CEMENT INDUSTRY FEDERATION

23 May 2008

The Secretary
The Senate Standing Committee on Environment,
Communications and the Arts
PO Bo 6100
Parliament House
Canberra ACT 2600

Inquiry into the Management of Australia's waste streams and the Drink Container Recycling Bill 2008

The Cement Industry Federation ("the CIF") welcomes the opportunity to submit comments to the Senate Inquiry into the Management of Australia's waste streams and the Drink Container Recycling Bill 2008 ("the inquiry").

The **Cement Industry Federation** (CIF) 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 all of the integrated production of clinker and cement in Australia. Their operations are located in every state and territory, and include 15 manufacturing sites, 10 mines and over 70 distribution terminals. In 2007, the industry employed 1,850 people and produced over ten million tonnes of cementitious materials, with an annual turnover in excess of $1.79 billion. In Australia, the industry is responsible for nearly 7.2 Mt per annum of greenhouse gas emissions.

In collaboration with its member companies, the CIF works to advance a competitive and sustainable Australian cement industry that is committed to best practice in all areas of cement production, as well as responsible management of our nation's resources.

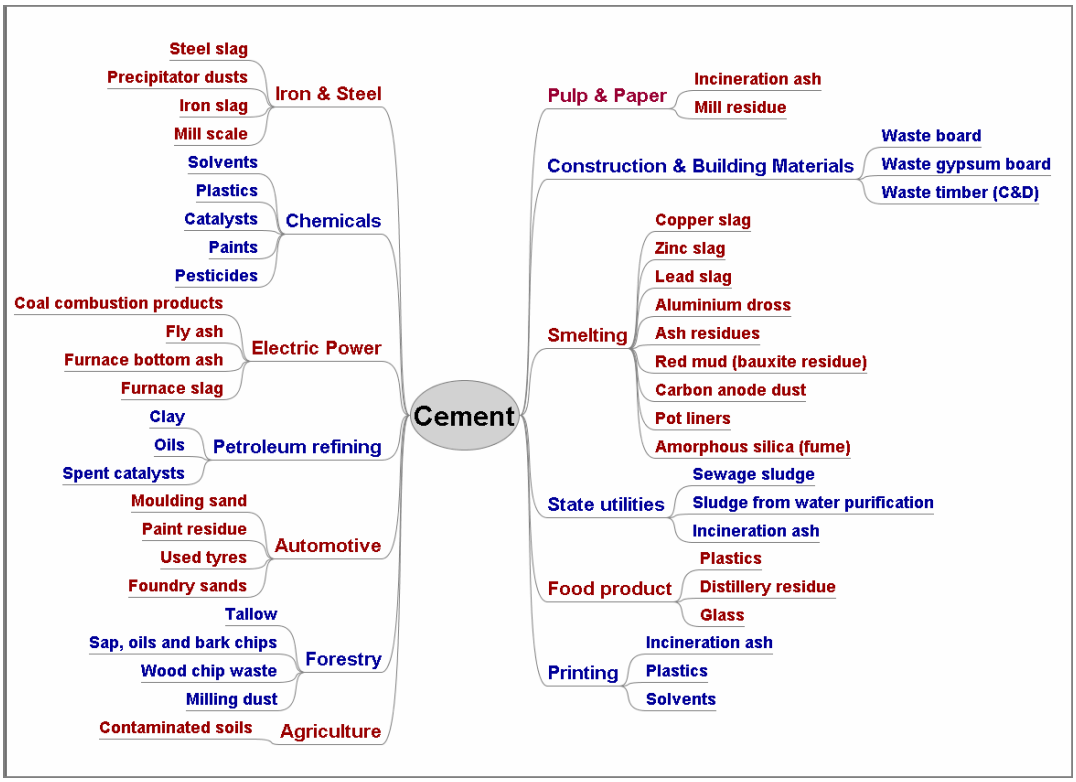
Introduction: The Australian Cement Industry and Resource Recovery

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 Federation Limited A B N 59 008 468 639 ■ Level 1, 27 Manuka Circle, Manuka ACT 2603 ■ PO Box 4178 Manuka ACT 2603
Telephone +61 2 6260 7222 ■ Facsimile +61 2 6260 7333 ■ www.cement.org.au

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).

Figure 1 – Secondary / By-Product Material Opportunities for the Cement Industry



Effectiveness of existing resource recovery strategies

For the year 2006/2007, approximately 112,000 tonnes of solid and liquid alternative fuels (or 6.5% 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 in excess of 10Mt of cement and cement materials) were introduced to the market. ***These figures make the cement industry one of the largest recyclers in Australia yet the Australian cement industry's can recycle more***. Globally, particularly in Europe and Japan, the cement manufacturing process is recognised for its contribution to sustainable resource management. Internationally the cement industry has made significant achievements in the use of alternative resources over the past 30 years which have not been able to be realised in the Australia industry due to a number of factors including:

- the abundant opportunities and low cost of land filling which has diminished the market incentive to establish resource recovery
- outdated and inconsistent waste and recycling legislation within State and Federal jurisdiction which results in regulatory uncertainty or disincentives to drive progress supporting resource recovery.

In particular, State approaches vary to defining, classifying and regulating wastes. This leads to increased ambiguity and confusion, and forms barriers to progressing innovative initiatives for end use. Opening legislative requirements and approval processes to move progressive approaches to the re-use of alternative resources, encourages the opportunities for the industry to adopt more sustainable practices and reduce its environmental footprint.

Potential new strategies to Resource Recovery

The important contribution the cement industry can make to a nation's waste management infrastructure has been explicitly recognised by several state governments. The practice of employing alternative fuels and raw materials in cement plants supports the establishment of a sound waste management industry, and essential principles of the waste management hierarchy. The establishment of the reuse of larger volumes can and has opened innovation in higher value uses for waste materials through encouragement of recovery and segregation of valued waste. To this end the cement industry continues to contribute to the furtherance of sustainable development in Australia.

The Australian cement industry seeks the federal, state and territory governments' assistance to achieve the following:

- To develop and implement a nationally consistent approach to resource recovery policy, identified in our "principles of resource recovery"
- To clarify resource recovery with definitions and classifications that promote the recycling of materials, and the industries and products that use recycled materials
- To gain agreement and remove regulatory impediments to resource recovery and reuse that carries over from its association with waste disposal.
- To lift the "waste" status for a selected number of material streams when they go to suitable next uses.

Policy priorities to maximise the efficiency of Resource Recovery

The CIF seeks the support of the federal, state and territory governments in the development and adoption of following resource recovery principles (see Appendix A for further detail on resource recovery principles):

1. Minimise the regulatory red tape that controls the use of waste differently to traditional materials, and duplicates requirements of next users, resource recovery operations and generators
2. Redefined "waste" nationally to mean materials destined for disposal while "resource recovery" materials are recognised as passing into a next use.
3. Use waste levies as an incentive to support the development of resource recovery industry and to reduce waste to landfill
4. Replace "exemptions" for processes using waste with legislation that is supportive of "resource recovery"
5. Focus regulatory control on ensuring acceptable process emissions standards are set to ensure public health and environmental standards are maintained
6. Allow market forces to determine Higher Valued Use for recovered resources
7. Utilise international best practice to support resource recovery development
8. Recognise the traits of resources being recovered, for example:
    - Resource recovery opportunities are often regional due to the cost of transport,
    - Resource recovery streams change as new opportunities with higher values become viable and waste reduction strategies are implemented,

- Processes such as cement manufacturing should be recognised for their robust nature and highly technical control.

The Australian cement industry recognises the need to conserve non-renewable resources, and supports recovery resources to their fullest economic potential in a safe and environmentally responsible manner. In this regard the cement industry plays a valuable role in maximising the utilisation of latent energy and material value within a by-products and waste material, thereby providing a high standard of sustainable and environmentally beneficial alternative to disposal.

A large amount of additional information has been included in the appendices of this submission. Appendix B provides a background of secondary materials used as kiln fuels and raw materials. Additionally, an outline of the current contribution the cement industry has made to resource management in Europe and in Australia has been included, together with some positive examples of regulation assisting the Australian cement industry in resource recovery and alternatively examples of regulatory barriers faced by the industry. Appendix C and D outline the recommendations of the Cement Industry Action Agenda and the Productivity Commission Inquiry into waste generation and resource recovery, to develop and implement a national definition of waste. Appendix E includes a decision tree developed by the European Court of Justice to determine when material is being recovered for valued use and when it is being sent for disposal.

Any inquiries should be directed to the undersigned. Thank you for the opportunity to provide this submission.

Yours faithfully,

Andrew Farlow

Sustainable Development Policy Manager

Appendix A - Principles of Resource Recovery

1 Regulatory red tape

Red tape and regulatory indecisiveness creates uncertainty for testing and adoption of "non-traditional" practices, stifling up-take of innovative opportunities. Resource recovery is a practice that will constantly challenge the use of traditional resources and practices. To maximise these opportunities, regulators need supporting legislation that addresses the issues of concern to public health and the environment and allows the authorities to assess the impact decisively, objectively and transparently.

Industry also needs regulations that are simple to apply, consistent and not requiring onerous special reporting, that are not duplicated either within State legislation or across State and Federal Acts.

The duplicative and inconsistent regulation to manage waste that arises through already licensed facilities having to additionally gain approval for materials being beneficially reused is an issue.

For resource sustainability to become a reality in Australia, we believe that these two identified concerns must be addressed. Options to achieve this are considered to include:

1. substantially improved definitions and classification systems;
2. provision of legislative mechanisms that allow for wastes, by-products and secondary materials to cease to be wastes; and
3. an acceptance that environmental harm that may be associated with the use of non-traditional fuels or the processing or reuse of by product materials is best addressed through appropriate scheduled activity emissions limits – rather than by input material limitations.

2 Definition of Waste and Resource Recovery

Of critical importance is how to determine what **is** a waste and what **is not** a waste. The CIF does not support ***a wholesale declassification to the waste status***. Declassification to the waste status should under no account lead to attempts to by-pass essential legislation which could lead to an overall negative perception of resource recovery processes. However we do suggest that no material is a waste until it is deposited in a registered landfill or incinerator. Once the decision is made to dispose of the item or substance then standard waste procedures apply, for example, levies, data capture and tracking.

Other by-products going to next use should be classified as recovered resources, and those sites that take in such materials and prepare them for next use should not be considered "waste depots" but rather a high level of operation, more closely linked with manufacturing standards. "Resource recovery" requires sophisticated equipment and processes, management of stock level and product specifications and development of trained employees.

CIF considers that ***by-product*** materials of an industrial production process are not necessarily wastes. The ***rulings of the European Court of Justice*** contain sufficient criteria to define by-products (see decision tree in Appendix E). By-products should be regulated as any other process material is managed, based on its chemical and physical characteristics and its use in a process. In this respect, any ***definition of by-products*** should clearly state that:

- A by-product (good or material) results from an extraction or manufacturing process, where the ***primary aim is not the production of that substance***, and

- The undertaking ***intends to benefit or market*** the by-product in a subsequent process, and

- By-products have an ***economic value*** as products able to be ***further processed prior to reuse*** as part of the continuing process of production, and

- Such a ***reuse*** is not a mere possibility but a ***certainty***, and

- By-products are ***subject to the legislation applicable*** to those products and raw materials/resources, as well as their transport, storage and production, further processing or use, especially with regards to environmental requirements.

3 Waste levy

The cement industry recognises the value of the use of a blunt regulatory instrument to drive the difference between waste disposal and resource recovery. In Western Australia the levy is $6 per tonne, insufficiently low to support a resource recovery industry of proportional size for the states industrial activity. In addition the advantage of planning for changes to the levy is important to both generators and next use industries. A five to ten year waste levy projection would assist this point.

4 Supportive regulation for Resource Recovery

Current practice to regulate industry utilising recycled materials with "exemptions" promotes a negative perception of a site's ability to manage its processes, for example, a well operated plant at world best practice using alternative fuels would be required to operate under an Environmental Licence exemption condition. This approach needs to be addressed.

The contingent liability of the product in the market becomes difficult again when the dated definitions and perceptions of waste are associated with the product. The progressive initiative of eco-efficiency is lost, the perception that waste materials used in a product are inferior, is being supported by special licensing and the reference to "waste".

In translating policy to market outcomes, the continuation of regulations referencing materials being recovered for use as "wastes", results in the resistance to embracing their use. Community groups, regulators, customers, our own employees and management perceive the use of "waste" materials as a degrading step for both process and environmental controls, and product performance.

5 Focusing regulatory control on emissions

With the changing opportunities of the resource recovery industry's 'next use' customers and the changing composition of both sources of by-products and waste, regulating the inputs to a process, especially only the non traditional materials, becomes difficult and inadequate. However expecting the facility to monitor its raw material inputs, and regulate the emissions from the process responsible environmental performance can be assured and varying sources of recovered materials can be accommodated.

Regulating emissions regardless of process inputs would relieve a great deal of licensing burden.

6 Higher Value Use

The CIF believes all levels of governments should encourage a shift away from waste disposal towards true resource recovery, reflecting modern resource management practices and the environmental benefits that this can bring. The CIF fully supports a ***clear three level waste hierarchy***:

- Prevention and reduction of waste production eg cleaner production
- Recovery, eg re-use, material recycling and energy recovery
- Disposal eg landfill and incineration

Lifecycle thinking and lifecycle assessment are tools that are complementary to the waste hierarchy to distinguish between recovery and disposal.

The CIF supports a waste hierarchy where all recovery operations are considered at the same level and where market forces are allowed to operate freely. We do not support subsidised recovery operations where a process cannot demonstrate economic sustainability.

7 International Best Practice

The Cement Industry supports the acceptance of best practice international standards and guiding principles. Resource Recovery has advanced more quickly in Europe than Australia and there is a great deal of experience our industry has gained through technical associations and organisations like the World Business Council for Sustainable Development - Cement Sustainability Initiative (WBCSD CSI). Alternative fuels and materials that come from regional opportunities will have specific requirements but the best practice standards should still be applied.

Appendix B

Background of secondary materials and the Cement Industries experience with Resource Recovery

Large volumes of secondary materials are used in cement manufacturing as alternative fuels and raw materials, providing a significant contribution to resource management and conservation. Unlike incinerators, the cement manufacturing process utilises energy from alternative fuels and minerals from alternative raw materials including ash and residues, ensuring that no additional solid waste stream arises. Other benefits of selecting alternative fuels and raw materials to substitute for traditional resources include: reducing the costs of production; reducing greenhouse gas emissions; improvements in energy efficiency; and the conservation of natural materials.

A common characteristic of all cement kiln systems is the long retention time at elevated temperatures. Kiln burner flame temperature is typically 2,000°C and material travelling through the kiln reaches 1,450°C as it forms clinker - an intermediate product of cement manufacturing. Cement kilns are energy intensive with fuels being the single greatest cost in production. Greenhouse gases emissions are also high per tonne of product with emissions forming from both energy use and the conversion of raw materials to clinker. Kilns are designed and operated to maximise energy use and minimise energy losses, this requires precise and continuous sophisticated monitoring of the process, the fuel and material feeds. The clinker is formed including the residue and contaminants from the fuel or raw materials, so the selection of suitable alternative materials and fuels must ensure they are complementary to the performance of the final product - cement. In addition, leaching tests on the final concrete product demonstrates that the clinker structure binds the elements of the residues permanently – whilst maintaining the environmental integrity of the concrete.

Secondary materials as kiln fuels and raw materials

Lowering energy costs is one of the main ways of improving the international competitiveness and sustainability of the Australian cement industry. More and more, cement plants are turning to using alternatives to fossil fuel and natural raw materials. Today, in Europe, alternative fuels provide on average about 12% (up to 72% in some individual plants) of thermal energy consumption to the industry. Waste materials such as used tyres, rubber, paper, used oils, used wood, paper sludge, sewage sludge, plastics, slags, animal meal are commonly utilised.

Pre-calcined and supplementary cementitious materials (SCMs) originate as the high-volume by-products of other industrial processes. Reducing the quantity of clinker required in concrete through the substitution of SCMs during the manufacture of cement and concrete lowers the greenhouse gas emissions per unit of cementitious material used and manages large volumes of normally land filled waste.

The industry currently substitutes 22% (about 2.2 million tonnes) of clinker with both mineral addition and SCMs such as fly ash and slag as blends in cement products or as sales direct to the premix industry for use in the concrete products markets. The Cement Industry Action Agenda includes a recommendation to increase the use of SCMs in cement and concrete to at least 29% by 2012.

Key environmental risk from the use of alternative materials

The high temperature and long material residence time implicit in the cement making process ensure that harmful organic substances are destroyed. Under these conditions, the destruction and removal efficiency of the most stable organic compounds exceeds 99.99 per cent. This meets the most stringent regulations, such as those required by the US EPA. Fuel ash, the solid residue of the combusted fuel, becomes incorporated into the crystalline structure of clinker and fixed in concrete.
Consequently, there are no solid by-products requiring disposal.
Dioxins and furans: A report commissioned by the Australian Government in 2002, indicated that emissions from cement and lime production combined were a minor source, accounting for less than 0.2 per cent of total dioxin and furan emissions to the Australian environment. the Australian cement industry has developed an extensive data set of dioxin and furan emissions from cement kiln stacks and supports international observations that emissions levels of dioxins and furans are normally independent of the type of fuel feed. The 2004 National Dioxin Program's study into bushfires as a major source of dioxins and furans production verified with their field tests that rapid cooling of exhaust gases, such as is conducted in cement kiln exhausts, creates the best environment for low production of dioxins and furans.
Heavy metals: The majority of heavy metals that enter the cement manufacturing process are inherent in the raw materials. During the process of clinker manufacture, these heavy metals (including the heavy metal constituents of any fuel used) predominantly become incorporated in very stable chemical combinations in the clinker. A small subset of higher volatility heavy metals have been identified as being of concern for cement manufacture overall, these are monitored in the recovered materials to ensure compliance with emissions regulations.
Particulate emissions: Process exhaust gases are passed through pollution control devices, such as electrostatic precipitators or bag filters. The particulates are captured and used through the kiln to make clinker. The use of alternative fuels and resources in cement manufacturing does not increase particulate emissions from the process.
Sulphur dioxide: The high levels of limestone used in the cement manufacturing process neutralize the majority of acidic gases, including sulphur compounds.

The European Cement Industry

The use of such materials in European cement plants has proven to save fossil fuels, equivalent to approximately 3 million tonnes of coal per year. The cement industry is recognised by some European Governments as an essential part of their waste management policy. A ruling delivered by the European Court of Justice on 13 February 2003 holds that using waste as a fuel in cement kilns is to be classified as **recovery**, while burning municipal waste in dedicated incinerators, even with energy recovery, is to be classified as **disposal** (www.cembureau.be). The ruling was a major step towards recognition by policymakers of the environmental and economic advantages of valorising waste in cement kilns.

In February 2007, the European Court of Justice released a communication to explain the definition of waste set down the Waste Framework Directive. The European Court of Justice addressed the issues of by-products in relevant industry sectors, and when by-products should or should not be considered as waste in order to clarify the legal situation for economic operators and competent authorities (see Decision tree in Appendix E).

Australian Cement Industry

In Australia, alternative materials may be sourced from by-products of other manufacturing processes or from end-of-life products. Unfortunately, such materials are commonly classified as "wastes" under existing state regulatory regimes and this can constrain legitimate resource conservation efforts. Regardless, the industry is focused on identifying opportunities for utilising materials which retain value as either energy content and/or material substitution, and where this value can be realised by the cement industry, provided their use makes economic and environmental sense. Examples of the by-products and waste products currently used as alternative fuels in Australia include tyres, demolition timber, tallow, carbon or anode fines, spent cell liners, waste oil, coke breeze and blended solvents. While the industry has been safely using these materials for many years, the processes, practices and techniques to do so are generally part of individual company procedures, and thus not well known to a broader public. Stakeholders hold legitimate concerns about the effects of changes to processing being introduced by the cement industry, particularly in air emissions, product performance, transparency, communication, standards and regulation are all important elements to establish an environmentally responsible process for the use of alternative resources.

As a minimum standard, all CIF member companies using alternative fuels and raw materials follow the World Business Council for Sustainable Developments "Guidelines for the selection and use of fuels and raw materials in the cement manufacturing process" which are built upon the principles of sustainable development, eco-efficiency and industrial ecology, and the best practice of the global industry.

Examples of Waste Regulation working with industry

The Waurn Ponds site operated by Blue Circle Southern Cement (BCSC) in Victoria has pioneered the use of alternative fuels in Australia. Currently 50% of the plant's energy requirements are derived from alternative fuels. This provides significant cost savings to the business while diverting some 40,000 tonnes per annum of material from the waste stream and conserving over one million gigajoules of natural gas annually. Extensive trials have ensured that use of alternative fuels has not compromised the quality of the environment or the quality of the cement produced. The results of environmental monitoring are reported annually to the EPA and to the Community Liaison Committee.

Energy recovery is recognised by the Victorian EPA as one of the options available for the management of waste through resource recovery. The alternative fuels programme at BCSC, Waurn Ponds has been developed in consultation with the Victorian EPA and the community. The EPA has implemented a regulatory framework for the cement kiln process that involves monitoring the inputs as well as controlling the emissions from the process to ensure the requirements of the State Environment Protection Policy for air quality indicators are satisfied.

Cement Australia's Geocycle Plant in Victoria provides management for the alternative fuels operation within Cement Australia. The Dandenong site is a blending platform for solvent-based alternative fuels (SBF) which provides a conduit for waste between the generator and the environmentally sustainable resource management outcome provided by using alternative fuels in cement kilns. The plant is able to take sludgy materials and even solid waste materials, and homogenise them into a high viscosity fuel. The liquid fuel is transported to Gladstone, Queensland and Railton, Tasmania and is used to supplement coal as kiln fuel. The use of low carbon fuels has a positive impact on CO_2 emissions when compared to coal as a fuel source.

Cement Australia is currently extending the waste processing capability of its Geocycle plant with the introduction of innovative equipment, enabling conversion of a broader range of wastes into kiln fuel. The new plant embraces the Victorian EPA's waste strategy by converting waste

materials that have traditionally ended up as landfill into usable alternative fuels for cement kilns. It also provides a sustainable waste management solution for Geocycle's customers who require environmentally sound and sustainable solutions to their waste management issues. It is anticipated that 15,000–20,000 tonnes per annum will be processed through the plant from the end of 2008, and ultimately as much as 25,000 tonnes per annum could be processed using this technology saving potentially 40,000 tonnes per annum of CO_2.

The high-level of acceptance of resource conservation through this process has led the Victorian EPA to recognise that processing of such secondary materials via a legitimate processes resulting in a final product needing to meet a rigorous specification, is no different to the manufacture of any fuel product and that therefore the output material should be considered equally as a product, while still being managed in accordance with the environmental risk determined.

Similarly, fly ash, generated in NSW is used as an SCM by the cement and concrete industry in Victoria where it is no longer classified as a Prescribed Industrial Waste by the EPA. This assisted NSW with waste management and Victoria with resource conservation, where Victoria has no suitable grade of Fly Ash for SCM use.

These decisions to reclassify valuable secondary and processed materials as no longer wastes provide real incentives to the management of these resources with resulting, substantial environmental and sustainability benefits.

In South Australia, the EPA established specific GLC for pollutants based on the WHO criteria and modelling of test data taken from the stack. These limits are written into the operating licence of the cement works and give certainty to the industry, the EPA and the community that emissions for any changes to the process will be measured, reported and controlled to within the licence conditions.

Example of Waste Regulatory barriers stifling industry

Blue Circle Southern Cement's Berrima site in New South Wales has been striving to maximise its usage of alternative raw materials (ARMs) for both sustainability purposes. Current ARMs in use at the plant are: BOS secondary fines, mill scale, steel slag, FCC catalyst and cement fibre board. In particular, Berrima has been focusing on achieving 100% replacement of iron ore requirements with alternative materials sourced from the steel industry.

Under the existing legislative framework for waste within NSW, the receipt of wastes classified as Solid or Inert is restricted to a maximum quantity of 30,000 tonnes per annum. Acceptance of tonnages beyond this limit requires the site to be classified as a waste facility an unacceptable requirements for both management and the community. This requirement has had a significant impact on Berrima's ability to maximise its use of alternative raw materials, particularly iron rich materials from the steel making industry. Clearly there is no understanding of the opportunities of the cement manufacturing process to utilise waste, and the tonnage constrains reduce the economic viability of installing infrastructure and process change.

In addition in NSW this is particularly the case with alternative (non-standard) fuels where the current regulations create a significant barrier to their use. Under the current regulations the use of alternative fuels results in an operational licence change, a change not applied when there is a change for standard fuels. The use of non standard fuels requires tighter emission limits stifling the ability of a site to use alternative fuels. There is little rationale for a change to operational licensing requirements for emission limits when there is a change in fuel or material use to non traditional materials.

It can be seen that the current legislative requirements place significant limitations on the plant's ability to re-use waste materials, but even more importantly stifling extended resource sustainability and the potential for the plant to further reduce its environmental footprint. DECC is currently proposing to remove the 30,000 tonne per annum restriction, which will assist in maximising resource recovery, however, the amendments only provide an "exemption" from the regulatory requirements creates an "unable to comply" context to the operations of the site. A preferred approach would be one that supports the environmental benefits that occur and recognise and promote the resource management aspects of the operation. This could be achieved to include resource recovery by a reclassification of the waste.

Spent solvents were utilised as a fuel for five years at Adelaide Brighton Limited's (ABL) Geelong Cement Works from 1994 before the recycling of solvents became a regular site activity and with the change to water based chemicals the generation of spent solvents was reduced and the quality of the alternative fuel moved to sludgy tank bottoms requiring a change of process equipment for handling and firing. The change in the fuel quality made no difference to the environmental impact of the stack emissions. This demonstrates,

- the robust nature of the cement kiln is supported
- regulatory controls should be placed on emissions (outputs), not the source materials (inputs), and
- it's important to note that many opportunities to use waste and conserve natural materials have short time frames requiring regulations to be able to act quickly to maximise these chances.

Inconsistency in State legislation creates uncertainty and confusion. Fly ash is identified as a controlled or hazardous waste in Western Australia and South Australia, yet its inert properties have encouraged its use as a SCM in cement well before it was classified as a waste. The practice of using the material in cement and concrete continues without controls that would be expected of hazardous materials, adding a risk to the use of Fly Ash that should this standard of waste management be applied to Fly Ash its broad use would stop and it would be returned to landfill (250kt per annum). This would be a disappointing outcome as NSW, Queensland and Victoria are now using Fly Ash as a regular construction material.

Appendix C – Supporting National and International Programs of resource recovery

Cement Industry Action Agenda

On the 24th August 2004, the Hon Ian Macfarlane MP launched the Cement Industry Action Agenda stating "*the Cement Industry Action Agenda is a government-business partnership that will map a future for the industry by identifying opportunities and challenges ahead."* Through this Action Agenda industry is committed to securing a cooperative relationship with Australian, State and Territory Governments with the objective of delivering the best possible regulatory and fiscal framework for a sustainable long term future. This will allow the industry to counter anticipated international competition. Appendix D includes an extract from the Australian Cement Industry Action Agenda 2006-2012 detailing the government and industry actions in relation to waste.

State governments welcomed the findings of the Action Agenda and have been positive in their comments and suggestions on how to work through the various COAG committees to implement recommendations. One of the key Government actions in the Cement Industry Action Agenda is to develop and implement a nationally consistent approach to waste policy, addressing such issues as eco-efficiency, recycling and product stewardship.

Representations to progress these key recommendations have been made jointly by CIF and Australasian (iron & steel) Slag Association (ASA) with representatives of the Environment Protection and Heritage Council (EPHC) Waste Working Group.

Coincident with these representations, the Department of Industry Tourism and Resources (DITR) sponsored a national workshop titled "Alternative Raw Materials Use in Construction Section: Legal/Regulatory Issues" in Sydney on 4th May 2007.

The aim of the workshop was to "explore the legal/regulatory impediments having greatest potential to frustrate the current and ongoing use of alternative raw materials (ARM's) in the manufacture of cement and concrete, a key issue identified by the Cement Industry Action Agenda (CIAA)".

> *The specific objective being to "identify pathways for government and industry actions that can lead to the removal of legal or regulatory barriers for utilisation, thus increasing the uptake of alternative raw materials and supplementary cementitious materials (SCMs) such as iron and steel slags".*

Progress towards the key objective of the workshop to "identify pathways for government and industry actions that can lead to the removal of legal or regulatory barriers for utilisation…" was limited by the absence [low level of participation by] of representatives from state jurisdictions.

Some recommendations relative to key objective included;

- Only classify materials as "waste" when they ARE disposed of in landfills - otherwise cover by resource rules.
- Overall framework and policy process between states are similar, but interpretation, application and final outcomes can vary widely in practice. EPHC to take leadership role to develop national approach for reclassification
- Use of waste as a resource conserves natural resources and should be encouraged with appropriate policy.
- Environmental [landfill] levy funds should support R&D focussed on material reuse/recycling (e.g. grants)

Notes of the outcomes from this workshop are provided in Appendix D.

Productivity Commission Inquiry into waste generation and resource recovery

In 2005, the Productivity Commission was asked to advise on strategies to address market failures associated with the generation and disposal of waste. The Productivity Commission made several recommendations in relation to providing a nationally consistent approach to waste management. The Report recommended that:

- the Australian Government work with state and territory governments to develop and implement a national definition of waste, a national classification system and review the appropriate balance between prescriptive and risk-based classification of waste
- there is a need for the development and implementation of a concise nationally consistent data set for waste management
- opportunities to achieve further consistency in regulatory standards applying to waste should be explored.

World Business Council for Sustainable Development – Cement Sustainability Initiative

The Cement Sustainability Initiative (CSI) is a program of the World Business Council for Sustainable Development (WBCSD) was established in 2000 to develop and promote practical ways for the global industry to focus its sustainable development in environmental and social performance. The CSI has produced guidelines for each area of its Agenda for Action including the role of selecting and using fuels and materials in cement manufacturing.

The cement industry's contribution to sustainable development through eco-efficiency is increasing the efficiency with which we use non traditional forms of energy and material resources by sourcing, recovering and developing the use wastes and by-products from other industries ('industrial ecology'). Using resources more efficiently is an essential step toward creating a more sustainable society. Eco-efficiency means producing more with less: less waste and pollution, and fewer resources. It not only helps to break the link between economic growth and environmental degradation, but also can help companies improve financial performance.

Cement companies can achieve eco-efficiency gains in several ways, for example, **waste co-processing and energy / material recovery** – which uses the waste and by-products of other industries as fuels and raw materials for cement manufacture, creating 'closed loops' of resource use.

For some time, the industry has focused on mineral and energy recovery from the waste and by-products of other processes, a process known as 'co-processing'. Cement kilns can be used for energy recovery from non-hazardous wastes such as tyres and biomass, as well as some hazardous wastes. This reduces the need for fossil fuels and natural raw materials and increases resource efficiency. This practice also provides society with a new technology and skills, waste management options to landfill that are economically viable and environmentally sound alternative to land disposal, treatment, or incineration, the conservation of natural resources and in some cases can reduce greenhouse gas emissions.

Appendix D – Industry Action Plans

Extract from Australian Cement Industry Action Agenda

Goal 2 - *Increase electrical and fuel efficiency and reduce greenhouse emissions by 2012 in line with the goals identified in the Technology Pathway Report.*

Recommendation 2 - Future emissions management measures continue to acknowledge the impacts on energy intensive industry.

Industry commitments

9. Continue to reduce energy use and greenhouse gas emissions through the following strategies:

- switching to biomass as a carbon neutral alternative fuel;
- substituting calcined materials such as iron and steel slag and coal combustion products for natural raw materials such as limestone, clay and shales in the raw material mix;
- introducing more energy efficient equipment and practices;
- increasing the use of fuels with lower CO2 emission intensities; and
- extending the use and promotion of Supplementary Cementitious Materials (SCMs) in cement and concrete manufacture.

Goal 3 - *Increase the uptake of alternatives to fossil fuels, secondary materials and supplementary cementitious materials by 2012 to meet or exceed the quantities identified in the Technology Pathway Report.*

Recommendation 3 - The Australian Government, in consultation with industry, State and Territory governments consider the scope to enhance the uptake of alternatives to fossil fuels, secondary materials and supplementary cementitious materials.

Government actions

14. Develop and implement a nationally consistent approach to waste policy, addressing such issues as eco-efficiency, recycling and product stewardship.

15. Remove unwarranted regulatory impediments to resource recovery and reuse.

16. Australian Government to work with industry and other governments to promote the life cycle benefits of using alternative fuels and materials to the community.

Industry commitments

17. Pursue a collaborative and strategic approach to encourage the harmonisation of environmental legislation and regulations impacting the industry, including to:

- contribute submissions to the Australian and other governments;
- coordinate a submission from relevant industry associations to the Australian Government on the need for a national inventory of alternative fuels and raw materials;
- work with governments to develop product stewardship schemes; and
- develop commercial recycling schemes to:
    - encourage energy recovery from secondary materials or their reuse as raw materials; and
    - contribute to the elimination of unnecessary environmental impacts associated with current waste management practices.

18. In relation to supplementary cementitious materials (SCMs), to:

- work with relevant industry associations to identify and overcome barriers to increased uptake of SCM and, through joint representation, work to have any regulatory barriers addressed; and
- seek to increase the use of SCM in cement and concrete to at least 29 per cent by volume by 2012.

19. Work collaboratively with relevant industry associations and the Australian, State and Territory Governments to demonstrate the environmental and community benefits of the use of alternative fuels and materials by the industry to the community.

Notes from the ASA Conference May 2007, Workshop on Resource Recovery of Supplementary Cementitious Materials

Slag was recognised by speakers as a vital "co-product" of the iron and steel industry rather than merely a "waste". Its favourable properties (strength, durability, light weight and inertness) for use as a substitute for cement in concrete, as well as within asphalt mixes for road construction are now well known in Australia and many other countries. The use of slag as a substitute for natural resources has the potential to save energy and reduce greenhouse gas emissions significantly (e.g. reduce CO_2 emissions by 7%). Other examples of slag being used as a filter and within fertilizer further demonstrate its wider potential for use in an environmentally sound manner.

In the USA, slag is commonly referred to as a "co-product" and representatives from research, industry and the EPA meet regularly to share experiences and seek ways to limit bureaucracy and restrictive legislation. The challenge given to conference participants was that leadership to champion the increased use of slag needs to come from industry rather than government to help ensure its sustainable use, and that performance based regulations will be more helpful than prescriptive approaches to regulation.

The reduction of prescribed industrial waste is a priority for EPA Victoria and the cement industry is identified as best positioned to help divert more volumes of prescribed industrial waste from landfill (particular attention was given to potential fuel materials, rather than slag).

Recognition was also given to the recently published Productivity Commission Inquiry Report, Waste Management (2006). Within this report different [state] approaches to defining, classifying and regulating wastes were found to lead to ambiguity and confusion. The processes for exempting some recyclables [ARM] from regulation were seen as unclear and inefficient. Recommendations from this report relevant to this workshop were:

- The Australian Government should work with State and Territory Governments to improve existing definitions, classifications and exemption processes for recyclables.
- Ways need to be explored to achieve greater consistency in regulatory standards for waste.

A summary of industry's understanding of the various state jurisdictions dealing with substances such as slag is given in Table 1. It is seen in this table that currently the only legal status of slag is that of a "waste" and that a permitting function is the only way to enable effective use of the product.

State	Regulatory Waste Status	Exemptions Status	Exemption Criteria	Transport Exemption	Legal Status
Victoria	Waste	Yes Project specific Expires	Field Rule Not specified Subject to review 100 x Std drinking water req	Yes Project specific Expires Fees apply	Waste
New South Wales	Waste Lic requirements >20kts	None found	System for classification by generator - Inert, solid etc	Yes Project specific Expires Fees apply	Waste
Queensland	Waste	Yes BRA Project and resource type specific	None Application specific No thresholds Case by Case	Yes Project specific Expires Fees apply	Waste Exemption after BRA granted
South Australia	Not defined Responsibility for determination rest with generator	None identified Case by Case	None	Yes Project specific Expires Fees apply	Unclear - Waste
Western Australia	Not defined Responsibility for determination rest with generator	None identified Case by Case	None	Yes Project specific Expires Fees apply	Unclear – Waste

Table 1: Jurisdiction approaches to substances such as slag.

Further innovative approaches will be needed to gain the attention of the relevant personnel within government jurisdictions who have the power to act so that appropriate changes can be made to legislation to ensure environmental and social imperatives are met and industry is able to responsibly manage the alternative resources they have available. To this end the ASA may need to explore and champion the formation of a multi industry driven working group bringing together affected industry co-products thus giving weight to the issue and gain traction within government jurisdictions.

Appendix E – a decision tree for waste versus by-product decisions