SCENARIO DEVELOPMENT: MARKET BASED INSTRUMENTS & SUSTAINABLE RESOURCE RECOVERY

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EXECUTIVE SUMMARY

Market Based Instruments (MBIs) are gaining momentum as a central component in the reform agenda for waste within Australia. The attraction is their potential to create cyclical resource flows in the economy by providing incentives to invest in infrastructure required for sustainable resource recovery, reprocessing and remanufacture.

There are three points where an MBI for sustainable resource recovery could potentially be applied. Firstly an upstream focus, creating a market pull for material inputs with recycled content; secondly a downstream mechanism, creating a supply push of recovered resources; and finally a midstream approach, aiming for balance by combining supply push and market pull.

The key issues for developing MBI scenarios include selection of liable parties and allocation of liability, MBI operation in trading and discharge of liability and adequate penalty setting for non-compliance. By engaging with the process of developing these scenarios, a preliminary assessment of advantages and disadvantages was made, highlighting the potential (or lack thereof) for implementation.

A scenario was developed for each of the identified entry points for an MBI to effect sustainable resource recovery along the supply chain for Commercial and Industrial (C&I) materials. On the basis of this analysis, the following conclusions were drawn.

The implementation of an upstream MBI, where liability is placed on commodity manufacturers to use increasing amounts of recycled content, has the attraction of influencing resource use at the source. However there are several issues, particularly in the administration of such a scheme, that are likely to be intractable. These issues are compounded if material specific targets and certificates are established. When the uncertainties regarding taxation aspects of an upstream approach are also considered, the number of barriers to adoption of this MBI cast doubt on the workability of this option.

Conversely, a simplified downstream MBI, applied to landfill owners/operators requiring them to divert increasing amounts of material away from landfill toward beneficial use, has a strong potential on the basis of administration simplicity. This would involve no differentiation between material types, and a clear definition of C&I materials to prevent leakage into other waste streams. Even in this cut down form a strong commitment to ancillary market development to cope with the increased 'push' of recovered materials into the marketplace and regular auditing to prevent free riders would be required. However these management issues are thought to be controllable, as opposed to policing upstream bulk commodity manufacturers.

The midstream MBI, applied to product manufacturers with the requirement to increase use of recycled content and increase diversion of materials from landfill into beneficial use, represents the best of both worlds with its balance between supply push and market pull. Unfortunately the dual nature of the mechanism means that a two certificate approach is likely to be unavoidable. This creates a level of complexity in excess of both the upstream and downstream MBIs. However the long term benefits from having a mechanism that encouraged both the recovery of resources and the use of recycled content could justify the investment in such a sophisticated system.

Given the range of scenarios considered, a simplified downstream MBI application appears to be easiest to administer and thus has the shortest pathway to implementation. It is suggested that a demonstration project to prove the concept and refine the model would assist in fast tracking this development process.

The road testing of a downstream MBI in a 'virtual marketplace' would help to identify weak points, understand the level of administration required from participants and scheme administrators and gauge stakeholder commitment. Outcomes form the demonstration would provide useful data for an economic analysis of the MBI scheme. Participation in the project would also be invaluable in developing an MBI with broad industry support and minimal administrative burdens.

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1 BACKGROUND & OVERVIEW

In order to achieve a sustainable economy it is essential to operate with cyclical patterns of resource flow, a feature missing in the current Australian context. Each year Australians generate 28.4 million tonnes of waste.[1] Approximately two-thirds of these materials are disposed of to landfill, representing a wasteful linear resource flow in the order of 900 kg of waste to landfill per person per year. Linear resource flows are unsustainable in the long term and they generate undesirable environmental, social and economic impacts.

To address this problem, Market Based Instruments (MBIs) can be used to create cyclical resource flows by providing incentives for investment into infrastructure needed for sustainable resource recovery, reprocessing and remanufacture. A report entitled *Market Based Instruments and Sustainable Resource Recovery* investigated this potential for MBIs to promote sustainable resource recovery in Australia.[2]

Following the release of this report, a workshop was convened with stakeholders from industry, government and non-government organisations in Sydney during February 2005 at the offices of law firm Baker and McKenzie. This workshop confirmed a high level of support for a market based approach as a key element in the reform agenda for waste, with the intention being to create a mechanism that supports infrastructure development for sustainable resource recovery.[3]

At the workshop two MBI scenarios were outlined that had potential to promote sustainable resource recovery. These scenarios considered two ends of the supply chain; upstream (market pull) and downstream (supply push). This document further details the operation of these scenarios, in addition to developing a third 'midstream' scenario (supply push and market pull).

In line with feedback from the workshop, the scope for these MBIs has been restricted to a consideration of solid Commercial and Industrial (C&I) wastes. Key concepts of simplicity, additionality, competition, environmental improvement, highest resource value and investment into resource recovery infrastructure, also discussed at the workshop, were used to shape scenarios. The alternative case of 'command and control' regulation was also tested against these MBI scenarios to investigate whether the MBI would provide an 'optimal' result.

1.1 Overview of Scenario Development Report

Each scenario is detailed in a separate section, with Section 5 providing suggestions for moving the MBI programme forward. This is shown in Figure 1 below.

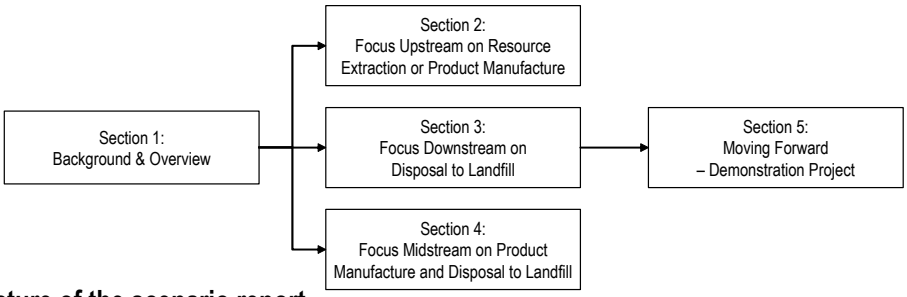

Figure 1 – Structure of the scenario report

[1] *Australian Environment Industry Directory – 2004 Edition, Waste Management and Environment and Environment Business Australia.*

[2] *The report was prepared by Total Environment Centre, in association with Warnken Industrial and Social Ecology Pty Ltd with funding from the Pratt Foundation. It is available online at www.tec.org.au/member/tec/projects/upload/Printed%20Market%20Based%20Instruments%20and%20Sustainable%20Resource%20Recovery.pdf*

[3] *Final workshop report available online at www.tec.org.au*

2 FOCUS UPSTREAM ON RESOURCE EXTRACTION OR PRODUCT MANUFACTURE

One way to create demand for recovered resources is to ensure that all costs in primary resource processing and manufacture are internalised. The theory being that this will increase virgin material costs, making the recovered resource more competitive. One approach to achieving this objective is through an MBI that places a liability on a commodity manufacturer[4] to use increasing amounts of recycled content. This mechanism would then drive demand for resource recovery through the creation of a strong market pull.

2.1 Allocation of Liability

In this scenario the focus for implementing MBIs is on the processes upstream from the point of disposal in the supply chain. Liability would be at the point of virgin material extraction or conversion to a bulk commodity product (see Figure 2 below). It would focus on inputs to production and on increasing the recycled content of products.

Currently, due to environmental costs of primary production being externalised and some direct subsidies to primary resource industries, it is difficult for recycled content to be competitive. This in turn makes resource recovery and remanufacturing uneconomic.

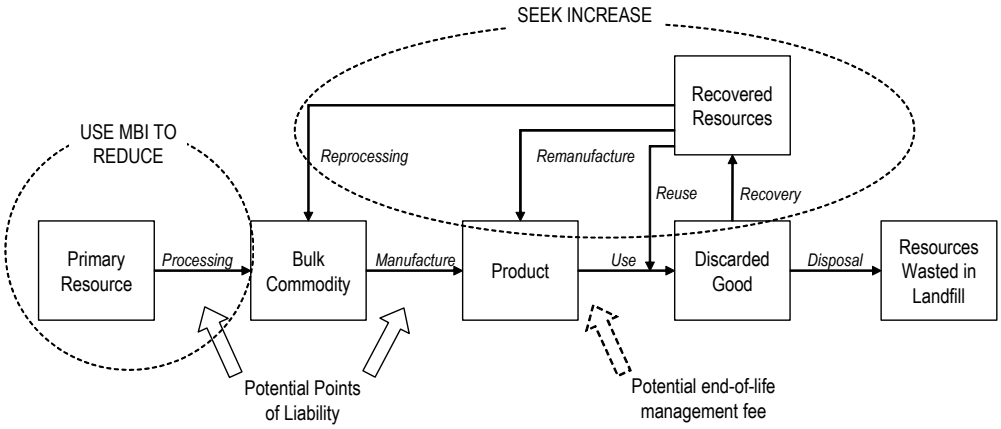

Figure 2 – MBI with upstream focus on resource extraction or product manufacture

By increasing the cost of primary resources through the introduction of a penalty if too high a proportion of virgin materials are used, this scenario aims to create a market pull for recycled content. This increased demand would then provide an incentive for investment in recovery infrastructure, with the end effect of an increased diversion of materials from landfill.

The precise approach of allocating liability would depend on the materials in use. The MBI workshop mentioned earlier, proposed that materials could be divided into categories such as timber, metal, plastics, glass & ceramics and organics. A percentage target would be set for recycled content under each material type. These targets could be determined along the lines of the EU packaging recovery targets.[5]

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[4] *Here commodity manufacture refers to the stage in the value chain where extracted resources are processed to the point where they can be traded as a refined commodity, for example steel billets, plastic resin and bulk paper rolls.*

[5] *60 % by weight for glass, 60 % by weight for paper and board, 50 % by weight for metals, 22.5 % by weight for plastics and 15% by weight for wood. - European Commission (2004). 'Packaging and Packaging Waste'. European Commission, Brussels. Available at http://europa.eu.int/scadplus/leg/en/lvb/l21207.htm. Link checked May 2005.*

This would mean for example, that 22.5% of all plastic inputs would need to be from recycled resin. A percentage is favoured over a set volume because of its flexibility in dealing with market cycles. For example a fixed volume of recycled content would disadvantage a manufacturer during an economic down turn, and reduce performance when markets are up.

However, when setting any targets, it is necessary to consider the accessible recovery component within the waste stream. This estimates the amount of material theoretically available for recycling, the amount practicably accessible and then how much of this could be converted into feedstock for production. It is also important to distinguish between three different types of material structure, namely atomic, molecular and compound.

Atomic materials, such as metals, are infinitely recyclable as they do not degrade and cannot be destroyed. Thus the amount of 'closed loop' recycling is only limited by the physical accessibility of material within the waste stream. Molecular materials include plastics and have a structure that will degrade slowly over time. These materials cannot be recycled infinitely and so any maximum target would need to account for accessibility and breakdown of the molecular structure. Compounds are materials such as wood and paper. These structures degrade rapidly through recycling processes such as size reduction. Thus the number of possible 'trips' through the economy is even less than for molecular materials. Ultimately targets will need to make allowances for material structures, suggesting high targets for metals, mid-range targets for molecular materials such as plastics and lower targets for compounds such as wood.

2.2 Trading and Discharge of Liability

The potential operation of an upstream Market Based Instrument is presented in Figure 3 overleaf. Essentially the liable party such as a commodity manufacturer (or the like) would create a recovered material certificate (RMC) when a certain amount of recovered resource was purchased for use in manufacture. This is likely to be on a weight basis and so allowances would need to be made for low bulk density materials by either setting one certificate as equal to 100 kg of material input (or a smaller amount), or allowing the creation and trade of fractions of recovery certificates.

Each party's liability would be based on achieving a set proportion of recycled content in manufacture. This content would have to be post consumer to ensure additionality, even where the consumer is a subsequent manufacturer. This is to guard against 'paper trades' where post production waste that would normally be incorporated into subsequent product batches gets transported off site and returned as 'recycled content'.

The targets would also vary according to material type and desired ramp up to meet aspirational goals. It may also be necessary to have material specific certificates, otherwise the situation where a plastic liability (difficult to recover) is offset through the use of recovered metals or paper (easier to recover). Alternatively this could be managed by having increases in targets that move quickly beyond low hanging fruit.

Any shortfall between the target proportion of recycled content and actual amounts used would be made up by either buying certificates from other manufacturers with surplus, or by paying a penalty. Similarly, any certificates created over the target proportion would be available to trade. A programme of certification would also be required for companies who sell recovered resources in order to ensure that bona fide recycling is occurring.

Some form of market administration would oversee the trading of certificates and the discharging of liability. This would be funded through an administration charge on every certificate.

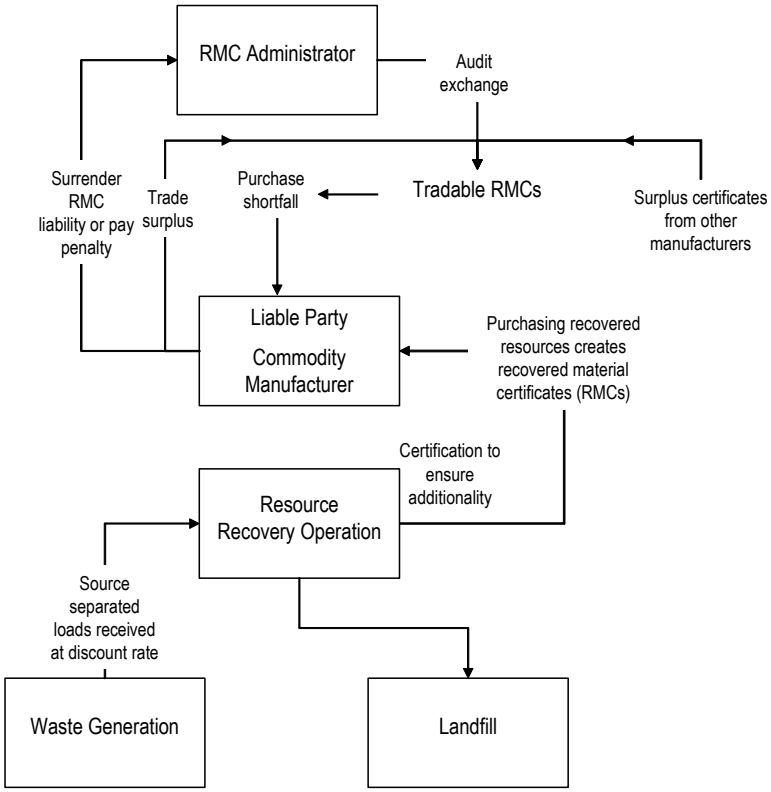

Figure 3 – Potential operation of the upstream market based instrument

2.3 Penalty

The penalty for non-compliance would need to be set at a sufficiently high level to drive change in raw material usage. For example, if one certificate represented a tonne of recycled content, a penalty of $100 per tonne of shortfall for aluminium represents a cost impost of less than 10% of the virgin commodity price and would be unlikely to drive demand.

However, if the penalty was set too high it could lead to unsustainable recovery. This would happen where it became economic to recover materials even where there were unsustainable energy or water burdens associated with that recovery option.

2.4 Advantages and Disadvantages

An upstream MBI approach creates a market demand for recovered resources that can be used in manufacturing processes. This engenders a quality assurance approach to resource recovery and encourages efficient modes of recycling while providing higher financial rewards for the value that recycling provides.

Such an approach would also act to constrain virgin resource availability through increased cost and hence drive resource efficiency. This may also lead to dematerialisation across the supply chain, an additional upside to the present focus on resource recovery.

Additionally an upstream MBI would be preferable over a regulatory approach that mandated a simple recycled content percentage in the manufacture of bulk commodity products. This is primarily because the MBI would motivate innovative companies to maximise the use of recycled content and generate surplus certificates, which could then be sold to companies unable to meet the recycled content target. The net result is an overall lower cost of achieving greater amounts of recycled content usage than a command-and-control regulatory instrument.

Some of the disadvantages of an upstream MBI arise from the potential to make bulk commodity manufacturers less competitive internationally as a result of increased costs, which would create political barriers for implementation. This MBI would also need to be on a national basis as a mechanism of this type could be viewed as a tax on production and states are not able to impose such a tax.

The administration burden of this scheme would be high, especially if material specific targets and certificates are introduced. The scheme also has the potential to catch a large number of small to medium enterprises (SMEs) across a wide variety of industrial sectors. These SMEs are unlikely to have the resources to participate in the MBI programme.

Furthermore this MBI has an indirect point of intervention that is removed from the landfill problem. An unwanted consequence could well be the import of recyclate to meet recycled content levels with no increases in local recovery and landfill diversion levels.

2.5 Upstream MBI Mechanism – Conclusion

Implementing an upstream MBI has a good philosophical base and has the attraction of influencing resource use at the source. However there are several issues, particularly in the administration of such a scheme, that are likely to be intractable. This is even more the case if material specific targets and certificates established. When the uncertainties regarding taxation aspects of an upstream approach are also considered, the number of barriers to adoption cast doubt on the practicability of this option.

3 FOCUS DOWNSTREAM ON DISPOSAL TO LANDFILL

The main difficulty with an upstream focus is the complexity of implementation, especially given the large number of liable parties that cover several industry sectors. One possible way of overcoming this difficulty would be to narrow the focus in liability allocation, such as concentrating on the point of disposal. Such a downstream market based instrument would provide a supply push to use greater levels of recovered materials.

3.1 Allocation of Liability

This second scenario introduces the MBI at the point of landfill disposal. Here landfill owner/operators are the liable party and are required to recover increasing amounts of Commercial and Industrial (C&I) materials as is shown in Figure 4.

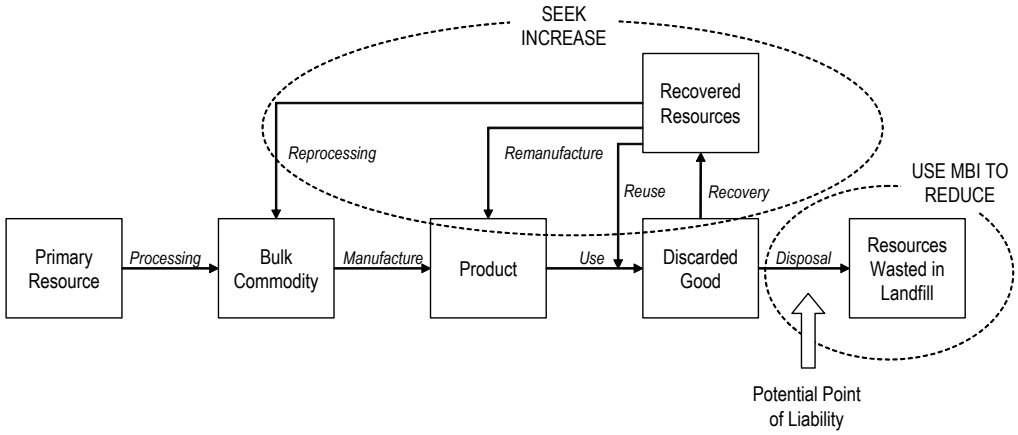

Figure 4 – MBI with downstream focus on disposal to landfill

This scenario aims to restrict the flow of C&I materials to landfill, by diverting them to beneficial use. Targets could be set so as to support existing waste diversion targets. For example in New South Wales the target is to achieve a 63% recovery rate for C&I materials by 2014.[6]

This could translate into a proportional recovery rate for all landfills accepting C&I materials, ramping up to say 70% by 2015 and maintaining that rate for an additional 10 years. An alternative approach in order to counter growth in consumption would be to 'freeze' the 30% C&I disposal tonnage amount at 2015. This would mean that recovery would constantly increase over the period 2015 - 2025 to cover increased consumption.

There may be a need to translate this into a per tonne liability for each landfill based on current performance. The risk is that otherwise landfills will stop accepting C&I materials, leaving only a limited number of buyers and sellers in the scheme. Using current performance as a baseline would give all landfills an increasing liability to recover resources, purchase certificates or pay the penalty, regardless of future decisions to accept C&I materials.

One way of allocating liability in this fashion would be to estimate an industry wide C&I recovery target for a given year, and then to apportion individual targets to landfills on the basis of their share of total materials being disposed of to landfill.

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[6] *Resource NSW (2003). NSW Waste Avoidance and Resource Recovery Strategy 2003. Resource New South Wales, Sydney. Available at http://www.resource.nsw.gov.au/data/strategy/Strategy%202003%20web.pdf. Link checked June 2005.*

However, this may present competition issues for inert landfills that deal predominately with Construction and Demolition (C&D) materials, as these landfills would need to modify operations and establish a new customer base in order to start managing C&I materials.

Given that this is a supply push mechanism, it is also recognised that something useful must be done with the recovered resources, creating a need for ongoing market development. Without corresponding markets for materials, the resulting stockpiles of 'resources' will merely be an above ground landfill.

There is also the potential to vary liability and certificate generation weighting according to material type. For example, recovering one tonne of timber products has a different cost and benefit structure to one tonne of electronic scrap. The weighting in this case may be one certificate per tonne of timber recovery and 20 certificates per tonne of electronic scrap recovery. In this way priority recycling materials and problematic materials could be targeted for accelerated action.

3.2 Trading and Discharge of Liability

The proposed mechanism would create resource recovery certificates (RRCs) for C&I materials recovered at landfill as is shown in Figure 5 below. Certificates would be created on a per tonne basis for materials that are diverted into a beneficial end-use. This may occur either by processing onsite, or by sorting and transporting to an offsite recovery operation.

With liability located at the landfill, waste collectors will be encouraged to look for disposal points that recover resources and can earn resource recovery certificates, as they will have cheaper gate fees. This will in turn encourage the provision of source separated collection services for the C&I sector. Additionally any increase in gate fees will be passed back to the original waste generator, providing an incentive for onsite waste minimisation.

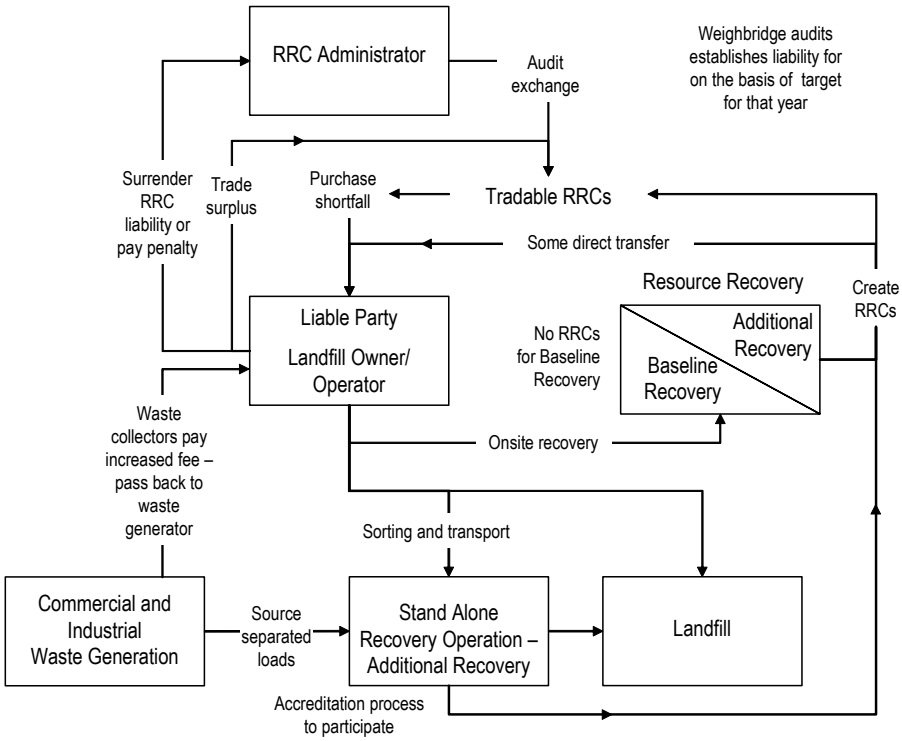

Figure 5 – Potential operation of the downstream market based instrument

Landfills that don't recover resources will need to purchase certificates in order to discharge their liability, or otherwise pay a non-compliance penalty. Those landfills that increase their recovery beyond baseline performance and beyond target levels can generate additional income through sale of RRCs, gaining an accelerated pay back on any infrastructure investment. Similarly accredited stand alone recovery operations will be able to generate certificates for any C&I material recycling over and above baseline performance.

As with the upstream mechanism an overall scheme administrator would oversee the trading of certificates and the discharging of liability. This would be funded through an administration charge on every certificate.

3.3 Penalty

The penalty for not meeting recovery targets would need to be set high enough to create demand for certificates and make resource recovery alternatives cost competitive. Important in this equation is the desired rate of change as a higher penalty rate will see quicker movement in the market in response.

However, if set too high the penalty could undermine the viability of existing operations without creating any diversion of resources. For example if the liability was greater than any income received for gate fees and not enough certificates were generated to offset penalties, then commercial viability would rapidly erode for the industry as a whole.

At the same if the penalty was set too low it would just be incorporated as cost of business, with no change required. As a first order estimate a penalty rate of $100 per tonne shortfall is likely to be too high, while $50 per tonne (more than double the landfill levy of $22.70 as at 1 July 2005) may not be high enough to support the infrastructure investment required.

The penalty would also be separate and additional to the existing landfill levy which would continue operation. So if a mid-point was assumed for the sake of example, the cost of landfill in Sydney could conceivably rise to $75 (MBI penalty) + $22.70 (landfill levy) + landfill component (in the order of $25 per tonne for non-putrescible materials), which is approximately $123 per tonne.

Also requiring consideration is variable penalty rates for material specific certificates. This would allow and priority recycling materials to be targeted with a higher penalty, but could be difficult to administer in terms of categorising the material types of waste entering the landfill.

3.4 Advantages and Disadvantages

The main advantage of landfill as the point of liability is its relative ease in defining and identifying liable parties, lessening the administration requirements of running the scheme. For example the MBI workshop mentioned in the introduction identified 34 disposal points, comprising 29 'dry' landfills and five putrescible landfills in the Sydney market. Thus the entirety of C&I waste disposal to landfill could be covered.

Also because of this focus in definition, it is likely that the mechanism would be highly effective in reaching set targets. At the very least, progress (or lack thereof) could be easily measured and reported. Another benefit of the trading scheme is that no money would go to government overcoming issues related to supposedly hypothecated levy monies ending up in consolidated revenue.

Furthermore a downstream MBI would be preferable over a regulatory approach that mandated the recovery of resources from landfills. The two main advantages of an MBI in this instance relate to flexibility and cost. Under a regulatory approach there would be no motivation for stand alone recovery operations to chase additional resource recovery opportunities as there would be no linkage between a landfill's regulatory requirement and a recovery operation's activities. This lack of flexibility would result in less innovation and investment in infrastructure across the industry.

Additionally, a command-and-control regulatory instrument would be likely to entail greater overall costs in achieving the desired result as there would be no incentive for landfills to recover more than their regulatory requirement. This means that landfills with high costs of recovery would have to wear those costs, as opposed to having the MBI alternative of offsetting their liability by purchasing lower cost certificates from innovative landfills that exceeded target recovery levels.

However, under a downstream MBI approach the actual C&I waste generator would be largely oblivious to the system operation, apart from a further increase in the cost of waste disposal. While this would make it easy for the system to work, it may not provide a direct link to encourage a reduction in waste generation, particularly with small and medium enterprises. This means that the total flow of materials in the economy would not be slowed with only indirect incentives for dematerialisation arising from an increase in landfill prices.

It is also recognised that a material specific approach would be sophisticated way to target problematic materials, but would add another dimension of complexity to the operation of the scheme, detracting from its practicability.

Another drawback is in differentiating between C&I waste as opposed to Municipal Solid Waste (MSW) or Construction and Demolition (C&D) when materials arrive at the landfill. The scheme may create perverse incentives for collecting restaurant waste in MSW trucks or other C&I materials in C&D skip bins.

There is the additional problem of market development for high volume but low value materials that are recovered. There is no point in going to the effort to pull recyclables out, only to stockpile and then landfill because there is no market. This is a real concern with any 'supply push' approach to resource recovery.

3.5 Downstream MBI Mechanism – Conclusion

If the downstream mechanism is kept in a simple form, that is no differentiation of material types and if a clear definition of C&I materials can be maintained to prevent leakage into other waste streams, then it would have a strong potential on the basis of administration simplicity. Even in this cut down form it would need a strong commitment to ancillary market development and regular auditing to prevent free riders. However these management issues are thought to be controllable, as opposed to policing upstream bulk commodity manufacturers.

4 FOCUS MIDSTREAM ON PRODUCT MANUFACTURE AND DISPOSAL TO LANDFILL

The dilution of responsibility for sustainable resource recovery away from the product manufacturer is one issue that a downstream scenario would be unable to manage. An alternative solution is a midstream MBI approach that combines elements of the upstream and downstream scenarios. Here liability is assigned at the point of product manufacture, with a requirement to increase both the use of recycled content and the diversion of materials from landfill.

4.1 Allocation of Liability

In this third scenario the market based instrument is activated at a midpoint in the supply chain around the point of product manufacture. Liability would be placed on large manufacturers to increase resource recovery and the use of recycled content (see Figure 6 below).

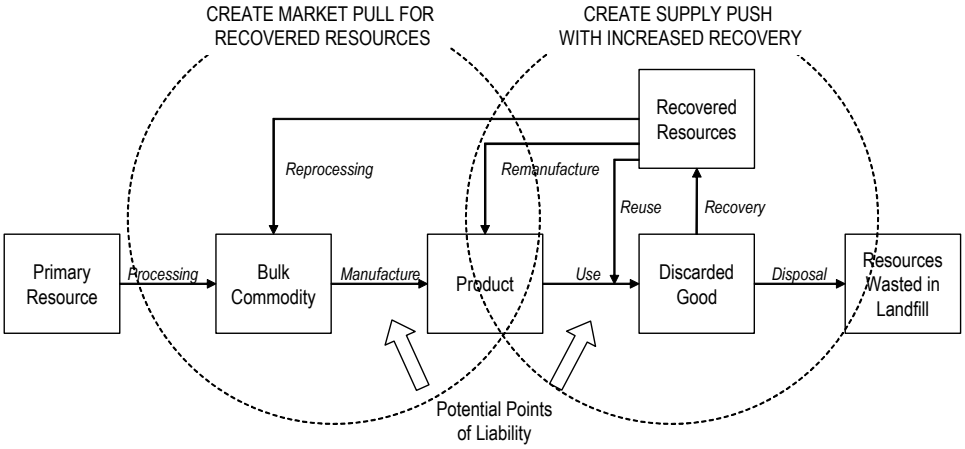

Figure 6 – MBI with midstream focus on resource recovery and use of recovered resources

This scenario aims to not only restrict the flow of Commercial and Industrial materials to landfill at the point of manufacture, but also to increase the amount of recycled content used in production. This approach stimulates both supply and demand using supply push and market pull forces.

Under the midstream scenario it would necessary to stipulate an 'offsite rule' where the liability is set on any waste materials generated and sent offsite. Here waste generation is defined as the materials sent to landfill for disposal in addition to materials sent offsite for recycling. This way any materials reused or recycled onsite would not be included in waste generation calculations and not added to the manufacturer's liability. The intention being to reduce any incentive for 'paper trades' where materials normally reused onsite are sent offsite in order to create a certificate.

Liability could again be set by diversion targets within the waste strategies of various jurisdictions. In NSW this would translate to a 63% diversion by 2014, or rounded up to say a 70% target by 2015. Another approach would be to look at a 'factor-4' type of outcome where 50% of waste generated was recovered and 50% of raw material inputs came from recovered resources. As raw material usage may be difficult to measure in tonnes, a simple middle ground would be to set a liability amount based on 100% of all waste generated, with half of this discharged with RRCs (Resource Recovery Certificates) and the other half with RMCs (Recovered Material Certificates).

Operational details from the previous financial year of large product manufacturers would be used to set liability targets for the following year, creating a need for audits on three counts. Firstly to identify whether a party met the base criteria of liability (for example, greater than 1,000 tonnes of solid waste generation), secondly to set liability amounts for the following financial year, and thirdly, to determine current performance levels for liable parties, so as to ensure that only additional recovery or purchase of recovered resources is eligible for certificate creation.

Another option for managing the issue of additionally would be to set a high initial liability as part of the ramp up. For example, a liability based on 50% of all waste generated at the start of the scheme that increased each year to reach 100% at 2015. Here any existing performance would be quickly eaten up as the target rapidly increases.

4.2 Trading and Discharge of Liability

The proposed mechanism would have two options to create certificates, either by purchasing recovered materials as inputs to manufacture (recovered material certificates - RMCs) or by diverting materials away from landfill (resource recovery certificates - RRCs). This proposed arrangement is shown in Figure 7 below.

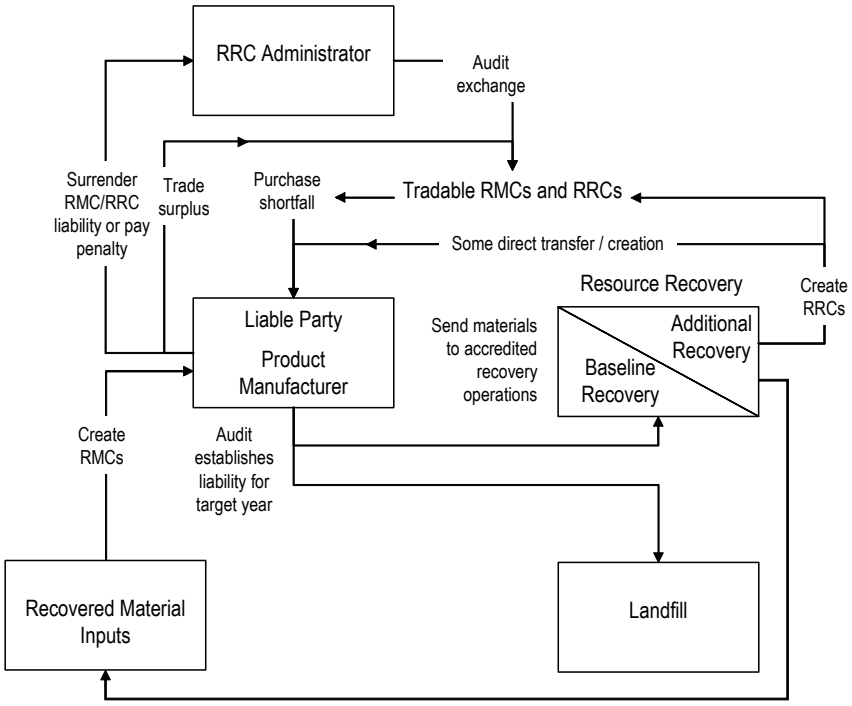

Figure 7 – Potential operation of the midstream market based instrument

Under this midstream scenario, wholesale/retailers of recovered resources would need to become accredited certificate providers. Accompanying any purchase of a product or material with recovered content would be corresponding recovered material certificates (RMCs). There may be a need to have fractions of certificates as part of currency, or to set a certificate as equal to 100 kg of product (or some other small amount).

Also at issue is material specificity and weighting. For example, those materials with low energy production costs and high recyclability could get a higher weighting to encourage their consumption, as opposed to high energy materials that are only able to be recycled three or four times.

Any material sent offsite for recycling from a liable party would be eligible for resource recovery certificate creation. The recovery operation would need to become accredited and have an audit system that tracked the material movements from the liable party. (Here recovery means incorporated into a beneficial end use and not just amounts collected). RRCs would then either be transferred or sold directly back to the liable party, or made available for sale through a market exchange facility. Depending on the original setting of liability amounts, certificates would either be created for additional recycling of an organisations' waste, or if a high initial target was set, for any recycling amounts.

The effect of this MBI would be that large manufactures would have a threefold incentive to:

- minimise, reuse and recycle as much as possible on site
- source separate waste materials for offsite recycling
- maximise the amount of recycled content purchased for manufacturing.

As a result waste collectors and recyclers would be also motivated to provide a greater range of recycling services and there would be increased market opportunities for recovered resources.

Similar to the up- and down-stream mechanisms an overall scheme administrator would oversee the trading of certificates and the discharging of liability. This would be funded through an administration charge on every certificate.

4.3 Penalty

Setting an appropriate penalty presents a number of challenges due to the upstream and downstream nature of this approach. For instance, $100 per tonne may be too little to drive the purchase of recycled content and too much for progressing the resource recovery side.

One option would be to have a separate penalty for recovered material certificates (RMCs) and resource recovery certificates (RRCs). The downside to this approach would be the duplication of certificate schemes with an increased administrative burden.

4.4 Advantages and Disadvantages

In an ideal world a midstream approach with its dual focus on supply push and market pull would provide impetus for manufacturers to invest in process improvement to minimise waste generation, increase onsite recycling of waste, and maximise use of recycling services, in addition to purchasing increased amounts of recycled content. As a result there would be greater demand for recycled content and recycling services, allowing the resource recovery industry to invest in additional recovery infrastructure.

There are also many advantages of using an MBI mechanism in this instance as opposed to implementing a regulatory regime to purchase recycled content and divert materials from landfill. These are similar to those identified with the up- and down-stream mechanisms and include greater flexibility and lower overall cost of achieving desired outcomes.

However, while blending the advantages of an up- and down-stream approach, a midstream MBI compounds many of the problems. One difficulty is in defining the scope of inclusion for large manufacturers. It could be on a volumetric basis, for example, all companies sending in excess 1,000 tonnes of material per year offsite for landfill or recycling.

In this instance the application of the Pareto principle suggests that large generators may only account for 20% of waste disposed to landfill and even if a 70% target reduction was achieved, this would be diluted to a 14% overall impact in the C&I waste stream. This raises the question of the cost-benefit return of operating the scheme.

Additionally there could be in the order of 500 to 1,000 liable parties in Sydney alone, creating a high cumulative administrative load across industry to participate. If there were two certificates the administrative requirements would conceivably double, not only for liable parties, but also for administrators of the scheme. Two certificates also raises the issue of interchangeability. A decision would need to be made as to whether it was acceptable to meet a resource recovery liability through the purchase of recycled content.

Other difficulties arise on the recovered material certificate side with composite materials that may have 60% recovered and 40% virgin materials and whether imported recycled materials were allowable. The issue would be verification of the actual recovered content that was eligible under the scheme.

4.5 Midstream MBI Mechanism – Conclusion

The midstream MBI represents the best of both worlds with its balance between supply push and market pull. Unfortunately the dual nature of the mechanism means that a two certificate approach is likely to be unavoidable. This creates a level of complexity in excess of both the upstream and downstream MBIs. However the long term benefits from having a clearly defined system that encourages both the recovery of resources and the use of recycled content could make investing in such a sophisticated system worthwhile.

5 MOVING FORWARD – DEMONSTRATION PROJECT

Given the range of scenarios considered in the preceding sections, a simplified downstream MBI application would appear to be easiest to administer and thus have the shortest pathway to implementation. It is suggested that a demonstration project to prove the concept, refine the MBI model and develop preliminary rules of operation would assist in fast tracking this development process. It would also provide significant input into an economic analysis of the likely impacts of the scheme. The requirements for a demonstration project are outlined below.

5.1 Development of Rules of Operation

The rules of operation for a simplified downstream MBI scenario for Commercial and Industrial (C&I) materials would be developed to a working draft stage. These rules would establish the operation of the scheme and the conditions for creating certificates. Thus a range of practical issues can be identified with the operation of the MBI, for instance whether recent recovery infrastructure would be eligible for certificate creation, or whether a strict application of additionality would be applied.

5.2 Resource Recovery MBI Simulation

The demonstration project would be undertaken as a simulation over ten weeks, with each week representing a year of trading. A reference panel of industry experts would be used to set market conditions throughout the course of the simulation. For example the panel would establish market preferences for gate fee prices on offer from participants and direct where C&I waste was taken within the simulation.

The panel would also act as the consent authority and regulator for assessing new project proposals for recovery infrastructure and establish the level of operational efficiency that new infrastructure achieves. This would allow participants to construct virtual infrastructure within the simulation according to representative commercial constraints. Panel input would thus ensure that realistic market conditions were used to inform the simulation.

5.3 MBI Participants

A minimum of five landfill owner/operators as liable parties would be required in order to create a basic level of competition. Resource recovery companies could also participate, and if 'accredited' could generate certificates as part of the simulation. Participation would be on a voluntary basis with each participant contributing to the cost of the simulation, although the demonstration would proceed on a 'paper basis' only, with no transfer of funds between participants.

Historical data would be used to establish the baseline annual amount of waste disposed of to landfill for each liable party. The diversion target would be 70% of C&I materials from landfill. Assuming an initial baseline performance of 30% diversion, the MBI would need to deliver an additional 40% of resource recovery.

The initial target would be 5% additional resource recovery with a continued ramp up 5% of each year (week) until the diversion target was reached, after which it would be held constant. Historical data would also set baseline diversion amounts for C&I waste for each participant as only additional recovery would be eligible for certificate creation (subject to any allowances for recent infrastructure development).

5.4 MBI Simulation Operation

The penalty for not meeting diversion targets would be set at $75 per tonne. Resource recovery certificates (RRCs) would be created for every additional tonne of C&I waste diverted to a beneficial use. There will be no weighting on the basis of material types in the demonstration project, meaning that one tonne of electronic scrap diversion would create one certificate, as would one tonne of metal diversion.

If a landfill was unable to meet their target diversion, they could either pay the penalty or purchase RRCs through a centralised exchange. The reference panel would oversee the operation of the exchange and would also initiate virtual audits of virtual infrastructure, with a view of testing likely levels of compliance.

RRCs would be bankable for the course of the simulation. A reverse auctioning mechanism would be used to buy and sell RRCs allowing for some form of price exploration. Trades would occur on the basis of one years worth of liability and RRC creation.

5.5 Simulation Outcomes

The purpose of the demonstration project is to test the operation of a downstream MBI in a 'live environment' in order to identify weak points, understand the level of administration required from participants and scheme administrators, and gauge stakeholder commitment.

Feedback from participants in the project would be a higher quality than comments on a report or focus group workshop and would used to further refine and model the impacts of the MBI. Additionally the demonstration project would provide quality data for a detailed economic impact assessment, required prior to the implementation of the MBI.

This road testing would thus be invaluable in developing an MBI with broad industry support and minimal administrative burdens.