States of Jersey
States Assembly

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Assemblée des États

Environment Scrutiny Panel

Ash Disposal

Presented to the States on 17th December 2012

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Chairman's foreword

The construction of the new EfW plant at La Collette which replaced the old incinerator at Bellozanne brought an end to many years of airborne pollution. Like many people I initially saw the new plant as an ugly blot on the landscape of the South East Coast, but have come to accept its visual impact. However, concerns remain over the implications of its siting at La Collette for the future use and development of this important area of reclaimed land which offers so much potential.

The artificial hill which is steadily advancing seaward from Mount Bingham encapsulates ash residues from many years' use of the Bellozanne plant in over thirty sealed cells. Some of the ash at La Collette was excavated and moved from West of Albert, where it was originally dumped in uncontrolled conditions under a waste regime which thankfully has long been consigned to history.

Very soon after Environment Panel members were elected, we spent a freezing cold but beautifully sunny winter's day touring La Collette and meeting the operators. We were astonished by the scale of TTS solid waste operations and learned of the plans inherited by both the new TTS and Environment Ministers for continued disposal of ash in an 'ash headland' which would gradually extend towards the southern end of la Collette. We were surprised that a more sustainable alternative to the headland plans appeared not to have been prioritised during the design and construction of the EfW plant, but saw no benefit in retrospective investigations. After all, pre-1970 Jersey's domestic waste was dumped in landfill sites in uncontrolled conditions leaving a legacy for our generation to deal with.

Our ideal vision was of a sustainable alternative to building an ash headland, recycling as much of this material as economically possible. After separate meetings with both Ministers we realized we had a common purpose in seeking it. However, there seemed to be no consensus on how this might be achieved, nor an early prospect of arriving at a consensus. We decided to focus our review on finding sustainable alternatives to help both Ministers and departments work together to this end. We feel confident that the alternative policy direction for the future disposal of ash we have proposed should meet the sustainable and practical visions sought by both Ministers.

There are likely to be some points of implementation on which the two Ministers may differ, particularly whether the smaller volumes of Air Pollution Control residues (APCr) from the new plant which are classified as hazardous waste are exported for disposal or recovery, whether this is to the UK or elsewhere, by way of a request under UK authorities or otherwise, but those issues should not detract from our conclusions.

The policy we have proposed offers the opportunity to recycle the majority of residues produced by the EfW plant in the form of products for the construction industry. Products which will meet regulatory standards, which have the potential to be economically viable with a modest investment in infrastructure within a framework of management and operating agreements between TTS and locally based commercial partners. The smaller volume of APC residues, which cannot be treated in Jersey at this time, is proposed to be exported off-Island in the first instance under conditions controlled by international agreements for the trans-boundary shipment of hazardous waste.

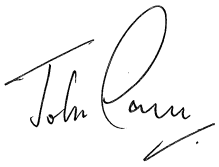
There are challenges to be overcome in the alternative policy we have proposed. For example, there is likely to be a need for change to Parish and community refuse collection arrangements to ensure the removal of batteries and waste electrical products from the general waste stream, to reduce levels of metal contamination in the ash residues. We will

need to achieve commercial acceptance of alternative aggregate products and build up the local market for them which will take some time. The strategy proposed requires some additional investment by TTS in infrastructure which would need to be contained within the funding available to TTS in the MTFP. We see these factors as solvable, but they do militate against an early decision to import Guernsey's waste. At present the financial benefits of doing so are unknown, but the sustainable policy we have proposed needs to be implemented and proven to be successful in operation before considering this major step.

The potential benefits of the alternative strategy we propose are very substantial. Much reduced legacy of waste for future generations to deal with, no ash headland, no further visual despoliation, no more ash cells, with consequent long term financial savings. Subject to a review of post-Buncefield safety constraints, valuable land at La Collette could also become available for alternative uses.

Members of my Panel have enjoyed carrying out this review immensely and are very excited with the results. We believe it can form a major part of a more sustainable waste management policy for the long term benefit of Jersey, and take pride in presenting our report to the States.

I would like to record my thanks to Panel members Deputy Steve Luce and Connétable Phil Rondel, Phil White, project manager for our advisers AEA Technology plc, Malcolm Orbell, our Scrutiny Officer, as well as the Ministers and officers of both TTS and Environment whose co-operation has enabled the Panel to complete this report.



Deputy John Young
Chairman, Environment Scrutiny Panel

1. Background

1.1 Ash disposal at La Collette

During the 1980s, ash from the Bellozanne Energy from Waste plant was commonly disposed of alongside inert waste materials in reclamation sites such as the Esplanade and 'West of Albert'. However, increasing environmental awareness led to recognition of the need for tighter controls over waste ash disposal.

From 1995 a policy of safely 'encapsulating' waste ash in lined cells at the La Collette 2 reclamation site was introduced, the cells being engineered to be hydraulically independent of ground and marine waters. During the course of excavation for new developments on the Waterfront quantities of ash that were previously deposited there have also been dug up and re-buried in cells at La Collette.

1.2 Engineered cells

From the outset ash cells at La Collette have been carefully constructed, lined with butyl and protective layers of inert material, and built above Mean High Water Spring Tide levels to ensure discontinuity with the marine environment. Any leachate that accumulates owing to rainfall while the cell is open is removed by tanker to the Bellozanne Sewage Treatment Works. Dust is minimised by the use of covered vehicles and a daily cover of inert soils applied over ash deposited in open cells to limit as far as possible escape of deposited material. When full, cells are capped to prevent further rain ingress, and over time the ash in the cell hardens into a cement-like consistency. Over 30 cells have been built since 1995; the current cost of a 'standard' ash cell is approximately £0.5 million.

Despite concerns from some quarters, a 6-month baseline water quality monitoring survey carried out around the La Collette site in 2011[1] found that the ash cell system was not contributing to any degradation of water quality in the surrounding marine environment and that the cell liners were preventing leachate from entering the groundwater. This is especially important in light of the need to protect the adjacent South East Coast of Jersey Ramsar site from harm.

1.3 Bellozanne and La Collette Energy from Waste plants

During the later years of its operation the Bellozanne Energy from Waste plant was known to produce substantially higher levels of airborne emissions than was then permitted elsewhere in Europe, as it was not fitted with modern abatement controls. It became a priority for the Transport and Technical Services Department to replace it with a new plant that could comply with the latest European standards established by the Waste Incineration Directive (WID).

The La Collette Energy from Waste plant began full scale operation early in 2011. It has a design life expectancy of 25 years, with the ability to accept a maximum of 105,000 tonnes of waste per year, although currently it is operating well below capacity, at around 70,000 tonnes per year. This has led to consideration that Jersey could import and process up to 30,000 tonnes of waste from Guernsey on a contract basis, which could potentially produce an income for Jersey as well as enabling the plant to generate additional electricity for local use.

[1] La Collette Waste Management Facility. Baseline Water Quality Review (Capita Symonds November 2011)

1.4 Better quality ash

Some significant differences in the types of waste produced by the new and old EfW plants need to be taken into account. The mixed fly ash and bottom ash produced by the Bellozanne plant was significantly 'dirtier' and contained more potential contaminants than the Incinerator Bottom Ash (IBA) produced by the new EfW plant. This is one reason why it was not previously considered feasible to recycle waste ash from Bellozanne, which led to the policy of permanent disposal into lined cells.

1.5 Air Pollution Control residues

The 'state of the art' pollution controls that set the La Collette plant apart from its predecessor also generate a different kind of waste, known as Air Pollution Control residues, or APCr. This is similar to talcum powder in consistency, being very light but rather bulky, and is collected separately from the IBA. It contains very low levels of metals and dioxins but its high lime content gives it strongly alkaline properties, for which reason it is classified as a hazardous material and has to be treated differently to IBA. At current operational levels some 18,000 tonnes of IBA and about 4,000 tonnes of APCr are being produced by the plant each year.

1.6 More ash cells

The quantity of ash (estimated at several hundred thousand tonnes) produced over many years has already resulted in a large legacy of ash cells at La Collette, many of which have been 'super-filled' over pre-existing cells to optimise the use of space. At the time of designing the new EfW it was decided that this operation would continue, gradually raising the level of the site up to a height previously agreed with the then Planning and Environment Department. This was considered at the time by the Transport and Technical Services Department to be an acceptable way forward, being a process with which they were familiar, on a site already in their control. The works to create ash pits above the level of the sea wall reflect a development framework for the La Collette site ratified by the States Assembly in 2000 (P.96/2000), rather than any formal planning permission.

1.7 An ash headland?

Public interest in the operation of the new EfW plant took on a different aspect early in 2011 when a short consultation exercise indicated that there would be a need to increase the size of the ash mound to accommodate the total volumes of ash that would be produced during the planned lifetime of the La Collette plant. Within the proposals there was also consideration of whether the hazardous APCr could be disposed of in suitably engineered cells within the new mound. This was described in plans as an 'ash headland', which caused concern amongst interested parties, including the environmental group Save Our Shoreline (SOS), some members of the Ramsar Management Authority, and the Environment Scrutiny Panel.

1.8 Presentation

A presentation on the proposals chaired by the newly elected Minister for Planning and Environment, Deputy Robert Duhamel, was attended by representatives of these groups on 21st July 2011. Attendees were told that a planning application and Environmental Impact Assessment for the headland were expected by the end of 2011. Although opportunities for recycling IBA were being considered, it was thought that export to the UK (for example for use as road base material) would be uneconomic; it was also indicated that APCr could not be recycled and no-one else was doing so. Current permissions would allow for continued burial of ash at La Collette for another 5-7 years, but the ash headland construction project could have a 35 year lifespan.

Questions were asked about whether sufficient thought had been given when planning the EfW plant as to how to deal with the total quantities of waste ash and APCr that would accrue over a 25 year period of operation.

1.9 Scrutiny involvement

Prior to the presentation, on 14th July 2011 the Environment Scrutiny Panel Chairman of the time[1] had written to the Minister for Transport and Technical Services expressing the Panel's serious concerns about the headland proposals, copying the letter to the Chief Minister and the Minister for Planning and Environment. A reply was received from the Minister for TTS on 2nd August 2011. The correspondence identified some of the issues that have since been addressed by this review. The Minister's reply (quoted below) also made it clear that the ash headland proposal was considered at the time to be a long term solution for ash disposal.[2]

> Certainly, I am aware of your concerns over the risks of contamination from existing operations and these now extend to proposed future practices. We take any contamination risks very seriously. We have taken specialist advice and the measures we propose are considered to be robust. We propose to cap over the site with quality assured long life liners which will ensure infiltration is all but eliminated. This is therefore a suitable long-term solution.

1.10 New Ministerial direction

Given this background, when the new Environment Panel began developing its work programme in early 2012, members expected that continued burial of waste ash and the eventual creation of an ash headland would still be the department's preferred way forward for ash disposal. The Panel was unanimous in feeling that this was not an acceptable or sustainable option, and began preparing for a review of possible alternatives.

Members were therefore pleasantly surprised to discover through early meetings and site visits that the new Minister for Transport and Technical Services (Deputy Kevin Lewis) and his Chief Officer appeared to share their views on these matters, and were firmly in favour of finding new methods to deal with hazardous APC residues and IBA to avoid their continued disposal in engineered cells on Jersey's coastline. Discussions revealed that the department's timetable for developing new plans would allow time for a Scrutiny review to take place; the TTS department welcomed the opportunity for additional expert input to help inform its decision-making process.

1.11 Departmental co-operation

Background work on the review began in April 2012 and progress was greatly helped by the positive co-operation of the Transport and Technical Services Department. The Panel's terms of reference were agreed, and following the appointment of advisers to the Panel the department responded promptly to requests for information. The Minister and his officers were generous with their time in informal briefings as well as at a later public hearing.[3] Similarly, officers of the Department of the Environment provided valuable assistance in briefing the Panel's adviser on regulatory matters and their Minister subsequently gave evidence to the Panel at a public hearing on 21st September 2012.[4]

[1] Then Deputy P. Rondel of St. John

[2] Minister for Transport and Technical Services (Connétable M. Jackson) to Environment Panel Chairman, 29.07.2011

[3] Hearing with Minister for TTS, 21.09.2012: transcript and podcast available from Scrutiny website (www.scrutiny.gov.je)

[4] Hearing with Minister for Planning and Environment, 21.09.2012: transcript and podcast available as above

2. Terms of Reference

Ash Disposal

This review will examine the existing and proposed policy of the Minister for Transport and Technical Services on Ash Disposal, in particular proposals for the treatment of Air Pollution Control (APC) residues and Incinerator Bottom Ash (IBA) arising from the operation of the new Energy from Waste Plant. It will also take account of continued development in the Waterfront area involving the excavation of historic ash deposits, as well as the possible implications of importing waste from Guernsey on ash disposal arrangements.

Terms of reference

1. To review the department's existing Ash Strategy, relevant reports and proposals for the short, medium and longer term disposal of ash from the Energy from Waste Plant
2. To compare the existing policy and new proposals with best practice methods for ash disposal elsewhere
3. To consider and evaluate alternative solutions which may offer economic, environmental or other benefits to the Island
4. To assess any environmental impacts or concerns relevant to current or proposed methods for disposal of ash, including impact on visual or other amenities
5. To investigate funding implications for the department and the States of alternative proposals for the disposal of ash
6. To consider the potential effect of any decision by the States regarding the importation of Guernsey waste, and possible further development of the Waterfront area in terms of ash volumes or other implications

The Panel will report its findings to the States.

3. Panel membership

The Environment Panel is constituted as follows:

Deputy John Young of St. Brelade (Chairman)

Deputy Steve Luce of St. Martin (Vice Chairman)

Connétable Phil Rondel of St. John (Member)

Officer support: M. Orbell

4. Methodology

Following approaches to various potential consultants the Panel appointed AEA Technology plc[1] as expert advisers to the review in July 2012. Mr Phil White, Technical Director and project manager for AEA visited the Island on several occasions during the course of the review, meeting with the Panel, departments and stakeholders as well as visiting relevant sites, including the La Collette reclamation site and potential treatment processes in the UK. He also attended to advise the Panel at public hearings for the review on 21st September 2012.

AEA's expertise in this area has been invaluable and their team produced a detailed report for the Panel which was shared with the department and stakeholders at the draft stage. Feedback from all parties has been taken into account where appropriate. Early in the review process the Panel also issued a public call for evidence and contacted a number of local organisations directly to ask for their views; a small number of submissions and comments were received and these are available to view on the Scrutiny website, www.scrutiny.gov.je

The Panel's report summarises important issues, key findings and recommendations, and evidence arising from the public hearings in September. The AEA report (available from the Scrutiny website) into technical matters presents a detailed analysis of all evidence received and options considered for ash disposal, including recommendations on those assessed as being most appropriate for the Island.

[1] Subsequently renamed Ricardo-AEA Limited following acquisition by Ricardo plc on 8.11.2012

5. Key findings

Evidence considered during this review has led the Panel to the conclusion that the States agreed strategy (set by the former Ministers for TTS and Planning and Environment) for the permanent disposal of ash from the Energy from Waste plant in lined cells at La Collette is unsustainable in the longer term and brings increased risks of pollution to the marine environment and the South East Coast of Jersey Ramsar site. It also leaves a legacy for future generations to deal with, is visually damaging to the coastline, inhibits and restricts the possibilities of future alternative community uses of land created within the La Collette reclamation site, and will impose future avoidable costs on the community. All parties, including both TTS and Planning and Environment Ministers appear to agree with this conclusion.

5.1 Findings: Incinerator Bottom Ash (IBA)

1. The review has shown that approximately 18,000 tonnes of IBA generated by the operation of the EfW plant at current levels (approximately 70,000 tonnes of waste per annum) could be recovered through a relatively straightforward process including crushing, metal separation, weathering and grading into IBA aggregate (IBAA), which would no longer be classified as waste and would be suitable for use by the construction industry, in either bound or unbound form. This would require limited investment by TTS in appropriate infrastructure including a concrete base, drainage, and additional fixed and mobile equipment for crushing, grading and metals extraction.

2. Successful recovery of IBA would require the development of a local market for processed IBAA appropriate to the needs of the construction industry. For this purpose it is anticipated that a commercial partnership between TTS and a local quarry operator (or operators) would be the best way forward. Initial approaches have already been made by TTS to the industry. More substantive progress will require confirmation of the chemical make-up of IBA that can be produced consistently by the EfW, and subsequently the operator would have to satisfy the regulator that IBAA products derived from it are safe for use in the local environment in whatever form is eventually selected.

3. TTS' decision to appoint a new operator for the vehicle scrap-yard and relocate it using alternative methodologies will result in the removal of vehicle shredder residues and other contaminated wastes which have up to now adversely affected the chemical profile of the ash from EfW plant; these must be removed for recycling to succeed.

4. To further ensure that significant sources of toxic metals and other waste components do not enter the EfW plant waste stream, contaminating the ash and thus preventing successful recycling into IBAA, it is essential that improvements are made to the separation of wastes at source. In particular it is important that batteries, WEEE (Waste Electrical and Electronic Equipment) and other potential contaminants are separated from the domestic waste stream derived from parish refuse collections. This may point to a need for improved kerb-side separation on an Island-wide basis.

5. It is anticipated that capital investment would be required by TTS to initiate these arrangements by 2014-15. Once the market for Jersey's own IBAA was proven and IBAA reliably recycled within the Island, the processing of Guernsey's waste could also be considered. However, firm assurances would be needed of a market for the additional volumes of IBAA produced as a result. The Panel considers that one way to achieve this

might be by means of an agreement for Guernsey to import a proportional volume of recovered IBAA product(s) for use in their construction industry.

6. It is noted that there may still be a requirement for limited landfill capacity for a small quantity of material (fines) unsuitable for use as aggregate.

5.2 Findings: Air pollution control residues (APCr)

1. The review found differing views on options for the disposal of hazardous APCr. The Environment Minister appears to favour investment in plant to enable on-Island processing of APCr for recovery using vitrification technology, which is a highly technical and energy-intensive option that locks contaminants into a stable glass-like substance. Both TTS and the Panel's advisers consider that this would be a very expensive option for Jersey which would be uneconomic compared with existing alternatives that are available either for recovery or disposal off-Island. It is also risky, involving relatively unproven and complex technology. A further concern is that it would produce at very high cost a specialised aggregate material which would have to compete in the market with other forms of inexpensive aggregate, including IBAA, which could be produced at much lower cost from the greater proportion of waste produced by the EfW.

2. The Panel therefore favours the preferred option of the Minister for TTS and his department, which would involve exporting the backlog of approximately 4,000 tonnes of APCr currently stored in cell 33 for disposal, followed by a similar volume annually thereafter. TTS have advised the Panel that they consider the costs of shipping, landfill taxes and gate fees could be contained within the £1 million budget currently allocated for construction of the cells needed to safely contain APCr at La Collette, making export a viable option.

3. In the first instance it is considered that the backlog of APCr could be disposed of in former salt mines which are now appropriately permitted to accept the material either in the UK, where this is classified as disposal, or in Germany, where it is currently viewed as a recovery process. Alternatively, it could be pre-treated by acid stabilisation in the UK for disposal into non-hazardous landfill.

4. The 'legacy' APCr in cell 33 was bagged with a view to facilitating its removal should a suitable treatment or alternative disposal option later become available. Whilst this has enabled TTS to retain the option of removal from La Collette, some treatment processes cannot handle bagged APCr; and some processes cannot treat APCr that has been exposed to the elements for any length of time as it can become hardened in storage.

5. Once the backlog has been dealt with, APCr subsequently generated by the EfW plant could be stored temporarily, using suitable infrastructure, and then shipped at economic intervals to the same facility under conditions approved by the regulator.

6. The initial options of disposal in salt mines or use of acid stabilisation should be periodically reviewed against any available alternatives of export for recovery, including accelerated carbonation, vitrification, and acid washing to recover gypsum substitute. Should these alternatives be proved to offer viable solutions for Jersey's hazardous APCr in due course there should be an automatic presumption that export for recovery would be favoured over disposal, following the principles of the waste hierarchy. There would be an expectation that export for recovery should be adopted as soon as it proved feasible on practical and economic grounds.

7. Export for disposal requires Jersey to make application to the UK Department for Environment, Food and Rural Affairs (Defra) for approval on the grounds that Jersey does not have existing facilities to adequately process or safely landfill this hazardous waste. This has already been done and the response is currently awaited.

5.3 Implications for the importation of Guernsey's waste

The potential importation of a significant quantity of Guernsey's domestic waste for incineration at Jersey's EfW plant has been under discussion for some time. The figure of 30,000 tonnes is seen as a practical proposition, as this would bring the plant to its full operating capacity of 105,000 tonnes per annum. The benefits to Jersey would be in the form of any payment received and an increased ability to generate electricity for local consumption.

However, it is clear that processing Guernsey's waste would also generate additional quantities of ash. From its investigation the Panel is aware that the general presumption under the Basel Convention against the export of such wastes would render the popular solution of sending a proportionate volume of ash back to our sister Island impractical. This would leave Jersey with the problem of how to deal with some 1,700 tonnes of extra APCr and 8,000 additional tonnes of IBA annually, which would clearly need to be factored into any potential agreement.

If the Minister for TTS adopts the recommendations for ash disposal in this report, a similar additional volume of 8,000 tonnes of IBAA would be produced, which would require a larger market for IBAA construction materials in due course. Permission would also need to be sought in the short to medium term for export of the additional APCr. Because of these factors it is recommended that a new ash disposal strategy is allowed time to settle in and prove itself in operation before a decision on importing Guernsey's waste is made.

6. Recommendations

Subject to the satisfactory conclusion of ongoing technical and financial evaluations, the Panel recommends that TTS' ash strategy and associated waste management policies be amended as follows:

Incinerator Bottom Ash (IBA)

1. The current policy of permanently burying IBA in sealed cells at La Collette should cease, and all IBA produced in future at the EfW plant should be processed into IBAA (incinerator bottom ash aggregate) of a consistent quality suitable for use by the local construction industry.

2. TTS should prioritise discussions with potential commercial partners to develop a local market for recycled IBAA product(s), with the aim of ensuring that the full volume of aggregate produced at La Collette can in future be utilised in preference to continued importation or local extraction of raw materials for aggregate.

3. The department should investigate possibilities for reducing the legacy of existing ash cells at La Collette by mining any cells filled with IBA since the start of operation of the new EfW plant, if ongoing tests prove that the quality of this ash makes it suitable for processing into IBAA.

Air Pollution Control Residues (APCr)

4. An alternative to the current storage of APCr in cell 33 should be agreed between TTS and the regulator as a matter of urgency, to avoid the need for construction of a second cell for APCr storage.

5. Subject to acceptance of the Duly Reasoned Request (DRR) recently applied for by the Department of the Environment on behalf of TTS, the backlog of APC residues currently stored in cell 33 should be exported to an approved disposal facility as soon as possible.

6. Once the backlog is exported, appropriate infrastructure should be constructed to enable temporary storage of APCr subsequently generated by the plant, prior to export for disposal at the same facility at economic intervals.

7. Export for disposal should only continue for the duration of the initial approval provided under the DRR (understood to be 3 years).

8. Options for export to recovery rather than disposal in the UK and elsewhere should be reviewed at regular intervals, with particular attention to developing technologies such as accelerated carbonation, thermal processes, including vitrification, and acid washing to recover gypsum substitute.

9. In the event that export of the bulk of Jersey's APCr production to a proven recovery process becomes viable (even during the period of the DRR approval), subject to any contractual obligations TTS should take steps to divert exported APCr to a recovery process rather than disposal as soon as practicable.

10. The department should continue to investigate possibilities for the recovery of APCr rather than disposal, to ensure that within 3 years all APCr produced can be recovered (either

on- or off-Island) via a recognised process that takes into account the principles of the waste hierarchy, best practice and prevailing EU, UK and local legislation.

Importation of Guernsey's Waste

11. Prior to any decision on the importation of waste from Guernsey for incineration at Jersey's EfW plant, the new policy for ash disposal including recovery of all IBA and a sustainable solution for APCr waste should be fully proven.

12. Any contractual arrangement for the acceptance of Guernsey's waste for treatment should be conditional not only on a proven ability to successfully treat all additional waste volumes arising, but also on confirmation of a viable market for the resulting products. This might require agreement from Guernsey to accept a suitable proportion of IBAA, either as bulk aggregate or in the form of manufactured product(s).

7. Incinerator Bottom Ash (IBA)

As indicated previously, two different types of waste are produced during the operation of the EfW plant. For practical reasons they need to be considered separately. The largest volume produced is in the form of IBA, which would be familiar to many people as it physically resembles the ash left behind in the grate of a domestic coal fire, although resulting from combustion of a wider range of materials at carefully controlled temperatures. Essentially it contains the remnants of non-combustible elements found in the waste stream such as glass, ceramics and metals, plus clinker and ash.

7.1 Recycling option

Because IBA is relatively stable and contains few toxic elements, nowadays in Europe it is common practice for it to be recycled into some form of secondary aggregate for use by the construction industry. The treatment usually includes metal recovery, crushing, weathering and screening to produce graded products which can be used in bound or unbound applications. Such aggregates are collectively known as IBAA (incinerator bottom ash aggregate) and can be a useful replacement for natural aggregates in many situations. In the UK their use is subject to site-specific risk assessments, to ensure that there is no risk of environmental damage from leaching if they come into contact with water; it is understood that this is an interim position pending development of an end of waste Quality Protocol.

Similar concerns about possible leaching characteristics would also apply in Jersey, as large parts of the Island are considered sensitive water catchment areas. The regulator would have to be satisfied that local use of IBAA-based products would present no risk of environmental harm. The Panel considers that there may be a need for some form of quality certification or screening assessment to reassure potential customers that there would not be a requirement for individual site-specific risk assessments or undue restrictions on the use of new products incorporating IBAA in the local market. Other measures, such as improved controls over the types of material entering the waste stream could help to ensure that consistent standards were maintained.

7.2 Chemical properties of IBA

The treatment process outlined above is considered by the Panel's advisers to be the only commercially viable method currently available for recovering IBA for re-use. This view is shared by the Transport and Technical Services Department, who have already begun trials to determine the suitability of ash from the La Collette EfW plant for this treatment. However, these are at a fairly early stage. The process is complicated by the fact that the chemical properties of IBA from different waste plants vary according to the composition of waste that is burned. Jersey's EfW plant is known to take in a much higher proportion of commercial industrial waste than is normally found in UK plants, which tend to be designed and sized around municipal waste contracts. There have also been problems with the amount of scrap-yard residues entering the EfW plant, although these should be resolved under the terms of the new scrap-yard contract due to start in January 2013.

The testing process is described in more detail in the AEA advisers' report. The results could affect its viability for processing into IBAA, although the department's Chief Officer seemed confident that this could be achieved:[1]

Chief Officer (Transport and Technical Services):
We have looked at what products you can produce from I.B.A. but clear market testing and that mix iteration has not been done because we do not know what product we are going to

[1] Public hearing with Minister for Transport and Technical Services, 21.09.2012

give to them in the first place. We need to say: "This is X, and if we turn it into Y this is what we can do." You are absolutely right, we need some innovation here in terms of what products we can produce. We may be able to make something that can be exported and used somewhere else. What we have got to do is make sure what we give to the contractors who are doing this work is safe, repeatable and a viable product for them to use. That is our first stage.

The Minister confirmed that his department was now fully committed to finding ways of recovering IBA:

The Deputy of St. Martin:
Minister, given that what we do with I.B.A. at the moment is pretty much unsustainable inasmuch as it still contains things which we do not like, we put it in an engineered pit and we seal it up, the option is to treat it with the weathering and the crushing and all the other bits and pieces and produce an aggregate which is inert. Can we have an assurance that your department will continue to work strenuously towards that target and not just have it as a preferred option, but something that you will do until you succeed?

The Minister for Transport and Technical Services:
Absolutely.

7.3 A cautious approach

Despite the commitment to recycle it seems that TTS has taken a relatively cautious approach to the testing of IBA so far, with a timetable for completing the necessary analysis, market testing and regulatory approval during 2012-2013, and active recycling of IBA on a commercial scale not expected to come into operation until 2014 or beyond.[1] The Panel's advisers have suggested ways in which this process could potentially be accelerated, as well as recommendations concerning the format of the testing being carried out, with a view to ensuring that the processed IBA will meet industry standards.

Once the chemical composition of the IBA has been confirmed, current department thinking is that the recovery operation for IBA would be based locally, possibly in conjunction with a commercial partner or partners. TTS has indicated that the weathering and screening process described in section 7.1 above would be practicable at La Collette, although it could take place elsewhere. The process would require a waste management licence.

It is understood that the weathering process generally takes about 6-12 weeks, and could be done largely in the open, on a concrete base with suitable leachate drainage. Watering of the ash surface would assist in controlling dust. The activity might involve turning the IBA at intervals. Machinery for handling and grading the resulting aggregate would be required, although some of this may already be available from current resources. In any event, it is not considered that it would be a particularly costly or technically complicated operation, and it should be relatively easy to put in place if the results of testing prove that the IBA is suitable for recovery.

7.4 Step in a new direction

Clearly there is still some distance to go, but the recommended policy marks an important change of direction away from the previous approach of burying all ash waste, towards a sustainable solution that could result in the recovery of thousands of tonnes of useable material, provided that the end product is of sufficient quality and suitable markets can be found. This is possible partly because of the inherently cleaner technology of the new EFW plant compared with the old, but also as a result of continuing efforts to 'clean up' the waste

[1] From TTS Ash Strategy Plan, September 2012

streams feeding the new EfW plant by excluding hazardous materials such as batteries, Waste Electrical and Electronic Equipment (WEEE) and scrap-yard residues.

7.5 No reasonable alternative – and an opportunity

In the view of the Panel the initiative to recycle waste ash should be universally supported. The only alternative would involve continued disposal into engineered cells (or an artificial headland) on the La Collette site, which at present rates of production would have to accommodate a further 500,000 tonnes of ash waste by 2035 (over and above what is already buried on site). This is not seen as justifiable or sustainable when an environmentally preferable solution is available.

While the viability of the project and consequent costs cannot be accurately established until tests on ash quality are complete, the Panel believes that the added benefit of freeing up areas at La Collette for other potential uses that would otherwise have been swallowed up by future ash cells is a material consideration in the appraisal of alternative options.

7.6 Export opportunities?

For the recycling process to be viable any eventual product will need to have a ready market. Processed IBAA is generally a low-cost material which can be used in bulk as an aggregate fill, in bound form for work such as highway maintenance, and in construction applications in blocks or cement-bound materials. Since large-scale works such as new road building are uncommon in Jersey, TTS confirmed that they had already been in discussion with local quarry operators with existing block-making facilities, who had shown some interest.

The success of a recycling project would depend on the level of demand from the local construction industry, which has experienced a significant downturn since the start of the global financial crisis. The prospects for a new and untried product are therefore particularly difficult to establish with any degree of confidence, so at the time of writing the size of the potential market for a processed aggregate product is uncertain. While sales into the local market would clearly be the optimum solution, if this proved difficult to achieve consideration would have to be given to export.

At the hearing both the Minister and Chief Officer of TTS made it clear that the department had an open mind about possibilities for export, although opportunities for this had not been investigated in any detail at this stage. One advantage of processing IBA locally would be that subject to the approval of the regulator in Jersey and any receiving jurisdiction, the resulting manufactured IBAA product would not require the same external licensing arrangements as unprocessed IBA, which as a waste material would be subject to the terms of the Basel Convention.[1]

7.7 Recovery versus disposal

Some requirements of the Basel Convention are also understood not to be applicable if the waste is exported for the purpose of recovery/recycling, rather than disposal in another jurisdiction. It is therefore conceivable that there might be an opportunity for Jersey to export untreated IBA, subject to finding a partner processing plant in the UK or elsewhere with both an established market for its products, and the capacity to accept the additional volume of Jersey's waste ash.

[1] Further discussion of the Basel Convention appears in sections 8 and 9 of this report.

7.8 Difficult economic case for export
It is recognised that any case for export could be challenging on commercial grounds. Shipping either IBA or treated IBAA would involve very high volumes of relatively low value material, with a likelihood that any return could be overshadowed by high transport costs. For this reason the Panel advisers' assessment suggests (and TTS agree) that exporting IBA for treatment elsewhere may not be commercially viable.

However, any eventual decision would need to take into account the other benefits which would result from diverting IBA from landfill at La Collette:

- avoiding a continuing build-up of ash cells in a vulnerable location
- reducing the environmental legacy for future generations
- potential savings for TTS of not having to construct further ash cells at La Collette (at present some £0.5 million per cell)
- the potential economic benefit of retaining more of the reclaimed land at La Collette for other uses

Looked at in this light there might be a case for accepting a low return, or even considering some degree of subsidy for the export of IBA/IBAA to obtain a greater benefit, if there was insufficient demand for the product in the local market.

7.9 Could we recover older ash produced by the Bellozanne plant?
The Panel also enquired whether there was any possibility that ash from the Bellozanne plant (contained in earlier cells) could in future be excavated for recovery, and this land at La Collette reclaimed for other uses. It was explained that this was likely to be more problematic owing to the higher burden of pollutants in the 'mixed' ash produced by the Bellozanne plant, which would be more difficult to process to an acceptable standard for re-use. The TTS Minister expressed the hope that this might still become feasible as new technologies for waste treatment emerge.

7.10 The way ahead
Burial of a high volume of IBA currently imposes the greatest burden on La Collette, and for this reason alone would not be seen as sustainable in the longer term. However, if the testing already begun on behalf of TTS proves that the ash is suitable for processing into usable IBAA, burial should no longer be considered as an acceptable option. The challenge is to develop a market for the recycled stabilised IBAA with a commercial partner. TTS feel strongly that this should be feasible, with early indications that the preferred use for IBAA could be in some form of building block.

Continued burial of IBA should only be considered if we fail with this alternative and/or are unable to find a viable market for the processed material. TTS are confident that this can be avoided, particularly if the Island can make progress with better separation of wastes at source to remove problem materials such as WEEE, batteries, scrap-yard metal waste, tyres etc. While some of these elements are already being addressed (e.g. under the new scrap-yard contract) new initiatives may be needed at a parish level to ensure a consistent pan-Island approach to waste collection.

7.11 Conclusion - IBA
In practical as well as economic terms, the preferred solution in the short to medium term must be to develop local facilities for recycling IBA. This should ideally be in partnership with an existing business which could provide a reliable outlet for IBAA-based product(s) into the local construction market. Consideration should also be given to the possibility of extracting

IBA from the most recent ash cells at La Collette for retrospective treatment, to reduce the legacy of ash cells remaining on site.

8. Air Pollution Control Residues (APCr)

APCr is classified as a hazardous waste under the European Waste Catalogue (EWC). The Landfill Directive restricts landfill disposal of APCr, and options for its disposal or recovery are somewhat more complicated than those for IBA. The Panel's advisers reported that even disposal to hazardous waste facilities in future is likely to require prior treatment of APCr to meet Waste Acceptance Criteria (WAC) limits on leachability.[1] It is understood that exceptions to this may be possible in the case of permanent underground storage, such as in suitably permitted former salt mine workings, although specific acceptance criteria may still be applied. However, contrary to statements at the ash headland presentation in July 2011, it is clear that a number of processes have been developed to enable recovery of APCr, and more are appearing as time goes on.

8.1 New cell design

In recognition of its hazardous designation, TTS commissioned a new type of highly engineered cell for storage of APCr at La Collette which includes more advanced lining and an electrical leak detection system; these improvements bring the cost of a cell to approximately £1 million – roughly double the cost of an ash cell. While designed to accept the APCr in the form of bulk slurry, as a temporary measure the first year's waste has been bagged before being stockpiled in the open cell, to enable easier removal and export for recovery, or disposal if permission can be obtained. The environmental group Save Our Shoreline confirmed that it has received assurances from the TTS Minister to the effect that the APCr cell would not be capped and that other alternatives for treatment would be found.[2]

Currently only one cell has been built to this specification (cell 33). However, at the public hearing with the Minister for TTS on 21st September 2012 it was revealed that this would be full by April 2013, with a decision needed on whether to commission a further cell by the end of 2012 to enable it to be built in time. This contradicted earlier comments from the Minister for Planning and Environment suggesting that there might be 12 to 18 months' life left in the cell. A decision on what to do with the first year's production of APCr is a matter of some urgency, although TTS subsequently accepted that it may be possible to postpone this until April if necessary.

8.2 La Collette geology

The Panel has been advised by the Department of the Environment that preliminary discussions between the department and the UK Environment Agency regarding possible export of APCr for disposal included consideration of the suitability of the La Collette site for the permanent disposal of hazardous waste.

During the public hearing with TTS it was explained that the geological characteristics of la Collette are not considered fully appropriate for landfill of hazardous waste. It is understood that this relates to the absence of a natural impermeable clay layer beneath the site to protect against the possible leaching of toxic elements into the wider environment. While the technical specification for the enhanced cell lining was designed to address concerns about leaching,[3] there is some doubt as to whether even this system would be considered appropriate for permanent storage of hazardous waste, owing to uncertainty about the performance of the lining materials over very extended periods; there is also the possibility that geological movement in the long term could compromise the integrity of an artificial

[1] See advisers' report section 3.2.3.2 for a full explanation of WAC

[2] Save Our Shoreline submission to Scrutiny, 26.04.2012 (available on Scrutiny website)

[3] See section 3.2.3.1 of advisers' report for details

barrier. These factors suggest that even highly engineered cells should realistically be considered to have a finite life. This would also tend to support the need to find an alternative route for the short term disposal of APCr, to avoid the expense of constructing another cell which would only provide a temporary solution.

If the site is deemed unsuitable for the permanent storage of hazardous waste such as APCr for these reasons this might also support the case for export in the short to medium term, although the Island would probably be expected to take steps to develop facilities to dispose of its own waste in future. This should be considered the ethical way forward in any case, as the Island could not reasonably expect to continue exporting its waste to other jurisdictions indefinitely.

8.3 Up to date studies

The Panel's adviser reported that earlier TTS studies on treatment options for APCr did not appear to be comprehensive, but confirms that this has subsequently been addressed and all available options have been assessed appropriately. Significantly, a TTS position paper from June 2012 makes it clear that the department now considers permanent disposal to landfill would constitute an undesirable legacy.

8.4 APCr treatment options

The Panel's advisers have conducted a comprehensive study of the full range of available technologies potentially capable of dealing with APCr in the short, medium and longer term. If one excludes the possibility of permanent burial at La Collette, in the short to medium term at least these would all involve off-Island solutions. They include:

1. washing;
2. stabilisation and solidification;
3. thermal treatment; and
4. disposal without treatment

It was confirmed that the successful treatment of APCr is more complicated than dealing with IBA, and potentially involves further environmental hazards:

> The concentration of soluble salts, heavy metals, and organic compounds makes disposal of APCr challenging and a common strategy for APCr management is treatment followed by landfill in either hazardous or non-hazardous facilities. Its use may create a new pollution source somewhere else, which will have an environmental impact, particularly as long term leachability is still unknown in relation to processed APCr from specific treatment processes.[1]

Readers are referred to the report of the Panel's advisers for detailed information on these processes. However, a brief summary of the process options listed above may be helpful.

8.5 Washing

Washing refers to the extraction of minerals from the APCr by the addition of water and/or acids, to reduce the problem posed by potential leaching of various compounds from the eventual residue. The advisers were not aware of any UK operations using water washing only; in acid washing processes, waste acid from industrial sources is used to reduce the cost. As there is no availability of such wastes in Jersey, washing of APCr is not considered to be practicable on-Island, but it could be considered as an export option if a plant with suitable capacity could be found in the UK.

[1] Advisers' report section 6.4

8.6 Stabilisation and solidification

Chemical stabilisation aims to fix pollutants such as heavy metals in the residue by altering their chemical properties. A combined process reduces the environmental impact of APCr disposal through washing to lower the concentration of the contaminants, stabilisation to reduce their leachability, and solidification to decrease the rate of leaching of contaminants.

Drawbacks of this process are that long-term leaching may continue to pose an environmental problem; and the actual volume of waste is substantially increased using this method. For these reasons stabilisation/solidification processes would only be suitable for an on-Island solution if the leachability issue could be successfully addressed and recovery produced a product for which a reliable market could be identified.

Off-Island treatment of APCr would therefore seem a more practical solution if a suitable process can be found with potential or existing markets. The Panel's adviser visited one such process in the UK accompanied by the Chief Officer of TTS during the course of the review. While at an early stage of development, the accelerated carbonation technology (ACT) process appears potentially to have many advantages for recovery of APCr and is described in detail in the advisers' report in section 6.5.1.

8.7 Thermal Treatment

Thermal treatment of APCr is used in some countries to reduce its volume and improve leaching properties. Thermal treatment is an energy-intensive process which can involve vitrification, melting or sintering. Different techniques for heating can be used, e.g. electrical, fuel fired or blast melting. Depending on the specific process and temperatures attained, the potential pollutants may be encapsulated in a glass-like melted residue suitable for re-use, or effectively destroyed at higher temperatures, although a requirement for further pollution control on the thermal treatment process itself will generate a further APC waste product.

Thermal treatment involves specialised technology and has very high energy requirements. Depending on licensing restrictions there may be possibilities to make use of existing facilities in Europe to treat Jersey's APCr, although this would be expected to entail considerable costs, not just for transport but also for treatment owing to the high energy demands of this type of process.

At present there are no commercial-scale thermal processing operations receiving APCr for treatment in the UK, although the Panel's advisers made a fact-finding visit to a demonstration facility for plasma vitrification in Swindon during the course of the review, accompanied by the Chief Officer of TTS. This process is described in more detail in the advisers' report section 6.5.2.

Comments made by the Chief Officer at the September hearing indicate that there would be considerable reservations about thermal treatment solutions on-Island for reasons of cost, complexity and energy demand. There may also be safety implications to locating a suitable plant in close proximity to the existing fuel farm.

8.8 Disposal without treatment

Untreated APCr can currently be disposed of in the UK and Europe in former salt mines which are suitably permitted to accept the material, owing to the dry conditions in such workings. This may even be described as a recovery option in some circumstances, for example in Germany where it is referred to as recovery for the purpose of reinforcing empty mine workings.

8.9 Tight controls
In the UK, storage of APCr in salt mines is considered as disposal. However, it can be licensed by the Environment Agency subject to approval of a 'duly reasoned request' under the terms of the Basel Convention. (This process is explained further in section 9 below.) It is understood that the Isle of Man has obtained permission to export APCr to the UK mainland on this basis. A similar arrangement is now the preferred option of TTS for the short term disposal of APCr stored in cell 33 at La Collette, with a possibility that it might continue into the medium term pending a decision on alternative future recovery/disposal arrangements. However, it is noted that any form of disposal to landfill is increasingly subject to tighter controls, and so even if an agreement is reached in the short term, the ability to continue disposing of APCr in this way in future seems likely to be time-limited. It would therefore seem wise to maintain a close watch on alternative and emerging technologies (and costs) to ensure that transfer to another option can take place with minimal disruption as and when landfill is no longer available.

8.10 Permanent burial at La Collette
While this is no longer an option favoured by TTS or the Panel, it was previously considered by the department as a potential solution for the disposal of both IBA and APCr wastes; hence the enhanced specification of cell 33 to take account of the hazardous nature of APCr. The possibility of permanent encapsulation of APCr in cells in the proposed ash headland was also considered an option prior to the current Minister's decision to seek alternative solutions.

Evidence presented to this review has confirmed that there are now viable alternatives to burial at La Collette for both of these wastes. The preferred option for APCr in the short to medium term is export for disposal or recovery. This may be dependent on approval from the UK Environment Agency. Alternatively, advice being sought by the Department of the Environment could establish whether Jersey is entitled to 'go it alone' and negotiate directly with other parties who could potentially dispose of or treat this waste. This is discussed further in section 9.3 below. In either case export may only offer an interim solution until Jersey can develop more acceptable treatment options for this hazardous waste that do not involve landfill, either at La Collette or elsewhere.

8.11 Funding available
From the Panel's research it is clear that there are various options available in the UK (and/or Europe) which could successfully dispose of, or process the Island's APCr for recovery. In terms of funding, the Medium Term Financial Plan for TTS includes capital allocations of £1 million in 2013, 2104 and 2015 for the construction of cells for APCr burial at La Collette; and growth allocations of £1 million in 2014 and £2 million in 2015 for 'off-Island disposal of APCr'. Depending on what solution is finally chosen, these sums can be combined to provide a substantial budget towards the cost of APCr recovery or disposal, whether on- or off-Island. The Chief Officer of TTS has indicated to the Panel that sums available in the MTFP would be sufficient to fund off-Island disposal of APCr for the first 3 years.

8.12 A choice for treatment - APCr or IBA?
An important practical consideration highlighted by the Panel's advisers when considering solutions for APCr treatment is that on-Island processing for recovery would result in a product which would then have to compete for a place in the local construction market with locally produced IBAA, assuming that a satisfactory process was also put in place for this.

With the significantly larger volumes of IBA needing to be recovered (18,000 tonnes per annum versus 4,000 tonnes of APCr), the ability to process IBA into IBAA would bring much

greater benefits in reducing waste volumes, as well as being technically a more straightforward and less costly process.

8.13 Conclusion – APCr

In the first instance, disposal of APCr off-Island should be pursued, with a view to first removing the 'legacy' APCr currently stored in bags in cell 33, and subsequently putting arrangements in place for regular shipments of new material arising from continuing operation of the EfW plant. In the short term the preferred solutions (particularly for the bagged material already stockpiled) would be either permanent storage of the waste in former salt mines, or pre-treatment by acid stabilisation in the UK for disposal into non-hazardous landfill. Alternative treatments could be considered if they proved economically favourable at a later date.

TTS have confirmed that shipping of the existing bagged APCr could be done by lorry under similar arrangements to those currently employed for transporting other hazardous wastes to the UK. In future it might be preferable to store the APCr produced in silos for shipment in bulk containers/tankers at economic intervals, possibly using the Victoria Quay if a suitable vessel could be found. The existing budget for APCr disposal at La Collette (approximately £1 million per annum) is considered by TTS to be sufficient to cover the likely costs of shipping, land fill tax and gate fees at the new disposal site.

In the medium to longer term, the Panel recommends that investigation of potential low-cost, low impact technologies for treatment of APCr, such as accelerated carbonation technology, should continue. While ACT is at an early stage of development, existing alternatives such as vitrification would entail such high levels of investment, technical complexity and energy consumption that the Panel considers they are unlikely to be sustainable. However, it seems highly likely that pressures for all jurisdictions to deal with their own wastes will only increase over time, and Jersey would be wise to prepare for this with an appropriate strategy, including options for local treatment of APCr if it becomes necessary in future.

9. The Basel Convention and duly reasoned requests

The UK's ratification of the Basel Convention on Control of Transboundary Movements of Hazardous Wastes and Their Disposal was extended to Jersey in September 2007, and requires that any export of hazardous wastes to other territories needs to be licensed through the responsible national authority. The Waste Shipments Regulation is the over-arching European legislation applicable to the export of waste and implements the Basel Convention into EU law. There is a strong presumption under the convention that territories should wherever possible deal with their own waste internally, if necessary by developing the required infrastructure to do so.

Where this is not possible or practical, a process involving the submission of a 'duly reasoned request' (DRR) to the relevant national authority can be instigated, giving reasons why the transport should be permitted. The DRR will include an explanation as to why the specified wastes cannot be dealt with appropriately *in situ*, to justify the need for export.

Acceptance of a DRR constitutes an 'in principle' decision by the relevant national authority that there is justification for specific types of waste to be considered for export from one territory to another. This would be followed by a formal application from the exporting jurisdiction which would specify the quantities, destinations and arrangements for transport and disposal of the waste. Regulatory authorities in both exporting and receiving jurisdictions would then need to be satisfied that these arrangements were acceptable before the export and disposal could take place.

According to the Chief Officer of TTS, the department asked the Department of the Environment (as regulator) to apply for a DRR to the UK Environment Agency to export the current stockpile of APCr for disposal around Christmas 2011. The resulting detailed discussions and appropriate revision of the DRR between the regulator, TTS and third parties and the Environment Agency culminated in a meeting in Jersey in September 2012.

The regulator emphasised that it was important from an Island perspective to ensure that all hazardous wastes included on the DRR request (not just APCr) were fully categorised and that the request adequately explained and answered all relevant arguments under the guiding principles for DRRs in the UK Shipments Plan, as a poor application could have resulted in an immediate refusal. The list of reasons given in the DRR application in respect of Jersey's APCr is included as an appendix to this report.[1]

9.1 Legal advice

Given that a DRR for APCr might be approved by the UK Environment Agency, the Panel was slightly surprised to hear from the Minister for Planning and Environment at the public hearing on 21st September that he was seeking advice from his officers on Jersey's position vis-à-vis the Convention. His aim was to clarify what responsibility Jersey had for its own waste disposal under the Waste Management (Jersey) Law 2005, and whether there was any need to submit a DRR for UK approval. The Environment Minister's view was that this might not be the case, which could enable the Island to negotiate directly with other territories, potentially opening up other routes for waste exports for recovery or disposal. The Environment Minister also advised that he had been in contact with companies in France which had shown an interest in taking some portion of Jersey's hazardous waste.

[1] Appendix p.28

9.2 An independent approach?

While sympathetic to the view that Jersey should wherever possible 'stand on its own feet', members initially felt that given the time-critical nature of the decision on APCr, deliberations on whether or not Jersey actually needed to submit a DRR at all might prove an unnecessary complication, with potential to cause delay. It was noted that the Island has had DRRs accepted for the export of other types of hazardous waste (such as special waste oils to Europe) in the past. TTS have also commented that any delay in seeking the derogation from the UK would result in additional costs of approximately £1 million for the construction of a new cell for APCr storage, which would reduce the funds available for the purchase of any new plant and infrastructure needed for the processing of IBA.

9.3 Clarification

Subsequent clarification by the department indicated that as ratification of the Basel Convention was extended to Jersey by the United Kingdom, although the Minister for Planning and Environment/Department of the Environment were nominated as the 'competent authority' for the Island, under the terms of the convention there is still an expectation that all activities relevant to the convention will be reported to and channelled through the national 'focal point'; in this case the UK Environment Agency. This was further explained in answer to a written question to the Minister for Planning and Environment in the States on 6th November 2012:

1240/5(7195)

WRITTEN QUESTION TO THE MINISTER FOR PLANNING AND ENVIRONMENT BY DEPUTY J.H. YOUNG OF ST. BRELADE

ANSWER TO BE TABLED ON TUESDAY 6th NOVEMBER 2012

Question

Will the Minister inform the assembly whether he is required to seek consent from the relevant authorities in the United Kingdom to determine whether Jersey's hazardous waste, including asbestos presently stored temporarily at La Collette, can be exported from Jersey to another OECD or EU member country for disposal or recovery or whether his own powers in the Waste Management (Jersey) Law 2005 are sufficient to enable him to approve such proposal, in either case , will he provide details of the criteria which apply and of the protocols and procedure which he as Minister is required to follow to enable that export to take place.

Answer

The Waste Management (Jersey) Law 2005 ('the Law') extends the UK ratification of the OECD decision the Basel Convention to cover Jersey. The Minister for Planning and Environment and the Department are the competent authority in Jersey and fulfil the functions of Basel. These functions include administering the requirements under the international conventions on waste shipments which the island is obliged to follow. The Department is therefore a regulatory authority.

Export of waste for recovery requires the procedures set out by the Law to be followed. This includes that the prior informed consent of the competent authority in the destination jurisdiction must be obtained before wastes can be exported.

These procedures also include the submission of prescribed forms (detailing the names and contacts for the waste generator, holder, broker, carrier and site of recovery, waste types) financial guarantees, contracts and submission of genuine recovery statements.

Exports of wastes for disposal require the same procedures and consents to be followed. However, prior to export the agreement of the competent authority of destination has to be obtained. This

involves justification for the proposed export for disposal from Jersey, that includes an assessment against the following criteria;

1) whether the country of dispatch has facilities of a type appropriate to deal with the wastes in question in an environmentally sound manner.
2) whether the country of dispatch is likely to be in a position to acquire facilities to dispose of the waste(s) in question in an environmentally sound manner in the short to medium term.
3) whether the waste identified could be stored safely prior to the acquisition of these facilities.
4) whether, based on present and predicted arisings, such facilities would be economically viable.

If all these conditions are satisfied, then the Department would formally submit a Duly Reasoned Request (DRR) to the proposed receiving jurisdiction.

If the DRR is granted, then before any shipments for disposal can take place, the agreed waste type and disposal activity is subject to the notification and consent procedure under the Law and the Waste Shipment Regulation. Accordingly, the competent authority of destination must approve the shipments of hazardous waste before export can take place. This includes provision of a financial guarantee to provide both the Department and the competent authority with guaranteed funds, for the waste need to be returned or otherwise suitable disposed of.

Defra (UK) has recently indicated to the Department that there is nothing to prevent Jersey from approaching another EU country in order to negotiate a DRR for the disposal of waste. The proviso here is so long as the Basel Convention (and provisions in the Waste Management (Jersey) Law 2005) are adhered to. However, under the Basel Convention, Defra have to report movements of hazardous waste to and from the UK, and correspondence with the UK authorities indicate that they would probably have to record such a movement under the UK banner. This information is made public on the Basel Convention website; so it would be problematic for the UK to report shipments for disposal to another EC member state which the UK would not itself accept for disposal in the UK through the DRR process.

If it is formally requested by a waste company or responsible States department that waste is exported from Jersey for recovery then a DRR would not be required. However, contact with the receiving competent authority would still be required, as this would still constitute a trans-boundary shipment of hazardous waste requiring prior informed consent from the competent authorities of both the exporting and importing jurisdictions. Prior consent of the UK would not be required.

9.4 DRR application confirmed

It was confirmed by the department that a formal DRR application was submitted on 18th September 2012, which included APCr together with other specialised wastes from different sources requiring off-Island disposal facilities. At the time of writing confirmation of the outcome was still awaited; the usual time-scale for such decisions is understood to be approximately 2-3 months.

10. Regulation and best practice

Asked for his views on ash disposal during the public hearing on 21st September, the Minister for Planning and Environment explained that there was a difference between his rôle as regulator and consideration of best environmental practice. He made it clear that from an environmental point of view, the current disposal method (burial of ash in engineered cells) was at the bottom of the list in terms of the waste management hierarchy, and did not represent best practice; even if from a regulatory viewpoint it did not generate pollution or human health problems. As such his department would be open to consideration of alternative approaches, which would hopefully be more sustainable and follow the principles of the waste hierarchy (which favours recovery options over disposal).

10.1 Recycling and other technologies

The Minister emphasised the need for continued efforts to increase recycling and minimise the volume of materials needing to be incinerated. He indicated that his powers to influence the development of waste management policy were limited by the fact that this remained the responsibility of the operator (TTS) at the present time; separating the 3 functions of strategy and policy setting, regulation and operation would potentially have environmental benefits:

The Minister for Planning and Environment:
The level to which the Minister is able through that department to direct or encourage the T.T.S. Department into higher waste management or recycling techniques is fairly limited. It is limited because the waste management strategy still rests with the operator and that is the difficulty. I have mentioned on other occasions that there has always been a long-term intention, and it makes proper administrative sense, to separate out the 3 functions, you have the operator, the regulator and the person who sets the long-term strategy and policy, and those are 3 separate functions that should not be blurred. At the moment we have the operator setting the policy and that means that I have limited powers with which to encourage the T.T.S. Department to go for, for example, higher recycling techniques that would automatically achieve the separation at source that I think might be beneficial to the better treatment of the waste products coming out of the end of that.

The Minister also suggested that there may be possible alternative technologies available for processing IBA, such as vitrification (as described in section 8.7 above in respect of possible treatment processes for APCr). While he did not identify a specific process, the Panel's advisers have commented that they are not aware of vitrification or similar thermal processes currently being applied to IBA on a commercial basis, as they require substantial investment in highly specialised equipment, as well as being extremely energy-intensive. TTS confirmed that the investment required for an on-Island vitrification plant using proven technology would be huge.

While vitrification might possibly be an option for treatment of smaller volumes of more hazardous wastes such as APCr, processing waste ash into IBAA as outlined in section 7.1 above is by comparison a well-proven, relatively simple and inexpensive process requiring limited technological input. As such it would be the preferred method of recovery provided the issues of quality control and market testing can be satisfactorily resolved.

Appendix

Duly reasoned request (DRR) for the transfrontier shipment of hazardous wastes from Jersey to the United Kingdom

Date of submission by the Department of the Environment to the UK Environment Agency: 18 September 2012

As part of the submission, Annex C contained additional information to support the DRR and satisfy Article 41(4) of Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste.

Annex C included the text:

A number of factors have influenced the decision to seek export of the APC for the next 3 years:

- *It is recognised that the incineration residues from the new La Collette EfW plant, IBA and APC, should not be co-disposed and that the highest engineering standards of containment cells must be applied to provide environmental protection.*

- *The best practice engineering standards required by the EC Landfill Directive 1999-31-EC and particularly requirements for a natural or artificial geological barrier as part of the hazardous landfill site containment cells is not feasible in Jersey where indigenous clay for use in engineering is not available[1] (see footnote).*

- *More sustainable options should be given precedence over the disposal of APC residues in landfill. Given the lack of any geological layer, (which may result in a legacy for future generations of reconstructing cells when polymeric liners reach the end of their design life) the acceptability and sustainability of landfilling hazardous waste at La Collette is in doubt.*

[1] The bedrock underlying Jersey comprises hard fractured strata, which has a moderate permeability. Recharge to the bedrock aquifer from rainfall occurs via fractures which permit the water to migrate rapidly downwards to the water table.

The overlying superficial deposits are composed of loess (an aeolian silt/clay deposit deposited during the last ice age), alluvium (recent deposits deposited by streams ranging from gravels to clays), head (a poorly sorted paleoglacial deposit) and wind blown sands. Alluvial clays occur in stream valleys, the greatest spread being beneath the urban area of St Helier. Alluvial clays rarely attain a thickness of more than a metre or two and are limited in extent, frequently being laterally discontinuous.

Loess deposits are located predominantly on the Island's plateau areas and over low lying areas in the south east of the island. Their thickness ranges from less than 1 metre in the west of the Island to about 4 metres (rarely up to 5 metres) in the east. The permeability of the loess on Jersey has not been determined, the published range of primary (intergranular) permeabilities for loess deposits ranges from 1 x 10-5 to 1 x 10 -7 m/s, with vertical secondary permeability (caused by the presence of cracks, root channels and bioturbation) often being significantly higher. The occurrence of rapid recharge to the bedrock aquifer in areas of the Island overlain by loess is indicative that the local loess does possess significant vertical permeability.

It is concluded that although clays of limited extent and loess (clayey silts) do occur in Jersey, their thickness and permeability are significantly less than that required in the EC Landfill Directive for a hazardous waste landfill.

- *The relatively small waste input compared to the wastes available to a EC Landfill Directive compliant hazardous waste landfill in the UK is an economic factor.*

- *There are a number of emerging technology options for the increasing quantities of APC residues being produced at EfW plants in the UK including recovery options. These may be more sustainable solution for Jersey either by export for recovery or by developing local on Island facilities. Options include use in concrete aggregate (carbonation) or as aggregate (high temperature stabilisation, plasma vitrification).*

- *It will take time to fully assess and choose a more sustainable option. Attached is the "Transport & Technical Services Department's Road Map for the Future Management of EfW Ash" This sets out the options for APC and IBA ash from the plant. A period of three years has been chosen because this is the time period within which the review, investigations any capital funding application/approval into the viability of other treatment techniques for APC residues can be carried out.*