

Minerals and Secondary Aggregate Technical Planning Group Annual Minerals Monitoring Report - 2012

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Purpose of the Report

The Minerals and Secondary Aggregate Technical Planning Group (MSATPG) Annual Minerals Monitoring Report (AMMR) is produced to:

- provide an agreed joint Industry/Government annual report on minerals on the IOM including data on: declared sales of minerals in tonnes and, where available, by end use; mineral reserves; forecasts of need; and landbanks.
- assess the future availability of minerals.
- identify any specific issues related to minerals production, availability or use on the island over the next 12 months and make recommendations on how to address those issues.

The information contained within this report is intended to advise the need for minerals considered essential for the social and economic well being of the Island. Although some minerals are imported, the aim of the Isle of Man is to maintain a high degree of self – sufficiency in mineral provision, particularly aggregates. This is inextricably linked to the need for the Island’s mineral reserves to be used sustainably, and includes the use, wherever practicable, of recycled and secondary aggregate.

Status of the Report

The AMMR is published as the official Government statement on Minerals. It will support interpretation of the guidance within the Mineral Planning Policy Statement when published. It is intended to provide the statutory technical information required by the IOM Strategic Plan once revised.

The AMMR is supported by baseline geological data and historical information contained within the Department of Economic Development’s (DED) Minerals Resources Plan.

Remit of the Report

The AMMR reports on all mineral sales and reserves. However the Isle of Man is unique in that Government owns and operates two large hard rock quarries, namely Poortown Quarry and Stoney Mountain Quarry. The stated reason for this is to ensure a strategic supply of highest grade aggregate and crushed rock for infrastructure works. Whilst most of this aggregate is utilised by Government, mineral from both quarries is supplied to the commercial sector, some of which is for use in Government projects. However it is accepted that the mineral reserve within Government quarries is not exploited as a commercial operation.

In seeking to reflect this situation the AMMR reports the aggregate data in a number of formats, including and excluding Government sales and reserves. It is anticipated that this data will aid mineral planning in both at strategic planning and individual planning application stage.

Baseline Data

The baseline data used in this Report are provided from the following:

Data on primary aggregate sales are provided by DED and are compiled from quarterly Mining Lease/licence returns. It covers the period from **November 2010 to November 2011**.

Data on recycled aggregate sales are provided by industry and have been combined to protect commercial confidentiality. In advance of licence return data being available, the data is collated from a limited number of companies involved in aggregate reprocessing and therefore presents a minimum figure.

**Minerals and Secondary Aggregate Technical Planning Group
Annual Minerals Monitoring Report 2012**

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1 Sale of Primary Minerals

1.1 All mineral operators provide information on the actual tonnage of primary mineral sold (in the form of sand and gravel, crushed rock and building stone between November 2010 and November 2011) to the Department of Economic Development. This information is managed and monitored by DED.

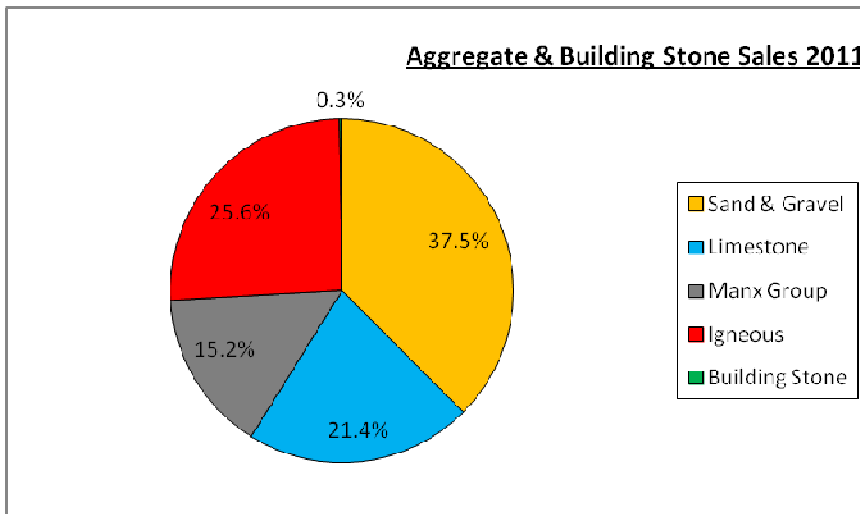
1.2 Data on quarry and ancillary mineral extraction is available dating back to 1993 which has been used to calculate the rolling 10 year averages of sand and gravel and hard rock (see Section 5 - Forecast Need for Minerals).

Table 1: Summary of Primary Aggregate & Building Stone Sales 2011

Mineral Operation	Tonnes ('000)
Ballaharra Sand Pit	19.76
Point of Ayre	126.18
Cronk y Scotty Sand Pit	1.05
Billown Quarry	83.70
Cringle Quarry (Crushed Rock)	27.22
Cringle Quarry (Building Stone)	0.56
Earystane Quarry (Building Stone)	0.01
Pooil Vaish Quarry (Building Stone)	0.36
Poortown Quarry (crushed rock - Government Sales)	32.75
Poortown Quarry (crushed rock - Private Sales)	46.06
Stoney Mountain Quarry (crushed rock - Government Sales)	9.56
Stoney Mountain Quarry (crushed rock - Private Sales)	12.96
Starch Mill Quarry (Crushed Rock)	0.09
Starch Mill Quarry (Building Stone)	0.21
Ancillary Mining Total	32.42
TOTAL	391.76

Ancillary Mineral Operation	Tonnes ('000)
Laurel Bank	3.51
Ramsey Service Reservoir	28.91
Ancillary Mining Total	32.42

Figure 1: Percentile Summary of Primary Aggregate & Building Stone Sales 2011



Primary Mineral Extraction by Mineral Type:

- Sand and Gravel; Limestone; Manx Group; Igneous

Table 2: Total Sales as Primary Aggregate 2002 – 2011 ('000 tonnes)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Sand & Gravel	326.08	304.67	286.36	184.19	223.91	203.41	201.78	178.32	146.53	146.99
Limestone	126.22	107.06	79.79	97.52	104.92	116.46	115.87	76.59	352.38 ¹	83.70
Manx Group	43.48	54.68	68.81	45.43	68.46	56.76	65.01	48.58	25.83	59.73
Igneous	197.07	127.11	115.50	85.35	58.86	98.21	157.71	140.56	110.58	100.20
TOTAL	692.85	593.52	550.46	412.48	456.15	474.84	540.38	444.05	635.33	390.61

¹ Includes 274kt of stone supplied to RESA project from Turkeyland Quarry

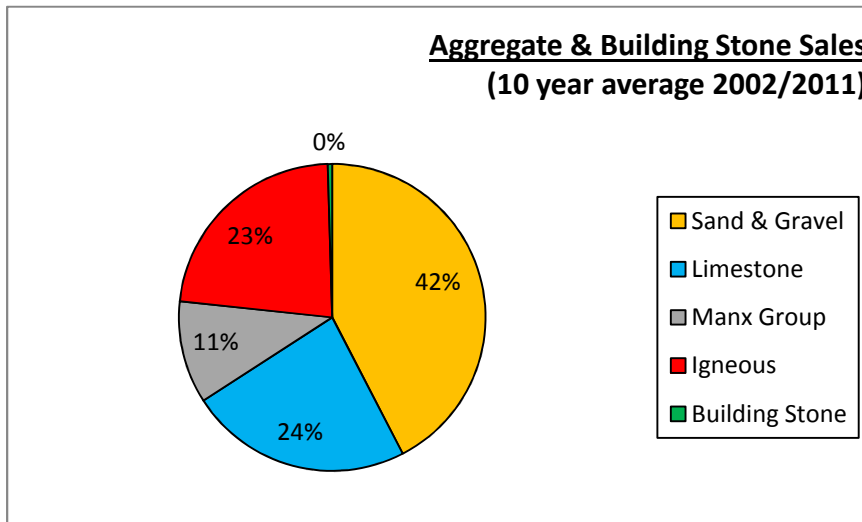
Table 3: Total Sales as Building Stone 2002 – 2011 ('000 tonnes)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Limestone	0.54	0.64	0.33	0.41	0.28	0.42	1.17	0.08	0.14	0.36
Manx Group	2.80	2.41	3.22	2.27	1.86	1.33	1.63	1.49	1.35	0.79
TOTAL	3.34	3.05	3.55	2.68	2.14	1.75	2.80	1.57	1.49	1.15

Table 4: Total Sales as Primary Aggregate & Building Stone 2002 – 2011 ('000 tonnes)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Primary Aggregate	692.85	593.52	550.46	412.48	456.15	470.88	540.38	438.46	635.33	390.61
Building Stone	3.34	3.05	3.55	2.68	2.14	1.75	2.80	1.57	1.49	1.15
TOTAL	696.19	596.57	554.01	415.16	458.29	472.62	543.18	440.05	636.81	391.76

Figure 2: Percentile Summary of Primary Aggregate & Building Stone Sales 2002/2011 (10 year average)



2 End use of extracted minerals

2.1 Extracted minerals can be processed into aggregate products which are suitable for a variety of end uses. The range of potential aggregate end uses is, in general, determined by the mineralogy of the sand & gravel and hard rock.

2.2 Data on mineral end-use over time can, where available, provide a useful indication of the demand for specific mineral products on Island. Whilst at the strategic level forecasting the need for Sand and Gravel and Hard Rock is based on a ten year average annual sales, a more detailed interpretation of product end-use can advise the assessment of individual mineral planning applications.

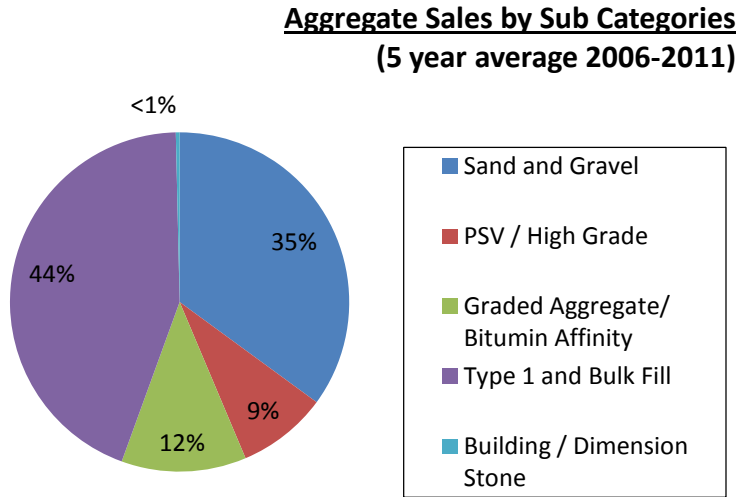
2.3 However caution needs to be applied to detailed interpretation of end use for forecasting need for the following reasons:

- End-use data is not currently reported for all quarries and does not include minerals imported (eg dimension stone)
- The demand for road aggregate products is driven by the design guide for the Island, Manx Roads 2 (MR2). MR2 is currently a prescriptive road construction design with quantity and type of aggregates specified. A move to a product performance led road design would reduce aggregate demand particularly for high grade aggregate such as igneous psv.
- Although not legally precluded from use, recycled aggregates are currently accepted within road construction as they are not subject to performance standard testing. A move to a more sustainable use of aggregate should realise a reduction in demand for primary aggregate.

Table 5: Aggregate Sales by Sub Categories 2007 - 2011 ('000 tonnes)

	2007	2008	2009	2010	2011	Total	5yr Average
Sand & Gravel	203.41	201.78	178.32	146.53	146.99	877.03	175.41
PSV / High Grade	32.90	40.94	68.57	33.58	38.60	214.58	42.92
Graded Aggregate/ Bitumen Affinity	50.85	84.35	59.66	51.67	51.13	297.65	59.53
Type 1 and Bulk Fill	190.11	214.52	138.84	404.76	155.04	1103.27	220.65
Building / Dimension Stone	1.74	2.80	1.58	1.49	1.15	8.75	1.75
TOTAL	479.00	544.39	446.96	638.03	392.90	2501.29	500.26

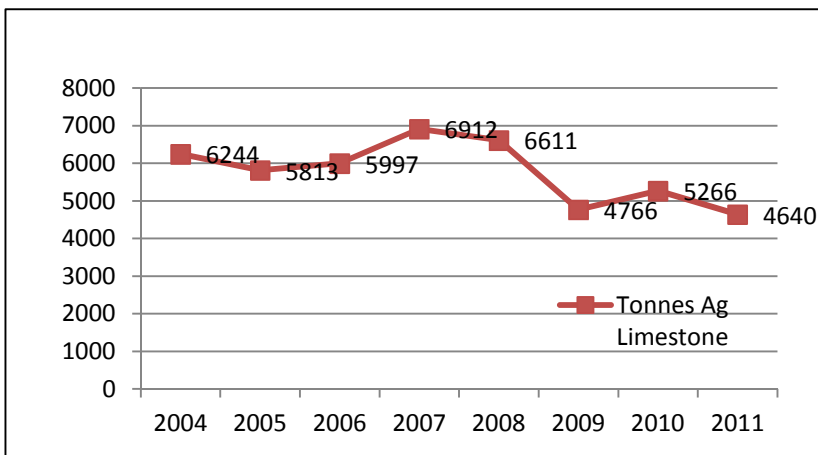
Figure 3: Percentile Summary of Aggregate Sales by sub Categories (5 year average)



Agricultural Lime

2.4 All agricultural land used for crop production requires the soil to have a pH in the region of 5.8 to 6.2 to maintain good levels of production and ensure that any fertilisers applied are utilised efficiently. The majority of the Islands soils are acidic and therefore require the periodic application of lime to increase and/or maintain pH. Sources of lime include crushed limestone from the Island's limestone reserve, imported crushed limestone, or imported pelletised lime. Limestone used for agricultural purposes is not classified as an 'aggregate' for the purposes of forecasting need for Hard Rock. However as the tonnage used is minimal in comparison with total aggregate sales it has not been excluded from the calculation of HR need.

Figure 4: Agricultural Lime Production 2004 – 2011 (Billown Quarry)



2.5 The effectiveness of some different liming products is currently being evaluated by DEFA as part of a field trial with the results intended to highlight the benefits and effectiveness of the different products in terms of effect on soil pH, crop yield and performance. The liming products were applied for the crop harvest year 2012 and DEFA anticipate a conclusion August/September 2013. Until the results of the DEFA trials are available the MSATPG recommends the protection of limestone as an economic mineral for Island.

2.6 DEFA advise that, if Billown is to cease producing agricultural lime and there are no alternative on Island sources, the Islands agricultural industry will need to be given a reasonable period of notice to allow it to plan for alternative sources.

3 Tonnage of recycled and secondary aggregate sold or allocated for use off-site (tonnes)

3.1 The tonnage of recycled and secondary aggregate produced by waste management facilities licenced under the Public Health Act 1990 are submitted quarterly to the Department of Environment, Food and Agriculture (DEFA). This information is managed and monitored by DEFA. Additional information on the production and management of construction and demolition waste may be available through returns for the 'Permit to Demolish a Building' issued under the Building Control Act 1991.

3.2 The data currently held on recycled or secondary aggregate production is incomplete. DEFA are in the process of revising their licence return forms and database, to standardise the classification of waste types to EWC codes, and simplify the process of returns. Once complete it is anticipated that data will be available for the 2012 AMMR.

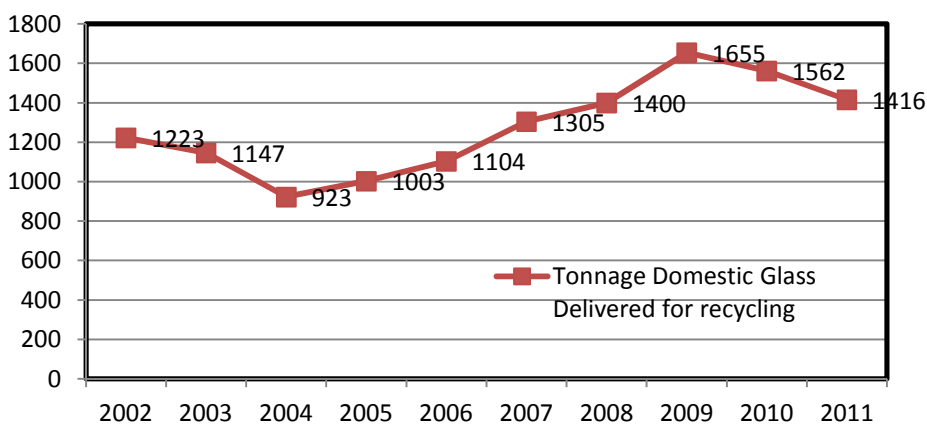
3.3 In the interim, data on the sale of recycled aggregate from main aggregate re-processors is summarised below, together with data on the source waste material required for the production of recycled or secondary aggregate.

Minimum Sale of Recycled Aggregate (000's tonnes over 12 months)

Aggregate type	000's tonnes
recovered and manufactured sand	34.84
graded and crushed stone	52.44
oversize	1.07
Total	88.35

Source Waste Material for Production of Recycled Aggregate

Figure 5: Tonnage of Domestic Glass delivered for Recycling 2002 – 2011



Incinerator Bottom Ash (includes boiler ash)

3.4 The Energy from Waste plant produced 11,500 tonnes of Incinerator Bottom Ash [IBA] each year in 2010 and 2011. Following metal extraction and maturation, the annual output of IBA produces around 9,500 tonnes of material with the potential for being reprocessed into Incinerator Bottom Ash Aggregate [IBAA]. This material is stored in Turkeyland Quarry (capacity circa 715,000m³). IBAA has the potential to be used as a secondary aggregate and feasibility studies are ongoing. Any future trials would be subject to site-specific environmental risk assessments.

3.5 The feasibility of use of IBAA in certain 'bound' applications ie bitumen coated stone and concrete blocks has been investigated. Due to costs associated with environmental risk control in storage of IBAA and with production plant modification, use of IBAA in these 'bound' applications is not considered to be commercially viable.

3.6 IBAA may have the engineering properties to be used in certain applications as a capping or sub-base in roads, paths and car-parks etc. Feasibility studies are taking place to assess the environmental risks associated with such use of IBAA in various locations.

4 Mineral Reserves and Aggregate Reprocessing Capacity

4.1 A **mineral reserve** is the total tonnage of mineral that is permitted to be extracted under either a planning permission or certificate of lawful use. Mineral reserves have been calculated for all existing mineral operations. The mechanism for determining mineral reserves is based on two options:

- a) Any re-assessment of reserves carried out by the mineral operator; or
- b) Assessment of reserves based on the total tonnage of minerals permitted to be extracted by an approved planning permission and adjusted by deducting the total tonnage of sales between the date of activation of the planning permission and November 2011.

4.2 The reserve calculations have been undertaken by DED who collate information on annual mineral sales as part of the licencing of mineral extraction and collection of mineral royalties.

4.3 The following mineral reserves reflect the situation at each mineral operation as at the end of November 2011.

Mineral Reserves @November 2011

Table 6: Sand and Gravel Reserves

Operation	Tonnes ('000)
Point of Ayre	3,074.00
Ballaharra Sand Pit	575.00
Cronk y Scotty Sand Pit	19.50
TOTAL	3,668.50

Table 7: Hard Rock Reserves

Mineral	Operation	Tonnes ('000)
Limestone	Billown Quarry	297.20
	Pooil Vaaish Quarry	111.60
Manx Group	Cringle Quarry	1,237.50
	Earystane Quarry	135.00
	Starch Mill	37.70
Igneous	Poortown Quarry	1,058.80
	Stoney Mountain Quarry	2,335.00
	TOTAL	5,212.80

4.4 There are currently no capacity restrictions attached to waste management licences for **aggregate reprocessing facilities**. The reprocessing capacity of each site is therefore determined by a combination of material input, equipment capacity and size of facility. The list of licenced waste aggregate reprocessing facilities listed below. In addition to licenced facilities some C&D waste may be managed at the point of production for use on site.

2012 - List of Facilities Licenced for the Reprocessing of Aggregate

DATE ISSUED	WASTE DISPOSAL LICENCE NO. (Expiry date)	LICENCE HOLDER	SITE ADDRESS (UPRN)	AUTHORISED GENERIC WASTE TYPES	FACILITY TYPE
01/10/10		JCK Ltd. , Port View, Balthane Industrial Estate, Ballasalla, IM9 2AJ	Fields 434057 & 434058 , Balthane Industrial Estate, Ballasalla (01688/3000/2/000)	Inert waste	Recycling and storage
31/03/10	WDL/04/2010/V1	Turkeyland Recycling & Waste Management Ltd. , Broom House, Rosehill, Foxdale Road, Ballasalla, IM9 3DW	Old Turkeyland Quarry , Balthane Road, Ballasalla (01688/2100/2/000)	Bottom Ash	Bottom Ash waste transfer station with treatment
01/04/10	WDL/03/2010/V1	A. V. Craine & Sons Ltd. , Garey Close, Foxdale, IM4 3EU	Cringle Quarry , Ronague, IM9 4HJ (01756/2016/2/000)	Inert construction and demolition waste	Recycling compound and storage facility
14/11/06	WDL/05/2006/V2 (Not Applicable)	Mr A Corlett, Director , Corletts Building Materials Ltd, Ballaharra Quarry, St. Johns, IM4 3RB	Corletts Building Materials Ltd , Ballaharra Quarry, St. Johns, IM4 3RB (00811/2001/2/000)	Inert non-leachate forming, construction materials containing asbestos.	Landfill & Recycling
23/09/05	WDL/06/2005/V1 (Not Applicable)	Paul Carey & Sons Ltd. , Knock-e-Neen, Smeale Road, Andreas. IM7 4JA	Paul Carey & Sons Ltd. , Land at the Technical Site, The Old Airfield, Braust, Andreas (01525/2002/2/000)	Inert, Construction & Demolition Wastes	Recycling Compound and Storage Facility
15/04/05	WDL/03/2005/V1 (Not Applicable)	Heritage Homes Ltd. , Park House, Isle of Man Business Park, Cooil Road, Braddan IM2 2SA.	Heritage Homes Ltd. , Field 522517, Richmond Hill, Braddan (00405/2510/2/000)	Waste Packaging and Construction & Demolition Waste.	Recycling Compound & Transfer Station

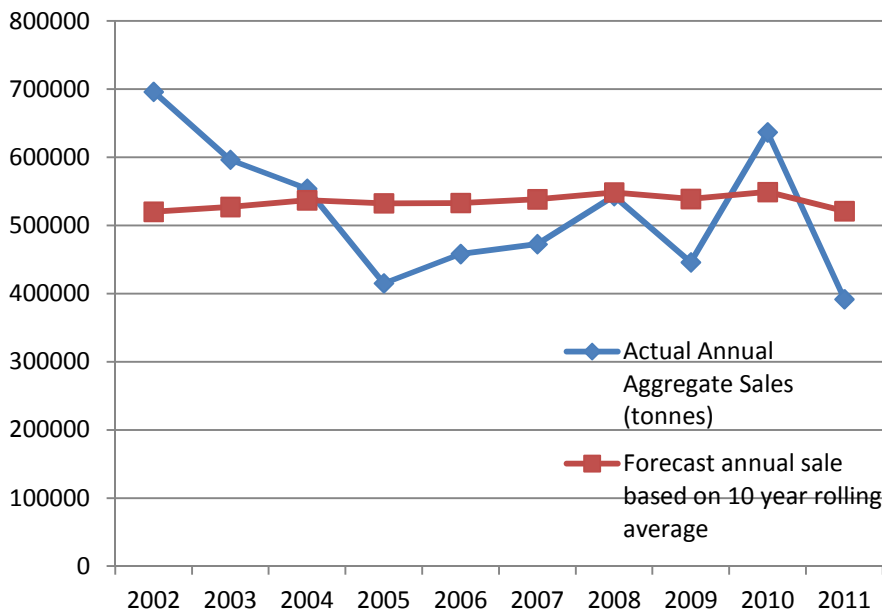
Source: DEFA Environmental Protection Unit June 2012

5 Forecast Need for Minerals, and Review of Mineral Production

5.1 Key for business planning in the minerals industry is certainty about the availability of reserves. Forecasting need for minerals based on changes in measures of economic activity (eg GPD) has historically proven to be unreliable. Using a 10 year rolling average of annual aggregate sales from all quarries to forecast the future 12 months minerals need is considered the most accurate method. This mitigates the potential of a one-off major infrastructure construction project to skew average aggregate demand.

5.2 For example the table below compares the forecast 10 year annual aggregates demand (S&G and HR) using sales data from 1993, and the actual annual aggregate sales tonnage. 2010 saw the extraction of 274,000t of aggregate for use in the airport runway extension project. The trend line (shown in orange) indicates a general decrease in demand for primary aggregate since 2002.

Figure 6: Comparison of Annual Mineral Sales to 10 year rolling average 2002 – 2011



5.3 Forecast of Need

Forecast of Need for Sand and Gravel in 2012

Table 8: Forecast of Need for Sand and Gravel in 2012

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	10 Year Total Tonnes ('000)	10 Year Ave. Tonnes ('000)
Sand & Gravel	326.1	304.7	286.4	184.2	223.9	203.4	201.8	178.3	146.5	147.0	2,202.2	220.22

The annual sand and gravel requirement for 2012 is **c.220,200 tonnes**.

Forecast of Need for Hard Rock in 2012

Hard Rock quarries are operated on Island by both the commercial sector and by Government. To reflect how this impacts on commercial need for, and availability of, aggregate, the AMMR reports the aggregate data in a number of formats, including and excluding Government sales and reserves.

Option A Based on a 10 year rolling average of annual aggregate/building stone sales from **all hard rock quarries** including all sales (to private and public sectors) from Poortown and Stoney Mountain quarries.

Table 9: Forecast of Need for Hard Rock in 2012 (Option A)

Mineral Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	10 Year Total Tonnes ('000)	10 Year Ave. Tonnes ('000)
Limestone	126.2	107.1	79.8	97.5	104.9	116.46	115.9	76.6	352.4	83.7	1,260.5	126.0
Manx Group	43.5	54.7	68.8	45.4	68.5	56.8	65.0	48.6	25.8	59.7	536.8	53.7
Igneous	197.1	127.1	115.5	85.4	58.9	98.2	157.7	140.6	110.6	100.2	1,191.1	119.1
TOTAL	366.8	288.9	264.1	228.3	232.3	271.46	338.6	265.8	488.8	243.6	2,988.6	298.8

The total hard rock requirement for 2012 is **c.298,800 tonnes**.

Option B Based on a 10 year rolling average of annual aggregate/building stone sales from all hard rock quarries but **excluding all sales from Poortown and Stoney Mountain quarries**

Table 10: Forecast of Need for Hard Rock in 2012 (Option B)

Mineral Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	10 Year Total Tonnes ('000)	10 Year Ave. Tonnes ('000)
Limestone	126.2	107.1	79.8	97.5	104.9	116.4	115.9	76.6	352.4	83.7	1,260.5	126.0
Manx Group	43.5	54.7	68.8	45.4	68.5	56.8	65.0	48.6	25.8	59.7	536.8	53.7
TOTAL	169.7	161.8	148.6	142.9	173.4	173.2	180.9	125.2	378.2	143.4	1,797.3	179.7

Therefore, the total hard rock requirement for 2012 (excluding Poortown and Stoney Mountain) is **c.179,700 tonnes**.

The majority of aggregate produced from SM and PT is used by the DOI. However material is sold to the commercial sector. To acknowledge the contribution SM and PT make to the supply of aggregate to the commercial sector, and provide a more accurate indication of commercial demand for aggregate, Option C forecasts need taking account of sales from SM and PT to the commercial sector.

Option C Based on a 10 year rolling average of annual aggregate/building stone sales from all hard rock quarries **including sales to the private sector from Stoney Mountain Quarry and Poortown Quarry from the point at which data is available**.

Table 11: Forecast of Need for Hard Rock in 2012 (Option C)

Mineral Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	10 Year Total Tonnes ('000)	10 Year Ave. Tonnes ('000)
Limestone	126.2	107.1	79.8	97.5	104.9	116.5	115.9	76.6	352.4	83.7	1,260.5	126.1
Manx Group	43.5	54.7	68.8	45.4	68.5	56.8	65	48.6	25.8	59.7	536.8	53.7
Igneous	35.5 ¹	21.1 ¹	30.5 ¹	26.4 ²	20.1 ²	28.8 ²	43.5 ²	38.1 ²	25.0 ²	24.2 ²	293.3 ³	29.5 ⁴
TOTAL	205.2	182.8	179.1	169.3	193.5	202.1	224.4	163.3	403.2	167.6	2,090.6	209.3

Notes:

- ¹ These tonnages reflect the sales to the private sector from Stoney Mountain only
- ² These tonnages include both private sector sales from Stoney Mountain and Poortown
- ³ This is the total private sector sales Stoney Mountain and Poortown for past 7 years
- ⁴ This is the average private sector sales Stoney Mountain and Poortown for past 7 years

Therefore, the total hard rock requirement for 2012 is **c. 209,300 tonnes**.

6 Landbanks

6.1 A mineral landbank is defined as the stock of permitted reserves that have a valid planning permission. Landbanks are needed to ensure a continuous supply of minerals. Conventional advice is that minimum length of the landbank should reflect the time needed to obtain planning permission and bring the operations into full production. The landbank required for both Hard Rock and Sand and Gravel is set at 10 years.

6.2 It is acknowledged that landbanks are only an indication of the availability of minerals. The interpretation and management of landbanks should be based on considerations of real need and real supply taking into account factors such as: the nature and quality of the aggregate which may change within a quarry and over time; known constraints on the availability of consented reserves that might limit output over the landbank period; significant future increases in demand that can be forecast with reasonable certainty.

Classification

6.3 The standard protocol adopted by Aggregate Working Parties across the UK for classifying landbanks is by main mineral type ie Hard Rock and Sand and Gravel. There is some sub-classification but this is for minerals with a specialised end use, eg silica sand.

6.4 The need for the Island to sub-classify these two main mineral types was considered. For example the Hard Rock landbank could be divided into high grade aggregate, Type 1/graded aggregate, building stone. In general this was considered impracticable. A hard rock resource may produce a range of aggregate types as the geology changes, or be processed into a range of products. The landbank for Hard Rock on the Island would therefore be calculated as follows:

$$\text{Landbank for Hard Rock} = \frac{\text{Total Mineral reserves remaining at hard rock quarries}}{\text{Average 10 year annual mineral production from hard rock quarries}}$$

2012 Landbank Assessments

6.5 Landbank assessment at November 2011

Sand and Gravel Landbank

Sand and Gravel Landbank of permitted reserves	=	3,668,500 tonnes	
10 year forecast of annual production	=	220,200 tonnes	
Landbank Requirement	=	2,202,000 tonnes	(i.e. 220,200 tonnes x 10 years)
Status of Landbank	=	1,466,500 tonnes	(SURPLUS)
Length of Landbank	=	16.7 Years	(i.e. 3,668,500t ÷ 220,200t)

Hard Rock

Total Hard Rock Landbank - Option A

(All Quarries)

Hard Rock Landbank of permitted reserves	=	5,212,800 tonnes	
10 year forecast of annual production	=	298,800 tonnes	
Landbank Requirement	=	2,988,000 tonnes	(i.e. 298,800 tonnes x 10 years)
Status of Landbank	=	2,224,800 tonnes	(SURPLUS)
Length of Landbank	=	17.5 Years	(i.e. 5,212,800t ÷ 298,800t)

Total Hard Rock Landbank Option B

(Excluding Poortown & Stoney Mountain)

Hard Rock Landbank of permitted reserves	=	1,819,000 tonnes	
10 year forecast of annual production	=	179,700 tonnes	
Landbank Requirement	=	1,797,000 tonnes	(i.e. 179,700 tonnes x 10 years)
Status of Landbank	=	22,000 tonnes	(SURPLUS)
Length of Landbank	=	10.1 Years	(i.e. 1,819,000t ÷ 179,700t)

6.6 Landbank Assessment at May 31st 2012.

The baseline data for the AMMR is November 2011. However it is possible to update the landbanks to take account of aggregate sales in the intervening six months to May 2012. There are two possible methods for updating landbanks, given that there have been no mineral permissions granted within this period:

- i. Re-calculation applying half of the 10 year annual average sales:

Sand and Gravel (110,100t)	16.2 years
Hard Rock - all quarries (149,400t)	16.9 years
Hard Rock – excl SM and PT reserves (89,850t)	9.6 years

- ii. Re-calculation using mineral returns data for the period December 2011 to May 2012:

Sand and Gravel (49,688 t)	16.4 years
Hard rock – all quarries (86,469 t)	17.1 years
Hard Rock - excl SM and PT reserves (53,196 t)	9.8 years

7 Need for New Mineral Reserves

7.1 It is important for the economic wellbeing of the Island that as far as practicable, provision of minerals is made through the extraction and processing of indigenous mineral resources, and the reprocessing of waste aggregate.

7.2 The landbank for each main mineral classification is calculated from average annual mineral sales over the previous ten years. This does not include provision from recycled or secondary aggregate. At present there is no reliable methodology for forecasting future arisings of recycled aggregate, which depends heavily upon the activity of the construction and demolition sector. In reviewing mineral landbanks therefore consideration will need to be given to the potential supply of material from the recycling sector to replace the need for bulk/lower specification aggregate.

Call for Sites (CfS)

7.3 A landbank of less than 10 years highlights that new mineral reserves will be required to ensure the strategic provision of minerals to meet the forecasted mineral sales. Where a landbank is less than 10 years DOI-Planning will undertake a Call for Sites (CfS) to identify where industry are considering applications for future reserves.

7.4 The CfS process is not a planning applications process. It does not require the submission of detailed information about a prospective minerals site, or undergo the environmental impact assessment of a planning application. A CfS is an invitation to the minerals industry to identify mineral resources which, at some point in the future, they intend to apply to extract.

7.5 The CfS is a very useful process in so far as it can:

- i. assure the construction sector that minerals can be supplied on island;
- ii. guide developers to where future mineral sites may be developed requiring the need for buffer zones, or prior extraction to avoid mineral sterilisation;
- iii. indicate to residents where mineral sites may be developed or extended.

Mineral Safeguarding Areas (MSA's)

7.5 Key also is the need for Mineral Safeguarding Areas (MSA's), within which the imperative is to safeguard the reserve from sterilisation by development or designation which would act as a constraint against future mineral extraction. MSA's support the sustainable management of minerals and are applied only to key economic minerals. On the Isle of Man these are identified as massive intrusions of igneous mineral ie diorite and granite, and are shown on the MSA maps: MSA 02Poortown, MSA 03Oatlands, MSA 04Dhoon, together with the appropriate 200m buffer zone¹ for hard rock. It was acknowledged that delineation of these mineral resources will have to rely upon the best available geological map information supplemented with any available borehole data.

¹ Minerals and Secondary Aggregate Technical Group: Technical Report April 2012

2012 - Need for Aggregate Reserves

7.6 A review of the 2012 landbanks indicates that at November 2011:

- i. there is **no** need to seek to identify further reserves of **sand and gravel** for aggregate purposes, the landbank standing at **16.7 years**
- ii. there is **no** need to seek to identify further reserves of **hard rock** for aggregate purposes. Calculation of landbanks including and excluding reserves from Government operated quarries stand at over 10 years (**17.5 and 10.1 years** respectively). However the landbank for Option B, which excludes reserves from Government operated quarries, is only marginally above 10 years. Without any further permitted commercial hard rock reserves in the next 12 months, it is likely that the landbank will be below 10 years by AMMR 2013 and a call for sites will be required.

This need assessment does not take account of the need for agricultural lime as a non aggregate product covered in Section 2.

7.7 However reflect the landbank status as accurately as possible for the AMMR 2012, it is necessary to re-calculate the landbank to take account of sales of aggregate up to May 2012, and any additional permitted mineral reserves.

a) Re-calculation of landbanks applying half of the 10 year annual average sales:

- i. there is **no** need to seek to identify further reserves of **sand and gravel** for aggregate purposes, the estimated landbank standing at **16.2 years**
- ii. Including all hard rock mineral reserves, there is **no** need to seek to identify further reserves, the estimated landbank standing at **16.2 years**
- iii. Excluding reserves from Government operated quarries, the estimated landbank drops below the recommended 10 year landbank threshold, to **9.6 years**. A call for sites is therefore required.

b) Re-calculation using six months actual sales return data. Total tonnages for the 6 months are lower than the same return period for last year. This suggests demand for aggregate is continuing to decrease.

- i. there is **no** need to seek to identify further reserves of **sand and gravel** for aggregate purposes, the estimated landbank standing at **16.4 years**
- ii. Including all hard rock mineral reserves, there is **no** need to seek to identify further reserves, the estimated landbank standing at **17.1 years**
- iii. Excluding reserves from Government operated quarries, the estimated landbank drops below the recommended 10 year landbank threshold, to **9.8 years**. A call for sites is therefore required.

7.8 A 'Restricted Call for Sites' to companies operational mineral workings was undertaken by the DoI Planning in November 2011. This followed the recommendation of the Minerals and Secondary Aggregate Technical Group (MSATG) after a review of methods for identifying potential new mineral reserves. Extensions to existing workings were preferred, the rationale being that, in general, a quarry extension has a lower environmental impact than a greenfield development.

7.9 The RCfS elicited four submissions. These are indicated as a green line on the MSA site maps (MSA 01 PtAyre, MSA 05Cringle, MSA 06Earystane, MSA 07Billown), together with the appropriate buffer zone² (100m for sand and gravel, 200 m for hard rock). The submissions did not contain sufficient information to allow a full assessment of their potential as prospective reserves. However as they are geologically conjunctive with current mineral permissions it can be assumed that suitable reserves are available. However as the proposed sites have not been subject to assessment against planning policy, access to RCfS mineral resources may be constrained or even prevented.

² Minerals and Secondary Aggregate Technical Group: Technical Report April 2012

8 Minerals Imports and export

8.1 The Island needs a range of minerals to sustain its economy, infrastructure and welfare. These include hydrocarbons such as coal and oil, minerals such as salt, aggregate limestone, granite/diorite, and sand. Geologically some of these are readily available and accessible on Island, whilst others are not.

Imports

8.2 Where local sources of minerals do not occur, are not available in the quantities and specification required, or are economically not viable to extract, then minerals are imported. Of importance for the AMMR is to seek to identify the tonnage and type and frequency of aggregate imported. This indicates the degree to which the Island is self-sufficient in aggregate provision and where local reserves are not meeting aggregate product demands. Importation of aggregate is energy intensive and will increase the carbon load or embedded energy within the aggregate. This will contribute to the embodied³ carbon⁴ of infrastructure and buildings constructed using that aggregate.

8.3 Data on aggregate importation is limited as there is no requirement to declare imports. Bulk loads imported by ship can be monitored via DOI harbours data. There are no recorded landings of aggregate between Nov 10 to Nov 11. During 2011/2012 a considerable increase in importation dimension or dressed stone for use as cladding and wall construction was reported by those involved with the construction industry. It is assumed this is due to a significant reduction in output from the main quarry producing dimension/dressed stone. Imports of 650 tonnes building stone in the past 12 months are reported by one company. It is known that aggregate and building stone is imported by builders merchants, although despite a request by DED, information about imports has not been forthcoming.

Exports

8.4 The market for mineral export is limited to specialist products. Geologically the main minerals reserve suitable for export is black limestone at Poil Vaaish Quarry. This quarry has during 2011/2012 developed links with a company in the UK which specialises in sourcing aggregate from small-scale quarrying operations for clients seeking a local alternative to imported marbles and limestones.

³ <http://www.sustain.co.uk/embodied-carbon.aspx> Embodied carbon is very closely related to [carbon footprinting](#). The main difference is that the term carbon footprint can also be used to discuss operational carbon requirements, for example heating and lighting a building, or operation of a power tool. Whereas embodied carbon can only be used in the context of materials, for example all activities related to the construction of a building, including the production of materials. Embodied carbon can be defined as the amount of carbon released from material extraction, transport, manufacturing, and related activities. This may be calculated from cradle to (factory) gate, cradle to (installation) site, or (ideally) from cradle to grave.

⁴ <http://www.csd.eng.cam.ac.uk/themes0/resource-flows-1/embodied-energy-and-carbon-in-buildings-eeeb> The UK Government pledged to reduce carbon emissions by 80% by 2050 (Climate Change Act of 2008). Regulations are being introduced requiring all new buildings to be 'zero carbon' by 2019. These are defined as buildings which emit net zero carbon during their operational lifetime. In order to meet the 80% target it is necessary to reduce the carbon emitted during the whole life-cycle of buildings, including that emitted during the processes of material extraction, manufacturing, delivery to site, construction process, maintenance and refurbishment, waste processing, demolition and recycling. These elements make up the 'embodied carbon' of the building.

9 Minerals Matters and Issues

9.1 This is the first AMMR since the formation of the MSATPG in May 2012. During the forthcoming year the group aims to:

- a. Provide technical advice to DOI Planning on the drafting of the Minerals Planning Policy Statement (MPPS).
- b. Work with DEFA and DOI to improve the capture, collation and analysis of data on construction and demolition waste, and recycled aggregate.
- c. Promote the introduction of performance testing for aggregate and recycled aggregate for use in construction.
- d. Promote the revision of design standards for roads (MR2) to accommodate performance led design, to reduce primary aggregate consumption.
- e. Work with DOI to agree a formal position statement on the role played by Government in supplying aggregate to the commercial sector, and contributing to the national landbank of hard rock mineral reserves.
- f. Continue to monitor landbanks and need for aggregate
- g. Maintaining a watching brief on the DEFA trials of limestone aggregate as an agricultural fertiliser to determine the need to maintain a local source of agricultural lime on Island
- h. Maintain a watching brief on the review of health and safety legislation related to the operation and management of quarries and aggregate reprocessing facilities.
- i. Maintain a watching brief on the review of the Islands Waste Strategy, specifically in relation to: the need for landfill capacity and its impact on the options for restoring mineral workings; arisings of construction and demolition waste; and, promotion/management of recycling schemes to supply glass for recycling into eco-sand.

10 Membership of the MSATPG 2012/13

Full Membership.

Membership of the MSTPG to be taken from companies operating mineral workings on Island or licenced for the reception and processing of waste aggregate.

Table 12: MSATPG Membership 2012 - 2013

Quarry name(s)	Mineral type	Representative	Company
Cringle Quarry	Manx Group	Mr Davey Craine	A V Craine & Sons Ltd
Earystane Quarry	Manx Group	Michael Craig	Earystone Ltd
Pt of Ayre	Sand and Gravel	Mike Shaw	Cemex Island Aggregates Ltd
Billown	Limestone	John Kelly	Colas Holdings (IOM) Ltd
Balthane	Recycled Aggregate	James Cubbon	J.C.K Ltd
Ballaharra	Sand, Recycled Aggregate	Allen Corlett	Corletts
Poortown and Stoney Mountain	Granite	Stuart McLaren	Operations Director
		Representative	Government Department
		Stephanie Gray	DOI Planning
		Michael Gallagher	DOI Planning
		Dave Roberts	DED
		Neil Hughes	DED technical advisors - Wardell Armstrong LLP

Co-opted members

The Terms of Reference for the MSATPG allow co-optation of representative from Government Departments or NGO's etc for the purpose of discussion specific technical operational or policy matters.

In 2011/12 no other members were co-opted to the MSATPG.

Table 13: Monitoring of Mineral Planning Application and Ancillary Mining Applications Decisions made 1st January 2010 – 31st December 2011

Site Name	Grid Reference	Operator	Application Number	Date Submitted	Mineral Type	Area of Application (Ha)	Quantity of Minerals (Tonnes)	Decision /Date Issued
Stoney Mountain Quarry	SC 288 771	Department of Infrastructure	09/01544/B	20/12/2010	Granite	3.6	2,335,000	Approved 09/08/2011
Service Reservoir, Glen Auldyn	Sc 244 493	IOM Water & Sewerage Authority	10/00953/B	25/06/2010	Manx Stone			Approved 02/09/2010

Table 14: Monitoring of Mineral Planning Applications awaiting determination as at 30th November 2011

Site Name	Grid Reference	Operator	Application Number	Date Submitted	Mineral Type	Area of Application (Ha)	Quantity of Minerals (Tonnes)
Cronk y Scotty Sand Pit	SC 367 007	D. Black & Sons	11/01379/B	04/10/2011	Sand	0.25	16,000