

8. LA GIGOULANDE QUARRY

La Gigoulande Quarry (also known as St. Peter's Quarry) has been operated since 1946 by Granite Products Ltd. The company is part of Brett, a UK group of companies which also has dredging interests in the North Sea. The quarry is located in the 'Sensitive Landscape Area of the Agricultural Priority Zone', in St. Peter's Valley, on the parish boundary between St. Mary and St. Peter.



La Gigoulande : June 1999

Output

The current output from La Gigoulande (1999) measures approximately 150,000 tonnes per annum. Approximately 50% of the normal quarry output is used for pre-cast products, blocks and ready-mix concrete and the remainder is sold as loose aggregate. As a direct result of the alkali-silica reactivity problem related to Ronez rock, demand for La Gigoulande aggregate has increased and Granite Products has been able to expand into bulk aggregates and ready-mix concrete, capturing market share from Ronez. At present, Granite Products use sand from Simon for concrete, mainly to fill an aggregate grading gap, which cannot otherwise be filled with crushed granite sand.

Capacity

Current permitted reserves at the quarry are very limited and rely entirely on the recent rezoning of part of Field 961, St. Mary. This was approved by the States of Jersey as an interim measure, in order that the quarry could continue operating and supplying the Island's building industry

(for a period of approximately 12 months at the normal rate of extraction) pending the approval of a Mineral Strategy. Granite Products Ltd. put remaining permitted reserves at approximately 100,000 tonnes (@March 2000). Taking into account the lower than planned level of output during the first half of 2000, the quarry has a theoretical life expectancy of approximately 6 months (@July 2000), and is therefore in urgent need of additional reserves if it is to continue operating.

Suitability for Expansion

The Arup report concludes that La Gigoulande quarry is geologically suitable as a short to medium term source of extracting rock for construction purposes. Indeed, they recognise that such expansion may be warranted to provide a continued source of supply to supplement the Ronez Quarry, whose product may not be suitable for some construction applications.

Nevertheless, the quarry is located in an area of high landscape quality including dense woodland with steep valley sides and farmed upland areas. Significant expansion of the quarry would mean using good quality agricultural land and there is a potential risk to the quality of a nearby watercourse which feeds one of the Island's reservoirs. Given the nature of these constraints, the site was viewed less favourably by Arup for expansion.

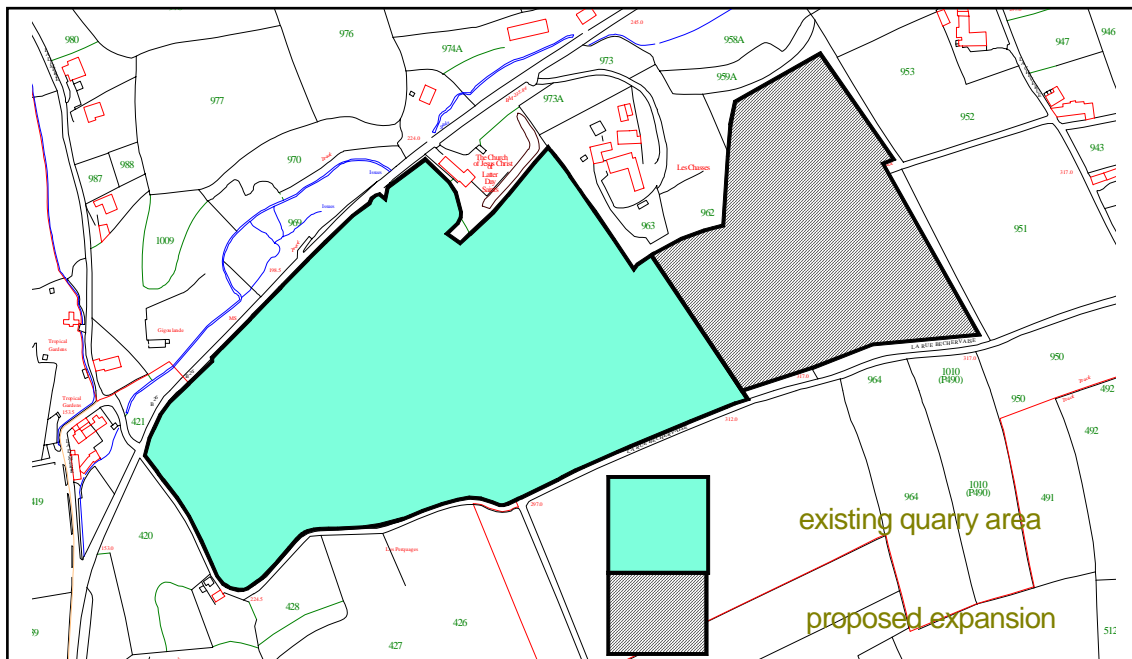
Plans for the Future

In June 1996, Granite Products Ltd. submitted an outline planning application (Ref. 603/R) to extend the quarry into adjacent fields together with an accompanying Environmental Assessment report. (see area shown hatched on Figure 6). The site in question measures approximately 25.5 verges (11.3 acres) of which 20 verges (8.9 acres) are proposed for quarrying. The application has been held in abeyance pending the approval of a Mineral Strategy for the Island. Granite Products Ltd. have been advised that determination of its proposal will be dependent on an Environmental Impact Assessment and that the proposal will also require the agreement of the States for the land to be re-zoned.

The proposal to work an additional 20 verges to the north-east of the quarry, would make available an additional 2 million tonnes of rock. It is estimated that this would extend the life of the quarry by anything from 13 to 20 years, based on outputs of between 150,000 and 100,000 tonnes per annum respectively.

All the land in question is presently located in the "Sensitive Landscape Area of the Agricultural Priority Zone".

Figure 6 : La Gigoulande Quarry - Current Area of Working and Proposed Extension



9. LA SALINE QUARRY

La Saline Quarries Ltd operate from La Saline Quarry, which is located in the Green Zone on the north coast, approximately 1 Km north of St. John's village. It lies at the top of a steep sea cliff and is accessed by a track off La Route du Nord.

Output

The quarry is very small and produces relatively small quantities of stone. The annual output from the quarry is between 2,000 and 2,500 tonnes.

The stone extracted from this quarry is a fine-grained pinkish grey granite and it is the only quarry in the Island producing building stone. As such, it supplies the majority of local stone masons and builders, but it also exports some stone to Guernsey (approximately 400-500 tonnes p.a.). In addition to the dressed stone used in monuments, lintels, quoins etc., the quarry also produces random blocks, which are sold for walling and rock-gardens. It is also able to produce paving stones, but for external non-slip paving it cannot always compete with the price of imported products.

The existing dressed stone operation at La Saline Quarry has modern cutting equipment, but it struggles to produce blocks from the quarry which are large enough to make the operation viable. The limited quantity and difficulty of extraction of the larger blocks required for dressed stone results in the production of a lot of smaller stone waste, not all of which can be sold for rubble walling. Some stone is also imported to the site from Breton in block form for cutting to produce dressed stone.



La Saline : May 2000

Capacity

No calculations have been made of the remaining reserves at the quarry. However, given the relatively small quantities of stone being extracted, the quarry can continue production in the short to medium term.

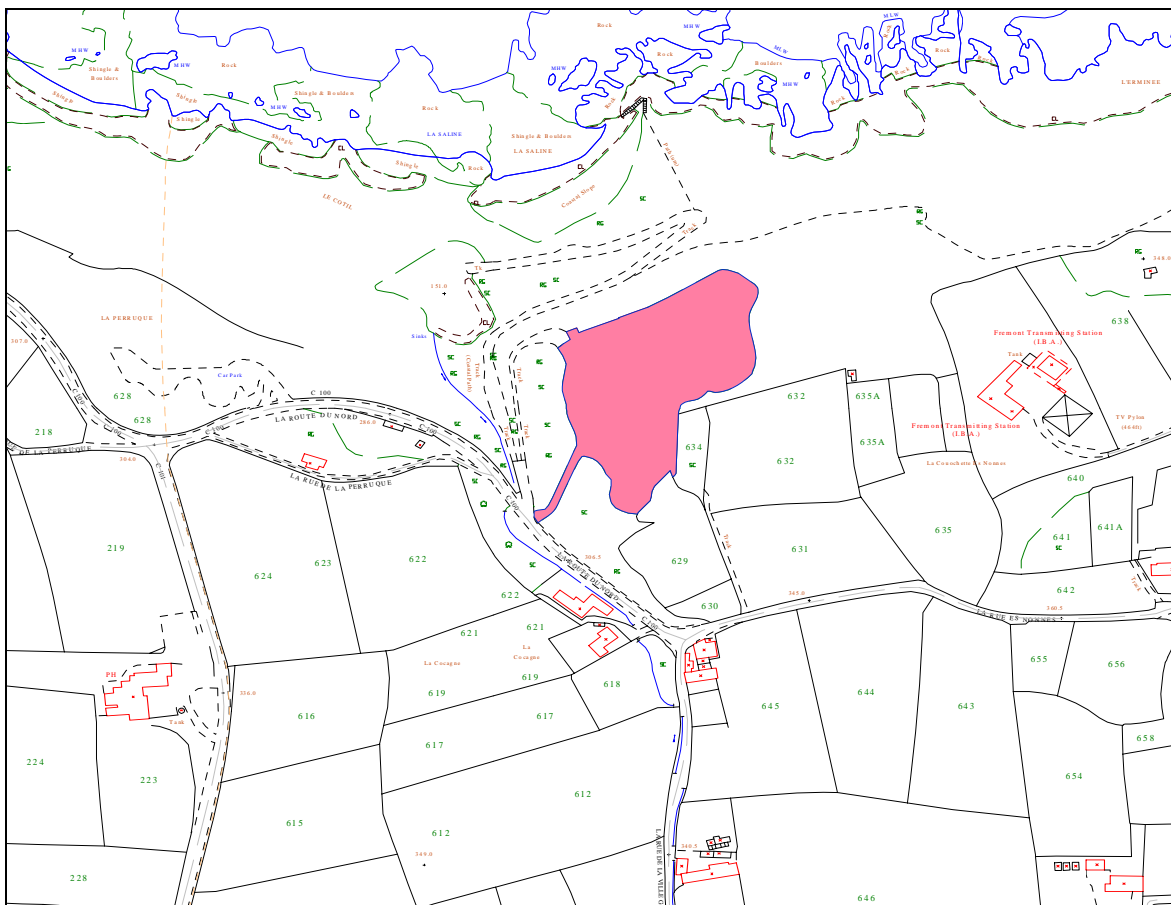
Suitability for Expansion

Arup does not consider the quarry an option for major expansion, because of locational constraints and land use conflicts. In any event, the presence of the nearby transmitting station limits the size and frequency of blasting. However, Arup does suggest that greater consideration be given to utilising waste stone generated at the site for construction aggregates. This is presently stored at the top of the quarry.

Plans for the Future

No specific plans for future quarry expansion have been put forward to the Planning and Environment Committee. However, the operators wish to install a mobile crusher on site, in order to process the waste produced so that it might be used for trench fill and other similar purposes. Clearly, there is merit in such an activity, which will maximise the use of extracted rock and avoid the unsightly stockpiling of waste.

Figure 7: La Saline



10. SIMON SAND AND GRAVEL LTD

Simon Sand and Gravel Ltd is a family business, which has been extracting sand from St. Ouen's Bay (Les Mielles) since 1909. The present workings are located in the Green Zone at the foot of Mont a la Brune, on land which was zoned by the States of Jersey in 1976 specifically for "sources of sand for building purposes".

Output

Since 1977 the sand has been worked entirely by means of a floating dredger, which can reach a depth of 60 feet. The current quarry output (1999) measures approximately 74,000 tonnes of sand per annum. As with other wind-blown sand deposits, the sand in St. Ouen's Bay is a uniform, fine to medium sand, which is well-rounded. The sand meets grading specification requirements for general use in mortars. However, the fineness and uniformity of the grading, presents a serious deficiency in the value of the resource, because it can't be used directly as a fine aggregate in concrete and pavement construction. It is for this reason that the two main producers of concrete on the Island (i.e. Granite Products Ltd. and Ronez Ltd.) either import sand, or blend the St. Ouen's sand with crushed rock to produce a fine aggregate which is acceptable for use in concrete.

Capacity

Simon Sand and Gravel Ltd. estimate that the current available reserves of sand on land already owned by the company and zoned for extraction are sufficient for another 60 years at current levels of output. However, limits for agreed sand extraction have been established in conjunction with the current planning permission which is conditional upon a completion date in August 2003.



Simon Sand and Gravel Ltd. - May 2000

Suitability for Expansion

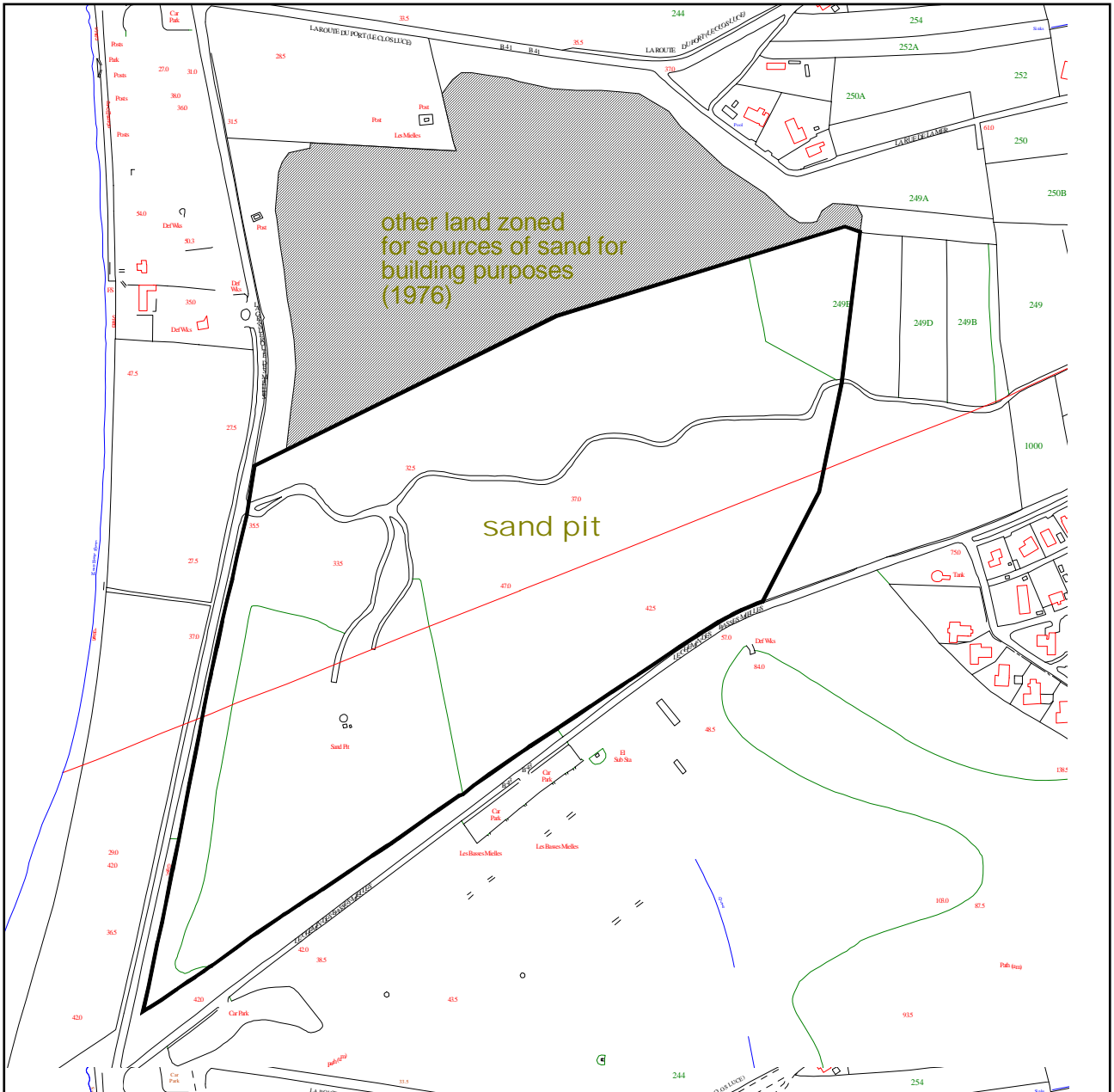
The geological availability of sand resources is not a problem at the present location. However, the quarry is located in an extremely sensitive coastal area which lies within the Green Zone and the conservation area of Les Mielles. This area is popular with residents and tourists. Adjacent to the site are sand dunes of ecological importance and sensitivity. Arup has suggested that continued larger scale extraction from the site is likely to increasingly encounter constraints associated with the ecology of the sand dunes and could possibly create the potential for salt-water ingress into the excavated lagoons.

These environmental constraints, combined with the limitations on the use of the extracted material (due to its grading) strongly point to the need to look for alternative sources of supply for the future.

Plans for the Future

Whilst Simon Sand and Gravel recognise the date of expiry of the current permit, and acknowledge the need to conserve the dune ecology as far as possible, their preferred future extraction strategy is to have a planned winding down of sand extraction operations over a 15 year period. This will provide the company with the necessary confidence and security to allow for reinvestment in ageing plant and machinery and will in so doing, smooth the process of progressive replacement by imported sand. If approved, the company would co-operate with the planning authorities in securing an acceptable restoration programme.

Figure 8 : Simon Sand and Gravel Ltd. - Current area of working and Other Land Zoned for Sand Extraction



“The Committee will ensure that restoration proposals on the site are carried out in full. Recreational activities of a disruptive or intrusive nature will not be permitted.”

11. L E J MOON

L E J Moon is a family-run sand extraction business which started about 40 years ago. The workings are in the process of relocation from the northern end of Field 1606, St. Ouen, to Field 1605, St. Ouen. Field 1605 is States owned land situated in the Green Zone the east of Le Chemin du Moulin. The land in question has been the subject of re-zoning decisions by the States of Jersey in 1976 (in part) and more recently in 1990, which allow for the land to be used as a source of sand for building purposes. Consent for working Field 1605 was granted in November 1999 and it represents the last remaining unworked area at the northern end of St. Ouen's Bay which has been reserved for sand extraction.

Output

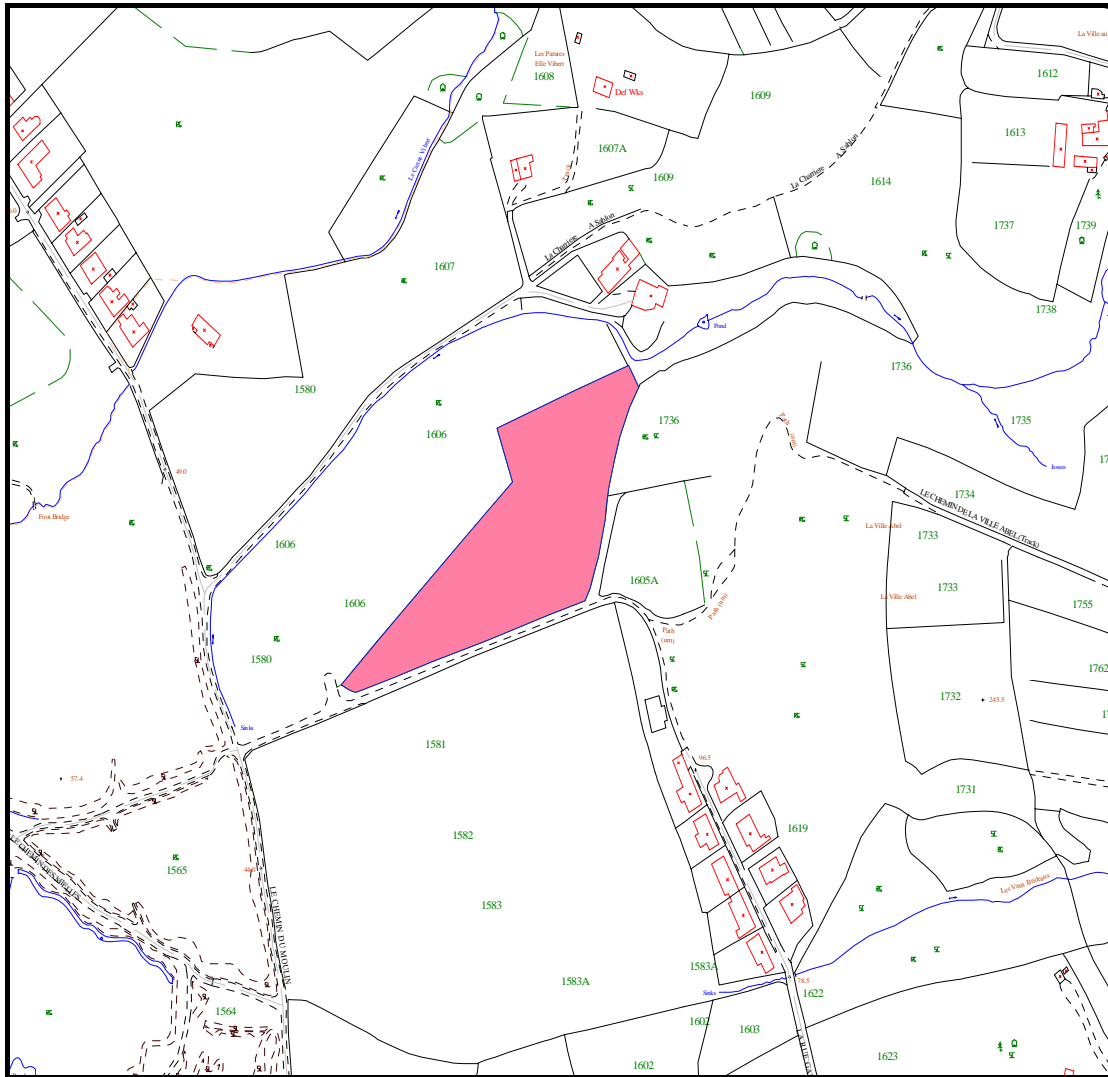
The output from Mr. Moon's operation at Field 1606 measured approximately 10,000 tonnes of sand per annum. It is assumed, for the purposes of this study, that the output will be similar from Field 1605.

The restricted quality of sand extracted from the site is such that it will continue to occupy a niche market. As with Field 1606, the yellow sand from the site will be used for concrete products and especially for render and brick mortar. The black sand is an inferior material and will be used mainly for back-filling of pipe trenches.



L E J Moon - Field 1605, St. Ouen - May 2000

Figure 9 : Moon's Sand Pit



Capacity

Given the quality of the material and the limited reserves remaining in the zoned area (i.e. approximately 2 years), this sand pit will not feature significantly in the planning of Jersey's future mineral resources.

Suitability for Expansion

There is no scope for expansion.

Plans for the Future

There are no plans for the future.

12. SECONDARY AGGREGATES

An ever increasing proportion of waste generated in Jersey arises from construction and demolition activity, including concrete, brick and rubble, soil and other demolition wastes. Much of this waste is delivered to the land reclamation site at La Collette, where a proportion is recycled into secondary aggregates and the remainder is used to provide stability to the infill material. The recycling operation at La Collette is currently operated without subsidy by a private company (D B Cummins), and the aggregates produced can be used for mixing with, or in substitution for primary aggregate produced by the Island's quarries. Currently, the main application for the recycled aggregates is as compatible trench fill material, as well as a road making aggregate on housing estates. Elsewhere, some secondary aggregates are produced on sites by individual demolition contractors.

The historical lack of monitoring data makes it difficult to accurately determine the level of production of secondary aggregates from construction and demolition waste material, although the situation will begin to improve now that the newly installed weighbridges at La Collette are operational. Nevertheless, the evidence available to-date suggests this recycling operation represents a significant source of supply. The Arup report estimated that secondary aggregates produced at La Collette were around 40,000 tonnes per annum. The draft Solid Waste Management Strategy, March 2000, on the other hand, suggests that 1998 levels were of the order of 50,000 tonnes per annum.



Aggregate Recycling Plant - Shelford Farm Waste Disposal Site, Kent - March 2000

In addition to construction and demolition waste, some 20,000 tonnes of ash from the Incinerator

are produced annually. At present, the combined ash is disposed of in lined pits at La Collette reclamation site. The bottom ash, once de-metalled, is suitable for re-use as a secondary aggregate and can be used for rough fill purposes, construction of road bases and the manufacture of concrete products. The fly ash, once washed to remove the heavy metals, may also be incorporated in the secondary aggregates market.

The reason for the success of aggregate recovery activity in the Island owes much to the prevailing economic and market conditions. It is more profitable to produce secondary aggregates in Jersey than anywhere in the UK, because of the much higher production costs and selling prices of local quarry products. This is a major reason why, in 1996, the aggregate and other engineering grade fills produced from construction and demolition waste in Jersey represented almost 9% of total aggregate demand in the Island....a proportion which compared favourably with the equivalent 4% figure achieved in the UK at that time.

There is little doubt that secondary aggregates can continue to play a leading role in managing the overall demand for minerals in the Island. The Arup report states that market prices are supporting a reasonable market penetration by secondary material and suggests that there is some potential for maintaining or even increasing levels of construction and demolition waste recycling. Arup estimates that future recycled output might be between 40,000 and 50,000 tonnes per year (i.e. between 8% and 10% of the aggregates market). However, these estimates carry the proviso that the long term contribution to future supplies will be dependent on the identification of a suitable long term site when the La Collette site is no longer available.

The draft Solid Waste Management Strategy report is more optimistic about the prospects for aggregate recovery. It suggests that an Island wide Environmental Management System should be introduced and that contractors should be required to operate waste control measures within that system. As a consequence, the report suggests it might be conceivable to attain between 75,000 and 100,000 tonnes of secondary aggregate per annum from inert waste by the year 2020. However, the report recognises that production is currently restricted by the on-going requirement for hard-core to accommodate reclamation at La Collette.

The Public Services Department are currently of the opinion that there is only likely to be a gradual and relatively modest increase in aggregate recovery during the next 8 years or so that it might take to fill the La Collette reclamation site to the level of the outer sea wall. However, they envisage there will be significant increases in the production of secondary aggregates, once work commences on super-filling. At this stage, it will be possible to take more material from the waste stream. The Public Services Department has suggested it might be reasonable to assume that aggregate recovery levels could increase to 70,000 tonnes per annum. It is also assumed that these levels could be maintained, provided a suitable inland site is provided for landfill in the longer term.

13. IMPORTS

The only regular aggregate imports to the Island are the 5000 tonnes p.a. of sand imported by Ronez Ltd, which is presently handled by St. Helier Port Services. There are no dedicated handling or storage facilities for aggregates within the harbour, and each of the 800 tonnes consignments is discharged by crane in about 8 hours direct to lorries on the New North Quay. The sand is then immediately delivered to Ronez, or sometimes directly to construction sites.

Other aggregate imports include fill / beach replenishment / rock armour, which are imported directly to site and a small amount of stone in block form for La Saline Quarry.

The main constraints to larger scale imports of aggregates, include :

- (i) the lack of available handling facilities and storage space in the port of St. Helier;
- (ii) the high level of port dues and stevedoring charges currently levied.

The availability of space at St. Helier Harbour is addressed later in this report. The latter constraint features particularly strongly in the Arup report, which highlighted the need to significantly reduce port charges for the importation of aggregate if large scale imports are to be a realistic option.



Aggregate Importing - Whitstable Wharf, Kent - March 2000

The Arup report itemises the costs (1998) of producing and transporting aggregates to Jersey, together with port-related costs, as set out in Figure 10. It can be seen that the total port-related costs (i.e. port dues and stevedoring) of £9.99 / tonne for Jersey effectively are extremely high and effectively double the cost of imported aggregates. As a result, “harbour gate” prices for aggregates in Jersey are approximately double the typical “quarry gate” prices for local products, which were around £10/tonne in 1998. These local port-related costs compare with £2.56/tonne for Guernsey and about £1.00/tonne in large ports like London and clearly represent an insuperable commercial barrier to large scale importation, even if adequate facilities can be provided for the purpose.

Figure 10 : Cost of Importing Aggregates to Jersey, 1998

COST ITEM	COST (£ / tonne)	
	Sand	Graded Aggregate
-Typical production cost of UK/French material;	3.00	5.00
-Local transport to port (allow 15 miles)	2.20	2.20
-Allowance for outgoing port charges	1.00	1.00
-Shipping Charge	5.00	5.00
Sub-total	11.20	13.20
-Jersey port dues;	5.87	5.87
-Jersey stevedoring (handling) fee	4.12	4.12
TOTAL COST OF IMPORTED AGGREGATE (at "harbour gate")	21.19	23.19

Source : Jersey Mineral Study Consultation Report, March 1999

Jersey's high harbour dues (particularly for freight) and the present stevedoring monopoly are also strongly criticised in the recent service review of the Harbours Department, which reported in September 1999. As a consequence, the Harbours and Airport Committee is reviewing its service charges and the current arrangements for stevedoring. It is very aware that the importation of aggregates must be economical and competitive with locally produced material. That said, it must also be recognised that harbour dues are, and will continue to be set on a commercial basis.

14. THE JERSEY MINERAL STUDY AND ARUP'S FINDINGS

Investigation of Future Supply Options

The Jersey Mineral Study - Consultation Report contains a review of the constraints and opportunities facing existing and potential mineral supply sources, including supplies available from each of the existing producers and also the prospects of supply from imports and secondary aggregates.

The brief for the Mineral Study outlined its scope and emphasised the requirement to have regard to the "implications of the Island's commitment to 'Sustainable Development' on the future supply of minerals. Accordingly, all of Arup's subsequent work looked at the social, economic and environmental implications of current mineral extraction and future supply options.

The matrix in Figure 11 summarises the environmental and socio-economic considerations addressed by Arup in relation to the alternative options generated for the supply of rock and crushed rock products. Each consideration is quantified on a scale of three degrees of impact so that, for example, 3 crosses represent the most serious impact.

On the basis of the matrix, the consultants conclude that the expansion of Ronez quarry would have significantly fewer intrinsic environmental effects than either expanding La Gigoulande or the opening of new quarries, primarily because of :

- its (relatively) remote location;
- its coastal landscape aspect, which screens it from virtually all land-based visual effects;
- its situation outside the Island's water catchment area.

Figure 11 : Evaluation Matrix of Impacts of Supply Options for Rock Resources

OPTIONS	Environmental Effects							Socio-Economic Considerations		
	Loss of Land	Road Traffic Effects	Visual & Landscape Effects	Potential Fresh Water Quality & Quantity Effects	Marine Effects	Dust Effects	Noise & Vibration Effects	Acceptance by future generations as a long term sustainable option	Trans-boundary Effects	Local Employment Effects
Expand Ronez	X	XX	X (3)	X			X	XX		
Expand La Gigoulande	XX	XX	XX	XX		X	X	X		
Open New Quarries (1)	XXX	XXX	XXX	X?		XX	XX	XX		
Import Material		XXX (2)	*		X	*	*	XX	X	X
Secondary Aggregates	X	X	X		X	X	X			

- KEY: X denotes a negative impact; 1 cross = noticeable; 2 crosses = significant; 3 crosses = serious
- denotes possible impacts arising from storage and distribution
 - (1) New quarry effects would depend on location, but the matrix presumes that for most locations, conflicts with existing land uses would yield significant or serious environmental impacts
 - (2) Serious impacts (XXX) if via St. Helier. If via a new port, impact would be (XX), = significant
 - (3) The Environmental Adviser to the States considers that the visual and landscape impact is understated in this instance

NOTES: La Saline not included as a realistic large scale supply option.
 Traffic impacts depend on output levels not extent of workings at a quarry. If a quarry increased its annual level of output, traffic impacts would increase, (and vice versa). Significant expansion at Ronez, for example, would increase traffic impacts in that vicinity.

Source : Jersey Mineral Study-Consultation Report, ARUP, March 1999

The importation of material is the only option to have trans-boundary effects and could be regarded as rating poorly in terms of sustainability, in that the Island could be regarded as effectively "exporting" its environmental affects. Reliance on the import of all rock products might also have severe road transport impacts at St. Helier unless a new port for such material was created. As one would expect, secondary aggregates production performs well in the matrix.

Figure 12 contains a similar summary of the environmental and socio-economic considerations for the different options available for future sand supply. Despite the trans-boundary effects, imports (from land-won sources) emerge in this matrix as probably the most acceptable approach to supplying the sand and gravel market (or supplementing local production). The main

constraint on imports is the high cost of port dues and handling charges at St. Helier, as explained earlier. Small scale increases in sand imports might be accommodated by existing arrangements at St. Helier, although large volume supplies would rely on satisfactory port facilities being made available.

Figure 12 : Evaluation Matrix of Sand Resources

OPTIONS	Environmental Effects								Socio-Economic Considerations		
	Loss of Land	Road Traffic Effects	Visual & Landscape Effects	Fresh Water Quality & Quantity Effects	Marine Effects	Dust Effect	Restoration & Aftercare Effects	Noise & Vibration Effects	Acceptance by future generations as a long term sustainable option	Trans-boundary Effects	Local Employment Effects
Expand Simon	XX	X	X (3)	XX		X	X	X	XX		
Expand Moon	X	X	X	XX		X	X	X	XX		
Marine Dredging	*	XXX (1)	*		X	*	(2)	(2)	X?	X	X
Open new working	XXX	X	XX	X?		X	X	X	XXX		
Import sand	*	XXX (1)	*			*			X	X	X

- KEY: X denotes a negative impact; 1 cross = noticeable; 2 crosses = significant; 3 crosses = serious
- denotes possible impacts arising from storage and distribution
 - (1) Serious transport impacts (XXX) if large volumes imported via St. Helier. If via new port at Ronez, impact would be (XX).
 - (2) The Agriculture and Fisheries Department disagrees with the measure of negative impact used here. It believes the marine effects of dredging would be quite dramatic and locally catastrophic and should warrant at least two if not three crosses.
 - (3) The Environmental Adviser to the States considers that the visual and landscape impact is understated in this instance.

Source : Jersey Mineral Study-Consultation Report, ARUP, March 1999

Future Supply Scenarios

Having regard to the ‘evaluation of options’ exercise summarised above, Arup distilled a number of distinct future supply scenarios for the Island, as the basis for arriving at an acceptable mineral supply strategy. The Consultation Report puts forward **four scenarios**, which are capable of supplying the estimated potential future requirement for aggregates for the Island’s construction industry, as follows :

Option 1 : Maximise Local Supply

- involves
- limited expansion of Ronez;
 - expansion of La Gigoulande;
 - continuation of Simon as long as ecologically feasible

Option 2 : Imports through St. Helier

- involves
- limited expansion of Ronez;
 - wind down production at La Gigoulande;
 - wind down production at Simon;
 - import large volumes of concreting aggregates (UK/France)

Option 3 : Concentrate at Ronez

- involves
- commitment to long term significant expansion at Ronez;
 - increase sand imports;
 - wind down production at La Gigoulande;
 - wind down production at Simon

Option 4 : Create a new port at Ronez

- involves
- wind down production at Ronez, La Gigoulande and Simon;
 - develop all-weather importing facility at Ronez (i.e. with breakwater);
 - import all aggregates via new port;
 - transfer bulks and other construction materials from St. Helier to new port.

Drawing upon extensive consultations with interested parties and a detailed evaluation of each of the above options, the report goes on to recommend a 5th (preferred) strategy option, which seeks to maximise the advantages and minimise the disadvantages of the other options, as follows :

Preferred Strategy : “sand imports only/long term port development”

It involves :

- continuing production at Ronez and La Gigoulande, allowing requested expansion;
- winding down Simon and arranging for the import of sand through St. Helier;
- Ronez developing a production strategy that leads to excavation of a dock basin from the base of the quarry for future importation of aggregates.

The advantages and disadvantages of each option are set out in Figure 13. At the time of publication, the ‘Preferred Option’ had the general support of the Island’s main operators and appeared to satisfy most of the study consultees. Cited among its main advantages are :

- protecting the ecology of Les Mielles;
- establishing the opportunity for the provision of a new port;
- overcoming perceived problems of ‘Alkali Silica Reactivity’ associated with Ronez;
- avoiding a monopoly situation arising in the shorter term;
- maintaining local business and employment.

The supply structure for the preferred option was as follows :

Producer	Tonnes per Annum
• Ronez	185 - 230,000
• La Gigoulande	110 - 150,000
• Secondary Aggregates	40 - 50,000
• Imports (sand)	50 - 70,000
TOTAL	385 - 500,000

Figure 13 : Advantages and Disadvantages of Alternative Supply Scenarios

CHARACTERISTICS OF OPTION	ADVANTAGES	DISADVANTAGES
<p>1. Maximise Local Supply</p> <p><i>Critical Decision :</i> Is the Island content to accept existing and increased environmental / land use conflicts of inland mineral extraction ?</p>	<ul style="list-style-type: none"> no need for port provision; internalises environmental impacts. 	<ul style="list-style-type: none"> <i>relatively</i> short life of LA Gigoulande quarry; ecological issues at Simon; retains problem of sand with a limited range of applications.
<p>2. Imports through St. Helier</p> <p><i>Critical Decision :</i> Can suitable import facilities (at acceptable port charges) be arranged at St. Helier ?</p>	<ul style="list-style-type: none"> overcomes usage limitations of local sand; avoids ecological and land-take issues at Simon / La Gigoulande. 	<ul style="list-style-type: none"> significant traffic impacts in port area; costly without adjustment to port charges.
<p>3. Concentrate at Ronez</p> <p><i>Critical Decision :</i> Is PSD willing to accept Ronez output for concreting aggregate ? Are States willing to have monopoly supply in aggregates market ?</p>	<ul style="list-style-type: none"> no need for significant new port provision; overall environmental impacts of mineral extraction reduced by having only one extraction point; overcome usage limitations of local sand. 	<ul style="list-style-type: none"> opposition from Simon / Granite Products; monopoly supplier on the Island (could lead to higher prices); concentration of traffic around Ronez; PSD not willing to use Ronez aggregate for some concreting end uses.
<p>4. Create a New Port at Ronez</p> <p><i>Critical Decision :</i> Is Jersey willing to pay up to £30 million for a new port ?</p>	<ul style="list-style-type: none"> land-related impacts of mineral extraction sites removed; potential for lower cost aggregates; reduced traffic and increased space for development of St. Helier; strategic value of a second port. 	<ul style="list-style-type: none"> concentration of traffic around Ronez; prohibitively expensive (unless long term excavation of quarry as a port).
<p>Arup's Recommended Option :</p> <p>Sand Imports only / Long Term Port development</p> <p><i>Critical Decision :</i> Operational feasibility of developing Ronez as envisaged would need to be established.</p>	<ul style="list-style-type: none"> potentially a significant new port provision at little public expense; provision for long term sustainable mineral supply; maintenance of indigenous business and local employment; avoids sensitive ecology impacts at Les Mielles; avoids monopoly situation arising in short term; overcomes perceived problems in relation to Alkali-Silica Reactivity; sand imports can be accommodated at St. Helier. 	<ul style="list-style-type: none"> extension of both Ronez and La Gigoulande required; may require increase in Ronez output in medium term (when La Gigoulande exhausted and port not yet developed); long term; traffic impacts at Ronez when all aggregates are imported here.

Source : Jersey Mineral Study-Consultation Report, ARUP, March 1999