



Lancashire

Minerals & Waste

Local Plan

Joint Lancashire Local Aggregate Assessment

October 2023

(with 2022 data)

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This document has been prepared jointly by Lancashire County Council, Blackpool Council and Blackburn with Darwen Borough Council.

Ratified by North West Aggregate Working Party October 2023.




Further details of the local plan, and to download this and other documents, please visit our website www.lancashire.gov.uk/mwdf. Or contact:

- Lancashire County Council, PO Box 100, County Hall, Preston, PR1 0LD
- Telephone: 01772 534294
- Email: lmwf@lancashire.gov.uk



Addendum

Amended December 2023 to correct an erroneous omission of reference to imports by rail in 5.3, and its erroneous inclusion of reference to imports in 4.3 .

Executive Summary									
	Sales (Mt)	Av (10yr) Sales ¹ (Mt)	Av (3yr) Sales (Mt)	Trend ²	LAA Rate ³ (Mt)	Permitted Reserves ⁴ (Mt)	Landbank (Yr) ⁵	Capacity (Mt/Yr) ⁶	Comments
Land won sand and gravel	0.029	0.37	0.14		0.37	4.46	12		Production capacity is significantly reduced. Runshaw, which represents most of the permitted reserves, has yet to start working.
Limestone	2.38	2.25	2.52		2.52	43.59	17.3		Number of quarries set to reduce during the forecast period.
Gritstone	1.04	1.04	1.03		1.04	71	71		Approximately 70% of the permitted reserve is held in Whitworth Quarry

¹ Average of 10 years sales data

² Change relative to previous years

³ The Av (10yr) Sales or Av (3yr) Sales used to inform the projections of demand. As set out in the NPPF, Av (10yr) Sales is the default, but consideration must be had to the Av (3yr) Sales, and other relevant local information including economic projections and growth aspirations within the Joint Plan area, and in neighbouring areas that constitute a market for aggregates produced in the Joint Plan area. The consideration of the other relevant local information used to come to this determination is set out in the body of this LAA.

⁴ Quantity of minerals with planning permission for extraction

⁵ Permitted reserve divided by LAA rate

⁶ A measure of the productive capacity of the permitted quarries (considering planning restrictions on vehicle movements or tonnages worked, and working methods/equipment used).

1. Introduction

The Joint Lancashire Minerals and Waste Plan covers the administrative areas of Lancashire County Council, Blackburn with Darwen Borough Council and Blackpool Council (the Joint Authorities). The Joint Plan consists of an adopted Core Strategy (2009) and an adopted Site Allocation and Development Management Policies Local Plan (2013).

This local aggregate assessment is prepared in response to section 13(1) of the Town and Country Planning (Local Plan) (England) Regulations 2012, and the National Planning Policy Framework (the NPPF). It accords with the guidance on local aggregate assessments contained in the National Planning Practice Guidance, and expanded upon by the Planning Officers Society/Minerals Products Association's Practice Guide. In accordance with section 17(6) of the Regulations it will inform the monitoring and review of the Minerals and Waste Local Plan.

This report contains information on the past 10 years data for aggregate sales, up to activity in 2022 (which is the most recent information available), provided through the work of the North West Aggregate Working Party. The information includes estimates by the Council, as several operators failed to complete monitoring returns (this estimate is based on the last recorded submission from the operator).

The Local Aggregate Assessment seeks to identify objectively assessed need, a requirement of the NPPF. The acceptability of meeting the objectively assessed need will be determined through the plan making process. The 10 year average of sales is presented alongside the North West Aggregate Working Party sub-regional apportionments, and the 3 year average of sales.

1.1 Making comments on the assessment

If you have any comments or information on the assessment please send them, with your name and address, to the address below:

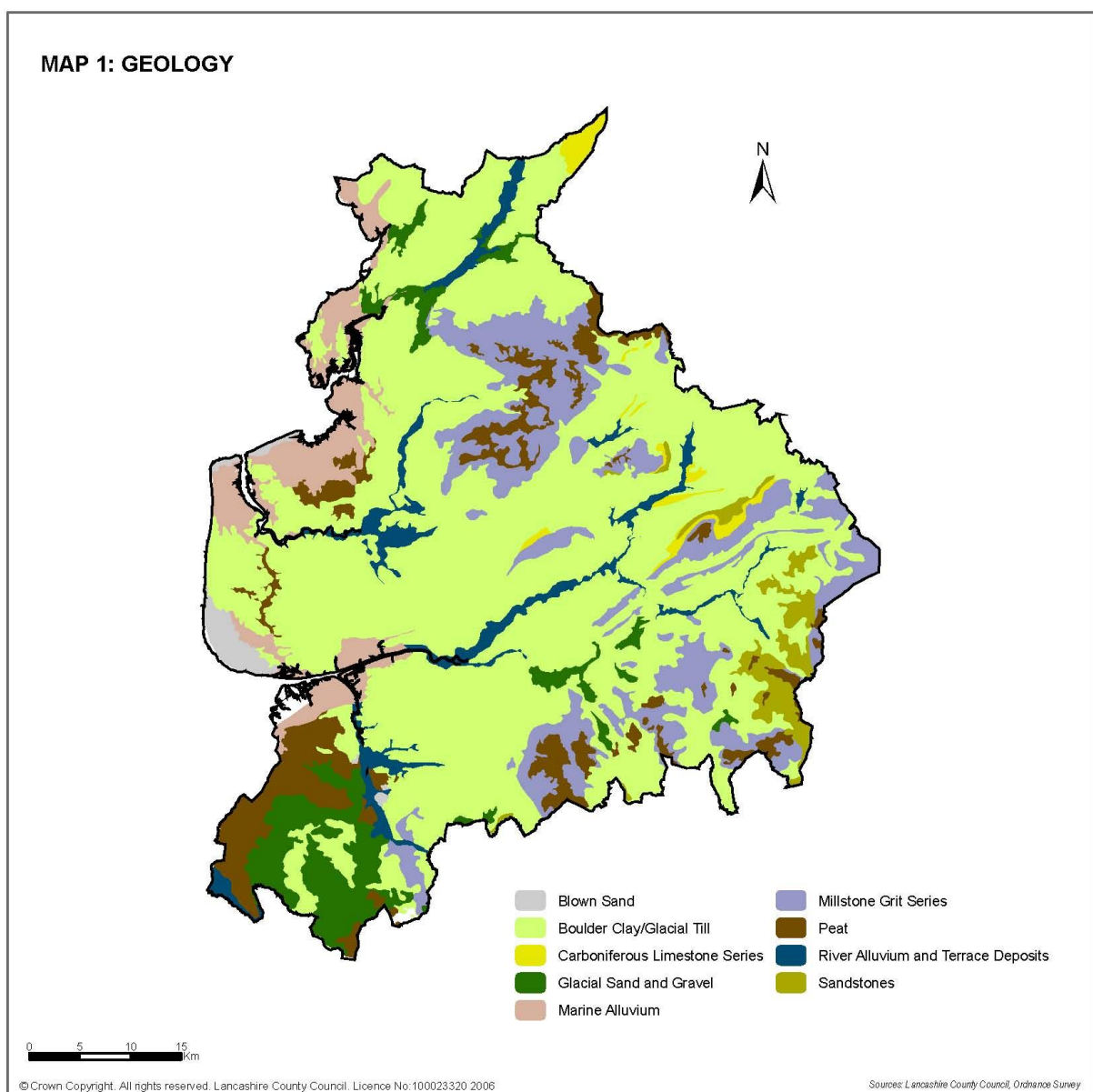
Planning Team
Lancashire County Council
PO Box 100
County Hall
PRESTON
PR1 0LD

- Or by email at: lmwf@lancashire.gov.uk

2. Lancashire's Geology

The surface geology of Lancashire, Blackpool and Blackburn with Darwen (the Plan area) is dominated by Triassic sandstones in the west and Carboniferous sandstones in the east, with small areas of limestone in the north, and significant areas of glacial till. It contains extensive mineral resources (natural concentrations of rocks that are, or may become, of potential interest for economic extraction). They are significant in the region given the extent of urbanisation in Merseyside and Manchester, and the limited availability of hard rock in the south of the North West, and limestone throughout the North West.

The minerals are described below, together with their uses. Permitted minerals sites are described in Appendix 1.



Sand and Gravel

In the Plan area, sand and gravel for aggregate use has usually been obtained from two distinct types of deposit: glacial sands and fluvial/fluvioglacial sand and gravel.

Glacial deposits occur in lowland areas and are often covered with a variable thickness of clay. The variability of these parameters makes glacial deposits difficult to locate, access and work. They yield soft building sands, asphalt sands and fine concrete sands after processing.

Fluvial and fluvioglacial deposits are associated with major rivers or former glacial drainage channels respectively. They yield high quality sand but variable quality gravel.

Beach sand is also a resource that can be worked for concrete and construction sands.

Limestone

Carboniferous limestone outcrops suitable for extraction are limited in the area, with quarrying operations confined to two locations in the north; a compact area east of Carnforth, and a complex of quarries east of Clitheroe. The limestone extracted is used as aggregate, though two quarries also provide feedstock for the cement works in Clitheroe.

Gritstone

The gritstone worked in the Plan area occurs in carboniferous rocks of either the Millstone Grit Series, or the Lower Coal Measures, comprising alternate beds of mudstone, shales and gritstones. They occur over a wide area mainly in east Lancashire.

Gritstone is extracted for use as both aggregates and dimension stone; output comprises mostly dry road stone and construction fill. Production in the area has historically shown considerable fluctuation.

Whether a rock is used for building stone depends on a number of factors or technical considerations such as the thickness of the gritstone deposit, the extent of the folding and faulting, and the aesthetic or technical qualities of the mineral. Building stone is used in various applications: to maintain vernacular styles in new buildings, architectural cladding, and the restoration of old buildings.

Shale

Shales are extracted in the area in conjunction with landfill operations for engineering works, as waste products from other quarrying activities, or in dedicated quarries, and are used as low-grade constructional fill.

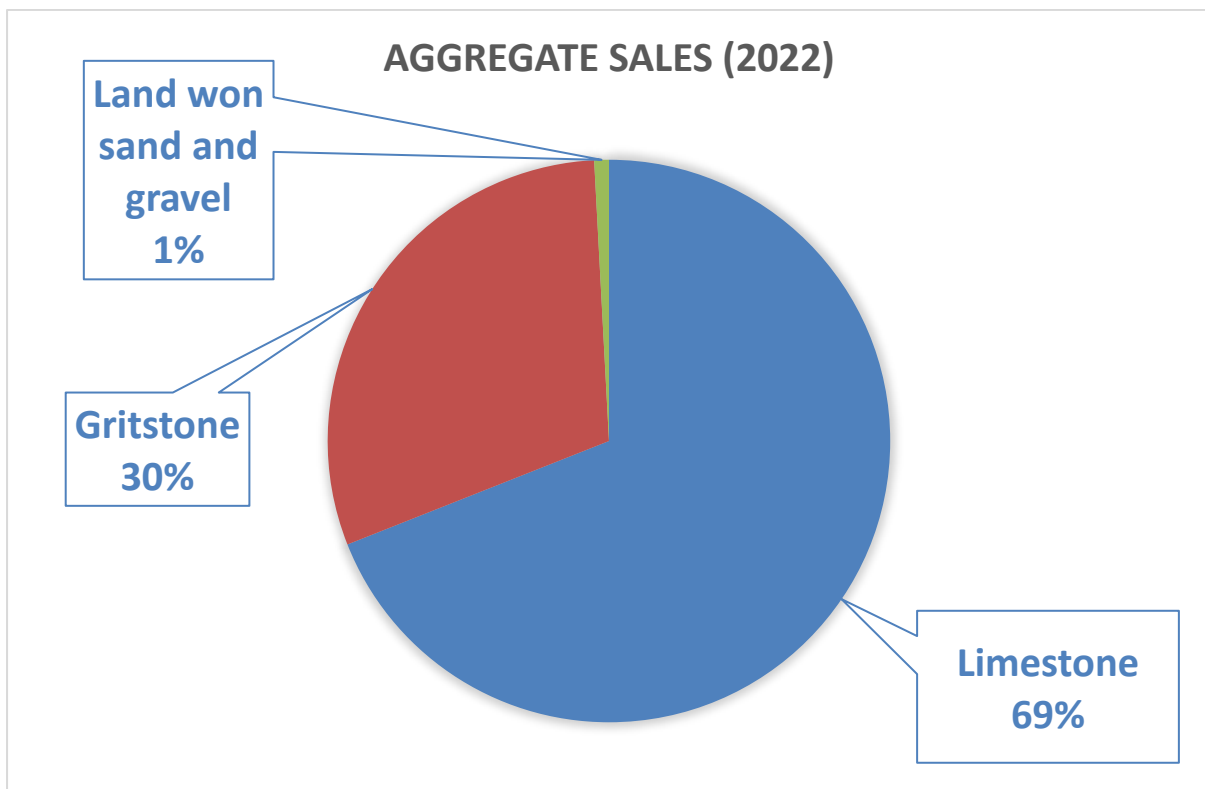
3. Sales of Aggregates

This document sets out information on the sales of aggregates, as well as assumptions on future demand, to inform the monitoring and review of the Local Plan, as part of the Managed Aggregate Supply System. It sets out methods of:

- Identifying forecast demand
- Assessing the adequacy of supply
- Assessing the supply options
- Meeting the forecast demand

This is broken down by mineral type:

- Sand and gravel
- Limestone
- Gritstone (Gritstone)



Because of the significant differences in the physical characteristics and use of limestone and gritstone, and the different characteristics of the landbanks, it is considered appropriate that they should continue to be treated separately rather than as a combined crushed rock landbank.

The average of 10 years sales data is presented alongside the average of 3 years sales data; the NWAWP Sub-regional apportionment (2011) is also presented. These should be considered alongside the economic trends and projections.

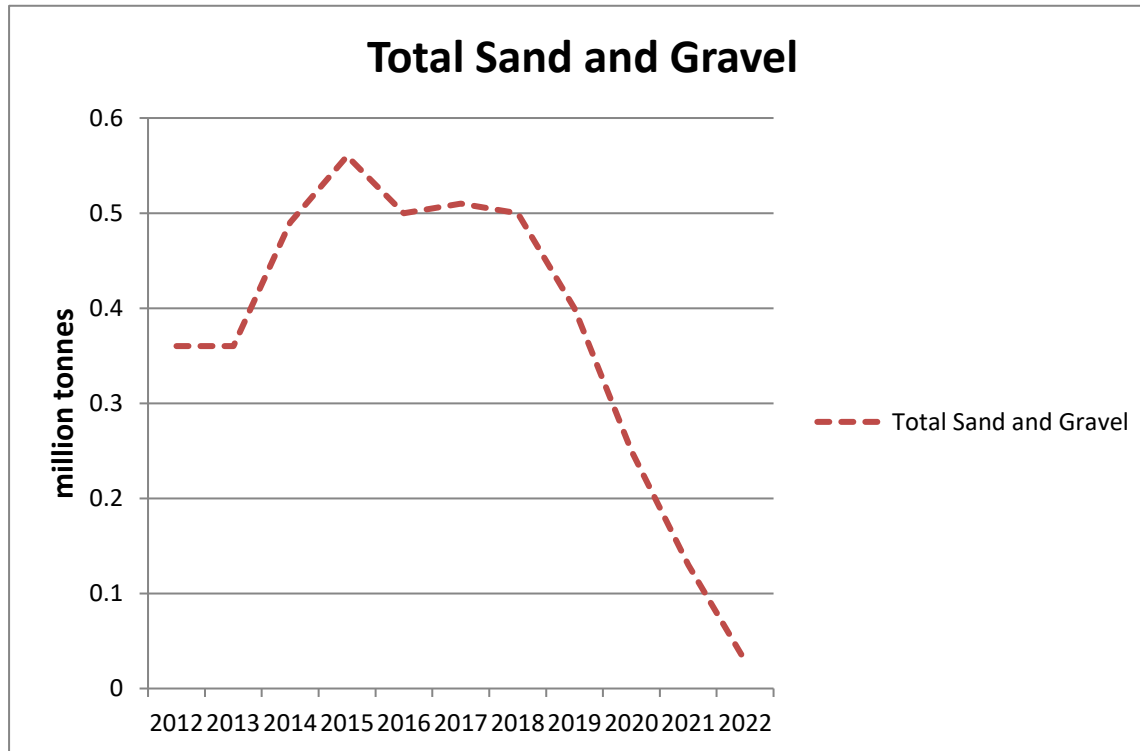
The forecast of demand is made over a 15 year period.

Information is used from the North West Aggregate Working Party monitoring survey returns (2022 sales data); this is the most recent source of information on aggregate reserves and sales.

This version of the Local Aggregate Assessment replaces any previous versions.

4. Sand and Gravel

4.1 Assessment of Demand for Sand and Gravel



Total sales are presented in the figure to the left. Due to the confidentiality requirement associated with the low number of sites 2022 is entirely estimated.

The 10 year average of sales of land won sand and gravel is 0.37 million tonnes per year.

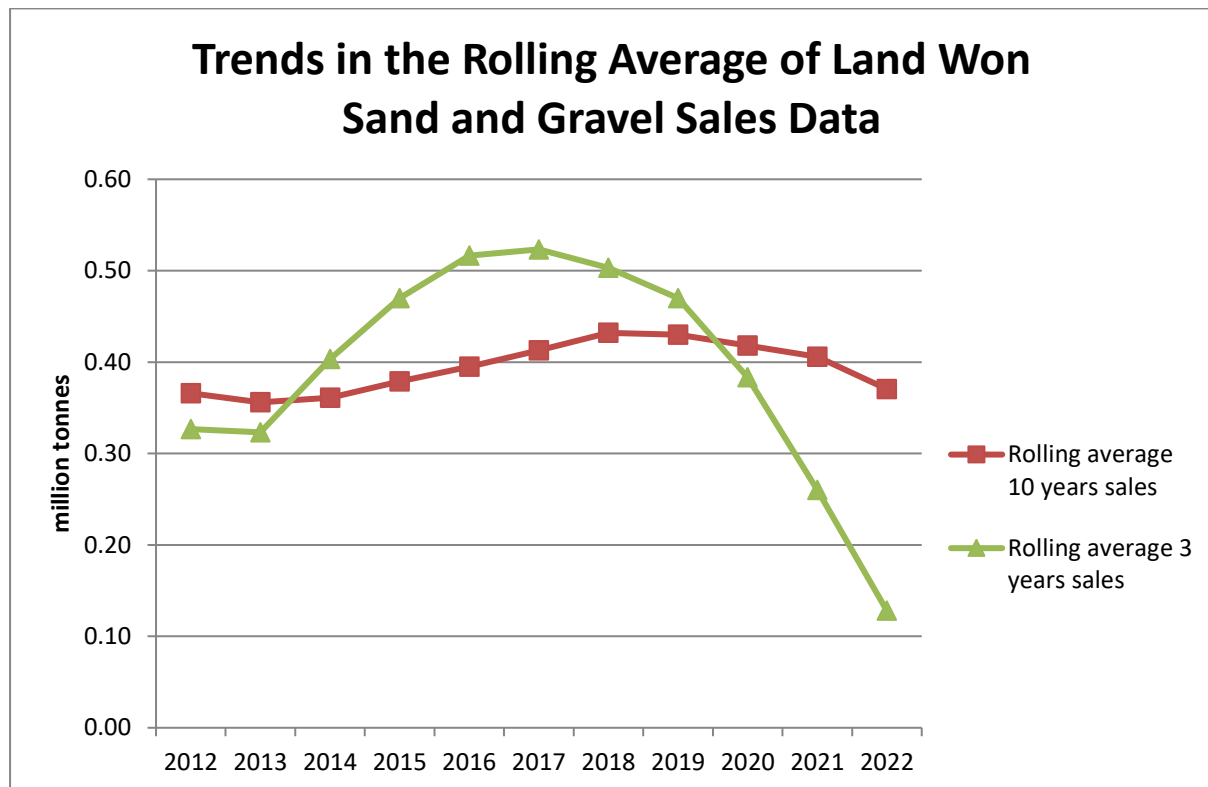
The 3 year average of sales of land won sand and gravel is 0.14mt, a big reduction on last year.

It can be seen that sales have reduced considerably; this corresponds to the closure/working out of Lower Brockholes (2015), St Annes Foreshore (2019), Clayton Hall (2019), Sandons Farm (2021), Sharples (2022). Production capacity is therefore significantly reduced.

Sales (mt)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Sand and Gravel	0.25	0.37	0.36	0.49	0.56	0.5	0.51	0.5	0.4	0.25	0.13	0.029

Due to a lack of information in operator returns this cannot be broken down into the different types of sand and gravel aggregates.



Forecasts of demand, projected over a 15 year period, are presented in the table below: these projections are based on the average of 3 years and 10 years sales data for land won sand and gravel, the Core Strategy apportionment, and the forecast demand set out in the National and Sub-National Guidelines (2005-2020), which were converted into an apportionment by the North West Regional Aggregate Working Party in 2011.

In addition, other relevant local information is considered at appendix 2 and 3. These indicate that economic activity can be expected to increase during the forecast demand period, though this is subject to significant uncertainty. This shows there is a moderate to high correlation between past housing completions, and total aggregate sales; as a result, future housing projections are also used to infer an indication of future demand for aggregates.

There are some gritstone quarries that produce fines as a by-product of their crushing and screening operations. Whilst they replace sand and gravel in some markets, they do not come from a defined supply or have a continuous historic record and so will not be considered in the supply landbank calculations.

Given the the low sales figures resulting from the recent closure of a number of quarries the 3 year average should not be used to calculate the LAA rate for the time being, to avoid these supply reductions affecting the demand forecast.

Land won sand and gravel (mt)	Basis for forecast demand	Forecast demand (over 15 year demand period)
Average of 10 years land won sales data (2021)	0.37	5.6
Average of 3 years sales data (2021)	0.14	2
Core Strategy Apportionment (2006)	0.5	7.5
NWRAWP Sub Regional Apportionment (2011)	0.44	6.6
Housing Delivery/Forecast Inferred Demand using Local Plan Forecast (2021)	0.57	8.6

These projections will be considered further in section 4.4, within the context of supply options.

4.2 Assessing the adequacy of sand and gravel supply

In 2022 there were approximately 4.46 million tonnes⁷ of sand and gravel reserves with planning permission. These permitted reserves are held in 4 quarries, though in 2022 German Lane was inactive and Runshaw had not started extraction⁸, although its permission has been implemented.

Based on the 10 year average of sales at 2022 the permitted reserves of 4.46mt are expected to last 12 years, and the landbank of at least 7 years is expected to begin to be eroded in 2026. However, in order to ensure the continued steady and adequate supply of aggregate to market we must also consider the permitted quarries' ability to meet the forecast annualised demand. The figure below describes when the current planning permissions expire.

By the end of 2022 a majority of the permitted reserve was held in one quarry (Runshaw Quarry) that was not yet extracting.



⁷ The number of quarries has now fallen to 3 and as such commercial confidence around reserve figures is at risk. However, all 3 have publicly available reserve figures contained in planning application information. This is the figure that is quoted. The figure does not include German Lane's reserves, which if included would not increase the number sufficient to significantly undermine its current application.

⁸ This continues to be the case in June 2023

⁹ Inactive

¹⁰ Inactive

4.3 Assessment of supply options

This chapter will present information on the alternative supply options available to meet the forecast demand identified in the previous chapter.

Other aggregates

Shale may be used to replace sand and gravel in some applications such as fill. There is some scope for substitution in concreting applications from washed crushed sandstone. These alternatives are also available in different locations separate from the main sand and gravel producing areas within the Plan area. They represent a moderate contribution to supply, notwithstanding the potential limitations on their uses.

Recycled Aggregates

Recycled aggregate sales are not recorded through the AWP or CLG monitoring process. Consequently it falls outside of the forecast demand calculated in the previous chapter. A number of planning applications have been granted for inert waste washing plant producing, amongst other things, sand for use in ready made concrete. Nationally it is estimated that around 29% of total aggregate use is met through recycled and secondary aggregates (MPA, 2019). It is assumed that inert construction and demolition waste will continue to be produced, and will continue to be recycled – at least at the existing levels – throughout the plan period.

Because of this, and the current uncertainties around the quantities of inert waste and recycled aggregate produced, we are not proposing to amend the forecast demand, either up or down, to reflect the contribution that recycled aggregates could make; we are assuming that the currently unrecorded contribution they make will continue to be made through the plan period; this will be reflected by, but not included in, the forecast demand.

Secondary Aggregates

There is minimal secondary aggregate production in the plan area, and it is not considered to be a significant option for contributing towards meeting the forecast demand for aggregates.

Marine Dredged Sand and Gravel

Landings of marine dredged sand and gravel in the plan area ceased in 2008. There is no indication that this will start again. Currently demand is being met by land based sources and where required via imports from landing points in neighbouring authorities and it is expected that this will continue for the duration of this plan period. There is existing consented marine aggregate reserve within the Northwest region to supply volumes in excess of historic landing levels for the Lancashire market. Additional marine aggregate reserves are likely to be developed in the

region to allow further capacity to supply via forthcoming tender rounds operated by The Crown Estate.

Imports and Exports

Aggregate movements in 2019¹¹ (the most recently available information on movements) are described in the figure and table below. In 2014 the Plan area was a net exporter of sand and gravel, as it was in 2009.

	Sand and Gravel (000 t)	Marine sand and gravel (000 t)	Total sand and gravel (000 t)
Total sales	390	0	390
Exports to rest of NW	0		0
- as % of sales	0		
Exports to unknown			
- as % of sales			
Imports	233	15	248
- as % of sales	60		63
Net imports			248

It can be seen that the plan area was a net importer during 2019. This change on previous surveys is likely a response to the reduction in the number of quarries in the plan area, as imports from neighbouring areas have replaced extraction within the plan area; they mainly come from Salford, with much smaller quantities coming from Liverpool, Cumbria, Cheshire, and further afield.

If the quarries providing for this supply were to cease production it could result in an increase in demand in the Plan area, and thus is likely to affect the rate of consumption of permitted reserves at the quarries identified above.

Current exports are included in the forecast of demand; current imports will be reflected in neighbouring mineral planning authorities' sales data. Should the industry be unable to maintain these outputs then these assumptions, and the forecast demand, may need to be revisited.

This matter will be addressed through the duty to cooperate and local plan making, should neighbouring authorities, or those from wider afield, have a quantified shortfall in supply.

¹¹ BGS/CLG. Collation of the Results of the 2019 Aggregate Minerals Survey for England and Wales. 2020

4.4 Meeting forecast demand for sand and gravel

The forecast demand and the permitted reserves are compared in the tables below, presenting information over a 15 year time horizon, for a variety of scenarios.

This indicates there is insufficient minerals available through the supply options identified above to meet estimated need during a 15 year time horizon for any of the scenarios. It is also apparent that the landbank will be reduced to below that prescribed as a minimum by national policy towards the end of the demand period for all scenarios.

Forecast demand period of 15 years (2021-2036)	Sub-regional forecast (mt)	10 year average land won sales forecast (mt)	3 year average land won sales forecast (mt)	Housing Delivery-Forecast Inferred Demand using local plan forecast (mt)
Demand	0.44	0.37	0.14	0.57

Forecast demand	6.6	5.6	2	8.6
Permitted reserves	4.46	4.46	4.46	4.46
Shortfall in supply	-2.1	-1.1		-4.1
Surplus in supply	-	-	2.4	-
Surplus in supply represents a landbank of x years	-	-	17.7	-

- In addition to the 10 year and 3 year average of sales, any other relevant local information should be considered; this is discussed further in Appendix 2 and 3.
 - The housing delivery forecasts fulfil this function.
- Historically we are estimated to be a slight net importer and the scenarios above should be viewed in that context; however, the sales figures have dropped significantly with the closure of a number of quarries, and the AM2019 survey shows a higher level of imports, possibly in response to this.
- There is also a need to consider the permitted reserves ability to meet the forecast demand.
 - As can be seen from the figure in section 4.2 the number of quarries has reduced considerably. This has affected the sales figures and so is

likely to have affected the availability of supplies to local markets. Because of this, recent sales alone are not sufficient to indicate demand - given the significant reduction in the rolling average of 3 year sales, the 3 year average should not be used for the time being to avoid these supply reductions affecting the demand forecast by locking in a declining trend to the projections of demand.

- Whilst there is no suggestion that Runshaw Quarry will not be brought into operation, there is a risk associated with the reliance on the output of one quarry in meeting forecast demand, both due to the lack of spatial distribution through the area, and the limit on output imposed by the planning permission constraining supply and affecting prices.

Conclusion

This assessment of the balance between supply and demand, together with a consideration of the economic circumstances, indicates that there is a projected shortfall, both in capacity and supply.

At this stage, it is prudent to address these through the review of the Minerals and Waste Local Plan.

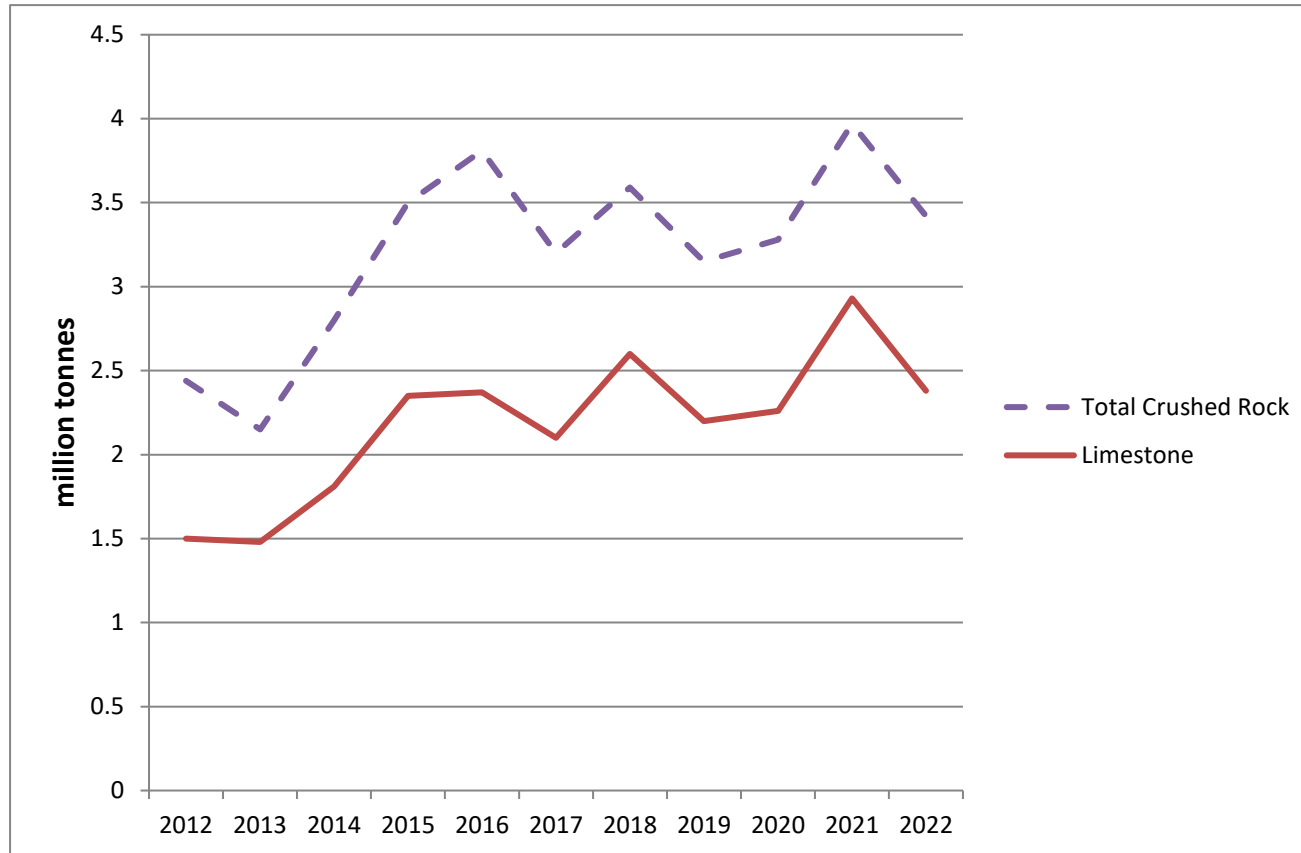
This review could consider a range of figures to inform objectively assessed need based around the 10 year average of sales, and the Housing Delivery-Forecast Inferred Demand. This will ensure that the projections are forward looking, and so do not lock in past trends arising from the recession, but also more recently the increased imports arising from the working out of some quarries and the closure of others. Given the uncertainties described above any policy should be drafted to provide for flexibility, and should be drafted so as to ensure consideration of the up to date information presented in the most recent LAA at the time of considering any development proposal.

Given the closure of a number of quarries, and the consistent recent decreases in sales and the average of 3 year sales data, the LAA provision rate - to be used when estimating the landbank of permitted reserves - is the 10 year average.

An assessment of the environmental constraints, and its capacity to accommodate this demand, will be carried out as part of the environmental assessment of the Local Plan review.

5. Crushed Rock - Limestone

5.1 Assessment of Demand for Limestone



Total sales (see figure left) remain relatively stable, at around pre-recession levels.

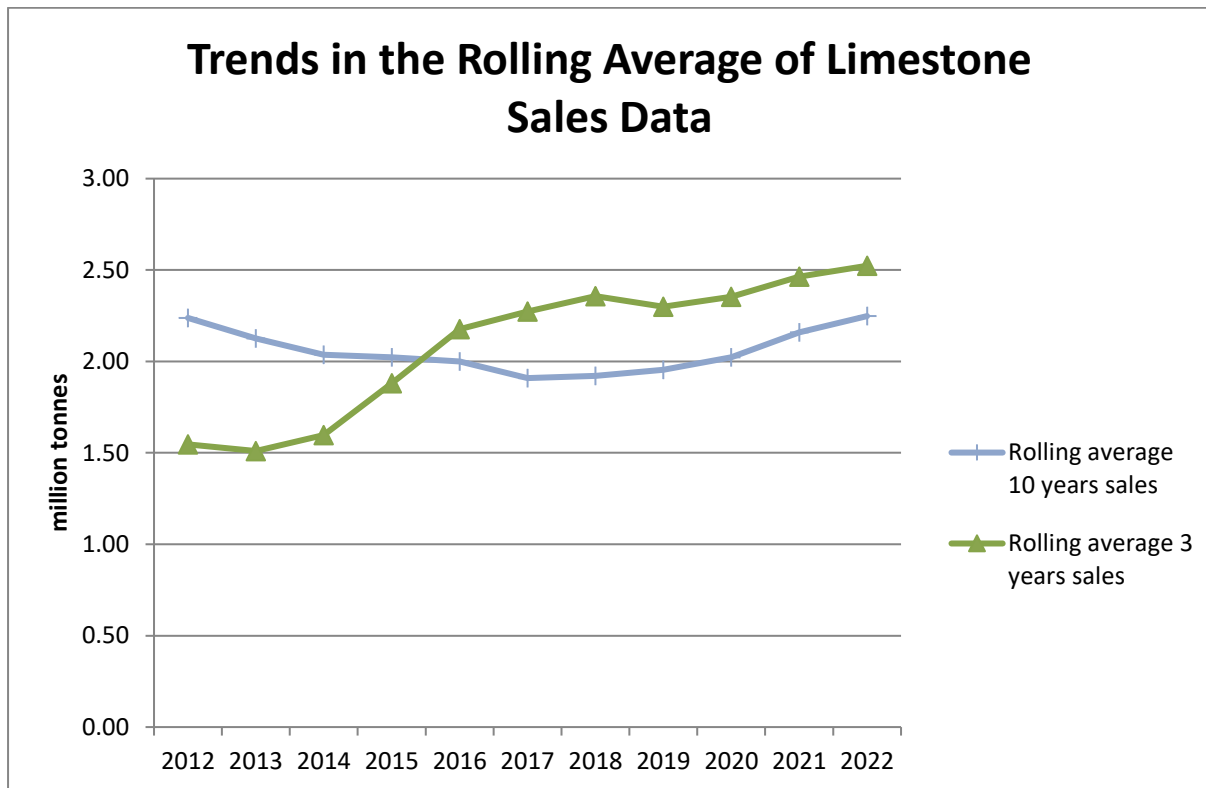
The rolling 10 year average of sales was 2.25 million tonnes (mt).

The 3 year average was 2.52mt.

Sales (mt)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Limestone	1.59	1.55	1.50	1.48	1.81	2.35	2.37	2.10	2.60	2.20	2.26	2.93	2.38
Total Crushed Rock	2.22	2.41	2.44	2.15	2.80	3.50	3.81	3.20	3.59	3.15	3.28	3.97	3.42

As can be seen in the figure below, both the 10 year average of sales, and the 3 year average, continues to rise slowly. This may indicate a more stable economic environment.



Forecasts of demand, based on the figures described above projected over a 15 year period, are presented in the table below: the average of 3 years and 10 years sales data for limestone is presented, alongside the Core Strategy apportionment, and the forecast demand set out in the National and Sub National Guidelines (2001-2016) which were converted into an apportionment by the North West Regional Aggregate Working Party in 2011.

In addition, other relevant local information is considered at appendix 2 and 3. These indicate that economic activity can be expected to increase during the forecast demand period, though this is subject to significant uncertainty. This shows there is a moderate to high correlation between past housing completions, and total aggregate sales; as a result, future housing projections are also used to infer an indication of future demand for aggregates.

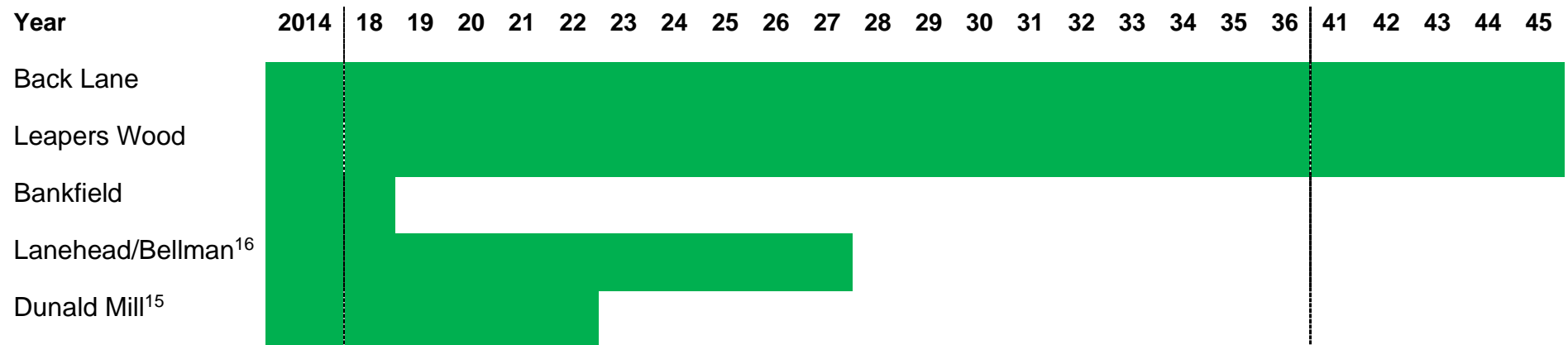
Limestone (mt)	Basis for forecast demand	Forecast demand (over 15 year demand period)
Average of 10 years land won sales data (2021)	2.25	33.7
Average of 3 years sales data (2021)	3.09	37.9
Core Strategy Apportionment (2006)	2.75	41.25
NWRAWP Sub Regional Apportionment (2011)	2.54	38.1
Housing Delivery/Forecast Inferred Demand using Local Plan Forecast (2021)	3	45

These projections will be considered further in section 5.4, within the context of supply options.

5.2 Assessing the adequacy of limestone supply

In 2022 there were 43.59¹² million tonnes of limestone reserves with planning permission. These permitted reserves are held in 4¹⁶ quarries. Based on the 10 year average of sales the permitted reserves represents a landbank of 19 years, and the landbank of at least 10 years is expected to begin to be eroded in 2031 (17 years if using the 3 year average, bringing this down to 2029).

However, in order to ensure the continued steady and adequate provision of aggregate to market we must also consider the permitted quarries' ability to meet the forecast annualised demand. The figure below describes when the current planning permissions expire. Dunald Mill continues to be mothballed¹³. The number of quarries currently permitted will reduce in 2019¹⁴, 2023¹⁵, and 2028. It is possible that a number of these will not be worked out before the expiry of their permission. If this is the case, in the event that their permitted life is not extended the permitted reserve and landbank will need to be revised. In addition it is estimated that Leapers Wood quarry is likely to be worked out before the end of its planning permission.



¹² Change more than would be expected due to a reassessment at one site

¹³ Correct at June 2022

¹⁴ Planning application 2018/0060 to vary the end date to 2033 was approved subject to the signing of a s106 agreement at June 2023

¹⁵ An application (2021/0058) has been submitted to extend the end date to 2034

¹⁶ Primarily cement raw materials but some material sold as aggregate if unsuitable for cement manufacture. No reserve figure provided as the whole of the reserve is now deemed potentially suitable for cement

5.3 Analysis of supply options

This chapter will present information on the supply options available to meet the forecast demand identified in the previous chapter.

Other aggregates

Shale, gritstone and sand and gravel may be used to replace limestone in some applications such as construction fill. There are limited opportunities for substitution for its use as an aggregate in roadstone and concrete. As such their contribution is not significant.

Recycled Aggregates

Recycled aggregate sales are not recorded through the AWP or CLG monitoring process. Consequently it falls outside of the forecast demand calculated in the previous chapter. Nationally it is estimated that around 29% of total aggregate use is met through recycled and secondary aggregates (MPA, 2019). It is assumed that inert construction and demolition waste will continue to be produced, and will continue to be recycled – at least at the existing levels – throughout the plan period.

Because of this, and the current uncertainties around the quantities of inert waste and recycled aggregate produced, we are not proposing to amend the forecast demand, either up or down, to reflect the contribution that recycled aggregates could make; we are assuming that the currently unrecorded contribution they make will continue to be made through the plan period.

Secondary Aggregates

There is minimal secondary aggregate production in the plan area, and it is not considered to be a significant option for contributing towards meeting the forecast demand.

Imports and Exports

Aggregate movements for crushed rock in 2019 (the most recently available information on movements) are described in the figure and table below. Information is not available for the split between limestone and gritstone. In 2014 the Plan area was a net importer of crushed rock, in 2009 it was a net exporter.

	Crushed rock ('000 t)
Total sales	3173
Exports to rest of NW	1154
- as % of sales	36
Exports to other	23
- as % of sales	1
Imports	1545
- as % of sales	48
Net imports	368

Derbyshire and the Peak District National Park accounts for approximately 20% of these, with Cumbria and the Yorkshire Dales National Park making up approximately 10% each. The rest comes from the wider East Midlands, Wales, and the North East. More recently some limestone aggregate has begun to be imported by rail to Lancashire Business Park from Derbyshire and Yorkshire.

It is assumed that the movements identified above will continue. However, if particular quarries in neighbouring authorities were to cease production it could have an impact on the market in the Plan area, and affect the rate of consumption of permitted reserves at particular quarries. This is particularly relevant when considering national NPPF policy, and local aspirations, to limit mineral working in national parks, and the effect this could have on supply when extant planning permissions in the Lake District, Derbyshire and the Peak District National Park and Yorkshire Dales reach the end of their operational or conditioned life span. 2042 in particular is a date many planning permissions will cease and there can be a relatively high degree of certainty that supply will be affected both in the Plan area and its current market area (this could include changes to the extent of the market area if businesses in areas such as West Yorkshire, which currently source a large proportion of the aggregates used from the Yorkshire Dales National Park, find the quarries in Lancashire to be an economic alternative market).

Current exports are included in the forecast of demand; current imports will be reflected in neighbouring mineral planning authorities' average of 10 years sales

data. Should the industry be unable to maintain these outputs then these assumptions, and the forecast demand, may need to be revisited.

This matter will be addressed through the duty to cooperate and local plan making, should neighbouring authorities, or those from wider afield, have a quantified shortfall in supply.

5.4 Meeting forecast demand for limestone

The forecast demand and the permitted reserves are compared in the tables below. This indicates there are sufficient minerals available through most of the supply options identified above to meet estimated need during a 15 year time horizon.

It is apparent that the landbank will be reduced to below that prescribed by national policy towards the end of the monitoring period under most of the scenarios.

Forecast demand period of 15 years (2021-2036)	Sub-regional forecast (mt)	10 year average sales forecast (mt)	3 year average sales forecast (mt)	Housing Delivery-Forecast Inferred Demand using local plan forecast (mt)
Demand	2.54	2.25	2.52	3

Forecast demand	38.1	33.7	37.9	45
Permitted reserves	45.39	45.39	45.39	45.39
Shortfall in supply during forecast demand period	-	-	-	-1.4
Surplus in supply during forecast demand period	5.5	9.9	5.7	
Surplus represents a landbank of X years	2.2	4.4	2.3	-

- In addition to the 10 year and 3 year average, any other relevant local information should be considered; this is discussed further in Appendix 2 and 3.
 - The housing delivery forecasts fulfil this function.
- Exports of crushed rock are estimated to represent approximately 37% of sales. Imports are estimated to represent approximately 46% of sales. We are estimated to be a net importer and the scenarios above should be viewed in that context.
- There is also a need to consider the permitted reserves ability to meet the forecast demand.
 - As can be seen from the figure in section 4.1 the number of quarries reduces during the monitoring period. This is likely to affect the rate at which the remaining quarries are worked out, to affect the availability of aggregates should the remaining quarries be unable to increase production to compensate, and to affect the availability of supplies to local markets.
 - It is also apparent that the landbank period will be reduced to below that prescribed by national policy towards the end of the monitoring period for all of the scenarios during the 15 year period. If Leapers Wood quarry is exhausted sooner (as is suggested in anecdotal reports of increased sales, beginning to be reflected in the monitoring data) then this is likely to bring this forwards.

Conclusion

This assessment of the balance between supply and demand, together with a consideration of the economic and local circumstances, indicates that there is potential for a shortfall towards the end of the forecast demand period.

There are also significant movements of crushed rock both ways across the plan areas boundary; the balance represents a slight net import (though this is based on figures collected every 4 years, lastly in 2019). These movements are likely to be influenced by economic activity and growth projections set out in those areas; and at this time this has not been incorporated into the above assessment. If growth in these areas is above that forecast in the plan areas district housing projections then the correlation between aggregate sales and housing completions may be affected, and the forecast demand may be an underestimate.

Likewise if imports are constrained by a reduced supply in neighbouring areas this may affect demand within the plan area.

These will be monitored and attempts will be made to quantify them through the duty to cooperate and the operation of the North West Aggregate Working Party.

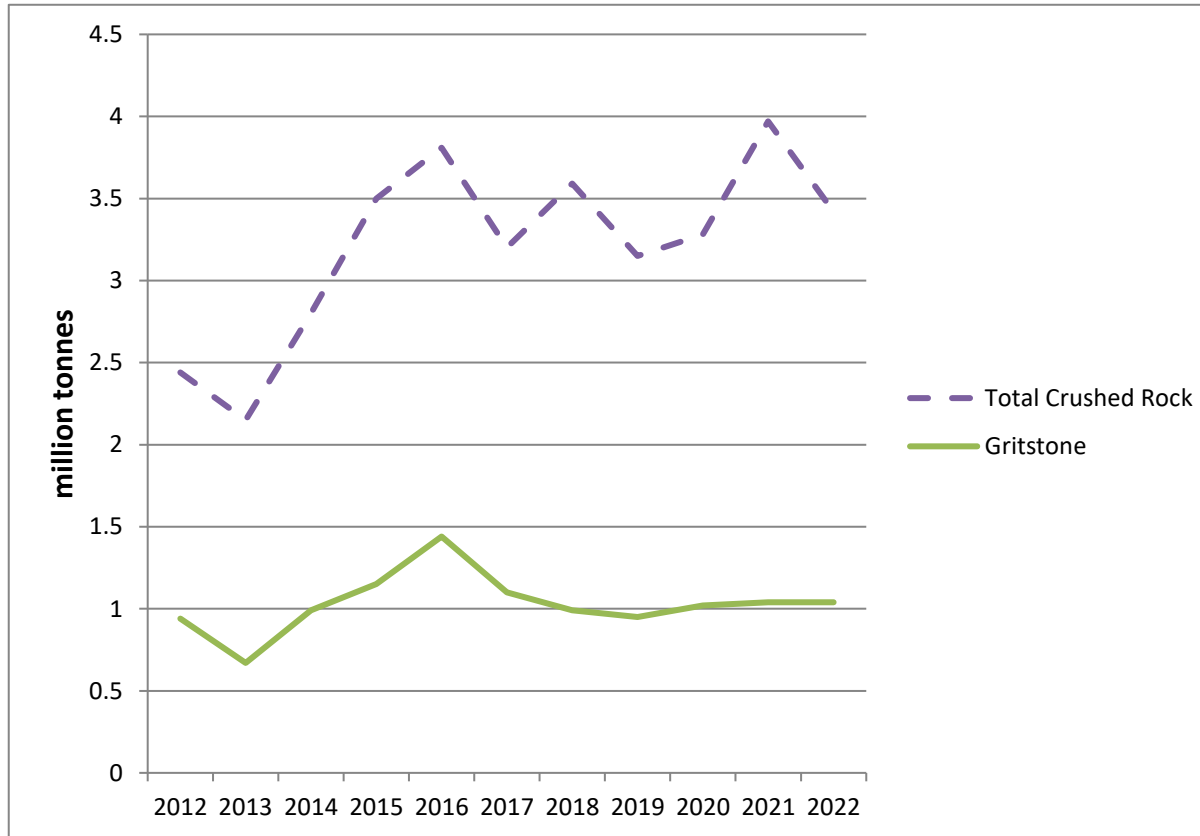
At this stage, given the relatively long term nature of the potential supply issue, it is prudent to address these through the review of the Minerals and Waste Local Plan.

This review could consider a range of figures to inform objectively assessed need (based around the 10 year average of sales, and the Housing Delivery-Forecast Inferred Demand). Given the uncertainties described above any policy should be drafted to provide for flexibility, and should be drafted so as to ensure consideration of the up to date information presented in the most recent LAA at the time of considering any development proposal.

Given the consistent recent increases in sales and the average of 3 year sales data, and the predicted demand for materials arising from the Plan areas growth aspirations (both in housing, road building and economic development) the LAA provision rate, to be used when estimating the landbank of permitted reserves, is the 3 year average.

6. Crushed Rock - Gritstone

6.1 Assessment of Demand for Gritstone



Sales (see figure left) have fluctuated during the monitoring period but remain relatively stable over the past few years.

The 10 year average of sales is 1.04mt.

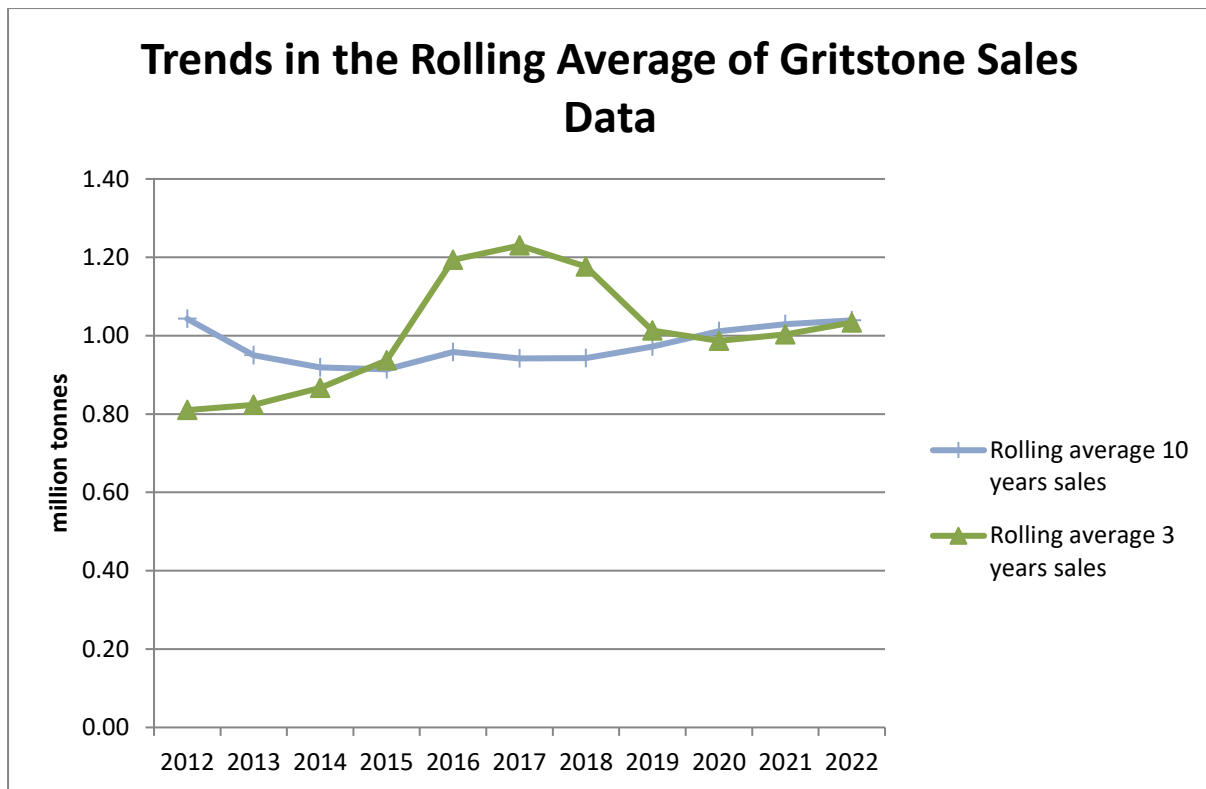
The 3 year average is similar, at 1.03mt.

These figures include the sales of gritstone fines from building stone quarries.

Sales (mt)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Gritstone	0.63	0.86	0.94	0.67	0.99	1.15	1.44	1.10	0.99	0.95	1.02	1.04	1.04
Total Crushed Rock	2.22	2.41	2.44	2.15	2.80	3.50	3.81	3.20	3.59	3.15	3.28	3.97	3.42

The trends in sales may indicate a more stable economic environment.



Forecasts of demand, based on the figures described above projected over a 15 year period, are presented in the table below: the average of 3 years and 10 years sales data for gritstone is presented, alongside the Core Strategy apportionment, and the forecast demand set out in the National and Sub National Guidelines (2001-2016) which were converted into an apportionment by the North West Regional Aggregate Working Party in 2011.

In addition, other relevant local information is considered at appendix 2, and 3. These indicate that economic activity can be expected to increase during the forecast demand period, though this is subject to significant uncertainty. This shows there is a moderate to high correlation between past housing completions, and total aggregate sales; as a result, future housing projections are also used to infer an indication of future demand for aggregates.

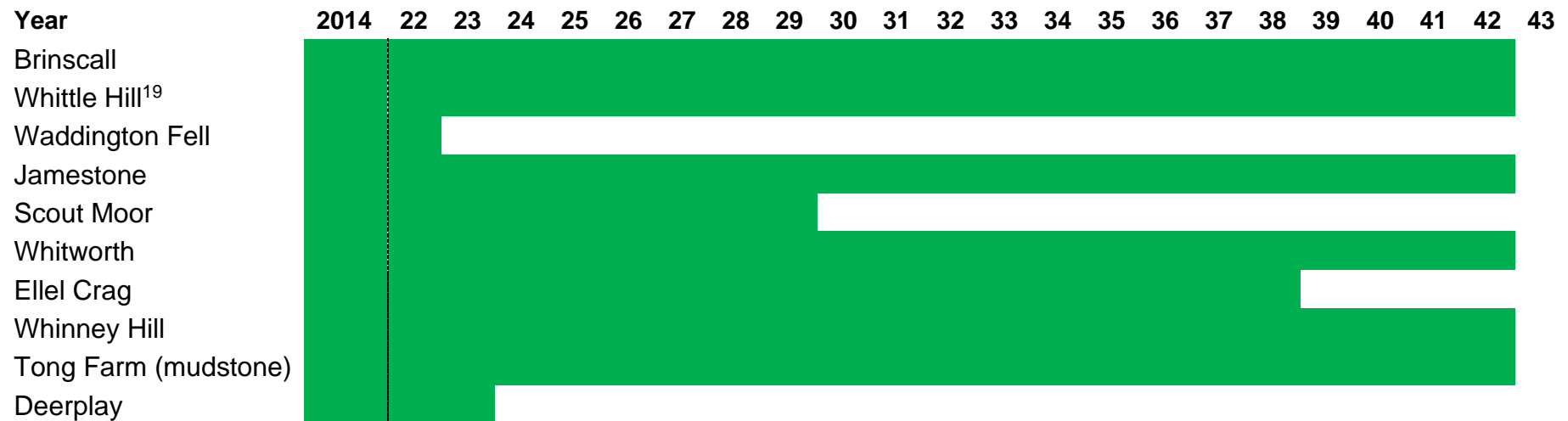
Gritstone (mt)	Basis for forecast demand	Forecast demand (over 15 year demand period)
Average of 10 years land won sales data (2021)	1.04	15.6
Average of 3 years sales data (2021)	1.03	15.5
Core Strategy Apportionment (2006)	1.81	27.2
NWRAWP Sub Regional Apportionment (2011)	1.69	25.4
Housing Delivery/Forecast Inferred Demand using Local Plan Forecast (2021)	1.43	21.5

These projections will be considered further in section 6.4, within the context of supply options.

6.2 Assessing the adequacy of gritstone supply

In 2022 there were 74.22¹⁷ million tonnes of gritstone reserves with planning permission. Based on the 10 year average of sales these permitted reserves are expected to last 71 years, and the landbank of at least 10 years is expected to begin to be eroded in 2083 (76 years if using the 3 year average, bringing this down to 2078).

However, in order to ensure the continued steady and adequate provision of aggregate to market we must also consider the permitted quarries' ability to meet the forecast annualised demand. The figure below describes when the current planning permissions expire. At 2010 a large proportion of the permitted reserve (52mt, representing approximately 70% of the permitted reserves) were held in Whitworth Quarry¹⁸ (the most recent publicly available information on Whitworth Quarry's permitted reserves).



¹⁷ Increased due to planning permission (LCC/2021/0041) for extension at Ellel Crag Quarry

¹⁸ the most recent publicly available information on Whitworth Quarry's permitted reserves

¹⁹ Inactive

6.3 Analysis of supply options

This chapter will present information on the supply options available to meet the forecast demand identified in the previous chapter.

Other aggregates

Shale may be used to replace gritstone aggregates in some construction fill applications.

Recycled Aggregates

Recycled aggregate sales are not recorded through the AWP or CLG monitoring process. Consequently it falls outside of the forecast demand calculated in the previous chapter. Nationally it is estimated that around 29% of total aggregate use is met through recycled and secondary aggregates (MPA, 2019). It is assumed that inert construction and demolition waste will continue to be produced, and will continue to be recycled – at least at the existing levels – throughout the plan period.

Because of this, and the current uncertainties around the quantities of inert waste and recycled aggregate produced, we are not proposing to amend the forecast demand, either up or down, to reflect the contribution that recycled aggregates could make; we are assuming that the currently unrecorded contribution they make will continue to be made through the plan period.

Secondary Aggregates

There is minimal secondary aggregate production in the plan area, and it is not considered to be a significant option for contributing towards meeting the forecast demand.

Imports and Exports

Aggregate movements for crushed rock in 2019 (the most recently available information on movements) are described in the figure and table below. Information is not available for the split between limestone and gritstone. In 2014 the Plan area was a net importer of crushed rock (in 2009 it was a net exporter).

	Crushed rock (‘000 t)
Total sales	3173
Exports to rest of NW	1154
- as % of sales	36
Exports to other	23
- as % of sales	1
Imports	1545
- as % of sales	48
Net imports	368

Derbyshire accounts for approximately 20% of these, with Cumbria and the Yorkshire Dales National Park making up approximately 10% each. The rest comes from the East Midlands, Wales, and the North East. It is assumed that the movements identified above will continue. However, if particular quarries in neighbouring authorities were to cease production it could have an impact on the market in the Plan area, and affect the rate of consumption of permitted reserves at particular quarries.

Current exports are included in the forecast of demand; current imports will be reflected in neighbouring mineral planning authorities' average of 10 years sales data. Should the industry be unable to maintain these outputs then these assumptions, and the forecast demand, may need to be revisited.

This matter will be addressed through the duty to cooperate and local plan making, should neighbouring authorities, or those from wider afield, have a quantified shortfall in supply.

6.4 Meeting forecast demand for gritstone

The forecast demand and the permitted reserves are compared in the tables below. This indicates there are sufficient minerals available through the supply options identified above to meet estimated need during a 15 year time horizon for a variety of scenarios. The 3 and 10 year average of sales are very similar.

Forecast demand period of 15 years (2021-2036)	Sub-regional forecast (mt)	10 year average sales forecast (mt)	3 year average sales forecast (mt)	Housing Delivery-Forecast Inferred Demand using local plan forecast (mt)
Demand	1.69	1.04	1.03	1.43

Forecast demand	25.4	15.6	15.5	21.5
Permitted reserves	74.22	74.22	74.22	74.22
Shortfall in supply during forecast demand period	-	-	-	-
Surplus in supply during forecast demand period	48.9	58.6	58.7	52.8
Surplus representing a landbank of X years	28.9	56.4	56.8	36.9

- In addition to the 10 year and 3 year average, any other relevant local information should be considered; this is discussed further in Appendix 2 and 3.
 - The housing delivery forecasts fulfil this function.
- Exports of crushed rock are estimated to represent approximately 37% of sales. Imports are estimated to represent approximately 46% of sales. We are estimated to be a net importer and the scenarios above should be viewed in that context.

- There is also a need to consider the permitted reserves ability to meet the forecast demand.
 - The landbank period is sufficient during the monitoring period.
 - Even if we discount half of Whitworths estimated permitted reserve when considering forecast demand, so as to account for its disproportionate size relative to the rest of the landbank, landbanks of gritstone are in excess of 10 years for all of the scenarios.
 - Whilst the permitted reserves are more than sufficient they are unevenly distributed: approximately 70% of the permitted reserve is held at one quarry. Should other quarries in the Plan area become worked out and unable to continue producing aggregates the industry's ability to meet forecast demand at the local market level may be restricted, this may also affect the availability of aggregates should the remaining quarries be unable to increase production to compensate.

Conclusion

This assessment of the balance between supply and demand, together with a consideration of the economic and local circumstances, indicates that there is no shortfall. However, notwithstanding this, there is the possibility of a shortfall in local markets if some quarries are worked out or close.

There are also significant movements of crushed rock both ways across the plan areas boundary; the balance represents a net import (though this is based on figures collected every 4 years, lastly in 2019). These movements are likely to be influenced by economic activity and growth projections set out in those areas; and at this time this has not been incorporated into the above assessment. If growth in these areas is above that forecast in the plan areas district housing projections then the correlation between aggregate sales and housing completions may be affected, and the forecast demand may be an underestimate.

Likewise if imports are constrained by a reduced supply in neighbouring areas this may affect demand within the plan area.

These will be monitored and attempts will be made to quantify them through the duty to cooperate and the operation of the North West Aggregate Working Party.

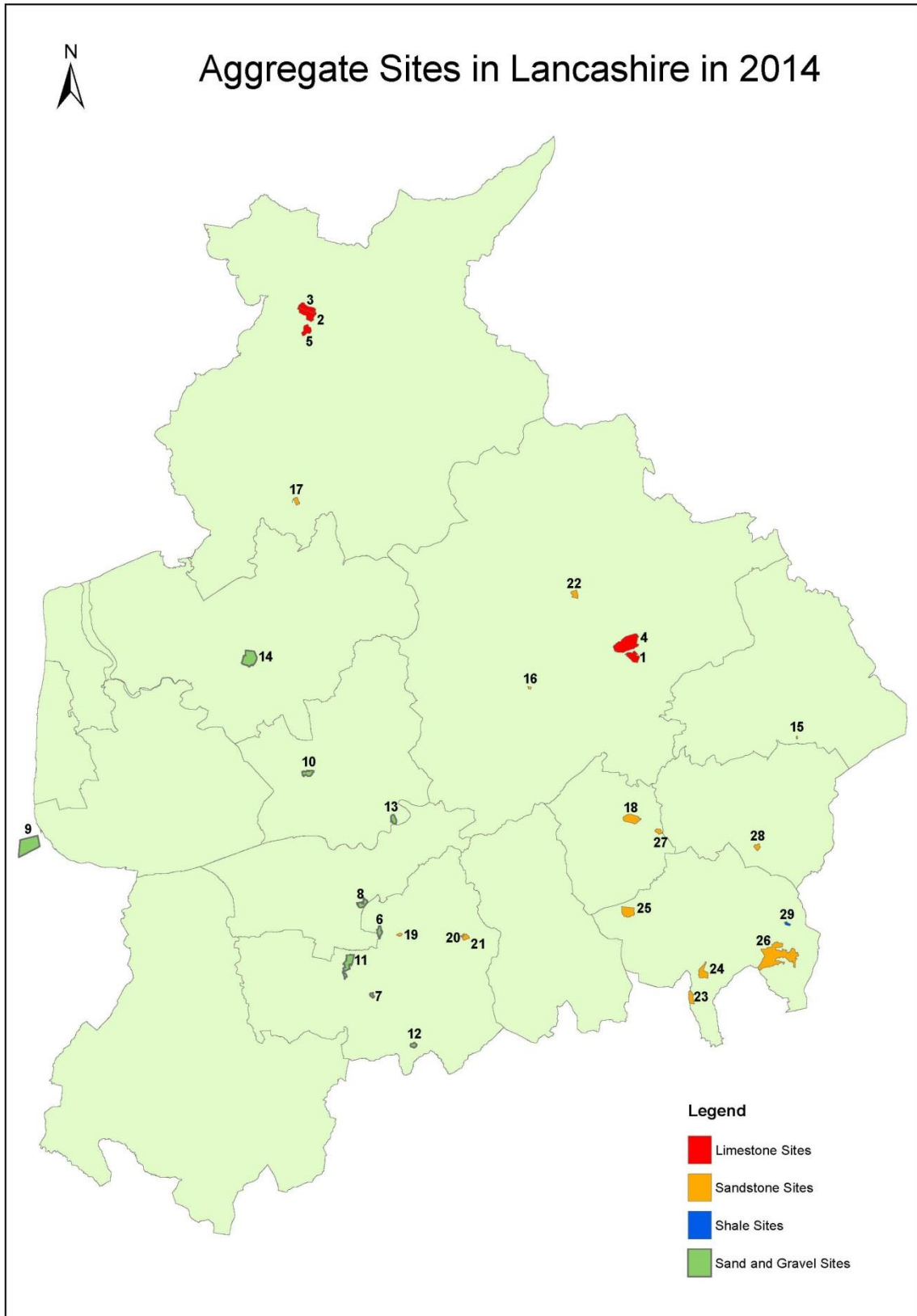
At this stage it would be prudent to address the issue of local supply and the threat to this through the large proportion of the permitted reserves held in a single quarry, through the ongoing review of the Minerals and Waste Local Plan.

This could include a more flexible criteria based policy to address the specific issue around the large landbank and its potential conflict with the continuation of local supply.

Given the relatively stable sales, the similarity between the 3 and 10 year averages of sales, and the predicted demand for materials arising from the Plan areas growth

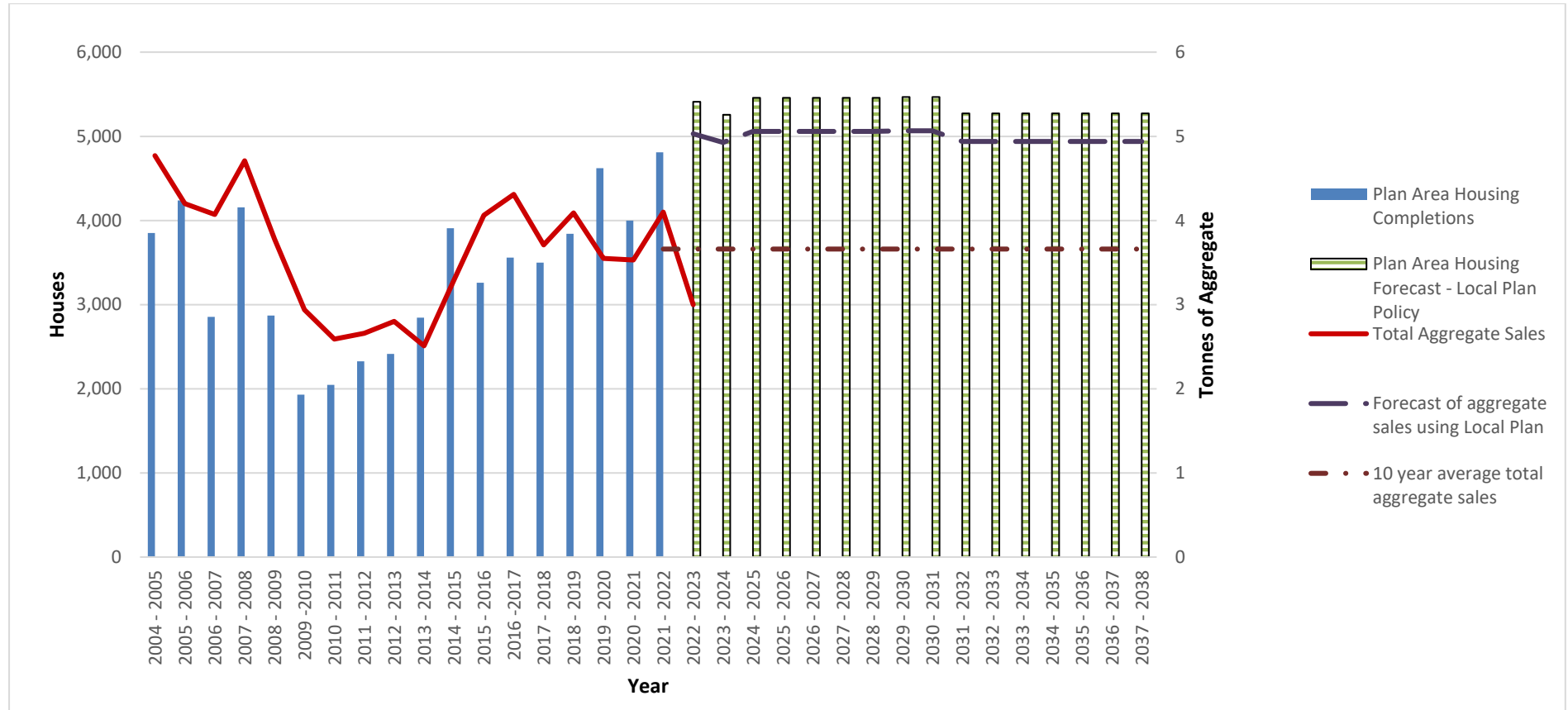
aspirations (both in housing, road building and economic development), the LAA provision rate, to be used when estimating the landbank of permitted reserves, is the 10 year average.

Appendix 1: Permitted aggregate sites



No.	Site	Status	Mineral	End date	Operator
1	Ribblesdale Cement - Bellman	Active	Limestone	2027	Hanson
2	Back Lane	Active	Limestone	2048	Aggregate Industries
3	Leapers Wood	Active	Limestone	2048	Tarmac
4	Ribblesdale – Bankfield	Active	Limestone	2018	Tarmac
4	Ribblesdale – Lanehead	Active	Limestone	2027	Hanson
5	Dunald Mill	Inactive	Limestone	2022	Tarmac
6	Clayton Hall	Worked out	Sand	2028	Neales
7	German Lane	Inactive	Sand	2042	P Casey Enviro
8	Lydiate Lane	Worked out	Sand	2030	JA Jackson
9	St Annes Foreshore	-	Sand	-	William Rainford
10	Bradleys	Active	Sand	2021	JA Jackson
11	Runshaw	Inactive	Sand	2027	Tarmac
12	Sandons Farm	Worked out	Sand	2022	Chorley Sand
13	Lower Brockholes	Worked out	Sand	-	Hargreaves
14	Sharples	Worked out	Sand	2028	Hargreaves
15	Catlow	Active	Sandstone	2028	Greens
16	Leeming	Active	Sandstone	2042	Brown Bros
17	Ellel Crag	Active	Sandstone	2038	JA Jacksons
18	Whinney Hill	Active	Sandstone	2042	Park Royal
19	Whittle Hill	Inactive	Sandstone	2042	Ruttles
20 & 21	Brinscall	Active	Sandstone	2042	Armstrongs
22	Waddington Fell	Active	Sandstone	2022	Armstrongs
23	Fletcher Bank	Active	Sandstone	2042	Marshalls
24	Scout Moor	Active	Sandstone	2029	Marshalls
25	Jamestone	Active	Sandstone	2042	W Maher and Sons
26	Whitworth	Active	Sandstone	2042	Fairhurst Stone
27	Rakehead	Inctive	Sandstone	2042	Ibstock
28	Deerplay	Inactive	Sandstone	2035	FCC
29	Tong Farm	Active	Shale	2042	Moorland Aggregates

Appendix 2: Other Relevant Local Information - Housing delivery and projections



This figure describes the delivery of houses as reported by the Department for Communities and Local Government and the projected annual demand for housing as described in district local plan policy.

It illustrates a period of significantly depressed housing completions caused by the global financial crisis, recession and subsequent restrictions on bank lending, relative to a local plan forecast of housebuilding (and also, though not expressed in this graph but linked to housebuilding statistically, other development activities) at much elevated levels.

The figure shows the delivery of housing relative to the sales of aggregate. It can be seen that aggregate sales and housing completions have shown a similar pattern over the last 10 years.

The relationship is statistically significant, with a correlation coefficient of +0.67 in 2022 indicating a moderate to high likelihood that the changes in the two variables are related (the closer to +1 the more significant the relationship). The reduction in sales of sand and gravel over the last couple of years has reduced this from +0.71 in 2020.

Projection using Local Plan housing targets

In the graph above this has been used in a basic attempt to model future aggregate sales, using the correlation between past housing completions and past aggregate sales, and applying this to the future housing need figure identified in district local plans, used as a proxy for general economic activity and therefore aggregate demand.

This produces an average aggregate sales figure of 4.94 million tonnes per year during the forecast demand period. When divided amongst the aggregate groups, using the proportions of total sales from the most up to date 10 year average of sales (approximately 10% sand, 28% gritstone, and 61% limestone), this could be made up of a demand for 1.42 million tonnes of gritstone per year, 3.07 million tonnes of limestone per year, and 0.38 million tonnes of sand and gravel per year.

At this stage there is a considerable uncertainty over some of the figures for projected future annualised housing completions, given past rates of under delivery relative to local plan targets in much of the Plan area.

None the less, it is expected that housing completions (and wider economic activity) will increase, and that this could reasonably be assumed to lead to an increase in demand for aggregates. Given the relationship between house building and aggregate demand that could be inferred from the figures, there is also the risk that the use of the 10 year average of aggregate sales data in predicting future demand could result in the inclusion of a recessionary underestimation in the demand prediction, projecting forwards a recessionary trend. It could also result in an underestimate given the reduction in sand and gravel sales over the last couple of years as sites have become worked out.

Appendix 3: Other Relevant Local Information - Planned Infrastructure Projects

There is a significant level of investment in Lancashire's transport network through the Lancashire City Deal, enabling the delivery of several items of infrastructure set out in the Central Lancashire Highways and Transport Masterplan, including the Preston Western Distributor, the Fylde Heyhouses/M55 Link, the A585 bypass, and the East-West Link Road. This in turn will unlock sites for the delivery of housing and commercial developments as part of the Central Lancashire Core Strategy.

Other sites coming forwards through the City Deal and the Lancashire Enterprise Partnership's growth agenda will result in an increased demand for aggregates, such as the Cuerden Strategic Site and the large number of housing developments proposed.

Neighbouring areas are also experiencing similar investments as part of their growth deals, and similar future aspirations for growth such as contained in the Northern Powerhouse aspirations and the Greater Manchester Joint Development Plan.

This should all be taken into account when considering projections of demand, as they represent a future demand for aggregates that is not necessarily reflected in past supply. However, quantifying the actual demand, and anticipating the duration of the demand, is at this stage uncertain. Instead it is prudent to address this issue through the review of the Minerals and Waste Local Plan. This could include using a range of figures to inform objectively assessed need (based around the 10 year average of sales and 3 year average of sales) given the uncertainties described above, which could be interpreted flexibly within the context of the up to date information presented in the most recent LAA at the time of considering any development proposal.

Appendix 4: Historic Aggregate Data

Sales

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Limestone	3.8	3.7	4.3	3.5	2.9	3.0	2.7	2.6	2.7	2.6	2.7	2.6	2.7	2.5	2.6	3	2.48	1.86	1.59
Gritstone	1.6	2.3	2.7	2.8	2.63	2.17	2.1	1.8	1.7	1.9	2.2	1.6	1.3	1.2	1	1.26	0.98	0.66	0.63
Sand and Gravel	0.8	0.8	0.77	0.8	0.8	0.91	0.66	0.48	0.34	0.47	0.5	0.46	0.44	0.38	0.34	0.33	0.31	0.42	0.37
Marine Dredged Sand and Gravel	-	-	-	-	-	-	-	0.05	0.07	0.18	0.13	0.11	0.1	0.12	0.13	0.12	0.01	0	0

Permitted Reserve

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Limestone	102	103.8	93.3	65.9	63.8	63.5	59.4	56.8	54.1	53.9	59.3	57.5	54.7	50.3	77	71.4	52.6	67.63	65.61
Gritstone	73	146.4	151.8	125	112.7	105.7	86	84	73.5	71.1	70.3	68.7	79.8	64.5	75.1	74.1	70.35	69.14	67.63
Sand and Gravel	7	9.4	9	9.5	9.2	8.6	7.38	7	6.4	4.6	4	3.54	3.24	4.4	5.21	6	10.3	8.98	4.43

Appendix 5: Consultation outcomes

Organisation	Comment	Response
Cheshire West and Chester; Westmorland and Furness Council; Cheshire East; Leicestershire County Council	No comment	
Northumberland County Council	Given the scale of this movement we do not consider that this raises any significant supply issues or significant cross boundary planning issues	Noted

