

MAJOR PROJECT ASSESSMENT:

Spent Potliner (SPL) Recycling Facility



Director-General's Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

July 2009

Cover photo: SPL thermal treatment plant

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EXECUTIVE SUMMARY

The Tomago Aluminium smelter (the smelter) owned by the Tomago Aluminium Company (TAC), is located in Tomago in the Port Stephens local government area. The smelter has been operational since 1983 and manufactures 530,000 tonnes per annum of aluminium ingots, billets and slabs.

Spent potliner (SPL) is a hazardous waste by-product of aluminium manufacturing which is not permitted to be disposed of to landfill. The smelter has had some difficulty in developing long term solutions for the disposal of SPL, thus SPL has historically been exported for treatment overseas.

In 2001 the Minister for Planning approved minor modifications to the smelter, allowing it to increase the production capacity of the smelter from 440,000 to 530,000 tonnes of aluminium per annum. Due to emerging technology in the recycling of SPL waste, the 2001 approval required the smelter to “adopt a system for the treatment of spent pot linings into non-hazardous waste or a useable product”.

As a result, Regain Services Pty Ltd (Regain) was commissioned by TAC to develop a project to treat the SPL waste. A trial SPL facility has been successfully operating at the smelter since 2002. The trial facility has now reached its capacity, processing up to 12,000 tonnes of SPL per annum and current storage for SPL is at a maximum capacity of 30,000 tonnes.

Regain now proposes to develop a larger SPL treatment facility at the smelter to convert a total of 20,000 tonnes per annum (tpa) of SPL waste into reusable products. The expanded facility would process SPL waste from the TAC smelter and would also treat up to 12,000 tpa of SPL from the nearby Hydro Aluminium Smelter at Kurri Kurri. The processed waste products would be used domestically in the manufacture of bricks and cement.

Importantly, the project would remove all hazardous SPL waste from the TAC smelter’s waste stream, and ensure existing waste products are treated rather than stockpiled or sent overseas. The project would also generate end-products that reduce the consumption of energy in the brick and cement manufacturing industries.

The project has a capital investment value of \$15 million, and would generate 10 jobs at the smelter.

The project constitutes a ‘major project’ under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and consequently requires the Director-General’s approval (by delegation from the Minister).

During the exhibition period, the Department received 3 submissions on the project. The Roads and Traffic Authority raised no concerns with the project and the Department of Environment and Climate Change recommended conditions of approval for the project. Port Stephens Council raised concerns about air quality, stormwater disposal and groundwater impacts.

The Department considers the key issues for assessment include stormwater management, hazards and air quality. Other minor issues include noise, traffic and greenhouse gas emissions.

The Department has recommended conditions requiring Regain to implement a range of environmental safeguards to protect groundwater and stormwater, prevent off-site risk and verify predicted air emissions.

Together with a range of other recommended conditions to control and manage other environmental impacts, the Department is satisfied that the project can be managed in accordance with applicable criteria and guidelines, and to an acceptable level of environmental performance.

On balance, the Department is satisfied that the project’s benefits significantly outweigh any residual costs, and that it is in the public interest and should be approved, subject to conditions.

1. PROPOSED PROJECT

1.1 Project Background

The Tomago Aluminium smelter (the smelter), owned by the Tomago Aluminium Company (TAC), is located on Tomago Road in the Port Stephens local government area (see Figure 1). TAC has been a significant contributor to the local and regional economy since 1983, and currently employs over 1,200 people. The smelter operates under two development consents issued by the Minister for Planning in 1981 and 1991.



Figure 1: Location of the Tomago Aluminium Smelter (SPL building shown in yellow)

The 1981 consent approved the construction and operation of the smelter while the 1991 consent allowed for an expansion of the smelter. A subsequent modification to both consents in 2001 allowed the smelter to produce up to 530,000 tonnes of aluminium per annum making it the second largest of its kind in Australia.

The 110 hectare site is located on the northern side of Tomago Road, approximately 4km east of the Pacific Highway and approximately 13km directly to the north-west of Newcastle. The Hunter River is located 200m to the south of the site.

The land adjacent to the TAC site is used for industrial and buffer zone purposes. Neighbouring premises include the Tropic asphalt batching plant and the proposed Sandvik mining equipment facilities; the Tomago Weekend Detention Centre (500m to the south), the Tomago Bowling Club (400m to the south-west); and Tomago House (1km to the south-east).

The closest residents are approximately 1.2km to the east of the site

Other key land uses in the locality include (see Figure 1):

- the Tomago Village Caravan Park;
- the Hunter Botanic Gardens; and
- the Tomago Sandbeds (a drinking water source).

The site is close to key infrastructure including the National Highway Network, Williamstown Airport and Newcastle Port.

The TAC aluminium manufacturing process involves the extraction of pure aluminium metal from alumina, in large electrolytic cells known as pots. The pots are connected to each other through an electrical current. The smelter has 3 potlines (within 6 buildings) with roughly 280 pots per potline (840 pots in total). Figure 2 below depicts the components of a pot used to manufacture aluminium.

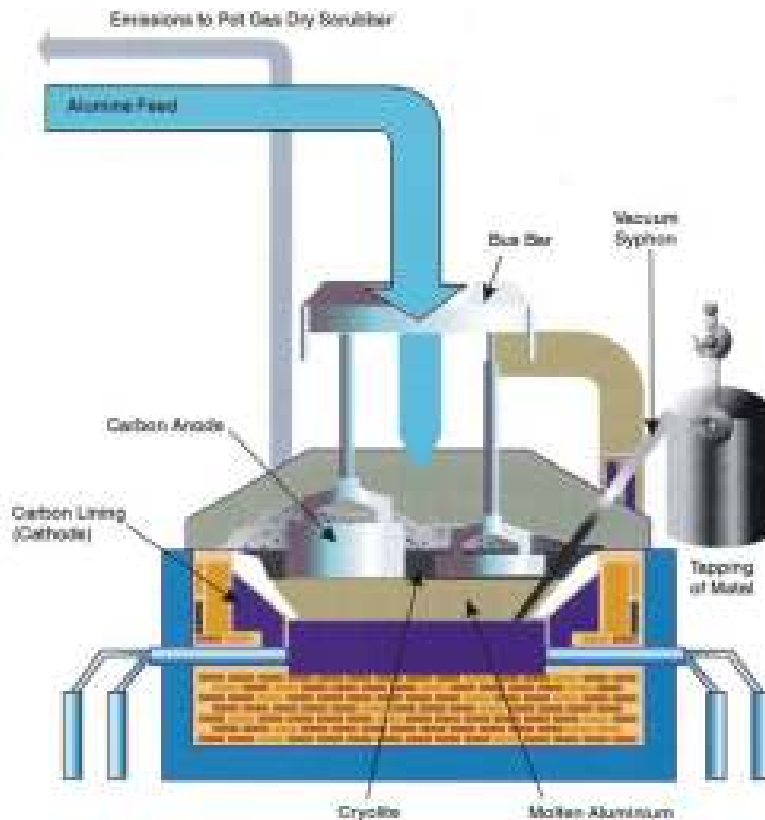


Figure 2: Overview of a pot

Aluminium production is a continuous process and the molten aluminium is eventually syphoned out of the pot and cast as small ingots, tee ingots, billets or slabs. Figures 2 and 3 demonstrate how aluminium is produced inside the pots.

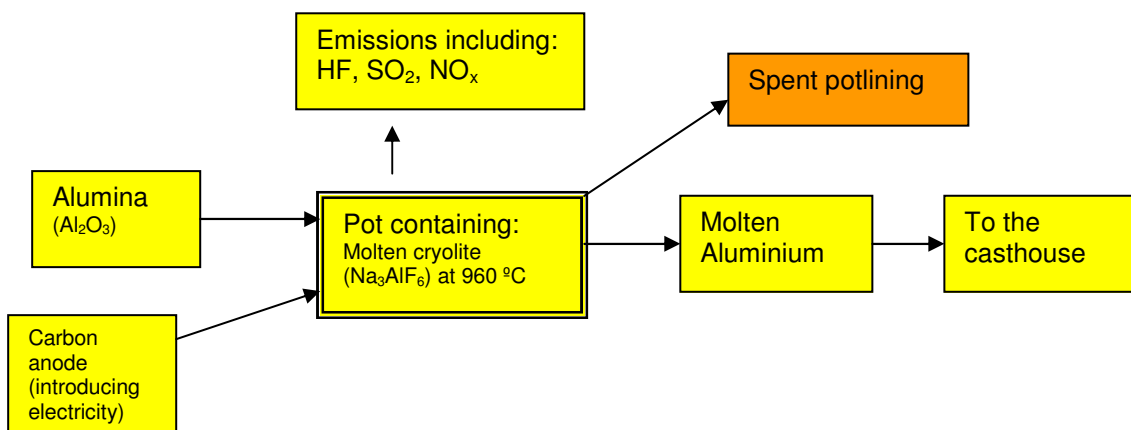


Figure 3: Aluminium and SPL production

The pots have a life cycle of six to seven years, over which time the carbon lining becomes contaminated with a range of materials such as aluminium, cyanide (CN) and fluoride. The deteriorated carbon lining, known as spent potlining (SPL), is regularly replaced as part of the smelter's maintenance program and up to 10,000 tonnes of SPL is generated at the smelter each year. SPL waste can react with water to give off explosive gases and due to the content of cyanide and/or fluoride is classified as environmentally hazardous waste and a dangerous good.

Historically, the waste SPL has been shipped overseas for processing due to the lack of available treatment technology in Australia. To date approximately 64,000 tonnes of SPL waste has been shipped to Italy for recycling by a specialist company.

However since 1997, Regain Services Pty Ltd (Regain), a Hunter based minerals processing company, has been working with aluminium plants in Victoria and New South Wales to re-process minerals from SPL into valuable products which are utilised by the cement and brick industries.

As mentioned previously, in 2001 the Minister for Planning approved minor modifications to the smelters 1981 and 1991 consents allowing it to increase the production capacity of the smelter from 440,000 to 530,000 tonnes of aluminium per annum. Due to emerging technology in the recycling of SPL waste, the 2001 approvals required the smelter to "by 31 December 2007, adopt a system for the treatment of spent pot linings into non-hazardous waste or a useable product" (so long as the process is feasible on economic, environmental, and industrial reliability criteria).

As a result of these conditions, Regain was commissioned by TAC to develop a trial system to treat the SPL waste and convert it to a useful product, on site. A trial SPL facility has now been operational at the smelter since 2002 (See Figure 4), and employs 5 people.



Figure 4: Location of the existing trial SPL recycling plant within the TAC smelter

The trial facility was approved to operate by the Department of Environment and Climate Change (DECC) through TAC's existing licence under the *Environmentally Hazardous Chemical (EHC) Act 1985*. Under this approval, the trial facility can process 12,000 tonnes per annum (tpa) of SPL from the TAC smelter, including up to 5,000 tpa from the Hydro Aluminium Smelter at Kurri Kurri.

There is currently 25,000 tonnes of SPL stored at the smelter in the dry, lined and secure sheds (sheds 5 & 6 in Figure 4) located within the western part of the smelter site. These sheds are at maximum capacity. The trial facility has also reached its capacity of processing up to 12,000 tonnes of SPL per annum and a larger SPL thermal treatment plant is needed to recycle the current SPL stockpile (it would take approximately 2^{1/2} years if the current proposal is approved).

1.2 Project Description

In May 2009, the Department received the final Environmental Assessment for exhibition from Regain to develop a larger SPL facility, capable of processing 20,000 tpa of SPL per annum and employing 10 staff. The existing sheds remain unchanged in size, layout and function and a new thermal treatment plant would be installed between the existing sheds.

The major components of the project are summarised in Table 1, and depicted in Figure 5 and 6. The project is described in full in Regain's Environmental Assessment (EA), which is attached as Appendix F.

Table 1: Major components of the project

Aspect	Description
Project Summary	Installation and operation of a Spent Potliner (SPL) Recycling Facility at the Tomago Aluminium Smelter with a processing capacity of 20,000 tonnes per annum. The proposed facility would treat and recycle waste SPL material into products that can be utilised by other industries.
Storage	Waste SPL would be stored in existing shed 5 (see Figure 4). Treated SPL would be stored in existing Shed 6 with other blending materials such as carbon from spent anodes. Each of the sheds is 11m high and has a floor area of 2,750 m ² . The sheds are constructed of steel and have floors of reinforced concrete.
SPL Deline and Preparation Plant	Waste SPL would be initially sent to the Deline Facility where it would be removed from the pots and then crushed and sized in existing Shed 5.
Thermal Treatment Plant	Waste SPL would be treated through a thermal process whereby cyanide and flammable gas would be neutralised. Valuable materials such as carbon and fluorides would be retained. This plant would be located between existing sheds 5 & 6, adjacent to the current demonstration plant. The stack for the thermal treatment plant would be 30m from ground level.
Blending Plant	Treated SPL would be blended with other minerals such as coal and sand to end user specifications. The blending plant would be located in existing 6.
Input	Water, electricity, natural gas and up to 20,000 tonnes per annum of waste SPL; including up to 12,000 tonnes per annum of SPL waste from Hydro Aluminium at Kurri Kurri. Regain would utilise TAC's existing utilities for their requirements.
Output	Up to 20,000 tonnes per annum of fluxing agents (<i>ReAl and HiCal</i>); which would be used by brick and cement industries.
Stormwater	Truck loading and unloading would take place within a bunded area. Stormwater outside this area would be directed to the existing TAC first flush pond.
Capital Investment Value	\$15 million
Transport	It is likely that the project would generate up to 30 truck movements per week, to transport SPL from the Hydro Aluminium smelter to the site and to transport the treated SPL from the site.
Hours of operation	24 hours a day, 7 days a week.
Jobs	5-10 construction jobs; approximately 10 staff would operate the proposed facility.
Construction duration	8-10 months during 2010, for operations to commence in 2011.

Construction activities for the proposed SPL plant and facilities will be limited. The existing thermal treatment plant would be incorporated into the proposed SPL facility. The new facility would be pre-commissioned off site and delivered to the site in modules, which would be installed on elevated work platforms with cranes, welding machines, grinders and oxy cutters.

Earths works would be minor and would consist of extensions to an existing concrete slab and foundations for 6 bulk storage bins.

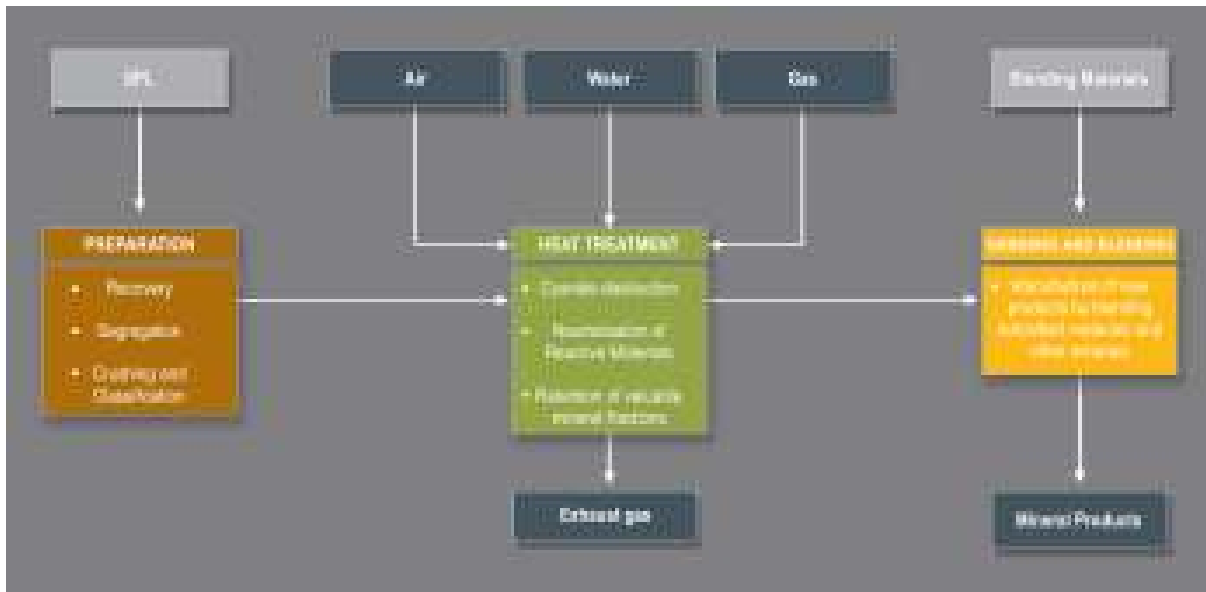


Figure 5: The SPL facility processes

The proposed treatment process of SPL is depicted in Figure 5 and a site plan of the proposed plant and equipment is provided in Figure 6.

In broad terms, the thermal treatment of SPL involves exposure to air at approximately 800°C inside a gas fired kiln. Regain must maintain temperatures below 850°C to prevent liberation of gaseous fluoride. The heated SPL is then transferred to a water reaction mixer where flammable gases (ammonia, hydrogen and methane) are emitted and returned to the kiln as fuel (and destroyed). The material is thus effectively 'detoxified' and would be conveyed to Shed 6 for grinding and blending into finished product.

There is no additional 'waste' product created by the Regain process. Particulate matter caught in the baghouse dust collectors is sent to the products blending hopper.

As waste SPL from the aluminium manufacturing process varies from smelter to smelter, Regain has been analysing the carbon, refractory and other smelter by-products from TAC to establish appropriate markets and re-use options for the materials along with the optimum processing methods. Since 2007, Regain has had some difficulty in developing a market for the end products manufactured through the trial facility. However, progress has been made and Regain has now developed marketable products of differing chemical composition by blending SPL material from the Hydro Aluminium facility at Kurri Kurri with the TAC SPL material.

TAC and Regain have entered into a commercial arrangement whereby TAC leases part of the smelter property to Regain for the treatment of SPL waste. Under the proposed arrangement, Regain would have a separate Project Approval and Environment Protection Licence (EPL) for the operation of the proposed SPL Facility.

1.3 Project Need

The project is needed for TAC to comply with an existing condition of the Minister's consent (DA 70-04-01), which as described previously, requires the smelter to “*adopt a system for the treatment of spent pot linings into non-hazardous waste or a useable product*”.

Further, the project will allow TAC to reduce the stores of existing SPL at the Tomago and Hydro Smelters and reduce the need to transport SPL overseas for treatment.

The Regain proposal has three key attributes, including:

1. recycling of a waste material;
2. reduction of the hazardous nature of the waste;
3. adding value to a waste product; and
4. generation of end-products that can be utilised by the brick and cement industries to reduce their greenhouse gas emissions.

The SPL end-products, known as *ReAl* and *HiCal* would act as a ‘flux’ or ‘mineralisers’, effectively lowering the firing temperature required to fuse raw materials used in the manufacturing of bricks and cement.

Trials have found that *ReAl* and *HiCal* reduce greenhouse gas emissions for these industries by between 9-15%. The EA for the project contains letters of support from potential users of the end products such as Selkirk Bricks and Adelaide Brighton Cement.

2. STATUTORY CONTEXT

2.1 State Plan

The project is consistent with the goals and priorities of the State Plan, in particular priorities P1 (increased business investment), P6 (increased business investment in rural and regional NSW) and E5 (jobs closer to home).

2.2 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (the EP&A Act) because it meets the criteria of Clause 27(5) of Schedule 1 of the *State Environmental Planning Policy (Major Projects) 2005*, namely development for the purposes of:

“hazardous waste facility that transfers, stores or disposes of solid or liquid waste classified in the Australian Dangerous Goods Code”.

On 4 March 2009, the Minister delegated her powers and functions as an approval authority for certain projects under section 75J of the EP&A Act to the Director-General. This project application meets the terms of this delegation. Under these circumstances, the Director-General may determine the application under delegated authority.

2.3 Permissibility

Under Section 75J of the EP&A Act, the Minister cannot approve the carrying out of a project that would be wholly prohibited under an environmental planning instrument.

The project is located on land zoned *4(a) Industrial General Zone* under the *Port Stephens Local Environment Plan* (LEP), 2000, and the project is permissible with consent in this zone.

Consequently, the Director-General may approve the project

2.4 Exhibition and Notification

Under Section 75(3) of the EP&A Act, the Director-General is required to make the Environmental Assessment (EA) of a project publicly available for at least 30 days.

After accepting the EA for the project, the Department:

- made it publicly available from 11 May 2009 until 12 June 2009;
 - on the Department's website,
 - at the Department's Information Centre and Newcastle Office;
 - at the Nature Conservation Council; and
 - at Port Stephens Council.
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities and Port Stephens Council by letter; and
- advertised the exhibition in the Port Stephens Examiner and the Newcastle Herald.

This satisfies the requirements in Section 75H(3) of the EP&A Act.

During the assessment process the Department also made a number of documents available for download on the Department's website. These documents included the:

- project application;
- Director-General's environmental assessment requirements;
- EA; and
- Regain's responses to issues raised in submissions.

2.5 Environmental Planning Instruments

Under Section 75I of the EP&A Act, the Director-General's report is to include a copy of or reference to the provisions of any:

- *State Environmental Planning Policy* (SEPP) that substantially govern the carrying out of the project; and
- environmental planning instrument that would (but for Part 3A) substantially govern the carrying out of the project and that have been taken into consideration in the environmental assessment of the project.

The Department has assessed the project against the relevant provisions of several environmental planning instruments and is satisfied that none of these SEPPs substantially govern the carrying out of this project (see Appendix C).

2.6 Objects of the Environmental Planning and Assessment Act 1979

The Minister is required to consider the objects of the EP&A Act when he makes decisions under the Act. These objects are detailed in Section 5 of the Act, and include:

The objects of this Act are:

- (a) *to encourage:*
 - (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
 - (ii) *the promotion and co-ordination of the orderly and economic use and development of land,*
 - (iii) *the protection, provision and co-ordination of communication and utility services,*
 - (iv) *the provision of land for public purposes,*
 - (v) *the provision and co-ordination of community services and facilities, and*
 - (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
 - (vii) *ecologically sustainable development, and*
 - (viii) *the provision and maintenance of affordable housing, and*

- (b) *to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and*
- (c) *to provide increased opportunity for public involvement and participation in environmental planning and assessment.'*

The objects of most relevance to the Minister's decision on whether or not to approve this project are those under Section 5(a)(i), (ii), (vi) and (vii).

With respect to ecologically sustainable development (ESD), the EP&A Act adopts the definition in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD 'requires the effective integration of economic and environmental considerations in decision-making processes' and that ESD 'can be achieved through' the implementation of the principles and programs including the precautionary principle, the principle of inter-generational equity, the principle of conservation of biological diversity and ecological integrity, and the principle of improved valuation, pricing and incentive mechanisms. In applying the precautionary principle, public decisions should be guided by careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment and an assessment of the risk-weighted consequences of various options.

The Department has fully considered the objects of the EP&A Act, including the encouragement of ESD, in its assessment of the application. The assessment integrates all significant economic and environmental considerations and seeks to avoid any potential serious or irreversible damage to the environment.

Regain has also considered a number of alternatives to the proposed project (including the alternative of not proceeding), and considered the project in the light of the principles of ESD.

2.7 Statement of Compliance

Under Section 75I of the EP&A Act, the Director-General's report is required to include a statement relating to compliance with the environmental assessment requirements with respect to the project.

The Department is satisfied that the environmental assessment requirements have been complied with.

3. ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received submissions from the Department of Environment and Climate Change (DECC), Port Stephens Council (Council) and the Roads and Traffic Authority (RTA).

The RTA and DECC do not object to the project. DECC provided recommended conditions of approval.

Council raised concerns about stormwater, groundwater and air quality impacts. These issues are discussed further in Section 4 and have been addressed through recommended conditions.

A full copy of the submissions is attached in Appendix E.

3.1 Response to Submissions

Regain has provided responses to the issues raised in submissions (see Appendix D). These have been made publicly available on the Department's website.

The Department has considered the issues raised in submissions, and Regain's responses to these issues, in its assessment of the project.

4. ASSESSMENT

The Department considers the key issues for the project are stormwater, groundwater, hazards/risk and air quality. Less significant issues include noise, traffic and greenhouse gas emissions.

4.1 Water

SPL would be stored and treated within sealed sheds/ and enclosed conveyers or on solid concrete foundations; therefore there would be no contact between the proposed SPL facility and the soil/groundwater. The sheds would also have an internal drainage system and storage tanks for the containment of any liquid. The liquid waste would be incorporated into TAC's waste stream, which is detailed in TAC's existing waste management plan. The truck loading areas would be fully bunded to capture and prevent any spills from reaching the site's stormwater system.

The existing TAC stormwater system, including the existing monitoring regime would service the proposed SPL facility. Under this system, surface water is diverted to an onsite pond before controlled discharge to the Hunter River. TAC's existing Environment Protection Licence (EPL) contains monitoring and reporting requirements for discharged stormwater and groundwater which includes the monitoring of cyanide, PH, conductivity and fluoride.

Council raised concerns about the discharge of contaminated stormwater from the SPL facility under the TAC EPL and potential impacts from stormwater contaminated with fluoride and cyanide on the nearby prawn industry.

As the TAC stormwater system would service the SPL facilities no additional requirements would be imposed on Regain through and EPL for the project. As such, it would be Regain's responsibility to ensure that stormwater leaving their site does not have the potential to contaminate the stormwater on the TAC site and hence cause of breach of the TAC EPL.

Regain has proposed to implement a number of safety systems and housekeeping techniques to minimise the potential for dust and residues whilst processing SPL which could ultimately contaminate the site's stormwater. These include bunding of the truck loading areas and fully enclosing all equipment on site. DECC consider the measures described in the EA to be satisfactory.

Council however, raised further concerns about impacts of the proposed SPL facility on groundwater. The Department notes that the management of groundwater and stormwater at the site is the responsibility of TAC under the existing EPL, and any exceedance in water quality criteria at the site would require TAC's management. The Department also notes that since the operation of the trial SPL facility, pollutants monitored in the groundwater and stormwater have not increased. Again, DECC did not raise any concerns about the potential for the proposed operations of the SPL facility to impact on groundwater.

Notwithstanding, to ensure that the TAC's stormwater and groundwater is not degraded by the operation of the SPL facility, the Department recommends that appropriate 'housekeeping' practices as described in the EA should be adopted, and these should form the basis for a Stormwater Management Plan for the facility.

Therefore, the Department has recommended the following conditions:

- the Proponent must not pollute nearby waters;
- the Proponent should minimise dust generated by the project; and
- the Proponent shall prepare and implement a Stormwater Management Plan prior to the commencement of operations, to the satisfaction of the Director-General.

The Department is satisfied that these recommended conditions would provide for adequate management of the stormwater and groundwater at the project site.

3.2 Hazards

A Preliminary Hazard Analysis (PHA) was undertaken to ascertain whether or not the project poses a significant off-site risk.

The PHA indicates that the main off-site risk relates to handling of the SPL material, which is classified as a hazardous waste. It can react with water to liberate flammable gases and is harmful to humans through inhalation of the dust, ingestion or skin contact. These hazards do not, however, lead to a significant off-site risk due to the location, which is well away from the smelter's boundary and the proposed handling and management measures for the project which are outlined in the PHA.

Council raised a concern about the potential for toxic gases to be generated from the contact of stormwater with SPL.

Calculations in the PHA demonstrate that, even if there is significant contact of the SPL material with water (unlikely, since SPL processing and storage are carried out under cover), insufficient quantities of toxic or flammable gases would be generated to have significant off-site impact.

The project also proposes a number of safeguards to minimise the likelihood of accidents arising out of equipment or process control failures. These are detailed in the EA and include such measures as:

- a temperature management and alarm system in the baghouse;
- a pressure management and monitoring system for the dust extraction equipment;
- lining the rotary kiln with blast panels to reduce the potential for explosion damage to the kiln shell.

It is proposed in the EA that these safeguards should form the basis for a Safety Management System for the proposed facility.

In accordance with the EA, the Department has recommended a condition requiring Regain to develop and implement a comprehensive Safety Management System (SMS) for the project, incorporating the recommendations in section 10.4 of the EA. The SMS should be consistent with the Department of Planning's *Hazardous Industry Planning Advisory Paper No. 9, 'Safety Management'*.

The Department is satisfied that the project does not pose a significant off-site risk, subject to the implementation of the proposed safeguards, and there are no hazards-related issues that would preclude granting of project approval.

4.2 Air Quality

The air quality assessment indicates that the primary emissions from the project include SO₂, PM₁₀, TF and NO_x. These would be emitted from three stacks, specifically the thermal treatment plant dust collector, the drying and blending plant dust collector and the Shed 5 air filter.

Regain has proposed a number of management measures along with the dust and air filters to minimise air emissions including fully enclosing the facility within the two sheds and incorporating covered conveyors into the design.

Regain's air quality impact assessment has been based on emissions from the existing trial SPL facility. The EA (and Table 2 below) demonstrates that all emissions from the proposed SPL facility **in isolation** would be **well** below their respective assessment criteria and the incremental increase to the ambient ground level concentrations would be very minor.

Table 2: Cumulative air quality exceedances

Pollutants ($\mu\text{g}/\text{m}^3$)	Averaging period	SPL facility predicted emissions	Cumulative concentration (including SPL emissions and background levels: i.e. the TAC smelter)	Future cumulative concentration (background + SPL facility + approved Tomago gas power station)	Criteria
TF	7 day	0.024	5.5	N/A	1.7
TF	90 day	0.014	2.91	N/A	0.5
PM ₁₀	24 hour	6.4	91.2	95	50
SO ₂	1 hour	0.12	572.1	579.3	570

The air quality assessment does predict some short-term exceedances against the regulatory criteria (see pink areas in Table 2), when the existing (background) and future air quality is considered. Council has raised some broad concerns about these exceedances (particularly SO₂, PM₁₀, TF and NO_x) and the potential for these emissions to affect human health and grazing animals in the vicinity of the smelter.

The air quality modelling did not predict any exceedances in NO_x emissions. The PM₁₀ and SO₂ exceedances would be short term only and can be attributed to the operation of the existing TAC smelter rather than the proposed SPL facility. The total fluoride (TF) exceedance also exists solely due to the current elevated concentrations of fluoride for the operation of the TAC smelter. TAC has an established buffer zone inside which exceedances of the ambient fluoride assessment are permissible under the TAC EPL.

Council's concerns about the aforementioned air quality exceedances are being further investigated by DECC and the Department as part of a separate and current application to increase aluminium production at the TAC smelter, for the Minister's consideration. DECC are currently considering additional monitoring for the smelter to confirm the source and ground level concentrations of SO₂. If monitoring confirms an exceedance of SO₂ against the national health criteria, DECC will require the smelter to implement SO₂ controls. The Department is satisfied that any concerns that Council may have about the rare cumulative air quality exceedances will be addressed as part of that application and through the TAC EPL. Given the minor contribution from the SPL facility to the predicted exceedances in cumulative air quality, the Department does not consider it reasonable to require Regain to address these issues.

Council also raised concerns about fugitive emissions from the site; however the EA predicts that fugitive emissions would be negligible as all emissions would pass through the baghouses before emitting to the atmosphere. DECC has not raised concerns about fugitive emissions.

DECC has however, recommended that the modelled air quality emissions are verified through a post commissioning verification report to confirm the accuracy of the inputs to the air quality modelling and also to confirm that the proposed SPL facility meets the performance capacity predicted in the EA. The air quality verification report would enable DECC to determine the frequency of ongoing air monitoring. If necessary, DECC would vary the EPL limits for the project following receipt of the verification report; so long as ambient ground level criteria is not exceeded.

The Department is satisfied that the incremental air quality impacts from the SPL facility would be small; however, as a precaution, has adopted DECC's recommended condition that requires Regain to submit an air quality verification report within nine months of the commencement of operations. The proposed condition would require detailed information demonstrating the actual emissions against the regulatory criteria, and would require Regain to identify additional mitigating measures for implementation should higher emissions be identified. The Department is satisfied that this will ensure emissions are appropriately managed.

3.3 Summary of Other Issues

Other issues raised during the assessment process and the Department's consideration of each are summarised in Table 3 below.

Table 3: Summary of other issues

Issue	Key Impacts	Recommendation
Noise	<ul style="list-style-type: none"> The proposed facility would operate 7 days a week, 24 hours a day. The largest contributors to operational noise would be the thermal treatment plant, the grinding/sizing plant and the dust collection system. Noise modelling has demonstrated that noise from the proposed facility would not add to the existing noise emissions from the smelter, and would not exceed 35 dB at any residential receiver. Furthermore, the predicted noise levels from construction and traffic are below the relevant noise criteria. The Department is satisfied that any noise impacts would be minimal. 	The Department has recommended a condition of approval that requires Regain to comply with the specified noise limits of 35 dBA to ensure that the proposed facility would not have any cumulative noise impacts on the surrounding residential areas.
Traffic	<ul style="list-style-type: none"> Up to 30 trucks <i>per week</i> would enter the site via the Pacific Highway and Old Punt Road. The site has good access to the national road network. The RTA raised no objections to the proposal and considers the additional traffic to be inconsequential to the surrounding road network. The Department is satisfied that traffic impacts would be minimal. 	N/A
Greenhouse gas	<ul style="list-style-type: none"> Primary greenhouse gas (GHG) emissions from the facility relate to the combustion of natural gas for the thermal treatment plant and electricity. Electricity consumption would be in the order of 3-4 GW hours per annum. In comparison, the TAC smelter consumes 7,700 GW hours per annum. Products of the SPL facility have the potential to save brick and cement industries between 9-15% of their average fuel consumption (with the associated GHG savings). Whilst greenhouse gas emissions have not been quantified, the Department considers that the SPL facility would have limited scope to reduce GHG emissions given the need to operate the thermal treatment plant at high temperatures. The proposal would however, reduce GHG emissions for the TAC site by reducing the need to transport SPL overseas, and products of the SPL facility would potentially reduce GHG emissions for cement and brick manufacturing industries. The Department is therefore satisfied that the GHG emissions attributed to the operation of the SPL facility can be justified. 	N/A

4. RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the project (see Appendix B and summarised these conditions in Appendix A. These conditions are required to:

- ensure that appropriate safeguards are in place to reduce the potential for off-site risk;
- manage stormwater to prevent pollution of the Hunter River;
- verify air quality impacts to ensure local air quality is not being degraded; and
- provide for the ongoing environmental management of the project.

The Department has incorporated recommended conditions from the DECC into the recommended conditions of approval where appropriate.

Regain has reviewed and accepts the recommended conditions.

5. CONCLUSION

The Department has assessed the EA, submissions, and Regain's responses to submissions, in accordance with the requirements of the EP&A Act.

This assessment has found that the environmental impacts of the project can be mitigated and managed to ensure an acceptable level of environmental performance.

It has also found that that the project would provide a range of economic, social and environmental benefits, including the removal of hazardous waste from the TAC waste stream and value adding to the processed waste through the generation of useful end-products.

Consequently, the Department believes that the project is in the public interest and should be approved, subject to conditions.

6. RECOMMENDATION

It is RECOMMENDED that the Director-General:

- consider the findings and recommendations of this report;
- approve the project application, subject to conditions, under section 75J of the *Environmental Planning and Assessment Act 1979*; and
- sign the attached project approval (see Appendix B).

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APPENDIX A: SUMMARY OF CONDITIONS OF APPROVAL

Aspect	Condition	Requirement
Schedule 2: Administrative Conditions		
	5 & 6	Limits on the amount of SPL that can be treated at the plant annually, and the requirement for the waste to be recycled to a non-hazardous waste or useable product.
	8	Requirements for the facility to be designed and constructed in accordance with the BCA and Australian Standards.
Schedule 3: Specific Environmental Conditions		
Soil and Water	12	The requirement for all SPL waste to be stored under cover or treated within the enclosed SPL thermal treatment plant.
	15	The requirement for Regain to develop and implement a comprehensive stormwater management plan to ensure that there is no degradation or contamination of the smelter's stormwater.
<i>Hazards</i>	16	Regain shall develop a Safety Management System to ensure that correct handling and storage procedures for SPL are installed at the facility.
Air	18	A requirement to undertake air quality monitoring in accordance with the EPL.
	19	Requirement for the preparation of an Air Quality Verification Report to validate the predictions made in relation to air emissions in the EA.
<i>Noise</i>	21	Sets noise limits for the Regain facility.
<i>Waste</i>	24	Requirement to dispose of waste lawfully.
Schedule 4: Environmental Management, Monitoring Auditing and Reporting		
<i>Environmental Management Strategy</i>	26	Requirements to prepare an environmental management strategy.
<i>Incident Reporting</i>	27 & 28	Incident reporting requirements.
<i>Independent Environmental Audit</i>	29 & 30	Requirement to commission an independent audit within 2 years of approval and every 3 years thereafter to assess the environmental performance of the project and compliance with the project approval.

APPENDIX B: CONDITIONS OF APPROVAL

APPENDIX C: CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS

Section 75I(2) of the *Environmental Planning and Assessment Act 1979* requires that reference be made to the provisions of any environmental planning instrument that would (but for Part 3A of the Act) substantially govern the carrying out of the project. Consideration of the proposed development in the context of the objectives and provisions of the relevant environmental planning instruments is provided below.

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) commenced in January 2008, consolidating and updating a number of State planning instruments, including the SEPP 11 – Traffic Generating Developments. The Infrastructure SEPP details planning provision and development controls for infrastructure works and development located adjacent to particular types of infrastructure development. However, the Infrastructure SEPP does not apply to project applications which were lodged but not determined before the commencement of the policy. As the project application was lodged prior to the commencement of the Infrastructure SEPP, the provisions of this SEPP do not apply to the project. Notwithstanding this, the project was referred to the RTA for comment in accordance with the Infrastructure SEPP.

State Environmental Planning Policy No. 14 – Coastal Wetlands

SEPP 14 aims to protect coastal wetlands within NSW outside of the Sydney Metropolitan Area. While there are no SEPP 14 wetlands on site, wetlands do occur within close proximity to the site and have been considered as part of the project. The assessment found that the project would have no impact on SEPP 14 wetlands.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

SEPP 33 aims to identify proposed developments with the potential for significant off-site impacts, in terms of risk and/ or offence (odour, noise etc). A development is defined as potentially hazardous and/ or potentially offensive if, without mitigating measures in place, the development would have a significant risk and/ or offence impact, on off-site receptors. SEPP 33 was considered as part of the project.

State Environmental Planning Policy No. 44 – Koala Habitat Protection

SEPP 44 aims to manage and conserve koala habitat to prevent declines in current populations. Although 'core koala habitat' is located nearby, the project is located on an existing industrial site which does not contain any koala habitat. The Department is satisfied with the consideration of SEPP 44 contained in the Environmental Assessment.

State Environmental Planning Policy No. 55 – Remediation of Land

SEPP 55 deals with the remediation of contaminated land. Whilst SEPP 55 applies to all projects, investigations indicate that there is only minimal disturbance to the soil for the construction of the slab between Sheds 5 and 6, and that the site is understood to be in a suitable condition for this type of development. No remediation is required to be undertaken at this stage.

Hunter Regional Environmental Plan (REP)

The REP applies to the site. Specifically Part 7 (Division 1) requires air, noise and water pollution to be minimised. Part 7 (Division 3) requires the safe and effective disposal of domestic, commercial and industrial wastes, including toxic materials, and encourages the most efficient use of resources by recycling or alternative use as appropriate. The EA has adequately assessed the project against the provisions of the REP. The Department is satisfied that the project is consistent with the objectives of the REP.

Port Stephens Local Environmental Plan 2000

The *Port Stephens Local Environmental Plan 2000* is applicable to the site and provides development controls for development in the Port Stephens Area. The proposed development is located in the *4(a) Industrial General Zone* and is defined as industry, therefore the project is permissible and the Department is satisfied that the proposed facility is consistent with the objectives of the zone.

APPENDIX D: REGAIN’S RESPONSES TO SUBMISSIONS & ADDITIONAL INFORMATION

APPENDIX E: SUBMISSIONS

APPENDIX F: ENVIRONMENTAL ASSESSMENT AND SITE PLAN
