Minerals and Secondary Aggregate Technical Planning Group
Annual Minerals Monitoring Report
AMMR 2015

Purpose of the Report

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

a. provide an agreed joint Industry/Government annual report on minerals on the Isle of Man including data on: declared sales of minerals in tonnes; sales of minerals by end use (where available); mineral reserves; forecasts of need; and landbanks

b. assess the future availability of minerals

c. 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, including mineral reserves and need. It is intended to advise the interpretation of need within the Isle of Man Strategic Plan 2007 policies: Minerals Policy 1 and Waste Policy 1.

The AMMR is supported by baseline geological data and historical information contained within the Department of Economic Development's (DED) Minerals Resources Plan and takes account of the Department of Infrastructure (DOI) Waste Policy and Strategy 2012-2020[1].

Baseline Data

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

a. data on primary aggregate sales are provided by DED and are compiled from half yearly mining lease/licence returns. It covers the period from **1st December 2013 to 30th November 2014**;

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

Data on void space (Table 19) is a best estimate. Information on remaining capacity within quarries with permitted infill is based on re-adjustments following landfill and can only be

[1] www.gov.im/transport/operations/wastemanagement/stratagy.xml

verified by full site survey. Data on void space in operational quarries is equally difficult to ascertain. Figures presented are estimated tonnages for current planning permissions.

The AMMR reports on mineral sales and reserves for all quarries on the Island. On the Isle of Man the Government owns and operates two hard rock quarries, namely Poortown Quarry and Stoney Mountain Quarry. This is to ensure that the Island can meet its national need for highest grade aggregate and rock for Government infrastructure works. If reviewed against the factors used for financial reporting for commercial mining operations[2], neither Poortown Quarry nor Stoney Mountain Quarry would be considered commercial quarries.

Most of the high quality aggregate produced from Poortown and the granite from Stoney Mountain is utilised by Government. However lower quality mineral from both Poortown and Stoney Mountain is supplied to the commercial sector who include certain mineral operators. At present it is only possible to confirm the tonnage of aggregate used in DOI civil engineering works. In seeking to reflect the situation the AMMR currently reports the aggregate data including and excluding Government sales and reserves.

Contribution of Reserves from Government Quarries to the Commercial Landbank

It is acknowledged that removing Government reserves entirely from the calculation of the Hard Rock landbank does not accurately represent the availability of aggregate to the commercial market. The methodology for calculating the landbank for hard rock needs therefore to be refined to consider this. One of the objectives from the 2014 AMMR was for the MSATPG to work with the DOI to develop a methodology for estimating, on an annual basis the reserves within Government operated quarries that supply aggregate to the commercial sector and contribute to the national landbank of hard rock mineral reserves. It was hoped that a new system of reporting sales data would have been implemented at Poortown Quarry in order to accurately determine sales of stone to Government and Private Use. Unfortunately, this has not happened but the intention is to roll out this new system in the near future. The new system will take into account the following.

a. the mineralogy of the Poortown dolerite results in a high grade aggregate that is suitable for use as a psv (polished stone value)/coated aggregate. However the reserve is not uniform in its characteristics as it is often inter-bedded with host rock, with zones of contact /metamorphosis producing poor quality, material and overlain by variable depths and compositions of overburden. At Stoney Mountain, although the reserve is not capable of producing a high grade aggregate, it is an essential source of armour stone and Type 1 for use by Government. However with quartz rich intrusions, weathering and faulting, the reserve is variable in quality;

b. access to the high quality material at Poortown is restricted to Government use and is not normally made available for non-Government use unless it is in the national interest to supply to local private customers. National interest would include situations where the only alternative is the importation of mineral. If a viable alternative source were available on Island, then the mineral would not normally be sold. However the limitations of production, together with the need to prioritise sale of aggregate for Government operations, can also restrict sales to private companies. This can and has resulted in the private sector having to import high psv mineral during periods of high demand;

[2] http://www.pwc.com/en_GX/gx/energy-utilities-mining/pdf/ifrs-mining.pdf

c. the lower quality, non-psv, mineral which is not used in asphalts is generally sold to private customers. The stone content of this material is of variable quality and may require further processing. Stockpiling the material on site is not a viable option. There is insufficient room within the quarry, and stockpiling would prohibit effective quarry operations. Removing the material to an alternate site for storage would also be cost prohibitive. It is therefore considered to be in the interests of mineral sustainability and self-sufficiency that non-psv material is made available to the commercial market where its sale can deliver value for money for the tax-payer. NB consideration of the sale price of aggregates is not within the remit of the AMMR.

Report Summary

Primary Aggregate Sales

Total primary aggregate sales for 2014 was 275,784 tonnes compared to 278,840 tonnes in 2013. This is an overall reduction of 3,060 tonnes (c. 1% of total demand) from 2013. Sand and gravel sales increased by 4,145 tonnes (c. 4% of total demand). Conversely, for hard rock aggregate there was a 7,180 tonne decrease compared to 2013. Overall, commercial quarries contributed 43% of the primary hard rock aggregates required on Island, with the balance being met through sales from Government quarries.

In comparison, during 2013 the fall in demand for primary aggregate was c. 8,600 tonnes (c. 3%) and in 2012, the drop in demand was 104,550 tonnes (c. 27%).

Recycled Aggregate Sales

Although incomplete, from the records available the usage of recycled aggregates continues to increase. In 2012, the amount was 100,600 tonnes, 169,400 tonnes in 2013 and rising to 186,200 tonnes in 2014 – overall an increase of c. 86,000 tonnes over three years.

Overall Aggregate demand (Primary and Recycled)

Over the past three years, the total demand for aggregates (primary and recycled) has increased year on year. In 2012, the combined total was 388,000 tonnes. This increased by 15% in 2013 to a level of 447,700 tonnes. During 2014, the rate of consumption increased by 3.5% to 463,200 tonnes.

Conclusions

It can be seen from Figure 6a that the combined annual demand for aggregate (primary and recycled) has continually increased since 2012 and could be interpreted as signs of recovery within the construction sector.

Looking at individual trends in demands for hard rock aggregate (decreasing) and recycled aggregate (increasing) a reasonable conclusion would be that the construction sector is displaying growing confidence in the usage of recycled aggregate.

The use of locally sourced crushed limestone as an agricultural fertilizer continues and the tonnage applied to land decreased slightly during 2014. DEFA have assessed the neutralising value and performance of different forms of limestone and conclude that Billown lime, if crushed sufficiently and applied in a timely and targeted manner, is an effective liming agent for Manx soils.

Landbanks

The reduction in the demand of primary aggregate and increased usage of recycled material is not surprisingly impacting on the length of landbanks. As at 30th November 2014, the

landbank for Sand & Gravel (based on a 10 year average) stands at 22.8 years, increasing from 19.6 years in AMMR2014. The equivalent Hard Rock landbank (including Government reserves) is 18.1 years. When Government reserves are excluded, the 10 year landbank reduces to 10.0 years.

However, having given due consideration to the short term demand of aggregates based on the annual aggregates demand over the past three years, the landbank for Sand & Gravel is 34.3 years, Hard Rock landbank (including Government reserves) is 26 years and 19 years when Government reserves are excluded.

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1. Sale of Primary Minerals

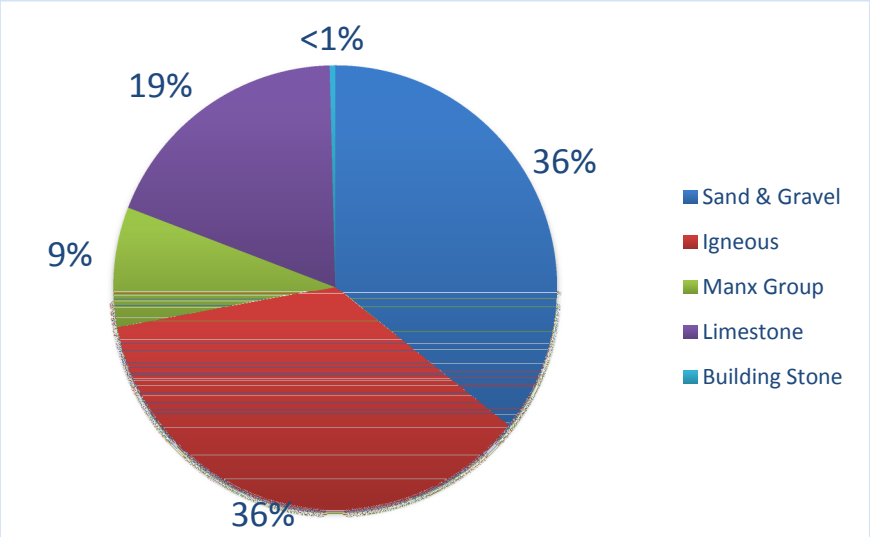
1.1 All mineral operators provide information on the actual tonnage of primary mineral sold (in the form of sand and gravel, crushed rock and building stone between 1st December 2013 and 30th November 2014) to the Department of Economic Development (DED). This information is managed and monitored by 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 S&G and Hard Rock (see Section 5 - Forecast Need for Minerals).

Table 1: Summary of Primary Aggregate & Building Stone Sales 2012 – 2014

	2012	2013	2014
Mineral Operation	**Tonnes ('000)**	**Tonnes ('000)**	**Tonnes ('000)**
Ballaharra Sand Pit	**13.57**	**12.84**	**11.99**
Point of Ayre	**87.72**	**81.50**	**85.84**
Cronk y Scotty Sand Pit	**0.51**	**0.32**	**0.46**
Billown Quarry	**69.55**	**57.31**	**51.84**
Cringle Quarry (Crushed Rock)	**21.84**	**15.18**	**23.34**
Cringle Quarry (Building Stone)	**0.27**	**0.13**	**0.26**
Earystane Quarry (Crushed Rock)	**0.25**	**0.15**	**0.49**
Earystane Quarry (Building Stone)	**0.24**	**0.39**	**0.08**
Pooil Vaaish Quarry (Crushed Rock)	**3.19**	**0.55**	**0.00**
Pooil Vaaish Quarry (Building Stone)	**0.12**	**0.06**	**0.00**
Poortown Quarry (crushed rock - Government Sales)	**24.51**	**38.08**	**29.77**
Poortown Quarry (crushed rock - Private Sales)	**36.31**	**38.48**	**48.24**
Stoney Mountain Quarry (crushed rock - Government Sales)	**7.28**	**18.23**	**12.53**
Stoney Mountain Quarry (crushed rock - Private Sales)	**21.11**	**15.47**	**9.90**
Starch Mill Quarry (Crushed Rock)	**0.08**	**0.02**	**0.47**
Starch Mill Quarry (Building Stone)	**0.15**	**0.13**	**0.06**
Ancillary Mining Total	**0.74**	**0.00**	**0.51**
TOTAL	**287.44**	**278.84**	**275.78**

Figure 1 2014 Sales of Primary Aggregate & Building Stone



Primary Mineral Extraction by Mineral Type: Sand and Gravel; Limestone; Manx Group; Igneous

Table 2: Total Sales as Primary Aggregate 2005 – 2014 *('000 tonnes*)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sand & Gravel	184.19	223.91	203.41	201.78	178.32	146.53	146.99	101.80	94.66	98.80
Limestone	97.52	104.92	116.46	115.87	76.59	352.38[1]	84.28	72.86	57.92	51.84
Manx Group	45.43	68.46	56.76	65.01	48.58	25.83	60.50	23.57	16.00	24.70
Igneous	85.35	58.86	98.21	157.71	140.56	110.58	101.33	89.21	110.26	100.44
TOTAL	**412.49**	**456.15**	**474.84**	**540.37**	**444.05**	**635.32**	**393.10**	**287.44**	**278.84**	**275.78**

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

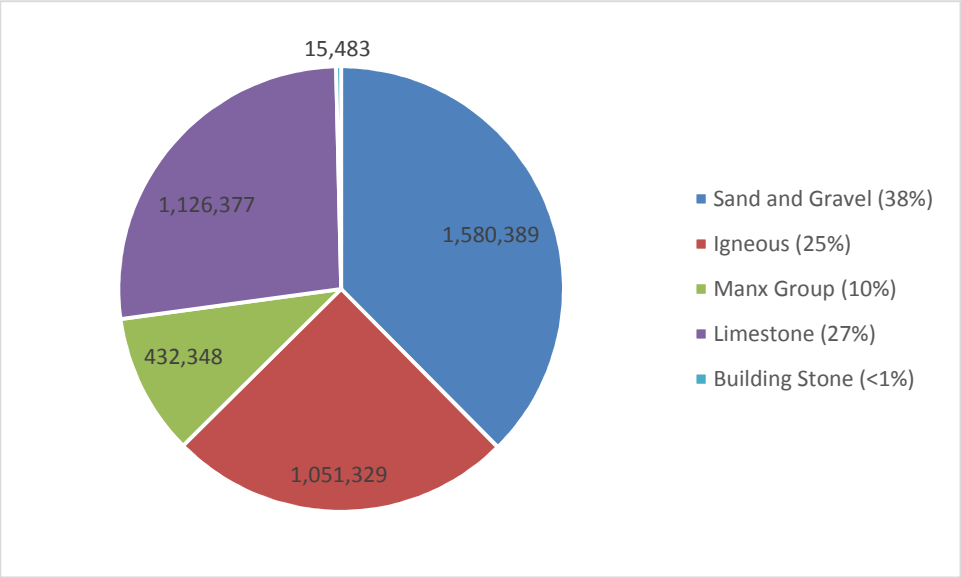
Table 3: Total Sales as Building Stone 2005 – 2014 *('000 tonnes)*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Limestone	0.41	0.28	0.42	1.17	0.08	0.14	0.36	0.12	0.06	0.00
Manx Group	2.27	1.86	1.33	1.63	1.49	1.35	0.77	0.66	0.65	0.40
TOTAL	**2.68**	**2.14**	**1.75**	**2.80**	**1.57**	**1.49**	**1.13**	**0.78**	**0.71**	**0.40**

Table 4: Total Sales Primary Agg & Building Stone 2005 – 2014 *('000 tonnes)*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Primary Aggregate	412.48	456.15	470.88	540.38	438.46	635.33	390.61	286.66	278.13	275.38
Building Stone	2.68	2.14	1.75	2.80	1.57	1.49	1.13	0.78	0.71	0.40
TOTAL	**415.16**	**458.29**	**472.63**	**543.18**	**440.03**	**636.82**	**391.74**	**287.44**	**278.84**	**275.78**

Figure 2: Total 10 Year Sales of Primary Aggregate and Building Stone 2005 to 2014 (tonnes)



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 S&G 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. While at the strategic level forecasting the need for S&G 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:

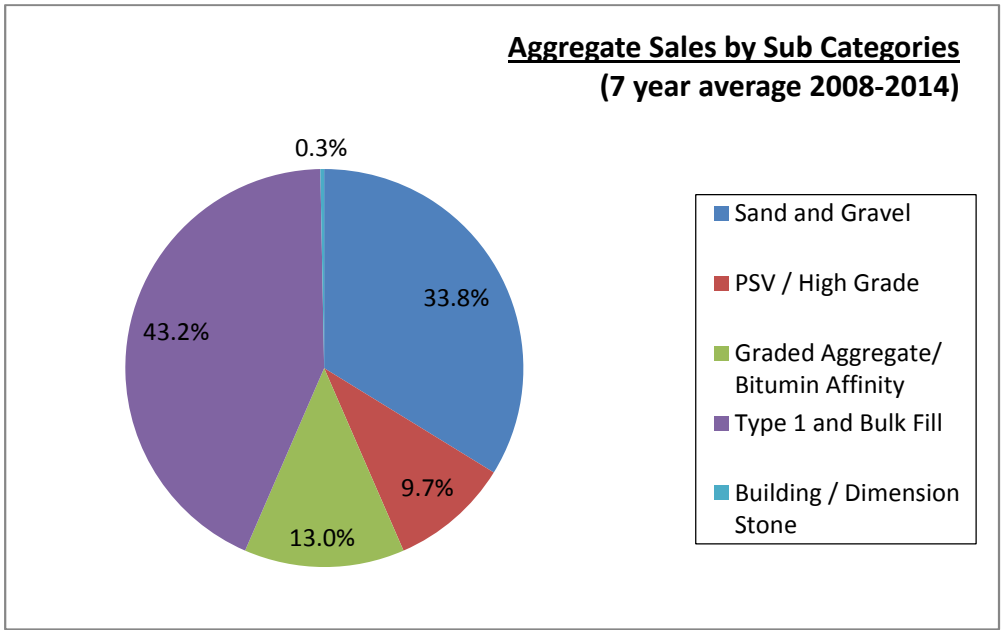
- end-use data is not reported for all quarries;
- there are no reliable data on the amount and end-use of imported minerals (e.g. dimension stone);
- the demand for road aggregate is driven by the design guide for residential roads on the Island, Manx Roads 2 (MR2). MR2 is currently a prescriptive road construction design which specifies the amount and type of primary aggregate required. A move to a product performance led road design would reduce the demand for primary aggregate, including high grade polished stone value (psv) igneous mineral[3], and therefore the amount and end use of mineral;
- although not precluded from use, recycled aggregates are only accepted within sub-base layer for road construction. A move to a more sustainable use of aggregate, together with agreed method for performance testing for recycled aggregate, should realise a reduction in demand for primary aggregate.

Table 5: Aggregate Sales by Sub Categories 2008 - 2014 *('000 tonnes)*

	2008	2009	2010	2011	2012	2013	2014	Total	7yr Average
Sand & Gravel	201.78	178.32	146.53	146.99	101.80	94.66	98.30	**968.38**	138.34
PSV / High Grade	40.94	68.57	33.58	38.60	36.41	22.56	37.11	**277.77**	39.68
Graded Aggregate/ Bitumen Affinity	84.35	59.66	51.67	51.13	44.16	52.00	30.48	**373.45**	53.35
Type 1 and Bulk Fill	214.52	138.84	404.76	155.04	105.19	108.90	109.51	**1236.76**	176.68
Building / Dimension Stone	2.80	1.58	1.49	1.15	0.78	0.72	0.40	**8.92**	1.27
TOTAL	**544.39**	**446.97**	**638.03**	**392.91**	**288.34**	**278.84**	**275.80**	**2,865.28**	**409.32**

[3] (psv): The Polished Stone Value gives a measure of the resistance of an aggregate to the polishing action of a pneumatic tyre under conditions similar to those occurring on the surface of a road. The PSV number determines an aggregates resistance to skidding when used in the surface course of a road. http://aggregain.wrap.org.uk/terminology/polished_stone.html

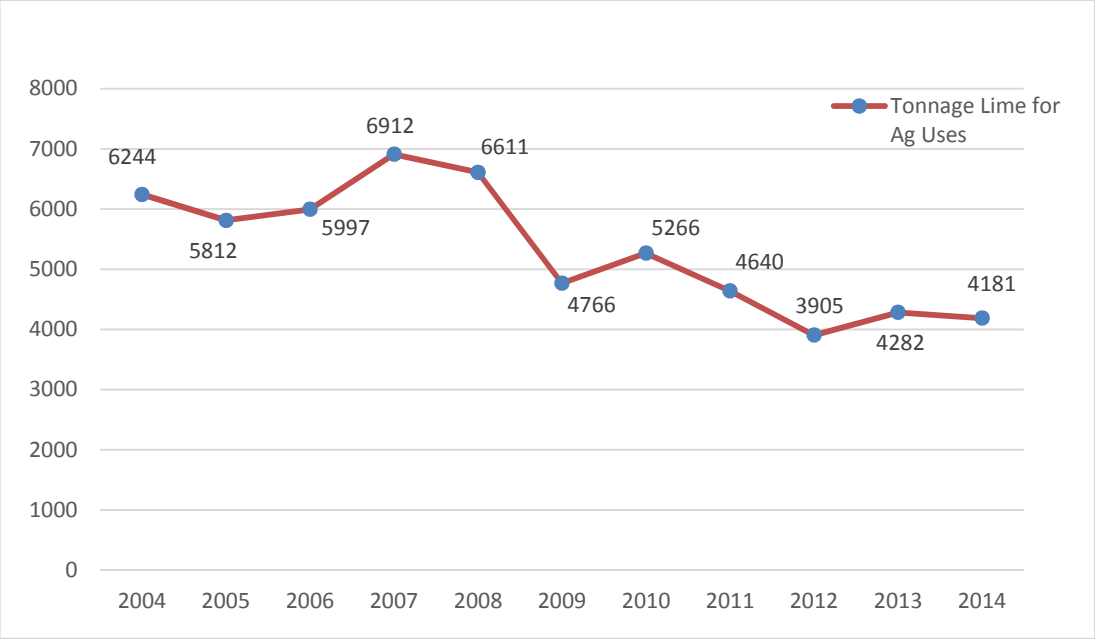
Figure 3: Percentile Summary of Aggregate Sales by Sub Categories (7 year average)



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 Island's soils are acidic and therefore require the periodic application of lime to increase and/or maintain pH. Sources of lime used on the Island commonly includes crushed limestone and imported pelletised lime, historically crushed limestone has also been imported. 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 Hard Rock need.

Figure 4: Agricultural Lime Production 2004 – 2014 (Billown Quarry)



2.5 A field scale trial conducted by DEFA indicates that the Billown lime, if crushed sufficiently and applied in a timely and targeted manner can prove to be an effective liming agent for Manx soils.

2.6 DEFA advise that, if Billown is to cease producing agricultural lime and there are no alternative on Island sources, the Island's 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 Facilities licenced under the Public Health Act 1990 for recycling of waste into recycled or secondary aggregate are required to submit tonnage data to DEFA. 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 European Waste Catalogue[4] (EWC) codes, and to simplify the process by developing on-line returns. 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.

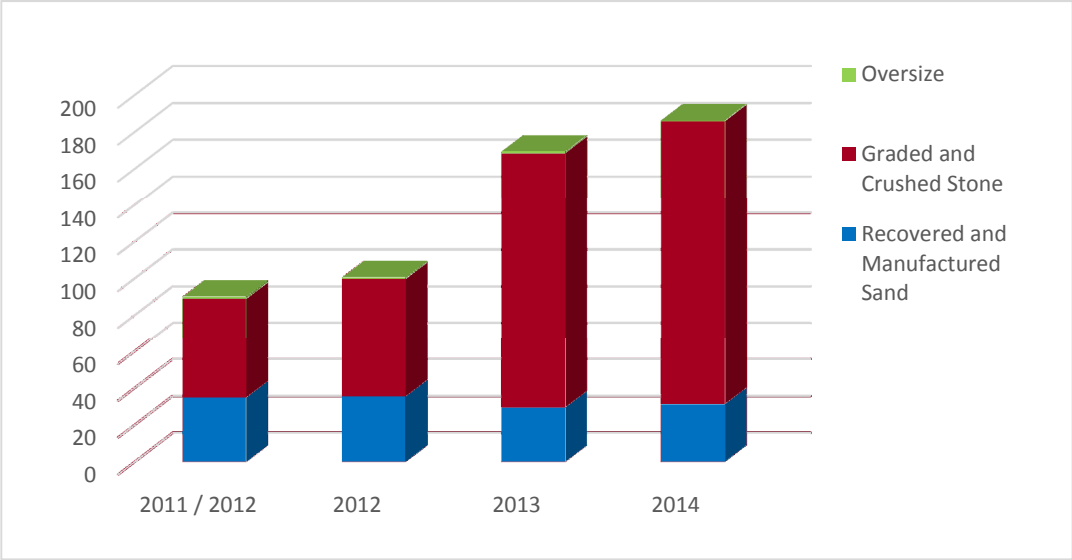
3.2 In the interim, data on the sale of recycled aggregate from main aggregate re-processors is summarised below, together with data on the source waste material required for the production of recycled or secondary aggregate.

Table 6 Sales of Recycled Aggregate - minimum (000's tonnes)

Year	2011/2 *	2012	2013	2014
Recovered & Manufactured Sand	34.8	35.5	29.5	31.2
Graded & Crushed Stone	54.2	64.4	139.1	154.6
Oversize	1.1	0.7	0.8	0.4
Total	**90.1**	**100.6**	**169.4**	**186.2**

*operations at one site commenced part way through 2011. Data for 2011 therefore includes data from 2012 to provide a full year production. This data (Jan – May) is also reported for 2012.

Figure 5 Sales of Recycled Aggregate



[4] www.sepa.org.uk/waste/waste_data/reporting_definitions_and_term/coding_systems.aspx

Sales of Primary and Recycled Aggregate 2012-2014

3.3 Figure 6(a) below indicates the total tonnage of aggregate sales (primary and recycled) 2012-2014. Whilst the total sales of primary aggregate have continually declined between 2012 (288.34kt), 2013 (278.84kt) and 2014 (275.78), if sales of recycled aggregate are included then the total tonnage of aggregate sales have actually increased, from 381.87kt in 2012 to 447.49kt in 2013 and 463.19 in 2014. Sale of recycled aggregate (graded crushed stone and oversize) accounted for the largest percentage increase in 2014 Table 6(b). Although data on sale of recycled aggregate is incomplete, the information that is available allows are more accurate assessment of the demand for aggregate on the Island. Figure 6(a) suggests that since 2012 there has been an increase in activity within the construction sector.

Figure 6 (a) Tonnage Sales – Primary and Recycled Aggregate ('000's Tonnes)

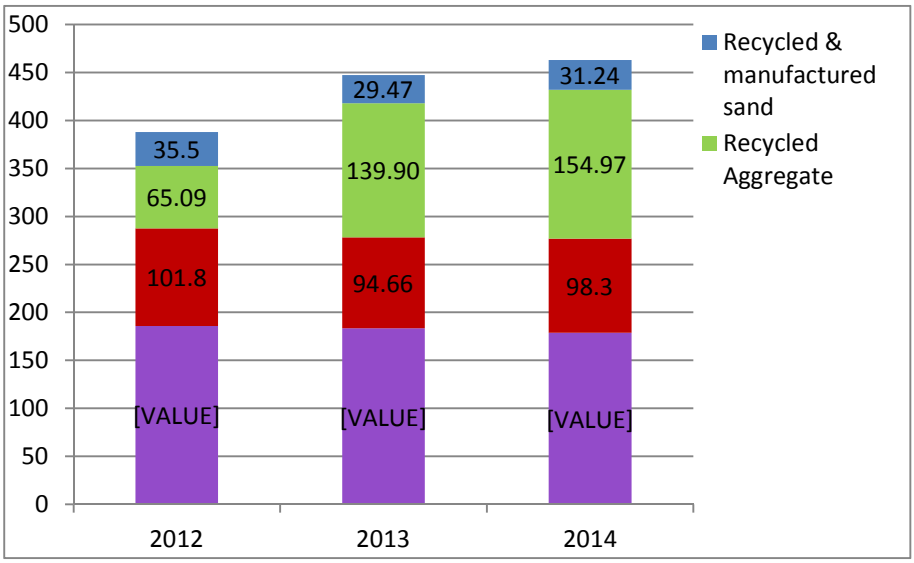
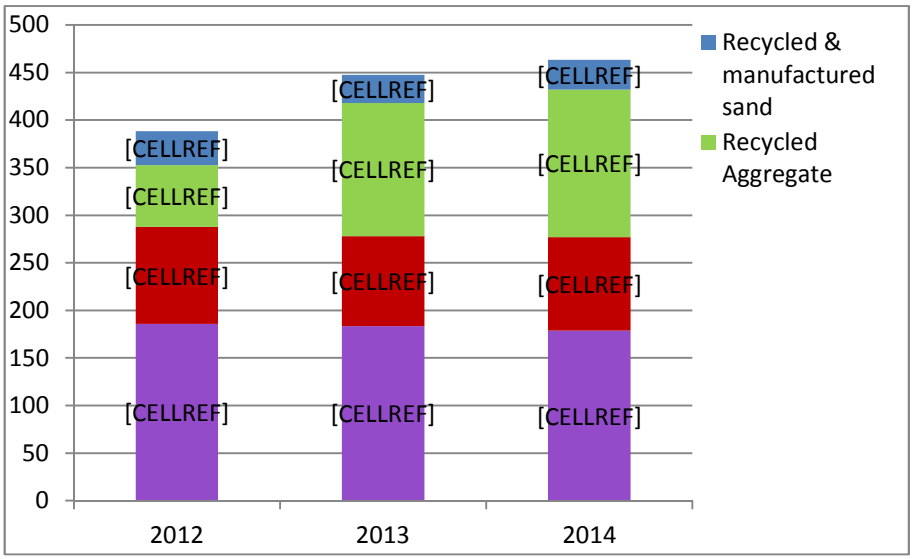


Figure 6 (b) Percentage of Annual Sales - Primary and Recycled Aggregate



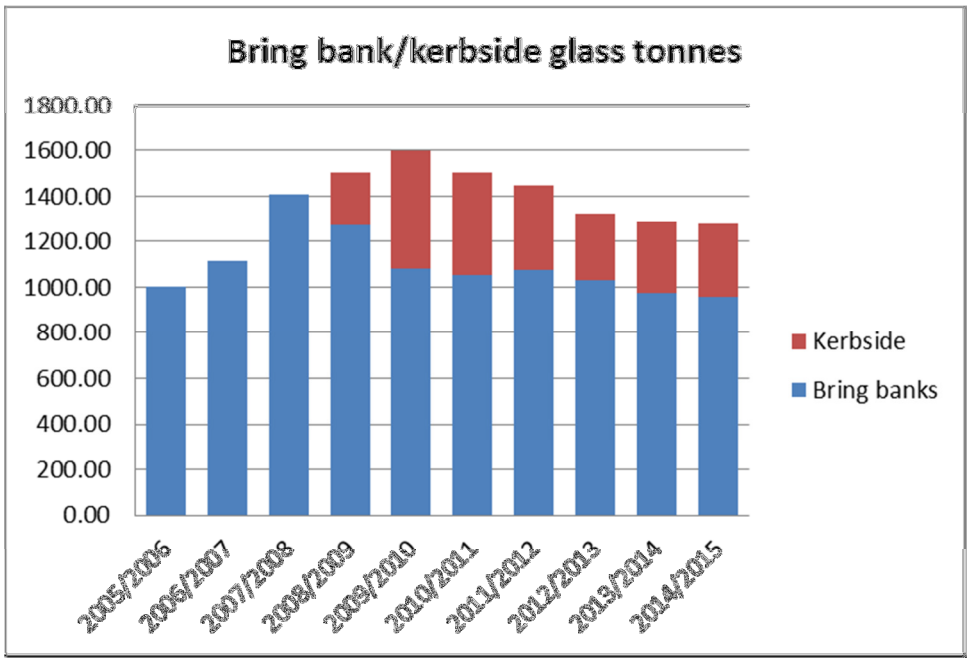
Production of Recycled Aggregate - Source Waste Materials

Glass

3.4 Glass bottles and jars collected as part of the Island's domestic waste recycling schemes (all Island Bring Banks and localised kerbside collection) and some glass collected from commercial premises are processed into eco-sand. This sand replacement is suitable for used in construction (as a blinding layer, or as a base layer for decorative block paviours or non-flexible pipes) and reduces the demand for primary won aggregate.

3.5 Figure 7 indicates the tonnage of glass collected from the domestic waste stream since 2004, including glass collected following the introduction of the kerbside collection scheme in 2008. Whilst some food and beverage manufacturers have changed from the use of glass to plastic packaging, this does not account for the notable decline in glass recollected from the domestic waste stream since 2010. It is suspected this is mainly due to a decline in householder participation in recycling schemes. In terms of commercial glass it is known that some collected commercial glass is now being diverted to landfill rather than a recycling route. To increase the availability of eco-sand effort needs to be made to increase both participation in household waste recycling schemes and the collection of glass waste for recycling from within the commercial sector.

Figure 7: Tonnage of Domestic Glass delivered for Recycling 2004 – 2014

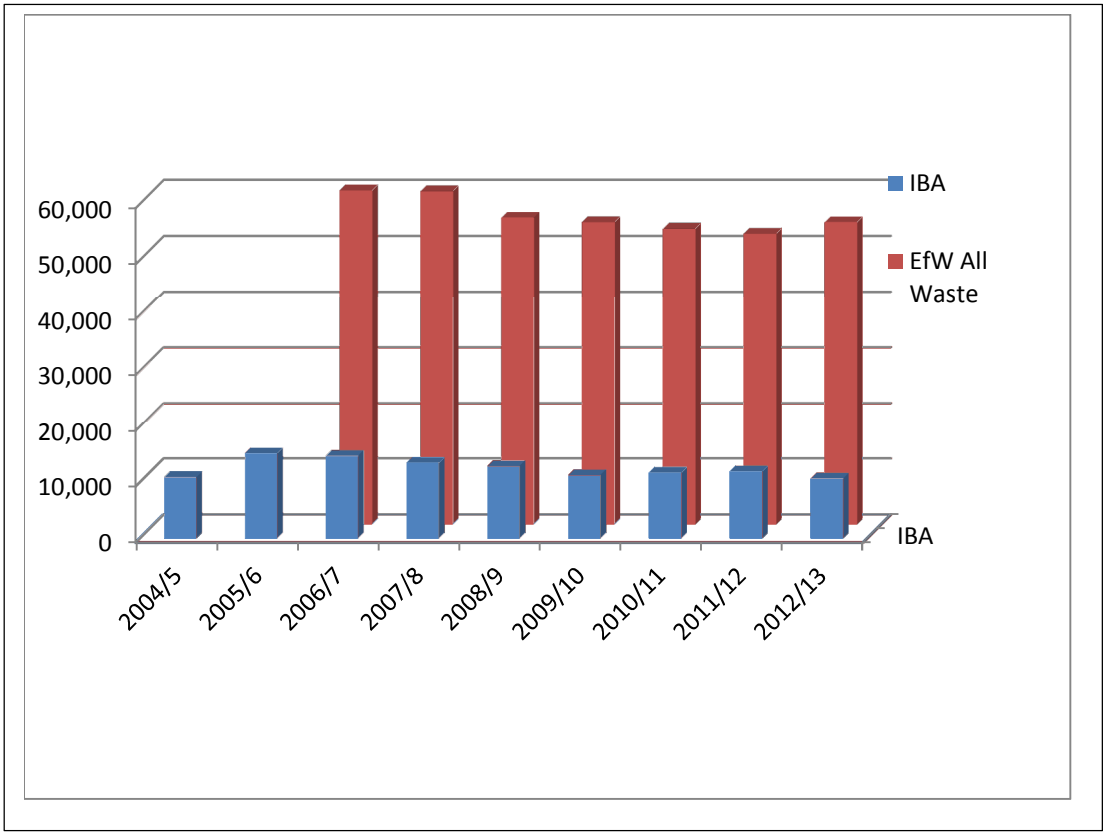


Incinerator Bottom Ash (primary and secondary streams, includes boiler ash)

3.6 The Energy from Waste (EfW) plant produced an average of 11,600 tonnes of Incinerator Bottom Ash [IBA] 2010 - 2013. 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 currently stored in Turkeyland Quarry (permitted landfill capacity 585,000m3).

3.7 IBAA has the potential to be used as a secondary aggregate, and the feasibility of its use in certain 'bound' applications e.g. 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. IBAA may also have the engineering properties to be used in certain applications as a capping or sub-base in roads, paths and car-parks etc. Having undertaken initial studies to assess the environmental risks associated with the use of IBAA in various locations, DOI is in the process of reviewing the results. Any future trials would be subject to site-specific environmental risk assessments.

Figure 8 Total Waste to EfW and Incinerator Bottom Ash tonnage 2004-2014 (tonnes)



Source: DOI 2014

Figure 8 shows total tonnage of waste deposited at the EfW (primary and secondary waste streams) and the residual tonnage of IBA. Incineration of waste reduces the volume of waste by circa 95% and weight by circa 75%.

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 a planning permission. 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 2014.

4.2 The reserve calculations have been undertaken by DED which collates information on annual mineral sales as part of the licencing of mineral extraction and collection of mineral royalties. The following mineral reserves reflect the situation at each mineral operation as at the end of November 2014.

TABLE 7: Sand and Gravel Reserves @ 30 Nov 2014

	2011	2012	2013	2014
Operation	**Tonnes**	**Tonnes**	**Tonnes**	**Tonnes**
Point of Ayre	3,074,000	2,986,280	2,904,780	2,818,940
Ballaharra Sand Pit	575,000	561,430	548,590	536,600
Cronk y Scotty Sand Pit	19,500	18,990	18,670	18,210
TOTAL	**3,668,500**	**3,566,700**	**3,472,040**	**3,373,750**

TABLE 8: Hard Rock Reserves @ 30 Nov 2014

		2011	2012	2013	2014
Mineral	**Operation**	**Tonnes**	**Tonnes**	**Tonnes**	**Tonnes**
Limestone	Billown Quarry	297,200	227,650	170,340	118,500
	Pooil Vaaish Quarry	111,600	108,290	107,680	100,000
Manx Group	Cringle Quarry	1,237,500	1,215,390	1,200,080	1,176,480
	Earystane Quarry	135,000	134,510	133,970	133,400
	Starch Mill Quarry	37,700	37,470	37,320	36,790
Igneous	Poortown Quarry	1,058,800	997,980	921,420	843,410
	Stoney Mountain Quarry	2,335,000	2,306,610	2,272,910	2,250,480
	TOTAL	**5,212,800**	**5,027,900**	**4,843,720**	**4,659,060**

4.3 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, size of facility, and any conditions attached to the planning permission. The list of licenced waste aggregate reprocessing facilities is listed in Figure 7. In addition to licenced facilities some construction and demolition waste aggregate may be managed at the point of production

Figure 9 List of Licenced Waste Aggregate Reprocessing Facilities correct at 2012

WASTE DISPOSAL LICENCE NO. (Expiry date)	LICENCE HOLDER	SITE ADDRESS	AUTHORISED WASTE TYPES which include	FACILITY TYPE
WDL/08/2010/V1	**JCK Ltd**	**Fields 434057 & 434058,** Balthane Industrial Estate, Ballasalla	Inert waste	**Recycling and storage**
WDL/04/2010/V1	**Turkeyland Recycling & Waste Management Ltd.**	**Old Turkeyland Quarry**, Balthane Road, Ballasalla	Incinerator Bottom Ash	**Bottom Ash waste transfer station with treatment**
WDL/05/2006/V2 (Not Applicable)	**Mr A Corlett, Director,**	**Corletts Building Materials Ltd,** Ballaharra Quarry, St. Johns, IM4 3RB	Inert construction and demolition waste	**Landfill & Recycling**
WDL/04/2003/V3 (Not Applicable)	**David Crowe Plant Hire Ltd**	**David Crowe Plant Hire Ltd.** Billy Goat Park, Stoney Mountain Road, Eairy, IM4 3HJ	Inert construction and demolition waste	**Transfer Station**
WDL/03/2010/V1	**A. V. Craine & Sons Ltd.**	**Cringle Quarry,** Ronague, IM9 4HJ	Inert waste	**Recycling compound and storage facility**
WDL/06/2005/V1 (Not Applicable)	**Paul Carey & Sons Ltd.**	**Paul Carey & Sons Ltd.,** Land at the Technical Site, The Old Airfield, Braust, Andreas	Inert construction and demolition waste	**Recycling Compound and Storage Facility**
WDL/03/2005/V2	**Heritage Homes Ltd.,**	**Heritage Homes Ltd.,** Field 522517, Richmond Hill, Braddan	Inert construction & demolition wastes	**Recycling Compound & Transfer Station**
WML/2002/V2/01 (Not Applicable)	**Mr D. Ayres, Manx Metals (1983) Ltd.,**	**Manx Metals (1983) Ltd,** Balthane Industrial Estate, IM9 2AQ	Inert, construction & demolition waste	**Transfer Station and Recycling**
DIR/01/2011/V1	**Department of Infrastructure**	**Stoney Mountain Quarry,** Stoney Mountain Road, Eairy, IM4 3HJ	Inert waste	**Transfer Station**
WDL/07/2010/V2	**Tel's Recycle Ltd,**	**Tel's Recycle Ltd** Units 43 & 43a Snugborough Trading Estate, Braddan,	Inert waste	**Transfer station**
WDL/01/2003/V2 (Not Applicable)	**Birchalls (Plant Hire) Ltd**.	**Birchalls (Plant Hire) Ltd**., The Technical Site, The Old Airfield, Andreas	Inert construction & demolition waste.	**Transfer Station**

Source: DEFA Environmental Protection Unit 2014

Need for Facilities for Managing Construction and Demolition Type Waste

4.4 The evidence base for assessing the need for waste management facilities is the DOI Waste Policy and Strategy 2012-2022 (WPS) published in January 2013. In terms of waste management infrastructure requirements WPS Policy 4 Waste Infrastructure states 'We will ensure the Island has access to an adequate network of waste storage processing, treatment and disposal facilities developed in accordance with the principle of self-sufficiency, proximity and cost.' The WPS also states a 'reduction in landfill will be delivered. Through an increase in reuse and recycling in construction and demolition type waste' (p4).

4.5 The WPS does not identify a shortage of, or a need for, construction and demolition (C&D) type reprocessing facilities either in totality or at specific locations across the Island. In planning policy terms therefore there is no acknowledged need for additional C&D reprocessing facilities, as required by Strategic Plan Waste Policy 1.

4.6 The past few years have seen an increase in the number of aggregate and C&D reprocessing facilities developed for private use only. The operators of these facilities indicate they are for the sole use of one company/operator, and are not open for general commercial use. The key driver for this appears to be cost, with operators saving on the need to pay commercial gate fees, setting aside the capital costs of site development. Whilst there are no planning or licence restrictions on their use, restricting access effectively reduces the number of sites and processing capacity available to manage commercially arising C&D waste. It is not known if this has an impact on the amount of C&D material reprocessed. It is known that unrestricted commercial C&D facilities are not operating at maximum capacity.

4.7 The main planning considerations in assessing the need for C&D waste type facilities relate to the:

- source of waste arising, i.e. where in relation to the proposed facility will the majority of waste be produced;
- forecast of waste arisings in the medium to long term, and options for on sites waste minimisation, reuse and reprocessing in accordance with the waste hierarchy;
- estimated tonnage of material to be imported to the facility annually;
- location of existing waste management facilities and any commercial restriction on their use;
- duration of the planning permission applied for;
- impact on carbon emissions from transportation of waste to the facility and the reprocessed aggregate and waste for landfill from the facility.

Need for Landfill Capacity

4.8 The WPS key proposal for landfill is to 'Develop a long term landfill solution for specific (problematic) wastes beyond the current lifespan of Wrights Pit North (i.e. 2020)'. The technical specifications, capacity requirement and preferred location of this void space are not included. The WPS does not identify a need for additional general landfill capacity for non-problematic wastes. The WPS indicates that the long term capacity for inert wastes is 'predominantly provided by Turkeylands inert landfill site which has a capacity of over 600,000m^3 void space' providing 'sufficient inert waste landfill space for the next 20 years.[5] This site is now permitted in part for the

[5] Data on inert waste arisings is estimated

storage/disposal of processed IBA. At current rates of disposal to EfW and assuming a 75% reduction by weight, at 1t:1m^3 the site has capacity for storage of IBA for an estimated 20 years. In planning policy terms therefore there is no 'acknowledged need' for landfill capacity for disposal of inert waste or IBA as required by IoM Strategic Plan 2007 - Waste Policy 1.

4.9 In relation to the restoration of former mineral workings by infill, the main planning considerations in relation to need will include:

- the forecast need for inert landfill void space post 2020;
- the need for the Island to secure a landbank of strategic infill void space;
- the location of existing landfill facilities and any commercial restriction on their use;
- the capacity of the site and duration of planning permission applied for;
- the suitability of former mineral workings to take differing types of landfill and engineering requirements (i.e. lining of waste cells)
- the proximity principle and impact of carbon emissions from transportation of waste to the facility.

4.10 Table 14 in Appendix 1 indicates the estimated void space for quarries with permission for restoration by infill, and lists operational mineral workings with provisions for restoration and estimated permitted tonnages of mineral for extraction/associated void space. Please note this data is incomplete. Information on remaining capacity within quarries with permitted infill is awaiting verification. Data on void space in operational quarries is difficult to ascertain. Figures presented are estimated tonnages for current planning permissions. In many cases these are extensions to existing quarries and therefore total void capacity associated with that quarry will be considerably greater.

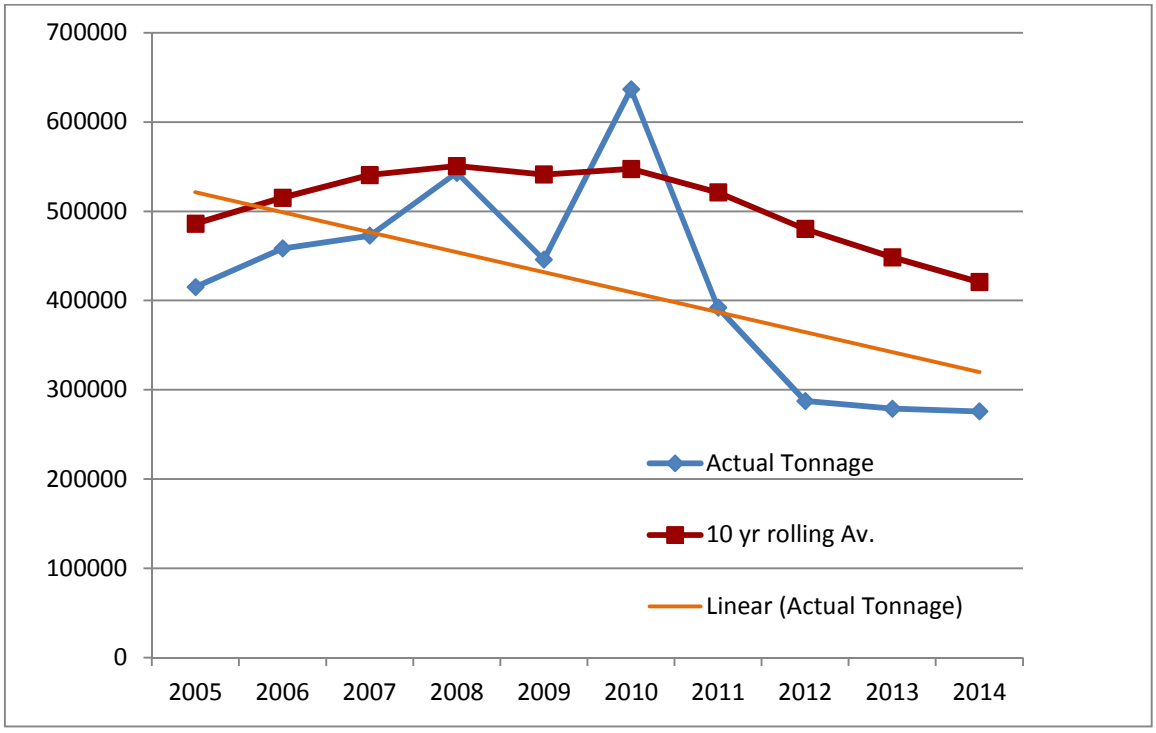
4.11 Wardell Armstrong undertook an assessment of the existing operations or recently surrendered sites to see if there are suitable void spaces that can be exploited for landfilling. The conclusions of the report state that they did not consider that any of the active minerals operations have the potential to assist the DOI with their hazardous waste strategy, other than as part of a long term approach.

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 (e.g. GDP) 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 Hard Rock) based on annual aggregate sales from 2002 (red line), and the actual annual aggregate sales (blue line). The spike in sales in 2010 is due to the one-off extraction of 274,000t of aggregate for use in the airport runway extension and sourced from New Turkeyland Quarry (see Table 2). The linear trend line (orange line) indicates the decrease in sales of primary aggregate since 2002. The gap between forecast (10 yr rolling average) and actual tonnage sales highlights the increased rate of decline in annual sales, although the rate of decline has reduced since 2013.

Figure 10: Comparison of Actual Aggregate Sales with Forecast Aggregate Sales Based on a 10 year rolling average



5.3 *Given the difference between the Actual tonnage and the 10 year rolling average, the AMMR 2015 has also assessed the* short-term demand for aggregates looking at the three-year annual aggregates demand which provides an indication of how the Island may develop in the short-term.

5.3 Forecast of Aggregate Need in 2015

5.3.1 Sand and Gravel

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	10 Year Total Tonnes (`000)	10 Year Ave. Tonnes (`000)
Sand & Gravel	184.19	223.91	203.41	201.78	178.32	146.53	146.99	101.80	94.66	98.29	**1,481.6**	**148.2**

Table 9: Forecast of Need for Sand and Gravel in 2015 (10 years)

The annual sand and gravel requirement for 2015 using the 10 year aggregate forecast is c.**148,200 tonnes**.

	2012	2013	2014	3 Year Total Tonnes (`000)	3 Year Ave. Tonnes (`000)
Sand & Gravel	101.80	94.66	98.29	**294.75**	**98.3**

Table 10: Forecast of Need for Sand and Gravel in 2015 (3 years)

The annual sand and gravel requirement for 2015 using the 3 year aggregate forecast is c.**98,300 tonnes**.

5.3.2 Hard Rock (aggregate/building stone)

HR 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 All Sales from All HR quarries

Based on a 10 year rolling average of annual aggregate/building stone sales from **all HR quarries** including all sales (to private and commercial sectors) from Poortown (PT) and Stoney Mountain (SM) quarries.

Table 11: Forecast of Need – HR 2015 - All HR Quarries (10 years)

Mineral Type	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	10 Year Total Tonnes (`000)	10 Year Ave. Tonnes (`000)
Limestone	97.5	104.9	116.46	115.9	76.6	352.4	84.3	72.8	57.9	51.8	1130.0	113.0
Manx Group	45.4	68.5	56.8	65	48.6	25.8	60.5	23.6	16	24.7	434.1	43.4
Igneous	85.4	58.9	98.2	157.7	140.6	110.6	100.2	89.2	110.3	100.4	1051.5	105.2
TOTAL	**228.3**	**232.2**	**271.4**	**338.6**	**265.7**	**488.8**	**245.0**	**185.6**	**184.2**	**176.9**	**2,615.6**	**261.6**

The total HR requirement for 2014 (based on all HR sales) using the 10 year aggregate forecast is **c.261,600 tonnes**.

Table 12: Forecast of Need – HR 2015 - All HR Quarries (3 years)

Mineral Type	2012	2013	2014	3 Year Total Tonnes ('000)	3 Year Ave. Tonnes ('000)
Limestone	72.8	57.9	51.8	182.5	60.8
Manx Group	23.6	16	24.7	64.3	21.4
Igneous	89.2	110.3	100.4	299.9	100.0
TOTAL	**185.6**	**184.2**	**176.9**	**546.7**	**182.2**

The total HR requirement for 2014 (based on all HR sales) using the 3 year aggregate forecast is **c.182,200 tonnes**.

Option B Excludes All Sales from Poortown and Stoney Mountain Quarries

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

Table 13: Forecast of Need - HR in 2015 – excludes all sales from PT and SM (10 years)

Mineral Type	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	10 Year Total Tonnes ('000)	10 Year Ave. Tonnes ('000)
Limestone	97.5	104.9	116.5	115.9	76.6	352.4	84.3	72.9	57.9	51.8	1130.6	113.1
Manx Group	45.4	68.5	56.8	65.0	48.6	25.8	60.5	23.6	16.0	24.7	434.9	43.5
TOTAL	**143.0**	**173.4**	**173.2**	**180.9**	**125.2**	**378.2**	**144.8**	**96.4**	**73.9**	**76.5**	**1565.5**	**156.6**

The total HR requirement for 2015 (excluding sales from Poortown and Stoney Mountain) using the 10 year aggregate forecast is **c.156,600 tonnes**.

Table 14: Forecast of Need - HR in 2015 – excludes all sales from PT and SM (3 years)

Mineral Type	2012	2013	2014	3 Year Total Tonnes ('000)	3 Year Ave. Tonnes ('000)
Limestone	72.9	57.9	51.8	182.5	60.9
Manx Group	23.6	16.0	24.7	64.3	21.4
TOTAL	**96.4**	**73.9**	**77.0**	**247.3**	**82.3**

The total HR requirement for 2015 (excluding sales from Poortown and Stoney Mountain) using the 3 year aggregate forecast is **c. 82,300 tonnes**.

Option C All Sales from All HR quarries excluding Poortown Quarry

Based on a 10 year rolling average of annual aggregate/building stone sales from **all HR quarries** including Stoney Mountain Quarry but excluding all sales (to private and commercial sectors) from Poortown (PT).

Table 15: Forecast of Need – HR 2015 - All HR Quarries excluding Poortown (10 years)

Mineral Type	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	10 Year Total Tonnes ('000)	10 Year Ave. Tonnes ('000)
Limestone	97.5	104.9	116.5	115.9	76.6	352.4	84.3	72.8	57.9	51.8	1130.6	113.1
Manx Group	45.4	68.5	56.8	65.0	48.6	25.8	60.5	23.6	16.0	24.7	434.9	43.5
Igneous	47.9	31.5	41.5	65.1	38.5	35.0	22.50	28.40	33.70	22.50	366.6	36.7
TOTAL	**190.8**	**204.9**	**214.8**	**246.0**	**163.7**	**413.2**	**167.3**	**124.8**	**107.6**	**99.0**	**1932.1**	**193.2**

The total HR requirement for 2014 (based on all HR sales excluding Poortown Quarry) using the 10 year aggregate forecast is **c.193,200 tonnes**.

Table 16: Forecast of Need – HR 2015 - All HR Quarries excluding Poortown (3 years)

Mineral Type	2012	2013	2014	3 Year Total Tonnes ('000)	3 Year Ave. Tonnes ('000)
Limestone	72.8	57.9	51.8	182.5	60.8
Manx Group	23.6	16.0	24.7	64.3	21.4
Igneous	28.40	33.70	22.50	84.6	28.2
TOTAL	**124.8**	**107.6**	**99.0**	**331.4**	**110.5**

The total HR requirement for 2014 (based on all HR sales excluding Poortown Quarry) using the 3 year aggregate forecast is **c.110,500 tonnes**.

Table 17 Summary of Aggregate Need in 2015

Forecast annual need from:	Annual tonnage based on 10 years average sales	Annual tonnage based on 3 years average sales
Sand & Gravel quarries	**148,200**	**98,300**
Hard Rock quarries - all	**261,600**	**182,200**
Hard Rock quarries - excluding Government Quarries	**156,600**	**82,300**
Hard Rock quarries - excluding Poortown Quarry	**193,200**	**110,500**

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 HR and S&G is set at 10 years as agreed by the MSATPG.

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 the two main mineral types HR and S&G. There is some sub- classification but this is for minerals with a specialised end use e.g. silica sand.

6.4 The option of sub-dividing the reserves of these two main mineral types was considered. For example, HR reserves could be sub-divided into high grade aggregate (psv/ bitumen affinity), Type 1/graded aggregate, and building stone. However the option was discounted as being both impracticable and imprecise. A HR reserve may produce a range of aggregate types due to local variations in mineralogy, weathering along faults lines, intrusions or bedding planes. Reserves can also be processed into a range of products according to demand. The landbank for HR on the Island is therefore calculated as follows:

$$\text{Landbank for Hard Rock} = \frac{\text{Total Mineral reserves remaining at Hard Rock quarries}}{\text{Average 10 year (or 3 year) annual mineral production from Hard Rock quarries}}$$

2015 Landbank Assessments at 30th November 2014

Sand and Gravel Landbank – 10 Year

Sand and Gravel Landbank of permitted reserves	=	3,373,750 tonnes	
10 year forecast of annual production	=	148,200 tonnes	
Landbank Requirement	=	1,482,000tonnes	(i.e. 148,200 tonnes x 10 years)
Status of Landbank	=	1,891,750 tonnes	(SURPLUS)
S&G Landbank	=	**22.8 Years**	(i.e. 3,373,750 ÷ 148,200)

Sand and Gravel Landbank – 3 year

Sand and Gravel Landbank of permitted reserves	=	3,373,750 tonnes	
3 year forecast of annual production	=	98,300 tonnes	
Landbank Requirement	=	983,000 tonnes	(i.e. 98,300 tonnes x 10 years)
Status of Landbank	=	2,390,750 tonnes	(SURPLUS)
S&G Landbank	=	**34.3 Years**	(i.e. 3,373,750 ÷ 98,300)

Hard Rock

HR 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 aggregate data including and excluding Government sales and reserves.

Option A: Hard rock Landbank all reserves and all sales – 10 Year

Hard Rock Landbank of permitted reserves	=	4,659,100 tonnes	
10 year forecast of annual production	=	261,600 tonnes	
Landbank Requirement	=	2,616,000 tonnes	(i.e. 261,600 tonnes x 10 years)
Status of Landbank	=	2,043,100 tonnes	**(SURPLUS)**
Hard Rock Landbank – all quarries	=	**17.8 Years**	(i.e. 4,659,100t ÷ 261,600t)

Option A: Hard rock Landbank all reserves and all sales – 3 Year

Hard Rock Landbank of permitted reserves	=	4,659,100 tonnes	
3 year forecast of annual production	=	182,200 tonnes	
Landbank Requirement	=	1,822,000 tonnes	(i.e. 182,200 tonnes x 10 years)
Status of Landbank	=	2,837,100 tonnes	**(SURPLUS)**
Hard Rock Landbank – all quarries	=	**25.6 Years**	(i.e. 4,736,400t ÷ 182,200t)

Option B: Hard Rock Landbank excluding reserves and sales for Poortown & Stoney Mountain -10 Year

Hard Rock Landbank of permitted reserves	=	1,565,200 tonnes	
10 year forecast of annual production	=	156,600 tonnes	
Landbank Requirement	=	1,566,000 tonnes	(i.e. 156,600 tonnes x 10 years)
Status of Landbank	=	-800 tonnes	**(DEFICIT)**
Hard Rock Landbank excl PT &S M	=	**10.0 Years**	(i.e. 1,565,200t ÷ 156,600t)

Option B: Hard Rock Landbank excluding reserves and sales for Poortown & Stoney Mountain – 3 year

Hard Rock Landbank of permitted reserves	=	1,565,200 tonnes	
3 year forecast of annual production	=	82,300 tonnes	
Landbank Requirement	=	823,000 tonnes	(i.e. 82,300 tonnes x 10 years)
Status of Landbank	=	742,200 tonnes	**(SURPLUS)**
Hard Rock Landbank excl PT & SM	=	**19.0 Years**	(i.e. 1,565,550t ÷ 82,300t)

Option C: Hard rock Landbank all reserves and all sales – 10 Year

Hard Rock Landbank of permitted reserves	=	3,815,600 tonnes	
10 year forecast of annual production	=	193,200 tonnes	
Landbank Requirement	=	1,932,000 tonnes	(i.e. 193,200 tonnes x 10 years)
Status of Landbank	=	1,883,600 tonnes	**(SURPLUS)**
Hard Rock Landbank – all HR Excl. Poortown	=	**19.7 Years**	(i.e. 3,815,600t ÷ 193,200t)

Option C: Hard rock Landbank all reserves and all sales – 3 Year

Hard Rock Landbank of permitted reserves	=	3,815,600 tonnes	
3 year forecast of annual production	=	110,500 tonnes	
Landbank Requirement	=	1,105,000 tonnes	(i.e. 110,500 tonnes x 10 years)
Status of Landbank	=	2,710,600 tonnes	**(SURPLUS)**
Hard Rock Landbank – all HR Excl. Poortown	=	**34.5 Years**	(i.e. 3,815,600t ÷ 110,500t)

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 three and 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 consideration will need to be given therefore to the potential supply of material from the recycling sector to replace the need for bulk/lower specification aggregate.

7.3 The production of primary aggregate by recycling companies also plays an important role in meeting demand and has an impact in the need for new mineral reserves.

Call for Sites (CfS)

7.4 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.

7.5 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.

7.6 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 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)

7.7 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 i.e. dolerite and granite, and are shown on the MSA maps: MSA03 Poortown, MSA04 Oatlands, MSA05 Dhoon, together with the appropriate 200m buffer zone[6] for HR. 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.

[6] Minerals and Secondary Aggregate Technical Group: Technical Report April 2012

Need for Aggregate Reserves - 2015

7.8 A review of the landbanks indicates that at November 2014:

i. there is **no need** to seek to identify further reserves of **sand and gravel** for aggregate purposes, the landbank standing at **22.8 years** using the 10 year average sales analysis. The landbank based on 3 year average sales is in excess of **34 years**.

ii. there is **no need** to seek to identify further reserves of **Hard Rock** for aggregate purposes if the reserves of the Government operated quarries are included as the landbank stands at **17.8 years** using the 10 year average sales analysis. The landbank based on 3 year average sales is in excess of **25 years**.

iii. With the reserves of the Government quarries excluded, the landbank for Hard Rock is **10.0 years**. Without any further permitted commercial Hard Rock reserves in the next 12 months, the landbank will be below 10 years by AMMR 2016 and a call for sites will be required. The landbank based on 3 year average sales is **19 years**.

iv. The Hard Rock reserves with only Poortown Quarry excluded, the landbank for Hard Rock is **19.7 years**. Without any further permitted commercial Hard Rock reserves in the next 12 months, the landbank will be below 10 years by AMMR 2016 and a call for sites will be required. The landbank based on 3 year average sales is in excess of **34 years**.

7.9 This assessment of need for aggregate does not take account of the need for agricultural lime which is a non-aggregate product (see Section 2).

7.10 A 'Restricted Call for Sites' (RCfS) 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 that a greenfield development.

7.11 The initial RCfS elicited five submissions none of which have been progressed. They have been confirmed for AMMR2014 and are indicated as a green line on the MSA site maps (MSA01 Point of Ayre, MSA02 Ballaharra, MSA06 Cringle, MSA07 Earystane, MSA08 Billown), together with the appropriate buffer zone[7] (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, although as they are geologically conjunctive with current mineral permissions it can be assumed that suitable reserves are available. The proposed sites have not however been subject to assessment against planning policy, therefore access to RCfS mineral resources may be constrained or even prevented.

7.12 Colas has requested that the limestone resources at New Turkeyland quarry be granted mineral safeguarded status. (MSA09 New Turkeyland).

[7] 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 embodied[8] carbon[9] 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 bulk aggregate between Nov11 and Nov 12. During 2012/2013 dimension or dressed stone continued to be imported for use as cladding and wall construction. Output from the main quarry producing dimension/dressed stone has now increased and it is anticipated that the use of locally soured material will increase. It is known that dressed aggregate, aggregate and building stone is imported by builders merchants and for use in Regeneration Projects across the Island. 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. Historically the main mineral suitable for export was black limestone from Pooil Vaaish.

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[8] 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.

[9] http://www-csd.eng.cam.ac.uk/themes0/resource-flows-1/embodied-energy-and-carbon-in-buildings-eecb 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 fourth AMMR since the formation of the MSATPG in May 2012. During the forthcoming year the Group aims to:

a. Work with DEFA to expand the remit of the group to include the management and monitoring of waste, and identify key stakeholders in the waste sector to join the technical group.

b. Work with DEFA and DOI to improve the capture, collation and analysis of data on construction and demolition waste, and recycled aggregate.

c. Work with HSWI to: progress a review of the health and safety legislation and regulations related to the operation and management of quarries and aggregate reprocessing facilities; promote industry working in accordance with HSE ACOP; and, establish an Island based training and assessment scheme for demonstrating competency.

d. Promote the introduction of performance testing for aggregate and recycled aggregate for use in construction.

e. Contribute to the DOI revision of design standards for roads (MR2) to accommodate performance led design.

f. Work with DOI to develop a methodology for estimating on an annual basis the reserves within Government operated quarries that will supply aggregate to the commercial sector, and contribute to the national landbank of HR mineral reserves.

g. Monitor landbanks and identify the need for new aggregate reserves.

h. Work with DEFA to monitor: the need for agricultural lime; annual sales of crushed limestone from Billown Limestone Quarry; and, mineral reserves at Billown.

i. Work with DOI to support its review of the 2012 Waste Strategy to identify proposals for use of IBAA or recycled aggregate, and monitor the need for facilities for aggregates recycling landfill.

j. Maintain a watching brief on the requirement for Restoration Bonds attached to planning permissions for mineral extraction.

k. Provide technical advice to the Cabinet Office on the drafting of relevant planning policies and area plans, and guidance on the interpretation of Minerals Policy 1 and Waste Policy 1.

10. Membership of the MSATPG 2014/15

Full Membership.

Membership of the MSATPG is taken from companies operating mineral workings on Island, companies licenced for the reception and processing of waste aggregate, and representatives from the Department of Infrastructure – Planning and Building Control and the Department of Economic Development – Mines and Minerals.

Table 18: MSATPG Membership 2014 - 2015

Mineral Operation	**Mineral type**	**Representative**	**Company**
Cringle Quarry	Manx Group	Davey Craine	A V Craine & Sons Ltd
Earystane Quarry	Manx Group	Michael Craig	Earystone Ltd
Point of Ayre	Sand and Gravel	Stephen Smyth	Island Aggregates Ltd
Billown	Limestone	Seymour Corkill	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	Stewart McLaren	DoI
Government Department		**Representative**	
DOI Planning		Stephanie Gray	
DOI Planning		Michael Gallagher	
DED		Dave Roberts	
DED technical advisor		Neil Hughes Wardell Armstrong LLP	

Co-opted members

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

Since 2013 the IoM Health and Safety at Work Inspectorate (Bernard Warden) has been co-opted to the MSATPG to review the regulation of minerals and aggregate recycling operations under the Health and Safety at Work Act 1974, the IoM Management of Health and Safety at Work Regulations 2003, and the HSE Health and Safety Quarries Regulations 1999 - Approved Code of Practice.

Appendix 1

Table 19 MSATPG AMMR 2014 – Estimated Void Space

Quarry Name	Description		Final Void Space m^3	restoration	infill
SITES - PP FOR RESTORATION by INFILLING VOID					
New Turkeylands Old Turkeylands (asbestos)	former quarry	limestone	601,500 (data 2012)		y
Lhergydhoo	former quarry	sand	Circa 60,000t		y
Ballaharra	**operational quarry** pp 96/0745 11/1996	sand	amount unknown - part infill only	Change of use of field to sand quarry 3767, extraction to max 3m below water table, with infill with inert to max 4m above wt	part
SITES - PP RESTORATION YET TO BE AGREED					
Billown	**operational quarry**	limestone	n/a	current pp prohibits infill. Interim restoration scheme submitted. Lease agreement is return to agricultural land use original land levels.	
Poortown	**operational quarry**; 03/01843/B EQ (on appeal 6/5/2005)	dolerite	n/a	landscape scheme submitted but matters of restoration to be included in a scheme (cond 32) for approval within 2 years cessation of quarrying	no but condition 30 indicates this is not precluded
SITES - PP RESTORATION NO INFILL					
Pt of Ayre	Operational Quarry **97/01561**	sand and gravel	n/a	low level restoration to lake	n
Stoney Mountain	**Operational Quarry** 09/01544/B EQ	granite	2,335,000 t	low level restoration, planting of heath and natural re-vegetation	n

Table 19 MSATPG AMMR 2014 - Void Space Audit continued					
Starch Mill	**Operational quarry** 01/02350/B	manx formation	37,500t	No overburden removed from the site O/B to be spread over the remaining flat surfaces/ rock faces when working completed and left to seed naturally.	n
Cringle	**Operational Quarry** 08/02090	manx formation	est reserves 1,215,000t	20 yr pp to 2030 - restoration to low level heathland and lake	n
Earystane	**Operational Quarry** 08/01790/B - 12/11/08 - to 12/11/18	manx formation	est reserves 134,000t	natural re-vegetation	n
Cronk y Scotty	**Operational Quarry** pp 11/01379/B 24/02/12	sand	est reserves 19,000t	Re-colonisation utilising turf and heath transplantation with marram grass	n
SITES - NO RESTORATION CONDITIONS					
Pooil Vaaish	**Historic mineral extraction** – no planning permission	limestone	est reserves 108,000t		

Table 20: Monitoring of Mineral and Aggregate Reprocessing Planning Applications - Decisions made 1st January 2014 – 1st May 2015

Site Name	Grid Reference	Operator	Application Number	Date Submitted	Mineral/ facility Type	Area of Application (Ha)	Quantity of Minerals (Tonnes)	Decision /Date Issued
Pooil Vaaish	225 467	Pooil Vaaish Quarry	14/01331/B	20/11/2014	Limestone	1.7	105,000 (excluding overburden)	20 Feb 2015