MATTRESS SCHEME DESIGN

Funding model and financial analysis for a mattress recycling scheme

Mattress scheme design
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GLOSSARY OF TERMS

Term	Definition
Collection	Mattresses collected for recycling.
Collection rate	Collection expressed as a percentage of total waste arisings. See also 'Diversion rate', 'Recovery rate' and 'Recycling rate'.
Consumption of Mattresses	Mattresses put onto the market in Australia from local and imported sources. Does not include locally made product that is exported for sale.
Diversion	Recovery of material for sale to end-markets instead of disposal in landfill.
Diversion rate	Diversion expressed as a percentage (by mass) of end-of-life disposal. See also 'Collection rate', 'Recovery rate' and 'Recycling rate'.
Drop off centre/site	A facility where households can drop off selected materials and household items for recycling and reuse. Also called drop off facilities.
Ensemble bases	Bed bases that are manufactured and sold as a set with a mattress. Usually composed of timber frame and textile covering, sometimes with spring set.
End-of-life (EOL) disposal	The process of a waste product reaching its end destination, which may include landfill, recycling or energy recovery.
Free rider / free riding	A company that benefits from the investment or expenditure of other companies but does not contribute to achieve those benefits. In the context of recycling schemes, free riding refers to the situation where a non-member company's products are collected and recycled but that company has not contributed to the costs of collection and recycling, nor to the scheme's research & development activities to develop markets for end-of-life materials.
Hard waste	Large items that cannot fit in a household bin and are collected separately by local councils or their contractors. This includes items like white goods and furniture, including mattresses.
In the gate	Material entering a facility following reprocessing and excluding most contamination. See also 'Out the gate'.
Internally consistent	An internally consistent modelling scenario is one where any assumption used in the modelling makes sense given all the other assumptions.
Kerbside waste / collection	Waste collected by local councils from residential properties, including garbage, commingled recyclables and garden organics, but excluding hard waste.
Landfill	Disposal of solid wastes onto land that are currently not collected for recycling.
Latex foam	A foam produced by vulcanising liquid latex into a solid foam. Latex foam can be produced with natural latex, which is harvested from rubber trees or synthetic latex, which is produced from petrochemicals.
Local use	Recyclate used within Australia in the manufacture of a new product.
Local / Locally	In Australia.
Material recycling	Reprocessing, by means of a manufacturing process, of a used mattress into a product, a component incorporated into a product, or a secondary (recycled) raw material.
Materials recovered	Materials diverted from landfill for use or reprocessing irrespective of where the recovery or reprocessing takes place.
Material recovery rate	Materials recovered from collected mattresses expressed as a percentage of waste arisings.
Mattress Scheme / Mattress Product Stewardship Scheme	Where the industry takes responsibility for the end-of-life management of its products by funding research and development, market development, collection and recycling infrastructure, and marketing and promotion.
Out the gate	Material leaving a facility following reprocessing and excluding most contamination. See also 'In the gate'.
Mattress	A large, rectangular pad designed to be used as a bed or on a bed frame, as part of a bed. Mattresses may consist of a quilted or similarly fastened case, usually of heavy cloth, that contains materials such as hair, straw, cotton, foam rubber, or a framework of metal springs. Mattresses may also be filled with air or water.

Term	Definition
Pocket spring	Pocket springs are individually wrapped, often in a non-woven textile and to a lesser degree a natural fibre textile, and unlike open coil springs are independent of each other. Structured on a singular basis, they are sewn inside a pocket of material.
Processing facilities	Facilities which either receive materials directly from collection systems or from recovery facilities for further sorting and/or processing to provide material for use in the generation of new products.
PU	Polyurethane usually in the form of foam.
Recover / recovery / resource recovery	The process of recovering resources from waste for reuse or reprocessing. This includes collection, sorting and aggregation of materials, to convert waste into a reusable material or energy.
Recovery rate	Recovery (at a defined point) as a percentage of end-of-life disposal. Similar meaning to 'Recycling rate' but can include energy recovery. See also 'Collection rate', 'Diversion rate' and 'Recycling rate'.
Recyclate	Scrap material either before or after reprocessing.
Recycle/Recyclables/Recycling	In common practice the term is used to cover a wide range of activities, including collection, sorting, reprocessing and reuse but generally excludes energy recovery.
Recycling	Activities in which solid wastes are collected, sorted, processed (including through composting), and converted into raw materials to be used in the production of new products. Excludes energy recovery and stockpiles.
Recycling rate	Recovery (at a defined point) as a percentage of end-of-life disposal. Similar meaning to 'Recovery rate' but excludes material into energy recovery. See also 'Collection rate', 'Diversion rate' and 'Reprocessing rate'.
Regional	Regional Australia includes all of the towns, cities and areas that lie beyond the major capital cities (Sydney, Melbourne, Brisbane, Perth, Adelaide, Canberra and Hobart). Regional Australia contributes one third of our national output and is home to 8.8 million Australians.
Remote	The term(s) 'rural and remote' encompass all areas outside Australia's Major cities. Using the Australian Standard Geographical Classification System, these areas are classified as Inner regional, Outer regional, Remote or Very remote.
Reprocess / reprocessing	To transform a used material through an industrial process so that it can be used again.
Reprocessor / reprocessing facility / reprocessing infrastructure	Facility that uses an industrial process to change the physical structure and properties of a waste material so it can be used again. This can include facilities that dismantle products, such as tyres, e-waste and mattresses to provide feedstock for downstream remanufacturing, and energy from waste facilities that use materials to generate energy.
Resource recovery	Total materials recovered including materials sent to recycling and energy recovery, including export and stockpiling, net of contaminants and residual wastes sent to disposal.
Resource recovery rate	The proportion calculated by dividing resource recovery by waste generation (also referred to as the 'recovery rate').
Spring sets	Modern spring mattress cores, often called 'innersprings' are made up of steel coil springs, or 'coils'. Connections between the coils help the mattress retain its shape. Most coils are connected by interconnecting wires; encased coils are not connected, but the fabric encasement helps preserve the mattress shape.
Solid waste	Non-hazardous, non-prescribed, solid waste materials, ranging from municipal garbage to industrial waste.

EXECUTIVE SUMMARY

This document outlines the proposed design and financial modelling for a voluntary product stewardship scheme for mattresses. It builds on a considerable amount of work previously undertaken by the Australian Bedding Stewardship Council (ABSC) and its predecessor organisation, including a detailed Material Stocks and Flows study. The scheme design was developed through an iterative process of consultation and desktop research.

The proposed model is summarised in Table E-1. This has been designed to meet key objectives established by the ABSC including:

- Build a sustainable collection and recycling sector for used mattresses, including support for social and employment outcomes
- Achieve high rates of collection and material recovery at end of life
- Meet the needs of consumers and government without distorting the mattress production and sales market.

Table E-1: Summary of final scheme design

Membership and governance
• Manufacturing and import sectors contribute a unit fee per mattress brought to market • Retail members agree to accept the fee and pass through to the consumer • Board of Directors drawn from manufacturing, retail and supply chain members (responsible for delivering and reporting on strategic objectives) – Secretariat administers fee collection and expenditure
Expenditure
• Collection rebate (**$5** intra-regional, **$10** inter-regional) • Recycling rebate (**$6** partial – Tier 1, **$16** substantial – Tier 2) • Administration ($1m p.a.) • Marketing ($1.5m p.a.) • R&D / Market development ($2m p.a., reducing to $1m p.a. long-term)
Elements to support the integrity of the scheme
• Requirement for fee pass-through • Annual targets for membership, collection rate, material recovery rate, geographical coverage and environmental performance • Accreditation of recyclers to validate recycling practices and provide incentives for stronger environmental outcomes • Accreditation of collectors as the link between consumers and recyclers, to ensure collectors act in the interests of the Scheme

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1 INTRODUCTION

1.1 Background

The Australian Bedding Stewardship Council (ABSC) was established in 2020. The ABSC currently operates the Recycle My Mattress program, which is a voluntary, member funded limited product stewardship scheme for waste mattresses. The scheme commenced under Community Resources Limited in partnership with Soft Landing Mattress Recycling and was transferred to the ABSC in late 2020.

Also in late 2020, the ABSC was awarded funding by the Federal Government's Product Stewardship Investment Fund (PSIF) to design and implement a national product stewardship scheme (the Scheme), which would expand the scale, geographical coverage and activities of the current scheme.

The ABSC commissioned RPS, Sustainable Resource Use (SRU) and Helen Lewis Research (Project Team) to recommend a final scheme design and undertake detailed financial assessment to demonstrate the feasibility of this design. This work built on prior consultation, research and analysis into the likely stocks and flows of mattresses in Australia, and potential options for a bedding product stewardship scheme.

1.2 Prior work

Members of the ABSC have commissioned and undertaken several investigations to support the establishment of a levy-based product stewardship scheme with broad industry participation. In particular, this has included analysis of potential levy models, albeit the assumptions underpinning these models and their potential outcomes for the industry have been based on uncertain data. For these and other reasons, members have not determined a consensus approach to take forward.

The following provides a high-level timeline of the work that this Project builds on:

- **2009:** Soft Landing started operating
- **2016:** Voluntary product stewardship scheme established by Community Resources and bedding industry
  - Funded by members, who are bedding industry participants
- **2018:** Westpac Foundation project investigated funding models
- **2019:** Draft budget and levy scenarios modelled
- **2020:** Australian Bedding Stewardship Council established
- **2020:** Mattress Stocks and Flows study (see next section)

1.3 Mattress Stocks and Flows

The aims of the MSF were to estimate the stocks and flows of used mattresses in Australia, by reviewing and building on prior work relating to an expanded scheme. The MSF assessed the potential industry (financial), environmental and socioeconomic impacts of an expanded scheme. The MSF's key findings included that:

- An already high proportion of mattresses are being collected, but many are shredded, and therefore the diversion of material for recycling is not optimal
- There is strong evidence that imports are much higher than previously estimated, highlighting the need for broad industry participation in a scheme to cover a sufficiently large proportion of the market
- Research & development (R&D) and market development are likely to be as important as funding recycling to ensure a successful scheme.

1.4 Rationale for an expanded Scheme

While the current collection rate is relatively high (59 per cent of the estimated 1.8 million mattresses entering the waste system), the MSF found that there is a low rate of materials recovery averaging approximately 60 per cent of materials recovered from those recycled.

Moreover, there are limited end-markets for some mattress components and inadequate information on the environmental and social impacts of mattress recycling. Recycling activities are also concentrated in and around metropolitan areas, with a poor level of regional coverage.

An expanded national scheme is expected to:

- Support increased (and higher value) material recovery
- Increase the recycling rate to meet government and community expectations
- Improve environmental and work health and safety practices
- Provide more accurate data to measure and report performance.

The Project commenced with a framing workshop, which established the purpose and objectives of an expanded scheme (summarised in Section 2). The 3-hour workshop was conducted on Thursday 18th February by videoconference with members of the Project Team and the ABSC. Following the workshop, the Project Team prepared a PowerPoint document titled *ABSC – Model Selection Guidance and Plan,* which summarised the Scheme objectives and success criteria, key decisions required, a provisional model and a roadmap to model confirmation.

This Project built on the outputs of that framing exercise and undertook further detailed research and analysis to recommend a final scheme design to take to the mattress industry.

1.5 Purpose of this report

This report documents methodology, research and analysis used to arrive at the final scheme design, and presents that design. The remainder of this report is structured as follows:

- **Section 2** summarises the objectives of the Scheme and the provisional model prepared following the project framing tasks in February 2021
- **Section 3** discusses the key issues that guided the scheme design process
- **Section 4** outlines the methodology used
- **Section 5** presents the final scheme design
- **Section 6** outlines the recommended next steps.

2 OBJECTIVES OF AN EXPANDED SCHEME

2.1 Statement of objectives

At the framing workshop on Thursday 18th February 2021, participants discussed the objectives and success factors for the Scheme. The success factors are outlined in Section 2.2. The discussion at the workshop was also later used to craft the following objective statement:

> *The objective is to develop and implement a product stewardship scheme to maximise the collection and recycling of mattresses and mattress materials at end of use, avoid mattresses going to landfill, and support lifecycle innovation. The scheme will be designed to meet the needs of consumers and government without distorting the mattress production and sales market. It will be implemented in a manner that builds a sustainable collection and recycling sector, including supporting social and employment outcomes (e.g. developing employment opportunities for those experiencing barriers to the open labour market).*

2.2 Scheme success factors

The workshop identified six success factors for the scheme, which are summarised in Table 1.

Table 1: Scheme success factors

(1) Acceptability of the scheme to consumers	(2) Alignment with business interests
• Provides a level of access that is considered convenient • Consumers accept the allocation of funds raised • Social and environmental performance is seen as positive	• Scheme is cost effective • Scheme improves company and industry reputation • Individual businesses see participation as necessary
(3) Financial sustainability	**(4) Environmental performance**
• Robust enough to manage potential financial risk • Allows sufficient headroom to provide a buffer in the future • Cost is an acceptable proportion of unit price	• Achieves high material recovery, not just high collection rate • Provides incentives throughout the lifecycle • Reduces lifecycle impacts • Extends the life and value of materials
(5) Acceptability of the scheme to government	**(6) Scheme maintains level playing field**
• Meets commitment to Product Stewardship Investment Fund • Provides measurable environmental benefits • Consistent with Government strategy	• Acceptable proportion of the industry participates • Does not significantly increase retail price[1] • Maintains relative product prices across the brands

Note [1]: There is no hard and fast rule on the level of retail price increase that would be considered reasonable. What would be acceptable for each market is subjective and depends on the dynamics of that market. The price increase for other schemes and product types varies considerably. Products that have a high price to weight ratio (e.g. mobile phones), would have a very low percentage price increase. Mattresses, being a bulky product and therefore low price to weight ratio are likely to have a relatively high percentage price increase by product stewardship scheme standards. In the US, state recycling schemes apply an approximately $10-$15 (USD) fee (refer to, e.g. https://www.mrcreporting.org/).

Some of these factors are interrelated. For example, for the scheme to be acceptable to government (at all levels), it also needs to be acceptable to consumers and deliver strong environmental performance.

2.3 Provisional model

The provisional model summarised in Table 2 was developed during the framing and objectives setting phase.

Table 2 Provisional model

Application and collection of fee	Expenditure
• Collect a flat fee (per unit of product) upstream in the supply chain (administratively easier, as demonstrated by other schemes) • Incentives for early membership (fee discount for foundation members and strong promotion)[1] • Intention for the fee to be passed to consumers	• Accreditation process for mattress collectors, refurbishers and recyclers • Rebates for the costs of collection and recycling • Only accredited parties entitled to a rebate • Incentives in the rebate structure linked to material diversion and regional collection • Non rebate expenditure includes R&D, administration and market development
Other model aspects	
• Rolling annual and 5-year targets for collection and material recovery	

Note [1]: A fee discount was not included in the final model. The fee is modelled to increase over time and the main incentive for foundation members is expected to be the reputational advantages of membership.

Fee collection and scope

As shown by other product stewardship schemes, collection of fees early in the supply chain (i.e. from the manufacturer / brand owner) is the most efficient option due to the relatively small number of companies that need to be engaged compared to the very large number of distributors and retailers.

A flat rate levy is proposed because it is much simpler to administer compared to differential rates based on mattress price or size, and the effort to collect and recycle is similar. A differential levy rate could be explored in future if mattress size, design or material composition is found to be substantially linked to the financial or environmental outcomes associated with their collection or recycling.

It is recommended that only mattresses are included in the initial scope and not bed bases, ensembles or other bedding products. The Scheme has the option of expanding its scope in the future if this is supported by research and industry or customer feedback.

To encourage early membership, the Scheme would include the strong promotion of founding members. While the provisional model contained a small discount on the fee for those who enter the Scheme at commencement, this feature was not included in the final model as the research suggested that a temporary discount is likely to be a weaker incentive than promotion. Foundation members would support the Scheme through the provision of audited unit sales data, as this is crucial data for the operation of the Scheme. The data would be managed by an independent third party to protect confidentiality.

Free riding will be discouraged not only through positive publicity for founding members (e.g. Ministerial launch, member profiles on website, social media posts on each member etc.), but also through active engagement by the Australian Government to name non-participants.

The fee is intended to be a consumer-paid fee, and therefore the provisional model assumes that the fee is transferred transparently down the supply chain to the consumer. However, the model proposes that levy transparency to consumers will not require updating invoicing systems (e.g. the need for transparency can be achieved through a sign at the counter or commentary online).

Expenditure

The fee proceeds will be used to fund an accreditation system for mattress collection, refurbishment (with stringent health and safety requirements) and reprocessing. The proceeds will also fund collection and recycler rebates, but only accredited parties will be eligible for rebates.

The rebate structure will include incentives for performance, linked to:

- Material diversion rates
- Collection of mattresses from outside capital cities and encompassing conurbations.

Non-rebate expenditure would include:

- Administration and marketing of the scheme through a product stewardship organisation (PSO)
- R&D including monitoring and reporting on mattress sales and recovery, and research on design and end-market opportunities
- Activities to develop the end-markets for recovered material (referred to as ‘market development in this report).

Targets

The ABSC would establish both short-term (annual) and longer term (five-yearly) targets for both collection rates and material recovery rates. Budgets for expenditure would be linked closely to increased collection and recovery targets. The ABSC would report achievements to governments and the broader community.

The targets should be based on ambitious goals for recovery and material circularity in order to drive performance and meet consumer and government expectations. Targets would also be developed for the broader environmental outcomes of recycling such as carbon reduction.

3 KEY ISSUES FOR SCHEME DESIGN

3.1 Guidance to Project Team on scheme design priorities

At the commencement of this project, the ABSC formed an Advisory Group to advise the Project Team on key issues for scheme design. The Project Team consulted the Advisory Group on important aspects of the scheme design and the group served as a useful sounding board to test ideas. Group members provided representation across the manufacturing and retail sectors. Table 3 lists the members of the Advisory Group and the matters they advised on.

Table 3: Advisory Group members

Advisory Group member	Organisation	Role / Background
Tim Schaafsma	ABSC	• ABSC company secretary • Experience with predecessor organisations • Retailer and manufacturer perspective • Legal background
David Wood	Sealy	• Sealy (COO) • Manufacturer perspective
David Edwards	Forty Winks	• Forty Winks Franchising (CEO) • Retailer perspective
Alexis Phitidis	Beds Australia	• Independent retailer and online seller

During the first meeting with the Advisory Group, the group advised the Project Team of the following three key issues that the team should be aware of for a scheme design:

1. **Equitable incidence of costs:** That to obtain cross-industry agreement, businesses from all segments of the mattress industry should perceive the incidence of schemes costs (i.e. how the costs are incurred and passed through the various segments of the supply chain) as being fair and equitable, and not distorting competition nor disadvantaging any participating business in the marketplace.
2. **Clarity of consumer promise:** That if the scheme design requires costs to be transparent to the consumer, as the provisional scheme design recommends, the consumer should be made aware of what their contribution to the scheme delivers in terms of benefits to the consumer, or to the environmental and social outcomes.
3. **Level playing field for local manufacturers and importers:** Given that the MSF found a higher proportion of imports than previously expected, the scheme should:
    a. Not unfairly disadvantage Australian manufacturers compared to importers, and
    b. Be mindful of legal considerations relating to the imposition of a potential levy on imports.

3.2 How the project methodology addressed these issues

Roundtable meeting with other schemes

Other product stewardship schemes that have been implemented or are currently in development, have encountered similar concerns to those outlined above. The Project Team therefore conducted a roundtable meeting with the operators of other schemes to discuss lessons learnt, including the most critical things that they did to reach agreement with brand owners and retailers, and obtain guidance for how these issues could be addressed for a mattress scheme.

Appendix A provides the details, participants, agenda and key takeaways for this roundtable meeting.

Consumer research

The ABSC commissioned consumer research to investigate what consumers are likely to value with respect to their contributions, direct or indirect, to the scheme. The research also aimed to identify how members' participation in a scheme was likely to affect the consumer's purchasing decision.

Appendix B provides a summary of the key research findings.

Feedback from the Centre of Excellence

The Project Team consulted with the Product Stewardship Centre of Excellence during the Project to seek independent and expert advice from them on scheme design issues. These included two main conversations:

1. How to address the issue of free riding
2. Feedback on the scheme design when the project was at an advanced stage

The advice was provided by Adjunct Professor John Gertsakis, who is a Director at the Centre.

With regards to free riding, John stressed the importance of effective communication and promotion of the scheme to all types of stakeholders on behalf of members in order to raise awareness and understanding. This would include presenting and promoting the scheme at government forums, industry, consumer and environment forums, conferences, online and in media. Government and consumer awareness and acceptance of the scheme are essential objectives and expected to be strong drivers for scheme participation.

John also provided feedback on an advanced version of the scheme design during a workshop where some slight design variations were tested. This final scheme design was updated to reflect that feedback. The main updates were in relation to maintaining an adequate allowance for R&D, marketing and targeted communications over the long term, emphasising the importance of retail members by recognising them as important stewards at the interface with consumers, and ensuring that the accreditation process for recycling partners is uncomplicated, fit-for-purpose and not unnecessarily burdensome.

Testing of scheme design with the Advisory Group

At discrete points in the project, the Project Team presented scheme design options, and tested the perceived equity and feasibility of those design aspects with the Advisory Group. The Advisory Group provided perspectives from the manufacturing and retail points of view, and from a legal perspective.

Table 4 summarises the formal Advisory Group meetings.

Table 4: Advisory Group meetings

Meeting date (AED time)	Main agenda	Agreed next steps
31st March 2021, 9.30-10.30am	• Present provisional model • Obtain initial feedback • Provide overview of scope	• Document key guiding issues for scheme design • Schedule remaining meetings
28th April 2021, 11.30-12.30pm	• Update on model design • Discussion on key issues	• Continue research • Continue design
2nd June 2021, 10.30-11.30am	• Present final draft scheme design	• Document final design
13th July 2021, 2.30-4.30pm	• Present final scheme design	• Proceed to board recommendation

Focused primary and secondary research on key issues

The primary and secondary research for this project was focused on obtaining data and perspectives (evidence) to confirming the feasibility of scheme design with respect to the three key issues raised by the Advisory Group (Section 3.1).

Section 4 outlines the consultation (primary) and desktop (secondary) research methodology.

4 METHODOLOGY

The scheme design was developed through consultation and desktop research. The research focussed on addressing gaps from the previous research conducted during the MSF work, and obtaining evidence to support the selection of the final scheme design and address the three key issues raised by the Advisory Group.

The design process was iterative. That is, the Project Team started with the preliminary design presented in Section 2.3, tested elements of this with the ABSC and the Advisory Group, and continuously refined the model through research, consultation and modelling (see Figure 4-1).

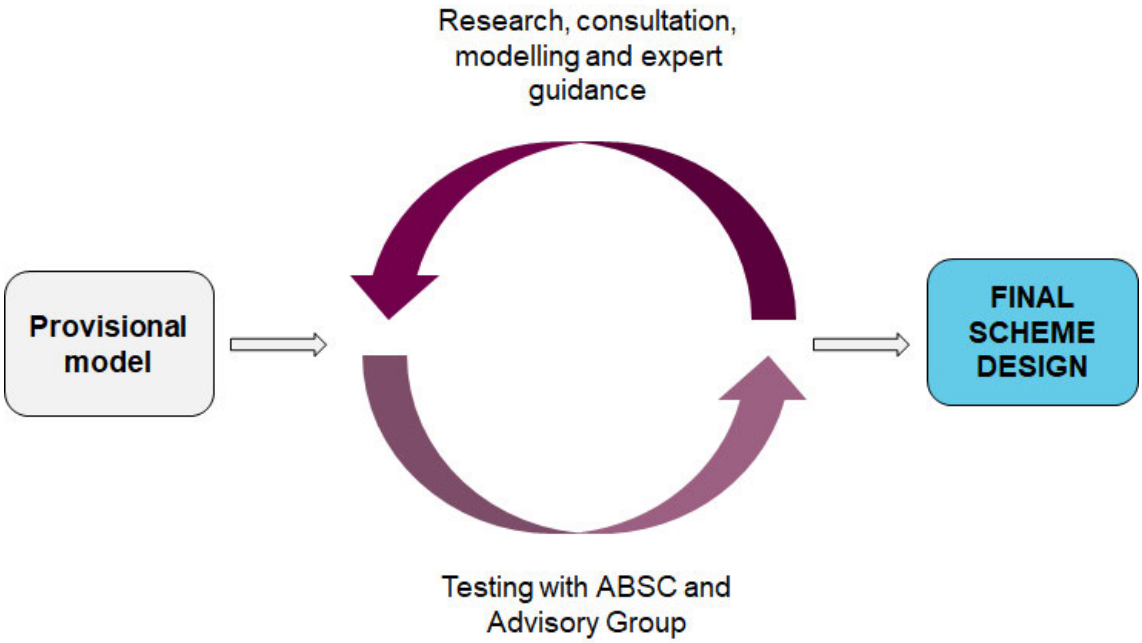

Figure 4-1 Iterative approach to scheme design

4.1 Consultation

Table 5 summarises the sectors targeted, parties within that sector that were engaged, and the purpose of including each stakeholder group in the consultation process.

Table 5: Consultation targets

Target	Purpose of consultation	Parties that responded
Scheme members and potential members	To understand whether the model is acceptable to and likely to achieve the support of members	• Sealy • AH Beard • Comfort Group
Local Government	Local Governments are the largest collectors of mattresses for recycling. The costs of collection will vary across Australia.	• Albury City Council • Lake Macquarie City Council • Yarra City Council
Recyclers	The economics of mattress recycling are known to vary according to the method employed and proximity to end-markets.	• Soft Landing
Waste management services and other freight operators	Logistics comprise a significant proportion of total recycling costs. As such, obtaining financial data on logistics is likely to be highly beneficial for estimating the overall costs, and identifying potential efficiencies.	• WM Waste Management
End-market participants	End-markets are of significant importance to recyclers as they incur costs to dispose of any unrecyclable material. They are also important for understanding the environmental performance of a Scheme.	• Sims Metal Management • Dunlop Flooring • Airstep
Retailers	Some retailers offer collection services either as a swap on home delivery or drop-off in store.	• Harvey Norman • Snooze • Beds Australia
Product stewardship schemes	Understand scheme design experiences from others	• Battery Stewardship Council • MobileMuster • PaintBack
Product Stewardship Centre of Excellence	Obtain expert input	• John Gertsakis • Rose Read

4.2 Desktop research

The desktop research and analysis focussed on the following:

- **Reviews of other relevant scheme designs:** These reviews focused on schemes that adopt a similar approach as outlined in the provisional design (see section 2.3). The scheme proposed by the Battery Stewardship Council (BSC) is similar as it involves a fee applied to manufacturers and importers, provides rebates for collection and recycling, and assumes that the fee is passed through the supply chain. Another relevant model is the MobileMuster scheme operated by the Australian Mobile Telecommunications Association (AMTA), which was the first accredited voluntary scheme in Australia and succeeded in securing a critical mass of membership over time.
- **Data on potential end-markets and end-market values:** This was used to corroborate stakeholder data and to understand the potential benefits to the industry if more material could be recovered and at higher values. This included reviewing data provided by stakeholders during the consultation process as well as obtaining independent, publicly available data.
- **Financial assumptions:** Research was undertaken on the pricing structures of mattress recyclers and their likely variance across Australia.
- **Logistics costs:** Estimates of the costs of collection and transport of mattresses were used to supplement and corroborate data provided through industry interviews.

4.3 Scheme financial model development

A key deliverable for this project was the development of a scheme financial model, which allows the user to:

- Understand the financial implications and risks of a wide range of possible scheme design choices and assumptions (refer to Table 6)
- Project how various funding parameters (e.g. levy rate, recycling rebate, freight rebate) are likely to influence scheme income and expenditure
- Specify a levy rate that can vary over time to match funding to the Scheme's expenditure needs
- Ascertain the financial feasibility of funding models.

The financial model was developed in Microsoft Excel and includes a summary page of assumptions and key results.

Table 6 summarises the funding model parameters that the financial model allows users to test.

Table 6: Funding model parameters

Funding model parameter	Units	Purpose
Annual product stewardship fee	$ per mattress per year	Specify the profile of the fee over time
Collection rebate (Intra-regional)	$ per mattress	Rebate for collection over short distances
Collection rebate (Inter-regional)	$ per mattress	Rebate for collection over longer distances
Recycling rebate (**Tier1:** Partial)	$ per mattress	Rebate for recycling with minimum material recovery
Recycling rebate (**Tier 2:** Substantial)	$ per mattress	Rebate for recycling with substantial material recovery
Rebates in Year 1	%	Proportion of Year 1 period eligible for rebates [a]
Administration budget (short-term)	$ per year	Budget for administrative expenditures for first 5 years
Marketing budget (short-term)	$ per year	Budget for marketing for first 5 years
R&D budget (short-term)	$ per year	Budget for R&D and market development for first 5 years
Administration budget (long-term)	$ per year	Budget for administrative expenditures after 5 years
Marketing budget (long-term)	$ per year	Budget for marketing after 5 years
R&D budget (long-term)	$ per year	Budget for R&D and market development after 5 years

Note [a]: This is to simulate the situation where rebates do not start immediately on scheme commencement to allow the Scheme to build a cash balance

5 FINAL SCHEME DESIGN

5.1 Scheme details

Table 7 summarises the final scheme design at a high level, with the subsections that follow providing additional detail.

Table 7: Summary of final scheme design

Membership and governance
• Manufacturing and import sectors contribute a volumetric fee per mattress brought to market • Retail members agree to accept the fee and pass through to consumer • Board of Directors drawn from manufacturing and retail members (responsible for delivering and reporting on strategic objectives) – Secretariat administers fee collection and expenditure
Expenditure
• Collection rebate (**$5** intra-regional, **$10** inter-regional) • Recycling rebate (**$6** partial – Tier 1, **$16** substantial – Tier 2) • Administration ($1m p.a.) • Marketing ($1.5m p.a.) • R&D / Market development ($2m p.a., reducing to $1m p.a. long-term)
Elements to support the integrity of the scheme
• Requirement for fee pass-through • Annual targets for membership, collection rate, material recovery rate, geographical coverage and environmental performance • Accreditation of recyclers to validate recycling practices and provide incentives for stronger environmental outcomes • Accreditation of collectors as the link between consumers and recyclers, to ensure collectors act in the interests of the Scheme

Membership and governance

Membership

All manufacturers and importers paying the fee will be members and will be able to promote their membership via websites and media, and display a logo, showing their support for the scheme. Retailers who stock and sell mattresses from fee-paying members can also market and display the logo showing their support for the scheme. The guidelines for this marketing will be established by the scheme. The Federal Government will play an active role in encouraging manufacturers and importers to become members and apply the fee.

Other stakeholders, such as councils and charities, can be associate members with no decision making or meeting attendance rights.

Scheme entity structure

The scheme will have a Board of Directors drawn from manufacturing, retail and supply chain members. The Board will be responsible for reporting scheme operations and results to government and other stakeholders. A secretariat will administer the scheme and answer to and report to the Board. The secretariat will also have

a fee accounting role that will remain confidential from the Board. There will be a third-party audit role for both scheme income and rebate expenditure.

Product stewardship fee

The contribution of members will be referred to as their Product Stewardship Fee (PS Fee), sometimes known as a levy in other schemes.

Figure 5-1 outlines the proposed profile of the PS Fee that is required to provide a financially sustainable scheme that meets the modelled expenditure requirements.

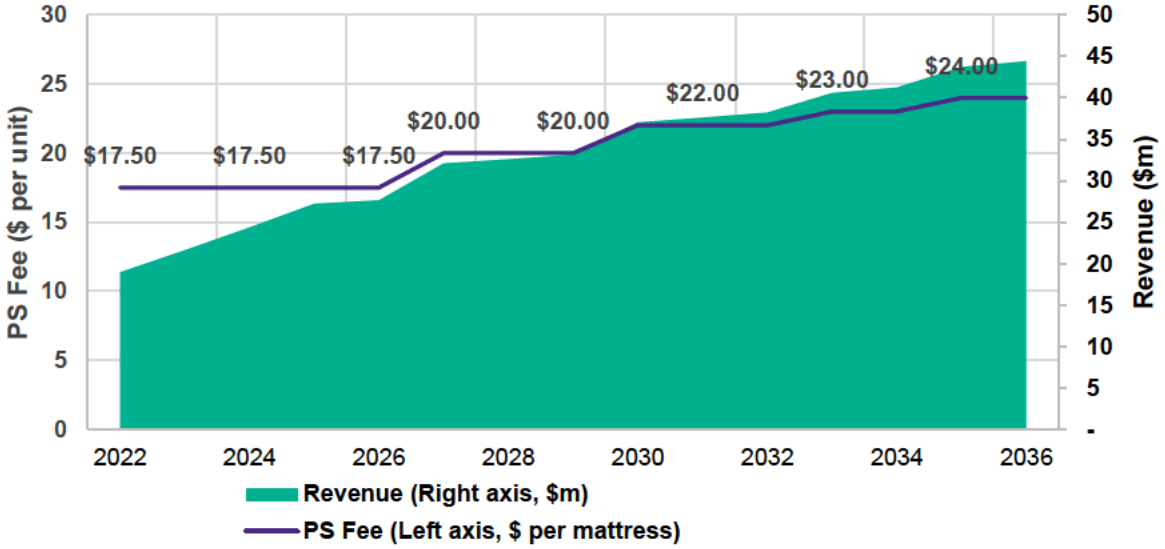

Figure 5-1 PS Fee profile (nominal prices)

Costs, and therefore the PS Fee, increase over time due to increased collection and recycling rates, and inflation.

The ABSC will review the PS Fee periodically and adjust it based on the actual expenditure compared with forecasts. The ABSC will aim to set the fee as low as possible while:

- Meeting scheme objectives and forecast expenditure
- Maintaining a minimum threshold cash balance of $1 million.

Expenditure parameters

Table 8 outlines the rebates that will be payable by the ABSC to accredited recyclers and collectors.

Table 8: Payable rebates

Collection rebate	
Intra-regional (< 100 km)	$5 / mattress
Inter-regional (>= 100 km)	$10 / mattress
Recycling rebate	
Tier 1: Partial (40-60% material recovery)	$6 / mattress
Tier 2: Substantial (> 60% material recovery)	$16 / mattress

Note Rebate will stay constant in real terms (increase with inflation)

Table 9 outlines the expenditure that has been modelled.

Table 9: Modelled expenditure

Short term (Years 1-5)	
Administration	$1.0 million
Marketing	$1.5 million
R&D / Market development	$2.0 million
Long term (Years 6+)	
Administration	$1.0 million
Marketing	$1.5 million
R&D / Market development	$1.0 million

Note Expenditure modelled to increase in line with inflation

Elements to support the integrity of the scheme

Fundamental requirement for fee pass-through and fee transparency

The PS Fee is to be paid by manufacturer and importer members. It will be clearly displayed on invoicing to retail industry and commercial customers.

The Scheme is predicated on retailers agreeing to accept the fee from manufacturers and importers, and either:

- Incorporating it into pricing, or
- Explicitly showing the fee to the consumer.

How the fee is recovered will be a business decision for each retailer. However, membership will require that the retailer accept the fee from manufacturers and importers as an explicit condition of membership. The requirement to accept the fee will be formalised through an agreement, with the details of that agreement to be developed during implementation. It is not intended that the fee be subject to a retail mark-up.

The success of the Scheme requires a critical mass of retailer membership so that there is widespread adoption of the fee, prompting smaller non-member retailers to also accept the fee. To support this outcome, it will be important for the ABSC to distinguish between member and non-member retailers.

Accreditation for collectors

Accredited collectors can be local government, council groupings, charities, retailers and recyclers or their contracted collectors. Each collector must have the ability to track collection unit numbers and geographic source. Accreditation will be subject to an initial audit and annual audits. Rebates will not be paid on mattresses not delivered to accredited recyclers.

Accreditation for recyclers

Accredited recyclers will be designated as tier 1 or 2 based on recovery rates of mattress components. The accreditation and tier designation will be reviewed annually through an audit. Recyclers will be required to show supply from accredited collectors and sale of material to end market destinations. Rebates will not be paid on mattresses coming from non-accredited collectors.

Targets

At scheme commencement, the ABSC will set a series of annual targets for the following:

- Membership, including percentage coverage of the sales market
- Mattress collection rate
- Mattress material recovery rate

- Geographic coverage of collections
- Environmental impacts (e.g. carbon reduction).

5.2 Justification and evidence to support final design

The Scheme design outlined in Section 5.1 was based on a rigorous assessment of all the evidence (i.e. desktop research, stakeholder views, modelling and the experience of other product stewardship schemes), as well as testing with the ABSC and Advisory Group members.

The following subsections provide the justification and evidence to support selected aspects of the scheme that required more investigation than others because of conflicting evidence or viewpoints.

Justification for a collection rebate

A collection rebate, in addition to a recycling rebate, is recommended because it enables the achievement of various scheme objectives. For example, a collection rebate:

- Allows the cost difference in transporting regional and remote mattresses to be acknowledged, so that the scheme explicitly supports regional collection
- Acknowledges that local councils are a major collector of mattresses and their enthusiastic support would be beneficial to the success of the scheme
- Accounts for the fact that collection costs are highly visible to consumers and so a collection rebate is also highly visible
- Allows the ABSC to have more control over collection practices
- Will encourage new players to collect, including retailers and their contractors.

Financial sustainability of scheme

For the Scheme to be successful it must be able to maintain sufficient cashflow and a positive cash position. This avoids unexpected increases in PS Fees or the situation where rebates or other expenditure cannot be funded.

Figure 5-2 on the next page presents the projected annual cashflow of the proposed Scheme. The results show that the Scheme is projected to maintain a healthy cashflow and cash position to fund the scheme's expenditures over a 15-year period.

Figure 5-3 shows the projected increase in collection and recycling achieved through the rebate expenditure.

Appendix C provides the justification for the Scheme's proposed:

- Administration budget
- Marketing budget.

Many schemes do not include an R&D or market development budget or only include a small budget for this. The Tyre Stewardship Australia (TSA) scheme is an exception as it mainly focuses on R&D and market development.

The proposed R&D and market development budget for the ABSC Scheme is $2 million per year in the short-term (first 5 years) and $1 million per year in the longer term. This is based on the currently low material recovery rate, and the need to refine recycling practices and develop end-markets to increase material recovery.

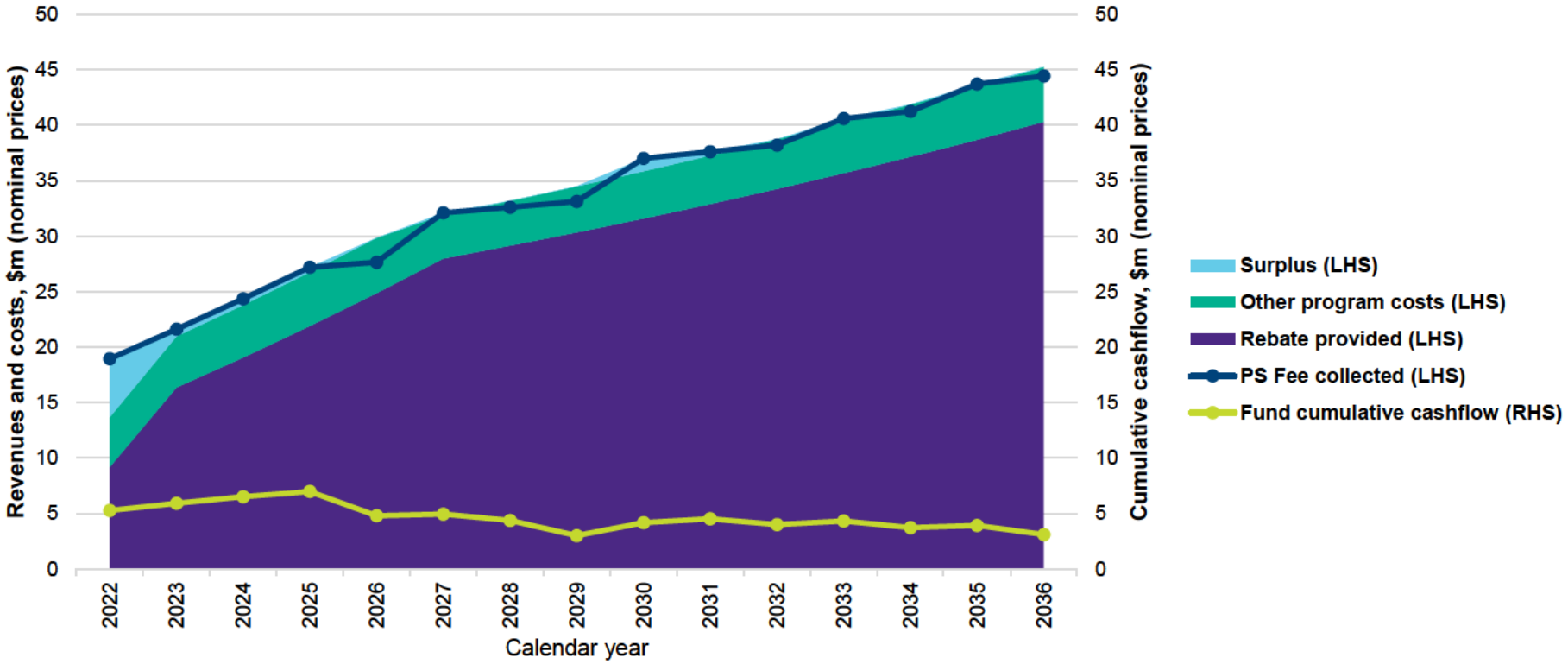

Figure 5-2 Scheme annual cashflow

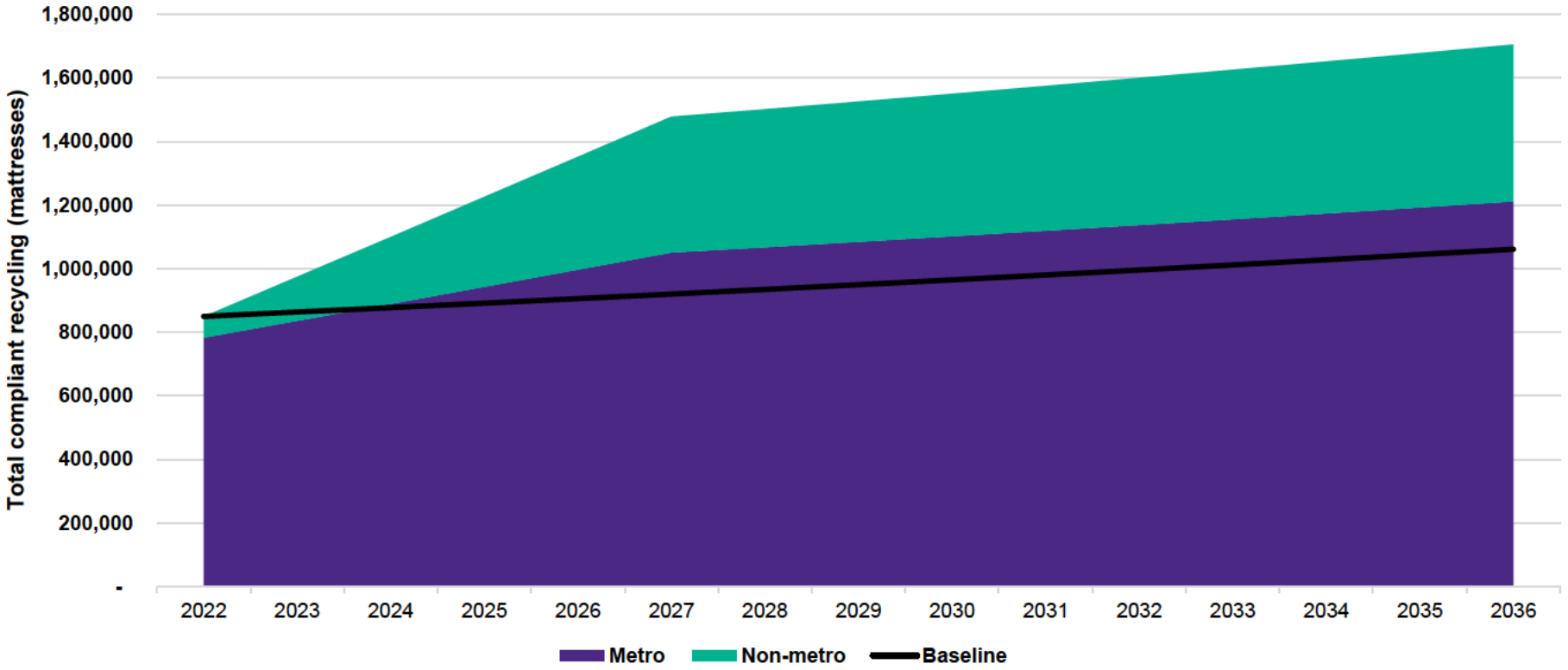

Figure 5-3 Scheme outcomes

Importance of retail members

The Scheme has been designed to be as attractive as possible to retail members by:

- Assuming a small token membership fee paid by retailers to cover the additional administrative cost
- Offering retail members the full benefits of membership (i.e. promote themselves as members to consumers and other stakeholders).

Moreover, through the ABSC's marketing and awareness campaigns, it will be apparent to the consumer marketplace who is or isn't a member. This is expected to act as a strong incentive for membership.

However, retailers will be required to meet membership obligations and act in good faith. In particular, retailers will be required to accept the PS Fee from manufacturers and not negotiate for this fee to be deducted from unit prices.

Securing a large proportion of the retail market will be important for Scheme success, as this will significantly limit the ability of non-members to push back on the PS fee applied by manufacturers and importers.

6 RECOMMENDED NEXT STEPS

The Scheme design presented in this document is based on extensive investigations by the Project Team, and testing with the ABSC and the Advisory Group. The design was concluded to be feasible based on the modelling undertaken. The design has also received the in-principle support of the ABSC Board to proceed, subjective to further testing, on the basis of the proposed fee and rebate structures.

At this point, it is recommended that the ABSC use this design as the basis for seeking the agreement of existing members and new members to support the Scheme.

Voluntary product stewardship schemes only succeed if a sufficient number and scope of members commit to join. Consistent with this, the proposed design will need to secure a minimum threshold of membership to address concerns about free riding and inability to achieve fee passthrough.[1]

As such, the key next steps are to:

- Develop a strategy to take this design to progressively more members and required new members, starting with members that have shown greater commitment
- Develop collateral that highlights the feasibility of the Scheme, benefits of membership, and the risks of non-membership
- Execute on that strategy by actively engaging with members and target new members
- Carefully consider the feedback provided by members to refine and shape the Scheme design as needed to obtain widespread support
- Obtain in-principle agreement by each targeted member in writing, supporting the snow-ball effect required to achieve membership targets.

Ultimately, as a voluntary industry scheme, the adopted Scheme design will be one that has the fine details accepted and shaped by the industry.

[1] The modelling done during this Project assumes a manufacturer / importer participation rate of 54.1 per cent on commencement, increasing to 74.1 per cent by 2025. It is also expected that large retail outlets (i.e. department stores and the larger specialist bedding outlets) will be needed as members for the Scheme to succeed.

Appendix A Roundtable discussion

The Project Team convened a roundtable meeting with the operators of other schemes. The meeting discussed lessons learnt, including the most critical things other schemes did to reach agreement with brand owners and retailers, and obtain guidance for how these issues could be addressed for a mattress scheme.

The meeting details are provided in the table below.

Roundtable details	
Purpose	Discuss lessons learnt on identified challenges for mattress scheme
Scheduled date and time	Thursday, 22 April 2021 1:30 PM-2:30 PM
Zoom meeting link	https://us02web.zoom.us/j/87960619401
Attendees	ABSC (Janelle Wallace, Vernon Fair) Project Team (Kapil Kulkarni, Peter Allan, Helen Lewis) Agsafe (Dominique Doyle) Product Stewardship Centre of Excellence (Rose Read) Tyre Stewardship (Silvio de Denaro) Vinyl Council of Australia (Jan Van De Graaff) APCO (Helen Millicer)
Agenda	• Quick introductions • Project outline and roundtable purpose – Kapil (5 minutes) • Discussion 1 – **Business case** (20 minutes): – In setting up the program or attracting new members, how did you demonstrate the business value? – Do you have a problem with free riders and how do you deal with them? • Discussion 2 – **Implementing the levy** (20 minutes): – What were your major challenges in collecting the levy, e.g., attitude of brands, administrative etc. – Is your levy transparent to consumers? If so, how? – What was the levy accumulation stage at the beginning of the program, i.e. the time period between collecting the levy from brands and starting to pay for collection/recycling (building a buffer) – Other learnings/suggestions? • Discussion 3 – **Other business** (20 minutes) – Option of promoting an 'EPR light' regulatory option to government i.e. to primarily address free riders (raised by BSC) • Summary and next steps – Kapil (5 minutes)

Key findings from the discussion included:

- All schemes apply a levy at manufacturer / importer or reseller / retailer level
- Some have moved from a levy model to a membership model, still based on market share
- The strength of government's role in discouraging free-riding was queried
- There may be a role to mandate on-shore recycling in some cases
- A lot of time and effort is in levy and membership issues rather than program implementation
- Scheme should build in a CPI increase
- It would be useful to have a cross-scheme comparison table, potentially developed by the Centre of Excellence

- Transparency to consumers is important for some schemes
- A light option, in-between voluntary and regulatory, could be to require industry to have a scheme and industry participants to be part of a scheme, without having the scheme details prescribed by regulation.

Appendix B Findings from consumer research

ABSC engaged Pollinate, a strategic research consultancy, to interview 10 consumers to explore their decision-making process around purchasing and recycling mattresses. Pollinate advised that their experience shows 10 in-depth interviews with a carefully selected cross-section of the community is representative.

The interview focused on what was important to the consumer and their views on recycling. The interviewees had all purchased a new mattress in order to replace an old mattress within the last 3 months. The table below outlines the characteristics of the interviewees.

Location	Mattress cost[1]	Shopping focus[2]	Gender
Regional NSW	Low	Neutral	Female
Regional NSW	Low	Neutral	Female
Regional QLD	Low	Environmental	Female
Melbourne	Low	Environmental	Female
Sydney	Mid	Environmental	Male
Sydney	Mid	Environmental	Female
Sydney	Mid	Neutral	Male
Sydney	Mid	Neutral	Female
Melbourne	Mid	Neutral	Female
Brisbane	Mid	Environmental	Female

Note [1]: Low = $250–$700, Mid $700–$1,200

Note [2]: Those with a Neutral focus do not tend to prioritise sustainability or the environment when making shopping and purchase decisions

Key outcomes from the research that were relevant for the scheme design project were that:

- None of the interviewees knew about the opportunity to recycle
- Once they knew about it, there was a strong desire to participate in recycling
- The hierarchy of decision-making factors for recycling included:
  - Convenience and low cost (i.e. that recycling options should be customer-centric)
  - Stress relief (i.e. saves time and effort)
  - Guilt relief (i.e. assurance that the shopper is not contributing to environmental degradation / landfill)
  - For the environmentally conscious shoppers, the opportunity to contribute to a good cause.

The main take-away from this research is that messaging to the consumer needs to be targeted and clear. That is, the Scheme should clearly explain to the consumer how it delivers more convenient and lower cost recycling, and how it contributes to positive environmental and social outcomes.

Appendix C Marketing, administration and R&D costs

During the MSF, the ABSC provided RPS and SRU with preliminary estimates of the expected annual budget for a product stewardship program, inclusive and exclusive of rebates / incentives for recycling. The budget exclusive of rebates (Program Costs), comprised the following items:

- Staff costs
- Other operating expenses (general and administrative)
- Marketing and research expenses
- Contingency.

Prior to the MSF, the ABSC considered two approximate annual budget amounts for the above items (approximately $1.6 million and $5.0 million).

RPS and SRU recommend the larger estimate for a mattress program (approximately $5 million). This is based on the fact that the mattress recycling sector and end-markets for the materials have significant scope for improvement, which would benefit from R&D and market development activities.

Some of the challenges with mattress recycling at present include its almost exclusive concentration in greater metropolitan areas, high logistical costs due to the bulkiness of mattresses, low levels of materials recovery, poor end-market values and free-riding.

Therefore, a larger budget with a sufficient allocation towards marketing and research is likely to deliver longer term productivity and environmental gains for consumers and the environment.

The estimates are based on a combination of benchmarks (other schemes), data (e.g. the marketing costs provide for about 4-5 major campaigns per year), and validation by the COE.

Item	Assumption	Source(s)	Justification / derivation
Staff costs	~ $0.6 million	ABSC estimates, RPS and SRU analysis, benchmarking against publicly available budgets	Refer to explanation above
General and administrative	~ $0.4 million		
Marketing	~ $1.5 million		
R&D / market development	~ $2.0 million		
Total annual	**~ $4.5 million**		