



**PROPOSAL BY VAW KURRI KURRI PTY LTD TO UPDATE AND
RETROFIT AN EXISTING ALUMINIUM SMELTER AT KURRI KURRI**

**Report on the assessment of a Development Application (DA 73-3-2002) Pursuant
to Section 80 of the Environmental Planning and Assessment Act, 1979
N91/00033Z**

Department of Planning

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1 Introduction

VAW Kurri Kurri Pty Ltd (The Applicant) owns and operates the Kurri Kurri Aluminium Smelter in Cessnock City Council local government area in the Hunter Valley. The smelter was originally owned by Alcan Australia and commenced operation in 1969. The smelter currently operates under a development consent signed by the Minister for Planning on 19 August 1981.

The smelter currently employs 600 persons and is located near the towns of Kurri Kurri, Loxford, Heddon Greta, and Weston, about 40 km west of Newcastle. The site location is shown in Figure 1.

The smelter currently manufactures 150,000 tonnes per annum (tpa) of aluminium which is produced by reducing alumina to aluminium metal in electrolytic cells called “pots”. The VAW smelter has three potlines, the last of which was commissioned in 1985. In the pots an electric current is passed through the alumina from a carbon anode to a carbon cathode. Other operations in the smelter include preparation of the carbon anodes and cathodes, treatment of emissions, and casting aluminium products.

The proposed smelter upgrade and retrofit would be developed in three stages, all of which form part of the current development application:

- **Stage 1** - Structural floor repairs to buildings, and the installation of a Greenmix scrubber for air emissions from the carbon plant;
- **Stage 2** - Construction of a new Anode Baking Furnace and the upgrade of Potlines 2 and 3; and
- **Stage 3** - Upgrade of Potline 1 and an increase in size of the anodes across all potlines.

The main benefits of the proposed development would be improved smelter efficiency and major reductions in key air emissions such as fluoride and greenhouse gases. The increase in smelter efficiency would allow production of aluminium to increase by approximately 10% without increasing energy consumption.

The proposed upgrade and retrofit project would involve a capital investment of \$110 million and create 450 construction jobs.

2 Development Proposal

2.1 SITE DESCRIPTION AND LOCALITY

The existing smelter is located on a 60 hectare site within a buffer zone of 2,100 hectares, on Hart Rd, Loxford, as shown in Figure 2. Surrounding landuses are mainly agricultural including beef cattle grazing to the north east and poultry farming, horse breeding, and rural residential farms circling the site from the east to the north east. The site is about two kilometres north of industrial and urban landuses in the towns of Weston, Kurri Kurri, and Heddon Greta. Other industrial landuses in the locality include the Weston Aluminium “Dross” Plant situated to the south west of the smelter.

The site is located in the Hunter region which has a diverse economy centred around coal mining, power generation, industrial development, agriculture, vineyards, and tourism.

Figure 1 Site Location – VAW Aluminium Smelter

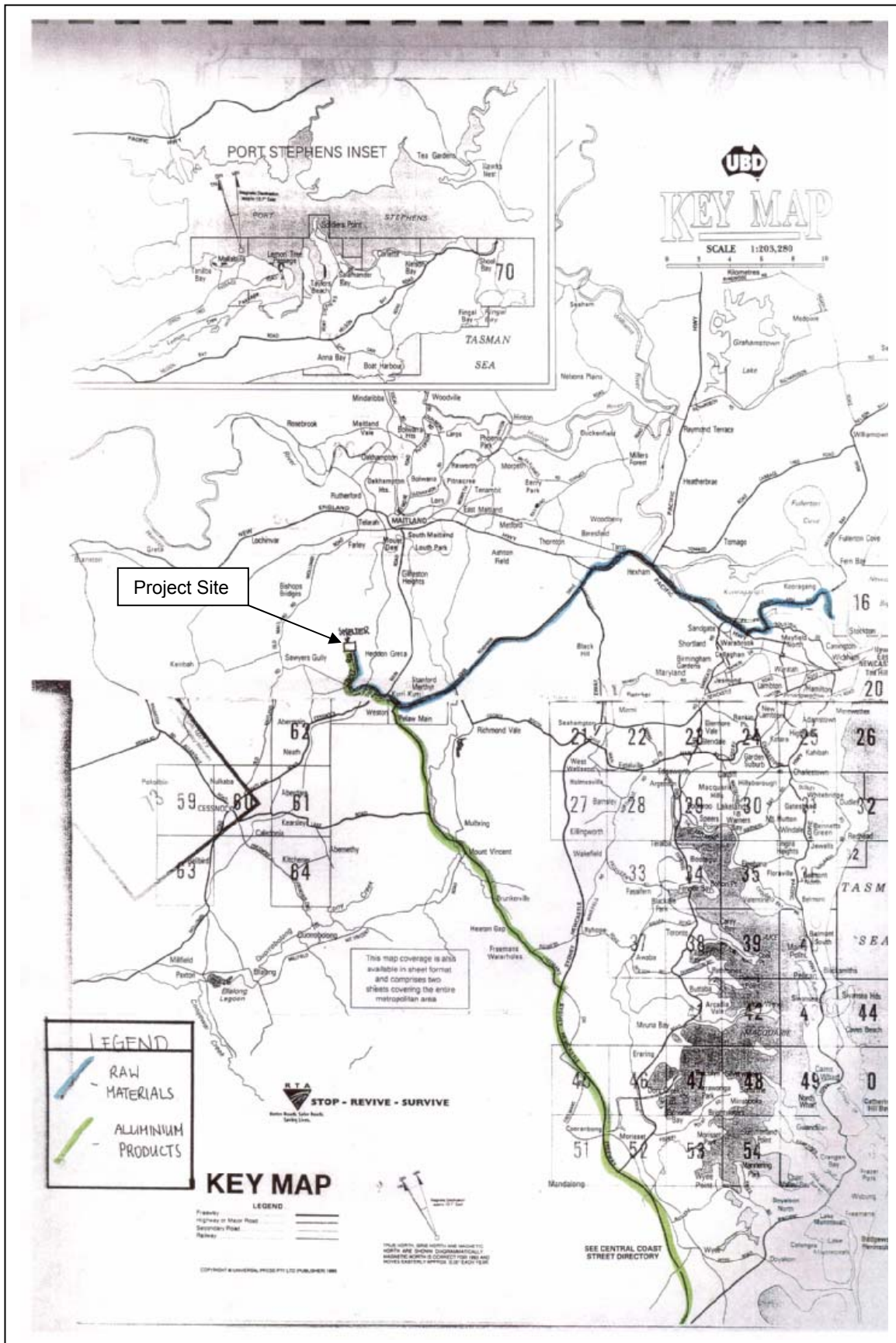
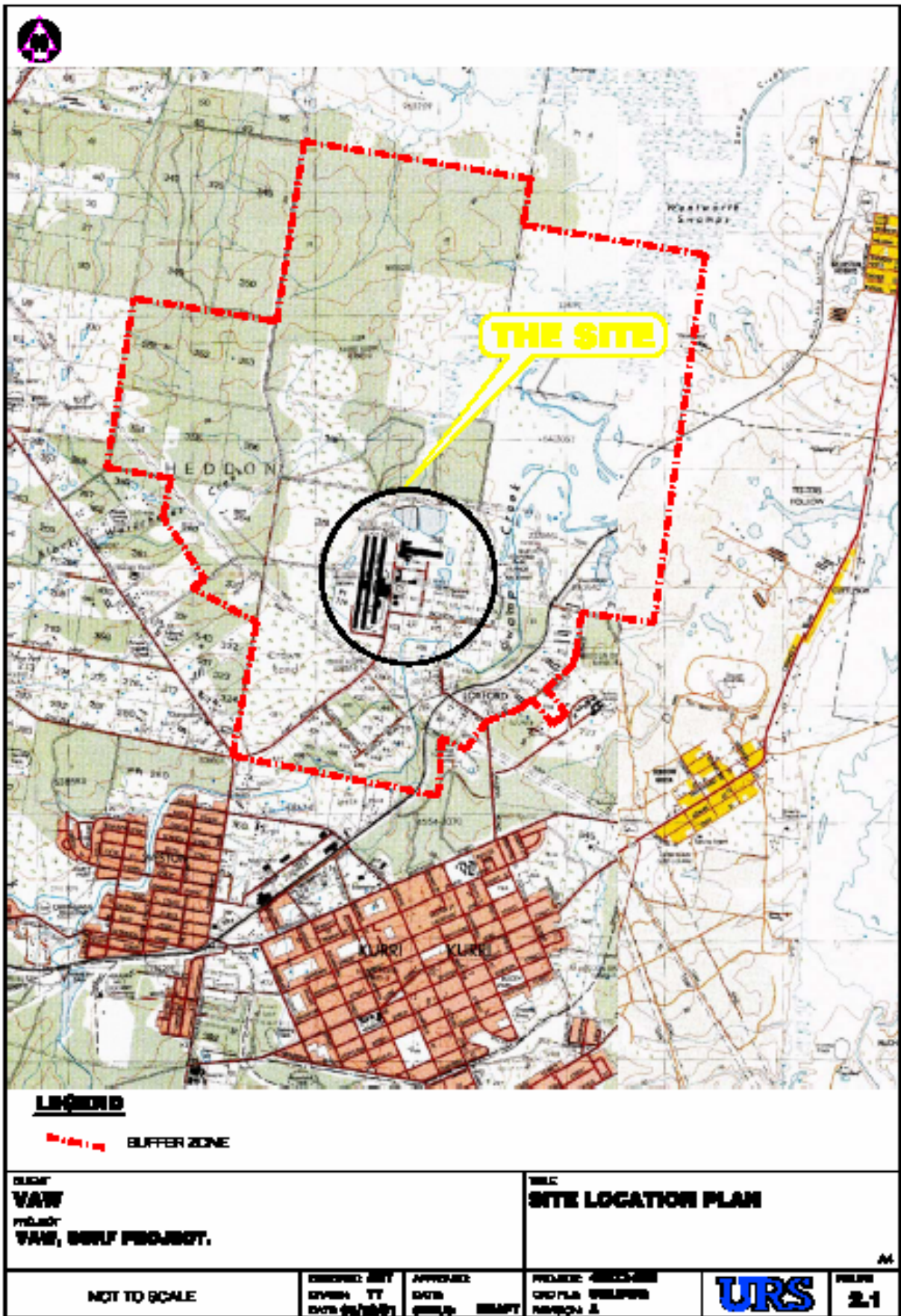


Figure 2 Site Locality – VAW Aluminium Smelter Kurri Kurri



2.2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed upgrade and retrofit to the existing smelter would involve a series of works and improvements to various sections of the smelter. The site layout in Figure 3 shows the locations of the proposed works. The project would be carried out in the following stages.

2.2.1 Stage 1

Structural Floor Repairs

The applicant proposes to make structural repairs to the floor of Potline 1 building and the Casthouse building. This is due to inadequate footing design which has resulted in the cracking of sections of the floor. Repairs would be undertaken within the existing buildings.

Greenmix Scrubber

The “Greenmix” plant is the section of the smelter where carbon for anode manufacture is crushed, screened, and mixed with liquid pitch before being formed into anodes and baked. The applicant proposes to install a proprietary scrubbing plant on the air extraction from the greenmix plant to remove the current visible plume and reduce poly aromatic hydrocarbon (PAH) emissions.

2.2.2 Stage 2

Rebuild Anode Baking Furnace

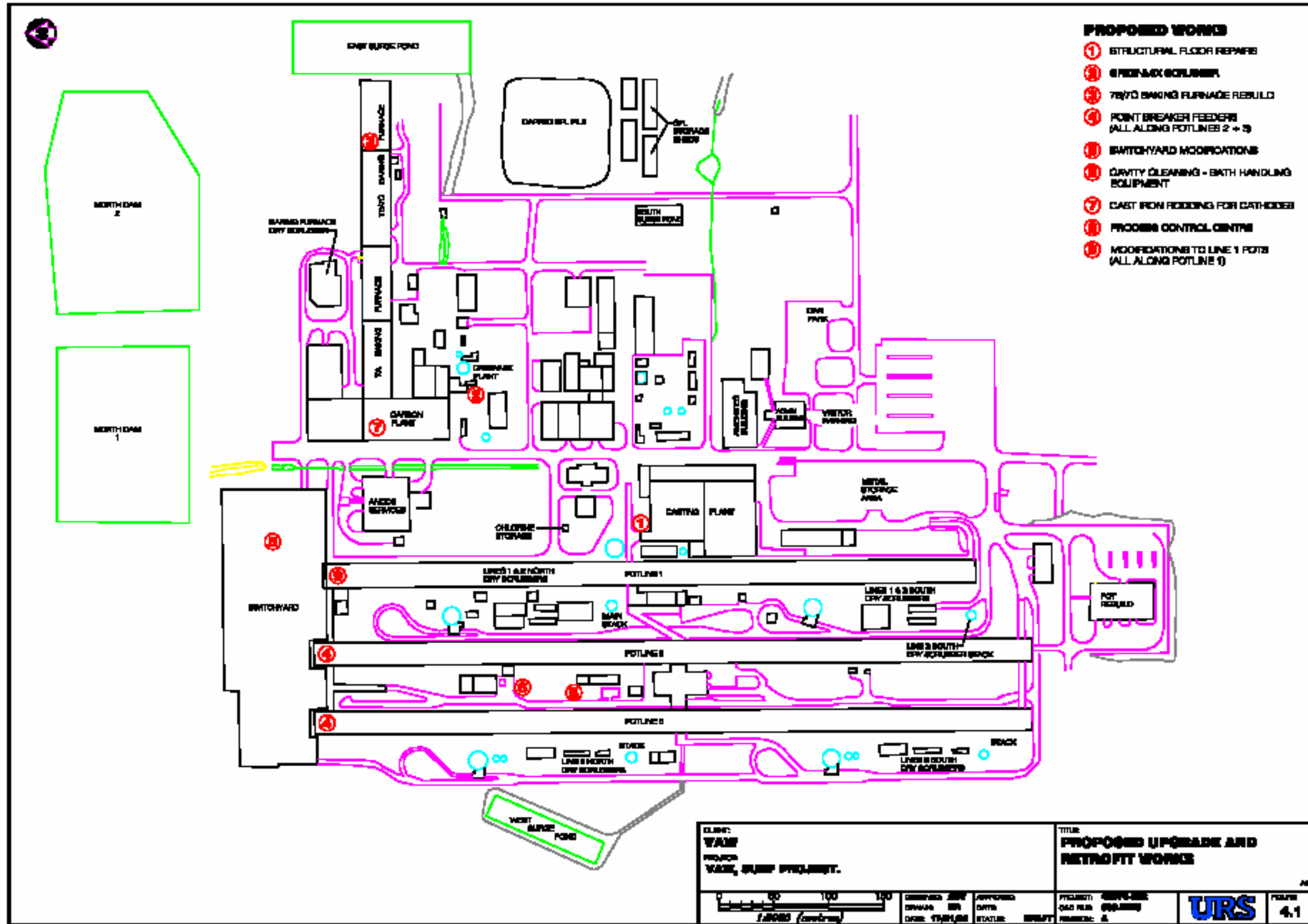
The applicant proposes to demolish part of the existing anode baking furnace and rebuild a larger furnace in the same location. The existing furnace is nearing the end of its operational life and needs to be enlarged to provide capacity for future expansion of the smelter. The works would involve demolition and excavation of the site of the existing furnace, civil works, installation of a new anode baking furnace and firing system, and modifications to anode handling equipment. The existing furnace building would also be extended to house the new furnace.

Material from demolition and excavation of the existing furnace would be used as road base to fill small unsealed depressions in the site surrounding the furnace building. The applicant is currently investigating possibilities for reuse of refractory material in the Australian refractory, cement, and brick industries.

Update Potlines 2 and 3

Alumina feed and pot control systems on Potlines 2 and 3 would be upgraded using VAW proprietary technology to increase operating efficiency and reduce emissions. The alumina feed systems on each pot would be changed to VAW designed “point breaker feeder” systems that improve the timely introduction of alumina to the pot and reduce anode effects. Anode effect is due to inefficient pot operation and results in greenhouse gas emissions and increased power consumption. The pot control systems for both potlines would be upgraded to VAW’s ELAS2 control system.

Figure 3 Site Layout – Proposed Upgrade and Retrofit Works



To facilitate the potline upgrades and allow production to increase some minor switchyard modifications would be made.

The Applicant proposes to introduce cavity cleaning and improvements to anode covering material (ACM) for both potlines. Cavity cleaning of the pots is a procedure that would be carried out each time anodes are changed and would improve current distribution, pot stability, and alumina concentration. New tools would be fitted to pot tending cranes and floor mounted bins for cavity cleaning material would be installed. The introduction of cavity cleaning would also allow the proposed improvements in ACM to be made.

Material from cavity cleaning would be transported from the potroom buildings to the North Bath Handling Station which is located between Potlines 2 and 3 (location 6 on Figure 3). The existing North Bath Handling Station building would be extended by 24m to accommodate the cavity cleaning material handling operations. Cavity cleaning material would cool and be processed with an existing rotary crusher in the North Bath Handling Station building. Crushed material would then be recycled to the pots as ACM. Additional screening and blending equipment would be installed at the North Bath Handling Station and two 250 tonne silos to provide additional storage capacity. Another 250 tonne silo would be installed at the south bath handling station. All silos and buildings would be below the rooflines of the existing potline buildings.

The Applicant proposes to improve energy efficiency of the smelter by cast iron rodding of cathodes. This process, currently in use for anodes, would reduce the resistance across the connection of cathodes to the steel collector bar.

A new process control centre would be established in an existing building between Potlines 2 and 3.

2.2.3 Stage 3

Update Potline 1

Potline 1, being the first potline built at the smelter, uses side-work technology which has now been superseded. Side-work technology involves opening the side of the pot to feed alumina from a floor mounted vehicle. This regular opening of the pots contributes significantly to the fluoride and particle roof emissions from Potline 1 and the smelter as a whole.

The update would involve conversion of the alumina feeding to the VAW point breaker feeder system and ELAS2 pot control system similar to Potlines 2 and 3.

Potline 1 scrubbing centres would experience an increase in fluoride as a result of the point breaker feeder technology and would need to be upgraded. Pre-reactors would be installed at both the north and south scrubbing centres and fresh alumina which is currently fed directly to the pots would be used to clean scrubber inlet gases in these reactors prior to being scrubbed in the existing scrubbers. The addition of the pre-reactors would ensure inlet concentrations of fluoride to the scrubbers, and hence scrubber efficiency, would not change as a result of the upgrade.

Reacted alumina from the pre-reactors would be conveyed to the pots on a new alumina feeding system.

Potline 1 efficiency would be improved by the introduction of cavity cleaning, similar to that proposed for Potlines 2 and 3.

A range of additional minor modifications to Potline 1 pots are proposed including new lining designs; relocating anode positions; strengthening pot superstructure; repositioning alumina hoppers; modifying busbars; and improving pot door arrangements. These improvements would be carried out over a 4 to 5 year period.

Increase Anode Size

Once the potlines are upgraded and the new anode baking furnace is installed, the Applicant proposes to increase the size of the anodes and raise the amperage across all three potlines.

2.3 ENVIRONMENTAL MANAGEMENT AND MITIGATION OF IMPACTS

Environmental management at the VAW smelter is carried out within a framework provided by the existing site environmental policy and comprehensive environmental management system (EMS).

Construction of the proposed development would be done in accordance with a specific environmental management plan (EMP) which would include generic procedural components and cover specific issues such as noise, air quality, erosion and sediment control, and waste management. All contractors would have to demonstrate commitment, and satisfactory adherence, to requirements of the EMP.

Operational environmental management would be as provided by the site EMS, the existing consent, and the Environment Protection Licence for the smelter. These existing requirements include comprehensive environmental monitoring and auditing. VAW proposes to establish an ambient SO₂ monitoring program to evaluate air quality impacts of the proposed development.

VAW has an existing Emergency Procedures Manual (EPM) which covers both safety and environmental emergencies. The proposed development would operate under those existing emergency procedures.

3 Statutory Planning Framework

3.1 PERMISSIBILITY

The site is zoned Rural 1(a) by the Cessnock Local Environmental Plan 1989. The proposed development is prohibited in the zone. The VAW Aluminium smelter has been operating at the site since 1969, however, and is currently operating under a consent dated 19 August 1981. As such it is an existing use, as defined by section 106 of the *Environmental Planning and Assessment Act 1979* (the Act). Part 5 of the *Environmental Planning and Assessment Regulation 2000* (the Regulation) permits an existing use to be enlarged, expanded, intensified, altered, extended, or rebuilt with development consent. Therefore the proposed development is permissible with development consent.

3.2 MINISTER'S ROLE

The proposed development is State Significant development (see below) and the Minister is therefore the consent authority.

3.3 LEGISLATIVE CONTEXT

3.3.1 Environmental Planning and Assessment Act 1979

The proposed development is State Significant development, non-designated development and integrated development in accordance with the provisions of the Act and the Regulation.

State Significant Development

The proposed development would involve a capital investment of \$110 million dollars and provide continued employment for the existing smelter employees. The Minister has formed the opinion that the development satisfies the criteria in Schedule 1 of *State Environmental Planning Policy No. 34 – Major Employment Generating Industrial Development* (SEPP 34) since it has a capital investment value of \$20 million or more. The proposed development is therefore State Significant development by virtue of a Declaration made by the Minister on 30 June 1998 which states that all development to which SEPP 34 applies is State Significant development.

Integrated Development

The applicant argues that the proposal is not integrated development under section 91 of the Act since there is an existing Environment Protection Licence for the smelter (URS, 2002). The Department sought legal advice on the matter and concludes that the proposed development does, in fact, require approval under section 91 (1) of the Act. This is based on the premise that the activities proposed would require an Environment Protection Licence under the *Protection of the Environment Operations Act 1997* and that, although section 91 of the *Environmental Planning and Assessment Act 1979* does not contemplate the situation where there is an existing Environment Protection Licence, such a licence does not detract from the intent of that section.

The proposal is therefore integrated development and requires the following licence:

- an Environment Protection Licence from the Environment Protection Authority (EPA) under the *Protection of the Environment Operations Act, 1997*

The EPA has provided its general terms of approval, indicating that it would give approval to an Environment Protection Licence for the development.

Non-Designated Development

A proposal is 'designated development' if it is listed under Schedule 3 of the Regulation. Since the existing smelter is designated development, the proposal could also be designated development. Clause 35 of Part 2 of Schedule 3 of the Regulation states, however, that development involving alterations or additions to development (whether existing or approved) is not designated development if, in the opinion of the consent authority:

the alterations or additions do not significantly increase the environmental impacts of the total development (that is the development together with the additions or alterations) compared with the existing or approved development.

Clause 36 of the Regulation sets out the following factors that the consent authority must take into account when determining whether a development involving alterations or additions would significantly increase the environmental impacts of the total development:

(a) *the impact of the existing development having regard to factors including:*

- (i) *previous environmental management performance, including compliance with the conditions of any consents, licences, leases or authorisations by a public authority and compliance with any relevant codes of practice, and*
- (ii) *rehabilitation or restoration of any disturbed land, and*
- (iii) *the number and nature of all past changes and their cumulative effects, and*

(b) *the likely impact of the proposed alterations or additions having regard to factors including:*

- (i) *the scale, character or nature of the proposal in relation to the development, and*
- (ii) *the existing vegetation, air, noise and water quality, scenic character and special features of the land on which the development is or is to be carried out and the surrounding locality, and*
- (iii) *the degree to which the potential environmental impacts can be predicted with adequate certainty, and*
- (iv) *the capacity of the receiving environment to accommodate changes in environmental impacts, and*

(c) *any proposals:*

- (i) *to mitigate the environmental impacts and manage any residual risk, and*
- (ii) *to facilitate compliance with relevant standards, codes of practice or guidelines published by the Department or other public authorities.*

The Department's consideration of these factors is outlined below:

Impact of Existing Development

- VAW and previous owners of the smelter have generally complied with the existing development consent and licences held with government agencies. The Department acknowledges that the previous owner, Capral, was fined in the Land and Environment Court in 1997 for fluoride emission exceedences but notes that the smelter has implemented an EPA pollution reduction program resulting in progressive emission reductions to date and compliance with the EPA licence;

- Any disturbed land on the site has been rehabilitated and landscaped;
- There have been four changes to the development since the 1981 consent that include reductions in power consumption, waste management and improved smelter efficiency. The impact of the proposed development has been assessed based on the current smelter with all past changes incorporated;

Proposed Development

- The scale of the development is minor in relation to the total development and would result in a 10% production increase and minimal increases structures on the site. The focus of the proposal is to provide improvements in efficiency and environmental performance rather than expand the existing development;
- The proposed development would not significantly increase the smelter's impact on environmental qualities in the locality;
- The potential impacts can be predicted with reasonable certainty since the current performance of the smelter is well understood from environmental monitoring over 20 years and the proposed alterations involve accepted technology which VAW currently operates on its Rheinwerk smelter in Germany;
- The proposed development would result in a general reduction of environmental impacts, however minor increases in some emissions would not significantly affect the capacity of the receiving environment;

Management of Impacts

- VAW has demonstrated that existing environmental management systems at the smelter can effectively manage the proposed development and that any short-term construction impacts can be managed in an EMP.

The Department therefore recommends that the Minister form the opinion that the proposed alterations and additions are not designated development.

3.4 RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS/POLICIES

The following environmental planning instruments are relevant to the proposed development:

- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*
- *State Environmental Planning Policy No. 34 – Major Employment Generating Industrial Development*
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection*
- *State Environmental Planning Policy No. 55 – Remediation of Land*
- *Hunter Regional Environmental Plan (REP) 1989*
- *Cessnock Local Environmental Plan (LEP) 1989*

The Department has assessed the proposal against the relevant provisions of these planning instruments (see Appendix A and section 5). The assessment concludes that the proposal is consistent with the aims and objectives of these instruments and generally satisfies the requirements of the instruments.

3.5 DEVELOPMENT CONTROL PLANS

The following Cessnock City Council development control plans are relevant to the proposed development:

- *Development Control Plan No. 2 – Off Street Vehicular Car Parking*
- *Development Control Plan No. 3 – Industrial Land Use Code*
- *Development Control Plan No. 37 – Contaminated Lands*
- *Development Control Plan No. 40 – Waste Management and Minimisation*

The Department has assessed the proposed development against the relevant provisions of these development control plans (see Appendix A) and concludes that it is generally in accordance with the aims and provisions of these plans.

3.6 RELATIONSHIP WITH EXISTING DEVELOPMENT CONSENT

The VAW Aluminium smelter has been operating at the site since 1969 and is currently operating under a consent signed by the Minister on 19 August 1981. This consent is known as the Line 3 consent since it was obtained for the addition of Potline 3 to the smelter.

The proposed development is an alteration and addition to the existing smelter. The proposal is the subject of a new development application, not a modification to the existing consent, and the recommended instrument of consent, should the Minister determine to approve the development application, would operate independently of the existing Line 3 consent. The recommended instrument of consent would not revoke or modify any of the requirements under the existing Line 3 consent.

The recommended instrument of consent would, however, allow the Applicant to combine the reporting requirements of both consents to minimise duplication and unnecessary complexity.

3.7 CONCLUSION

The Department has assessed the development application for the proposed smelter upgrade and retrofit in accordance with the Act and Regulation. All statutory requirements under NSW legislation have been met. The Department has considered the proposed development in the context of all relevant environmental planning instruments, Council's Development Control Plans, and the existing development consent. The Department concludes that the proposal is generally consistent with the aims, objectives and provisions of all applicable instruments, plans, and policies.

4 Stakeholder Consultation and Summary of Issues Raised

The Department's consultation with stakeholders has been comprehensive and in keeping with the scale and implications of the proposed development. The views expressed by each government agency, special interest group, and individual have been carefully considered. The Department has conducted public participation in accordance with the Act and the Regulation. The Department's consultation included:

- advertisement of the exhibition period on 4 April 2002 and 29 April 2002 in the Maitland Mercury and the Newcastle Herald;
- notification of nearby and potentially affected landholders and residents, and placement of signs at the site during the exhibition period;
- exhibition of the development application and SEE at Planning NSW in Newcastle and Sydney, Cessnock City Council, Maitland City Council and the Nature Conservation Council from 5 April 2002 to 10 May 2002; and
- consultation with Cessnock City Council and other government agencies through correspondence and meetings.

A summary of submissions received by the Department from key stakeholder groups is provided below.

4.1 GOVERNMENT AGENCIES

EPA requested additional information relating to potential air quality and noise impacts from the proposed development. This information was provided by the Applicant. EPA then provided its General Terms of Approval which have been incorporated into the recommended instrument of consent. EPA raised the issue of polycyclic aromatic hydrocarbon (PAH) emissions from the greenmix plant and the anode bake plant. The recommended instrument of consent, should the Minister determine to approve the development application, requires a cumulative impact study of PAHs and verification of the proposed pollution control equipment.

DLWC noted that the proposed development could potentially impact on the Wentworth Swamp wetlands and recommended specific measures to manage stormwater on the site. It also indicated that an approval may be required under the *Rivers and Foreshores Improvement Act 1948* and this was referred to the Applicant. The recommended instrument of consent, should the Minister determine to approve the development application, requires the Applicant to obtain all relevant approvals and incorporates DLWC's recommendations. DLWC also requested that the Applicant develop a strategy to remediate existing contaminated groundwater on the site. The Department considers that, since the proposed development would not significantly change of impact groundwater on the site (see section 5.3), remediation of existing contamination should be managed under the Applicant's Environment Protection Licence and has not been included in the recommended instrument of consent.

4.2 LOCAL COUNCILS

Cessnock City Council resolved to support the proposed development and recommended conditions of consent. These conditions relate to remediation of contaminated groundwater, management of spent potlinings, conservation of vegetation, noise, amenity of local residents, and management of stormwater. All these conditions have been incorporated into the recommended instrument of consent, except the condition relating to remediation of groundwater as discussed above.

4.3 ELECTED REPRESENTATIVES

The local state member for Cessnock is Mr Kerry Hickey. The member for the Federal seat of Hunter is Mr Joel Fitzgibbon. Their views on the proposed development are unknown.

4.4 INDIVIDUALS AND SPECIAL INTEREST GROUPS

The Department received submissions from one local business, one industry association, and one local resident in support of the development. Submissions objecting to the proposal were received from three individuals and one local environmental group.

Key issues raised in objections to the proposal include:

- Past and current performance of the smelter is not satisfactory relating to fluoride emissions, monitoring of cattle in the locality, management of spent potlinings, groundwater contamination, noise emissions, and treatment of workers;
- Any expansion of the smelter would result in increased emissions which is not acceptable;
- The company should make results of bone tests on cattle public and not rotate the herd in the buffer zone so long-term impacts can be analysed;
- Predicted increase in SO₂ emissions is not acceptable;
- Health impacts of smelter air emissions are unknown to residents;
- The smelter should have an emergency notification procedure for the local community;
- Visual impact of the additional stack is not acceptable;
- The vegetation in the buffer zone should be retained to mitigate noise impacts;
- Expansion of an industrial development is not appropriate in a rural zone.

Appendix C provides a detailed summary of all public submissions received.

5 Consideration of Environmental Issues

5.1 AIR QUALITY IMPACTS

Applicant's Position

The existing smelter has a number of air emissions including:

- Hydrogen Fluoride (HF);
- Sulphur Dioxide (SO₂);
- Particulate Matter;
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Perfluorinated Carbon Compounds (PFCs);
- Oxides of nitrogen (NO_x), carbon monoxide (CO), chlorine (Cl₂), hydrochloric acid (HCl) and volatile organic compounds (VOCs).

The proposed alterations and additions would:

- increase emissions of SO₂ by 10% due to the proposed increase in production;
- reduce emissions of HF, particulate matter, PAHs and PFCs; and
- not change emissions of other pollutants due to improvements in process control.

There is potential for fugitive dust emissions during excavation works in the construction phase. These emissions would be managed and mitigated through specific actions and procedures in the construction environmental management plan.

Sulphur Dioxide (SO₂)

SO₂ is produced in the pots from sulphur in the petroleum coke and coal tar pitch used in anode manufacture. SO₂ is emitted principally from the stacks at the smelter which range from 46 to 137 metres high. SO₂ emissions are currently controlled by limiting the sulphur content in the coke and pitch as specified in the smelter Environment Protection Licence. Emissions are directly calculated from the amount of sulphur in the raw materials, assuming total conversion to SO₂. No ambient air quality monitoring data for SO₂ is available for the smelter locality.

Other local sources of SO₂ include the Eraring, Bayswater, Liddell, Vales Point, Munmorah and Redbank coal-fired power stations, the Tomago Aluminium smelter, and the Pasminco Acid and Sinter Plants. These sources were included in modelling to estimate cumulative impacts.

The Applicant modelled predicted ground level concentrations of SO₂ using stack emission rates adjusted for the proposed 10% increase in production. The model used was the Ausplume standard Gaussian plume model with a full set of meteorological data from 2000, collected from the weather station at the smelter. The Applicant also conducted a sensitivity analysis on the wind profile exponents in the model comparing default values with empirically derived values from a study of similar site on the NSW coast. The Ausplume default values were found to give more conservative results and were therefore adopted for impact assessment.

Ausplume modelling indicates that maximum ground level concentrations of SO₂ would be less than 15% of the relevant NEPM air quality goals for concentrations averaged over intervals of 1 hour, 24 hours and a full year.

In addition, the Applicant used a semi-empirical model (KIMPS) to assess impacts of plume dispersion under conditions of strong convection. The KIMPS model is based on monitoring information from a range of stack sources in Australia, the United States, and South Africa and was used by the Applicant to predict maximum 1-hour average ground level concentrations.

KIMPS modelling found that, while predictions were higher than those by Ausplume, the maximum ground level concentration of SO₂ would be still be less than 50% of the NEPM 1 hour average air quality goal, and that concentrations would also be within the recommended WHO limit of 500 µg/m³ for a 10 minute average.

Residential areas and sensitive receptors such as schools and a hospital may experience SO₂ concentrations up to a maximum of 150 to 160 µg/m³, which is less than 30% of the relevant NEPM air quality goal.

Fluoride

Hydrogen fluoride (HF) is an air pollutant that can potentially damage vegetation, such as grapevines. Since plant damage occurs at one thousandth the level of concern for human health, ambient air quality goals are designed to protect plants. Cattle may also be affected by fluoride concentrations in fodder crops which can damage teeth and bones.

HF is derived from cryolite and aluminium fluoride that are used in the smelting process. It is emitted from the smelter in both gaseous and particulate form via the potroom roof vents and stacks. Current emissions are subject to monitoring and load limits under the smelter Environment Protection Licence. VAW is also required to monitor impacts on surrounding vegetation, native animals, water quality, and cattle.

The proposed alterations and additions to the smelter would result in changes to HF emissions whereby some HF emitted through the Potroom 1 roof vents would be diverted via the scrubbers to the stacks. Alterations to the scrubbing system and alumina feed for Potline 1 would ensure that HF stack emissions do not significantly increase. The main benefit, however, of the proposal is a 40% reduction in Potline 1 HF roof emissions which would reduce overall smelter emissions significantly.

Maximum HF ground level concentrations resulting from the proposed development were modelled using a modified BLP atmospheric model that was developed based on monitoring data from the smelter in the 1980s. This model has been used regularly to estimate ground level HF concentrations since that time and has proved to be generally conservative in its predictions.

Modelling results confirmed that ground level concentrations of HF would be reduced from their current levels and that the smelter would continue to satisfy all relevant EPA impact assessment criteria and the Environment Protection Licence.

Polyaromatic Hydrocarbons

Polyaromatic hydrocarbons (PAHs) are emitted from stacks at both the greenmix carbon plant and the anode baking plant. Monitoring data from 1999 and 2000 was used to estimate the current maximum PAH emissions from the two sources and ground level

concentrations were modelled with the Ausplume model, as previously described for SO₂ modelling. Current operations were modelled and maximum ground level concentration of PAHs (expressed as benzo-a-pyrene equivalents) was found to marginally exceed the relevant EPA criteria (Victorian EPA, referred to by NSW EPA). Concentrations at discrete receptors at the buffer zone boundary were, however, much lower and within the relevant criteria.

The proposed alterations and additions would involve the removal of the greenmix carbon plant as an emission source, due to the installation of the greenmix scrubber. The effect of this was modelled and it was found that maximum ground level PAH concentrations were significantly reduced. This is due to the better dispersion conditions present at the anode plant, and the removal of greenmix plant emissions. Maximum ground level concentrations predicted were 100 times less than the relevant EPA criteria.

Greenhouse Gas Assessment

The main source of greenhouse gas emissions from the plant is Perfluorinated Carbon Compounds (PFC) that are caused by “anode effect” in the pots. In addition, CO₂ is produced through the reaction of the carbon anode with oxygen in the alumina and by various fixed and mobile combustion sources on the site. Current greenhouse gas emissions from the smelter have been estimated at 1.250 million tonnes per annum which represents 0.27% of National Greenhouse Gas Emissions.

The proposed upgrade of all three potlines would result in reductions in the frequency of anode effect, which would directly reduce PFC emissions. The estimated greenhouse gas emissions for the smelter post-upgrade have been estimated as 430,000 tonnes per annum, or 0.09% of National Greenhouse Gas Emissions.

Issues Raised in Submissions

Individuals and Special Interest Groups

Public submissions objecting to the proposed development focussed on the existing fluoride emissions and impacts on surrounding vegetation and cattle. Submissions expressed the view that current emissions of all air pollutants were not acceptable and, as such, any increase should not be allowed. The proposed 10% increase in production was viewed as an expansion of the smelter which would result in increased emissions.

One submission questioned the Applicants prediction that fluoride emissions would be reduced by 40%, and raised the issue of impacts on nearby properties such as yellowing of grass and noticeable air pollution at residences.

Government Agencies

The EPA requested further information relating to air impacts and, in response, the Applicant prepared a study of the predicted impact of PAH emissions from the existing plant and the smelter following the proposed alterations.

Department's Position

The Department notes the concerns raised in public submissions that any increase in production may result in additional air quality impacts. This would be the case if production was to be increased without improved environmental controls. The proposed

development, however, includes a range of air treatment improvements to the smelter that would account for any increases and, in fact, reduce overall emissions.

The Applicant has demonstrated that in the case of all emissions, except SO₂, there would be reductions in emitted pollutants and impacts on local air quality. Even under the conservative assumptions and modelling employed by the Applicant, the emission reductions would be significant most notably for fluoride, the key air pollutant emitted by the smelter.

The Department notes that SO₂ emissions from the smelter would increase by 10%. The Applicant has conducted detailed modelling of the impact of this increase and used two different models to ensure a conservative approach to predictions. Maximum ground level concentrations of SO₂ did not exceed half the relevant NEPM air quality goals for all modelling scenarios and all averaging times. The Department notes that this maximum concentration was predicted within the existing smelter buffer zone and that sensitive receptors such as residents, schools, and the local hospital would experience significantly lower levels of SO₂.

The Department considers that environmental monitoring of ambient SO₂ concentrations should be required to verify the predictions in the SEE and ensure air quality standards are adhered to. The recommended instrument of consent, should the Minister determine to approve the development application, includes a requirement for the Applicant to conduct regular SO₂ monitoring and reporting during operation of the proposed development.

The greenhouse gas assessment conducted by the Applicant highlights the benefits of the smelter upgrade which include major reductions in greenhouse emissions. Approximately 820,000 tonnes per annum (CO₂ equivalent) of greenhouse gas emissions would be eliminated, a 67% reduction from current emissions, which would have a significant impact on national and state emissions.

The Department notes the potential for fugitive dust emissions during construction and has included a condition in the recommended instrument of consent, should the Minister determine to approve the development application, requiring dust mitigation procedures to be included in the Construction Environmental Management Plan.

The Department concludes that, in general, the proposed development would result in improvements to local air quality and that predicted impacts due to SO₂ and fugitive dust emissions would be acceptable and can be effectively managed under the recommended instrument of consent, should the Minister determine to approve the development application,.

5.2 NOISE IMPACTS

Applicant's Position

The Applicant conducted a noise impact assessment for the proposed alterations and additions in accordance with the EPA *Industrial Noise Policy*. Background noise levels were measured at four locations to the south and south west of the smelter site over two one week periods in 2001. Monitoring was not conducted at sites close to the smelter, such as Sawyers Gully Road, since noise from the existing development and traffic would have influenced the results.

A model of the sound power level from the existing smelter was developed from empirical data obtained from VAW noise monitoring conducted in the buffer zone since

1993. Modelled results for noise levels from the existing smelter at sensitive receptors were used to adjust the rating background levels from monitoring in 2001. Amenity criteria were established in accordance with the INP and project specific noise levels were determined for all relevant assessment periods, including construction.

Comparison of the noise levels from the existing development with the project specific noise levels indicates that there are some exceedences at sensitive receptors in the evening and night assessment periods under temperature inversion conditions.

Impacts of construction activities for the proposed development were modelled with the existing smelter in operation. Predicted noise levels are well within relevant project specific noise levels for the construction phases, calculated in accordance with the EPAs *Environmental Noise Control Manual*.

During operation, the contribution to overall smelter noise levels from the proposed upgrade and retrofit project would be limited to the greenmix scrubber fan. Modelling conducted by the Applicant indicates that the contribution of the fan to the overall noise levels would be minimal and would not significantly increase noise impacts on nearby sensitive receptors.

The Applicant has not specifically assessed the potential impacts of the proposal on sleep disturbance since noise from the smelter operations are constant and do not contribute to $L_{1,1 \text{ minute}}$ or $L_{\text{max}, 15 \text{ minute}}$ levels which would exceed the background by more than 15 dBA. Construction noise would only occur during the day and would not, therefore cause sleep disturbance.

The Applicant states that additional impacts from tonal noise from the greenmix scrubber fan would be avoided by specification of the fan characteristics in the tender for the project. Any equipment that would replace existing equipment would be no noisier than existing equipment.

The Applicant concludes that exceedences of project specific noise levels predicted in modelling are due to existing smelter operations and that the proposed construction and operation of the alterations to the smelter would not significantly increase noise impacts on nearby residents.

Issues Raised in Submissions

Individuals and Special Interest Groups

One submission raised the absence of noise monitoring in the Sawyers Gully Road area and claimed that existing noise levels at their residence cause annoyance and sleep disturbance. The submission states that existing noise levels are not acceptable and impacts are significantly increased with wind direction and humidity. The submission notes that the Applicant has not proposed any measures to reduce existing noise levels.

Government Agencies

EPA requested additional noise impact assessment, including a discussion of the influence of the existing smelter operations of calculated background levels. The Applicant provided a detailed report with a re-assessment of the project specific noise levels and predicted noise impacts.

Department's Position

The Applicant's analysis demonstrates that the proposed development would not significantly increase the noise levels created by the smelter. The Department agrees that the noise impact of the proposed alterations and additions would be limited to the greenmix scrubber fan, and that this equipment alone would create minimal additional noise levels at residential receptors.

The Department notes that the existing development, however, does not comply with the project specific noise levels calculated under the EPA's *Industrial Noise Policy*. One public submission highlighted the annoyance and sleep disturbance caused by noise from the existing smelter at the submitters residence. While this is of some concern, it should be noted that the *Industrial Noise Policy* recognises that in some cases existing developments may not comply with noise limits calculated according to the policy, and that project specific noise levels should not be applied as mandatory limits in such cases. This exceedence is due to existing developments having been designed to meet past criteria which have now been superseded, and increases in residential development around industrial sites after their establishment. The policy also recognises that the scope for applying reasonable and feasible noise mitigation measures to existing developments is far more limited than for new developments. A structured approach to negotiation is proposed to reduce existing noise levels. Negotiation between the Applicant, the EPA, and in some cases the community is proposed to design a program of noise reduction and set appropriate noise limits for the development.

The Department considers that a program of negotiation would be highly beneficial and lead to lower noise levels in the smelter locality. The EPA also supports this conclusion and the framework for a noise reduction program is set out in the recommended instrument of consent.

To ensure that the noise contribution from the proposed development does not exceed that predicted in the SEE, the Department has included a requirement in the recommended instrument of consent, should the Minister determine to approve the development application, that new equipment must have lower sound power levels than existing equipment and no tonal noise characteristics. Requirements for noise monitoring and reporting are also included in the consent.

The Department concludes that the proposed development would not have significant noise impacts on nearby residents and has prepared a recommended instrument of consent that provides for a structured program of noise reduction from the existing development.

5.3 WATER QUALITY IMPACTS

Applicant's Position

The Applicant provided a discussion of the existing groundwater characteristics on the site, noting the contamination that was caused by the Spent Pot Lining (SPL) stockpile. The stockpile has since been capped and VAW regularly monitors the quality and migration of the contaminated groundwater.

The proposed development would involve excavation to construct footings for the anode baking furnace. This excavation would encounter groundwater which would be pumped out to the adjacent east surge pond and enter the site stormwater management system. Potential for contamination of the groundwater below the anode baking furnace was assessed from monitoring data from the nearest bores. This data indicates that it is

unlikely that there is any contamination present in that area, and groundwater pumped out of the excavation would not require any treatment.

The proposed development involves minimal changes to the hard stand and roofed areas and groundwater infiltration would not be significantly affected.

The smelter is a nil-discharge site and all stormwater is reused for irrigation or evaporates. The smelter is currently improving stormwater management on the site in accordance with the site Environment Protection Licence.

Surface water could potentially be contaminated during construction due to spillages and sediment. These potential impacts would be controlled under the construction environmental management plan which would include a soil and water management plan. Once operational, the proposed alterations and additions to the smelter would not require any changes to the existing stormwater management on site and would not result in significant impacts on stormwater quality or quantity.

Issues Raised in Submissions

No specific concerns were raised in relation to water quality impacts of the proposed development, however several submissions claimed that the nearby Wentworth Swamps are contaminated with fluoride and toxic metals.

The Department of Land and Water Conservation (DLWC) requested further detail on the existing stormwater management system and highlighted the importance of effective environmental management procedures during construction to mitigate water quality impacts. DLWC requested that a strategy be developed to remediate existing contaminated groundwater on the site and indicated that an approval under the *Rivers and Foreshores Act 1948* may be required for the development to proceed.

Department's Position

The Department raised concerns over the potential for contaminated groundwater to be extracted from excavations. The Applicant submitted monitoring results for nearby groundwater bores which indicate that groundwater is unlikely to be contaminated under the proposed anode baking furnace excavation. The Department is satisfied that groundwater extracted would be of acceptable quality to be managed in the site stormwater system.

The Department notes concern from the community over the contamination of Wentworth Swamp, however the Applicant's analysis shows that no off site water quality impacts are expected as a result of the proposed development.

The Department considers that the issue of the existing contaminated groundwater on the site associated with stored spent potlining is currently being managed effectively by VAW under the existing Environment Protection Licence for the smelter. In addition, the proposed development would not change or impact this groundwater and there is no reasonable nexus between it and the proposal. Therefore no condition has been included requiring additional measures to remediate this groundwater.

The Department is satisfied that the proposed alterations and additions would have negligible impacts on water quality at the site and in the locality. The recommended instrument of consent, should the Minister determine to approve the development application, contains appropriate controls to ensure environmental management procedures effectively mitigate any potential construction impacts.

5.4 FLORA AND FAUNA IMPACTS

Applicant's Position

The Applicant presented the results of flora and fauna surveys of the smelter site and buffer zone. One ecological community listed under the *Threatened Species Conservation Act 1995*, the Kurri Sand Swamp Woodland, two listed plant species, and seven listed fauna species have been recorded in the study area or local vicinity. This includes one species of migratory bird, the Painted Snipe, which may use limited wetland habitat in the study area and is listed under the CAMBA international conservation treaty. One regionally significant plant species and one regionally significant fauna species have been recorded in the area.

The Applicant argues, however, that since all the proposed alterations and additions are contained within the existing smelter footprint, that there would be no significant impact on any flora and fauna in the locality. In addition, emissions resulting from the proposed development would, in general, be reduced from current levels thereby reducing any potential indirect impacts. The Applicant concludes that, considering the factors under section 5A of the Act, that there is not likely to be a significant impact on any threatened species or ecological community.

Issues Raised in Submissions

One submission noted that the Applicant has challenged the listing of the Kurri Sand Swamp ecological community in the Land and Environment Court.

Department's Position

The Department requested further information relating to the location of the Kurri Sand Swamp Woodland ecological community on the site. The Applicant provided this information and further clarification of the potential impacts of the proposed development.

The Department is satisfied that the proposal would not have any significant impact on flora and fauna values in the local area, or on any threatened species or ecological communities.

5.5 TRANSPORT IMPACTS

Applicant's Position

Traffic is generated at the smelter from deliveries of raw materials, dispatch of products, vehicles of providers of goods and services, and employees and contractors. Raw materials are transported to the site by B-Double trucks from Kooragang Island in Newcastle and aluminium product is transported mainly to Sydney in semi-trailers. Approximately 70 heavy vehicles and 500-600 light vehicles visit the smelter each day.

Traffic volumes generated during the construction phase would vary in nature and intensity over the 24 month period. The Applicant expects that peak traffic volumes would involve up to 2 heavy vehicle movements per hour and approximately 170 light vehicles per day. This roughly equates to the current vehicle movements that occur at the beginning and end of an operating shift, and would not therefore, present any additional impact on the road system. Some oversized vehicle movements would also be required to bring new equipment to the site.

Due to the proposed 10% increase in smelter production there would be a corresponding increase in traffic generation as a result of the proposed development. This would produce an additional 7 heavy vehicle movements per day. Given the current traffic volumes on the road network servicing the smelter, the minimal relative increase due to the proposed development is not expected to affect the Level of Service on any traffic routes.

The Applicant has proposed a range of mitigation procedures, including scheduling of oversized loads outside peak traffic times and using B-double trucks to transport aluminium product.

Issues Raised in Submissions

No submissions raised issues relating to transport.

Department's Position

The Department has compared the Applicants predicted traffic volumes with the RTA Traffic Volume Data provided in the SEE. Current traffic generated by the smelter is assumed to be accounted for in the RTA traffic data. Peak construction traffic generated by the proposed development would be less than 5% of existing traffic volumes. This would not result in a significant impact on Level of Service on the road system. Similarly, impacts from operational traffic increases would not be significant.

To further reduce any potential for short-term traffic impacts during construction the recommended instrument of consent, should the Minister determine to approve the development application, requires the Applicant to ensure construction hours and operation shift hours do not coincide.

The Department acknowledges that traffic impacts from oversized vehicles, could be significant if not properly managed. The recommended instrument of consent requires the Applicant to develop specific traffic management procedures as part of the Construction Environmental Plan.

5.6 LANDSCAPE AND VISUAL AMENITY IMPACTS

Applicant's Position

The landscape of the surrounding locality is described as rural, moving to urban to the south and south west of the smelter site. The topography is generally undulating and covered in a mixture of vegetation. Nearby vegetation includes closely planted stands of trees within the smelter buffer zone and more open scattered woodland and grazing land in the surrounding area. The closest residential areas are Loxford (750m to the south east), Kurri Kurri (2km to the south), and Weston (2km to the south west). The nearest residents are located approximately 700m from the smelter in Loxford and on Sawyers Gully Rd to the west.

The visual components of the existing smelter are dominated by the 5 stacks which range from 45m to 137m high, and three main plant buildings. The proposed alterations and additions would create the following visual changes to the smelter:

1. Addition of a 40m high stack for the greenmix scrubber;
2. Removal of one stack near the site of the proposed greenmix scrubber; and,
3. Extension of the existing anode baking furnace building;

All other alterations would be internal or located between existing buildings below the roof line, such as the proposed 250 tonne silos and North Bath Handling Station extension. The Applicant indicates that some short-term visual impacts may occur as a result of construction equipment such as cranes.

The Applicant identified potential viewing locations around the smelter which include sites close to the buffer zone and distant sites to the north east where views may be obtained due to the elevation of this area. Photographs representing views from each location confirm that the closer viewing sites are mainly screened by existing vegetation, undulations and existing buildings. Sites further from the smelter have distant views however all plant components except the main 137m stack are positioned below the horizon.

The Applicant concludes that the current visual impact of the plant would not be significantly changed by the proposed alterations and additions since the added visual components are either minimal or, in the case of the stack, replace existing components.

Issues Raised in Submissions

One submission raised concern over the added visual impact of the proposed greenmix scrubber stack.

Department's Position

The Department notes the concern raised over the addition of a stack to the smelter, however given the stack would replace a nearby existing stack, it is satisfied that the visual impacts of the smelter would not be increased by the proposed alterations. Any construction impacts would be temporary and short-term and are not considered to be significant. The Department has included a condition in the recommended instrument of consent, should the Minister determine to approve the development application, requiring the Applicant to design all visual components of the proposal with a colour scheme that maximises the ability of the development to "blend into" local vegetation and existing visual components.

5.7 WASTE MANAGEMENT IMPACTS AND CONTAMINATED LAND

Applicant's Position

The principle sources of waste from the proposed development would be from construction, including:

1. Refractory materials, concrete, and spoil from the anode baking furnace; and,
2. General construction waste from demolition of structures and sections of buildings.

The Applicant has performed leach tests on refractory materials from the anode baking furnace which confirm that waste material produce would be classed as "inert waste" under EPA classifications. Any contamination in concrete and spoil to be removed is expected to be less than in the refractory materials, and groundwater monitoring does not indicate the presence of contamination. Approximately 8000 tonnes of refractory material, 400 m³ of concrete, and 16,000 m³ of spoil are expected from the excavation. Some refractory material would be separated for reuse in other industries. VAW has entered into a partnership with Cooper Minerals to investigate reuse opportunities for refractory waste and other wastes such as Spent Potlining (SPL). Material that cannot

be reused would be used as fill to raise an area near the furnace building to create additional hardstand area.

General construction wastes would be separated and either reused, recycled, or disposed of with licensed waste contractors, in accordance with the Construction Environmental Management Plan.

The increase in production would result in increase in smelter waste including SPL and refractory waste from the anode baking furnace. The Applicant argues that these increases would be minimal due to improvements in process efficiency and stability which would increase the life of these materials. Baghouse material from the greenmix scrubber would be recycled to the carbon plant and create an additional waste stream.

Operational waste would be managed according to existing site procedures.

Issues Raised in Submissions

The issue of management of SPL was raised in several public and government submissions.

Department's Position

The Department considers that the management of construction waste from the proposed development would not create any significant environmental impacts on or off the smelter site. The recommended instrument of consent, should the Minister determine to approve the development application, requires the Applicant to include specific waste management procedures in the Construction Environmental Management Plan.

The Department notes the concerns raised over the management of SPL on the site while acknowledging the current limitations on commercially viable reuse, recycling, or disposal options for smelters in Australia. SPL management is, however, an important issue and the Department considers that improvements in best-practice management are necessary. To establish a program and set timeframes for these improvements the Department has included a condition in the recommended instrument of consent, should the Minister determine to approve the development application, requiring the Applicant to develop a system for treating SPL to produce non-hazardous waste or a reusable product by 31 December 2007. The condition includes a provision to allow an extension to the deadline in certain circumstances. This is the same approach taken by the Department for the recent modifications to the Tomago Aluminium Smelter and provides a consistent framework for management of SPL across the industry.

The Department is satisfied that potential waste management impacts of the proposed development would be acceptable and can be effectively managed and mitigated under the recommended instrument of consent. The Applicant has supplied sufficient information for the Department to determine that the land is unlikely to be contaminated and would be suitable for the proposed development.

5.8 HAZARDS IMPACTS

The existing smelter is a potentially hazardous industry and was subject to a Final Hazard Analysis that was submitted to and approved by the Department in 1992.

The proposed smelter upgrade and retrofit would not result in significant changes to storage, handling, or transportation of Dangerous Goods at the smelter. A Preliminary

Hazard Analysis was not prepared since none of the threshold criteria in SEPP 33 or the Department's guidelines for "potentially hazardous" development would be exceeded by the proposed development.

The Department is satisfied that potential risk impacts of the proposal are acceptably low, however, it believes the Applicant should be required to update the following hazard studies to accommodate the proposed changes:

- a Final Hazard Analysis;
- a Fire Safety Study;
- a Construction Safety Study;
- an updated Emergency Plan;
- an Independent Hazard and Operability Study;
- an Independent Hazard Audit;
- a Safety Management System; and
- Incident Reporting.

The recommended instrument of consent, should the Minister determine to approve the development application, requires the Applicant to provide these studies and documents to the Director-General for approval.

5.9 SOCIO-ECONOMIC IMPACTS

The Applicant described the socio-economic characteristics of the region. The regional economy is based on industrial, mining, agricultural, tourism and service industry activities. Employment in the Hunter region in manufacturing and primary industries declined in the 1990s with service sector employment increasing. Population in the Lower Hunter region is projected to increase from 449,773 in 1996 to 506,100 in 2006.

The proposed development would involve a capital investment of around \$110 million dollars and provide up to 450 construction jobs. While over half the capital budget would be spent on equipment imported from overseas, a significant portion would enter the local economy and create flow-on economic effects from expenditure on wages, construction contracts, transportation, and accommodation. Direct employment generation is also expected to have flow on effects.

The Applicant has estimated that approximately half the construction jobs would be sourced from locally based workers and that the peak workforce at any one time would be 220 workers. This is not expected to have significant negative impacts on short-term accommodation services in the local area.

The Department considers that the proposed development would have a significant net benefit to the socio-economic characteristics of the area and the local community.

5.10 ENERGY USE IMPACTS

The smelter currently consumes approximately 2,500 gigawatt hours per annum, 95% of which is used in the reduction process. The proposed smelter upgrade would result in a significant improvement in efficiency, or the electricity consumed per tonne of aluminium produced. This improved efficiency would allow the smelter to increase production by 10% without increasing total energy consumption.

The Department is satisfied that the proposal would not have any negative impacts on energy consumption and would result in more efficient use of resources.

5.11 CUMULATIVE IMPACTS AND OTHER ISSUES

The Applicant has reviewed potential for cumulative impacts from existing and approved developments in the locality and the region. Cumulative impacts of traffic generation from other developments in the area was considered in the assessment. The recently approved development at nearby Weston Aluminium would generate construction traffic, however the construction period would not coincide with that of VAW's, therefore no cumulative effect is expected.

Other potential cumulative impacts could arise from noise and air emissions. These impacts were considered in the modelling in the relevant sections of the SEE and this report. The Department is satisfied that no significant impacts would be expected, considering any potential cumulative effects.

The Department considers that the proposed development would not have significant impacts on other issues such as European or indigenous heritage since the development is confined to the footprint of the existing smelter.

5.12 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The Applicant has addressed the principles of Ecologically Sustainable Development (ESD) including the precautionary principle, intergenerational equity, conservation of biological diversity, and improved valuation and pricing of environmental resources. The key points raised relate to the limited uncertainty in the SEE predictions due to the use of accepted best-practice technology in the upgrade which has known consequences and effects. Any uncertainty in predictions related to variability in the natural environment has been accounted for by taking a conservative approach to the assessment. The improvements in smelter efficiency and major reductions in greenhouse gas and fluoride emissions would result in better use of non-renewable resources and reduced environmental impact, which would contribute to intergenerational equity. The proposal would not have any significant impacts on the biodiversity or ecological integrity of the area. The Department considers that the proposed development is generally in accordance with the principles of ESD, and has included conditions such as those requiring noise reductions and improved Spent Potting management to provide additional benefits to society and the environment.

6 Recommended Instrument of Consent

The Department has prepared a set of recommended conditions of consent for the proposal.

These conditions include EPA's General Terms of Approval.

These conditions are required to:

- Minimise any adverse environmental impacts associated with the proposal;
- Provide for the on-going environmental management of the development; and
- Provide for regular monitoring and reporting on the development.

The Applicant has been consulted and has agreed with the conditions in the recommended instrument of consent

7 Section 79 (C) Consideration

Section 79C of the Act sets out the matters that a consent authority must take into consideration when it determines a DA.

The Department has assessed the DA against these matters (see Appendix B), and is satisfied that:

1. the proposal is generally consistent with the provisions of the relevant planning instruments;
2. the potential impacts of the proposal could either be mitigated or managed; and
3. the proposal is generally in the public interest.

8 Conclusion

The Department is of the opinion that the proposed development is consistent with State and regional planning objectives relating to environmental management, sustainable economic development and employment generation. It is further considered that the potential environmental impacts of the proposal can be suitably managed such that they do not preclude the granting of development consent. The proposal would also provide substantial improvements to environmental management at the existing smelter and environmental amenity in the locality. It is therefore concluded that the proposal should be approved, subject to the conditions of consent designed to control and mitigate potential environmental impacts.

9 Recommendations

It is RECOMMENDED that the Minister:

- (i) Consider the findings and recommendations of this report;
- (ii) Determine that the proposed development is not Designated Development;
- (iii) Approve the DA subject to conditions under Section 80 of the Act; and
- (iv) Sign the attached Instrument of Consent.

Gordon Kirkby
Manager - Manufacturing and Rural
Major Development Assessment Branch

ENDORSED:

Sam Haddad
Executive Director
Sustainable Development

Report Prepared by Matt Andrews

10 References

URS, 2002, "Statement of Environmental Effects – VAW Smelter Update and Retrofit Projects", prepared for VAW Kurri Kurri, March 2002.

URS, 2002a, "Additional information for PlanningNSW", prepared for VAW Kurri Kurri, 28 June 2002.

URS, 2002b, "Additional information for EPA", prepared for VAW Kurri Kurri, 11 June 2002.

APPENDIX A – ENVIRONMENTAL PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

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

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 offensive impact on off-site receptors.

The proposed smelter upgrade and retrofit would not result in significant changes to storage, handling, or transportation of Dangerous Goods. A Preliminary Hazard Analysis was not prepared since none of the threshold criteria in SEPP 33 or the Department's guidelines for "potentially hazardous" development would be exceeded by the proposed development. The Department has considered potential hazards and risk impacts in detail in section 5.8 of this report, concluding that the proposed development is not a hazardous development.

The proposal is also considered "potentially offensive" as it requires an Environment Protection Licence (EPL) from the Environment Protection Authority (EPA). The EPA has issued General Terms of Approval for the proposed development, thereby indicating that it is prepared to issue the EPL. As such, the proposal does not constitute "offensive" development.

State Environmental Planning Policy No. 34 – Major Employment Generating Industrial Development

SEPP 34 applies to the proposed development since the Minister has formed the opinion that the capital investment involved is greater than \$20 million. The Minister is therefore the consent authority and the requirements of SEPP 34 have been satisfied.

State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP44)

SEPP 44 applies to the proposed development site since it is within Cessnock local government area, which is listed in Schedule 1 of the policy. The aims and objectives of the policy are:

“to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline:

- (a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat; and*
- (b) by encouraging the identification of areas of core koala habitat; and*
- (c) by encouraging the inclusion of areas of core koala habitat in environment protection zones.”*

The provisions of SEPP 44 require the consent authority to consider whether there is "potential koala habitat" on the site. Potential koala habitat is defined in the policy as areas of native vegetation where the trees of the types listed in Schedule 2 of the policy

constitute at least 15% of the total number of trees in the upper or lower strata of the tree component.

While the Applicant has indicated that koalas have been sighted within 5 km of the smelter and within the buffer zone, the Department notes that there is no significant vegetation on the smelter plant site. Any significant vegetation has been previously cleared for construction of the existing facility. The Department therefore considers that the smelter plant site, the land to which the development application applies, does not constitute potential or core koala habitat. In addition, indirect impacts on vegetation surrounding the site would be reduced by the proposed development, particularly fluoride emissions which can be damaging to plant foliage.

The Department is satisfied that the land within the proposed development site is not potential koala habitat and the provisions of SEPP 44 do not prevent the Minister from granting consent to the development application.

State Environmental Planning Policy No. 55 – Remediation of Land

SEPP 55 provides a State-wide planning approach for the protection of health and the environment from contamination and remediation of contaminated land. Clause 7 of this policy stipulates that a consent authority must not grant consent to the carrying out of any development on land unless:

1. *it has considered whether the land is contaminated, and*
2. *if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
3. *if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

The Department has considered whether the land where the development is proposed is contaminated in section 5.7 and concludes that the land is unlikely to be contaminated. The proposal therefore satisfies the requirements of SEPP 55.

Hunter Regional Environmental Plan (REP) 1989

The aims of the Hunter REP 1989 are:

- (a) *to promote the balanced development of the region, the improvement of its urban and rural environments and the orderly and economic development and optimum use of its land and other resources, consistent with conservation of natural and man made features and so as to meet the needs and aspirations of the community,*
- (b) *to co-ordinate activities related to development in the region so there is optimum social and economic benefit to the community, and*
- (c) *to continue a regional planning process that will serve as a framework for identifying priorities for further investigations to be carried out by the Department and other agencies.*

The proposed development represents a minimal change to the balance development in the region and would have significant social, economic, and environmental benefits to the local community. It is consistent with the aims of Hunter REP 1989.

In relation to industrial development, the Plan has the following objectives:

- (a) *to ensure that sufficient zoned and serviced industrial land is provided in locations appropriate to the needs of industry, while ensuring protection of the environment, and*
- (b) *to promote the distribution of employment in secondary industry in a manner compatible with the availability of services and distribution of population.*

The proposal does not relate to zoning of land, however it is consistent with the second aim since it provides for continued employment in secondary industry.

The objective of the Plan in relation to planning strategies concerning pollution control is to control development so as to minimise air, noise and water pollution. The Plan also requires that:

A consent authority should not grant consent to the carrying out of development listed in Schedule 3 to the Environmental Planning and Assessment Regulations 1980 (including development comprising the expansion of an existing facility) unless it is satisfied that:

- (a) *topographic and meteorological conditions are such that air pollutants would have no significant adverse effect,*
- (b) *an appropriate buffer zone can be provided to ensure that noise, dust and vibration are maintained at acceptable levels,*
- (c) *the best practicable technology for air, water and noise pollution control will be incorporated in the design and operation of the equipment and facilities to be used for the purposes of the industry,*
- (d) *there will be no significant deterioration of air or water quality as a result of emissions from that equipment or those facilities, and*
- (e) *the site will not become contaminated within the meaning of Part 5 of the Environmentally Hazardous Chemicals Act 1985.*

(2)A council should not grant consent to any development unless it is satisfied that:

- (a) *there is adequate provision for setbacks between the development and existing watercourses,*
- (b) *an adequate vegetation cover is maintained or reinstated so as to minimise soil erosion,*
- (c) *where necessary, adequate retardation basins, grassed floodways, sedimentation pits and trash collection facilities are established and maintained, and*
- (d) *adequate measures are provided to control soil erosion during construction of the development.*

These factors have been assessed in section 5 of this report. The Department considers that proposal is consistent with these provisions.

The objectives of the Plan in relation to planning strategies concerning waste disposal are:

- (a) *to provide for safe and effective disposal of domestic, commercial and industrial wastes, including toxic materials,*
- (b) *to avoid the entry of harmful chemicals into the environment, and*
- (c) *to encourage the most efficient use of resources by recycling or alternative use as appropriate.*

For the assessment of development proposals, the consent authority must have regard to the following provisions to ensure consistency with the above aims:

In considering a proposal for commercial or industrial development which will, or is likely to, produce toxic wastes, councils should consult with the State Pollution Control Commission and other relevant public authorities to ensure that adequate provisions have been made for the disposal of such wastes.

The Department has consulted extensively with EPA on the issue of waste and has made provision in the recommended instrument of consent for disposal of the key toxic waste product from the smelter, Spent Potlinings. The Department considers that the proposal is consistent with the relevant aims and provisions of the Hunter REP 1989.

Cessnock Local Environmental Plan (LEP) 1989

The principle aim of the Cessnock LEP 1989 is to consolidate and update existing planning controls in the City of Cessnock. Under the Plan, the project site is zoned Rural 1 (a). The objectives of the zone are:

- (a) *to enable the continuation of existing forms of agricultural land use and occupation,*
- (b) *to ensure that potentially productive land is not withdrawn from production,*
- (c) *to encourage new forms of agricultural land use,*
- (d) *to enable other forms of development which are associated with rural activity and which require an isolated location, or which support tourism and recreation, and*
- (e) *to ensure that the type and intensity of development is appropriate in relation to:*
 - (i) *the rural capability and suitability of the land,*
 - (ii) *the preservation of the agricultural, mineral and extractive production potential of the land,*
 - (iii) *the rural environment (including scenic resources), and*
 - (iv) *the costs of providing public services and amenities.*

The proposed development is prohibited in the zone. The VAW Aluminium smelter has been operating at the site since 1969, however, and is currently operating under a consent dated 19 August 1981. As such it is an existing use, as defined by section 106 of the *Environmental Planning and Assessment Act 1979* (the Act). Part 5 of the *Environmental Planning and Assessment Regulation 2000* (the Regulation) permits and existing use to be enlarged, expanded, intensified, altered, extended, or rebuilt with development consent. Therefore the proposed development is permissible with development consent.

Clause 10 of the Plan requires that, in determining any application for consent to carry out development on land within the zone, the consent authority shall have regard to the following general principles:

- (i) *development should be generally compatible with the rural suitability and*

- capability of the land on which it is to be carried out, as indicated on maps deposited in the office of the Council,
- (ii) development should be of a type compatible with the maintenance and enhancement, as far as is practicable, of the existing rural and scenic character of the City of Cessnock,
 - (iii) development (other than development on land within Zone No 1 (c), 1 (c1) or 1 (c2)) should not materially reduce the agricultural production potential of the land on which it is to be carried out, or of adjoining land,
 - (iv) the existing and possible future use of the land and of other land in the locality should not be prejudiced (particularly in the case of land which contains recoverable mineral or extractive resources),
 - (v) development should not materially affect any wildlife refuge, significant wetland or any identified site containing Aboriginal archaeological relics and such relics or places should be preserved where necessary,
 - (vi) development (including associated access roads) should not create or worsen soil erosion potential through the action of wind or water or the alteration of land form, and adequate measures should be taken to avoid such an effect,
 - (vii) adequate utility services and community facilities should be available to the land and its future occupants, and the land should be capable of accommodating on-site disposal of domestic waste and the provision of a domestic water supply, including a fire-fighting capacity,
 - (viii) development should not have the possible effect of creating demands for unreasonable or uneconomic provision or extension of services by the Council or any other public authority,
 - (ix) development should not create significant additional traffic or create or increase a condition of ribbon development on any road, particularly a main or arterial road, relative to the capacity, standard and safety of the road,
 - (x) the creation of vehicular access to a main or arterial road should be minimised and where no alternative access is available, the location and treatment of the access should minimise potential traffic hazards,
 - (xi) development should incorporate adequate drainage measures, including sediment and waste control, and prevention of the uncontrolled flow of water across the land or adjoining land,
 - (xii) development should not lead to any deterioration of water supply or water quality within a water catchment,
 - (xiii) where land is proposed to be cleared, vegetation should be retained in appropriate locations to reduce the visual impact of clearing to the maximum extent consistent with the rural character of the area,
 - (xiv) in the case of land within Zone No 1 (v), the general impact of development on the scenic catchment of the vineyards district should be minimised,

The proposed development is generally consistent with these provisions.

Development Control Plan No.2 – Off Street Vehicular Car Parking (DCP 2)

DCP 2 aims to:

- (a) provide a guide for developers of Council's requirements for off street vehicular parking; and
- (b) ensure that adequate off street vehicular parking is provided for traffic generating developments.

The objectives of DCP 2 are to ensure that:

- (a) adequate car parking facilities are provided in association with developments;

- (b) each development proposal is assessed consistently and equitably in relation to the provision of off street vehicular parking;*
- (c) vehicular parking areas are designed in such a manner as to be functional, aesthetically pleasing in terms of landscaping, and safe for motorists and pedestrians; and*
- (d) all vehicles entering or leaving properties are driven in a forward direction.*

The provisions of the Plan require that industrial premises provide 1 car space per 75 m² of gross floor area, or 1 space per 2 employees, whichever is greater. The proposed alterations and additions would not create any additional permanent employees and as such no additional car spaces would be required under the Plan. The current car parking provided is in excess of that required for existing employees. The proposal is therefore consistent with DCP 2.

Development Control Plan No. 3 – Industrial Land Use Code (DCP 3)

DCP 3 aims to encourage industrial development without creating environmental problems or adversely affecting existing services and infrastructure, and ensure that environmental safeguards are implemented by industry through careful site planning.

The environmental and social aspects of the proposal have been assessed in detail in section 5 of this report. The proposed development and requirements set out in the recommended instrument of consent are in excess of those required in the provisions of DCP 3. The Department considers that the proposal is consistent with DCP 3.

Development Control Plan No. 37 – Contaminated Lands (DCP 37)

DCP 37 provides a framework for the identification, management and remediation of contaminated lands. The Applicant has provided sufficient information for a Stage 1 assessment, as defined in the Plan. The information indicates that the land in locations to be excavated is not contaminated and is suitable for the proposed use. Other areas of the site to be developed do not involve changes to the current hardstand over the smelter site.

The Department has considered the provisions of DCP 37 and considers that they do not preclude the granting of consent for the proposed development.

Development Control Plan No. 40 – Waste Management and Minimisation (DCP 40)

The aims and objectives of DCP 40 are to provide for the reduction of waste generation and management of waste in an environmentally responsible manner. The proposed alterations and additions would not substantially change the current waste management practices at the smelter and would provide for reductions in waste generation in some cases. Waste management impacts have been assessed in detail in section 5.7 of this report. If the Minister determines to approve the proposed development, the recommended instrument of consent provides for both construction and operation Waste Management Plans and requires the applicant to develop solutions for the management of Spent Potlining waste. The Department considers that the proposed development is consistent with the objectives and provisions of DCP 40.

APPENDIX B – SECTION 79(C) CONSIDERATION

Section 79C requires that the consent authority, when determining a development application, takes into consideration the following matters:

a) The provisions of:

i) any environmental planning instrument;

In relation to the proposed smelter upgrade and retrofit, the following environmental instruments apply:

- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*
- *State Environmental Planning Policy No. 34 – Major Employment Generating Industrial Development*
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection*
- *State Environmental Planning Policy No. 55 – Remediation of Land*
- *Hunter Regional Environmental Plan (REP) 1989*
- *Cessnock Local Environmental Plan (LEP) 1989*

An assessment of the proposal's consistency with each of these environmental planning instruments is provided in section 3.4 of this report, with details of specific provisions outlined in Appendix A.

ii) any draft environmental planning instrument that is or has been placed on public exhibition and details of which have been notified to the consent authority;

There are no draft environmental planning instruments relating to the proposed development.

iii) any development control plan;

The following development control plans that relate to the proposed development:

- *Development Control Plan No. 2 – Off Street Vehicular Car Parking*
- *Development Control Plan No. 3 – Industrial Land Use Code*
- *Development Control Plan No. 37 – Contaminated Lands*
- *Development Control Plan No. 40 – Waste Management and Minimisation*

Consideration of each of these DCP's is provided in section 3.5 of this report, with details of specific provisions outlined in Appendix A.

iv) any matters prescribed by the regulations that apply to the land to which the development application relates;

Clause 92 of the *Environmental Planning and Assessment Regulation 2000* requires the following matters to be taken into consideration by a consent authority in determining an application:

- *The Government Coastal Policy (where relevant);*

The Government Coastal Policy does not apply to the proposed development site.

- *In the case of a DA for the demolition of a building, the provisions of Australian Standard AS 2601-1991: The demolition of structures, as in force 1 July 1993;*

The recommended instrument of consent, if the Minister determines to approve the proposed development, include a requirement for all demolition works to be carried out in accordance with the provisions of *Australian Standard AS 2601-1991: The demolition of structures*.

b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality;

Section 5 of this report considers the environmental impacts of the proposed development in detail. The Department is satisfied that all relevant environmental impacts can be appropriately managed and mitigated through the conditions of the recommended instrument of consent, if the Minister decides to approve the development application.

c) the suitability of the site for the development;

The proposed development is an addition and alteration to an existing development on the subject development site. Through consideration of each of the relevant impacts posed by the development, detailed in section 5 of this report, the Department concludes that the development can be constructed and operated on the site within appropriate environmental limits.

d) any submissions made in accordance with this Act or the regulations;

All matters raised in submissions have been given due consideration, as outlined in section 4 and Appendix C of this report, and addressed in relevant parts of section 5.

e) the public interest.

The Department has duly considered each of the issues of concern raised in public submissions. Assessment of each of these issues has concluded that the proposed development can be constructed and operated with appropriate environment limits. The proposal would result in significant improvements in environmental amenity and quality in the locality and the region. The local community would also benefit economically from the capital expenditure and economic flow on effects of that expenditure. The Department considers that the proposed development is in the public interest.

APPENDIX C – SUMMARY OF PUBLIC SUBMISSIONS