North Wales Regional Aggregates Working Party

Annual Report 2005

This Annual Report covers the calendar year 2005. During that period the North Wales Regional Aggregates Working Party (NWaRAWP) Officers were:

Chairman: Iwan Evans, Head of Service (Planning and Transportation)

Secretary: Jeremy Gibbins

The Environment Directorate, Gwynedd Council, Council Office, Caernarfon, Gwynedd, LL55 1SH

However, this report was compiled by Ian Thomas and Karen Down, National Stone Centre, Wirksworth, Derbyshire, DE4 4LS as commissioned by the Welsh Assembly Government on 1 June 2006 (see introduction).

Copies of the report will be made available electronically on the NWaRAWP web site when launched, and on the Welsh Assembly Government web site.

Acknowledgement

The NWaRAWP wishes to acknowledge the Welsh Assembly Government for its financial support, which has enabled this report to be published. 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. Readers should use corroborative data before making major decisions based on this 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 (particularly 6), for example other land uses and transport.

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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 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 2005, and where appropriate (e.g. permitted reserves) relates the position at 31 December 2005. In 2005 a major four yearly survey (AM2005) was carried out by the Department of Communities and Local Government (DCLG). This survey collected information relating to permitted reserves and the distribution of aggregate and therefore this report is able to provide a level of detail unavailable other than in the AM survey years.

1.4. As 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, in the interest of clarity, it was felt appropriate to set them out here.

1. In the period after local government reorganisation, the RAWP secretariat was provided by Flintshire County Council (and prior to that by Clwyd County Council).

2. For numerous reasons, largely outside the RAWP's control, RAWP reports were not produced for some years in the late 1990s. Thus in December 2001, the National Stone Centre was invited to attempt to revive surveys for 1996-2000 and produce reports, which it did (together with data for 1995 recast in the form of the new MPA areas) and submitted separate annual reports in September 2002. In 2003, NSC was asked to collate these into a single report, which was made publicly available by Flintshire CC later that year.

3. Meanwhile in 2002, the secretariat passed to Roger Bennion and the Chair to Iwan Evans both then at Gwynedd Council. Under their auspices, the 2001, 2002 and 2003 surveys were conducted and related annual reports published by the Council.

4. In the last few weeks of 2004, Jeremy Gibbins of Gwynedd Council took over the secretariat until his retirement in March 2006 and coincidentally, Iwan Evans also retired on health grounds at this point.

5. In parallel, severe delays were being experienced in conducting the 2004 survey on account of the reluctance of QPA members to participate until issues of data confidentiality had been resolved nationally. The latter was effected in October 2005.

6. Trawls of N Wales MPAs for officers willing to take on the secretariat proved unsuccessful, so in March 2006, the Welsh Assembly Government invited competitive tenders to carry out this work from 1st June 2006 to 31st May 2007. As a result, the National Stone Centre (NSC) was commissioned to provide the Technical Secretariat for this period.

7. This report has been complied for the RAWP under this last commission, and as in the past is based largely on information supplied by the quarry operators to the Mineral Planning Authorities and in turn, to the NSC.

1.5 A high level of returns was received for the AM2005 survey and in the majority of cases a high level of detail was provided. Therefore the sales, reserve and distribution figures are all believed to be robust.

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 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 NWaRAWP region is comprised of six unitary authorities, which as such are also Mineral Planning Authorities (MPAs): Anglesey; Gwynedd; Conwy; Denbighshire; Flintshire and Wrexham and the Snowdonia National Park.

Membership

2.2. The membership of the NWaRAWP is drawn from officers of the MPAs, the aggregates extraction industry, Welsh Assembly Government WAG), the Office of the Deputy Prime Minister (ODPM - now the Department for Communities and Local Government - DCLG), the Technical Services Division (WAG), the British Geological Survey, the National Federation of Demolition Contractors, representing the recycling sector, the marine aggregates producers, the Environment Agency, the Countryside Council for Wales and the South Wales RAWP.

2.3. In 2005, Iwan Evans, Head of Planning and Transportation at Gwynedd continued as Chair. However, during the year Gareth Jones took over as acting chair because Iwan Evans was on long term leave through illness. Gwynedd Council was contracted to provide secretarial services to the NWaRAWP until March 2006 (see para 1.4 above). A full list of membership at the end of 2005 can be found in Appendix 1.

2.4 There were a number of membership changes during the year which were as follows: Meryl Read (EA) replaced Ricky Carter, Siwan Williams (WAG-N Wales) replaced Basil Hollington, Paul Chambery (slate) replaced Sion Roberts, Jonathan Cawley (Denbs CC) replaced Gareth Jones, Bob Dewey (Wrexham BC) replaced Bob Sheffield, and Paul Lusty (BGS) replaced Jeremy Davies. WET was newly represented by Rebecca Huck, Tom Brown (Hanson /QPA) replaced Eddie Jordan, Viv Russell (Tarmac/QPA) replaced Murray Adair.

Meetings

N Wales RAWP

2.5. The full N Wales RAWP met on 20th April 2005 at Caernarfon. Members discussed the establishment of an RTS sub group RAWP membership and the RAWP secretariat. They also received a presentation on the findings of the IMAECA project from Enviros. When its uses and limitations were explained. The Wales Environment Trust (WET) updated the meeting and the recently initiated IMAGIN project was also described. Considerable concerns were

expressed by QPA and BAA relating to the need to ensure confidentiality of the 2004 survey returns and the matter was not resolved; action on the survey by members of these trade bodies had been halted since February. The RAWP pressed for research into sand and gravel resources of North West Wales. Prohibition notices and ROMPs were also discussed. It was noted that although Jeremy Gibbins (who had taken on the role of Secretary on a temporary basis, (following the resignation of Roger Bennion), he was due to retire on 30th April but it had been agreed that he would continue on a half time basis, resuming in June.

2.6 The RAWP also met on 12th October at Mold. The establishment of an RTS Political (i.e. authority members) Sub Group and a draft Memorandum of Understanding was discussed. The matter of Prohibition Notices and sites lists was raised, as was the need for an annual MPA statement as requested by WAG. Concern was expressed at the lack of the RTS SG meetings and that numbers of members had declined. An earlier Issues Paper would be revised and taken to the RTS SG. The need for a SEA and HIA in respect of the RTS was aired, but the discussion was inconclusive. Views of members' organisations were still being sought at national level. There was a call for co-ordination of RTS content between North and South Wales and a draft contents list was to be drawn up.

2.7 Concerns were also expressed about ongoing problems of secretarial services and particularly as anticipated after March 2006. It was possible to report that just before the meeting, the impasse concerning progressing the 2004 survey had been broken but that new procedures would be introduced; QPA were preparing a note to this effect. It was reported that the NE Wales sand and gravel survey would be postponed. The role of secondary aggregates was considered and as was the timing of the RTS and LDP processes.

N Wales RAWP Technical Sub Group

2.8 A Technical Sub Group had been convened in the past to advise the RAWP on matters of a particular technical nature. This group now had been re-constituted as the RTS Sub Group. It met on 7th November for the first time since September 2004 and discussed a draft Issues Paper and the other matters put before the RTS Members Forum (see below). In the interim, members had made written comments in a short draft Issues Paper, circulated in August 2005.

N Wales RTS Forum

2.9 The inaugural meeting of the "Political Sub Group" was held on 9th November 2005. It was resolved to re-name the group the RTS Members Forum and that numbers could if they wished, be accompanied by their minerals officer colleagues. A copy of the Memorandum of Understanding and an amended draft Issues Paper, based on the equivalent for South Wales, was considered. It was reported that the industry had felt the transition from an issues to an options paper was too large a move and had asked to be able to present a position

statement, but had not done so by the year end. Enviros made a presentation on IMAECA.

2.10 It was envisaged that a final issues paper would be published shortly and a final RTS could be issued by the end of March 2006. It was also agreed that meetings of the RTS Members Forum only be convened when there were policy matters to be decided.

3. SURVEY RESULTS 2005

Sales

3.1 Table 1 shows the total aggregate sales both in the region and sub-divided into North West 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 relies mainly on igneous rock for crushed rock aggregate, mostly for use within the region, whereas in the North East limestone is the main source of crushed rock of which about 65% was exported from the region in 2005.

Table 1: Aggregate Sales-North Wales Region 1994-2005 (, 000 tonnes)

	SAND&GRAVEL			CRUSHED ROCK			TOTAL N WALES
	NW Wales	NE Wales	Total N Wales	NW Wales	NE Wales	Total N Wales	Aggregates Sales
1994	245	1461	**1706**	690	8030	**8720**	**10426**
1995	282	1385	**1667**	942	7586	**8528**	**10195**
1996	301	1417	**1718**	614	6413	**7027**	**8745**
1997	213	1225	**1438**	1161	6327	**7488**	**10316**
1998	189	1295	**1484**	540	7497	**8037**	**9521**
1999	261	1420	**1681**	1065	6931	**7996**	**9677**
2000	371	1157	**1528**	1270	6743	**8013**	**9541**
2001	216	1170	**1386**	702	6496	**7198**	**8584**
2002	213	*1141	**1354**	651	5869	**6520**	**7874**
2003	231	1040	**1271**	656	5641	**6297**	**7568**
2004	243	904	**1147**	738	5767	**6505**	**7652**
2005	250	985	**1235**	565	5530	**6095**	**7330**

NW Wales S&G includes 44,785 tonnes marine aggregate
Excludes slate sales to allow comparison with past sales

3.2 Table 1 also shows the contribution of the sub-regions to crushed rock and sand and gravel sales respectively. The downturn in sales since 1999 noted in previous reports continued in the case of crushed rock but in 2005 sales of sand and gravel rose slightly, reversing the trend.

3.3 The survey reveals an overall decline in sales of primary aggregate across the region of some 5% compared with 2004. This is the sixth consecutive year that sales have fallen. In order to allow a comparison with previous years the figures do not include the contribution to the primary aggregates market made by slate. However, if added, sales would be about 3% above those for 2004. This fairly level trend appears to reflect the state of the market in the region in 2005. Full details of sales by rock type, including slate, are set out in Table 3.

3.4 Individually, sales of sand and gravel showed an increase of about 7% and crushed rock a decrease of about 7% compared with 2004.

3.5 In terms of Unitary Authority Production, which is set out in Table 2, the rise in sand and gravel sales was primarily due to increased sales in Wrexham which are shown combined with sales from Flintshire and Denbighshire in order to protect confidentiality. With regard to crushed rock, a modest increase in sales in Conwy (partly as a result of a new permission at St Georges Quarry) was offset by a modest fall in Flintshire and Denbighshire.

Table 2: Sales of Aggregate by Unitary Authority 1998-2005 (tonnes)

	1998	1999	2000	2001	2002	2003	2004	2005
SAND&GRAVEL								
Anglesey	0	0	0	0	0	0	©	©
Gwynedd	188998	261310	370094	216197	212964	230924	245307	250,213
Snowdonia	0	0	0	0	0	0	0	0
Conwy	0	0	0	0	0	0	0	0
Flintshire/Denbighshire	770585	793036	585427	546512	523613	389691	292519	#
Wrexham	524007	627036	571737	623832	617553	650771	606833	985,074
Total N Wales	**1483590**	**1681382**	**1527258**	**1386541**	**1354130**	**1271386**	**1144659**	**1235287**
CRUSHED ROCK								
Anglesey	318856	911111	1006937	525494	485026	419079	445231	564950
Gwynedd	149339	144874	262717	177063	165480	236924	292705	*
Snowdonia	72226	9076	0	0	0	0	0	0
Conwy	1764198	1637307	1858172	1743910	1671991	1502975	1258972	1370431
Denbighshire	2744550	2615243	2332716	1719904	1226523	1066215	1037837	905581
Flintshire	2988178	2678418	2551903	3031829	2970787	3071685	3470501	3254442
Wrexham	0	0	0	0	0	0	0	0
Total N Wales	**8037347**	**7996029**	**8012445**	**7198200**	**6519807**	**6296878**	**6505246**	**6095404**

Gwynedd S&G includes 44,785 T. Marine dredged sand
*** Gwynedd crushed rock combined with Anglesey to protect confidentiality**
© denotes confidential figure
Excludes slate sales to allow comparison with past sales
 # For 2005 Flintshire and Denbighshire sand and gravel has been combined with Wrexham to protect confidentiality

3.6 Applying the current rules on confidentiality, it has been necessary to combine rock sales in Gwynedd and Anglesey and, as referred to above, sand and gravel sales in Flintshire, Denbighshire and Wrexham in order to protect confidentiality.

3.7 As assessment of the contribution made to aggregates supply by each authority shows that Flintshire remains the main producer of crushed rock, providing about 53% of the regional output, a similar share to previous years. Wrexham continues to be the primary producer of sand and gravel.

3.8 Tables 3 and 4 set out the end uses of the primary aggregate sales. In the case of crushed rock, a full breakdown of uses was not provided for the AM2005 survey and those 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.

3.9 Table 3 shows that about 28% of crushed rock was used as roadstone with a higher proportion being used coated. Approximately a further 13% was used as concrete aggregate. Other constructional uses (including unknown uses) accounted for almost 42% of sales. Sales for non aggregate purposes amounted to almost 8% of total sales of crushed rock.

3.10 Table 4 shows that about 36% of sand and gravel sales were sharp sand; soft sand, and gravel for concrete accounting for 17% and 22% of sales respectively. Just under 16% of the remaining supply comprised other screened gravels with the remainder being made up of other unspecified sand and gravel. No sand and gravel was used for non aggregate purposes.

Distribution

3.11 Owing to the more detailed nature of the 2005 survey, information relating to distribution of aggregate is available. The detailed distribution is set out in Tables 8a and 8b below. One thing stands out clearly and that is the level of exports from the region. In 2005, 57% of crushed rock and 41% of sand and gravel was exported. In the case of both rock and sand and gravel the majority of material was exported to the North West Region of England. A very small amount was exported to South Wales (just under 3% of crushed rock exports and under 1% of sand and gravel exports).

3.12 It can be seen from the tables that the majority of aggregate is transported by road, regardless of its destination. In more detail, 97% of rock used within North Wales and 84% of that exported from the region was carried by road. For sand and gravel all movements were by road. Of the crushed rock transported by modes other than road, almost 270,000 tonnes was sent by rail, mainly to the North West but also to London and the South East. A further 279,000 tonnes was transported by water, mainly to London and the South East but also to the East of England.

Table 3 Crushed Rock Sales: North Wales 2005 All figures in Tonnes

LIMESTONE/DOLOMITE	COATED ROADSTONE	UNCOATED ROADSTONE	CONCRETE AGGREGATE	OTHER SCREENED/ GRADED AGG.	RAIL BALLAST	OTHER CONSTRUCTION INCL. UNKNOWN	TOTAL AGGREGATES	BUILDING STONE	OTHER NON-AGG. USES	TOTAL NON-AGG. USES	TOTAL
Anglesey	0	0	0	0	0	0	-	11,525	0	11,525	**11,525**
NW WALES	0	0	0	0	0	0	-	11,525	0	11,525	**11,525**
Conwy	120,158	69,549	128,115	59,837	0	535,867	913,526	0	7,739	7,739	**921,265**
Denbighshire#	210,938	1,446	86,568	56,708	0	549,921	905,581	65	3,844	3,909	**909,490**
Flintshire	469,579	643,380	597,778	362,757	0	1,180,948	3,254,442	164	512,536	512,700	**3,767,142**
NE WALES	800,675	714,375	812,461	479,302	0	2,266,736	5,073,549	229	524,119	524,348	**5,597,897**
TOTAL Lst	800,675	714,375	812,461	479,302	-	2,266,736	5,073,549	11,754	524,119	535,873	**5,609,422**
IGNEOUS ROCK											
Anglesey& Gwynedd*	117,807	128,226	20,182	51,555	84	247,096	564,950	300	0	300	**565,250**
NW WALES	117,807	128,226	20,182	51,555	84	247,096	564,950	300	0	300	**565,250**
Conwy	61,837	17,579	19,859	52,448	227,781	77,401	456,905	0	0	0	**456,905**
NE WALES	61,837	17,579	19,859	52,448	227,781	77,401	456,905	0	0	0	**456,905**
TOTAL Igneous	179,644	145,805	40,041	104,003	227,865	324,497	1,021,855	300	-	300	**1,022,155**
SLATE											
Gwynedd	0	©	©	©	0	179,153	548,835	©	©	10,037	**558,872**
NW WALES	0	©	©	©	0	179,153	548,835	©	©	10,037	**558,872**
TOTAL Slate	-	©	©	©	-	179,153	548,835	©	©	10,037	**558,872**
TOTAL ROCK	**980,319**	**860,180**	**852,502**	**583,305**	**227,865**	**2,770,386**	**6,644,239**	**12,054**	**524,119**	**546,210**	**7,190,449**

***Igneous Rock figures for Anglesey and Gwynedd combined to protect confidentiality**

 # Denbighshire figures for limestone are higher than those in the National Collation of the AM2005 survey owing to one return not being included in the collation figures

Table 4 Sand & Gravel Sales: North Wales 2005 All figures in Tonnes

	SOFT SAND	SHARP SAND	GRAVEL FOR CONCRETE	OTHER SCREENED GRAVEL	OTHER SAND AND GRAVEL	TOTAL AGGREGATE	INDUSTRIAL USE	TOTAL
Gwynedd	47,040	62,125	53,100	69,308	18,640	250,213	-	**250,213**
Denbighshire/ Wrexham/Flintshire	168,909	381,881	217,019	125,726	91,539	985,074	-	**985,074**
Total NW Wales	47,040	62,125	53,100	69,308	18,640	250,213	-	**250,213**
Total NE Wales	168,909	381,881	217,019	125,726	91,539	985,074	-	**985,074**
TOTAL N WALES	215,949	444,006	270,119	195,034	110,179	1,235,287	-	**1,235,287**

The marine sand landed at Port Penrhyn (44,785) is included in the figure for Gwynedd

To protect confidentiality, small amount of sand & gravel from Anglesey not shown

Table 5a: Distribution of Aggregates from North Wales Quarries 2005 by All Modes & Road

ALL MODES tonnes

Destination / Origin	NE Wales	NW Wales	Total N Wales	S Wales	N West	West Midlands	London/ S East	East of England	Other Regions & Unknown	Total outside Region	Total
Rock											
NE Wales	1401152	354290	**1755442**	91785	2943068	5403	246966	54897	239	**3342358**	**5097800**
NW Wales	18705	919932	**938637**	3175	0	0	0	0	170486	**173661**	**1112298**
Total N Wales	**1419857**	**1274222**	**2694079**	**94960**	**2943068**	**5403**	**246966**	**54897**	**170725**	**3516019**	**6210098**
Sand & Gravel											
NE Wales	500720	17074	**517794**	61	463917	2944	0	0	25	**466947**	**984741**
NW Wales	576	209617	**210193**	0	167	41412	0	0	0	**41579**	**251772**
Total N Wales	**501296**	**226691**	**727987**	**61**	**464084**	**44356**	**0**	**0**	**25**	**508526**	**1236513**

ROAD

Destination / Origin	NE Wales	NW Wales	Total N Wales	S Wales	N West	West Midlands	London/ S East	East of England	Other Regions & Unknown	Total outside Region	Total
Rock											
NE Wales	1401152	280764	**1681916**	91785	2689488	5403	0	7972	239	**2794887**	**4476803**
NW Wales	18705	919932	**938637**	3175	0	0	0	0	170486	**173661**	**1112298**
Total N Wales	**1419857**	**1200696**	**2620553**	**94960**	**2689488**	**5403**	**0**	**7972**	**170725**	**2968548**	**5589101**
Sand & Gravel											
NE Wales	500720	17074	**517794**	61	463917	2944	0	0	25	**466947**	**984741**
NW Wales	576	209617	**210193**	0	167	41412	0	0	0	**41579**	**251772**
Total N Wales	**501296**	**226691**	**727987**	**61**	**464084**	**44356**	**0**	**0**	**25**	**508526**	**1236513**

 # Distribution data not provided for all sales therefore totals do not agree with sales totals in some cases

NE Wales includes Conwy, Denbighshire, Flintshire & Wrexham

NW Wales includes Anglesey & Gwynedd

Figures exclude non-aggregate sales

Rock includes slate worked as primary aggregate

Table 5b: Distribution of Aggregates from North Wales Quarries 2005 by Rail & Water

RAIL tonnes

Destination / Origin	NE Wales	NW Wales	Total N Wales	S Wales	N West	West Midlands	London/ S East	East of England	Other Regions & Unknown	Total outside Region	Total
Rock											
NE Wales	0	73526	**73526**	0	253580	0	15333	0	0	**268913**	**342439**
NW Wales	0	0	**0**	0	0	0	0	0	0	**0**	**0**
Total N Wales	**0**	**73526**	**73526**	**0**	**253580**	**0**	**15333**	**0**	**0**	**268913**	**342439**

WATER

Destination / Origin	NE Wales	NW Wales	Total N Wales	S Wales	N West	West Midlands	London/ S East	East of England	Other Regions & Unknown	Total outside Region	Total
Rock											
NE Wales	0	0	**0**	0	0	0	231633	46925	0	**278558**	**278558**
NW Wales	0	0	**0**	0	0	0	0	0	0	**0**	**0**
Total N Wales	**0**	**0**	**0**	**0**	**0**	**0**	**231633**	**46925**	**0**	**278558**	**278558**

There were no recorded movements of sand and gravel by rail or water in 2005

NE Wales includes Conwy, Denbighshire, Flintshire & Wrexham

NW Wales includes Anglesey & Gwynedd

Figures exclude non-aggregate sales

4. RESERVES AND LANDBANKS

4.1 Table 6a below shows the permitted reserves of crushed rock in the North Wales Region at the end of 2005. The reserves are shown divided into those in active sites and those in inactive sites. In accordance with MTAN1, paragraph 47, those in dormant sites are shown in a separate category. Material contained in dormant sites is not considered to have a valid planning permission for working and does not therefore contribute towards the permitted reserve from which the landbank is derived.

Table 6a: Crushed Rock Reserves North Wales at 31 December 2005

All figures in 1,000 tonnes

LIMESTONE/DOLOMITE	ACTIVE	INACTIVE	TOTAL	DORMANT
Anglesey	83	0	83	0
NW WALES TOTAL	83	0	83	0
Conwy	37,699	150	37,849	0
Denbighshire	20,594	4,541	25,135	11,680
Flintshire	126,206	1,485	127,691	12,000
NE WALES TOTAL	184,499	6,026	190,525	23,680
TOTAL LIMESTONE	**184,582**	**6,176**	**190,758**	**23,680**
IGNEOUS ROCK				
Anglesey	11,867	5,000	16,867	0
Gwynedd	5,400	0	5,400	0
NW WALES TOTAL	17,267	5,000	22,267	-
Conwy	32,138	0	32,138	0
NE WALES TOTAL	32,138	0	32,138	0
TOTAL IGNEOUS	**49,405**	**5,000**	**54,405**	**-**
SLATE				
Gwynedd	41,851	636	42,487	50
NW WALES TOTAL	41,851	636	42,487	50
TOTAL SLATE	**41,851**	**636**	**42,487**	**50**
NW WALES TOTAL ROCK	59,201	5,636	64,837	50
NE WALES TOTAL ROCK	216,637	6,026	222,663	23,680
NORTH WALES TOTAL ROCK	**275,838**	**11,812**	**287,650**	**23,730**

N.B. Dormant reserves **NOT** included in Inactive reserves

4.2 The tables show that the majority of permitted reserves of crushed rock for which returns have been made are contained in active sites (96%). However, in Flintshire and Denbighshire significant quantities of material are additionally present in dormant sites for which reserve figures are unknown. These dormant reserves cannot be re-worked without new conditions being

approved. Nevertheless, the possibility of them being worked in the future cannot be discounted. In Gwynedd and Snowdonia National Park, Prohibition Notices have been served and confirmed in recent years. This has significantly reduced the amount of material contained in dormant sites.

4.3 Table 6b indicates the amount of crushed rock reserve allocated for non-aggregate uses. As a proportion of total rock this represents just under16% of permitted reserves.

Table 6b: Subdivision of Above to Show Non-Aggregate Reserves

LIMESTONE/DOLOMITE RESERVES FOR INDUSTRIAL USES

	ACTIVE	INACTIVE	TOTAL	DORMANT
Anglesey	8	0	8	0
Conwy	0	0	-	0
Denbighshire	0	0	-	0
Flintshire	45,000	0	45,000	0
TOTAL	**45,008**	**-**	**45,008**	-

SLATE RESERVES FOR INDUSTRIAL USES

	ACTIVE	INACTIVE	TOTAL	DORMANT
Gwynedd	73	0	73	0
TOTAL	**73**	0	**73**	0

N.B. Dormant reserves **NOT** included in Inactive reserves

4.4 Table 7 below indicates the permitted reserve of sand and gravel in the North Wales Region at the end of 2005. As for crushed rock the material is shown divided into that in active sites, that in inactive sites and that in dormant sites. The table shows that the majority of the calculated permitted reserve of sand and gravel is contained in active sites (84%). The amount known to be held in dormant sites is relatively small, standing at 0.65Mt across the region. Unknown quantities of sand and gravel in dormant sites are not thought to be significant. There are no sand and gravel reserves allocated for non-aggregate purposes.

Table 7: Sand & Gravel Reserves at 31 December 2005 North Wales

All Figures in 1,000 Tonnes

	ACTIVE	INACTIVE	TOTAL	DORMANT
Gwynedd	950	25	975	225
NW WALES TOTAL	950	25	975	225
Denbighshire/ Flintshire/Wrexham	11,854	2,352	14,206	430
NE WALES TOTAL	11,854	2,352	14,206	430
TOTAL SAND & GRAVEL	**12,804**	**2,377**	**15,181**	**655**

N.B. Dormant reserves **NOT** included in Inactive reserves

Table 8: Reserves & Landbanks For Aggregates* North Wales 2005

LIMESTONE	2003 Aggregate Sales (Million Tonnes)	2004 Aggregate Sales (Million Tonnes)	2005 Aggregate Sales (Million Tonnes)	Average Sales (Million Tonnes)	Permitted Reserves at 31/12/05 (Million Tonnes)	Landbank (years)
Anglesey	0.0	0.1	0.0	<0.1	0.8	8+
NW WALES	0.0	0.1	0.0	<0.1	0.8	8+
Conwy	1.1	0.8	0.9	0.9	37.8	42
Denbighshire	1.1	1.0	0.9	1.0	25.1	25
Flintshire	3.1	3.5	3.3	3.3	82.7	25
NE WALES	5.3	5.3	5.1	5.2	145.6	28
TOTAL LIMESTONE	5.3	5.4	5.1	5.3	146.4	28
IGNEOUS ROCK/ SANDSTONE						
Anglesey	0.4	0.3	**	0.4	16.9	42#
Gwynedd	0.2	0.3	**	0.2	5.4	27#
NW WALES	0.6	0.6	0.6	0.6	22.3	37
Conwy	0.5	0.4	0.5	0.5	32.1	64
NE WALES	0.5	0.5	0.5	0.5	32.1	64
TOTAL IGNEOUS & SSTN.	1.1	1.1	1.1	1.1	54.4	50
TOTAL ROCK	**6.4**	**6.5**	**5.8**	**6.2**	**200.8**	**32**

SAND & GRAVEL	2003 Aggregate Sales (Million Tonnes)	2004 Aggregate Sales (Million Tonnes)	2005 Aggregate Sales (Million Tonnes)	Average Sales (Million tonnes)	Permitted Reserves at 31/12/05 (Million Tonnes)	Landbank (years)
Gwynedd	0.2	0.2	0.25	0.2	1.0	5
NW WALES	0.2	0.2	0.25	0.2	1.0	5
Denbighshire/	0.4	0.3	(a)	(a)	(a)	(a)
Flintshire/Wrexham	0.7	0.6	1.0	1.0	14.2	14
NE WALES	1.1	0.9	1.0	1.0	14.2	14
TOTAL SAND & GRAVEL	**1.3**	**1.1**	**1.3**	**1.2**	**15.2**	**12.7**

Reserve Figures **Exclude Dormant** Reserves
*N.B. it is important to note that the figures in this table relate solely to **aggregate** uses and related reserves.

In addition to reserves shown in table there are **42.4 million tonnes** of **Primary Slate** reserve for aggregate use in Gwynedd

** Sales combined to protect confidentiality

Figures based on average of 2 years sales

(a) Denbighshire & Flintshire combined with Wrexham to protect confidentiality

4.5 Table 8 above provides details of the aggregate reserves and landbank currently available if material allocated for non-aggregate uses and the known dormant reserves are subtracted from the total landbanks. 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.

4.6 It is clear from the landbank figures that crushed rock reserves throughout most of North Wales are large with landbanks well in excess of 20 years in most areas. In terms of sand and gravel, the landbank is a healthy 14 years in North East Wales but stands at only about 5 years in North West Wales, below the 7 year minimum recommended in MTAN1.

4.7 Additional reserves held in dormant sites add to the landbank. Whilst these reserves cannot be worked without new conditions being approved they are nevertheless consented

4.8 For those crushed rock sites where a reserve figure is available the dormant landbank is as follows: Denbighshire, 12 years; Flintshire, 4 years. There are also relatively small quantities of dormant slate reserve in Gwynedd. These landbanks do not include the very significant reserves for which no tonnages are known.

4.9 Dormant landbanks for sand and gravel are as follows: Gwynedd, 1 year; Denbighshire/Flintshire/Wrexham combined, under six months.

5. SECONDARY, RECYCLED AND OTHER AGGREGATES

5.1 In addition to traditional primary aggregates, other materials are important in contributing towards meeting demand in the North Wales Region. The most significant mineral is slate which is worked both as a primary aggregate and as a secondary material from waste tips. Clay and shale are also worked for aggregate purposes and substitute for the traditional primary aggregates at the lower end of the market, for example as fill.

5.2 Sales of slate are included in Table 3 above and amounted to 548,835 tonnes for aggregate and 10,037 tonnes for non-aggregate purposes in 2005. Most of the material was derived from slate waste. However, some is worked as primary aggregate and this is believed to amount to somewhat under 20% of the total.

5.3 In terms of reserves, although difficult to assess with any precision, it has been estimated that there are about 79M tonnes of slate waste available with permission to be worked. Of this some 42.5M tonnes are known to exist in Gwynedd, excluding about 3M tonnes which is permitted as primary aggregate.

5.4 In the case of fill grade material from clay sites considered suitable for construction, some 6.5M tonnes have in the past been declared by operators. However, in 2005 only 1.75M tonnes was declared. Both figures are thought to be underestimates of the true reserve because not all operators have provided information.

5.5 In Wrexham, colliery shale from the former Llay Main Tip is extracted and used in cement manufacture at the Padeswood Works in Flintshire. However, the quantities involved are not known.

5.6 Overall, it has been estimated that in the region the amount of secondary material available for use in the construction industry could amount to in excess of 90M tonnes. However, how much of this material could in practice be used by the region's construction market, for reasons of specification and location, is a matter for debate.

5.7 The situation regarding the substitution of primary aggregate by recycled construction and demolition waste (CDEW) remains unclear. The Welsh Assembly Government commissioned Faber Maunsell to carry out a survey of arisings and re-use for 2005. However, a low response rate has diminished the reliability of results which are in any case only available at present in draft. Nevertheless, the survey estimates that some 8.38M tonnes of recycled material (excluding rail ballast) may have been used as aggregate in 2005.

5.8 No survey of road planings arisings was carried out for 2005. The response to the previous survey in 2004 was poor with only one authority providing a return. However, it is likely that road planings have been recycled in all areas. Nevertheless, they would not be expected to amount to a significant resource.

6: PLANNING APPLICATIONS 2005

6.1. The following information has been provided by the Mineral Planning Authorities and provides details of planning applications and decisions during 2005.

Conwy

6.2 No applications were submitted during 2005. However, following a call-in and a public inquiry in 2004, planning permission was granted by the National Assembly for an extension to the St George Quarry. The permission, dated 19 January 2005, is for 14.8M tonnes of high quality limestone. The material is expected to be worked over about 30 years. In exchange, the company offered to relinquish permitted reserves at Llanddulas Quarry, amounting to 18M tonnes. Overall this results in a net reduction in permitted reserves of some 3.2M tonnes.

Gwynedd

6.3 At Bryncir, a small lateral extension was permitted, providing an additional 20,000 tonnes of sand and gravel reserve.

6.4 Extensions to two slate quarries were permitted. At Penrhyn Quarry a significant extension, containing 6.6M tonnes was granted permission and at Manod an additional 600,000 tonnes was allowed in a lateral extension.

Snowdonia

6.5 No applications were received and no permissions were granted for aggregate extraction during 2005.

Wrexham

6.6 In December 2005 the Council resolved to grant planning permission for extraction of 17.7M tonnes of sand and gravel from Borras Quarry. Approximately 11.8M tonnes of this comprise new reserves that will come from quarry deepening and a major lateral extension. The scale of the development will clearly have a major impact on the North-East Wales landbank. However the permission was not issued in 2005 because a legal agreement associated with the revocation of existing permissions at the quarry had not been signed. Therefore the material is not included in the permitted reserves or landbank for 2005.

Flintshire

6.7 Two applications were received in Flintshire: firstly, an application for an extension to Pant Quarry to extract 2 million tonnes of limestone; and secondly a S73 applications at Fagl lane Quarry for an extension of time to allow the extraction of 3.9 million tonnes of previously permitted sand and gravel.

Denbighshire

6.8 There were no applications in 2005 that affected the permitted reserves of primary crushed rock or sand and gravel. An application to restore Moel Y Waen slate quarry and tipping area, together with an application to allow secondary aggregate storage and recovery, was “resurrected”.

Anglesey

6.9 An application for an extension to Rhuddlan Bach Quarry, received in 2003, remained undetermined in 2005 owing to significant and complex groundwater issues. The application was for an extension to the existing quarry and would yield about 0.94 million tonnes.

7: DEVELOPMENT PLANS

7.1 The table below provides information regarding progress with the preparation of development plans in each Mineral Planning Authority and also sets out the extant development plan for each area.

Table 9: Development Plans

Mineral Planning Authority	Progress in 2005/Current Policy document	Adoption Date (Anticipated)
Anglesey	Plan inquiry August/September 2003. Inspectors report 2004. minimal modification in respect of aggregates policies. Plan abandoned late 2005 but legal advice is that policies reached such a late stage that they do carry some weight. Current policy; Gwynedd Structure Plan 1993 and Gwynedd SPG – Minerals, 1996-2006, adopted by Anglesey March 1996	
Gwynedd	The Gwynedd Unitary Development Plan was at the Draft Deposit stage at the end of 2005 Current Policy relies on the Gwynedd Structure Plan 1993 together with the Rural Arfon Local Plan, Menai Straits Local Plan and the Dwyfor Local Plan	
Snowdonia N.P.	In January 2005 it was resolved to suspend work on the UDP At 31 December 2005 the Authority was in the process of drafting the LDP Delivery Agreement and the Community Involvement Scheme Current policy document; Eryri Local Plan adopted Nov. 1999	
Conwy	At the end of 2004 Conwy abandoned its draft UDP and commenced work on an LDP. In 2005 approval was given by WAG to the LDP Delivery Agreement and work commenced on the Regulation 14 “Pre-Deposit” stage. Gwynedd 1993 and Clwyd 1999 Structure plans as interim	
Denbighshire	UDP Adopted 2002	2002
Flintshire	Following consideration of 17,000 objections to the Consultation Draft published at the end of 2004, post consultation modifications were being drafted during 2005. They are expected to be published for consultation during 2006 Current policy; Clywd Structure Plan 1st Alteration 1991	
Wrexham	The Wrexham Unitary Development Plan was adopted in February 2005. Information gathering and research work commenced for the preparation of the Wrexham LDP. The aim is to prepare a Delivery Agreement for approval by WAG by mid 2006.	2005

8: REGIONAL DEVELOPMENTS AND OTHER SIGNIFICANT MATTERS

8.1 The following information has been provided by the Mineral Planning Authorities and identifies significant developments or other matters with significance for aggregate supply and demand which occurred during 2005.

Anglesey

8.2 Nothing reported.

Conwy

8.3 There was no major construction activity during 2005. Neither are there any other matters of relevance to report.

Flintshire/Denbighshire

8.4 Significant developments affecting Flintshire and Denbighshire are at Manchester Airport, the Airbus site (bulk fill for factory units) and on the A55 where there have been a number of maintenance contracts.

Gwynedd

8.5 The Aberech Bi-Pass, on the outskirts of Pwllheli was built during 2005. All material for this road scheme was sourced from local operators.

8.6 Gwynedd has already served five Prohibition Orders, all of which have been confirmed. Other potential sites at which Orders may be served are: Marchlyn, Dinorwig; Dorothea, Nantlle; and Twll Coed, Nantlle. These are all slate sites.

8.7 One stalled ROMP is reported at Twll Llwyd, Nantlle where the submission of conditions under the Environment Act 1995 for the active phase 1 site cannot be determined owing to an Environmental Statement having been requested but not submitted.

Snowdonia

8.8 No major developments are reported in the Snowdonia National Park.

8.9 Three dormant ROMP aggregates quarries are recorded at Foel Gron, Coed Ffridd Arw and Llys Gwynt. However, owing to a number of factors it is considered unlikely that any will be re-opened.

Wrexham

8.10 No major development took place during 2005.

8.11 Prohibition Orders were made at two former hard rock quarries: Tir Celyn near Wern and Pen y Graig at Froncysyllte. A third order was made in relation to a former clay pit at Llwyneinion near Rhos.

9. RESEARCH

9.1 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 that 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.

9.2 The programme is currently funding a five-year programme of geological mapping in Wales by the British Geological Survey which is initially, concentrated on South and Mid Wales (ie outside the N Wales RAWP area).

9.3 The programme also supports the work of the North and South Wales Regional Aggregates Working Parties.

9.4 The 2004/05 programme saw the completion of IMAECA (Implementing the Methodology for Assessing the Environmental Capacity for Planning Aggregates). This applies the environmental capacity methodology derived from previous research by ARUP (EMAADS – Establishing a Methodology for Assessing Aggregates Supply and Demand) to primary aggregate resources in Wales, to allow strategic level assessments of development suitability.

9.5 A start was made on the IMAGIN project, its aim being to facilitate the evolution of a strategic framework within which the development and exploitation of marine aggregate resources from the Irish Sea may be sustainability managed, with minimum risk of impact on marine and coastal environments, ecosystems and other marine users.This is a two year programme separated by INTERREG (European interregional fund), WAG , the Irish Government and Industry.

9.6 The North and South Wales RAWPs had earlier been successful in gaining finance from the Aggregates Levy Sustainability Fund for Wales to support a study into secondary aggregates arisings and usage in Wales during 2003. This work was awarded to Smith, Gore and a report was produced in August 2005. The results for the whole of Wales indicated that arisings of construction and demolition waste had risen from 5.02mt in 2001 to 6.01mt in 2003. Of this, utilisation as recycled aggregates and soil had increased from 1.79mt in 2001 to 2.68mt in 2003 (i.e. usage for aggregates had increased from 36% in 2001 to 45% in 2003). Separate figures for soil within the recycled total in 2001 were c5% but were not separately available for 2003. The report however expressed caution in comparing the two years as the nature of the survey samples and confidence levels differered. Data for North and South Wales was not subdivided.

GLOSSARY AND ACRONYMS

Active	– A quarry with a current planning permission producing stone in 2002
Aggregates	– Sand, gravel, crushed rock and other bulk materials used in the construction industry for purposes such as the making of concrete, mortar, asphalt or for road stone, drainage or bulk filling materials.
British Aggregates Association (BAA)	– An association formed in 1999 representing over 60 independent and privately owned quarry companies.
Construction and Demolition Waste (CDW)	– 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.
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.
Dormant	– A quarry with a valid planning permission that 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.
Export	– The transport of aggregate from the North Wales region, including to other parts of Wales.
Fill	– Aggregate used during construction to fill large voids, for example to replace material excavated at construction sites considered unsuitable for foundations or to form embankments during road construction.
Igneous Rock	– Solidified molten rock, e.g. Granite, dolerite
Landbank	– A stock of planning permissions for the winning and working of minerals. It is composed of the sum of all permitted reserves at a given time and for a given area.
Primary	– Rock quarried as the main objective of a quarry for the production of aggregate.
Limestone	– A sedimentary rock of organic origin consisting mainly of calcium carbonate.

MPA	– Mineral Planning Authority
ODPM	– Office of the Deputy Prime Minister (now Department for Communities and Local Government (DCLG)
Quarry Product Association (QPA)	– The principal trade association that represents some 120 quarry operators who, together, account for 90% of the supply of aggregate materials in Great Britain.
Rail Ballast	– Aggregate used to support railway tracks.
Reserves	– Defined quantities of areas and tonnages of rock with a valid planning permission for extraction, usually by quarry working.
Resource	– Areas of rock and sand and gravel which are known 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 removed during the repair of road carriageways, often this is coated stone that will need to be treated to remove old bitumen if it is to be reused in road construction.
Sand and Gravel	– Unconsolidated superficial material usually of fluvio-glacial origin overlying the solid geology. Deposits are usually worked as a source of material for general building and for the manufacture of concrete.
Secondary Mineral	– Rock that is produced at a quarry as a by-product of the main product, for example contaminated or weak aggregates in hard rock quarries, siltstones and sandstone in clay workings and unsuitable rock in quarries producing roofing slate. Material derived from these sources and used for construction are often referred to as secondary aggregates
Sharp Sand	– Coarse sand suitable for use in making concrete.
Slate Waste	– Material produced at slate quarries unsuitable for the production of roofing slate and waste material arising from the manufacturing of the slates (See Secondary Minerals).
Soft Sand	– Otherwise known as building sand, fine sand suitable for use in such products as mortar and plaster.

Appendix 1. NWaRAWP Membership 2005

Full RAWP

Chair.

I Evans	Gwynedd Council

Technical Secretary

J Gibbins	Gwynedd Council

Local Government Representatives

J Williams	Isle of Anglesey County Council
D G Jones/ J Gibbins	Gwynedd Council
G Lloyd	Snowdonia National Park
C Thomas	Conwy County Borough Council
J Cawley	Denbighshire County Council
G Nancarrow	Flintshire County Council
R Dewey	Wrexham County Borough Council

Aggregate Industry Representatives

D Pollock	Quarry Products Association
P Huxtable	British Aggregates Association
C Dobbs	Tarmac/QPA
R Hulse	Tarmac/QPA
V Russell	Tarmac/QPA Wales
T Brown	Hanson/QPA
D Williams	D P Williams Independents
J Davies	RMC/QPA
G Sloyan	J Doyle (Demolition) Ltd (CDW. Recycling Rep.)
N Brown	Norwest Sand and Ballast/ BMAPA
P Charmbery	McAlpine Slate Products

Government / Other Agency Representatives

C Morgan	Welsh Assembly Government (WAG)
S Martin	Welsh Assembly Government (WAG)
W Mackenzie	Office of the Deputy Prime Minister
P Lusty	British Geological Survey
S Williams	Technical Services Division, WAG
A Dale	Countryside Council for Wales
M Read	Environment Agency Wales
A Farrow	North West Regional Aggregates Working Party
S Bool	South Wales Regional Aggregates Working Party
R Huck	Wales Environment Trust

Technical Sub-Group

Chair.

G Jones	Gwynedd Council
J Gibbins	Gwynedd Council
R Bennion	Flintshire County Council
V Russell	Tarmac/QPA Wales
D Williams	D P Williams Independents
C Morgan	Welsh Assembly Government (WAG)
S Martin	Welsh Assembly Government (WAG)
A Dale	Countryside Council for Wales

N Wales RAWP RTS Members Forum

Anglesey CC

Cllr Hefin Thomas

Cllr John Williams

Conwy

Cllr G O Edwards

Cllr R G Waters

Flintshire

Cllr Aaron Shotton

Cllr Jim Jones

Denbighshire

Cllr Eryl Williams

Cllr Selwyn Thomas

Gwynedd

Cllr Dyfed Edwards

Cllr Gwilym Williams

Snowdonia NP

Peter Weston

Warren Martin

Wrexham CBC

Cllr Mark Pritchard

Cllr M H R Moysen

Appendix 2. Sites Producing Aggregates in 2005

Unitary Authority	Site	Material	Grid Reference
ANGLESEY	Caer Glaw	Igneous	381766
	Gwyndy	Igneous	395795
	Rhuddlan Bach	Limestone	486806
	Nant Newydd	Limestone	481811
	Bryn Engan	Limestone	507814
	Twyn Trewan	Sand/Ash	321747
	Creigiau	Sandstone	488 860
	Aber	Limestone	503 866
GWYNEDD	Garth (Minfordd)	Igneous	259339
	Nanhoron	Igneous	
	Fferm Graianog	Sand & Gravel	245349
	Blaen y Cae, Bryncir	Sand & Gravel	248345
	Port Penrhyn, Bangor	Sand (Marine)	259373
	Penrhyn	Slate Waste	262365
	Oakeley	Slate Waste	269347
	Pen yr Orsedd	Slate Waste	250354
	Llechwedd	Slate Waste	
	Manod & Graig Ddu	Slate Waste	
SNOWDONIA	None	None	-
CONWY	St. George	Limestone	970373
	Raynes	Limestone	890780
	Penmaenmawr	Igneous	702755
DENBIGHSHIRE	Graig (Denbigh)	Limestone	305366
	Graig (Llanarmon)	Limestone	320356
	Aberduna	Limestone	320361
	Cae Rhys	Sand & Gravel	321356
	Moel y Faen	Slate Waste	318348
FLINTSHIRE	Pant	Limestone	319730
	Pant y Pwll Dwr	Limestone	319732
	Trimm Rock	Limestone	319366
	Hendre	Limestone	319368
	Aberdo	Limestone	318372
	Bryn Mawr	Limestone	318373
	Maes Mynan	Sand & Gravel	311372
	Fron Haul	Sand & Gravel	315370
	Parrys	Shale	328366
	Alltami	Shale(Bulk Fill)	327366
WREXHAM	Borras	Sand & Gravel	364524
	Ballswood	Sand & Gravel	350563

Appendix 3. Dormant/Inactive Sites included in Returns for 2005 Survey

Unitary Authority	Site	Material	Grid Reference
ANGLESEY	Bwlch Gwyn	Igneous	485730
	Hengae	Igneous	440687
GWYNEDD	Cae Efalwyd	Sand & Gravel	246352
	Tan y Bryn	Sand & Gravel	246352
	Gro Sarnau	Sand & Gravel	-
SNOWDONIA	None	None	-
CONWY	Plas Gwilym	Limestone	880780
DENBIGHSHIRE	Dyserth	Limestone	306379
	Burley Hill	Limestone	-
FLINTSHIRE	Grange	Limestone	316375
	Bryn Gwyn	Limestone & Sandstone	321361
	Cambrian	Limestone & Silica Rock	-
	Ddol Uchaf	Sand & Gravel	315371
	Fagl Lane	Sand & Gravel	330359
	Liverpool Road	Shale & Sandstone	328365
	Ruby	Shale	320364
WREXHAM	None	None	-

Appendix 4: 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*

* This report is free to download. However, a charge will be made if a hard copy is requested which will reflect the price of copying, administration and postal charges

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