

Rail Recyclates Study Stage 2 Report



NESRFDG



**The Interreg IVB
North Sea Region
Programme**



*Investing in the future by working together
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**Aberdeenshire
COUNCIL**



Prepared by:
Andrew Robb
Consultant

Checked by:
Paul Finch
Associate Director

Approved by:
Neil Halket
Regional Director

Rail Recyclates Study

Stage 2 Report

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First Floor, 499 Union Street, Aberdeen, AB11 6DB
Telephone: 01224 597450 Website: <http://www.aecom.com>

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Table of Contents

1	Introduction	2
1.1	Introduction	2
1.2	Study Background	2
1.3	Summary of Stage 1 Findings	3
1.4	Progression to Stage 2	5
1.5	Structure of Report	6
2	Stakeholder Discussions.....	8
2.1	Introduction	8
2.2	Discussions with UPM-Kymmene, Shotton.....	8
2.3	Discussions with DRS.....	12
2.4	Outcomes of Discussions	14
3	Cost Estimates	17
3.1	Subsequent Developments.....	17
3.2	Investment Costs	17
3.3	Load Details – Card.....	17
3.4	Load Details – Plastics	18
3.5	Summary	19
4	Recommendations	21
4.1	Introduction	21
4.2	Key Finding 1 – Paper	21
4.3	Key Finding 2 – Plastics	21
4.4	Key Finding 3 – Card	21
4.5	Considerations Going Forward	22
4.6	Lessons Learned	Error! Bookmark not defined.

Introduction

1 Introduction

1.1 Introduction

This Stage 2 report presents the outcomes of further work undertaken as part of the Rail Recyclates Study. It builds on Stage 1 of this study which involved a data collection exercise and an initial assessment of the recyclate flows considered to have potential for modal transfer from road haulage to rail freight.

This stage of the project examined in more detail the feasibility issues for the most promising flows identified at Stage 1, which were:

- Rail Transfer of recycled paper from North East Scotland to UPM-Kymmene facility at Shotton (dedicated rail freight service); and
- Transfer of baled plastics and/or card from North East Scotland to reprocessing sites in Midlands and Kent (back-loading pallets onto on existing rail freight service).

The report in particular presents outcomes of discussions with UPM-Kymmene at Shotton, and Direct Rail Services. Informed by further feasibility assessments, presents key findings and suggested next steps.

The work has been undertaken by AECOM, commissioned and managed by Aberdeenshire Council.

The project was initiated and part funded by the North East Scotland Rail Freight Development Group (NESRFDG).

The project has also formed an element of the Regional Transport Partnership Nestrans' Freight Action Plan, and has been reported to the Freight Action Plan Implementation Group, and Nestrans' Freight Forum.

The project work has also formed an element of the Freight flow and hub demonstrator DP3 of the Interreg IVB StratMoS project. The DP3 theme was looking in the North East of Scotland for a pilot action which could aggregate freight flows to offer volumes that should be attractive to operators and thereby achieve modal transfer. The theme was then to refine the flows and look at the physical, organisational and contractual issues necessary to achieve modal transfer.

1.2 Study Background

Following completion of rail gauge enhancement between Elgin and Mossend, there has been interest in encouraging and promoting the transfer of freight from road haulage to rail freight. This policy goal has been well-established for a number of years, and is expressed with national policy, regional policy and local policy.

This report develops the ideas originally formulated under the auspices of the North East Scotland Rail Freight Development Group (NESRFDG) for investigating whether the flows of recyclate materials originating in the three Unitary Authority areas of North East Scotland could be aggregated together, such that they would form a suitable load for rail freight. Initial work identified that recyclate flows are typically bulky, not time dependent, and it is known that many travel to centralised locations in the UK for reprocessing. With the recyclate flows being mainly in the control (or at least within the influence of the public sector), it was considered that any feasibility issues, such as contractual arrangements, could potentially be overcome with more ease relative to other potential new rail freight flows.

This study covers the areas of Aberdeen City, Aberdeenshire and Moray Council, and the study team are grateful for the continued support of all the organisations mentioned above and the cooperation of their respective Group members and Officials.

The aims of the study are to:

1. Gain a better understanding of the regimes currently adopted by North East Local Authorities (Aberdeenshire Council, Aberdeen City Council, and The Moray Council) in relation to the transport of waste recyclate produced by each Authority;
2. Identify one or two specific types of waste recyclate which would have the potential to be consolidated in sufficient volume to make transfer to rail an attractive and feasible option; and;
3. Develop an Implementation Strategy, which would be followed in order to deliver a consolidated recyclate stream onto rail. In addition to providing a step-by-step guide on the actions that should be undertaken in order to get a consolidated recyclate stream onto rail, the Implementation Strategy would outline the potential barriers to transferring the chosen waste recyclate stream to rail and propose measures to remove / reduce these constraints. The Strategy will be developed mindful that each stakeholder (e.g. Council, waste agents, recyclate processors and the road and rail logistics operators) faces different barriers and will attempt to provide guidance on measures that could minimise barriers for each stakeholder.

1.3 Summary of Stage 1 Findings

1.3.1 Paper Recyclate

The Stage 1 report confirmed that paper recyclate offered the greatest potential for further consideration, and transferral to rail, and could form a stand alone flow. Paper is a bulk loose (and clean) commodity, and requires to be transported a long distance by road from Aberdeen City, Aberdeenshire and Moray to the UPM-Kymmene facility in Shotton, Wales, the principal destination of paper from the North East of Scotland (see Figure 1.1).

Both Aberdeenshire Council and Moray's recyclate paper is transferred directly to UPM-Kymmene in Shotton. However, SITA have a long-term contract for managing the municipal waste arisings from Aberdeen City Council, and are responsible for the reprocessing of recyclates. In the case of paper, this is passed to Stirling Fibre in Croy, who then after sorting often sell on some of the recyclate to UPM-Kymmene in Shotton.

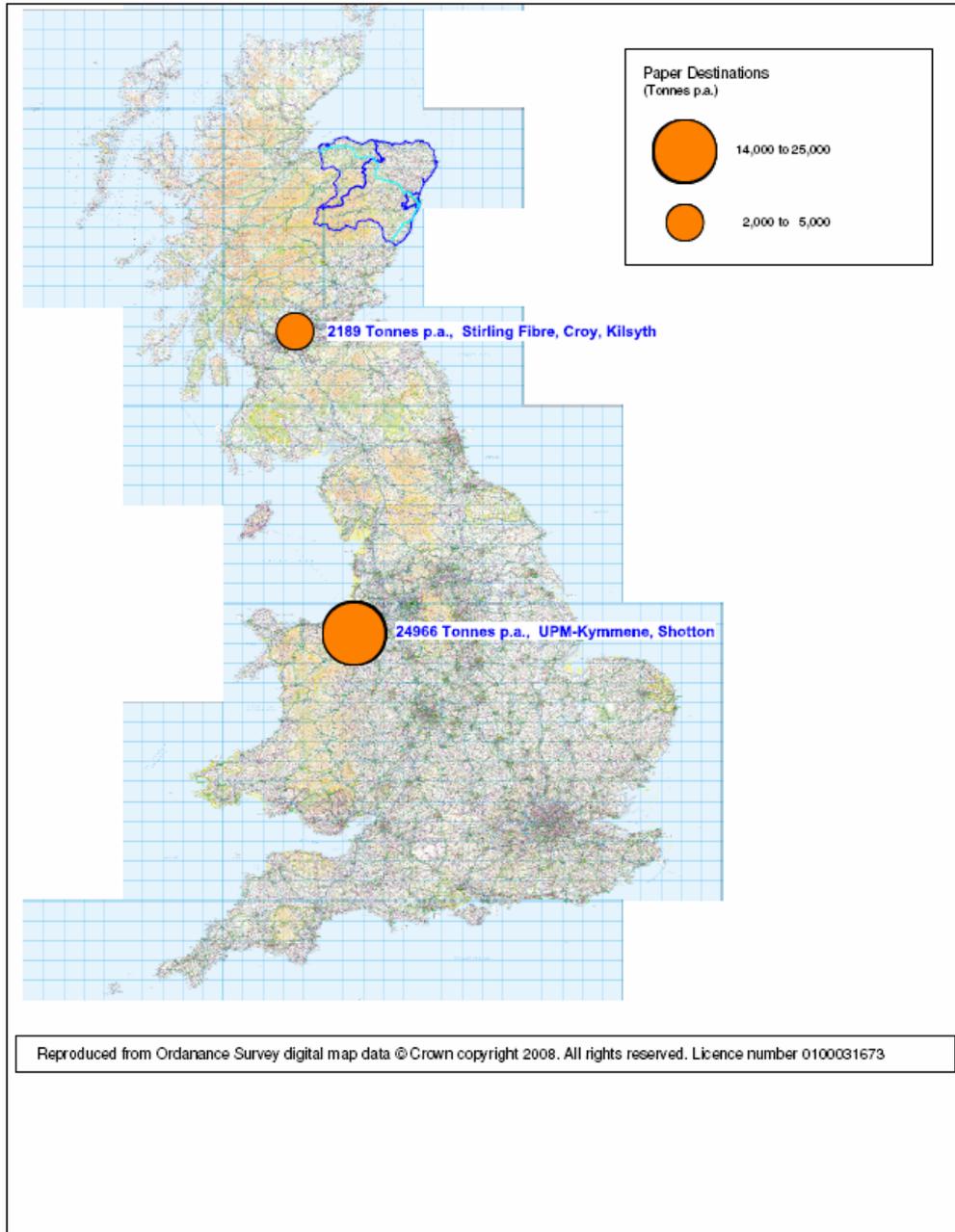
Several factors supported the identification of this recyclate flow for further consideration in stage 2 of the study, as a new stand alone rail freight service:

- The Shotton paper mill has an operational rail link;
- If the recyclate flow could be successfully consolidated for transfer to rail, there may also be an opportunity to seek an application for support under the Mode Shift Revenue Support Scheme (MSRS), given the volume of paper currently transported from the region to Shotton. As this was "cross-border", then it could attract a competitive subsidy level; and
- It was understood that further investment in rail freight handling facilities was being considered near to the plant at Shotton.

Specific barriers identified to be overcome included consolidation and loading facilities within North East Scotland; the supply of suitable rolling stock for the loose material; the suitability of unloading arrangements at Shotton; and overall financial viability relative to existing haulage arrangements.

The work also highlighted the need for early discussions with rail freight operators to determine the most effective rail solution, and also the requirement to consider the logistics of returning empty containers/wagons, and ownership of containers/wagons.

Figure 1.1 – Paper Destinations



1.3.2 Backhaul Card and Plastics

The Stage 1 report also identified that the current Grangemouth-Aberdeen multi-modal service also offers potential backhaul opportunities for recycle flows such as baled plastic and card.

This service is currently used by ASDA amongst others, and it was pointed out that a number of containers typically return empty from Aberdeen to Grangemouth, although some are used to transport materials by ARR Craib. This opens up potential backhaul opportunities.

Aberdeenshire's Card is currently sent for re-processing in Kent, and could provide 2 or 3 containers per week. Aberdeenshire's Plastics are re-processed at various sites in the East Midlands and North West England, and again was considered to provide potential backhaul volumes worthy of further investigation.

1.3.3 *Summary of Stage 1*

Whilst contractual arrangements were regarded as a potentially substantive issue at the inception of the study preventing transfer of recyclates from road to rail, as Stage 1 of the study progressed, it was determined that more fundamental issues would require to be overcome including:

- Councils' different approaches to selling-on recyclates;
- Willingness to aggregate loads;
- Logistical arrangements; and
- Financial viability.

Other key outcomes of the first stage of the study were:

- The potential backhaul opportunities for recyclates on the current Grangemouth-Aberdeen multi-modal service; and
- The possibility of considering extending the study to include the authorities of Highland, Angus and Dundee City, and potentially private waste contractors.

The findings of the Stage 1 report were validated in February 2010 at a stakeholder workshop held in order to confirm the recommendations of the study to date, and to consider the next steps for taking the most suitable recycle flows to the next stage for consideration for transportation as rail freight. This workshop was attended by officers of Aberdeenshire Council and Aberdeen City Council, representatives of SITA and the freight industry.

1.4 **Progression to Stage 2**

Following validation of the outcomes of the Stage 1 report, this report now considers in more detail the potential recycle loads in relation to developing a workable business model. This report therefore considers:

- Logistical feasibility – considering the pieces of the logistics chain that would have to be in place in order to enable the potential recycle flow to be realised;
- Financial feasibility – considering in detail the operational and capital costs of any proposal, as well as grant funding, in relation to the haulage costs available for transfer by road; and
- Confirming the benefits that would be accrued to various organisations (including the local authorities and freight operators).

This work has been informed principally by discussions held with UPM-Kymmene in Shotton, and rail operator DRS (Direct Rail Services).

1.5 Structure of Report

The remainder of this report is structured as follows:

- Chapter 2 – Stakeholder Discussions;
- Chapter 3 – Cost Estimates.
- Chapter 4 – Recommendations.

Stakeholder Discussions

Capabilities on project:
Transportation

2 Stakeholder Discussions

2.1 Introduction

This chapter sets out the findings of the main priorities for action that emerged from Stage 1 of this study. The work includes:

- Discussions with UPM-Kymmene (paper reprocessors); and
- Discussions with DRS (rail freight operators).

These findings will then be assessed with regard to the viability of developing business model options for the transferral of recyclates to rail.

2.2 Discussions with UPM-Kymmene, Shotton

UPM-Kymmene in Shotton is the principal destination for paper recyclate from the North East of Scotland, with around 20 lorry loads of paper moved to the facility from the region each week.

In June 2010, AECOM held on-site discussions with representatives of UPM-Kymmene with a view to confirming information relevant to the options and developing an outline business case for the transferral of paper recyclate from North East Scotland as rail freight.

2.2.1 *Current Transportation Processes at UPM-Kymmene*

The UPM-Kymmene plant receives newspapers and magazines from recycling centres all over the UK. Many suppliers are Local Authorities. The company has four satellite stores, three on Deeside Park (North Wales) and one at Erith, Kent.

In total, approximately 640,000 Tonnes of paper per annum arrives at Shotton. Up to 12% of received paper is baled, with the remaining 565,000 Tonnes being loose. It is preferred for paper to be received in loose format.

Inward goods are received 24 hours a day, 7 days a week and these are unloaded, and inspected. The plant also works 24 hours, 7 days a week on reprocessing however it is quieter on accepting goods at weekends and consequently, there is a lower stock on a Monday morning. There is no booking-in procedure. Typically 225 lorries arrive at the site per day (with fewer at weekends).

Incoming goods are received within a large warehouse, with HGVs driving into the warehouse prior to unloading. The vast majority of goods come in on "walking floor" trailers (although some customers prefer baled packs). This provides advantages of safe and efficient unloading and the unloading process takes only around 10 minutes. The trailers also allow for top loading at the originator site. All loose goods arrive in this fashion. This mode of unloading also facilitates easy re-loading if the goods require to be rejected due to contamination.

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Transportation



Rejected paper is reloaded and either sent back to the originator, or sent to nearby sorting facilities. However, as regular suppliers know the need for quality material, rejections were reported to be running at a relatively low level.

With regard to the receipt of paper from Scotland, the majority of the product is transported by Jenkinsons on a price basis. The 25,000 Tonnes per annum arriving from North East Scotland (either directly, or onwards from Stirling Fibre) accounts for 4% of their total throughput. As an example, 11,000 tonnes comes on articulated Jenkinson lorries from three sites in Aberdeenshire:

- Crimond (3,100t);
- Laurencekirk (2,750t); and
- Oldmeldrum (4,200t).

No containers are used due to the nature of the material. No tipping lorries are used, principally due to concerns regarding Health and Safety during the unloading process. The transportation contracts for the collection of materials are let and managed by UPM-Kymmene.

2.2.2 *Current Rail Linkages and Use of Rail Freight*

As previously noted, two factors in particular provided further impetus for holding discussions with UPM-Kymmene:

- Their Shotton facility has an operational rail link; and
- Reported interest in the development of rail freight facilities near to the plant.

Discussions at UPM-Kymmene confirmed the rail connection at the plant, and this is used for the collection of finished bales of paper, with the rail lines linked to the “finished warehouse” area of the site.

However, use of the rail connection at the plant has declined recently and there is no in house shunter:

- In 2008, the tonnage by rail was 8,000t;
- In 2009, the tonnage by rail was 28,000t; and
- In 2010, no tonnage by rail.

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Transportation



Utilising the rail connection, paper had been delivered to Associated News in London. UPM-Kymmene stated that this trade has stopped due to a number of reasons:

- The critical mass of volume no longer exists as printing has been dispersed to different locations causing the deliveries to be split up and is less cost efficient to use rail freight;
- Rail is less flexible than road. The operator used was DB Schenker, and overall they found the process to be relatively inflexible. The goods were typically loaded at the weekend, but because there was no shunting wagon, the loading process could be very constrained;
- Service performance was poorer than road by both the train provider and the warehouse operation; and
- There was more damage to products in transit than by road freight.

Rail has never been used for inward paper, typically because of the large number of geographically dispersed locations that they collect from and the rail line only links to the finished goods warehouse.

2.2.3 Rail Options

It was recognised by UPM-Kymmene that there needs to be a critical mass to make any rail option work, and from their perspective this critical mass is unlikely to come from the North East of Scotland alone. However, it was also recognised that development of rail facilities and services adjacent to the site may enable rail to be considered in the future, particularly if it can add value or make logistics more efficient.

A rail solution for recyclates could be based on bulk wagons with side or bottom tipping, but this would require significant investment locally at the plant, and the majority of the inward goods arriving by rail. The solution would also have to be based around a “21st Century” approach to rail freight service delivery, offering similar levels of service to that provided by current road based solutions, which would signal a significant change from current arrangements.

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UPM are currently investing in a large MRF plant, which will accept a wide range of unsorted recyclates from local authorities across the UK. It is conceivable in the future that a rail freight solution could be developed to feed the MRF, and potentially also paper recyclates.

It was also noted that UPM had to move gas and water mains at a cost of £1m so would not want to consider moving these services again if a new rail connected facility was required.

2.2.4 *Other Constraints and Issues*

In addition to the rail freight considerations identified above, a number of other constraints or significant issues were also raised. These specifically relate to the paper recyclate itself, and arrangements for unloading.

Table 2.1 – Further Constraints and Issues

Paper	Unloading Arrangements
<ul style="list-style-type: none"> • Has to be less than 3 months old • Containers would require paper to be baled, significant investment in facilities at each location, as well as new loading arrangements • Has to be kept dry • Maintain ability to check paper quality • Contracts for supply of paper typically not long term 	<ul style="list-style-type: none"> • Unloading arrangements, which are currently consistent, would have to be changed to accommodate a small proportion of incoming paper by rail • Issue of where these would take place – on site, off site, whilst minimising costs and handling • Tipping in the unloading area not permitted due to concerns over vehicle stability. • Need to maintain traceability of loads in 25T lots – Currently if one of the intake supervisors rejects a load on quality, it is reloaded on to the same vehicle for return

2.2.5 *Future Developments*

Discussions with the representatives of UPM-Kymmene at Shotton also highlighted details on initiatives with the Welsh Assembly Government with respect to the development of rail freight services centred on the Shotton / Deeside (Wales) area. This may ultimately provide a local rail terminal, with rail links to other parts of the country, including Scotland.

Finally, it was also noted that UPM-Kymmene had also been aware of previous considerations of paper recyclate transfer by rail in Norwich and Portsmouth, although nothing had come of these studies.

2.2.6 *Summary*

The discussions with UPM-Kymmene were valuable in understanding the transportation processes involved and the possible limitations on rail freight movement. The next stage of this part of the study involved holding discussions with DRS with regard to potential opportunities for recyclate transport by rail.

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2.3 Discussions with DRS

Further to the discussions held with UPM-Kymmene in Shotton, AECOM consulted DRS in August 2010 to determine their interest with respect to operating services (or legs of services) to accommodate the levels of paper recyclate produced by each of the three North East Local Authorities, or to facilitate the back-loading of baled card and plastics.

DRS operate inter-modal freight services, and it was confirmed that DRS work in partnership with ARR Craib (who operate the Craiginches rail freight terminal in Aberdeen for DRS, and provide local haulage), Malcolms (likewise at Grangemouth), and Russells.

AECOM discussed the following potential rail freight opportunities with DRS:

- Introduction of a dedicated train from Aberdeen to Shotton for recycled paper; and
- Back haul opportunities on existing trains for baled card and plastics.

2.3.1 Opportunity 1 – Dedicated Train for Recyclates Paper

Regarding a train load with specialised containers from Aberdeen to Shotton, DRS confirmed that they would not be interested in operating a dedicated train that ran 1 or 2 days a week. This would not be financially viable or attractive to the company. This would have to be 4 days per week or more to be viable or attractive, due to the low commercial return to be made on the service, relative to the fixed costs that would have to be incurred to supply the service (driver, locomotive etc).

Whilst there was the prospect of specialist (“walking floor”) containers could be secured through the Freight Facilities Grant, DRS were unaware whether or not the manufacture of such equipment would be feasible, and their development and manufacture would represent a significant cost and risk, for relatively low levels of flow.

The concept of a single train which was intensively used on different routes was discussed, for example:

- North East Scotland Day 1;
- Lothians Day 2;
- Tayside Day 3;
- Highlands Day 4;
- West of Scotland Day 5; and
- North East England Day 6.

This would intensively use any specialised containers and the locomotive, but until such volumes could be considered, DRS would not have any interest in this potential opportunity.

At this stage, AECOM has also considered the viability of basing a dedicated waste paper train **at Shotton** itself, which could then service various destinations (including Scotland) one or two times a week.

Boxes from North East and Northern Scotland could be transhipped off existing daily Tesco/ASDA services respectively in the Glasgow area.

Capabilities on project:
Transportation

This service could then operate, for example, as follows:

- Monday – Central Belt e.g. Glasgow;
- Tuesday – South e.g. Portsmouth;
- Wednesday – East of England e.g. Norfolk; and
- Thursday – Saturday similar to above.

The trains would travel about 8 hours each way on a daily basis to collect waste paper from the destinations that are furthest away from North Wales. By having between 3 and 6 terminals involved a train load could be aggregated on a weekly basis for each site giving a full load six days a week.

However, although the above approach could be a logical way to move waste paper to Shotton, it is realised that by basing the train in Wales, such an initiative could be out of a scope for a Scottish project.

2.3.2 *Opportunity 2 – Back Haul Opportunities*

A variety of baled material could be accommodated on DRS's existing multi-modal trains. Recyclates are attractive as they form a non time-critical backhaul, typically flowing in the opposite direction as the main flow of goods. DRS viewed that building incrementally on the existing services (making best use of what was already there) would be most attractive from an operators' perspective.

DRS confirmed that some space was available on the southbound leg of the majority of their services to accommodate the potential loads arising from the North East.

DRS have inter-modal terminals located at:

- Craiginches (Aberdeen);
- Grangemouth;
- Elderslie;
- Daventry; and
- Tilbury/Purfleet.

Through agreements with road hauliers, they can offer "door to door" prices for consignments. However, if the collection or delivery leg is greater than 50 to 80 miles, then DRS confirmed that the use of the multi-modal service quickly becomes uncompetitive in relation to road freight.

With a focus on potential back haul opportunities for plastics and card, it was envisaged that this could initially involve using the existing ASDA containers, or leasing new containers. Logistically, this opportunity could be taken forward as follows:

1. Containers delivered to paper bulking point (for example, Inverurie);
2. Aberdeenshire Council loads container with plastic/card. The ease of this procedure would depend on the type of container involved. For example, if the container was not a Curtainside, loading apparatus would be required to enable this to be done, which would involve the provision of a loading ramp and loading machinery at each location, such as a forklift (a curtainsider would require a forklift only);

Capabilities on project:
Transportation

3. Local Haulier would collect bulked recyclate which is then transported and loaded on a train at Craiginches, for transfer by rail to Grangemouth;
4. Recyclate transported by rail from Grangemouth – Elderslie – Tilbury;
5. Containers return from Tilbury with possible opportunities for being able to fill north-bound containers; and
6. Upon arrival to Aberdeen (and any unloading of goods), delivered back to Inverurie to be re-loaded.

DRS intimated that the approach outlined above could be commercially attractive, as the prices would take account of generous back haul discounts available on the existing trains. It was confirmed that DRS would be able to provide both “Door to Door” and “Terminal to Terminal” quotes for the plastic and card recyclates. Costings for this opportunity were subsequently requested from DRS by AECOM.

DRS highlighted that that this opportunity could be realised in a relatively short timescale following the acceptance of a quotation. A site inspection for loading would also be required.

2.3.3 Summary

In summary, the discussions with DRS have appeared to preclude the possibility of providing a train load with specialised containers from Aberdeen – Shotton as this opportunity was not considered to be commercially attractive to the company. The development and manufacture of specialist containers would also be a significant risk.

The longer term potential of a dedicated train serving several destinations, either Scottish based, or Shotton based was highlighted.

The possibility of utilising back hauling opportunities for transferring paper and card recyclates by rail from North East Scotland was also explored through the discussions with DRS, and appeared to be a feasible, short-term option, subject to financial and logistical viability.

This has highlighted the possibilities available for this stream, although further work would need to be undertaken to confirm the necessary “steps in the chain.” It should also be borne in mind that plastics and card accumulate at a slower rate than paper, and represent lower overall volumes.

2.4 Outcomes of Discussions

The outcome from the discussions and site visits confirmed the following:

- UPM-Kymmene expressed little appetite for receipt of recycled paper by rail, principally due to the challenges in delivering an unloading process that would be as efficient and cost effective as the one currently adopted.
- UPM-Kymmene also stated that they would also be unwilling to invest at the current time on the basis of paper flows originating from the North East of Scotland alone.
- In the longer term, UPM-Kymmene may have interest in a rail freight solution if a local rail freight hub was developed near to, or adjacent to the plant, and provided this was matched by a modern approach to logistics by the rail freight companies.
- This longer term approach could also be linked into the supply of unsorted recyclates, which could feed the newly constructed Materials Reclamation Facility (MRF) at the site.
- DRS expressed little appetite for a stand-alone rail service, on a 1 or 2 days a week basis, linking North East Scotland to the UPM-Kymmene plant at Shotton. They expressed a view that this would only be

Capabilities on project:
Transportation

commercially attractive to them if it could be provided on at least a 4 day a week basis, if not greater. We consider that other rail freight operators would take a similar view at the current time.

- With little appetite from either the plant that receives the paper, or the rail freight operating company, it would appear that there would be little prospect in pursuing this opportunity in the short term. Medium term opportunities may arise if rail freight developments occur in the vicinity of the plant in Shotton, and if flows of unsorted waste to Shotton developed.

With respect to back haul of paper and plastics, there was a more favourable response to this suggestion from DRS, who viewed this prospect as being far more straightforward to achieve, with the ability of testing a recycle flow in the short term, prior to developing larger flows in the medium term.

Accordingly, subsequent attention was placed on seeking to determine feasibility for the back haul flow.

Cost Estimates

Capabilities on project:
Transportation

3 Cost Estimates

3.1 Subsequent Developments

Following the meetings with DRS there was a significant delay whilst costings and service proposals were received from DRS. This delay also coincided with uncertainty regarding the future of the Freight Facilities Grant for Financial Year 2011-12 (in February 2011 there was confirmation that this would continue with £2m available for at least one further year). During this period, discussions were also held with local hauliers regarding costs and feasibility.

3.2 Investment Costs

The following aspects were determined during this period.

Investment would be required at the plastics / card bulking locations in the form of a suitable fork lift truck able to load the containers, and also a ramp for the fork lift truck to gain entry to the containers. It is assumed that this loading equipment would either have to be purchased or leased. Purchase cost (ex VAT) has been estimated as follows, per site:

- £7k for a loading ramp; and
- £10k for a fork lift-truck.

Further investment in containers, or leasing of containers would also be necessary. A cost of £3,000 would be expected per unit. Assuming 2 loads of card per week, and 1 load of plastics per week, and a turn-round of seven days, an absolute minimum of three containers would be required. However, up to six containers are suggested to allow for slow and delayed connections..

- £18k for containers.

Total initial investment costs (assuming 3 containers per week from a single site) = £35,000.

It is currently unknown whether there would require to be investment in unloading facilities at the ultimate reprocessing destinations.

Capital costs would be eligible for Freight Facilities Grant. However, this is limited in the current year to £2million, and is understood to be over-subscribed. There is currently no certainty as to the future of the Freight Facilities grant beyond the 2011/2012 financial year.

3.3 Load Details – Card

Aberdeenshire Council currently have arrangements for card reprocessing with Severnside Recycling, in Ashford Kent. The other authorities in North East Scotland dispose of card for re-processing via Scottish waste agents, with the card typically being sent overseas for re-processing. On average 3 loads per week of card are dispatched from two locations (Inverurie and Banchory), which is typically presented in bales. The contractual arrangement with Severnside is relatively stable.

Capabilities on project:
Transportation

3.3.1 Operational Costs

Given a £150 return trip per container load (quoted by DRS), Aberdeen to Grangemouth return, we can assume a cost of £650-£675 to Purfleet (this is calculated on a pro-rata basis rather than an actual quote, which we have not been able to obtain from DRS).. Additional costs relate to container lifts at each rail terminal (quoted by DRS to be £72 total), plus door to door delivery costs, assumed at £35/h (discussions with local hauliers).

For card, assuming rail freight from Aberdeen to Purfleet, estimated costs per load would be:

Delivery / Uplift from Inverurie (assume 2 hours)	£70.00
Return rail freight to Purfleet	£650.00
Cranage	£72.00
Delivery / Uplift from Severnside (160km round trip, assume 4 hours)	£140.00
Total load	£932.00 per container

3.4 Load Details – Plastics

In North East Scotland, there are approximately two loads per week in total, arising from Sclattie (Aberdeen City), Balmedie, Inverurie and Banchory (Aberdeenshire). Moray's plastics are sent via Scottish Waste agents.

Contractual arrangements with reprocessors are more dynamic than with card, and in the past two years, a number of different processors have been used. They include Valpak (Preston), AWS (Hemswell) and JCF Plastics (Runcorn).

Given a £150 return trip per container load (quoted by DRS), Aberdeen to Grangemouth, we can assume a cost of £520-£570 to Daventry (again, calculated on a pro-rata basis).. Additional costs relate to container lifts at each rail terminal (£72 total quoted by DRS), plus door to door delivery costs, assumed at £35/h (discussions with local hauliers).

For plastics, assuming rail freight from Aberdeen to Daventry, and then onwards by road, estimated costs per load would be:

Delivery / Uplift from Inverurie / Banchory (assume 2 hours)	£70.00
Return rail freight to Daventry	£520.00
Cranage	£72.00
Delivery / Uplift from Daventry to:	
a) Valpak, Preston (460km round trip, 9 hours)	not viable
b) AWS, Hemswell (360km round trip, 7 hours)	£245.00
c) JCF Plastics, Runcorn (400km round trip, 8 hours)	not viable
Total	£907.00 per container load
	(only if via Hemswell)

Capabilities on project:
Transportation

3.5 Possible Future Developments

Since AECOM's visit to DRS, we are now aware that DRS have just started a new Teeside to Widnes container service. In the future, this could open up the possibility of a Glasgow to Widnes link, which could change the viability of the backloading of baled plastics. We also note that DBSchenker run a Trafford Park-Glasgow container service as part of a longer distance route, and depending on how services to and from the North East develop in the future, this may also provide the basis of an alternative future option.

Summary

Based on the assumptions that have been made regarding costs, it can be seen that:

- a) Assuming back-loading on DRS services, rail freight options for baled plastics (one container per week) does not appear to be currently viable, typically due to the destinations not being convenient for established rail terminals, and also due to the apparent volatility in contractual arrangements for baled plastics.
- b) For card, it appears that it would be logistically possible to send loads to Severnside reprocessing, but a cost of circa £900 per load appears to be uncompetitive with road haulage, and also exceeds the value of the load, which would be around £700 per load (assuming 20T @ £35.00 tonne).
- c) Consideration of how to combine the loads between Banchory and Inverurie would be necessary to enable the full potential number containers per week to be dispatched. One option would be to invest in two sets of loading equipment at each location, but this assumes that there is space at each location to enable this, and also access to the necessary capital funding. The alternative would be to lease a central storage location for the baled card and plastics, but this incurs operational costs in extra mileage as well as lease of a yard / warehouse.

Recommendations

4 Recommendations

4.1 Introduction

The work has considered three potential flows of recyclates, for consideration for transfer from road haulage to rail freight.

- Paper;
- Card; and
- Plastics.

These were identified as the most promising flows for transfer to rail freight during stage 1 of this study.

4.2 Recommendation 1 – Paper

At the current time, it is not considered viable to continue the pursuit of transferring paper from road haulage to rail freight. This is because:

- a) The volumes of paper are insufficient, even when aggregated, to warrant more than a 2 day a week service. This does not present a commercially attractive proposition to rail freight companies at present, despite the continuation of MSRS and Freight Facilities grants.
- b) Unloading arrangements at Shotton are tailored to the use of “walking floor” HGVs bulk trailers, or baled paper. Baling paper at source incurs significant additional revenue and capital cost, and is unlikely to be financially viable or feasible for the three Councils. At present we are not aware of any “open top, walking floor” containers available commercially. These would represent a significant development cost and would be high risk. Tipping containers are not favoured due to safety concerns, particularly when a safer alternative has been proven.
- c) Although a rail connection is provided at Shotton, this has been designed for the export of finished paper goods, not the import of paper recyclate. Capital investment would be required to adapt the layout, and provide modern unloading facilities for direct unloading from bulk rail wagons. This investment could not be justified on the basis of the volume of paper coming from North East Scotland.

4.3 Recommendation 2 – Plastics

At the current time, it is not considered viable to continue the pursuit of transferring baled plastics from road haulage to rail freight.

- a) Whilst the load would appear to make a worthwhile backload, the destinations for the reprocessing centres are poorly suited for the existing rail freight services operating out of Aberdeen. There is also relative volatility with respect to the plastics reprocessing facilities used by north east Councils.
- b) One container per week does not appear to be sufficient in itself to justify the necessary investment in loading equipment.
- c) Costs are anticipated to be uncompetitive relative to what might be achieved as a road haulage backhaul rate, given that the baled plastic can be accommodated on a wide variety of HGVs.

4.4 Recommendation 3 – Card

It is considered that the transfer of baled card from Aberdeen to Severnside Reprocessing in Kent is the most viable option available in the short term, potentially yielding 2 containers per week. However, despite it

Capabilities on project:
Transportation

being logistically feasible, our estimates suggest that it may be financially uncompetitive with respect to road haulage at backhaul rates. The transfer would also require either a successful freight facilities grant, or capital investment from the council to enable loading at either, or both Inverurie / Banchory, and potentially revenue and capital investment in a local consolidation centre.

Prior to dismissing this option, it is recommended that our estimated costs are validated with the haulage industry to re-confirm our findings.

4.5 Considerations Going Forward

4.5.1 Paper

Transferring paper by rail is only likely to succeed if there is a commercial case arising from UPM-Kymmene wanting to make it happen, as they are the key decision makers, not the Councils. This commercial case may arise if there is new rail freight activity adjacent to the plant; if the relative costs of road / rail haulage change; or if there are structural changes in the way that recyclates market is currently organised.

4.5.2 Plastics

Similarly, for plastics, there appears to be little prospect of rail freight, unless the plastics reprocessing market changes significantly.

4.5.3 Card

For card, there is some prospect, if the Council was willing to undertake this on a pilot basis, and subject to a successful FFG application. It has to be stressed that it is likely that the rail freight option could be more expensive than current arrangements, and it may also expose the Council to greater risk, as they would likely be obliged to take on some responsibility for the delivery to the supplier. (Currently, the re-processor takes responsibility for collection).

The benefits to the Council would arise from the carbon savings achieved by switching from road to rail.

4.5.4 Unsorted Waste

A number of trends point towards greater use of "unsorted" recyclates, which are then sorted at large Material Reclamation Facilities, often located adjacent to reprocessing sites. It is possible that in the longer term, unsorted recyclate could be transferred in bulk to these central locations, which could be very suitable to be fed by rail freight.