CEMENT INDUSTRY FEDERATION

14 February 2006

Waste Generation and Resource Efficiency Inquiry,
Productivity Commission
LB2 Collins Street East
MELBOURNE VIC 8003

Productivity Commission – Waste Generation and Resource Efficiency in Australia
Cement Industry Federation Submission

The Cement Industry Federation ("the CIF") welcomes the opportunity to submit comments to the Productivity Commission in relation to their Inquiry into waste generation and resource efficiency in Australia ("the inquiry").

The Cement Industry Federation is the national body representing the Australian cement industry, and comprises the three major Australian cement producers - Adelaide Brighton Ltd, Blue Circle Southern Cement Ltd and Cement Australia Pty Ltd. Together these companies account for 100 per cent of integrated clinker and cement supplies in Australia.

The CIF aims to help promote and sustain a competitive Australian cement industry, committed to best practice in its activities.

Our submission provides some general background and comments as well as specific comments in relation to the Productivity Commission's Issues Paper ("the Issues Paper") and is structured along the following lines:

- Introduction: The Australian Cement Industry and Resource Efficiency
- Imperatives Required to Enhance Resource Efficiency
- Our Views on Section 2 "Types of waste covered by the inquiry"
- Our Views on Section 3 "Overview of solid waste"
- Our Views on Section 4 "Benefits and costs"
- Our Views on Section 5 "Arguments for government intervention"
- Our Views on Section 6 "Policy options"
- Conclusion

Where sections or specific questions included within the Issues Paper Sections have not been addressed within this submission, the CIF has no comment to make in relation to that section or issue.

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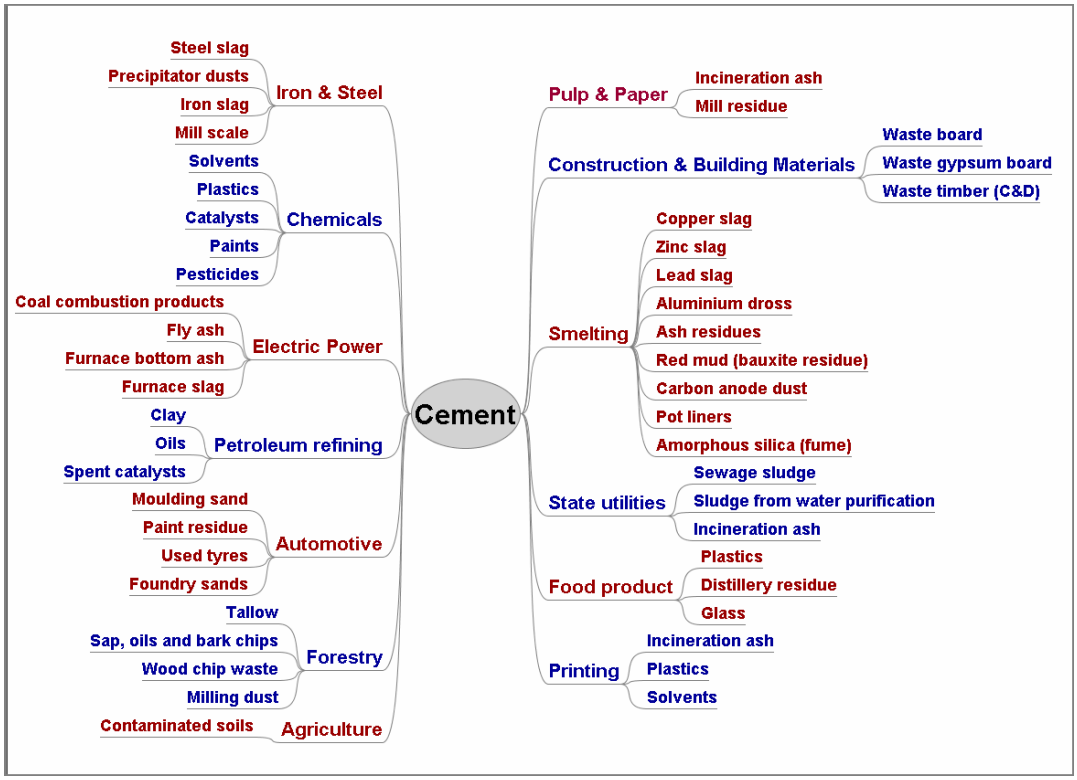
Introduction: The Australian Cement Industry and Resource Efficiency

The Australian cement industry's viability is dependent upon minimising costs, advancing the industry toward greater sustainability and maintaining a "social licence to operate". In this regard, the industry has been innovative and creative in reducing its environmental footprint via the uptake of alternative fuels, raw materials and supplementary cementitious material - predominantly sourced from secondary materials/by-products. These actions not only conserve natural resources (for example coal, gas, limestone, iron ore, sands and shales) and reduce landfill, but in many cases also reduce greenhouse gas and other emissions.

The cement industry is at the forefront of resource efficiency initiatives, which have been achieved through research and development programs and innovation. The versatility of the cement manufacturing process enables the safe use of certain secondary materials from other manufacturing processes, and has resulted in the progressive uptake of supplementary cementitious materials or SCMs (materials which exhibit cementitious properties in the presence of lime released during the hydration of cement), non-traditional or alternative raw materials (materials containing calcium, silica, alumina or iron), and non-traditional or alternative fuels (having calorific value and in some cases recyclable raw material components). For the year 2004/2005, approximately 54,000 tonnes of solid and liquid alternative fuels (or 6% of our total thermal energy requirements) were safely converted to energy and product materials, and nearly 1.5 Mt of SCMs (in a total market of about 10Mt of cement and cement materials) were introduced to the market. These figures make the cement industry one of the largest recyclers in Australia. In the European cement industry, about 4 Mt of alternative fuels, substituting 3 Mt of coal are used in the clinker manufacturing process, in a recovery operation deemed as both energy and material content (Cembureau, 2003).

As competitive suppliers to the market, our members are well cognisant that they are first-and-foremost producers of a product that must still meet strict quality specifications and customer performance specifications.

Secondary/By-Product Material Opportunities for the Cement Industry



Imperatives Required to Enhance Resource Efficiency

The cement industry believes that the following issues are key imperatives to drive improved resource efficiency in Australia:

1. **The redrafting or replacement of the current suite of waste management related legislation to incorporate the critical principles of "material value" and "resource efficiency"**;
2. **A national approach to waste management and resource efficiency regulation**. The cement industry is currently developing an Action Agenda facilitated by the Australian Government and the issue of inconsistent regulations in relation to the use of secondary materials/industrial by-products has arisen as a recurring and significant issue requiring attention. The cement industry considers that this is best achieved through a coordinated policy approach facilitated through the Environment Protection and Heritage Council ("EPHC"). We would bring to the Commission's attention a recent, related EPHC discussion paper on the development of a national approach for assessing the beneficial reuse of industrial residues. We consider that a harmonised national approach to the assessment of secondary materials is also critical and see no reason why a well-developed assessment approach should not be applicable to secondary materials generally. We would hope that such an approach might then address the regulatory impediments to resource efficiency that this industry has experienced;
3. **The judicious use of market interventions that address only the identified market failure**. We will highlight later in our submission our experiences with market failures and market intervention schemes.

Our Views on Section 2 "Types of waste covered by the inquiry"

The CIF believes that the inquiry is timely for advancing debate on waste generation and resource efficiency issues in Australia.

We note the use of the traditional definition of waste used in the Issues Paper. We believe strongly that the terminology can bias proper debate over issues such as resource efficiency. We would argue that this traditional definition classifies waste on the basis of value within a single process rather than on a material's potential value within other processes. The CIF does not believe that the use of the word "waste" as per the definition supplied is at all beneficial to the inquiry and will in this submission address materials traditionally defined as "wastes" as "secondary materials" or "by-products"/"by-product materials". Given that our industry operates very much at the pioneering edge of resource re-use, it is our belief that in a world that rapidly needs to progress towards resources efficiency, the term "waste" is an outdated misnomer perpetuating a perception of materials that are unwanted and therefore destined to disposal. While the term "residues" is preferable, it still suggests that some valued part has been removed and that what is left retains little or no value. We would prefer a move to even less prejudicial terms such as "secondary materials" or "by-products"/"by-product materials". We will argue that substantial regulatory impediments to resource efficiency initiatives have evolved largely due to traditional definitions and views in relation to wastes.

"This inquiry will not cover some hazardous wastes" sub-heading

In relation to the inquiry not addressing certain "hazardous wastes", we would contend that the hazards or risks associated with, indeed any material, be it a virgin raw material, manufactured material or secondary material will align with a three-dimensional spectrum of risk, with risk varying with the hazard type being considered and the degree of hazard. With regard to hazard classification, existing systems are generally considered to be acceptable. However, there are some systems, for example the Basel Convention, which we believe err in designating materials as hazardous by generic name (albeit in some cases conditionally). The simple adoption of such systems by regulatory mechanisms in Australia can result in detrimental regulatory impediments (see case studies).

Case Study: Fly Ash in Queensland and the Basel Convention

The introduction of the new Environmental Protection Regulations in Queensland in 1998 used the then current Basel Convention to nominate materials to a new to classification of "Regulated Wastes" having restrictions on ……, tracking etc. Although fly ash is conditioned within the Basel convention as being an Article 1 hazardous waste only where hazardous characteristics are displayed, such caveats did not transfer to the Environmental Protection Regulation, which provided no exemption where named materials did not in fact exhibit hazardous properties.

The Queensland ash industry has well established that fly ash generated from black-coal fired power stations is indeed non-hazardous, but has suffered from being branded as an industry dealing in a regulated waste - in practice exempted from prosecution only by a non-legally binding policy statement.

The fly ash industry is one of the most significant recycling industries in Australia and, as a supplementary cementitious material, saves almost an equivalent tonnage of CO_2 emissions as is used in blended cements.

For this reason we would prefer that the inquiry maintain an open mind in relation to the arbitrary classification of hazard by generic name rather than specific hazard/risk property. As discussed above, we believe that debate on this issue will be served better by a more mature approach to material and material risk classification, rather than extant international and State classification systems.
We would hope that the principles developed by the Commission towards an effective, harmonised, mature, approach towards resource efficiency should be applicable to all wastes and that the Inquiry, should it agree with this position, at least highlight this point.

Our Views on Section 3 "Overview of solid waste"

While the cement industry believes that good data is important in making good management decisions, we do not believe that insufficient data exists in the area of waste generation and resource efficiency to make a case for delaying early action in this area. The cement industry collects data on all materials used by the industry as well as secondary materials utilised.

Our Views on Section 4 "Benefits and costs"

It is our contention that to date, approaches to waste management have been driven not by a resource efficiency mentality but largely by a "least-cost, bury in backyard" mentality with no or little substantive consideration given to the "economic, environmental and social benefits and costs" of optimal approaches to resource recovery and efficiency.

We agree that the cost of disposing of waste to landfill should include the costs of externalities (e.g. contamination of groundwater), as well as the financial cost of operating the landfill. We would contend that there should also be included in any proper evaluation, the foregone cost of resource recovery, or recycling to some higher order use.

"The Waste Hierarchy" sub-heading

With regard to the discussion in relation to the waste hierarchy, we strongly agree with the Issues Paper contention with regard to the potential inconsistency between a "net benefits approach" and strict adherence to a waste hierarchy, and we hereby provide a further case study for the Inquiry's consideration (Tyre Product Stewardship Scheme). As outlined in a 2003 report to Environment Australia (BDA, 2003), waste policy in Australia has evolved from a focus on minimising harm to the environment through the improper disposal of wastes, to diverting waste from landfills to be recycled or reused. The paper identifies two principles now widely adopted by State and Territory governments namely: the adoption of a "hierarchy of waste" ideology; and the setting of targets (to reduce) the amount of waste going to landfill. We would contend that while this is indeed an evolutionary step, we are more and more experiencing incompatibility between these principles particularly where a waste hierarchy approach is advocated in the absence of available or economic "higher order" technology or markets.

As a significant user of secondary materials for the purpose of realising energy value, we are aware that concerns exist that, should the cement industry establish itself as a major user of certain secondary materials, higher order uses may be precluded. The industry's experience globally shows that, in many of these cases (and without any market intervention), market forces of themselves will drive higher order fates over time.

Decisions made on a "waste hierarchy" basis must be made with full knowledge of technically available and commercially available options and through end-product market testing. Should a market intervention be made without viable markets, we may well arrive at a point where we are simply landfilling materials to which additional energy or economic value has been added for the sake of an uneconomic ideology. While the chipping of tyres destined for landfill may be undertaken for stated reasons of improved burial, vermin control or other environmental reasons, it makes little sense to add so much value to a high value fuel and then disallow realisation of energy value.

Q: How has the waste hierarchy influenced waste management policy? What are the advantages and disadvantages of using the waste hierarchy approach to waste management? Under what circumstances, and for which wastes, is it appropriate to proceed sequentially through this hierarchy?

We hope that the case studies and discussion provided highlight the issues that arise should the waste management hierarchy be used in isolation. We believe that the hierarchy has a place as a guideline or objective, but that it is clearly limited in application to those instances where commercially available technology and viable markets exist.

Q: When would it be appropriate to consider these approaches as options rather than an ordered sequence? For example, under what circumstances would it be appropriate to forgo reuse or recycling in favour of energy recover

As per our discussion above, the cement industry provides a potentially commercially available technology and market for realisation of energy value and in some cases parallel material recycling (for example the steel in used tyres is recycled in cement kilns and reduces the intake of supplementary iron inputs). As such the industry provides a high-volume option where much of this resource is being foregone through landfilling. While a few other used tyre-recycling options exist or are emerging, as yet these are largely non-commercial, or end-markets have not been proven. In these cases, we would argue that the high-volume, available market should be adopted. Again it has been the experience of the industry globally, that the value added to the secondary material resource through this

uptake will of itself drive alternative recycling technologies until these become commercially viable with their own available markets, at which point the market will drive a transfer to the higher order use.

"Resource Efficiency" sub-heading

It is our working interpretation that the concept of resource efficiency involves increasing the efficiency with which we use energy and material resources ('eco-efficiency'), and recovering and finding new ways to use wastes and by-products from other industries ('industrial ecology'). For our industry, opportunities to improve resource efficiency are focussed on the use of non-virgin raw materials and energy, as well as the use of non-virgin cementitious materials, which also assist in reducing our use of input materials. Our industry has already realised significant environmental and social benefits from initiatives in these areas.

Our Views on Section 5 "Arguments for government intervention"

"Market failure arguments for government intervention" sub heading

We note the discussion within the Issues Paper in relation to negative externalities. It is our belief that negative externalities are not yet being fully accounted for, particularly on a full social, environmental, economic basis. We would consider that a government policy response is appropriate to drive a united action by jurisdictions. However, we would caution against a regulatory response. We generally consider that landfill controls, be this through pricing or hazard, are perhaps the most effective instrument in guiding the community towards improved waste management and greater resource efficiency.

"Institutional and regulatory barriers" sub-heading

Q: Are institutional or regulatory barriers preventing the uptake of better waste management practices and how?

Q: Are local governments sufficiently aware of best practice approaches to waste management that would suit their circumstances? What institutional constraints are preventing the adoption of best practices?

Q: What regulatory and institutional barriers are impending the development of markets for recovered resources? What is the case for removing these barriers?

The Australian cement industry has worked for a long period with administering authorities and communities to improve acceptance of the use of alternative fuels and raw materials. In some instances, broad acceptance derives from longstanding practices (e.g the use of fly ash in cement) where regulatory barriers are the main impediment (see Case Studies on fly ash). However, there is justifiably greater suspicion in relation to the use of alternative fuels in our process. The cement industry welcomes the opportunities that this provides for public debate and does not shy from providing technical information to support its case. However, there is a great deal of frustration in relation to dealing with the numerous jurisdictions and levels of government, particularly with the differences that exist in relation to policy (or lack of policy), which then feed down to widely varying approaches to licensing and monitoring (see Case Study on the Berrima plant).

Case Study: Berrima Plant and its Uphill Battle for Fuel Substitution Approval

Berrima Works commenced investigating opportunities for the use of non-traditional or alternative fuels in 1999. This was based on the success of their use at overseas cement plants and at the Blue Circle Southern Cement plant at Waurn Ponds in Victoria.

In 1999 and 2000 Berrima Works conducted trials using a number of alternative fuels (waste oil, carbon anode dust, cooking oils, used industrial lubricants and wood chips). The results of the trials were all below NSW Department of Environment and Conservation (DEC) guidelines and US EPA limits. The results were reported to the NSW DEC Environment Protection Authority (EPA) and it proposed to agree licence limits to allow the routine use of alternative fuels.

There were extended discussions with DEC over a number of years before conditions for a further trial were agreed in June 2003. The delay in agreeing conditions resulted in the development approval (DA) for the upgrade of Kiln 6 precluding the use of non-standard fuels in the upgraded kiln and forcing BCSC to apply for a further modification of the DA to allow their use.

Trials using carbon dust from the aluminium industry, waste oil water mix and used tyres were conducted from August to October 2003. The emission tests made during the trials showed no effect on the environment or the health of the community. The results were used in support of a modification of the DA to allow the use of these non-standard fuels.

Significant community concern resulted in the application being delayed and the approval was not granted until September 2005.

In an excessive application of the precautionary principle, DEC have imposed extensive limits to both material inputs and emissions, assessing the use of the materials as incineration not energy recovery.

The cement industry believes that the delays in agreeing conditions for trials and the use of the materials reflects a lack of policy supporting energy recovery and in particular that this policy gap leads DEC to treat what is essentially the burning of a valid, high calorific value fuel as incineration. The cement industry considers that limits should not apply to input materials but to 'end of pipe' emissions (i.e performance standards) and, to encourage energy recovery those limits ought to be no more restrictive than those applied to the fuels replaced.

"Unsustainability of current practices" sub-heading

The cement industry sees the issues of "resource efficiency" and "sustainability" as complementary. As such we believe that a policy focus on resource efficiency is sufficient and better targeted than the broader area of "sustainability".

Our Views on Section 6 "Policy options"

"Energy recovery from waste" sub-heading (p 24)

Q: What are the economic, environmental and social benefits of recovering energy from waste?

The benefits of using by-products as fuel can be summarised as:

- reducing the amount of virgin fossil fuels needed, thereby reducing the associated environmental impacts of finding, producing, transporting, and burning these fuels;
- decreasing the demands on local landfills and reducing their environmental impacts, including potential groundwater pollution, and methane generation; and
- assisting the Australian cement industry achieve international competitiveness.

Q: What is hindering the greater use of recovering energy from waste in Australia?

As per this submission, we can identify the main hindrances to recovering energy as:

- regulatory impediments;
- inconsistent legislation across different jurisdictions;
- lack of supply security due to issues with current policy and legislative framework resulting in an increase in risk for private capital expenditure.

Q: Are there particular products or locations for which recovering energy from waste would be the most efficient approach to waste management?

The existence of cement kilns provides an existing, ready and efficient approach for the recovery of energy from waste. Cement kilns are located predominantly in regional locations within Australia and this has tended to impact on the availability of various secondary material markets available. For example the cement kiln at Birkenhead in South Australia has developed a waste wood energy input, while other kilns have focussed on used tyres, spent cell liners or other materials.

Case Study: Geocycle SBF, the Oil Product Stewardship Scheme (PSO) and Hazardous Waste Disposal

For the past 15 years, most of the hazardous liquid and sludgy wastes generated in Australia have been scientifically formulated into a liquid fuel by Geocycle, and used as a fuel in high-temperature cement kilns. The blending and firing process in cement kilns requires a mix of wastes that have a high energy content, thereby contributing to the kiln's fuel requirements and replacing coal or gas. However, in recent years a number of factors have changed the nature of the hazardous waste generated in Australia to the point where the current disposal options are no longer viable and thereby creating a greater environmental threat.

While Geocycle is committed to the principles of sustainable development, it operates within a competitive commodity market requiring ongoing focus on cost minimisation. As such, the heavy subsidising of competitors by the PSO makes it extremely difficult to source much-needed materials on a commercially viable basis.

Stricter environmental and health controls by governments and greater environmental awareness within industry is increasing the volumes of higher risk hazardous wastes that companies need to dispose of.

Opposing this growth in high-risk hazardous wastes is a falling trend in sources of high-energy value wastes, such as solvents and oils due to loss of manufacturing industry and improvements in industrial efficiency, including minimising waste output and recycling.

The PSO has introduced market inequities by providing disproportionate support for technologies with similar environmental outcomes. For example, the PSO provides a benefit of 50c/litre for lube-to-lube oil recycling compared to 3c/litre for the cement kilns that recover energy. This inequity has reduced the volume of used oil available to assist in the blending of hazardous wastes.

This shortfall in the availability of high calorific wastes has reached a critical point for Geocycle. The business is unable to source sufficient high calorific wastes to remain operationally and financially viable. If Geocycle ceases operating it would result in the most hazardous wastes being stockpiled by industry, creating an ever-increasing risk of fire, pollution or poisoning, in addition to the immediate impact of 25,000 tonnes CO2-e per annum increase in greenhouse gas emissions.

"Producer responsibility for waste"

The cement industry considers that product stewardship schemes may be appropriate for some products in certain markets, but that their role may not be well suited to addressing market failures.

If the market failure is deemed to be a loss of material or energy resource to landfill, then increasing landfill controls or cost adjustment is considered to be a more efficient means of driving market readjustment. However, either option increases the risk of illegal dumping unless commercially and technically viable alternatives exist. This is also the case with

product stewardship schemes which, while providing additional monetary resources to assist in the development of new technologies, are still dependent upon the research and development cycle and the not insignificant assumption of a viable market.

We do not support product stewardship schemes that provide a differential benefit to different technologies. We believe that product stewardship schemes where "winners" are picked and supported is not good economic practice and will result in technologies remaining economically unviable and requiring taxpayer-funded, economic support indefinitely. It is our belief that if a product stewardship scheme is initiated then it's benefit is to raise the overall value of a secondary material in order that markets will develop with viable markets succeeding. We do not believe that Product Stewardship schemes should interfere in natural market development by "picking winners" through benefit discrimination. (see Oil Product Stewardship Scheme Case Study).

"Regulation of landfill and other waste management facilities" sub-heading

With regard to the regulation of landfill and other waste management facilities, we consider that overall community benefit is a critical consideration to be taken into account and believe that this is a key role of jurisdictions. We note a lack of policy direction particularly in relation to energy recovery from secondary materials as this results in significant duplication of costs and effort in obtaining planning and operational approvals. We support an appropriate level of regulation of all facilities recycling or recovering energy from secondary materials to ensure that social and environmental aspects are assessed in a professional and technical manner.

"Education programs" sub-heading

The cement industry has been positively involved in community education in relation to resource efficiency issues and the reuse of secondary materials for some time. We believe that such education is critical to advancing community discussion on resource use efficiency. Jurisdictional harmony on material and material-hazard classification, as well as management policy would greatly assist in providing a uniform approach to community education.

"National coordination of policies" sub-heading

Q: Are there significant regulatory differences between jurisdictions and what are the costs?

It is the case that significant regulatory differences exist between jurisdictions in areas including waste definitions and classification systems; transport, storage and handling requirements; as well as planning and licensing requirements. These differences result in duplication of effort by our member companies in undertaking resource efficiency programs – particularly those involving the use of secondary materials. The costs involved are incurred by duplication of management effort, in some cases unnecessary duplication of monitoring and or evaluation trial effort. Less visible are the costs incurred where resource efficiency projects do not proceed due to lack of regulatory certainty or risks associated with secondary material supply security.

Q: How can this be improved?

Q: How well is the EPHC functioning in this area?

CIF believes that the EPHC has a key role in addressing the national harmonisation of waste management legislation. We would contend that a national policy approach developed within the EPHC forum is key to moving forward. This will then provide a basis for eventual review and rationalisation of regulation, as well as provide a mechanism for better addressing issues surrounding cross-boundary transit of secondary materials.

Conclusion

The cement industry sees itself as able to provide a high-volume, proven, regional solution to the current loss of energy-resource value being experienced through the broad-scale land-filling of secondary or by-product materials. The CIF considers that the use of secondary or by-product materials as alternative raw materials and fuels in cement manufacturing has a net social and environmental benefit by helping the cement industry in reducing its effects on the environment and improving its overall performance. For society as a whole, the provision of a waste management solution for the community, as well as reducing the use of non-renewable fuel resources is also of real significance.

The cement industry accepts that some environmental issues and community concerns around the use of secondary materials exist, but the industry well understands these issues and has a good record of addressing community concerns. The cement industry's most significant concerns (and which generally apply equally to advancing the resource efficiency debate) include:

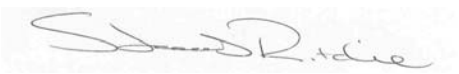
- out-dated regulatory approaches that are not harmonised between jurisdictions;
- different approaches to the classification of waste materials and hazard classification by different jurisdictions; and
- the current legislative inability to reclassify wastes as "beneficial resources", thereby incurring significant licensing, tracking and in some cases forced disposal rather than optimising resource efficiency.

The cement industry believes that the following solutions are necessary to address these impediments and to drive improved resource efficiency in Australia:

- **The redrafting or replacement of the current suite of waste management related legislation to incorporate the critical principles of "material value" and "resource efficiency"**;
- **A national approach to waste management and resource efficiency regulation**. The cement industry considers that this is best achieved through a coordinated policy approach facilitated through the Environment Protection and Heritage Council ("EPHC"). We would hope that such an approach might then also address the regulatory impediments to resource efficiency that this industry has experienced;
- **The judicious use of market interventions that address only the identified market failure**. We will highlight later in our submission our experiences with market failures and market intervention schemes.

This submission has been authorized at the level of the Chief Executive Officer of the CIF. Any inquiries should be directed to the undersigned. Thank-you for the opportunity to provide this submission.

Yours faithfully,



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