide valuable dimension stone for use in historic restoration projects and new build. There are now only two operational hard (crushed) rock sites in Kent. In the past, confidentiality prevented detailed reporting of sales. As a result, the proxy of 0.78mtpa has been used in past LAAs and during the formulation and examination of the 2016 adopted KMWLP Plan, as this was the figure derived for the former South East Plan. The mineral operator waived their right to maintain confidentiality some time ago to enable better planning of the resource through the local plan-making process, using up-to-date sales and reserves data.
- 4.3.2. The permitted reserves of this material were historically significantly boosted by the grant of planning permission for 16 million tonnes of Kentish Ragstone in a westerly extension of Hermitage Quarry, near Maidstone, in 2013. This reserve, in addition to the reserves currently available at Blaise Farm Quarry, is counted as the land-won hard rock in Kent available to meet the NPPF requirement to maintain a landbank of at least 10 years for crushed rock. Currently, the landbank is 10.4 years based on the 10-year sales average, or 9 years based on the 6-year average. Table 3 and Figure 4 below show the monitoring data for land-won crushed rock sales. These show a pattern of significantly increasing demand since 2017, peaking in 2020 at an unusually

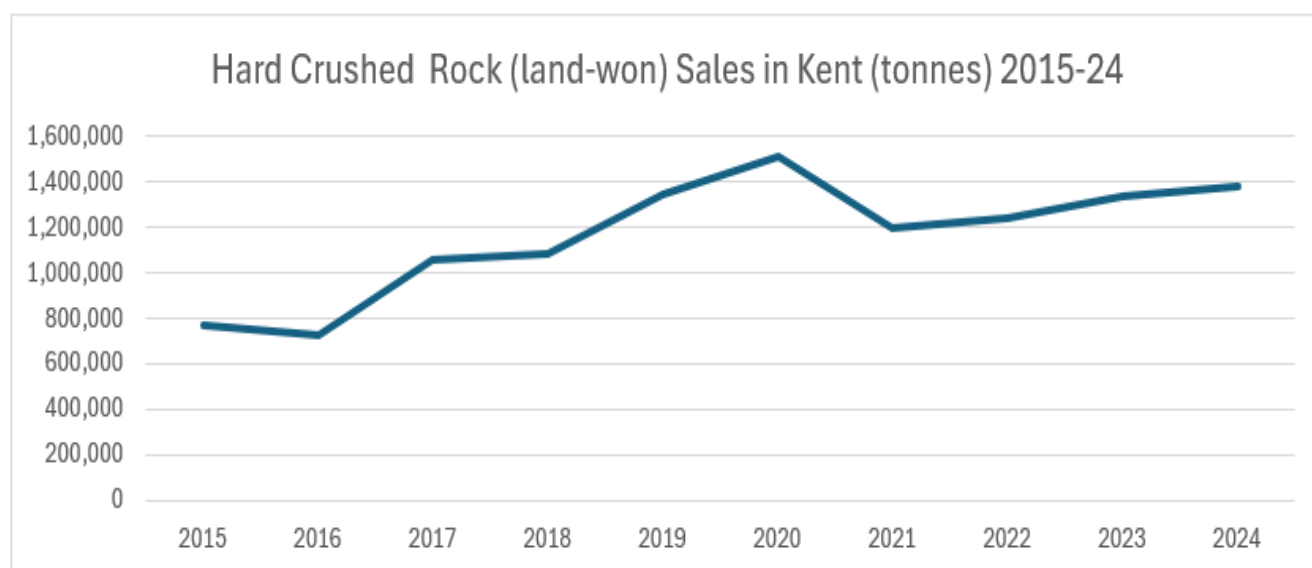
high level of 1.5mtpa, with sales falling back in 2021-23. In 2024, sales appear to be climbing again, almost reaching 1.4mt. The reserves at the end of 2024 are estimated at 12.13mt, which is considered essentially reliable following the operator's use of three-dimensional survey modelling in 2021. The LAA Rate/APR is 1.336mtpa, up from 1.287mtpa in 2023, using the 6-year sales average. This average is considered the appropriate LAA Rate/APR (instead of using a 10-year sales average) as it reflects a pattern of increased sales, over 1.0mtpa, observed between 2019 and 2024.

Table 3: Landwon Hard Rock Sales in Kent, 2015-2024 (Million tonnes)

Year	Tonnes	Reserves as of end of 2024 (tonnes)
2015	767,198	12,132,484 or 12.132mt
2016	727,272	
2017	1,061,529	
2018	1,083,122	
2019	1,349,319	
2020	1,508,239	
2021	1,200,433	
2022	1,242,839	
2023	1,340,883	
2024	1,377,021	
Last 3-year average (2022-24)	1.320mtpa	
Last 6-year average (2019-24)	1.336mtpa	
Last 10-year average (2015-24)	1.166mtpa	

Source: Aggregate Monitoring Surveys, 2015-2024

Figure 4: Hard Crushed Rock Land-won Sales (tonnes) 2015-24



5. Importation of Aggregates

- 5.1. Importation of aggregates remains a significant and growing element of the overall supply of primary aggregates in Kent. This is particularly the case for sharp sands and gravels, which are mainly marine dredged in origin from licensed areas in the East English Channel and southern North Sea, and arrive by dredging vessel at Kent's wharves. Land-won sand and gravel importation by road is not captured by the AM survey. Rail imports of this aggregate are relatively insignificant, as are land-won imports of Soft Sand (Folkestone Formation). The other significant aggregate import into Kent is hard crushed rock. The majority arrives via Kent's aggregate wharves, which are adapted to receive this material. It originates from a variety of locations, including Northern Ireland, Scotland and Norway.
- 5.2. A not insignificant quantity of crushed rock is also imported into Kent by rail from land-won sources elsewhere in the UK. Kent has nine active/semi-active wharves out of a total of 12 safeguarded wharves³ located on its coast, as shown in Figures 5 and 6 overleaf, which also show secondary/recycled aggregate processing locations and Kent's rail depots. Of the safeguarded mineral wharves, Dunkirk Jetty at Dover Western Docks had been decommissioned, as first reported in AM2016, although this site became active again in 2021 and remained so in 2024. The mineral importation wharf at Garrison Point, Sheerness Docks, is no longer in use. Sales recorded by Kent's mineral wharves and rail depots are shown in Table 4 and graphically in Figure 7, included on the following pages.
- 5.3. It is clear from the sales data over the period 2015-24 that importation has been a significant contributor to overall supply, at around the 3.0+mtpa level, with almost 4.0mt recorded in 2022. Of particular note is the consistency of marine dredged sands and gravels over this period, generally in the 1.7-1.8mtpa range, and almost 2.0mt in 2022. However, and possibly more importantly in relation to future overall aggregate supply, there has been growth in hard crushed rock imports from around 1.0+mtpa up to 2020, to 1.4-1.7+mtpa between 2021 and 2024. Imports of soft sand are negligible. Land-won sands and gravels from other areas, via rail depots and wharves, are higher, although they have never reached 30Ktpa from rail or 0.30mt from wharf imports in any one year.

³ By virtue of Policy CSM 6: Safeguarded Wharves and Rail Depots of the Kent Minerals and Waste Local Plan 2024-39.

Figure 5: Kent Aggregate Importation Wharves and Rail Depots and Secondary/Recycling Sites

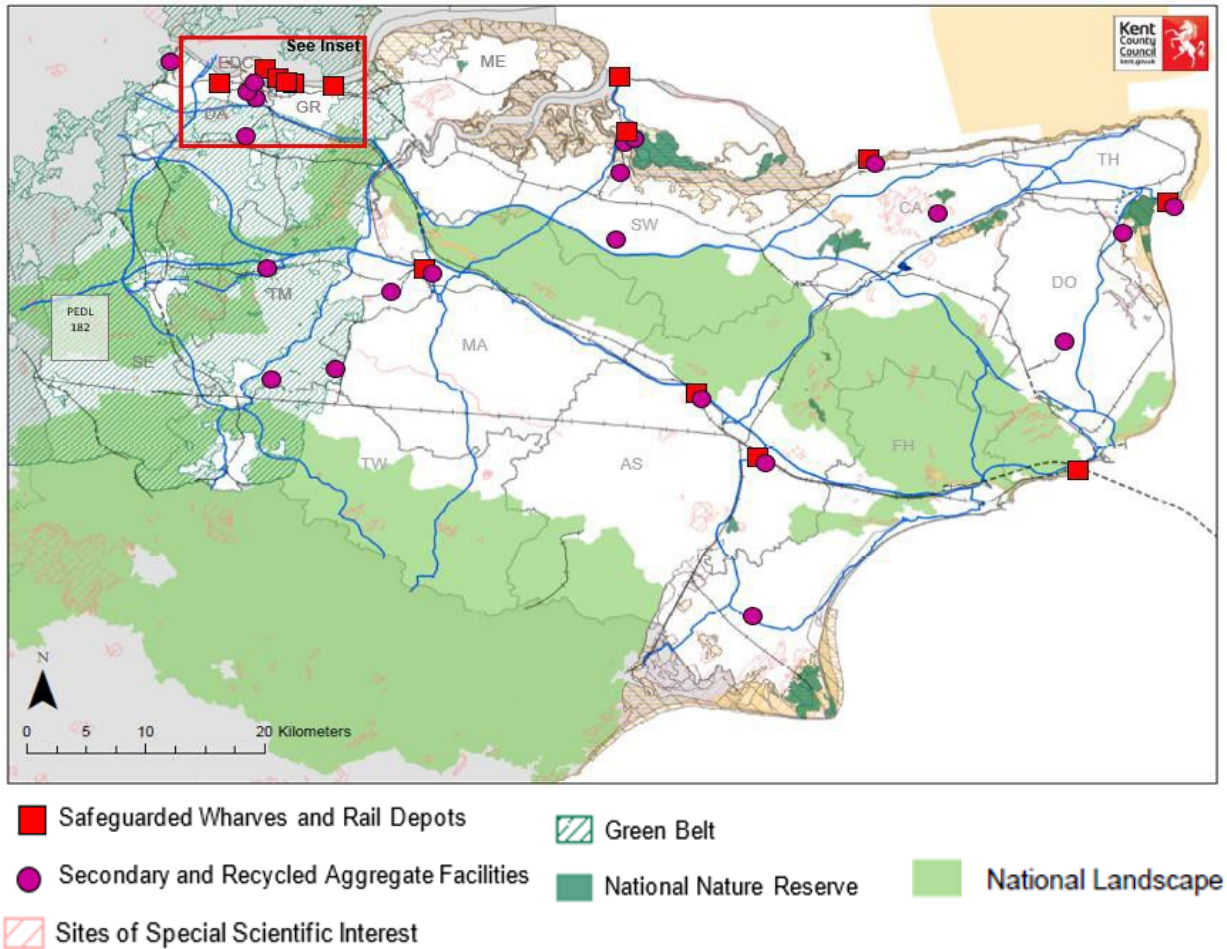


Figure 6: North Kent Aggregate Importation Wharves and Secondary/Recycling Sites

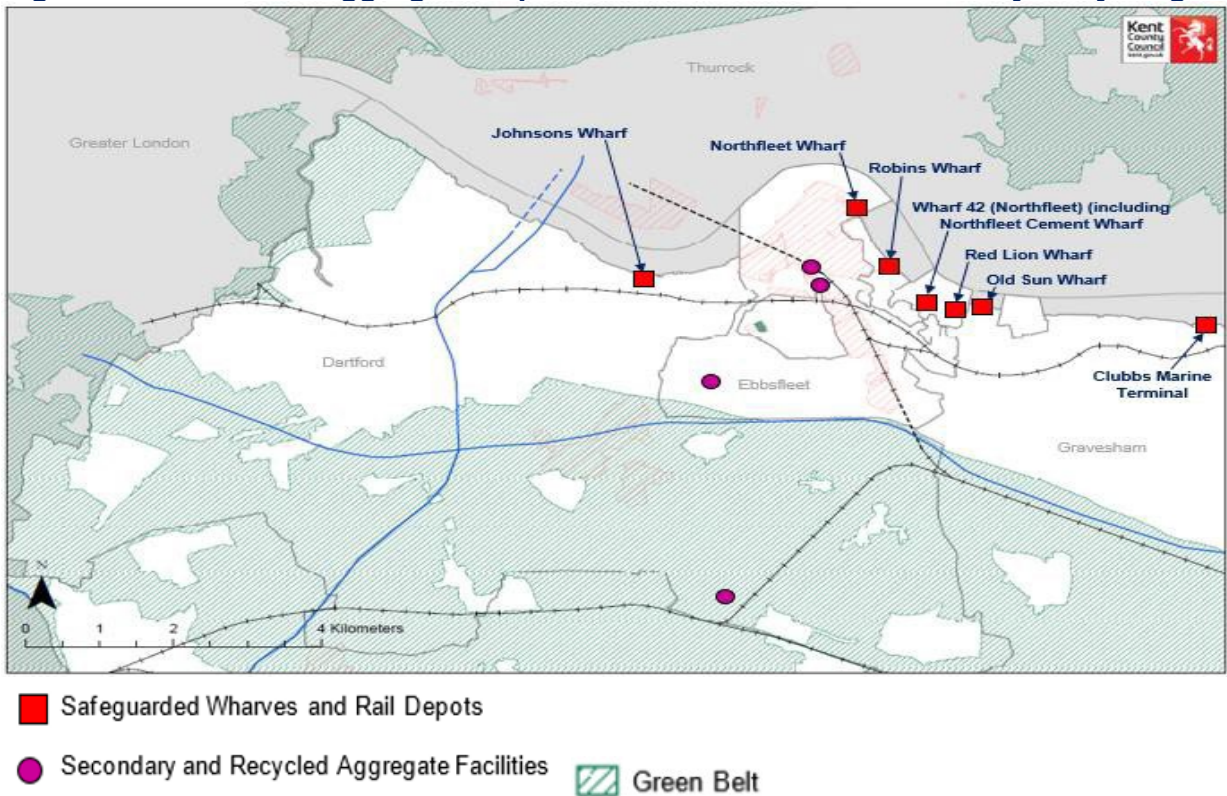
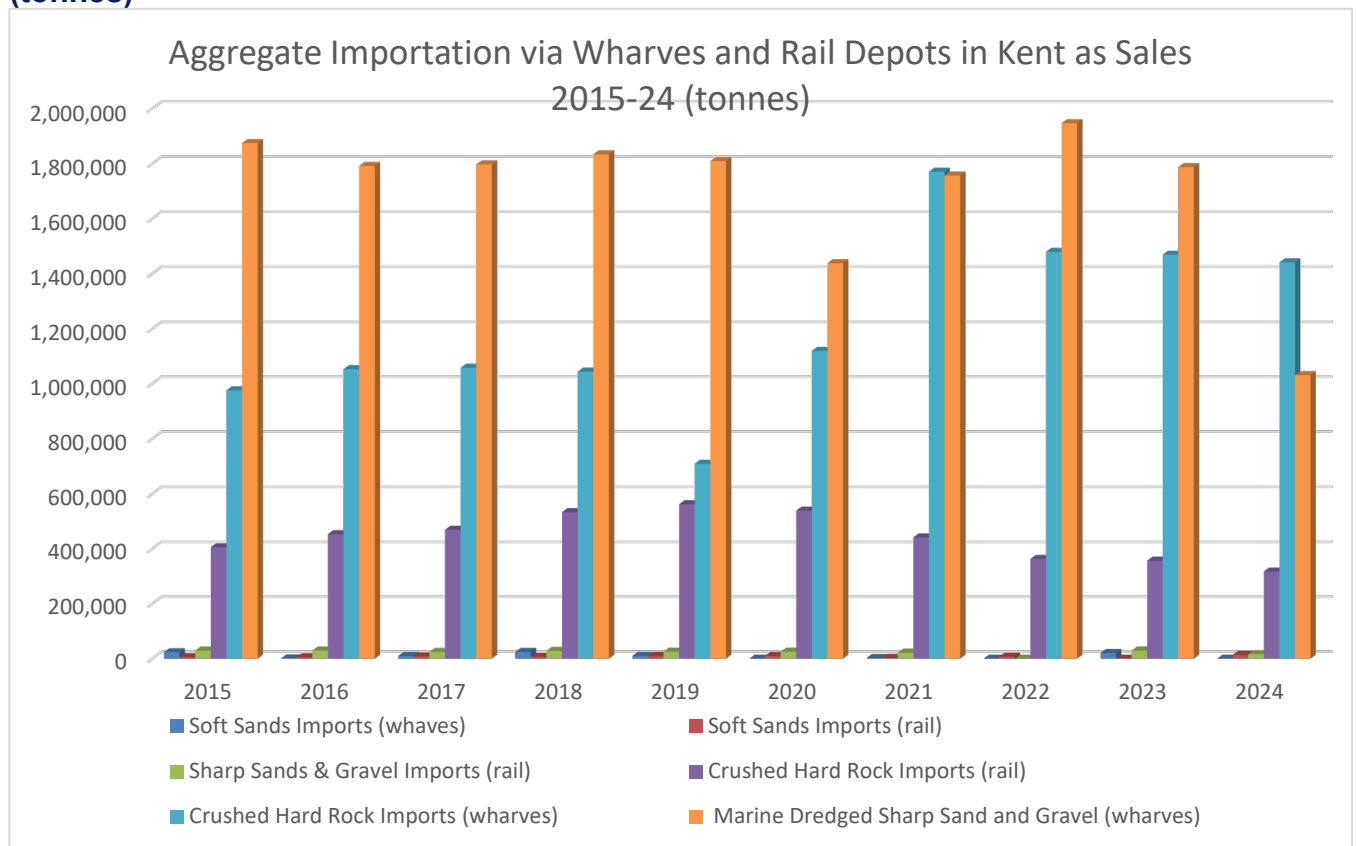


Table 4: Aggregate Importation in Kent via Wharves and Rail Depots, 2015-2024 (tonnes)

Year	Soft Sands Imports (wharves)	Soft Sands Imports (rail)	Sharp Sands & Gravel Imports (rail)	Crushed Hard Rock Imports (rail)	Crushed Hard Rock Imports (wharves)	Marine Dredged Sharp Sand and Gravel (wharves includes landwon)	Totals
2015	23,266	5,567	29,064	405,331	975,875	1,874,311	3,313,414
2016	790	5,370	29,118	452,751	1,052,971	1,791,219	3,332,219
2017	9,800	8,212	24,214	468,785	1,057,785	1,796,513	3,365,309
2018	24,350	6,477	28,194	533,110	1,043,721	1,833,545	3,469,397
2019	10,000	10,222	24,917	561,738	708,751	1,809,000	3,124,628
2020	74	10,222	24,917	538,458	1,119,202	1,437,860	3,130,733
2021	2,146	2,890	21,747	441,084	1,770,068	1,756,281	3,994,216
2022	0	7,162	0	362,614	1,479,058	1,946,486	3,795,320
2023	20,556	0	28,975	356,271	1,468,825	1,787,101	3,661,728
2024	0	13,921	16,344	316,769	1,440,513	1,031,234	2,818,781

Figure 7: Kent Aggregate Importation Wharves and Rail Depots as Sales 2015-24 (tonnes)



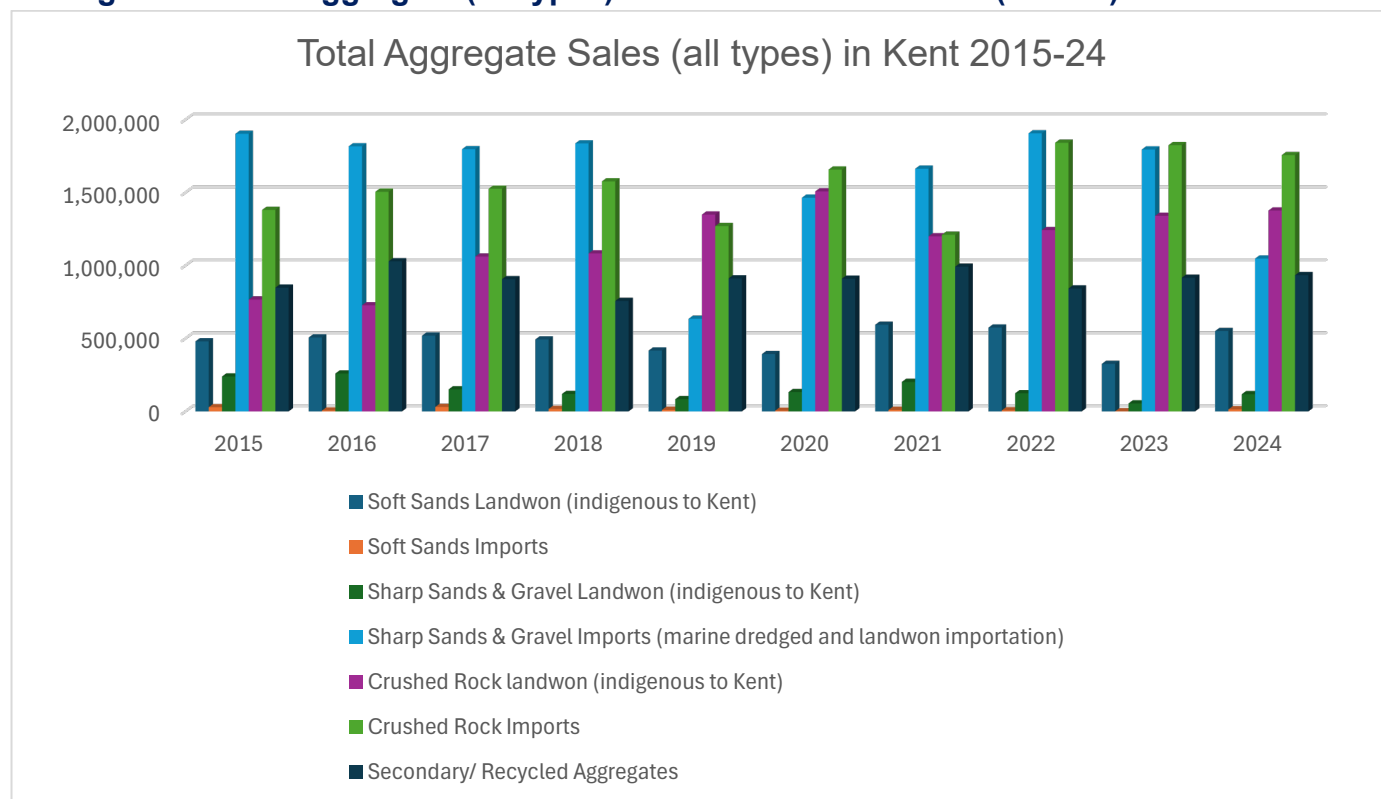
6. Total Aggregate Sales in Kent 2015-24

- 6.1. During 2024, total primary and recycled/secondary aggregate sales, including imports, in Kent were as shown in Table 6 below. Land-won sand and gravel 'hoggin' type material sales for construction fill are not included in the totals. Figure 8 shows the data graphically (Source: Aggregate Monitoring Surveys, 2015-2024. \$ denotes marine dredged and land-won material via railheads and wharves; * denotes any sales for construction fill not included).

Table 6: Total Aggregate (all types) Sales in Kent 2015-2024 (tonnes)

Year	Soft Sands Landwon (indigenous to Kent) *	Soft Sands Imports (wharves and rail)	Sharp Sands & Gravel Landwon (indigenous to Kent) *	Sharp Sands & Gravel Imports (marine dredged and landwon over wharves and rail depots)	Crushed Rock landwon (indigenous to Kent)	Total Crushed Rock Imports	Secondary/ Recycled Aggregates	Totals
2015	480,215	28,833	239,366	1,903,064	767,198	1,381,206	848,105	5,647,987
2016	506,663	6,160	259,550	1,817,118	727,272	1,505,722	1,029,002	5,851,487
2017	519,414	30,827	151,165	1,797,214	1,061,529	1,526,570	906,373	5,993,092
2018	493,179	16,686	119,259	1,837,194	1,083,122	1,576,831	757,518	5,883,789
2019	417,027	10,296	83,709	635,175	1,349,319	1,270,489	911,722	4,677,737
2020	392,850	5,036	132,231	1,464,917	1,508,239	1,657,660	909,703	6,070,636
2021	594,099	10,296	202,022	1,663,747	1,200,433	1,211,152	992,218	5,873,967
2022	574,685	7,162	124,200	1,906,346	1,242,839	1,841,672	842,669	6,257,969
2023	325,624	21	82,442	1,795,520	1,340,883	1,825,096	916,245	6,257,969
2024	550,874	13,921	117,729	1,047,578	1,377,021	1,757,282	934,000	5,798,405
Last 3-year average	483,728	7,035	108,124	1,583,148	1,320,248	1,808,017	897,638	Total Aggregate Sales 2015-24 58,836,196 tonnes 10-year average 5.88t
Last 10-year average	485,463	12,924	151,167	2,983,268	1,165,786	1555,368	904,756	
Totals	4,854,630	129,238	1,511,673	15,867,873	11,657,855	15,553,680	9,047,555	

Figure 8: Total Aggregate (all types) Sales in Kent 2015-2024 (tonnes)



6.2. The data in Table 6 does not demonstrate actual consumption of aggregates within Kent, as it records sales rather than end use or where the aggregate was actually consumed in construction. It is reasonable to assume that a degree of exportation from Kent occurred to other areas, and that this information is effectively 'hidden' in the overall sales data. The import and export studies undertaken as part of previous aggregate monitoring in 2009, 2014, 2019 and 2023 attempt to track this data. These

more comprehensive surveys of imports and exports, undertaken by the British Geological Survey (BGS), can assist in understanding consumption patterns.

- 6.3. The BGS 2019 survey data showed that Kent typically consumed 80-90% of all aggregate sold in Kent, including both land-won material and imports of sand and gravel and crushed rock, with 10-20% of materials exported to the wider South East. Moreover, due to the relative scarcity of sharp sand and gravel reserves in Kent, with extraction at Lydd and Denge coming to an end in Kent, it is highly likely that exports of soft sand exceed any exports of land-won sharp sand and gravel. The BGS 2019 data has been used to inform a national aggregate monitoring report in which Kent's role in supplying areas beyond its boundaries is demonstrated.
- 6.4. The more recent 2023 study undertaken by the BGS showed that the South East exported slightly more sand and gravel than it imported, and that it also increased importation of crushed rock via wharves and rail depots. In Kent, primary land-won supply was mainly used or consumed within the county. Crushed hard rock was exported to Medway (170k tonnes), Essex (50k tonnes) and East Sussex (81k tonnes), while the South East, including Kent, received the bulk of the material, at over 1mt. Similarly, soft sand was exported to Essex (95k tonnes) and East and West London (110k tonnes), with smaller amounts to Medway, while the bulk of sales of this material remained in Kent. Importation via wharves and rail depots centred on crushed rock and marine dredged sand and gravel. Of these imports, most of the sand and gravel was used in Kent, with some going into London (53k tonnes) and smaller amounts going to Surrey and Medway. Of the crushed rock imports, 347k tonnes went into London, with the majority remaining in Kent.
- 6.5. Looking at Kent alone, imports of marine dredged and smaller amounts of land-won sharp sand and gravel over wharves and rail depots increased in 2021 (2.055mt) compared with 2020 (1.653mt). In 2022, this increased to 2.178mt, before decreasing in 2023 and 2024 to 1.808mt and 1.193mt respectively (see Table 4 above). Although there has been some contraction in 2023/24, the data demonstrates that imports, mainly marine dredged aggregates, are displacing Kent's indigenous land-won supply overall. Imports of crushed rock via wharves and rail depots fell in 2022 to 1.842mt, compared with 2.211mt in 2021, and decreased very slightly in 2023 to 1.825mt. In 2024, 1.756mt of sales were recorded and, although this represents a slight decrease, it remains above the 10-year average for hard rock importation of 1.655mtpa. The main observation is that the importation of sharp sands and gravels remains highly significant in compensating for the continued decline of land-won sources, while crushed hard rock importation also remains high and apparently stable at around the 1.8mtpa level. Soft sand imports remain insignificant and essentially irrelevant in overall supply terms. Land-won soft sand supply from Kent has declined compared with the more than 0.59mt recorded in 2021, although 2024 sales showed some recovery at 0.55mt. Overall, in terms of primary aggregate supply, land-won sharp sands and gravels are in depletion, while land-won crushed rock sales have exceeded 1.0mtpa since 2017, increasing again in 2024 to more than 1.37mt. It appears that this may be the normal level of land-won production, as expressed by sales data. Sales of

recycled and secondary aggregates showed a significant increase to 0.909mtpa in 2020, well above the then 10-year average of 0.688mtpa, and increased again in 2021 to 1.04mtpa. In 2022, this fell back to 0.84mtpa, and in 2023 the level of sales could only be estimated (0.916mt) using the Environment Agency's Waste Data Interrogator 2023, given poor participation in the AM2023 survey. The same procedure was used in 2024, giving a notional figure of 0.934mt, with the 10-year sales average now being 0.907mtpa. It would appear that approaching 1mtpa is the 'steady state' for recycled and secondary aggregate in Kent.

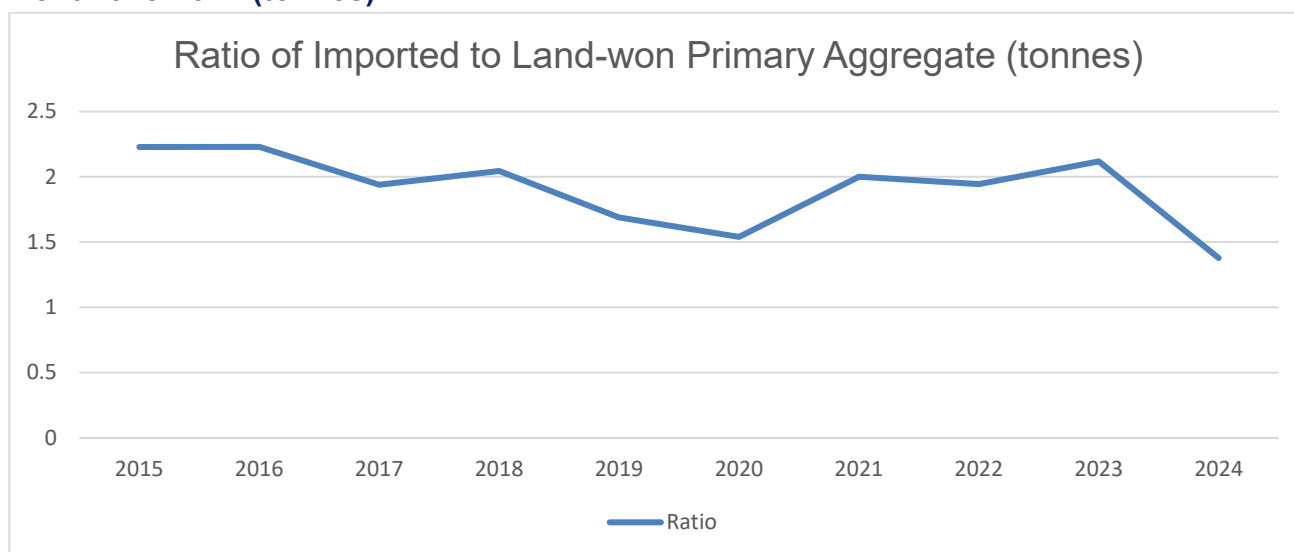
7. The Balance between Aggregate Importation and Land-won Supply in Kent

- 7.1. The sales data demonstrates that, for the period 2015 to 2024, the ratio of imported primary aggregate sales to land-won aggregate sales (in tonnes) was at least 1:2 for five of the 10 years. Table 7 below shows the data and Figure 9 overleaf presents the data graphically. Clearly, importation, and therefore the ratio of imports to land-won supply, will increase if land-won supply is not maintained at current levels.
- 7.2. This will particularly apply to land-won sharp sands and gravels, which are in depletion and where there are substantial marine reserves to draw upon. The ratio may also change in relation to hard crushed rock if land-won reserves fall below NPPF landbank requirements and are not replenished.

Table 7: Ratio of Imported to Land-won Primary Aggregate (all types) Sales in Kent 2015-2024 (tonnes)

Years	Land-won	Importation	Ratio	Average Ratio 2015-2024
2015	1,486,779	3,313,414	1:2.228	1:1.910
2016	1,493,485	3,332,219	1:2.230	
2017	1,732,108	3,365,309	1:1.940	
2018	1,695,560	3,469,397	1:2.046	
2019	1,850,055	3,124,628	1:1.689	
2020	2,033,320	3,130,733	1:1.539	
2021	1,995,554	3,994,216	1:2.000	
2022	1,941,724	3,795,320	1:1.954	
2023	1,721,087	3,661,728	1:2.120	
2024	2,045,624	2,818,781	1:1.378	

Figure 9: Ratio of Land-won to Imported Primary Aggregate (all types) Sales in Kent 2015-2024 (tonnes)



8. Future Supply Requirements of Aggregates and Current Landbank Resilience in Kent 2024-39

8.1. Available Permitted Reserves Landbanks and Projected Aggregate Requirements

8.2. Soft Sands (Folkestone Formation)

8.2.1. The available reserves in Kent at the end of 2024 were 4,471,838 tonnes. This level of permitted reserves and the landbank position are illustrated in Table 8 below, which shows the position for the soft sands landbank at the end of 2024. The 9.2-year landbank, based on the 10-year sales average, is currently greater than the 'at least 7 years' required by the National Planning Policy Framework (NPPF).

Table 8: Land-won Aggregates Sales - Soft Sands 2015-24

Years	Soft Sand Sales	Landbank
2015	480,215	3 year sales average = 483,728t (or 0.484mtpa) 10 year sales average = 485,463t (or 0.485mtpa) (the LAA rate/APR) 7 year landbank = 3.395mt The available reserve of 4.472mt divided by the APR (485,463t) = 9.2 year landbank
2016	506,663	
2017	519,414	
2018	493,179	
2019	417,027	
2020	392,850	
2021	594,099	
2022	574,685	
2023	325,624	
2024	550,874	

8.2.2. Future requirements for soft sand aggregates are based on the existing permitted reserves and the 3.2mt allocation in the adopted Mineral Sites Plan 2020. The adopted Kent Minerals and Waste Local Plan (KMWLP) 2024-39 sets out the basic requirements to 2039, the Plan period. The following soft sand requirements for the adopted Plan period to 2039 are calculated in the box below:

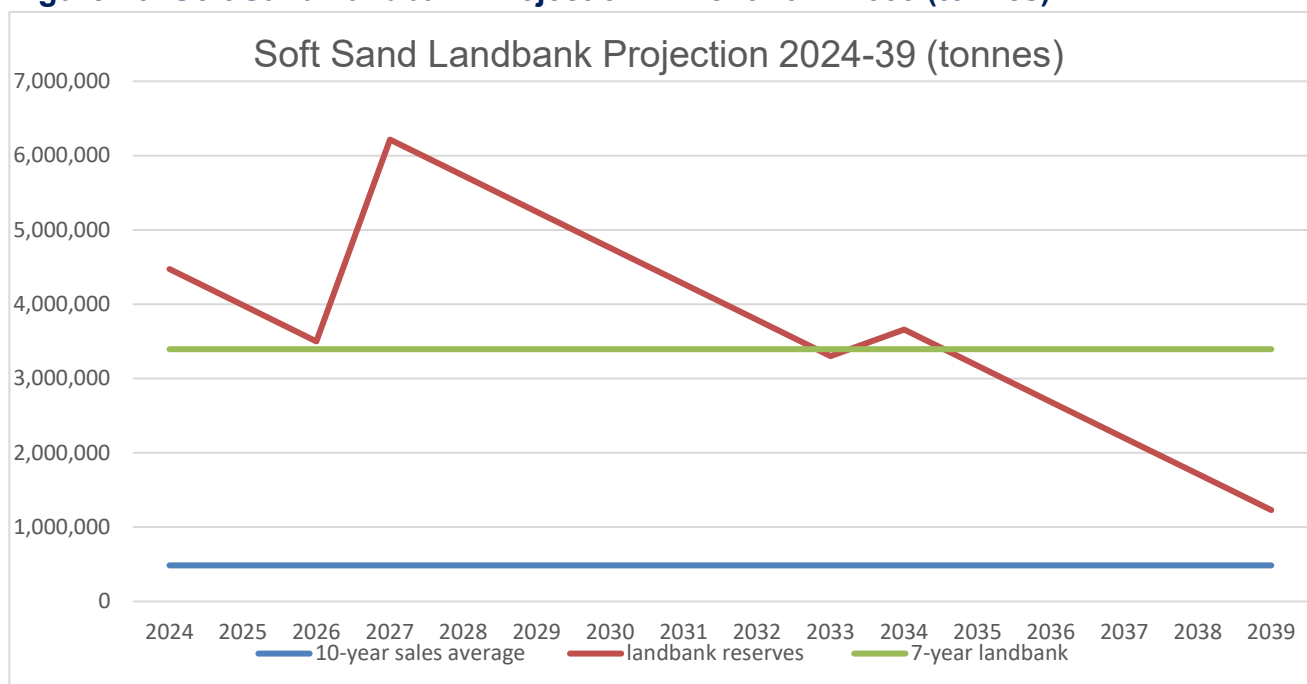
Estimated reserves at the end of 2024 are 4.472mt, and the 10-year sales average is 485,000t (the LAA rate/APR). The Plan period runs from 2024 to 2039. The Plan requirement is 15 years, plus a further 7 years to provide for the maintained 7-year landbank at the end of the Plan period, giving a total period of 22 years overall.

The total Plan requirement is $15 \times 485,000\text{t} = 7.275\text{mt}$, plus a 7-year landbank at the end of the Plan period, which is 3.395mt ($7 \times 485,463\text{t}$). This gives a total overall Plan requirement of 10.67mt . Given that 2024 and 2025 have now elapsed, 2 years of the Plan requirement (equal to $2 \times 485,000\text{t} = 970,000\text{t}$) can be removed from the total, as follows: $10.67\text{mt} - 970,000\text{t} = 9.7\text{mt}$.

*Reserves at the end of 2024 were reported at 4.472mt, allowing for 1 years sales to the end of 2025 (assume 485,000t), available reserves are taken as 3.987mt. With an anticipated 3.20mt replenishment from the allocation at Chapel Farm, it is anticipated that available reserves over the remaining Plan period will be 7.187mt. Therefore, the **9.70mt requirement** minus **7.187mt of reserves** gives an estimated **2.513mt shortfall** over the remaining Plan period.*

8.2.3. The identified shortfall will affect the ability to maintain a 7-year landbank towards the end of the Plan period and for the years following. Figure 10 below shows the relationship between reserves, anticipated replenishments (3.2mt from the Chapel Farm allocation and potentially 0.84mt from the Otterpool Garden Settlement), and the drawdown of the 10-year sales average.

Figure 10: Soft Sand Landbank Projection in Kent 2024-2039 (tonnes)



8.2.4. The projection demonstrates that a 7-year NPPF-compliant landbank can be maintained to 2033 and potentially a few years beyond, dependent on current available reserves, the 3.2mt from the Chapel Farm allocation in the adopted Mineral Sites Plan 2020, and the 0.84mt of safeguarded prior-extracted Folkestone Formation deposits from Otterpool Garden Settlement anticipated in 2034/35. Moreover, several district and borough areas of Kent have identified sites in local plans that may also yield ‘windfall’ supplies of Folkestone Formation soft sand in the future. Table 9 details these potential opportunities for further supply.

Table 9: Soft Sand Potential ‘Windfall’ Replenishments in Kent

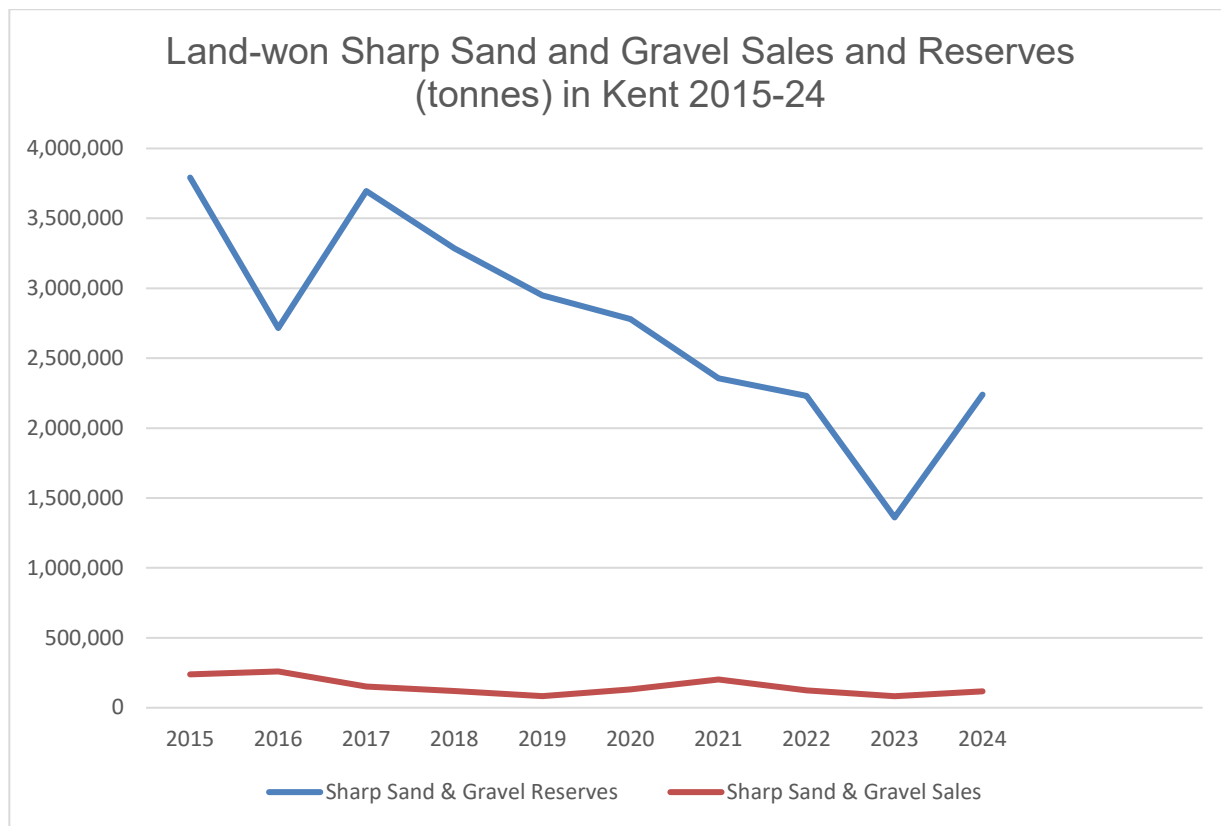
Area	Site	Mineral Yield (tonnes)	Notes
Sevenoaks District	Potential sites identified in the Regulation 18 2023 consultation local plan 2040: HO21, HO28, HO32 and MX13 that affect the Folkestone Formation (soft sand)	Unknown	At this stage of the local plan formulation and consultation process, no data on yield from potential prior extraction of ‘windfall’ resources, plan length to 2040 is largely therefore coincident with the KMWLP review plan period. All emerging allocations affecting safeguarded mineral resources will need to satisfy safeguarding policies and demonstrate that prior extraction is not an option. This may well give rise to some soft sand ‘windfall’ reserves entering the supply chain.
Maidstone Borough	Heathlands Garden Community. Strategic site part of the emerging Maidstone Local Plan Review to 2031	Unknown	Chapel Farm allocation (3.2mt) in Kent Mineral Sites Plan is coincident with the new settlement and will require prior extraction, also other areas of the Folkestone Formation are affected by the proposed settlement and thus further scope for prior extraction of soft sand therefore exists.
Tonbridge and Malling Borough	Adopted Local Plan 2007; Regulation 18 public consultation 2025	Unknown	The Medway Gap area of future spatial development focus is partially coincident with the Folkestone Formation, potential for sites to come forward that may have the potential for prior extraction.
Ashford Borough	Site S34 of the Ashford Borough Council Local Plan to 2030 identifies this site as possibly requiring prior extraction	Unknown-40 housing unit allocation	Statement of Common Ground signed on the 6 June 2018 stated: <i>‘Prior to the grant of planning permission for non-minerals development at the site, the applicant shall prepare and submit a Minerals Assessment to establish whether any prior extraction of Minerals should take place in advance of residential development’</i> Therefore, there may be some sites that give rise to some soft sand ‘windfall’ reserves entering the supply chain.
Folkestone and Hythe District	Otterpool Park new Garden Town part of the Folkestone and Hythe Local Plan Core Strategy Review 2022 as a major Strategic Site Allocation [now a planning application]	Circa 0.84mt	The submitted Minerals Assessment (Ref OP5 Appendix 17.2) identified the potential resource of 0.84mt. It has been agreed that this matter will be further addressed as a planning condition of any planning permission subsequently granted to the proposal. Currently there is a resolution to grant conditional planning permission.

8.2.5. The full potential for ‘windfall’ resources that may come forward over the anticipated extended Plan period to 2039 cannot be determined at this time. However, it appears that these may range between 0.84mt and over 1.0mt of soft sand reserves. This potential material input, together with the existing permitted reserves and the adopted allocation at Chapel Farm, Lenham, means that an adequate and steady supply of soft sand will be maintained over most of the Plan period, and to at least 2035. Moreover, the requirement to review all plans, including the adopted Kent Minerals and Waste Local Plan 2024-39, at least every five years will allow regular monitoring and changes in circumstances to inform need and to plan accordingly for any additional allocations of Folkestone Formation soft sands to meet identified needs.

8.3. Sharp Sands and Gravels

8.3.1. The reported steady decline in overall reserves, from 3.79mt in 2015 to 1.36mt in 2023, has been arrested in 2024, with 2.240mt reported. However, this is due to one site undertaking a re-evaluation of reserves. The recorded sales bear little relationship with available reserves; see Figure 11 below.

Figure 11: Land-won Sharp Sand and Gravel Sales and Reserves in Kent 2015-24 (tonnes)



8.3.2. Recorded sales in 2024 were 117,729 tonnes, a slight increase over the 82,442 tonnes recorded in 2023. The ten-year sales average increased from 0.082mtpa in 2023 to 0.151mtpa in 2024. The land-won sharp sand and gravel landbank, based on the last 10-year sales average (the Kent LAA/APR Rate), is currently almost 15 years, which exceeds the ‘at least 7 years’ requirement in the NPPF (2024). However, given that the land-won sector is a depleting resource and much of the available reserve is not being exploited to any great degree, the landbank life is more a reflection of declining sales than of increasing reserves. It can reasonably be concluded that the LAA Rate/APR Rate, now 0.151mtpa, is not fully reflective of demand in Kent for land-won sharp sand and gravel. This metric is, in all probability, too low, as it gives an ‘inflated’ landbank duration based on declining sales that are likely to be unrelated to true demand and consumption in Kent for this aggregate, which is increasingly being met by importation. The estimate of supply requirements in adopted KMWLP 2024-39 Policy CSM 2 is caveated with the wording “*at least equal to a 7-year supply ... will be maintained throughout the Plan period for as long as **reserves and potential resources allow***”, reflecting the lack of reserve replenishment during recent monitoring periods.

8.3.3. Moreover, the policy wording is an explicit acknowledgment of the geological scarcity of this type of aggregate deposit in Kent, coupled with the material planning considerations that determine what level of resources can be sustainably allocated for

future supply in local plans. This is now highly constrained by national and international landscape and habitat designations. If the landbank life was based on actual consumption of sharp sand and gravel in Kent, the landbank, based on current reserves and 2.5mt from the adopted Mineral Sites Plan allocations (September 2020), would not maintain the landbank in line with NPPF requirements. However, based on the low LAA Rate/APR figure (based on sales from quarries in Kent) and the actual and potential reserves together, a surplus over the adopted Plan period to 2039 is calculated. The box below demonstrates this:

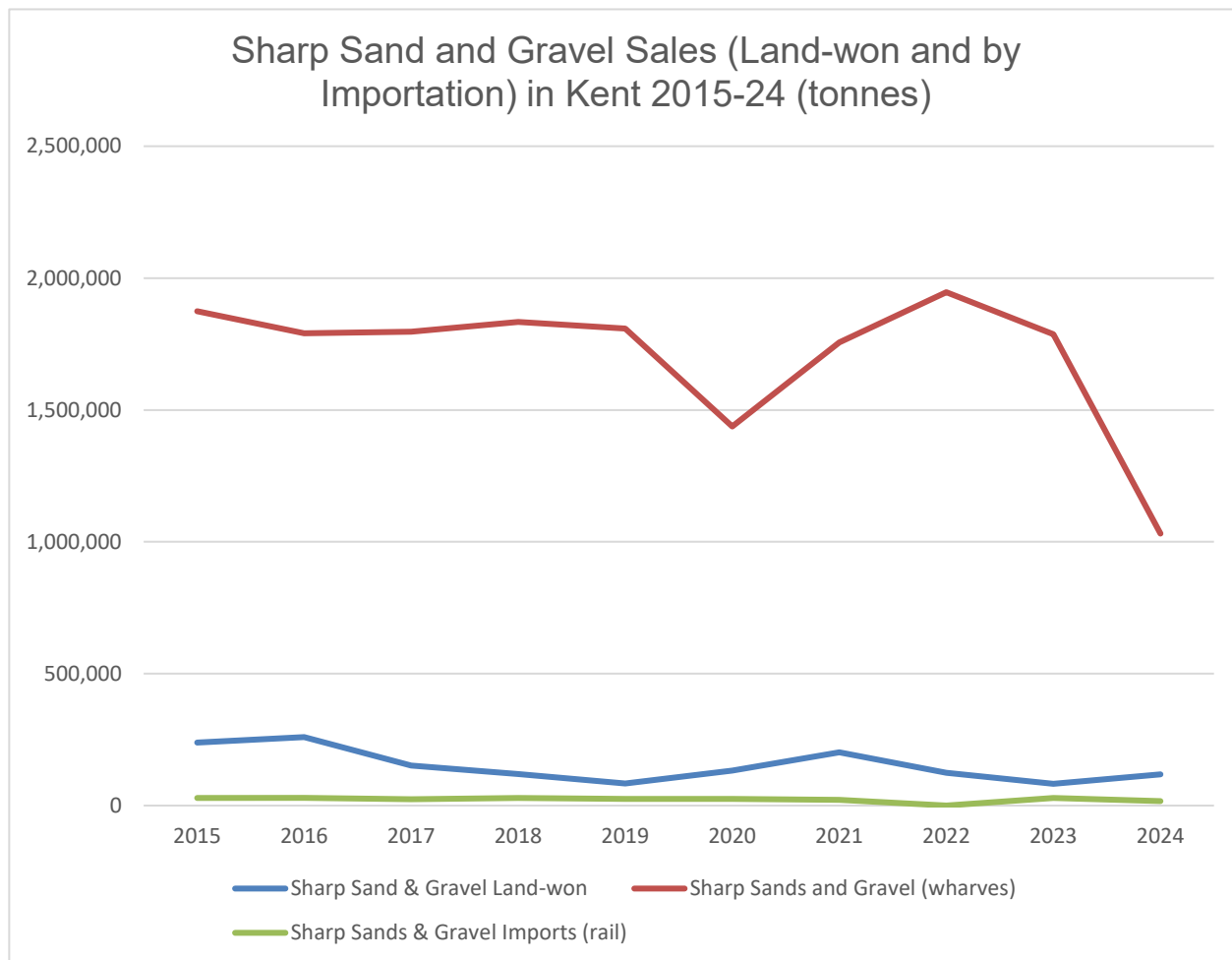
The Plan period is 15 years, plus 7 years for the maintained 7-year landbank at the end of the Plan period (2024 to 2039 + 7), giving a total period of 22 years overall.

The total Plan requirement is $15 \times 151,000 = 2.265\text{mt}$, plus a 7-year landbank at the end of the Plan period (1.057mt ($7 \times 151,000$)). This gives a total of 3.322mt as the overall Plan requirement. Given that 2024 and 2025 have now elapsed, 2 years of the requirement (equal to $2 \times 151,000 = 302,000\text{t}$) can be removed from the total requirement, as follows: $3.323\text{mt} - 302,000\text{t} = 3.020\text{mt}$ to 2039.

*Reserves at the end of 2024 were reported at 2.24mt , allowing for 1 years sales to the end of 2025 (assume $151,000\text{t}$) means reserves are taken as 2.089mt . With an anticipated 2.5mt replenishment from the allocations at Moat Farm and Stonecastle Farm, therefore potential available reserves over the remaining Plan period are anticipated to be 4.59mt . Therefore, the reserve of 4.59mt minus the requirement of 3.020mt would allow a **surplus over the Plan period of 1.57mt** .*

8.3.4. Clearly, land-won extraction is no longer the main source of supply, and maintaining the landbank in line with NPPF requirements is less relevant to how this aggregate is actually being sourced. Figure 12 below demonstrates this graphically.

Figure 12: Sharp Sand and Gravel Sales by Land-won and Importation (Wharves and Rail Depots) in Kent 2015-2024 (tonnes)



8.4. Hard Crushed Rock

8.4.1. Previously, hard (crushed) rock sales records were restricted, given that Kent production from the land-won resource is represented by only two sites and the SEEAWP protocol requires at least three sites to aggregate sales and reserves while maintaining confidentiality. The operator has waived that requirement so that the matter of future supply can be fully understood. The sales of crushed rock were not fully reported in the past due to the exclusion of construction fill; it is now considered that the volumes of this material form part of the overall hard crushed rock supply. The sales increase in 2017, of over 1.0mt, was significantly higher per annum than in the previous 2013-2016 period and represents a notable step change in sales of this primary land-won aggregate type; this trend has continued. The change to 'high' sales may well be due to very local circumstances in Kent. However, AM2023 also illustrated that land-won hard crushed rock from Kent is exported to Essex, East Sussex and Medway. The consistently 'high' sales pattern of over 1.0mtpa since 2017 justify the use of a 6-

year sales average as being more appropriate than the 10-year sales average when predicting future provision for plan-making purposes. Therefore, the LAA/APR Rate of 1.336mtpa (the 6-year sales average) gives an NPPF maintained landbank of 9.08 years. This is insufficient to meet the adopted Plan's needs to 2039 (plus 10 years) from 2024.

8.4.2. In the past, the consented reserves of hard (crushed) rock of the Hythe Formation in Kent were considered to be so extensive that there was no need to consider future supply needs, and no sites were proposed in the Mineral Sites Plan adopted in 2020. However, since that time, the extent of the reserve base, in terms of its recent marked decline, has become apparent. The implications of this, reflected in the adopted KMWLP 2024-39 period to 2039, are such that there is a predicted shortfall of available reserves at the maintained 'at least' 10-year landbank level for, and at the end of, the Plan period (2024-2039). The inadequacy of the available landbank over the KMWLP plan period is illustrated using the following parameters:

- Estimated reserves at the end of 2024 are 12,132,484 tonnes, or 12.132mt
- The 6-year sales average is 1.336mtpa
- This gives a landbank of 9.08 years
- The Plan period is 15 years, plus 10 years for the maintained 10-year landbank at the end of the Plan period, giving a total period of 25 years

8.4.3. The box below demonstrates the requirement over the adopted Plan period to 2039 and the magnitude of the predicted shortfall:

*The total requirement is $15 \times 1.336\text{mt} = 20.04\text{mt}$, plus a 10-year landbank at the end of the Plan period of 13.36mt. This gives an overall requirement of **33.4mt**.*

*The Plan period runs from 1 January 2024 to 1 January 2039. Therefore, two years of the Plan period have elapsed, reducing the overall requirement by 2.672mt and giving an adjusted requirement of **30.728mt**.*

*Reserves at the end of 2024 are **12.132mt**, allowing for 1 years sales to the end of 2025 (assume 1.336mt) means reserves are taken as **10.796mt**. Deducting this from the **30.73mt** Plan requirement gives a **shortfall of 19.93mt** over the Plan period.*

8.4.4. Given the estimated shortfall of at least 19.9mt over the adopted Plan period, there are compelling grounds for identifying further hard rock resources to enable a steady and adequate supply of hard (crushed) rock over this period.

8.5. Other Relevant Local Information Effects on Aggregate Requirements

8.5.1. The NPPF (2024), at Part 17, paragraph 226(a), makes clear that, when preparing plans to ensure a steady and adequate supply of aggregates, planning authorities

should consider other relevant local information in addition to the use of rolling sales averages and landbank estimates. This can include construction activity, such as housing supply and other development linked to aggregate requirements, as well as infrastructure projects and infrastructure maintenance.

8.5.2. However, a direct relationship between sales and construction in one Mineral Planning Authority (MPA) area is unlikely to be provable, given that imports and exports into and out of any given MPA area also occur. An examination of the main construction forecasts can potentially indicate whether aggregate needs are likely to grow or decline over any given plan period. The 2021 housing requirement forecasts (which, as of 2024, remain the most recent data) and infrastructure projects, as generally anticipated to 2040, are shown in Table 10 and Figure 13 below.

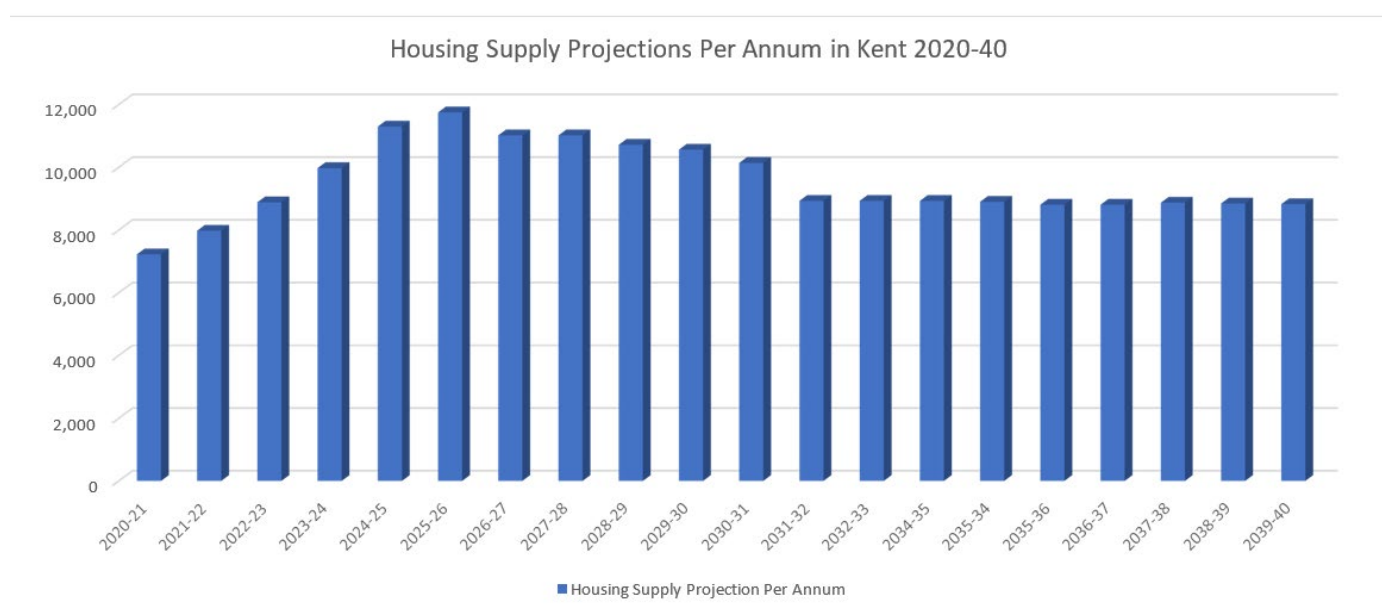
Table 10: Levels of Planned Housing and Infrastructure in Kent excluding Medway

Demand Generation	Approximate Timelines			
Dwellings	In LAA2018, it was reported that Kent would require 178,600 additional homes between 2011 and 2031, or 8,930 per annum. This was revised by a 'Housing Trajectory' based on information provided by each local authority in Kent in November 2019. It concluded that 217,030 dwellings would be built between 2018 and 2038 in Kent and Medway, or 10,851 per annum. This was revised in November 2020 and increased to 225,000 dwellings (Kent and Medway combined) required between 2019 and 2039, or 11,250 per annum, representing an increase of 3.5% over the 2019 estimate. An update to the Housing Led Forecast 2021 (by Kent Analytics, Kent County Council) predicts that, between 2020 and 2040, 222,757 homes will be required in Kent and Medway combined, including 190,398 homes in Kent. In addition, Ebbsfleet Garden City is a planned development within Kent of up to 15,000 homes and 45,000m² of commercial floorspace.			
Education	2020-24 Primary 12.8FE Secondary 58 FE	2024-28 Primary 26.6 FE Secondary 21 FE	2028-30 Primary 11 FE Secondary 8 FE	2030-38 Primary No Data Secondary No Data
Infrastructure	Significant Infrastructure Up to 2030 in Kent: • A2 Bean and Ebbsfleet Junctions; • Lower Thames Crossing; • Motorway Junction Improvements (M20 Junctions 3-5, 10a, M2 Junctions 5, 7); • Bifurcation of Port Traffic and Ports Expansion (Dover Western Docks significantly, including potentially Large Local Major (LLM) funding schemes for A229; • Solution to Operation Stack and Overnight Lorry Parking; • Rail improvements to Thanet; • Crossrail Extension;			

8.5.3. As stated above, in addition to planned infrastructure requirements over the Plan period, there is the planned level of dwellings in Kent, based on local plan allocations

and estimated population changes to 2040. These figures have not been updated since they were reported in LAA2022. The figure of 190,398 dwellings for Kent to 2040, reported in 2022, remains the best available housing projection in 2024 that differentiates Kent from Medway. Figure 13 below shows the predicted per annum (pa) requirements. Housing growth requirements are evident to 2025-26; thereafter, the annual requirements start to fall markedly to around 8,800 per annum by 2031-32 and remain at this level to the 2040 end horizon.

Figure 13: New Housing Growth Per Annum Requirement Predictions in Kent 2020-40

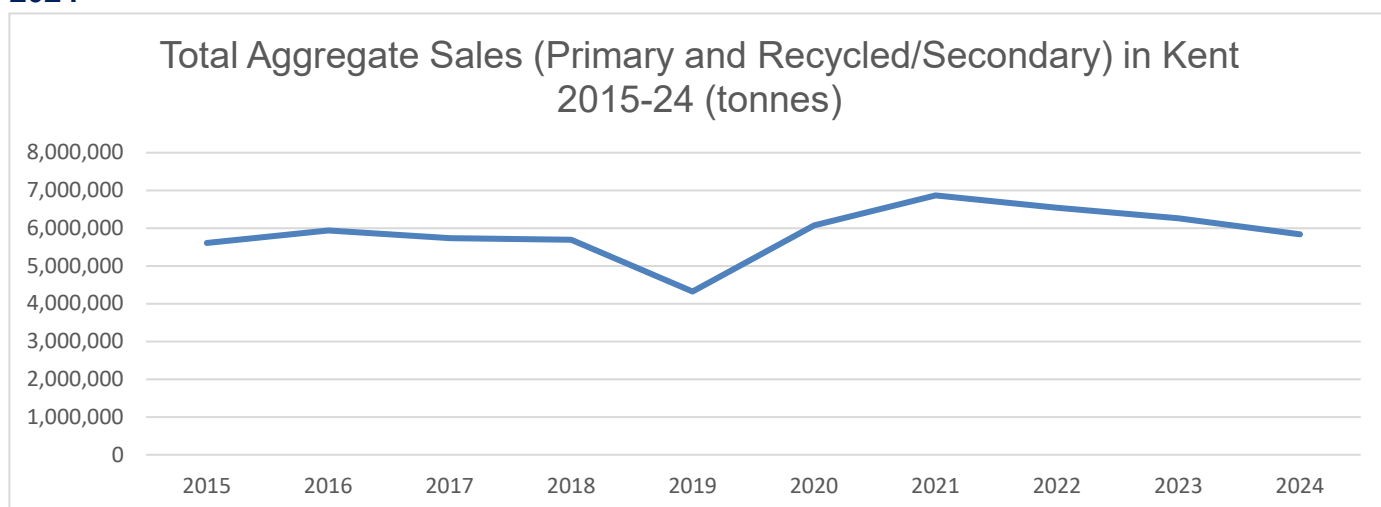


- 8.5.4. In addition to the above Kent County-administered area-based housing needs, Ebbsfleet Garden City, a planned development of the Ebbsfleet Urban Development Corporation, is planned to add a further 15,000 homes to the overall total, which will require an increase in aggregate supply. However, compared with previous monitoring periods, the overall magnitude of housing growth is now predicted to decline slightly between 2026 and 2031, followed by a period of essentially no growth to 2040, resulting in an overall reduction compared with past predictions. The extent to which this will affect aggregate supply overall is difficult to estimate. Other areas, including Medway, which estimates that it requires 28,000 homes by 2041 to meet projected needs, and East Sussex, with a potential need for 69,000 new homes based on 2023 assessed needs, may also have the effect of drawing on Kent's aggregate reserves. However, their past influence in this regard is reflected in the collation of the AM sales data.
- 8.5.5. Given that aggregates are a relatively low-cost and heavy raw material commodity, and that transport costs are a significant factor in their profitability and viability, it is not considered that development pressure in other areas should be given undue weight in influencing Kent's future mineral needs assessment. However, the Council's mineral strategy recognises that Kent supplies materials to other areas, as do most mineral

planning authorities to some degree, not least because of the differing economic geology of mineral planning authority areas.

- 8.5.6. The demand projections for infrastructure development, as now reported in LAA2024, have not significantly altered for some time. They include port expansion, East Kent rail connections and major highway schemes, including A2 and motorway junction improvements, in addition to the Lower Thames Crossing proposal, which is the subject of a current Development Consent Order application. As stated in previous LAA monitoring reports, infrastructure maintenance would have to be commensurate with the need to maintain the network and ensure that new schemes coming on stream by 2030-32 are also integrated and maintained. Overall demand for aggregates in Kent for housebuilding, construction, concrete products, infrastructure development and maintenance, and major projects has shown a marked recovery from the 2019 fall-off in sales of most aggregate types.
- 8.5.7. The gradient in the total aggregate sales data from 2015 to 2024 shows a gradual overall increase over time, as shown in Figure 14 below. The steep recovery from the exceptionally low level of sales recorded in 2019 was followed by a levelling off in 2021, slower growth to 2023, and then a marginal decline to 2024. This could indicate a reduction in overall construction demand based on wider UK economic factors, such as relatively high interest rates and low growth in UK gross domestic product (GDP) at the present time. The Office for National Statistics reported that, in the last quarter of 2024, the construction sector fell by 2.1% and the services sector showed no growth. While it can be concluded that there are no local construction indicators, based on predictions available up to 2024, such as housing as described above, that indicate a likelihood of significant increases in demand for construction aggregates above the historic 5-6mtpa levels observed in Kent, this conclusion is not immune from consideration of wider regional growth estimates that may be made in the future. However, at this time, there are no indications that there is justification to depart from the use of past sales averages and rolling landbanks to estimate aggregate requirements over the life of the Plan.

Figure 14: Total Aggregate (Primary and Recycled/Secondary) Sales in Kent 2015-2024



9. Importation and Production Capacity and the Role of Safeguarding to Maintain Supply Resilience

- 9.1. The monitoring survey undertaken in 2024 was incomplete in terms of productive capacity, due to low participation in the land-won sector. The AM2023 data gathered for 2023 is therefore relied upon again for 2024. The productive capacities are shown in Table 11 below.

Table 11: Total Sales and Estimated Production Capacity (million tonnes per annum)

	Sales (mt) 2024	Productive Capacity (mtpa)	Sales/Production Capacity %	Capacity Headroom
Landwon Aggregate				
• Soft Sands	550,874	1.045mtpa	53.47%	46.53%
• Sharp Sands and Gravels	117,729	0.75mtpa	43.03%	56.97%
• Crushed Rock	1,377,021	2.0mtpa	68.15%	31.15%
Wharves	2,818,781	8.210mtpa	34.4%	65.60%
Rail Depots	347,034	2.225mtpa	15.6%	84.40%
Recycling/Secondary	934,000	4.00mtpa (estimated)	23.5%	76.50%

Source: Aggregate Monitoring Survey 2021, 2022, 2023 and 2024 and previous wharf capacity work (2010) undertaken to support the adopted Plan

- 9.2. It is recognised that capacity information will become increasingly important in future years, particularly in relation to wharves and rail depots. The 2017⁴ study by the Mineral Products Association into future aggregate requirements suggests that, nationally, there could be a decrease in demand for land-won aggregates over time. However, as the land-won resource depletes, as is currently occurring for sharp sands and gravels within Kent, and is substituted significantly by marine-won aggregates or land-won materials from other locations, the productive capacity of importation facilities, both individually and in total, will become increasingly important as an indicator of supply resilience and is

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

analogous to landbanks within the land-won sector. Kent still has significant unused capacity in its wharfage, as it appears to be operating at approximately 35% capacity at the end of 2024, leaving a theoretical 65% headroom. This is a slight increase over the headroom reported in 2023, at 60%. An interpretation of this recent data might suggest that Kent could significantly increase importation with no consequential negative effects on its ability to maintain a steady and adequate supply of aggregates into the future. However, this would be a flawed and simplistic assessment. Firstly, the loss of any wharf site would be irreplaceable within the county. If this were to occur, other wharves would need to increase their throughputs to compensate for the lost capacity. There is no certainty that this would occur, and treating this issue as insignificant would neglect the difficulties of consistently operating other facilities at higher levels of throughput.

- 9.3. This position would underplay the practical difficulties in releasing additional capacity, including shipping availability, channel navigation, maintenance, and facility repair and renewal considerations. The result would be to place stress on the mineral wharf importation system if it were required to operate at a higher rate. To maintain or increase throughputs, any importation facility must be inherently flexible, with a high degree of interoperability and resilience. The safeguarding of existing wharf infrastructure will therefore remain a central requirement to maintain supply as the land-won sand and gravel sector becomes less relevant. Moreover, soft sand from the Folkestone Formation is essentially a land-won material that cannot be substituted by marine-dredged supply, and land-won trans-shipped material from other locations is negligible. Hard crushed rock has shown a significant increase in both land-won and imported supply. If the land-won sector were to be substituted by importation, this would again increase pressure on wharves, by around 1mtpa, simply to maintain current supply.
- 9.4. Rail importation has apparent further potential to increase throughputs, with some 84% unused capacity headroom. Rail connectivity, like wharf location, remains fixed in place. While the full potential of rail depots is currently underutilised, they are located in Kent's hinterland and play a role in providing importation, particularly of hard rock, away from coastal locations. Therefore, rail depots in Kent will be important in the future and should continue to be safeguarded. The high apparent capacity headroom, as with wharves, is needed to maintain flexibility and contributes to the importation system's potential resilience. Safeguarding will ensure that operational capacity can be increased if and when necessary to compensate for declining land-won supply, allowing importation to continue flexibly, in conjunction with wharves, as part of an overall importation system. Rail depots are also significant because they are located inland and can supply Kent's hinterland in a way that wharves may not.
- 9.5. Secondary and recycled aggregates are showing a slight increase in sales, although the historic pattern appears to be that sales remain in the 0.90mtpa range. There is, however, significant capacity to be further utilised if market demand increases production in this sector. Land-won soft sand extraction capacity remains below its full productive potential, illustrating that the sector can still increase supply if this important mineral resource is required to respond to any uplift in future demand. However, how far this will need to be realised, given a potential slowdown in the economy, is a matter of conjecture

at this time. Further monitoring will establish how this aggregate supply responds to demand. Land-won sharp sands and gravels could also increase output, given that productive capacity overall remains underutilised. However, the sector is in decline as a supplier of this type of aggregate, and importation, particularly over wharves, is of far greater importance. While the existing reserves are being gradually run down and are therefore increasingly less important in supply terms, the permitted reserves are being effectively eclipsed by importation.

10. Conclusion

- 10.1. This LAA is based on data for the 2015 to 2024 period. It highlights that Kent produced slightly less aggregate overall in 2024, at 5.838mt, than in 2023, when 6.256mt was produced. The apparent increasing shift towards higher levels of importation, particularly sand and gravel and hard rock, appears only to have been slightly reversed in 2024. The average ratio of land-won sales to importation remains close to 1:2. This pattern appears likely to continue as land-won sand and gravel reserves deplete without replenishment; there have been no substantive reserves permitted for sharp sands and gravels in 2023-24. The decline in land-won sharp sands and gravels as a share of overall supply, expressed as sales, was only slightly reversed in 2024. Extraction is now limited to two operational quarries at Denge, where operations were anticipated to cease in 2024, and Dartford, with all extraction at Lydd having moved over the border into East Sussex, where 50% of sales are still serving the Kent market.
- 10.2. The importance of importation, primarily via wharves, now appears to be the established pattern for the future supply of sharp sand and gravel. In 2022, some 1.906mt of sales were recorded, the highest in the last 10 years. In 2023, sales fell back to 1.795mt, and in 2024 sales reduced again to 1.047mt. Despite lower sales in 2024, the sales data generally indicates that the industry is increasing imports, predominantly over wharves, proportionately to land-won sharp sand and gravel sources to meet demand. The level of importation capacity headroom for both rail depots and wharves remains central to enabling this shift. The properties of marine-dredged sands and gravels are largely comparable to land-won deposits, although not exactly in particle size distribution, and form part of an active and dynamic sedimentary basin rather than fixed, laid-down deposits. It appears that they are fully capable of meeting market specification requirements for construction aggregate use without significant input from land-won reserves.
- 10.3. Land-won soft sands have significant remaining productive capacity headroom, although reserves have contracted following re-evaluation in 2021 and through further extraction. The 'at least 7-year landbank' will be maintained until an estimated period up to 2035, assuming that the additional 3.2mt identified in the Kent Mineral Sites Plan, and currently the subject of a live planning application, comes forward. There is no forecast exhaustion of supply during the Plan period, which extends to 2039. The anticipated further reserves from the allocation at Chapel Farm in the adopted Kent Mineral Sites Plan (3.2mt) will be required to achieve supply over the Plan period.

Windfall reserves, in the form of mineral safeguarding prior extraction requirements in the region of some 1mt from local plan allocated sites within the Folkestone Formation over the Plan period, would further militate against the need to identify additional reserves at this time. This approach was accepted by the Independent Inspector in 2024-25, who examined the KMWLP 2024-39 and found it sound. Furthermore, the current weak condition of the UK economy, as evidenced by low GDP growth, supports this approach. Further monitoring of the soft sand supply sector through the LAA and future plan reviews will demonstrate whether and when any further allocations are required.

- 10.4. Land-won hard (crushed) rock has undergone a marked change from the position reported in previous Kent LAAs. Reserves have significantly reduced to 12.132mt. The rate of extraction from 2017 to 2024 has significantly increased over what had previously been reported. It is now clear that there are insufficient reserves over the adopted Plan period to 2039. Therefore, further reserves are required to maintain a steady and adequate supply of land-won hard crushed aggregate in accordance with NPPF requirements. A need of 19.9mt has been identified to maintain reserves in the future. If an allocation is not achievable, then further increases in importation via safeguarded wharves and rail depots would have to make up the difference to meet supply. The permitted land-won reserves could be exhausted by 2033, well short of the Plan period to 2039, if current extraction rates are maintained.
- 10.5. Recycled and secondary aggregate sales were over 1mtpa in 2021. As of 2024, they had fallen back marginally to 0.934mt, indicating that the sector's contribution is around the 1mtpa level. However, it is considered to be an under-reported sector in aggregate monitoring due to poor survey returns. In addition, productive capacity is thought to be relatively poorly reported and is more likely to be in the 4+mtpa range. Any significant increase in supply from this sector, however, is also contingent on a commensurate increase in suitable materials arising from the Construction, Demolition and Excavation (CD&E) waste stream. This is by no means certain and is related to the UK economy rather than to a known resource, as is the case for primary aggregate provision. It appears from the survey returns that sales could be around the 1+mtpa level, as reported, and will be generally available, with any increases likely to be marginal. It is also possible that this level of provision may decline over time as construction technology changes and the availability of suitable aggregate-forming material declines. Continuing monitoring of this supply source will demonstrate what is occurring in this sector of overall aggregate provision.
- 10.6. The safeguarding of wharves and rail depots will remain critical to maintaining resilience in Kent's ability to supply the required amount of aggregate in a steady and adequate way. All indications are that they will remain an important element in maintaining overall primary aggregate supply into the future. This is particularly the case for land-won sharp sands and gravels, which have now, to all intents and purposes, become of minor importance in overall supply terms in Kent. Marine-dredged sand and gravel imports via Kent's wharves are now of far greater importance for this aggregate type. It may also be the case that, if further allocations of land-won

hard crushed rock are not secured, supply would have to be met by imports. The future security of primary aggregate supply may become more dependent on imports and so it will be increasingly important to ensure importation infrastructure is safeguarded.

- 10.7. Rail depots are of importance, as they have significant underused capacity and can arguably supply demand in Kent's interior more efficiently than coastal locations. However, rail depots are fewer in number and their overall capacity is considerably lower than that of the wharves along Kent's coast. The wharves also have significant clustering in the lower reaches of the River Thames in Kent, reducing their overall distribution. Therefore, although the capacity of mineral importation rail depots is important and should be robustly safeguarded, it can only partially compensate for the uneven distribution of wharf-based importation capacity.
- 10.8. Kent's importation facilities can be viewed as a system and the need to maintain and safeguard importation capacity headroom in any importation system is necessary for efficient and flexible operation, as it acts as a critical buffer that protects the overall supply chain. For aggregates, which are a high-weight and high-bulk commodity, this is particularly important, as bulk carrier ships and trans-shipment barges discharge at regular intervals. Aggregate is stored in bulk as stockpiles, and the market is then supplied from these importation nodes. Therefore, maintenance of the system is important to ensure that a steady and adequate supply is maintained. A degree of inbuilt headroom is necessary, as it buffers this stability against supply shocks. This includes the loss of regular shipping movements due to adverse weather, accidents, shipping decommissioning, shipping movement availability, and any necessary maintenance and/or plant replacement. The wharf-side capacity for bulk stockpiling must be maintained at a scale capable of mitigating these potential shocks. In doing so, this enables the system to remain flexible in response to system component redundancy or supply shocks. With sufficient safeguarded unused capacity headroom, the system can still pivot to other established importation nodes to increase throughput without causing overall disruption to supply. Therefore, if one or more importation points, such as a wharf acting as a system component, cannot function for any reason, including loss through redevelopment or shutdowns for plant replacement or maintenance, the overall resilience of the system is not unduly compromised. Moreover, any potential increases in throughput due to demand changes, such as economic growth or land-won supply exhaustion, can only be reliably achieved where the system has sufficient stability and resilience, in the form of excess capacity headroom, to accommodate either sudden or long-term increases. As these effects would absorb a degree of available capacity headroom, if this causes the system to move towards 100% operational capacity to meet increased needs, the resilience of the system becomes increasingly vulnerable to failure in maintaining overall system stability. The effect of any supply shock, redundancy, or loss of sites would therefore place stress on the system's flexibility, stability and resilience to other supply shocks.
- 10.9. The overall conclusion is that Kent can continue to maintain a steady and adequate supply of aggregates, but only if three requirements are met. First, soft sand supply

must be monitored and the Chapel Farm allocation progressed if appropriate. Secondly, further hard crushed rock provision should be pursued through the Mineral Sites Plan review to address the identified 19.9mt shortfall. Thirdly, importation infrastructure must continue to be robustly safeguarded. Wharves are the principal importation route and are effectively irreplaceable; rail depots provide important additional resilience and inland distribution. The apparent spare capacity in both systems should not be treated as surplus capacity. It provides the operational headroom needed to absorb disruption, maintenance, weather, shipping constraints, site loss and future demand growth. Safeguarding this headroom is therefore central to maintaining Kent's aggregate supply resilience over the Plan period to 2039.