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Chris Ritchie
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Dear Chris

Spent Potliner (SPL) Recycling Facility at Tomago Aluminium Smelter - S75W Modification - Project update

I refer to our letter dated 26 June 2016 regarding the proposed modification of the existing Part 3A Approval (06_0050) and the Environmental Assessment Requirements (EARs) received on 1 September 2016, for the Tomago SPL Processing Facility. In the development and environmental assessment of the proposed modification, further opportunities have been identified to increase throughput whilst ensuring that potential environmental consequences remain substantially the same as the original approved development.

This letter has been prepared to outline changes to the proposed modification as previously advised by letter correspondence dated 26 June 2016 and to confirm that the existing proposed planning pathway (s.75W modification) and EARs remain appropriate in light of these changes. This letter provides:

- A brief outline of the proposed changes to the project as previously described in the letter dated 26 June 2016;
- A consolidated description of the proposed modifications based on these changes; and
- A discussion of the proposed planning pathway for the proposed modifications, including a summary of preliminary environmental assessment outcomes.

1.0 Proposed Project Changes

Regain has identified that with minor physical modifications of plant and equipment, and with minor variance in currently approved environmental impacts, the throughput capacity of the facility can be increased from 20,000 tpa to 60,000 tpa.

Proposed changes to the project modification are outlined below:

- **Plant modifications** – Modification is sought for the introduction of an additional emission point and revised site layout. The modification would ensure that the site layout and all plant modifications are adequately described and assessed; and
- **Increasing plant throughput** – To ensure operational efficiencies and for Regain to meet market demand, modification is sought to increase current throughput from 20,000tpa to 60,000tpa. Preliminary investigations indicate that potential environmental impacts associated with this increase are likely to remain of a similar magnitude to those initially identified within the 2009 Environmental Assessment (EA).

A comparison of the project description advised in the letter dated 26 June 2016 with the current project description is provided in Table 1.

Table 1 Comparison of changes to proposed modification

Project Description (project at 26 June 2016)	Revised Project Description (current project)
Opportunities have been identified to enhance the operational efficiency of the existing facility by implementing minor alterations to the originally proposed site layout and key plant components. Modification is sought for the introduction of an additional emission point and revised site layout. The modification would ensure that the site layout and all plant modifications are adequately described and assessed;	The description of the proposed site layout and plant components remains generally consistent with the June 2016 letter advice. However an alternate plant configuration and operation is proposed as detailed in **Section 2**.
To ensure operational efficiencies and for Regain to meet market demand, modification is sought to increase current production from 20,000 tonnes per annum (tpa) to 40,000tpa. Preliminary investigations indicate that potential environmental impacts associated with this increase are likely to remain of a similar magnitude to those initially identified within the 2009 Environmental Assessment (EA).	The current project proposes to increase the current throughput from 20,000tpa to 60,000tpa. This increase would not involve additional expansion of the facility other than minor alterations to the site layout and key plant components identified in the 2009 EA.

Each of the proposed modifications is discussed in greater detail below.

1.1 Plant Modifications

The original project description provided in the 2009 EA included new plant to enable the processing of SPL, including:

- A new heat treatment plant;
- A new blending and product plant (incorporating drying, grinding and blending equipment); and
- Materials preparation plant including sheds, a primary crushing and coarse grinding plant.

Existing plant constructed to date is in general accordance with the project description provided in the EA which stated that:

- *"The heat treatment plant (which would include a rotary kiln and water reaction mixer) and product plant (where grinding and blending, drying, final product crushing and storage would be undertaken) would be located between Shed 5 and Shed 6."* and;
- *"Plant associated with the existing demonstration plant, including conveyors, crushing, grinding and sizing equipment, raw material and product bins, etc., may be retained and utilised in the proposed project."*

1.2 Increasing Plant Throughput

An operating restriction is applied through Condition 5 of Project Approval 06_0050 which limits SPL processing on site to 20,000tpa. Modification to Project Approval 06_0050 would be sought to increase SPL processing capacity to 60,000tpa.

The 2009 EA considered both 24 hour operation as well as the retention and use of elements of the demonstration plant. Therefore whilst the practical increase in plant throughput to 60,000tpa would be achieved by operating plant items for a higher number of hours per year, the conservative assumptions supporting the original environmental assessment remain unchanged.

To reach the target capacity of 60,000tpa it is proposed to operate an optimised configuration utilising the thermal treatment process elements of both the originally proposed SPL Process Plant and existing demonstration plant. This retains the thermal treatment functionality of the existing demonstration plant thereby increasing average processing rates. Therefore the increase in throughout will result in a different operating configuration to that anticipated in the original EA whilst retaining the physical size and scale of the originally approved project. Current environmental

investigations have considered combined operation of plant elements in the configuration currently proposed and are described in **Section 3**.

The originally proposed fine grinding plant will be installed with updated technology and improved operational performance from that envisaged in the 2009 EA. The fine grinding plant would introduce an additional emission point (as outlined in correspondence dated 26 June 2016). Consequently, the completed SPL Process Plant will employ two stacks (Stack 2A and 2B) whilst the original EA considered only a single additional stack (Stack 2). An overview of the revised project configuration is provided in Table 2.

Table 2 Overview of Revised Project Configuration

Project Configuration (2009 EA)	Revised Project Configuration(current project)
Stack 1 - Thermal treatment plant dust collector (EPL Point 1)	Stack 1 – Retained thermal treatment (demonstration) plant (EPL Point 1).
Stack 2 Drying and blending plant dust collector (EPL Point 2)	Stack 2A – Combination drying plant and thermal treatment plant (EPL Point 2).
	Stack 2B – Fine Grinding Stack (New EPL Point)
Stack 3 - Shed 5 and Deline facility air filter (EPL Point 3)	Stack 3 - Shed 5 and Deline facility air filter (EPL Point 3)

The currently proposed plant layout differs from that shown in the original site layout plan as presented in the 2009 EA (Figure 7 Proposed Facilities – SPL Treatment). Condition 2 of Project Approval 06_0050 requires that the Proponent carries out the project in general accordance with the site plan. A modified site plan, including the proposed new fine grinding plant and location of all as-built and proposed SPL Processing Plant elements, would be included as part of the modification.

2.0 Proposed Planning Pathway

Project Approval 06_0050 was granted for Regain's SPL Facility on 07 August 2009 under Part 3A of the EP&A Act. This approval is now a transitional Part 3A approval, as per the savings and transitional provisions in force since the repeal of Part 3A of the EP&A Act in 2011. As such the provisions of the former Part 3A continue to apply to modifications to transitional Part 3A approvals.

In the letter outlining the EARs dated 1 September 2016, the Department of Planning identified that a modification under Section 75W of the EP&A Act would be the appropriate method of pursuing modifications to Project Approval 06_0050.

Preliminary environment assessment undertaken following receipt of the EARs for the project suggest that the environmental consequences associated with the current proposed modifications (including the increased throughput to 60,000tpa) would remain substantially the same as the original approved development, and therefore a Section 75W modification is still considered appropriate.

A summary of the results of a preliminary environment assessment of the current proposed modification is provided in the sections below.

3.0 Environmental Assessment

Further environmental investigations and studies would be undertaken in support of the proposed modification in accordance with the Environmental Assessment Requirements (EARs) received on 1 September 2016.

It is envisaged that further iteration of the preliminary air quality modelling would be undertaken where required to adequately consider all proposed plant modifications. However, the remainder of the environmental assessment will be largely qualitative given the comparable characteristics of the modifications with the originally approved project, the likely incremental nature of any potential environmental impacts and availability of existing monitoring data for the product plant.

3.1 Preliminary Air Quality Assessment

To consider the potential air quality impacts associated with the reconfigured plant layout, a preliminary air quality model was undertaken in accordance with the NSW Environment Protection Authority's *Approved Methods for the Modelling & Assessment of Air Pollutants in NSW (2016)*. The assessment demonstrates limited environmental consequences beyond those which were considered as part of the original Environmental Assessment and consequent project approval in 2009.

3.1.1 Assessment Methodology

All air quality assessments undertaken to date have adopted a conservative approach which considered that the proposed facilities would be designed to operate 24 hours per day, 7 days per week (i.e. 8,760 hours per year).

Accordingly, pollutant concentrations moving through the baghouses should not change significantly with increased SPL processing capacity; as plant is proposed to be operated within existing specifications and would not bring about a substantial change in emissions performance.

Preliminary dispersion modelling was undertaken for a range of pollutants using the CALPUFF dispersion model in accordance with the Approved Methods 2016. Two operating scenarios were assessed for the proposed modification, including the SPL Facility operating at average emission rates ('60kT Average' scenario) and the Facility operating at its EPL emission limits ('60kT EPL' scenario).

Incremental pollutant concentrations for the '60kT Average' scenario were modelled using emission rates obtained from previous years' stack emissions testing data from the SPL Facility.

Background ambient air concentrations were taken from the Beresfield EPA monitoring station (2015 monitoring data). These background concentrations were combined with the predicted incremental concentrations to provide a cumulative emission.

3.1.2 Summary of Preliminary Results

A summary of the predicted incremental and cumulative ground level concentrations recorded at sensitive receptors for the proposed modification is provided in Table 3. For each pollutant, the original predictions made in the 2009 EA and the assessment criteria provided within the Approved Methods 2016 are provided for comparison.

The results indicate that when the proposed modification is considered in isolation to background air quality, the incremental ground level concentrations are below the respective assessment criteria under both operating scenarios. The cumulative emissions would also be below the respective assessment criteria, with the exception of Hydrogen Fluoride (HF) cumulative emissions under the '60kT EPL' scenario. This result is in line with the original environmental assessment for the site which also identified an exceedance against the criteria for cumulative emissions.

It should be noted that the Regain facility operates within the site boundaries of an existing aluminium smelter currently approved to produce 600,000tpa of saleable product. The potential for cumulative fluoride exceedances from the Regain facility may be largely attributed to elevated background concentrations of fluoride emitted by the Aluminium Smelter. Table 3 identifies that comparatively, fluoride contributions to the cumulative environment from the Regain facility are low.

A screening level contemporaneous assessment of the HF results shows that at the '60kT Average' operations, no additional exceedances would occur as a result of the SPL Facility contributions to the elevated background concentrations. When operating under the '60kT EPL' scenario, additional exceedances of the criteria may occur, when adding the highest background concentration detected at a monitoring site, to the maximum predicted concentration in the model, which is predicted to occur within the confines of the Tomago Aluminium site. It is noted that the predicted cumulative emission which exceeds the 7 day criterion is lower than that originally predicted in the 2009 EA (30 day averaging period was not originally modelled and can't be compared).

The assessment identifies some variability in results between those originally considered in the 2009 EA. While some incremental pollutant concentrations (e.g. SO_2, NO_2, HF, and PAHs) are predicted to increase, as might be expected with a proposed increase in operational capacity, other predicted concentrations (e.g. PM_{10}, TSP and cyanide) are lower than originally predicted. Changes in the incremental emissions predicted are largely due to more accurate emission testing data obtained over

a longer period of operation compared to those used in the 2009 assessment. Additionally, there has been a change to the modelling software currently used (CALPUFF) compared to that used in the 2009 EA (AUSTPLUME) which may result in minor variations to modelled concentrations.

There is also significant variation in the cumulative assessment compared to that of the original 2009 EA, with the majority being lower than originally predicted. In addition to the reasons highlighted above, this reflects the change in ambient background concentration and potentially, improved emissions performance or reduced production at the Tomago Aluminium smelter.

In summary, the majority of predicted ground level concentrations associated with the proposed modification would be below the respective EPA criterion. Therefore potential air quality impacts associated with the current proposed modification are likely to remain substantially the same as the original approved development. The preliminary modelling represents a conservative assessment based on continuous operation of the SPL Facility at EPL concentration limits which are generally orders of magnitude above average emission rates recorded on site.

Table 3 Summary of Dispersion Modelling Results (Maximum Modelled Ground Level Concentrations)

Pollutant	Period	Original 20kT Result ($\mu g/m^3$)		Scenario Results ($\mu g/m^3$)				Criterion Limit ($\mu g/m^3$)
				60kT Average		60kT EPL		
		Inc.	Cu.	Inc.	Cu.	Inc.	Cu.	
Sulfur Dioxide (SO_2)	1 hour	0.09	**572.1**	1.13	215.97	21.49	236.33	**570**
	24 hours	0.02	217.4	0.29	22.51	5.62	27.83	228
Nitrogen Dioxide (NO_2)	1 hour	0.92	126.9	2.36	94.48	42.99	135.11	246
	Annual	0.03	28	0.08	16.93	1.38	18.24	62
PM_{10}	24 hour	3.2	**91.2**	0.43	43.73	2.36	45.66	**50**
	Annual	0.33	21.3	0.05	43.35	0.29	19.01	25
Total Suspended Particulates	Annual	0.77	53.2	0.08	N/A	0.50	N/A	90
Hydrogen Fluoride	90 days	0.009	**2.91**	0.02	0.36	0.13	0.46	0.5
	7 days	0.016	**5.5**	0.04	1.68	0.25	**1.89**	**1.7**
	24 hours	0.04	N/A	0.09	N/A	0.56	N/A	2.9
Cyanide	1 hour	0.27	N/A	0.07	N/A	0.25	N/A	200
PAH's as benzo(a)pyrene	1 hour	0.0094	N/A	0.03	N/A	0.12	N/A	0.4

Notes: N/A = no available ambient air background data for this pollutant
N/M = not modelled
Cu. = Cumulative
Inc. = Incremental

4.0 Summary

Recycling of SPL continues to provide environmental and economic benefits by fully recycling a waste product and generating end-products that improve efficiencies within the brick and cement industries. The proposed project as modified will retain the same general physical size and scale of the originally approved project whilst capitalising on improved plant efficiencies. It is expected that the environmental consequences associated with the proposed modifications are likely to remain substantially the same as the original approved development.

We request endorsement of:

- the proposed planning pathway (modification under Section 75W of the EP&A Act); and
- preparation of an Environmental Assessment on the basis outlined in Section 4 and in accordance with Environmental Assessment Requirements (EARs) received on 1 September 2016.

I trust that the above advice assists in confirming an approval strategy towards the further development and improvement of the Tomago SPL Processing Facility. Please call me should you have any questions or concerns.

Yours sincerely

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