North Wales Regional Aggregates Working Party

Annual Report 2017

This Annual Report covers the calendar year 1st January 2017 to 31ar December 2017. During that period the North Wales Regional Aggregates Working Party (NWaRAWP) oficers were:

Chairman:	Andrew Farrow, Environment Directorate, Flintshire County Council, County Hall, Mold, CH7 6NF
Technical Secretary:	Gary Nancarrow, Environment Directorate, Flintshire County Council, County Hall, Mold, CH7 6NF

Copies of the report are available electronically on the NWaRAWP web site http://www.nwrawp-wales.org.uk.

Acknowledgement

The NWaRAWP wishes to acknowledge the financial support of the Welsh Assembly Government, which has enabled this report to be coordinated and published by Flintshire County Council. The Working Party also wishes to record its' thanks to all those in the industry and the Mineral Planning Authorities in the North Wales region who have contributed to the production of the report.

The statistics and statements contained in this report are based on information from a large number of mainly third party sources and are compiled to an appropriate level of accuracy and verification. Users of this report should obtain corroborative data before making major decisions based on the information.

Terms of Reference for the NWaRAWP

1. To monitor regularly, the production and sales of aggregate minerals within the region.

2. To assess the total sand, gravel and hard rock reserves available in the region suitable for aggregate production (i.e. those with planning permission and other areas where there is some commitment in local authority statutory and non-statutory plans), making reference to areas where planning permission has been refused and to those in industry ownership; and taking into account the availability of marine dredged materials and the use of materials for non-aggregate purposes.

3. To assess the likely short term demand for aggregates in the region.

4. To indicate whether, in the short term, current permitted reserves are likely to be adequate.

5. To assess the extent of imports of aggregates from other regions.

6. To indicate to what extent the market area serviced by the region could and should be allowed to change in the medium and longer term (i.e. 10 and 20 years respectively).

7. To consider the extent and implications of the present and potential future use of synthetic and waste materials* as substitutes for natural aggregates.

8. To take adequate account for agricultural, amenity and other planning conditions, for example other land uses and transport.

In addition the NWaRAWP is charged with carrying out a number of specific duties set out in the Minerals Technical Advice Note 1 (MTAN1) and in particular those described in Annex A of MTAN 1, especially in respect of the preparation of Regional Technical Statements.

* Now normally referred to as secondary and recycled aggregates

CONTENTS

TABLES

FIGURES

APPENDICES

EXECUTIVE SUMMARY

1. INTRODUCTION

1.1. This report, by the North Wales Regional Aggregates Working Party, is intended for use by those involved with the supply and demand of aggregates for the construction industry. It provides statistics and information which:

- assist government in its aim of developing robust and relevant aggregate mineral policies,
- allows mineral planning authorities to carry out their statutory functions in respect of the preparation of development plans and effective development control in relation to mineral extraction,
- assists the industry with the planning of future development and investment.

1.2. The report may also be of use and interest to the general public and those bodies carrying out research into matters related to the supply and demand of aggregates.

1.3. It covers the calendar year 2017, and where appropriate (e.g. permitted reserves) relates the position at 31 December 2017. The AMS was carried out by the British Geological Survey (BGS) appointed by the Department of Communities and Local Government (DCLG) relating to 2014 was prepared but not published during this year. . Reserve data in this report is generally as provided by quarry operators or is calculated by MPAs based on information provided in previous years with sales for subsequent years deducted.

1.4. There have been a number of changes in the administration of the North Wales RAWP over recent years which are not coincidental with the preparation of reports. These are set out in the 2006 Annual Report.

1.5 A good level of returns was again received for the 2017 survey and in the majority of cases a high level of detail was provided. Therefore the sales, reserve and distribution figures for those site included in the survey are all believed to be reasonably robust unless specifically indicated to the contrary. In some instances the provided data not does not detail for sales by product type. In these instances, the return is normally categorised as ‘other’ or ‘general fill’ or ‘unknown’. It is therefore possible that the constructional fill figures are an overestimate, with other areas being underestimates. The majority of the more significant operating quarries have provided detailed data, on the grades of product, and therefore held to be reliable, and a robust indicator of the types of products consumed by the construction industry

1.6 The decision to include the sales of all slate aggregate products in the aggregate sales analysis from 2008 is continued to give a better understanding of the total aggregate demand on the region. Slate is a significant contributor to the aggregate market in the region and may have the scope to replace, if not displace, other exhausted aggregate supplies. Depending upon the grade of slate, it is used not only in bulk fill applications, but as an uncoated road stone, and is also increasingly used as an aggregate in the production of value added concrete products such as 3.5N and 7N concrete building blocks.

2. NORTH WALES REGIONAL AGGREGATES WORKING PARTY (NWaRAWP)

2.1 The NWaRAWP is one of two such groups in Wales and is complemented by nine similar working parties in England. The NWaRAWP region covers six unitary authority areas: Anglesey; Gwynedd; Conwy; Denbighshire; Flintshire and Wrexham plus the Snowdonia National Park. Each authority is also the Mineral Planning Authority (MPA). The working parties are co-ordinated by the National Co-ordinating Group (NCG) which provides a forum for debate and discussion about matters relevant to the effective running of the working parties throughout Wales and England. The NCG did not meet in 2017 due to the continued uncertainty about the continuance and support for the managed aggregate supply system (MASS) and funding for the (R)AWPs in England by Department for Communities and Local Government.

2.2 A (R)AWP Secretaries Meeting was convened with DCLG and Welsh Government on 3rd October 2014. This meeting sought to clarify the procedural measures for the tendering of the AMS contract and for the AWP funding for each region in England, including the possibility of 3 year contracts. This meeting also sought to highlight issues with inconsistency between Local Aggregates Assessments and emerging mineral plans, which is making it difficult to compile national strategic aggregates trends and emerging supply issues. It was considered that there are good examples of LAA's and can be used to promote good practice. The meeting agreed that for the Managed Aggregate Supply System (MASS) to work it needs to be supported by credible and reliable data. DCLG is to prepare a paper for the NCG setting out the issues with LAAs and mineral plans. An analysis of AWP reports highlighted some data gaps and DCLG is to develop a better balance of qualitative and quantitative analysis, with a key issus summary a the front of the report and tables on crushed rock and data on secondary aggregates. A paper was presented on the structure of future reports to improve data comparison at a national level.

Membership

2.3 The membership of the NWaRAWP is drawn from officers of the MPAs, the aggregates extraction industry via the Mineral Products Association (MPA) formerly the Quarry Products Association (QPA), British Aggregates Association (BAA) and independent companies; the Welsh Assembly Government (WAG), the Department for Communities and Local Government – (CLG), the British Geological Survey, the National Federation of Demolition Contractors (representing the recycling sector), the marine aggregates producers, Natural Resources Wales (a new Welsh Government agency formerly the Environment Agency Wales, Countryside Council for Wales and the Forestry Commission) and the South Wales RAWP.

2.4 In 2015, Andrew Farrow of Flintshire County Council chaired the RAWP and Gary Nancarrow of Flintshire County provided the Secretariat Services. A full list of members at the end of 2015 can be found in Appendix 1.

2.5 In terms of the Local Authorities, operator companies and other agency and government representations there was no significant change, but there was variation in both the individuals attending on behalf of the member bodies and the number of non attendees compared with previous meetings. Breedon Aggregates has acquired the former Lloyds

Sand & Gravel (Marshalls Plc) operations in Flintshire. A merger between Lafarge and Tarmac took effect which resulted in rationalisation of operational quarries and the mothballing of some units. It means the number of operators in the region has declined.

North Wales RAWP Meetings in 2017

2.6 In 2017 the North Wales RAWP met on 24th March at the Conwy Business Centre, Llandudno Junction and 9th November at Glyndwr University, Wrexham.

2.7 The focus of the meetings was the general business of the RAWP, the Environment Act Wales Bill, loss of landing wharves and growth in the aggregates sector. lo discuss the Regional Technical Statement and to agree to the actions and recommendations arising out of three subcommittee meetings that were held. A consultation event was held in Llandudno Junction at which members of the North Wales RAWP and interested third parties were present.

Matters of Interest in 2017

2.8 Slate continues to be included in the crushed rock data to reflect the fact that it is being used as an aggregate irrespective of whether it is won as a primary aggregate, a 'by product' of slate production, slate waste or recovered slate waste. This was accepted at the 2009 meeting for crushed rock aggregate. The use of slate materials as a sand and gravel substitute was not supported by the NWaRAWP.

2.9 The business of the RAWP, RTS and Annual report was carried out under the remainder of an annual contract. The Welsh Assembly Government has made a commitment to support the RAWPs in Wales and has moved to annually renewable grant contracts from 2014 onwards. In England, the Department of Communities and Local Government remain committed to the Managed Aggregate Supply System, and are entering in to yearly contracts for Aggregate Working Parties in England.

2.10 Government funding remained a difficulty during 2015 and into the data collecting year of 2016. The 4 yearly Aggregate Monitoring Survey funded by DCLG covering both England and Wales was postponed in 2013 and instead a commitment was made to undertake the survey a year later for 2014. The British Geological Survey BGS were appointed to coordinate and prepare the AMS for 2014. This caused some practical difficulties as there was a hiatus with AWP contracts in England as new contracts were only awarded part of the way through the survey gathering year of 2015, and in many instances new secretariats were appointed.

2.11 Two Steering Group meetings were held on 7th, May, 2015 and 13th October, 2015. The meeting on 7th May, 2015 dealt with the terms and scope of the survey and the meeting of 13th October considered an early draft of the results. The timescales have been delayed and as of 13th October the approximately 30 to 40 per cent of mineral planning authorities had yet to come in with returns. A steering group meeting was convened oon 21st January, 2016 to run through the final set of results. The final report to ministers is proposed to be published by the end of April, 2016.

3. SURVEY RESULTS 2017

Sales

3.1 Table 1 shows the total aggregate sales from the region and sub-divided into North West Wales and North East Wales sub-regions. The sub-regional figures are included because, in general terms, both sub-regions exhibit individual characteristics in terms of rock type and market profile. North West Wales traditionally relies mainly on igneous rock for crushed rock aggregate, largely for use within the region, however, slate has established a significant contribution, capable of meeting specification standards for construction and highways projects. In North East Wales, limestone is the main source of crushed rock of which a high proportion is exported from the region. In this report the crushed rock figure continues to include all slate aggregate products, that is, both primary won slate quarry aggregate and aggregate produced from waste arising from the working of slate for building materials; the purpose of this is to try to give a better understanding of the overall aggregate market in the region.

Table 1: Aggregates Sales – North Wales Region 2008 – 2017 (000 tonnes)

	SAND&GRAVEL			CRUSHED ROCK			TOTAL
Year	NW Wales	NE Wales	Total N Wales	NW Wales	NE Wales	Total N Wales	Aggregate Sales
2008	*	*	**957**	1295	4890	**6185**	7142
2009	*	*	**631**	919	2970	**3889**	4520
2010	*	*	**696**	1162	3219	**4381**	5077
2011	*	*	**673**	1520	2764	**4284**	4957
2012	*	*	**620**	1122	2771	**3893**	4513
2013	*	*	**663**	1796	2256	**4052**	4715
2014	*	*	**922**	1644	2980	**4624**	5546
2015	*	*	**972**	1737	3266	**5003**	5975
2016	*	*	**756**	1913	3009	**4922**	5678
2017	*	*	**844**	1652	2612	**4264**	5108

***** figures combined for confidentiality. S&G includes marine. CR includes slate & shale.

*NW &NW Wales S&G combined for confidentiality
2008 onwards S&G includes marine dredged
NW wales crushed rock includes slate waste used for aggregate
NE Wales crushed rock includes sandstone, siltstone, grit and shale as dug for aggregate

3.2 Figures 1 and 2 show the contribution of the sub-regions to crushed rock and sand and gravel sales respectively.

3.3 Crushed rock sales for 2017 saw a 13% decrease on 2016 sales. Sand and gravel sales showed an increase in sales of 12% when compared with 2016.

Figure 1. Sub–regional Aggregate sales 2008-2017 - Crushed Rock

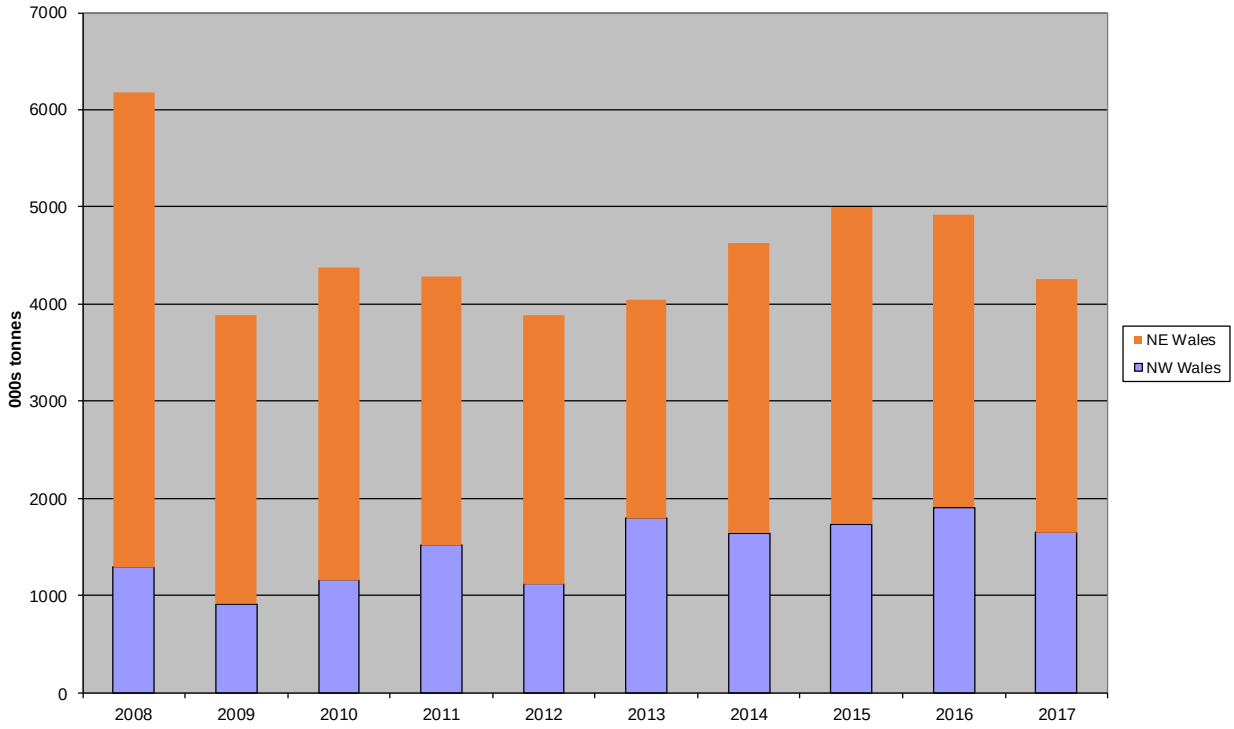
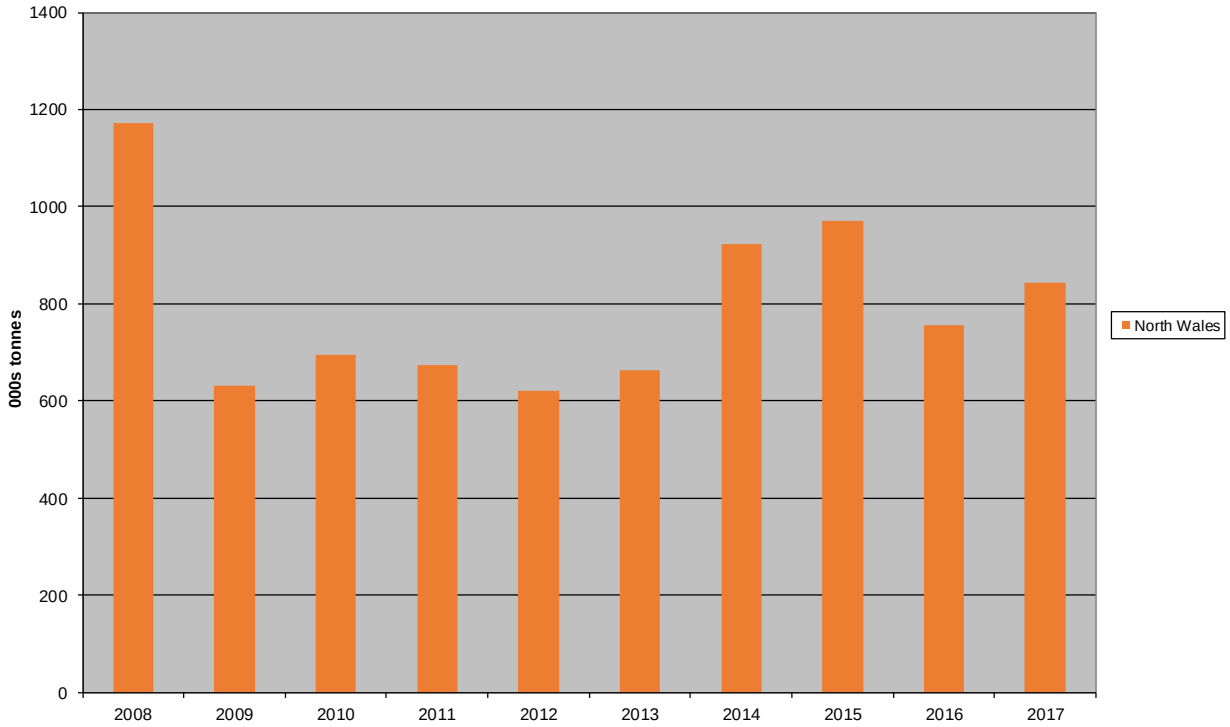


Figure 2. Sub-regional 2008-2017 Sand and Gravel Sales



Unitary Authority Production

3.4 In terms of production within MPA areas, which is set out in Table 2, it is not possible to provide an analysis of sand and gravel sales based on MPA areas. Sales have recovered from the 2009 all-time low, and have increased markedly and are approaching the 2008 levels but remain lower than the pre 2008 levels prior to the economic downturn. Crushed rock sales analysis suggest that overall sales have improved, and slate continues to maintain an impact in the NW Wales sub-region at around 14% of total sales in 2017.

Table 2.1: Aggregate Sales by MPA 2008 – 2017 Sand & Gravel

Tonnes

Year	Anglesey	Gwynedd	Snowdonia	Conwy	Wrexham	Flintshire/ Denbighshire/ Wrexham	Flintshire/ Denbighshire/ Wrexham/ Gwynedd	Total N Wales
2008	0	0	0	0	0		956694	956694
2009	0	0	0	0	0	0	631244	631244
2010	0	0	0	0	0	0	696273	696273
2011	0	0	0	0	0	0	673513	673513
2012	0	0	0	0	0	0	620374	620374
2013	0	0	0	0	0	0	662085	662085
2014	0	0	0	0	0	0	922222	922222
2015	0	0	0	0	0	0	972098	972098
2016	0	0	0	0	0	0	755937	755937
2017	0	0	0	0	0	0	843907	843907

Table 2.2: Aggregate Sales by MPA 2008 – 2017 Crushed Rock

Tonnes

Year	Anglesey	Gwynedd	Snowdonia	Conwy	Denbighshire	Flintshire	Wrexham	Total N Wales
2008	279088	341138	0	1385997	372214	3131969	0	5510406
2009	267595	651845	0	677544	424691	1868299	0	3889974
2010	197425	965101	10264	906160	649471	1753519	0	4481940
2011	230006	875812	10264	844705	491250	1831813	0	4283850
2012	209897	679034	10264	788443	377427	1827235	0	3892300
2013	204872	680375	10264	900492	277820	1977751	0	4051574
2014	229890	623570	10000	738969	21671	2957876	0	4581976
2015	252390	714617	10624	819900	21671	3244935	0	5064137
2016	281637	743489	8000	879532	86434	2922399	0	4921491
2017	285620	741898	8000	616912	217476	2394317	0	4264223

3.5 Figures 3 and 4 show the contribution made to aggregates supply by each authority area for Crushed rock and sand and gravel; Flintshire remains the main producer of crushed rock, providing about 56% of the regional output. Wrexham continues to be the largest producer of sand and gravel, with the other producing areas being Flintshire and Gwynedd. There are no sand and gravel sites in Denbighshire, Conwy, Snowdonia or Anglesey.

Figure 3: Unitary Authority Sales - Crushed Rock Sales 2008-2017 (Tonnes)

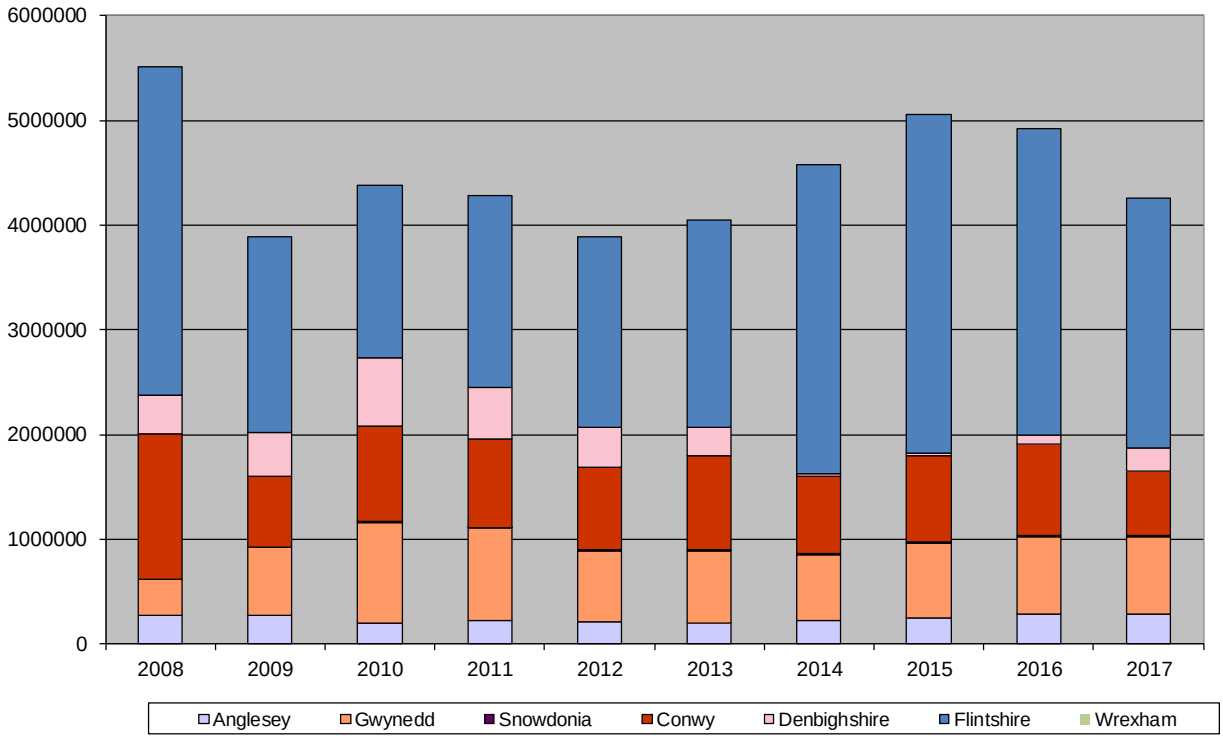
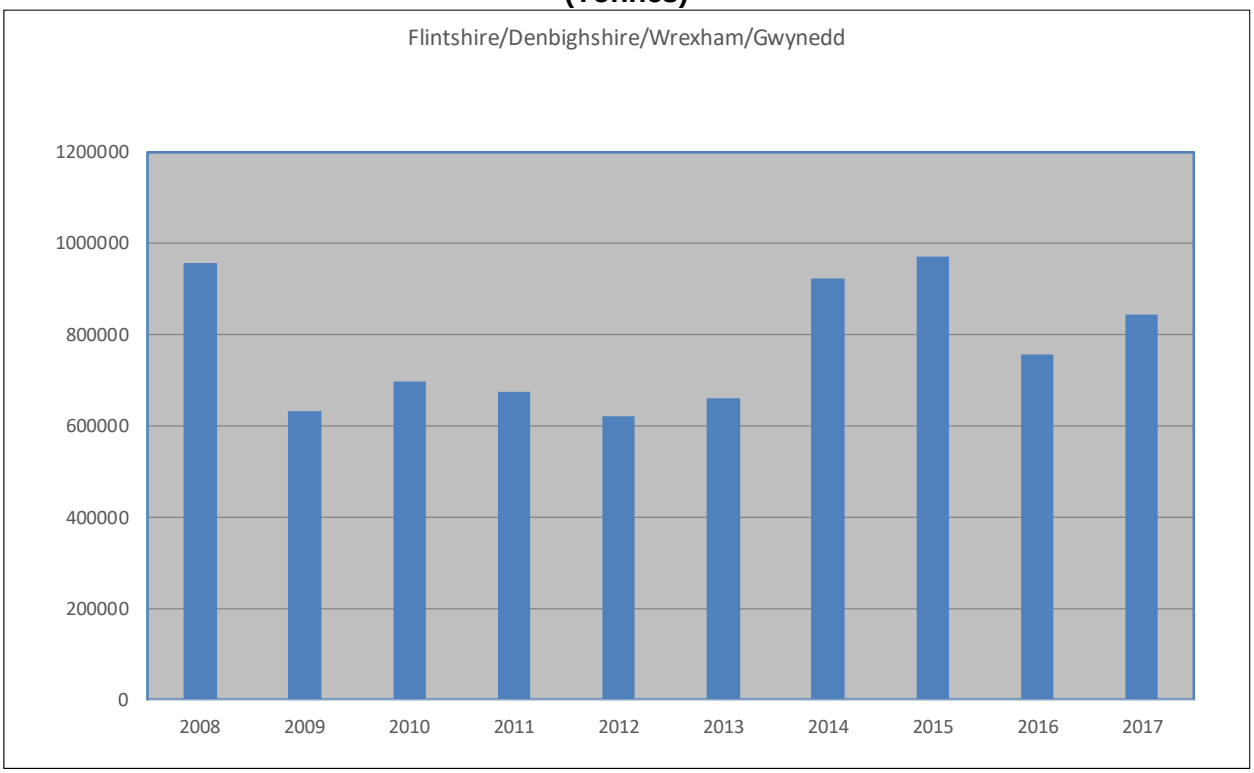


Figure 4: Unitary Authority Sales - Sand and Gravel 2008-2017 (Tonnes)



3.8 Sand and gravel sales by unitary authority are illustrated in figure 4. Overall sales of sand and gravel have improved by 11% compared with 2016 sales. Due to confidentiality, it is no longer possible to report for individual unitary authorities, or to report at a sub-regional level due to the limited number of operational sites and operating companies. Sand and gravel is now produced only in Wrexham, Flintshire and Gwynedd, with the majority of production in Wrexham. This reduces the effectiveness of the survey analysis, and may lead to incorrect assumptions on capacity, need and markets for sand and gravel. Whilst the landbank of permitted reserves is apparently healthy on an all North Wales basis, the spatial imbalance of permitted reserves masks shortfalls in local authority areas west of Wrexham. The main issue is the haulage distance from the producing units in Wrexham and Flintshire to markets to the west, which increases costs and is not an ideal environmentally sustainable supply pattern.

Aggregate End Use

3.9 Tables 3 and 4 set out the end uses of the primary aggregate sales. In the case of crushed rock, a full breakdown of end uses was provided by the majority of operators. Sales with an unknown end use have been combined with sales for other constructional uses. With regard to sand and gravel sales, a complete breakdown of end uses was provided. As with previous years primary won aggregates provides the largest contribution, particularly limestone, although slate continues to contribute at a level of around 14% of the total North Wales aggregate sales. Limestone is the single largest contributor, at 75% of total aggregate sales.

Crushed Rock
Limestone

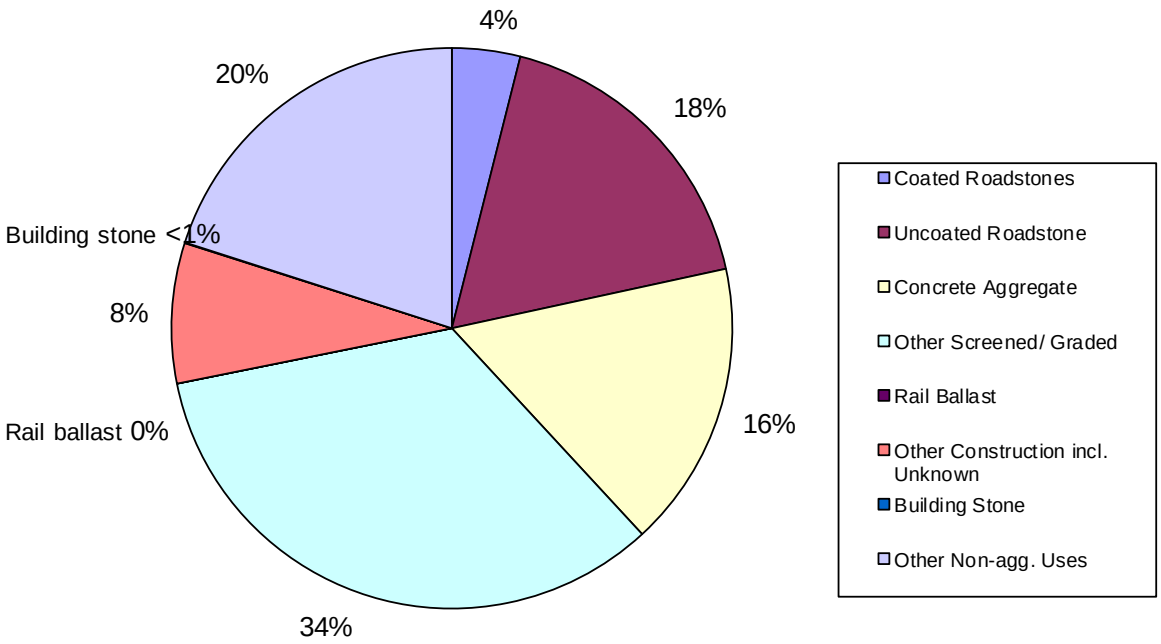
3.10 Table 3.1 illustrates limestone aggregate end use. Limestone sales have improved on 2016 for aggregate uses. Roadstone accounts for 22% of limestone sales, concrete aggregate 16% of limestone sales and graded screened aggregate accounting for 20% of sales. 8% of sales is attributed to other construction and unknown uses. Sales have decreased by 16% on 2015 sales.

Table 3.1 Crushed Rock Sales, Limestone: N Wales 2017

All figures tonnes

Product	Conwy/ Denbighshire	Flintshire	TOTAL NE WALES
Coated Roadstones	13,483	143,881	157,364
Uncoated Roadstone	166,200	541,020	707,220
Concrete Aggregate	133,278	528,867	662,145
Other Screened/ Graded	397,583	951,647	1,349,230
Rail Ballast	0	0	0
Other Construction incl. Unknown	94,733	228,902	323,635
Total Aggregates	**805,277**	**2,394,317**	**3,199,594**
Building Stone	1508	0	1508
Other Non-agg. Uses	4,788	797,777	802,565
Total Non-agg. Uses	6,296	797,777	804,073
Total	**811,573**	**3,192,094**	**4,003,667**

Figure 5 Crushed Rock Sales End Use: Limestone



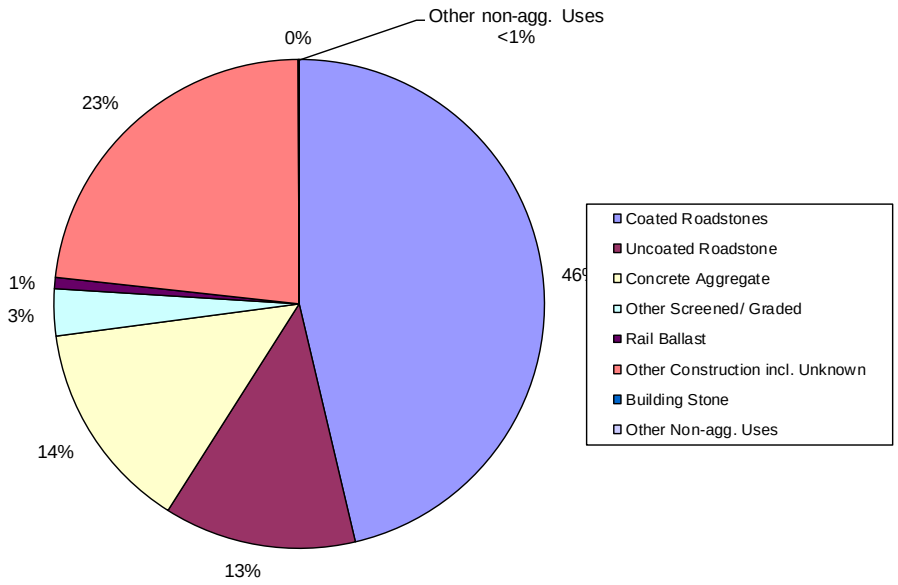
3.11 Table 3.2 and figure 6 illustrates igneous and metamorphic crushed rock sales for 2017. Sales in this category have decreased by 13% compared with 2015 sales. Roadstone accounted for 59% of sales.

Table 3.2 Crushed Rock Sales, Igneous and Metamorphic: N Wales 2017

All figures tonnes

Product	Anglesey	Gwynedd/ Conwy	TOTAL NW WALES
Coated Roadstones	138,000	120,868	258,868
Uncoated Roadstone	15,800	54,988	70,788
Concrete Aggregate	18,000	59,753	77,753
Other Screened/ Graded	820	16,504	17,324
Rail Ballast	0	4,134	4,134
Other Construction incl. Unknow n	56,800	72,842	129,642
Total Aggregates	**229,420**	**329,089**	**558,509**
Building Stone	0	287	287
Other Non-agg. Uses	0	100	100
Total Non-agg. Uses	0	387	387
Total	**229,420**	**329,476**	**558,896**

Figure 6 Crushed Rock Sales End Use: Igneous and Metamorphic



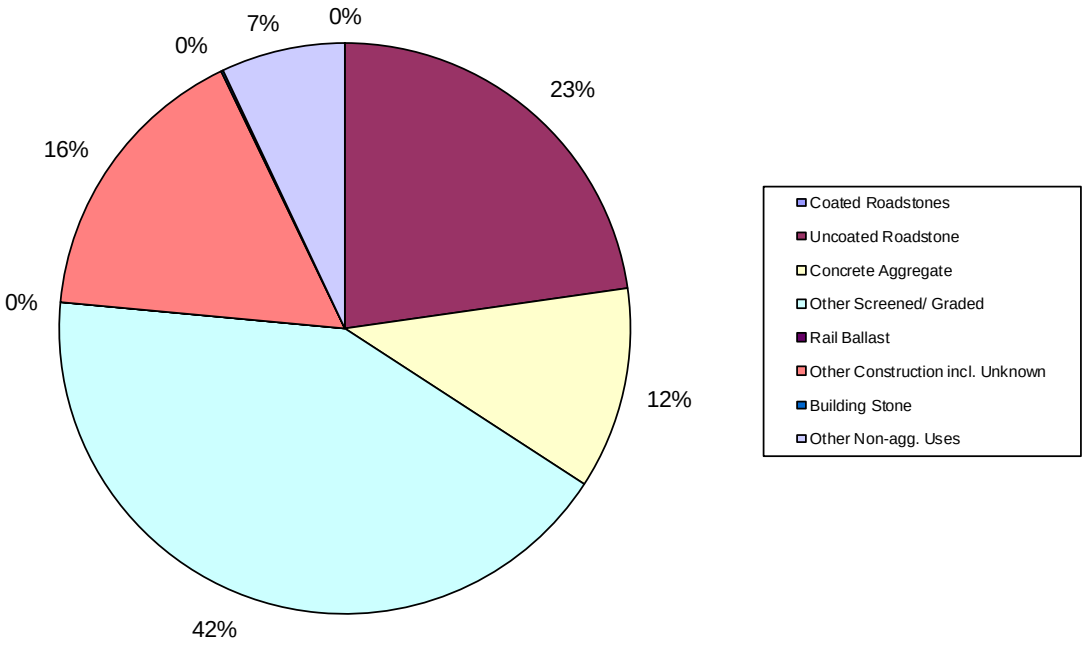
3.12 Table 3.3 and figure 7 illustrate slate aggregate sales. Slate aggregate sales had an improvement of 29% compared with 2015 sales. Roadstone accounted for 30% of sales.

Table 3.3 Crushed Rock Sales, Slate: N Wales 2017

All figures tonnes

Product	TOTAL
Coated Roadstones	0
Uncoated Roadstone	144,623
Concrete Aggregate	72,735
Other Screened/ Graded	268,937
Rail Ballast	0
Other Construction incl. Unknow n	104,261
Total Aggregates	**590,556**
Building Stone	771
Other Non-agg. Uses	44,604
Total Non-agg. Uses	45,375
Total	**635,931**

Figure 7 Crushed Rock Sales End Use: Slate



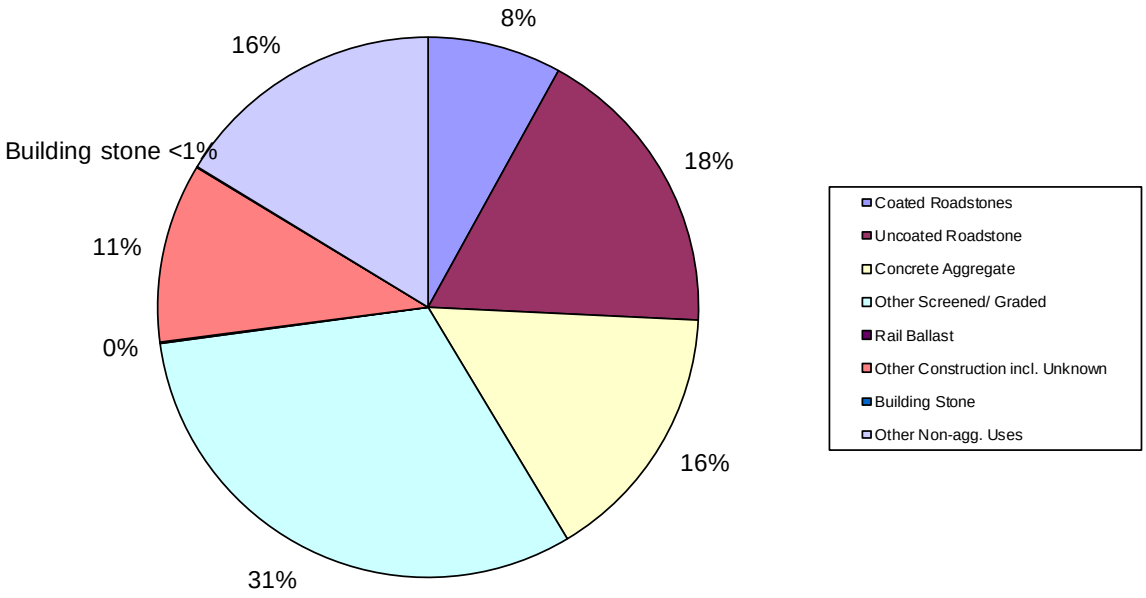
3.13 Table 3.4 and figure 8 illustrate total crushed rock sales. Total aggregate sales have decreased by 13% on 2015 sales. Total rock aggregate sales of 26% crushed rock was used as roadstone (18% uncoated, and 8% coated). Aggregate for concrete accounted for 16% of sales. Other screened graded stone accounted for 31%. Other constructional uses (including unknown uses) accounted for 11% of sales.

Table 3.4 Crushed Rock Sales, Total Aggregate: N Wales 2017

All figures tonnes

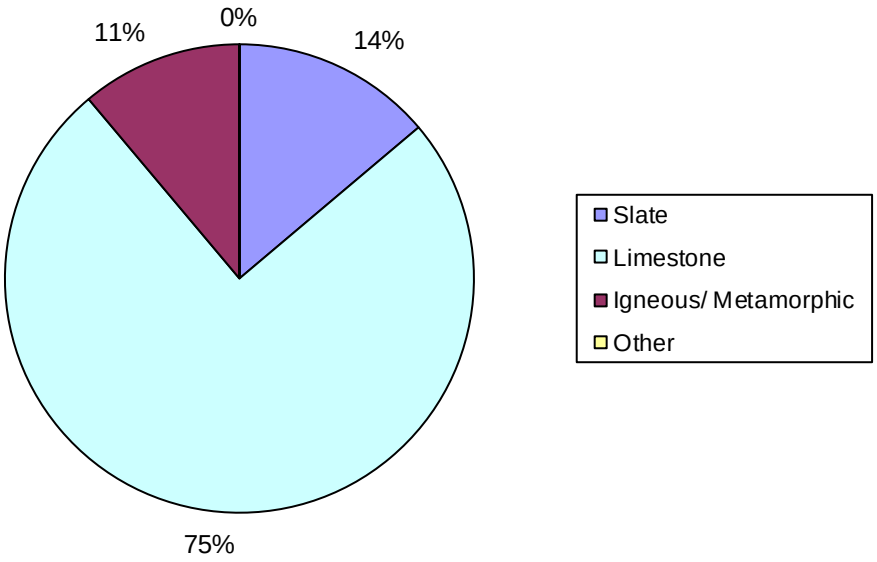
Product	TOTAL
Coated Roadstones	416,232
Uncoated Roadstone	922,631
Concrete Aggregate	812,633
Other Screened/ Graded	1,635,491
Rail Ballast	4,134
Other Construction incl. Unknow n	557,538
Total Aggregates	**4,348,659**
Building Stone	2,566
Other Non-agg. Uses	846,581
Total Non-agg. Uses	849,147
Total	**5,197,806**

Figure 8: Crushed Rock Sales - End Use



3.14 Figure 9 illustrates the rock market share. Limestone is the single biggest contributor, at 75%, with Igneous and Metamorphic accounting for 11% and Slate contributing 14% of sales in 2017.

Figure 9: Rock Type Market Share 2017



Sand and Gravel

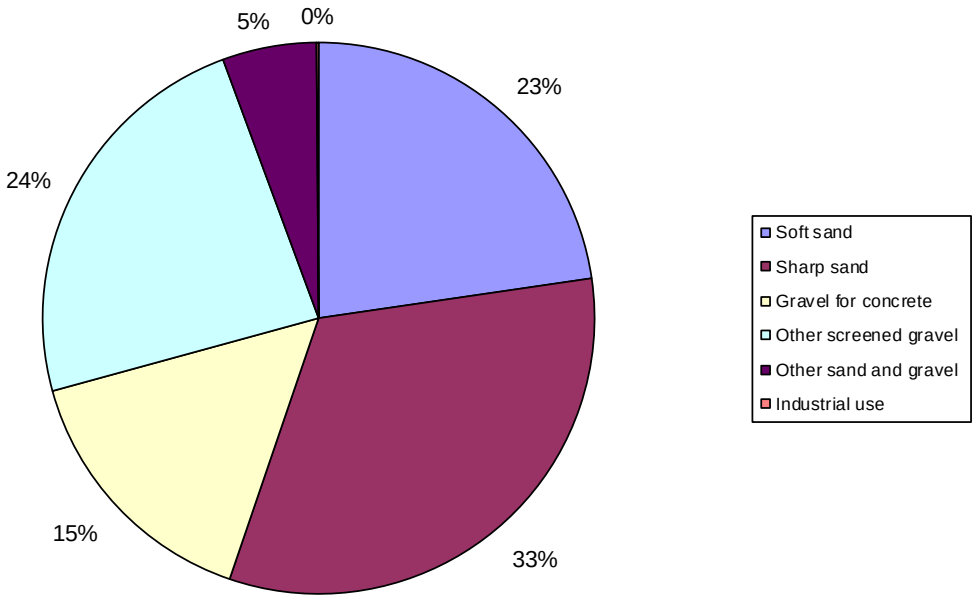
3.15 Table 4 and Figure 10 illustrate sand and gravel sales. Sales of sand and gravel used for aggregate in 2017 have decreased 13% compared with 2015 sales. About 33% of sales were sharp (concreting) sand and 23% soft sand. Gravel for concrete is 15% of sales. About 5% of the remaining supply comprised unspecified sand and gravel, and 24% other graded screened gravels. A very small amount of sand and gravel, less than 1%, was used for non-aggregate purposes.

Table 4 Sand and Gravel Sales: N Wales 2017

All figures tonnes

	Soft sand	Sharp sand	Gravel for concrete	Other screened gravel	Other sand and gravel	Total aggregate	Industrial use	Total
Total	184,909	265,151	126,446	192,296	44,864	843,907	1,018	844,925

Figure 10: Sand and Gravel End Use



Distribution

3.16 As the 2017 survey is an 'intermediate' survey, information relating to the distribution of aggregates was not collected.

Regional Sales Movements

3.17 The four yearly AMS data includes information on regional export and import movements by destination area. The wider picture will be presented in the AMS report to be published by DCLG in 2016. It is noted that in some instances the declared destination may not be the final destination that the aggregate is consumed, and an example may be deliveries received at a concrete batching plant, but the value added product may be onward distributed out of the region or sub-region, or aggregate is delivered to a central distribution hub such as a railway siding, may end up being redistributed to other regions. Nevertheless, the distribution data gives a reasonable indication of the modes of transport and which areas are relying on imports to meet demand. No analysis of inter-regional sales, consumption or transport mode is presented in this report. However in North Wales the overwhelming mode of transport is by road, mainly via the A55(T) expressway and A494 (T) onward to the M56 and M53 motorways. There are minor levels of land won aggregate exports by ship from those quarries which have a landing wharf and by rail from those quarries which have rail loading facilities.

3.18 North Wales is a net exporter of aggregate with a total of 2.44 Mt exported compared with 0.17 Mt imported. The majority of sales destination is to North West England, and the majority of this comprises Limestone.

000 tonnes

Exports			**Imports**		
Sand & Gravel	**Crushed Rock**	**Total**	**Sand & Gravel**	**Crushed Rock**	**Total**
158	2281	**2439**	126	42	**172**

4. RESERVES AND LANDBANKS

4.1 Table 5 below shows the permitted reserves of crushed rock in the North Wales Region at the end of 2017. The reserves are shown divided into those in active sites and those in inactive sites, that is sites where aggregate was being worked in 2017 or resumption of working could take place without further consideration by the mineral planning authority. In accordance with MTAN1, paragraph 47, those in dormant sites are shown in a separate category. Material contained in dormant sites whilst having a valid planning permission, cannot be worked until new conditions have been approved and does not therefore contribute towards the permitted reserve from which the landbank calculation is derived.

Table 5 Crushed Rock Reserves

(000s tonnes)

	Active	Inactive	Total	Dormant
Limestone/ Dolomite				
Angelsey (a)	0	0	0	
Conwy	29,891	250	30,141	
Denbighshire	15,968	4,476	20,444	
Flintshire (b)	41,369	0	41,369	1,405
Total Limestone	87,228	4,726	91,954	1,405
Igneous/ Metamorphic				
Angelsey/Gwynedd				
Conwy (c)	53,660	0	53,660	
N Wales total	53,660	0	53,660	
N Wales total rock	**140,888**	**4,726**	**145,614**	**1,405**

(a) Anglesey limestone included in Conwy for confidentiality
(b) Flintshire excludes industrial mineral reserves
(c) Anglesey and Gwynedd Igneous and metamorphic included in Conwy for confidentiality

4.2 The reduction in the number of quarries has meant that there has been an increased need to combine Unitary Authorities in the collation. For the purposes of reserve calculation it has been decided to include rock types together rather than geographical areas, for example, Anglesey limestone has been included with Conwy limestone; in previous years it was included with Gwynedd igneous rock. The reason for this is to try to provide some understanding of the availability of the various rock qualities.

4.3 The table shows that 97% of permitted reserves of crushed rock is contained in active sites. The issuing of Prohibition Orders in recent years has reduced the amount of material contained in dormant sites. The process is detailed in the Regional Technical Statement and in earlier Annual Reports. The table does not included slate waste and other rock type waste arising from slate working, this is not meant to reflect on the suitability of the material for aggregate use, much of the material is being used for a range of aggregates, rather the uncertainty surrounding the reserve figures, which could be in excess of 40m tonnes.

Table 6 Sand & Gravel Reserves

(000 tonnes)

	Active	Inactive	Total	Dormant
Gwynedd	1,330	25	1,355	
NW Wales Total	**1,330**	**25**	**1,355**	
Flints/Wrexham	13,520	540	14,060	
NE Wales Total	**13,520**	**540**	**14,060**	
Total Sand & Gravel	**14,850**	**565**	**15,415**	

4.4 Table 6 indicates the permitted reserves of sand and gravel in the North Wales Region at the end of 2017. The material is shown divided into active sites, inactive sites and dormant sites. The table shows that the majority of the calculated permitted reserve of sand and gravel is contained in active sites. There are sand and gravel reserves allocated for non-aggregate purposes at a quarry in Denbighshire which could be made available for the aggregate market. The allocation has not allowed for reserves of slate waste; it is known that certain types of slate waste is capable of producing a sharp sand suitable for use in concrete but the information is not available to make an assessment of the potential reserve.

4.5 Table 7 provides details of the aggregate reserves and landbank currently available and does not include rock designated for industrial use, for example cement manufacture, or rock reserves in dormant sites. The analysis of landbank is based on permitted reserves divided by the average of the last 3 years sales. Where possible, reserves and landbanks are shown for each MPA and are also grouped into those authorities falling within North East and North West Wales in order to allow comparison with earlier reports. In contrast to Table 6, all Anglesey rock is included together and not combined with similar rock types elsewhere, to allow an assessment on a Unitary Authority basis of individual apportionment.

4.6 Additional reserves held in dormant sites potentially add to the landbank. Although they cannot be worked without new conditions being approved, they are nevertheless consented.

4.7 It is important to note that although the use of slate waste derived aggregate was included in Section 1 of this report to provide an overall aggregate market picture, slate is not combined with other rock types for the purposes of this landbank. Instead, slate is shown as an indicative landbank based on declared returns, but it is noted that the true permitted reserves figure may be greater. It is perhaps more realistic to present the declared returns data as being indicative of permitted reserves which are not disputed. Accurate information on the reserve potential for this material is unknown, this is an issue that future surveys will need to address.

4.8 Notwithstanding the effect on the collation of having to reconfigure the allocation of sales for reasons of confidentiality, it is clear from the landbank figures that crushed rock reserves throughout most of North Wales are large with most landbanks in excess of 20 years in all areas. This is the level stipulated in MTAN 1, above which it is deemed that further provision is not appropriate in most circumstances. Only Flintshire has less than 20 years supply of limestone.

4.9 In terms of sand and gravel, the landbank has 23 years in North East Wales, but stands at only 6 years in North West Wales, below the 7 year minimum recommended in MTAN1.

Table 7 Reserves Landbanks for Aggregates North Wales 3 Year Sales Average

	2015 Aggregate sales	2016 Aggregate sales	2017 Aggregate sales	Average sales	Permitted Reserves at 31/12/2017	Landbank (years)
Limestone						
NW Wales (a)(b)						
Denbighshire	0.00	0.66	0.19	0.28	20.4	72
Flintshire	3.24	2.92	2.39	2.85	41.4	15
North East Wales	3.24	3.59	2.58	3.14	61.8	20
Total North Wales	3.24	3.59	2.58	3.14	61.8	20
Igneous						
Anglesey (a)	0.20	0.28	0.29	0.26	14.2	56
Gwynedd	0.23	0.19	0.19	0.20	8.1	40
NW Wales	0.43	0.47	0.48	0.46	22.3	48
Conwy (b)	0.82	0.88	0.70	0.80	61.5	77
North East Wales	0.82	0.88	0.70	0.80	61.5	77
Total North Wales	1.25	1.35	1.18	1.26	83.7	66
Sand & Gravel						
NW Wales	0.24	0.24	0.24	0.24	1.35	6
NE Wales	0.73	0.52	0.60	0.62	14.1	23
Total North Wales	0.97	0.76	0.84	0.86	15.4	18
Slate/ Secondary						
Total North Wales	0.46	0.58	0.59	0.54	20.2	37
Total Aggregate North Wales	5.92	6.27	5.19	5.80	181.2	31

(a) Anglesey limestone included with Anglesey Igneous (b) Conwy limestone combined with Conwy Igneous

Note: NE Wales limestone excludes Conwy Limestone. Slate reserves based on declared returns only. Sandstone, shale & grit based on returns only, and generally relates to bulk fill markets. Reserves expressed as million tonnes.

4.10 The landbanks for crushed rock show an increase on the levels in 2007 & 2008. This is entirely accountable by the significant and prolonged downturn in the construction market in the intervening five years. In the longer term the landbank is expected to decrease when sales will improve in response to improved market conditions. There are no permitted reserves in Wrexham, and there is little remaining consented crushed rock in Snowdonia.

4.11 The sand and gravel landbank remains at a critical position in NW Wales. BGS mapping has indicated significant high quality resources, albeit that much is within the Llyn Area of Outstanding Natural Beauty. Any improvement in sales will further decline the landbank in NW Wales. There are no operational sand and gravel sites of significance within Anglesey, or Snowdonia NP.

4.12 The landbank is apparently healthy in NE Wales, but again, distribution of sites and capacity is not evenly distributed. The majority of the permitted reserves are located in Wrexham, and there are no permitted reserves in Denbighshire or Conwy. This picture may be further complicated by the distribution of types of sand and gravel, and the issue will be explored as an issue for the RTS review to redress this regional imbalance.

4.13 Table 7b illustrates a landbank based on the previous 10 years sales. This is not the method of calculation as specified in paragraph 45 of Minerals Technical Guidance Note1: Aggregates, but is agreed as the basis for estimating demand agreed with DCLG for all RAWPS and AWPS across Wales and England. This longer period reduces sensitivity to short term changes to sales patterns.

Table 7b Reserves and Landbanks for Aggregates North Wales 10 Year Sales Average

	10 yr Average sales	Permitted reserves at 31/12/2017	10 yr Landbank (years)
Limestone			
NW Wales (a)(b)			
Denbighshire	0.34	20.4	60
Flintshire	2.23	41.4	19
North East Wales	2.57	61.8	24
Total North Wales	2.57	61.8	24
Igneous			
Anglesey (a)	0.22	14.2	64
Gwynedd	0.30	8.1	27
NW Wales	0.53	22.3	42
Conwy (b)	0.79	61.5	77
North East Wales	0.79	61.5	77
Total North Wales	1.32	83.7	63
Sand & Gravel			
NW Wales	0.17	1.35	8
NE Wales	0.57	14.1	25
Total	0.74	15.4	21
Slate/ Secondary			
Total North Wales	0.51	20.2	39
Total Aggregate North Wales	5.15	181.2	35

(a) Anglesey limestone included with Anglesey Igneous (b) Conwy limestone combined with Conwy Igneous Note: NE Wales limestone excludes Conwy Limestone. Rounding of totals figures. Reserves expressed as million tonnes.

5. SECONDARY & RECYCLED AGGREGATES

5.1 In addition to primary aggregates, other materials are important in contributing towards meeting demand in the North Wales Region and in terms of policy, have priority over primary aggregates. The most significant material in this category in the region is slate which is worked both as a by-product of roofing slate production and as a secondary material from waste tips. Aggregates derived by recycling construction wastes comprise another important group of materials and are generally abbreviated to CD+EW (construction, demolition and excavation wastes). Clay and shale are also worked intermittently in the region for aggregate purposes and, depending upon specification, substitute for traditional primary aggregates. Unlike South Wales, there are no arisings (or stockpiles) of pulverised fuel ash (pfa) or furnace slag available in the region and there are only very limited opportunities if any, for the removal of former colliery spoil heaps for use as fill. The only remaining colliery spoil is in Wrexham at Llay and Bersham. Material from Llay has fed into cement manufacturing in the past.

Slate

5.2 Where slate has been used as aggregate, whether primary dug or processed waste, it has been included in the total sales; see Table I and 3 above, this is to give an indication of the overall size of the aggregate market served by the region in 2015. Figure 9 shows the relative share of the crushed rock aggregate sales met by slate.

5.3 In this region, the main source of secondary aggregates is waste slate. Although there is one dominant producer, there are now a number of other firms in the business. All uses of slate, including those for decorative and landscape purposes, have been considered as aggregate for the purpose of this report. In 2017 slate aggregate sales as a proportion of all aggregates has improved and accounts for 14% of the market. Sales of slate have improved compared with 2015.

5.4 The companies involved continued to actively market the material, although none of this material has been shipped by rail or sea for logistical reasons.

Table 8: N Wales: Sales of slate for aggregates 2006 -2015

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1,000 tonnes	710	577	521	432	404	409	449	458	576	591

Source: N Wa RAWP Surveys

5.5 The majority of the material was produced, recovered or recycled in Gwynedd but a small amount came from Denbighshire and Snowdonia.

5.6 In terms of reserves of slate waste, although difficult to assess with any precision, it has been estimated that there are about 79Mt of slate waste available to be worked. Of this some 39Mt are known to exist with planning permission in Gwynedd but the true figure may be more than twice this. Reserves in Denbighshire represent a small proportion of those that have been declared.

Clay, Shale, and Colliery Spoil

5.7 In the case of fill grade material from clay/shale sites considered suitable for construction fill, four sites contain residual quantities of reserves, but have not been worked to any great extent. Two of these sites have permissions or application for landfill, and a further one has a restoration ongoing utilising construction fill, located in Flintshire, the remainder being in Denbighshire. However, the figures are thought to be underestimates of the true reserve. Little information was provided for the survey but shales and sandtones continued to be used for aggregate in bulk fill uses.

Construction and Demolition Waste

5.8 No survey of this material was carried out for 2017. The survey of road planings was carried out by only Authority. However, it is known anecdotally that C&D waste was being produced and although some of this material did go to landfill sites, mainly for engineering purposes, such as capping and road construction much of the material remained on site and it is reasonable to assume some was used as aggregate substitute. Improvements in data capture by the Environment Agency may allow better analysis, but much data is on arisings of waste, not on end products.

5.9 C&D waste arisings reflect the general downturn in the construction sector. Material is stockpiled at a number of sites, but inputs exceed onward sales of sorted and recovered materials for recycling. Much of the material being handled is cohesive material or soils, and demand by industry for construction and demolition disposal sites remains high, albeit this is at odds with the governments stated desire for greater recycling.

6. RESEARCH

6.1 A programme was established by the Welsh Assembly Government in 2001 to provide funding for minerals and waste planning related research projects. The research programme aims to support the development of policy and Technical Advice Notes which will assist in achieving the Assembly's goals of sustainable development, economic growth, tackling social disadvantage and promoting equal opportunities. The research funded by the programme is intended to provide sound evidence-based foundation for future policy development.

6.2 The programme is currently funding a five-year programme to complete modern geological mapping to cover Wales by the British Geological Survey. This initially, concentrated on South migrating northwards into Mid Wales and in 2008/9 continued into North Wales. The Mineral Resource Map for Wales was formally launched in 2010, though earlier versions had been made available to planning authorities at an earlier date.

6.3 The BGS has produced mineral safeguarding maps and guidance for Wales, to enable Unitary Authorities to prepare LDP safeguarding policies

7. REGIONAL TECHNICAL STATEMENT (RTS)

7.1 The Minerals Technical Advice Note 1 (MTAN1) published in 2004 required the production of Regional Technical Statements (RTS) for North and South Wales respectively. The inaugural RTS was endorsed and published in 2009. This set out recommendations for maintaining the managed aggregate supply by means of allocation recommendations for each Unitary and the Welsh Assembly Government regarded it as a material consideration in formulating plans and in particular, in setting out matters to be implemented over the ensuing five years, including apportionment to MPA areas.

7.2 At this stage it is too early to assess the effectiveness of the RTS in informing the mineral planning process in terms of planning applications. A number of LDPs have incorporated the recommendations of the RTS, however, few applications have directly resulted as a consequence. It is evident that at that crushed rock land banks are generally sufficient for the time being, but that further provision may be required for sand and gravel in North West Wales. An upturn in construction activity may encourage investment in securing new reserves by the minerals industry.

7.3 MTAN1 requires the RTS to be reviewed at 5 yearly intervals. The Review process was carried out during 2013 and finalised in 2014. It was agreed to prepare one document setting out the background and methodology of the RTS and supported by two Technical Appendices, one for North Wales and one for South Wales, which will set out Unitary Authority specific recommendations for landbanks and apportionment to ensure supply is capable of being met for the duration of any given LDP plan period. This translates as needing to maintain the recommended minimum 7 years sand & gravel provision for the entire 15 year plan period, ie 22 years, and a minimum of 10 years crushed rock provision for the entire plan period, ie 25 years. A draft 1st Review RTS was issued for consultation between 28th October and 23rd December 2013. The publication of the final document for political endorsement by each Unitary Authority and endorsement of the document as an example of regional collaboration by the Minister for Housing and Regeneration was expected to take place by April 2014 however, the requirement for each Unitary Authority formally endorse the plan lead to delay as a number of authorities lacked delegated powers and necessitated reports to be presented to Cabinet or Full Council meetings for endorsement. The final endorsement by Welsh Government took place in June 2014, and the document was published, with a Welsh translation in August 2014.

7.4 It was agreed to not overcomplicate matters and a number of methods of attempting to predict future demand were rejected, and included ‘per capita’, gross domestic production and housing demand. The consultation draft instead recommends a simple 10 year average of sales, with adjustments for local factors or sustainability matters such as transportation distribution. Spatial maps illustrate that there is a good coverage of quarries, and that the majority are already in locations closed to transportation distribution links. In North Wales, some rebalancing is recommended to offset an imbalance in the distribution of sand and gravel reserves, for example, as regionally reserves are at an adequate level, but at a unitary or sub-regional level there are some serious shortfalls, as the majority of reserves are held in Wrexham

Appendix 1: Sites Included in the 2017 Survey

Unitary Authority	Site	Material	Grid Reference
ANGLESEY	Gwyndy	Igneous	395795
	Hengae	Igneous	440687
	Rhuddlan Bach	Limestone	486806
	Nant Newydd	Limestone	481811
	Bryn Engan	Limestone	507814
	Aber Strectrt	Limestone	503866
GWYNEDD	Garth (Minfordd)	Igneous	259339
	Nanhoron	Igneous	-
	Trefor/Yr Eifl No 2	Igneous	-
	Fferm Graianog	Sand & Gravel	245349
	Port Penrhyn, Bangor	Sand (Marine)	259373
	Penrhyn	Slate	262365
	Oakeley	Slate	269347
	Pen yr Orsedd	Slate	250354
	Llechwedd	Slate Waste	-
	Manod & Graig Ddu	Slate Waste	-
SNOWDONIA	Arthog	Slate Waste	-
CONWY	St. George	Limestone	970373
	Raynes	Limestone	890780
DENBIGHSHIRE	Graig (Llanarmon)*	Limestone	320356
	Graig Denbigh*	Limestone	305366
	Maes y Droell*	Sand & Gravel	322356
	Moel y Faen	Clay/Shale	319348
FLINTSHIRE	Pant	Limestone	319730
	Pant y Pwll Dwr	Limestone	319732
	Aberdo/Bryn Mawr	Limestone	318372
	Hendre	Limestone	319368
	Cefn Mawr	Limestone	320363
	Parrys	Shale	327366
	Maes Mynan	Sand & Gravel	311372
	Fron Haul	Sand & Gravel	315370
WREXHAM	Borras	Sand & Gravel	364524
	Ballswood	Sand & Gravel	350563
	Hafod	Sand & Gravel	

Appendix 2. Dormant/Inactive Sites included in 2017 Survey

Unitary Authority	Site	Material	Grid Reference
ANGLESEY	Bwlch Gwyn	Igneous	485730
	Tywyn Trewan	Sand/Ash	321747
	Creigiau	Sandstone	488860
GWYNEDD	Cae Efalwyd	Sand & Gravel	246352
	Tan y Bryn	Sand & Gravel	246352
	Gro Sarnau	Sand & Gravel	-
	Pentre Uchaf	Sand and Gravel	-
SNOWDONIA	Tonfanau	Granite	-
CONWY	Plas Gwilym	Limestone	880780
DENBIGHSHIRE	Burley Hill	Limestone	320360
	Pant Y Gwlanod	Limestone	320357
	Graig Denbigh	Limestone	305366
	Graig Llanarmon	Limestone	320356
FLINTSHIRE	Grange	Limestone	316375
	Ddol Uchaf	Sand & Gravel	315371
	Ruby	Shale	320367
WREXHAM	None	None	-

Appendix 3: North Wales Aggregates Working Party Publications

Interim Report	November 1976	out of print
Regional Commentary Part 1	June 1981	£2.50
Regional Commentary Part 2	July 1981	£2.50
Report on AM85 Survey	June 1987	£2.50
Regional Commentary 1988	October 1988	£2.50
First Annual Report 1989		£2.50
Report on AM89 Survey	April 1991	£5.50
Annual Report 1990	June 1991	£3.50
Regional Commentary	February 1992	£5.50
Annual Report 1991	June 1992	£3.50
Annual Report 1992	July 1993	£5.50
Annual Report 1993	July 1994	£5.50
Report on AM93 Survey		£5.50
Guidelines for Aggregates Provision	March 1995	£5.50
Annual Report 1994		£5.50
Annual Report 1995		£5.50
Annual Report and Statistics 1996-2000 (with revised 1995 data) (single volume)		
Annual Report 2001	March 2002	£15.00
Annual Report 2002	September 2003	£15.00
Annual Report 2003	September 2004	Free
Annual Report 2004	September 2006	Free*
Annual Report 2005	May 2007	Free*
Annual Report 2006	Dec 2007	Free*
Regional Technical Statement	Feb 2008	Free *
Annual Report 2007	Dec 2008	Free *
Annual Report 2008	Nov 2009	Free*
Annual Report 2009	Oct 2012	Free*
Annual Report 2010	Oct 2012	Free*
Annual Report 2011	Nov 2012	Free*
Annual Report 2012	Dec 2013	Free*
Regional Technical Statement 2010	July 2013	Free*
Annual Report 2013	Dec 2014	Free*
Annual Report 2014	Nov 2015	Free*

* This report is free to download can be viewed on the North Wales RAWP website ie www.nwrawp-wales.org.uk However, a charge will be made if a hard copy is requested; this will reflect the price of copying, administration and postal charges.

Appendix 4: Glossary and Acronyms

Active	A quarry with a current planning permission producing stone in 2015.
Aggregates	Sand, gravel, crushed rock and recycled or secondary materials used in the construction industry eg. for purposes such as the making of concrete, mortar, asphalt or for road stone, drainage or bulk filling materials.
AMRI	Annual Minerals Raised Inquiry – an annual survey by the Office of National Statistics (ref PA 1007)
British Aggregates Association (BAA)	An association formed in 1999 representing over 50 mainly independent and privately owned quarry companies in the UK.
DCLG	Department of Communities and Local Government (ie for England) previously ODPM
Construction Demolition and Excavation Waste (CD&EW)	Material arising from the demolition of buildings, it can include material that after processing, for example by crushing and sizing, can be re-used as aggregate. (previously referred to as C&DW – excavation waste is now usually included)
Coated Stone	Aggregate coated with bitumen for road construction.
Crushed Rock	Stone derived from a solid rock mass, for example limestone, by quarrying and processed, usually by mechanical breaking, for use in construction.
DCLG	Department for Communities and Local Government.
Dormant	A quarry with a valid planning permission which cannot be lawfully worked or resume working until a scheme of modern planning conditions has been submitted to and approved by a Mineral Planning Authority.
EAW	Environment Agency (Wales).
Export	The transport of aggregate from the North Wales region to other areas, including to other parts of Wales as well as England.
Fill	Aggregate used to fill large voids preparatory to construction, for example for foundations or to form embankments during road construction.
Inactive site	Sites with planning permission which are not operational but which can be reactivated.
Igneous Rock	Solidified molten rock, e.g. granite, dolerite
Landbank	A stock of planning permissions for the winning and working of minerals, usually expressed in years based on recent averaged outputs. Normally reserves in dormant sites are excluded from the calculation.
Limestone	A sedimentary rock consisting mainly of calcium carbonate.

Mothballed site	A quarry which is temporarily not working for operational and economic reasons but which is intended to become operational again.
MPA	Minerals Products Association, formerly Quarry Products Association. A trade association which represents over 80 quarry companies which, together, account for 90% of the supply of aggregate materials in the UK.
NWaRAWP	North Wales Aggregates Working Party (nb when in some cases abbreviated to NWRAWP, this can be confused with the North West AWP in England)
Permitted Reserves	Areas and tonnages of rock with a valid planning permission for extraction which have been defined by survey and or estimation.
Primary aggregate	Naturally occurring (as opposed to recycled material) rock, sand and gravel suitable for construction aggregate purposes.
Rail Ballast	Aggregate used to support railway track.
Recycled Aggregates	Aggregates previously used in construction, rail ballast, pipe trench excavation etc, recycled for further aggregate use.
Resource	Deposits of rock and sand and gravel which are likely to be suitable for working for aggregate but which may need further technical evaluation and will need planning permission before development can commence.
Road Planings	Stone recovered during the surface repair of road carriageways. Often this is coated stone which will need to be treated to remove old bitumen if it is to be reused in road construction.
RTS	Regional Technical Statement – These have been produced by the North and South Wales RAWPs for their respective regions as a general framework for the preparation of development plans
Sand and Gravel	Unconsolidated usually superficial material usually of fluvial or glacial origin overlying the solid geology. However some deposits are bedded and form part of the solid geology. Deposits are usually worked as a source of material for general building and for the manufacture of concrete.
Secondary Aggregate	Wastes or by-products suitable for aggregate purposes but derived from activities where aggregate production is not the main aim eg, various industrial processes and the extraction of minerals for uses other than for aggregates. These include for example colliery waste, blast furnace slag, slate waste.
Sharp Sand	Coarse sand suitable for use in making concrete.
Slate Waste	Waste material arising from the manufacturing of roofing and architectural slate (See Secondary Aggregates). Often sourced from historic working deposits of quarrying waste.
Soft Sand	Otherwise known as building sand, fine sand suitable for use in such products as mortar and plaster.

SRAs	Secondary and recycled aggregates.
WET	Wales Environment Trust