mpa
Mineral Products Association
The Trade Association for the Aggregates, Asphalt, Cement, Concrete, Dimension Stone, Lime, Mortar and Silica Sand Industries

Long-term aggregates demand & supply scenarios, 2016-30

The Mineral Products Association (MPA) has set out long-term aggregate demand and supply trends at a national (GB) level for the next 15 years, based on a scenario analysis. It aims to provide industry and industry stakeholders with indications of the volumes of aggregates that may be needed to satisfy future demand, reflecting the UK's needs for construction, including housebuilding and infrastructure.

The scenarios proposed take into account the potentially lower economic and construction outlook in the next few years as a result of the decision to leave the European Union. Estimates show that a slower outlook for construction activity in the early years of the projection period (2016-23) leads to lower aggregates demand compared to MPA's pre-referendum projections.

The longer-term trends follow population growth, which is used as a proxy for future construction and aggregates needs. Overall, and despite slower aggregates demand in the short term compared to MPA's previous (2015) analysis, large quantities of primary aggregates will still be required to support future construction needs. While there appear to be sufficient indigenous mineral resources available to support future demand requirements, subject to planning and permitting, the supply mix is likely to be a major issue.

Executive summary

GENERAL ASSUMPTIONS (Section 1 & 2)

- General construction activity is projected using forecasts for construction, the UK economy and population growth. The statistical analysis was carried out in October 2016.
- The construction and economic forecasts used take into account the potentially lower outlooks in the short/medium term as a result of the decision to leave the European Union.
- Aggregates demand projections are based on construction outlook and estimates of material intensity.

KEY FINDINGS – AGGREGATES DEMAND (Section 1 & 2)

- Demand projections suggest that by 2030, 267Mt per annum of aggregates might be needed to satisfy construction needs.
- Further declines in material intensity however would result in aggregates demand peaking at 220Mt per annum in 2023, before undergoing a steady decline to 200Mt per annum by 2030.
- Overall, this means that the industry faces a cumulative demand for aggregates of between 3.2 and 3.8 billion tonnes over the next 15 years.

KEY FINDINGS – AGGREGATES SUPPLY (Section 3)

- While there appear to be sufficient indigenous mineral resources available to support future demand requirements, there are issues around the supply-mix that need to be addressed. Four supply mix scenarios were considered, including no change in the current supply mix of aggregates and variants of supply mixes.
- Under all supply scenarios considered, significant tonnages of primary aggregates will be needed, supplying between 63% and 72% of overall demand, recycled and secondary materials providing the remainder.
- The current decline in permitted reserves of land-won sand & gravel points to growing pressures on other sources, particularly crushed rock and marine sand & gravel, to meet future demand.
- Alternative sources of aggregates, including recycling, secondary materials and imports, have a role to play but are unlikely to be a game changer given their constraints. The share of recycled and secondary aggregates varies between 28% and 37% of overall demand.
- Future supply of aggregates also faces additional challenges related to issues around transport infrastructure, safeguarding essential minerals infrastructure (wharves/rail-heads) and access to skills.

INTRODUCTION

As economic activity fluctuates, the focus changes on short- or long-term issues. For most industries, recessions inhibit long-term planning, but as growth returns, market participants start thinking about how future demand will be supplied. The aggregates industry is no different. After falling by almost a third over 2007-09, demand for aggregates has since recovered: Between 2013 and 2015, the sharp pickup in construction activity resulted in primary aggregate sales increasing by over 20%, although the total 2015 GB aggregates sales volume (including recycled materials) remained well below historical highs at 226Mt in 2015 compared with 332Mt in 1989 and 279Mt in 2007.

Prospects for the coming years are positive, even after accounting for the potentially slower economic and construction outlook in the medium term as a result of the decision to leave the European Union and other global economic concerns. Increased economic uncertainty following the Brexit vote is expected to constrain construction activity over 2017-18, impacting especially on housing, commercial and industrial construction. Meanwhile, infrastructure spending is likely to be a more positive feature of construction from 2018, as work on major projects such as Hinkley Point C and HS2 is planned to start alongside more marked increases in Highways England's road programme.

Following the beginning of the recovery in construction activity in 2013, concerns about whether industries and their suppliers have the capacity to cope with further significant market growth emerged. Signs of stress were well-publicised in some markets, such as for clay bricks, where import volumes rocketed in 2013-14, and partly reflecting a mismatch between the pace of recovery in construction activity and the speed at which UK brick plants' capacity increased.

In the aggregates industry, the latest MPA Annual Mineral Planning Survey 2016 shows the potential for future shortages of supply for sand & gravel: In the past 10 years, for every 100 tonnes of sand & gravel used, only 61 tonnes on average have been replaced through new planning permissions, resulting in significant declines in permitted reserves. Looking at sites' development timelines, it takes on average 10-15 years to identify, secure, and get planning permission and permits for a new mineral site, which emphasizes the need to plan strategically for the long term.

The need to think forward, beyond the economic cycles, and plan for potential demand and ways to ensure this demand can be supplied is therefore evident. Future economic growth, population growth and trends in material intensity in construction activity will be decisive factors for the level of demand over the next 15 years. A baseline scenario shows that annual demand for aggregates could increase by 18% by 2030, meaning an additional 40Mt of aggregates each year. Over the next 15 years, the industry could have to supply as much as 3.8 billion tonnes of materials. Current permitted reserves are already close to this figure, and continue to decline steadily.

Our internal consultation with industry stakeholders suggests that the biggest issue is not just about ensuring the overall supply of aggregates, but more about how the dynamics will work out between the various sources of aggregates in order to meet total demand. Industry stakeholders believe that a major challenge will be tackling the decline in land-won sand & gravel permitted reserves, and the potential for compensating for this decline through an increase in the supply of alternative sources of aggregates, such as marine sand & gravel, crushed rock, recycled and secondary materials, and imports. Undeniably, all will have a role to play, but none is considered to be a game-changer as long-term issues around transport, logistics and skills shortages add to more material-related issues such as the overall level of permitted reserves, the trend in recycling and the limited practical scope for imports.

This paper describes the methodology followed and sheds light on these issues, drawing a picture of what the GB aggregates market might look like in the next 15 years. The statistical analysis was carried out in October 2016 and uses data and forecasts available at this time. Future aggregates demand is projected on the basis of assumptions on general macroeconomic, construction and population growth, as well as on material intensity. On the supply-side, four scenarios are being considered, based on either constant market shares of aggregates supplies (scenario 1), or on variations of the supply-mix in response to a long-term decline in land-won sand & gravel permitted reserves (scenarios 2-4).

1. Aggregates demand to 2030 – baseline scenario

Whilst the UK economy contracted by almost 5% between 2007 and 2009, construction output fell by more than 15% over the same period. In the meantime, demand for primary aggregates fell by a staggering 30%. Between 2013 and 2015, the 5.5% growth in GDP, driven by 13.5% growth in construction activity, led to primary aggregate sales increasing by over 20%.

Economic growth and construction activity are significant factors for the demand for minerals, and assumptions about future activity can be used to estimate material demand. The MPA produces regular medium-term forecasts for aggregates sales volumes in GB using insights on economic and construction trends.

Our forecast published in September 2016 is summarised in table 1 below and is used as the basis for aggregates demand over 2016-18.

Table 1. MPA Economic Affairs Committee, September 2016 (GB) Forecast, 2016-2018

% chg. on prev. year	2015 (outturn)	2016	2017	2018
Total Aggregates	4.8%	2.0%	-0.1%	1.5%
Crushed rock	5.8%	2.6%	0.4%	1.5%
Sand & gravel	3.1%	1.0%	-1.0%	1.5%
Recycled & Secondary	4.9%	0.4%	-0.6%	1.2%
Source: MPA.				

Our **2016-18** aggregates demand forecast is based on the general economic outlook following the decision to leave the European Union on 23rd June 2016, as well as the revised construction output forecast from the Construction Products Association (CPA). At the end of 2015, industry expected 3%-4% growth per annum in

Table 2. Construction output and total aggregates demand projections (GB), baseline scenario

		Construction output (£bn, 2013 prices)	Total aggregates (Mt)	Material intensity (tonnes per £000)
2014	Outturn	128	216	1.69
2015	Outturn	134	226	1.68
2016	MPA forecast	135	228	1.69 (Implied)
2017	MPA forecast	134	228	1.70 (Implied)
2018	MPA forecast	136	231	1.70 (Implied)
2019	GDP forecast	139	236	1.70 (Assumption)
2020	GDP forecast	142	241	1.70 (Assumption)
2021	GDP forecast	145	246	1.70 (Assumption)
2022	GDP forecast	145	251	1.70 (Assumption)
2023	GDP forecast	151	257	1.70 (Assumption)
2024	Population growth	152	258	1.70 (Assumption)
2025	Population growth	153	260	1.70 (Assumption)
2026	Population growth	154	261	1.70 (Assumption)
2027	Population growth	154	262	1.70 (Assumption)
2028	Population growth	155	264	1.70 (Assumption)
2029	Population growth	156	265	1.70 (Assumption)
2030	Population growth	157	267	1.70 (Assumption)

construction output until 2020. However, in response to the Brexit vote, the CPA published a new construction forecast (September 2016) where a central scenario for construction output over 2016-18 was discussed, along with higher and lower bounds as an attempt to reflect the range of risk and uncertainty surrounding the UK economy. Overall, the increased economic uncertainty following the Brexit vote means that lower business investment and real wage growth are expected to constrain housing, commercial and industrial construction over 2017-18, with infrastructure spending likely to be a more positive feature of construction in 2018. In the CPA's central scenario, construction output was expected to grow by 0.4% in 2016, followed by a 0.6% fall in 2017, before starting to recover from 2018 (+1.2%) as work on major projects such as Hinkley Point C and HS2 is planned to start alongside more marked increases in Highways England's road programme.

Based on this outlook for construction activity, MPA expected aggregates markets to grow by 3% over 2016-18.

Post-2018, we project overall construction activity using proxies, and then derive the implied aggregates demand on the basis that material intensity, defined as the volume of material used per £000 spent in construction, remains flat at the 2018 level over the remainder of the projection period. This assumption on material intensity will be relaxed at a later stage to look at future demand for aggregates materials if material intensity declines further.

Construction activity over **2019-23** is first assumed to grow in line with the UK economy, using the National Institute of Economic and Social Research's (NIESR) GDP forecast published in August 2016. Between 2019 and 2023, GDP is expected to grow by an average of 2.1% per annum.

Post-2023, the assumptions use a different basis. The UK economy has seen 7 recessions in the past 60 years, meaning on average 1 recession every 8 years (although the actual distribution of recessions over the period is much more uneven than the average), which makes it difficult to make sensible assumptions as to how economic and construction activity will fluctuate in the longer run. Yet, in order to develop a long-term outlook for material demand, one needs to find a proxy to understand how construction activity might vary.

Population growth is one such proxy, as general increases in the size of the population can be assumed to result in increasing infrastructure and housing needs. ONS produces long-term projections for population growth, and estimates that the UK population will increase by 6.4m people (10%) by 2030, meaning an annual growth rate of 0.5-0.6%. We applied this population trend growth to our construction projections over 2024-30.

Combining assumptions on construction activity and material intensity provides a baseline scenario for the demand for aggregates to 2030, by when demand is projected to increase by 18% or 40Mt per annum, reaching a total demand of 267Mt, a level not seen since 2007 (table 2). This compares with a pre-referendum projection that aggregates demand would rise to 287Mt per annum by 2030. This limited impact reflects the assumption that the Brexit-related uncertainty is expected to impact on general economic and construction activity only in the short to medium-term, before fading as the outcome of the exit negotiations with other European Union member states becomes clearer.

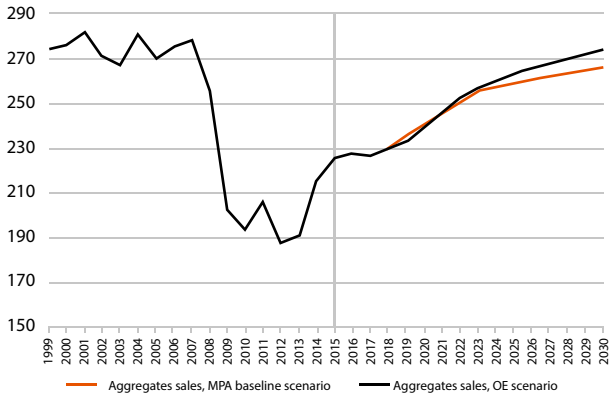
This is not intended to be a firm forecast, but an indicative trend for the purposes of considering longer term demand and supply issues.

It is worth noting that Oxford Economics (OE) also produces long-term construction forecasts and projections to 2045. Using their estimates for construction activity instead of our baseline scenario laid out in table 2, along with our material intensity assumptions, results in a similar profile for aggregates demand, with total demand reaching 275Mt by 2030.

. . . the long-term construction output trend may be considered as a relatively conservative projection, up about 0.5% per annum post-2023.

There is of course a significant degree of uncertainty in our baseline aggregates demand scenario, not least reflecting the fact that annual fluctuations in economic and construction activity are highly likely, rather than the steady-growth path assumed. Nonetheless, it is to be noted that the long-term construction output trend may be considered as a relatively conservative projection, up about 0.5% per annum post-2023.

Chart 1. Total GB aggregates demand (Mt) to 2030, MPA baseline scenario and Oxford Economic (OE) scenario



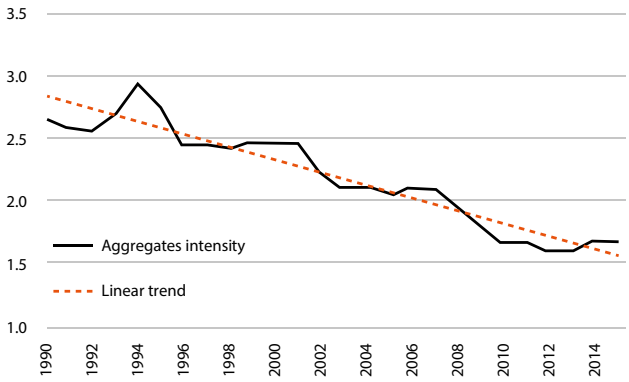
Source: AMRI and MPA calculations.

2. Low material intensity demand scenario

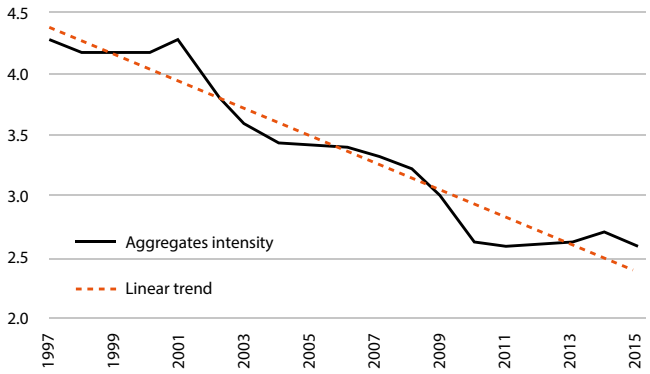
Material intensity is defined as the volume of aggregates used per £1000 spent in construction. There are different ways of computing it, based on whether one considers total construction output (incl. repair & maintenance) or only new work. Both analyses result in similar conclusions, in that material intensity has declined significantly since the mid-1990s, but also that this decline may have bottomed out in recent years.

Chart 2. Volume (tonnes) of aggregates used per £000 spent in construction in GB

Total construction output



Construction output - new work only



Source: AMRI, ONS.

Variations in material intensity can have a significant impact on the future level of material demand, as technological progress, increased material efficiency, and different compositions of construction work can lead to more or less material being required to produce a similar value of construction output.

Looking at total construction output, the use of aggregates per £000 spent in construction fell by 37% between 1990 and 2015, from 2.66 to 1.68 tonnes. Per annum, it represents an average decline in material intensity by about 1.8% over the period.

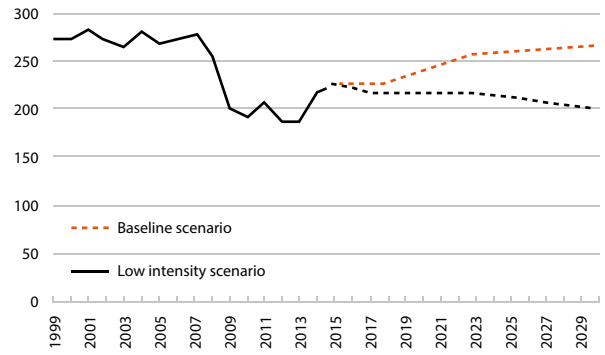
We used estimates of material intensity based on total construction output to build scenarios for total aggregates demand to 2030. The use of total construction output was preferred over the alternative of focussing only on new work because of uncertainties around the ONS classification of new work and repair and maintenance work across time.

In our baseline aggregates demand scenario, we assumed that material intensity remains flat at its 2018 level (implied by our medium-term material demand forecast) over the remaining projection period, i.e. at 1.70 tonnes of aggregates used per thousand pounds spent in construction. An alternative aggregates demand scenario is also considered, in which further reductions in material intensity are assumed, putting downward pressures on total aggregates demand over the next 15 years. This would reflect a continuing general focus on resource efficiency in construction, whilst the type of construction required over the coming decades, notably the need to improve housing supply and infrastructure provision, will also help to determine the underlying strength of demand for different materials.

As such, using the baseline scenario, we projected aggregates demand on the assumption that the construction industry would achieve a 1.8% decline in material intensity each year from 2016 onwards. This is not intended to be interpreted as a forecast – it is an illustrative projection to provide a contrast with the base assumption of a stable intensity of use. In practice, any assumption of a long-term reduction in intensity of use implies that this will eventually reach zero – meaning no demand for aggregates regardless of the level of construction output. This is clearly unrealistic given that there is no likelihood of total substitution of aggregates demand (including both primary and recycled aggregates) in the foreseeable future. Under this illustrative projection, demand for aggregates would peak at 220Mt per annum in 2023, before undergoing a steady decline to 200Mt per annum by 2030, as construction output is projected to grow at a slower pace than the decline in material intensity (table 3).

Overall we see that, regardless of the slower economic and construction outlook in the short-term and improvement in material intensity, the industry still faces a cumulative demand for aggregates between 3.2 and 3.8 billion tonnes over the next 15 years under both scenarios.

Chart 3. Total GB aggregates demand (Mt) to 2030, baseline and low intensity scenarios



Source: AMRI and MPA calculations.

Table 3. Construction output and total aggregates demand projections (GB), Low intensity scenario

	Construction output (£bn, 2013 prices)	Material intensity (tonnes per £000)	Total aggregates (Mt)
2014 (outturn)	128	1.69	216
2015 (outturn)	134	1.68	226
2016	135	1.65	223
2017	134	1.62	218
2018	136	1.59	216
2019	139	1.57	217
2020	142	1.54	218
2021	145	1.51	218
2022	148	1.48	219
2023	151	1.46	220
2024	152	1.43	217
2025	153	1.40	214
2026	154	1.38	212
2027	154	1.35	209
2028	155	1.33	206
2029	156	1.30	203
2030	157	1.28	201

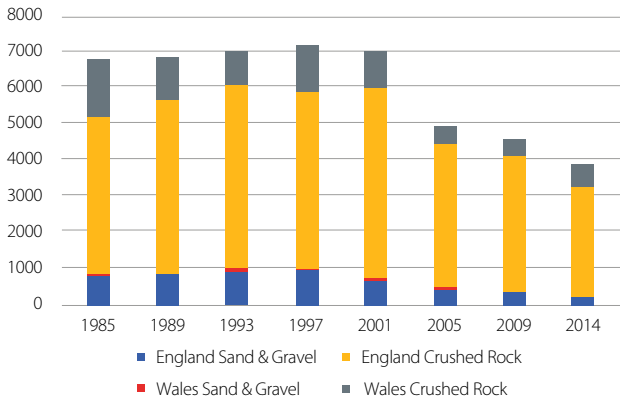
Source: MPA, NIESR, AMRI, ONS.

3. CONSIDERATIONS FOR AGGREGATES SUPPLY

3.1 Resource availability & permitted reserves

Aggregates are widely available in the UK, and import volumes remain relatively low. A key factor influencing the supply of aggregates, and therefore other mineral products manufactured using aggregates, is the operation of the mineral planning and associated regulatory systems.

Chart 4. Primary aggregate permitted reserves in England & Wales (Mt)



Source: BGS, 2016.

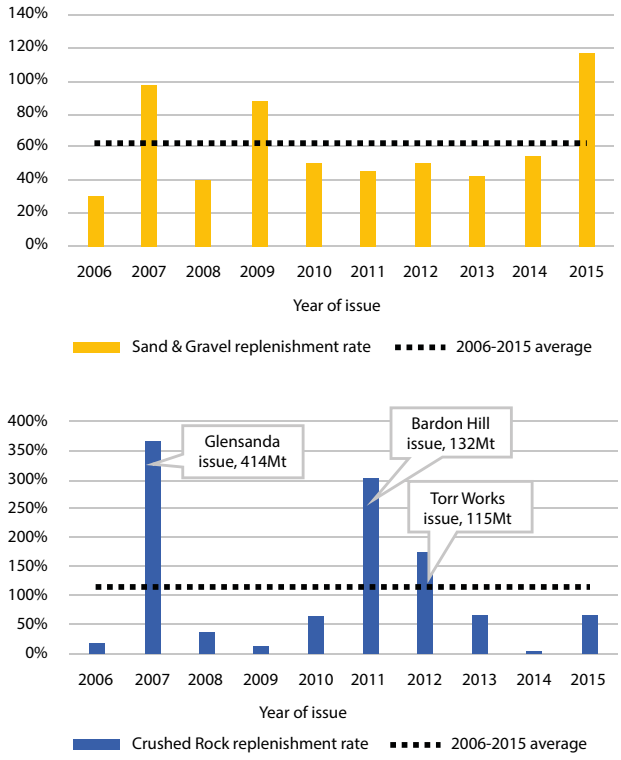
Chart 4 indicates changes in land-won permitted reserves of aggregates in England and Wales since the early 1990s. The step change reduction in 2005 was influenced by a more prudent assessment method than used previously. In 2014, the permitted reserves of land-won aggregates was under 4 billion tonnes. In addition, data from The Crown Estate indicates a level of economically viable reserves of primary marine aggregates of about 371Mt in 2016.

A complementary indicator, the "replenishment rate", provides a useful insight into the long-term availability of supply. Chart 5 indicates that, whilst the average replenishment rate for crushed rock has been close to and above parity in the past 10 years, land-won sand & gravel is being replaced at a much slower pace: for every 100 tonnes of sand & gravel used, only 61 tonnes is being replaced through new planning permissions. In addition, the crushed rock replenishment rates reflect mostly new permissions granted at a small number of sites, and therefore these reserves are not evenly distributed across the country.

The implication of long-term replenishment rates falling below 100% is that shortages of supply may become apparent. Evidence from Local Aggregates Assessments and Local Plan formulation suggests that pressures on available reserves of traditional sand & gravel sources are beginning to emerge in parts of Yorkshire, the South West, the South East, the North West, and the West Midlands.

This means that supply will have to adapt in order to be able to respond to the baseline demand scenario for the next 15 years.

Chart 5. Land-won aggregates replenishment rates, permissions issued only (GB)



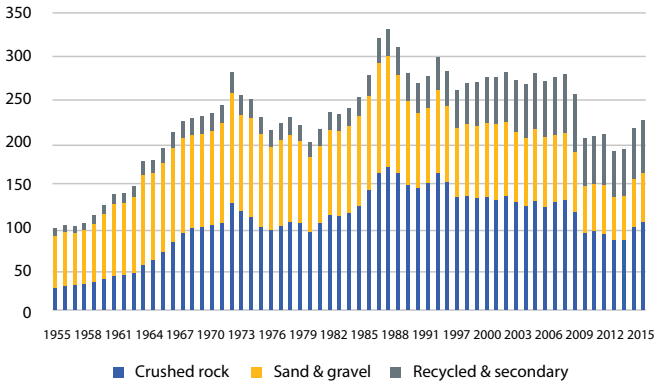
Source: MPA.

3.2 Recycling & secondary aggregates

In aggregates markets, recycled and secondary materials are estimated to represent nearly 30% of the GB market, a much higher share than the rest of Europe, for which the average (excluding GB) currently stands at 10%. All supply scenarios described in this paper assume that recycled and secondary aggregates supplies grow in line with construction trends, not faster. The view is that the potential for recycling has already reached a high level, and that if further improvements are possible, these are expected to remain incremental in volume terms. Significant sources of secondary materials do exist, but these are currently located away from the main market. Going forward, their use and contribution could increase but only with improvements to transport infrastructure.

For the baseline demand scenario, this means that the estimated share of recycled and secondary materials in the total aggregates supply is likely to remain stable over the next 15 years. There is no likelihood of significant improvement. In other words, even if the actual volume of recycled and secondary materials increases, the expectation is that this will not constitute a game-changer: significant sources of primary supplies will be necessary to meet demand.

Chart 6. Aggregates sales by sources of supply (GB)



Source: AMRI, MPA.

In the alternative (low material intensity) demand scenario, the contribution of recycled and secondary materials does not change compared to our baseline scenario, i.e. it continues to grow in line with construction activity in the same way. This means that the squeeze on overall aggregates demand implied by the reduction in intensity is focussed on primary sources, so that the share of recycled and secondary material in our supply scenarios actually increases over the projection period to reach 37% of the total aggregate supplies by 2030. Again, whilst recycled and secondary materials are providing a valuable source of supply, significant sources of primary supplies would still be necessary to meet overall demand.

One could argue for the possibility of a decline in the use of recycled materials in the future. As buildings have become more complex, the ability to recover aggregate materials following demolition will be more difficult. With lower quantities available from demolition, the availability of recycled material may become more constrained.

A contrary point of view is that a continuing policy focus on improved resource efficiency as part of the circular economy, and on more efficient and technically advanced recycling practices could squeeze more recycled content from demolition and secondary material sources.

Overall, there are uncertainties associated with the future of some recycled and secondary materials and sources, suggesting that caution is required in making assessments of potential future supply.

3.3 Imports

Construction aggregates are widely available in the UK, which produced about 250Mt in 2015 (production in Northern Ireland is estimated to be about 20Mt). Import volumes remain low, accounting for less than 5Mt per annum. It is thought that there may be scope for import volumes to increase, making use of some underutilised port facilities, but of course, such changes will only happen if commercially viable. Overall, it is undeniable that imports have a role to play, but they will be limited by the capacity of port and transport infrastructure to receive and distribute to markets at acceptable amenity and environmental cost. Even a very significant increase to 10Mt per annum by 2030 – if possible – would represent less than 5% of total market supply. As such, where it is anticipated that imports are likely to grow, this will not be significant.

3.4 Transport & logistics

As bulk materials, aggregates are highly dependent on efficient transport networks. There are currently stresses on the availability of drivers and delivery vehicles, the ability for rail freight to supply aggregates, and concerns about future availability of strategic wharf capacity for marine dredged aggregates. Although there is some evidence that transport constraints have delayed deliveries to customers in localities where demand is strong, in general the delivery supply chain has continued to meet customers' needs. Whether this continues will depend on factors such as:

- The availability of drivers, and particularly new entrants;
- The availability of suitable new vehicles;
- The use of larger, articulated tipper trucks;
- The development of more efficient supply logistics in cooperation with customers;
- Potential rush hour delivery restrictions in urban areas;
- The ability of industry and freight operators to increase the average loading of train deliveries;
- The availability of critical rail paths;
- The availability of rail depot capacity in key markets;
- The availability of wharf capacity in key locations;
- The availability of marine dredging production capacity;
- The future distribution of demand – clearly concentrated geographical hot spots of demand would place particular pressure on local transport capacity, therefore considered scheduling of major infrastructure programmes could help to minimise such transport stresses.

3.5 Skills availability

There is growing concern around the future availability of industry staff with the necessary skills required to allow the sector to continue to function efficiently and effectively. However it is very difficult to assess if this is likely to inhibit the industry's ability to operate and supply or whether the supply chain will adapt to potential skills constraints. One area of concern is the possibility for stricter immigration controls post-Brexit. Government will have to take the issue of access to skills into account if it wants to avoid putting further pressures on industries already facing skills shortages.

3.6 Aggregates supply scenarios

These scenarios are meant to be indicative only. They provide an outline as to what may need to happen in order for the aggregates industry and planning system to be able to satisfy future demand, and are intended to provide a basis for discussion as to whether these supply scenarios can be achieved.

The scenarios have been produced at GB level, based on national data and forecasts. These should provide a helpful indication of how aggregates demand and supplies are anticipated to change over the next 15 years. They should also provide a national overview and context for local planning, including in England in the preparation of Local Aggregates Assessments (LAAs) and the production of Local Minerals Plans.

English national planning policy and guidance require that in preparing LAAs authorities consider forecasts of future demand, based on the average of 10 years past sales and other relevant local information.

Attempting to undertake detailed local plan scale modelling would be hindered by data availability and consistency of the assumptions applied and methodology that is used. Instead, MPA considers that LAAs should reflect on the direction that a set of indicators, such as recent sales of aggregates, macroeconomic trends, planned housing and infrastructure construction and population projections, in order to fully understand what future demand is likely to be and how different it may be from the 10 year average. This should then inform local minerals planning policy, in particular through flexibility and provision for growth in demand and aggregates supply, including where appropriate, above the 10 year average figure.

MPA will be considering the extent to which the methodology applied at the GB scale could be applied to a regional analysis.

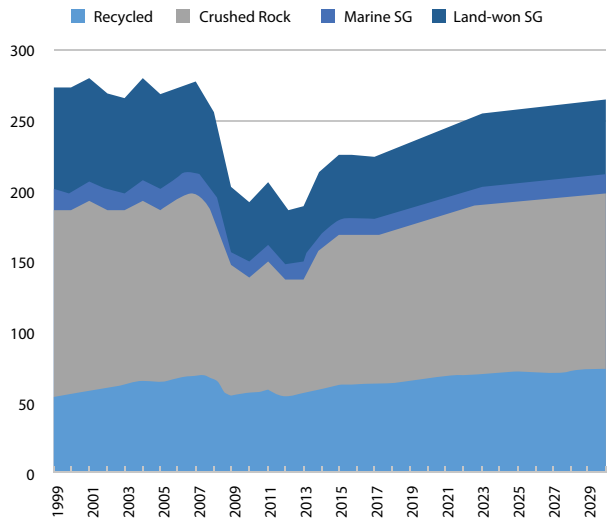
Aggregates supply scenario 1

Assumption: **No change in the current supply mix of aggregates, i.e. the split between primary aggregates reflects the 2014 shares for marine sand & gravel in total sand & gravel (20%), and for total sand & gravel in total primary aggregates (36%)**.

The outcomes of this supply mix are outlined in the charts and tables below, which represent both the baseline total aggregate demand and low intensity scenarios.

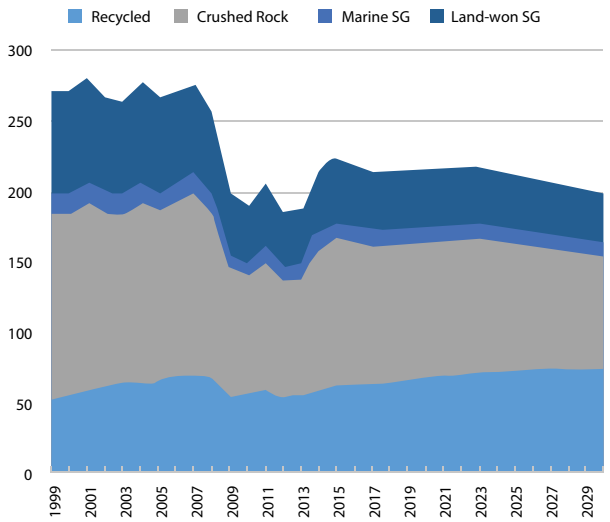
Result: Supply scenario 1

Baseline



(GB, Mt)	2015	2030
Land-won sand & gravel	46	55
Marine sand & gravel	12	14
Crushed Rock	104	123
Recycled & Secondary	64	75
Total	**226**	**267**

Low intensity



(GB, Mt)	2015	2030
Land-won sand & gravel	46	36
Marine sand & gravel	12	9
Crushed Rock	104	81
Recycled & Secondary	64	75
Total	**226**	**201**

Source: MPA.
Please note that totals may not add up due to individual rounding.

Aggregates supply scenario 2

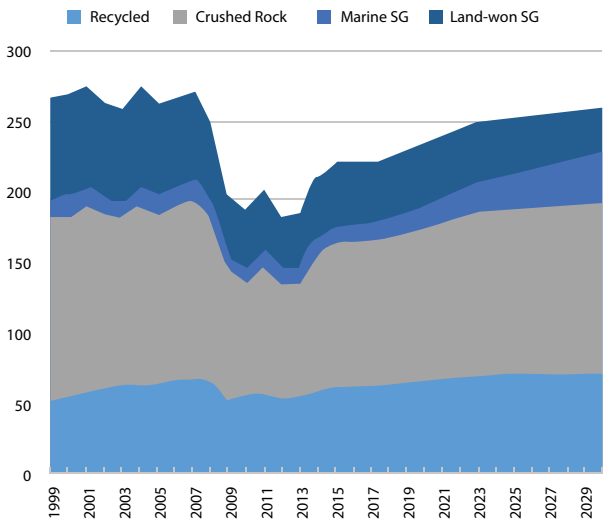
Assumption: **The availability of land-based sand & gravel becomes constrained over time, but there is sufficient marine sand & gravel to replace it.**

In this scenario, we maintain the volume for total aggregates, and the share of total sand & gravel in the total aggregates as per scenario 1.

However, land-won sand & gravel is gradually being replaced by marine resources, so that the share of marine sand & gravel increases to 50% of the total sand & gravel supply by 2030. Projections for crushed rock and recycled materials are as in scenario 1.

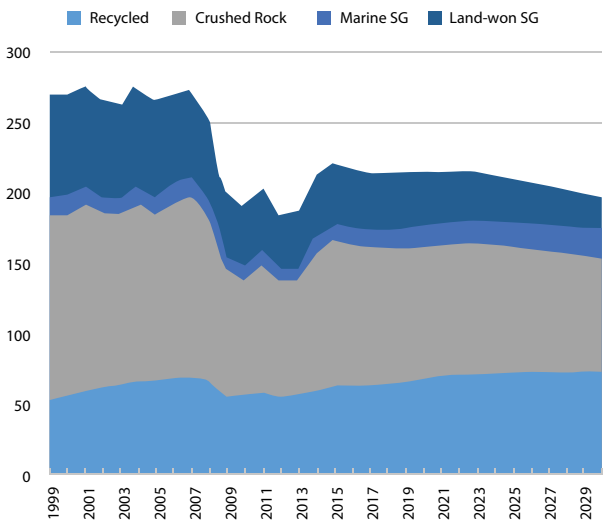
Result: Supply scenario 2

Baseline



(GB, Mt)	2015	2030
Land-won sand & gravel	46	34
Marine sand & gravel	12	34
Crushed Rock	104	123
Recycled & Secondary	64	75
Total	**226**	**267**

Low intensity



(GB, Mt)	2015	2030
Land-won sand & gravel	46	22
Marine sand & gravel	12	22
Crushed Rock	104	81
Recycled & Secondary	64	75
Total	**226**	**201**

Source: MPA.
Please note that totals may not add up due to individual rounding.

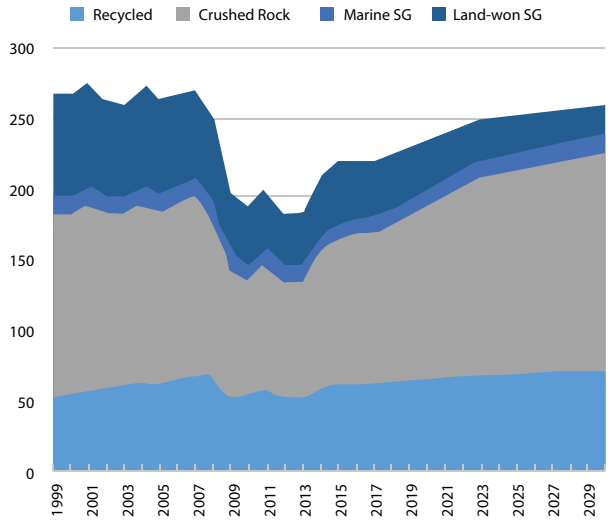
Aggregates supply scenario 3

Assumption: **Declining availability in land-won sand & gravel is fully made up by crushed rock substitution, as marine supplies are limited by wharf and dredger capacity**.

The total sand & gravel volume is assumed to decline, reflecting a 5% per annum fall in land-won sand & gravel (to 21Mt per annum by 2030), which is entirely compensated by a rise in crushed rock supplies. Meanwhile, marine sand & gravel volumes continue to grow as per scenario 1.

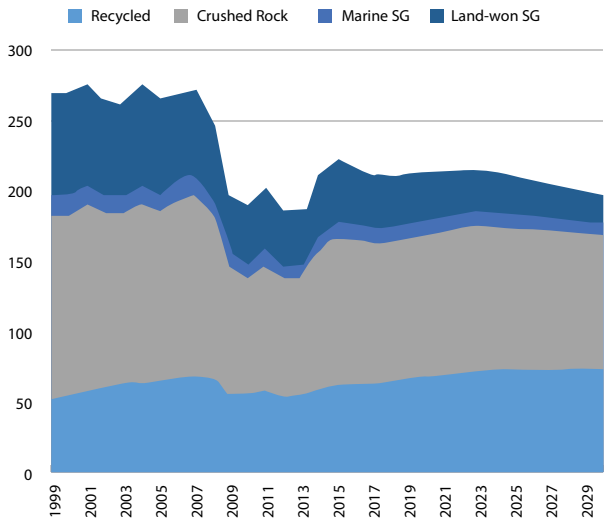
Result: Supply scenario 3

Baseline



(GB, Mt)	2015	2030
Land-won sand & gravel	46	21
Marine sand & gravel	12	14
Crushed Rock	104	156
Recycled & Secondary	64	75
Total	**226**	**267**

Low intensity



(GB, Mt)	2015	2030
Land-won sand & gravel	46	21
Marine sand & gravel	12	9
Crushed Rock	104	95
Recycled & Secondary	64	75
Total	**226**	**201**

Source: MPA.
Please note that totals may not add up due to individual rounding.

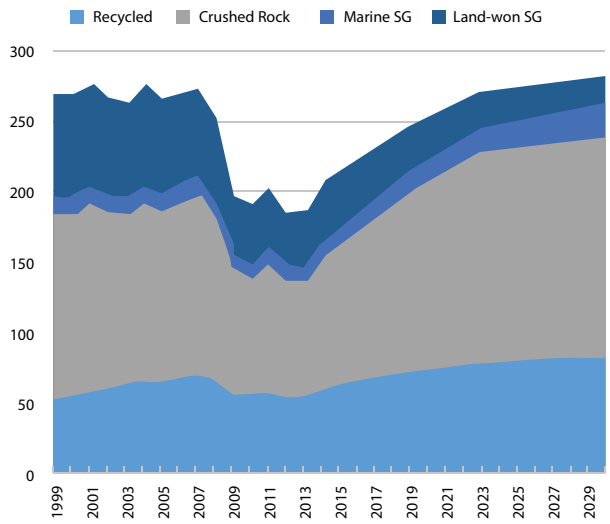
Aggregates supply scenario 4

Assumption: **Declining availability of land-won sand & gravel is made up by a combination of increases in both marine sand & gravel and substitution with crushed rock supplies.**

This scenario also relies on other elements, such as the associated infrastructure (rail/river) to enable the material to access the markets where it is required. Overall, the total sand & gravel volume is assumed to decline, reflecting a 5% per annum fall in land-won sand & gravel (to 21Mt per annum by 2030). The decline is then compensated by a combination of increases in marine sand & gravel (by 5% per annum, to 24Mt per annum by 2030) and crushed rock (to make up the difference with total aggregate demand). Our marine supply assumption can be compared with that of The Crown Estate, which has previously assumed a potential demand for marine aggregates of 29Mt per annum by 2030. Note that in this scenario, whilst crushed rock supplies need to increase by about 2.7% per annum to meet baseline demand, a fall in material intensity combined with increases in marine sand & gravel would, by contrast, reduce the total tonnage that would actually be required.

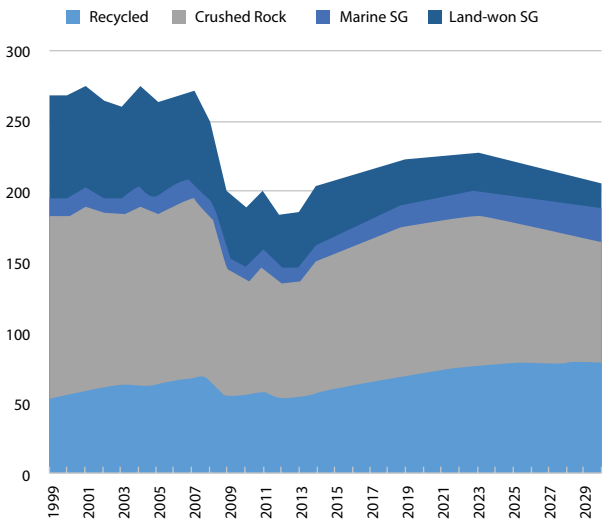
Result: Supply scenario 4

Baseline



(GB, Mt)	2015	2030
Land-won sand & gravel	46	21
Marine sand & gravel	12	24
Crushed Rock	104	146
Recycled & Secondary	64	75
Total	**226**	**267**

Low intensity



(GB, Mt)	2015	2030
Land-won sand & gravel	46	21
Marine sand & gravel	12	24
Crushed Rock	104	80
Recycled & Secondary	64	75
Total	**226**	**201**

Source: MPA.
Please note that totals may not add up due to individual rounding

CONCLUSION

This paper provides an insight into the future demand and supply for aggregates. It combines both analytical work on projections for future demand to 2030 together with an industry discussion on the potential supply mix for this demand and major market limitations.

Projections suggest that:

- By 2030, about 267Mt of aggregates might be needed each year to respond to construction needs.
- Even after projecting further reductions in material intensity to an unrealistic level, this would still mean a total demand for aggregates of 201Mt per annum, the majority of which (more than 60%) would still need to come from primary sources.
- This means that the industry faces a cumulative demand for aggregates of between 3.2 – 3.8 billion tonnes over the next 15 years.
- There are uncertainties around the mix of primary aggregate sources. Trends suggest that the contribution made by traditional land-won sand & gravel sources are likely to continue to decline, being replaced by a combination of marine sand & gravel and crushed rock substitution. Replenishment rates for sand & gravel will need to increase if the decline is to slow. This will rely upon the industry bringing forward more applications and the mineral planning system responding accordingly. Secondary and recycled sources of material are expected to continue to make a major contribution to supply.
- Whilst demand for aggregates will be determined ultimately by factors such as the rate and shape of economic growth, population changes and associated construction needs, there will also be a significant challenge for industry relating to future investment in operational and transport facilities, and skills and training.

The scenarios have been produced at GB level, based on national data and forecasts. These should provide a helpful indication of how aggregates demand and supplies are anticipated to change over the next 15 years. They should also provide a national overview and context for local planning, including in preparation of LAAs.

MPA will be considering the extent to which the methodology applied at the GB scale could be applied to a regional analysis.

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The Mineral Products Association is the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries.

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