

Assessment Report

for the Public Environmental Report

**Nyrstar Port Pirie Pty Ltd
Port Pirie Smelter Transformation,
Mid North**

December 2013



Government of
South Australia

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Department of Planning, Transport and Infrastructure

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CONTENTS

| | | |
|-------|---|----|
| 1 | INTRODUCTION | 1 |
| 1.1 | SUMMARY | 1 |
| 1.2 | BACKGROUND | 1 |
| 1.3 | ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCEDURES | 3 |
| 2 | THE PROPOSED DEVELOPMENT | 5 |
| 2.1 | THE SITE AND LOCALITY | 5 |
| 2.2 | THE SUBJECT LAND | 5 |
| 2.3 | NATURE OF THE PROPOSAL | 5 |
| 2.4 | CONSTRUCTION STAGING AND OPERATION MANAGEMENT | 12 |
| 2.5 | INFRASTRUCTURE REQUIREMENTS AND AVAILABILITY | 13 |
| 3 | EXISTING ENVIRONMENT | 14 |
| 3.1 | GENERAL | 14 |
| 3.2 | SOCIO-ECONOMIC CHARACTERISTICS | 14 |
| 3.3 | CURRENT SMELTER EMISSIONS | 14 |
| 4 | CONFORMITY WITH LEGISLATION AND POLICIES | 15 |
| 4.1 | DEVELOPMENT PLAN | 15 |
| 4.1.1 | Development Plan Provisions | 15 |
| 4.1.2 | Assessment Against the Development Plans | 15 |
| 4.2 | PLANNING STRATEGY | 18 |
| 4.3 | BUILDING RULES | 20 |
| 4.4 | ENVIRONMENT PROTECTION ACT | 20 |
| 4.5 | OTHER MATTERS | 21 |
| 4.5.1 | South Australia's Strategic Plan | 21 |
| 4.5.2 | Native Vegetation Act | 22 |
| 4.5.3 | Marine Parks Act | 23 |
| 4.5.4 | Commonwealth Environment Protection and Biodiversity Conservation Act | 23 |
| 5 | CONSULTATION | 25 |
| 5.1 | PUBLIC | 25 |
| 5.2 | COUNCIL | 25 |
| 5.3 | GOVERNMENT | 25 |
| 5.4 | RESPONSE DOCUMENT | 26 |
| 6 | ASSESSMENT OF THE MAIN ISSUES | 27 |

| | | |
|-------|---|----|
| 6.1 | NEED FOR THE PROPOSAL | 28 |
| 6.1.1 | Justification | 28 |
| 6.1.2 | “Do Nothing” Option | 28 |
| 6.1.3 | Alternatives | 29 |
| 6.2 | EMISSIONS AND AIR QUALITY | 29 |
| 6.2.1 | Lead-in-Air Emissions | 30 |
| 6.2.2 | Sulphur Dioxide (SO ₂) Emissions | 31 |
| 6.2.3 | Particulate Matter (PM ₁₀) Emissions | 31 |
| 6.2.4 | Improved Storage and Handling of Materials | 32 |
| 6.3 | EFFECTS ON COMMUNITIES | 32 |
| 6.3.1 | Human Health Issues | 32 |
| 6.3.2 | Construction and Operational Workforce | 34 |
| 6.3.3 | Traffic and Transport | 34 |
| 6.4 | ENVIRONMENTAL ISSUES | 35 |
| 6.4.1 | Coastal and Marine Environment | 35 |
| 6.4.2 | Sustainability and Climate Change | 38 |
| 6.5 | ECONOMIC ISSUES | 39 |
| 6.5.1 | Employment | 39 |
| 6.5.2 | Investment | 39 |
| 6.6 | DECOMMISSIONING AND DEMOLITION OF EXISTING INFRASTRUCTURE | 40 |
| 6.7 | CONSTRUCTION AND OPERATIONAL EFFECTS | 40 |
| 6.8 | RISK & HAZARD MANAGEMENT | 41 |
| 6.8.1 | Site Contamination | 41 |
| 6.8.2 | Acid Sulfate Soils | 42 |
| 6.8.3 | Hazardous Materials/Dangerous Substances Risk | 42 |
| 6.8.4 | Coastal Flooding | 43 |
| 6.8.5 | Biosecurity | 43 |
| 6.8.6 | Shipping Effects | 43 |
| 6.9 | INFRASTRUCTURE | 43 |
| 6.9.1 | Water and Power Supply | 43 |
| 6.9.2 | Waste Management | 44 |
| 7 | PROPOSED MANAGEMENT AND MONITORING OF ISSUES | 45 |
| 7.1 | CONSTRUCTION AND OPERATIONAL ENVIRONMENTAL MANAGEMENT PLANS | 45 |
| 8 | CONCLUSIONS | 47 |
| 9 | RECOMMENDATIONS | 49 |

Figure 1 - Location and Site Plan

Figure 2 - Proposed Development Concept Plan Layout

Figure 3 - Proposed Enclosed Bath Smelter (EBS) Concept Design

1 INTRODUCTION

1.1 SUMMARY

This Assessment Report (AR) assesses the environmental, social and economic impacts of the proposal by Nyrstar Port Pirie Pty Ltd (Nyrstar or the ‘proponent’) to upgrade and redevelop the existing Port Pirie Smelter located on the northern boundary of the regional city of Port Pirie.

Nyrstar proposes to upgrade and redevelop existing operations at the Port Pirie Smelter site. The project seeks to transform the existing smelter facilities into an advanced poly-metallic processing and recovery facility. The focus of the upgraded facility is to meet applicable environmental standards and secure a viable long-term future for the smelter operations. It is proposed the new technology would substantially reduce emissions (especially lead and sulphur dioxide) and improve air quality and public health for the Port Pirie community.

The proposal comprises the replacement of the out-dated sinter plant with an Enclosed Bath Smelter (EBS) and an upgrade and redevelopment of the current blast furnace and acid making operations (and associated infrastructure and equipment) and would involve the construction and operation of:

- A new Stage 1 Enclosed Bath Smelting (EBS) oxidation furnace system to replace the current sinter plant.
- A new Stage 1 Oxygen Plant Facility.
- A new upgraded Acid Plant to replace the existing acid plant.
- New storage areas and handling improvements for mineral concentrate and raw materials.
- An upgraded sea water intake cooling system and expanded cooling water discharge system.
- A new Stage 2 Enclosed Bath Smelting reduction furnace system to replace the current blast furnace (future option).
- Decommissioning and/or demolition of the current sinter plant, acid plant (and associated infrastructure) and possibly the blast furnace.

While this AR is intended to be a ‘stand alone’ document, the detailed information on which it is based is contained in the Nyrstar Port Pirie Smelter Transformation Proposal Public Environment Report (PER), dated August 2013; the public, Port Pirie Regional Council and South Australian Government agency comments on the PER; and Nyrstar’s responses to these comments in the Response Document (RD), dated October 2013. It also relies on some further specific information, comments and advice provided by the proponent and relevant South Australian Government agencies.

1.2 BACKGROUND

The proponent is Nyrstar Port Pirie Pty Ltd, a subsidiary of Nyrstar NV, a global mining and metals business that has mining and smelting operations in Europe, the Americas and Australia.

As stated in the PER, the existing Port Pirie Smelter has been in continuous operation for 124 years and is an integral part of the social and economic fabric of the Port Pirie community. The upgrade and redevelopment of the smelter would provide an opportunity for a ‘step-change’, over and above existing measures to reduce lead emissions (and the consequent elevated blood lead levels, particularly in children, in the Port Pirie community), as well as securing the facility’s

long term economic future in the town by facilitating a more efficient and cost-effective operation.

The South Australian and Commonwealth Governments are also providing financial and in-kind support designed to enhance the opportunity for the continued existence of the smelter at Port Pirie, including:

- A \$5 million contribution towards Nyrstar's outlay on feasibility studies into the transformation. If the transformation proceeds to financial close, Nyrstar is to apply the \$5 million towards a Targeted Lead Abatement Program (TLAP), in a manner to be agreed between Nyrstar and the South Australian Government.
- The TLAP, jointly developed by the State Government and Nyrstar, to target a further reduction in blood lead levels of children aged 0-4 years and to reduce exposure to lead in Port Pirie.
- Contingent support from the State Government to Nyrstar (via a Guarantee to support a forward sale of silver from the transformed smelter) and an indemnity to the Commonwealth's Export Finance & Insurance Corporation (EFIC) in relation to defined environmental, health and property liabilities resulting from lead emissions (up to a combined limit of \$115 million).
- A Commonwealth Government (through EFIC) in-principle commitment to provide a guarantee of between \$150 - \$170 million, to secure third party investor capital raising.
- A final commitment from both the Commonwealth and State Governments is conditional on development approval; due diligence regarding financial, legal, technical, environmental and health matters; and the outcomes of Nyrstar's feasibility studies due for completion in the first quarter of 2014.
- Legislation to provide regulatory certainty, in relation to the required Environment Protection Authority (EPA) operating licence conditions for lead-in-air emission concentrations, for 10 years following completion of the transformation project. The *Port Pirie Smelting Facility (Lead-In-Air Concentrations) Act 2013* was passed by Parliament on 11 September 2013, and given Royal Assent on 19 September. The Act provides a degree of certainty by:
 - The EPA setting the initial maximum limit within six months of the commencement of commercial operations.
 - For the next 10 years, any variation proposed by the EPA (or necessitated by Federal or State health guidance changes) must either have Nyrstar's consent or be approved by the Manufacturing Minister.
 - From the commencement of the Act until 10 years after project completion, no State law or statutory authorisation can reduce the maximum lead-in-air concentration fixed by the EPA, unless the Manufacturing Minister determines otherwise.

It is proposed that the Act would be commenced by proclamation during the first quarter of 2014, subject to development approval being granted and a decision by Nyrstar to proceed with the transformation investment.

1.3 ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCEDURES

Environmental Impact Assessment (EIA) is the process of identifying the potential environmental, social and economic impacts of a proposal and appropriate measures that may be taken to minimise those impacts. The main purpose of EIA is to inform decision-makers of the likely impacts of a proposal, before decisions are taken. The process also allows the community to make submissions on the proposal, based on the documents presented for assessment.

Procedures for EIA for Major Developments or Projects in South Australia are set out in Sections 46, 47 and 48 of the *Development Act 1993*.

On 25 January 2013 Nyrstar formally wrote to the Minister for Planning requesting a Major Development declaration for the proposed upgrade and redevelopment ('transformation') of their existing smelting operations at Port Pirie.

On 28 February 2013 the Minister made a declaration in the South Australian Government *Gazette*, that the proposed upgrade and redevelopment of the existing Port Pirie Smelter be assessed as a Major Development, under the provisions of Section 46 of the Act. In making the declaration the Minister formed the view that the proposed development was of major environmental, social and economic importance and that a declaration was appropriate or necessary for the proper assessment of the proposal.

The proponent's development application was subsequently referred to the Development Assessment Commission (DAC) to determine the level of assessment that should apply to the proposed development [Environmental Impact Statement (EIS), Public Environmental Report (PER) or a Development Report (DR)] and to set the Guidelines (i.e. issues to be addressed).

After considering the proposal, DAC determined that a PER was the required level of assessment for the proposal and set the Guidelines, which were publicly released by the Minister for Planning on 31 May 2013. Pursuant to Section 46C of the Act, the proponent must comply with the Guidelines when preparing the PER.

The proponent prepared a PER, which was released by the Minister for Planning and placed on public exhibition from Wednesday 7 August to Wednesday 18 September 2013. During this six week period, submissions were invited from the public. Submissions were also sought from the Port Pirie Regional Council and relevant government agencies. A public meeting was held in Port Pirie by the Department of Planning, Transport and Infrastructure on 27 August 2013 to explain the assessment process and the proposal. The aim of the meeting was to provide an opportunity to answer questions that would assist the public in preparing submissions. Approximately 30 members of the public attended the meeting and representatives from Nyrstar and consultants (COOE Pty Ltd, CSIRO, SEA Pty Ltd and BlueSphere Pty Ltd) were in attendance to present the proposal, answer questions and note the issues raised by the public.

In response to the PER, a total of nine formal submissions were received from the public and South Australian Government agencies, including a letter of support for the proposal submitted by the Port Pirie Regional Council. The submissions were referred to Nyrstar for a response, in accordance with Section 46(7) of the Act.

Following the public exhibition period, the proponent lodged a Response Document (RD) to the submissions on the PER with the Minister on 17 October 2013.

Pursuant to Section 46C(8) of the Act, in this AR the Minister has taken into account the PER, the public submissions and Nyrstar's response to them, the advice of the Port Pirie Regional Council, the comments from government agencies, and other matters the Minister considered appropriate.

The AR provides advice to the Governor, who is the final decision-maker on the proposed development. Pursuant to Section 48(5) of the Act, when making a decision on the proposed development, the Governor must have regard to the provisions of the appropriate Development Plan and Regulations (so far as they are relevant); the Building Rules (if relevant); the Planning Strategy; the objects, general environmental duty and relevant environment protection policies under the *Environment Protection Act 1993* (if the development involves a prescribed activity of environmental significance); the proponent's PER; and the Minister's AR and any other matters considered relevant by the Governor. Pursuant to Section 48(7) of the Act, the Governor may specify any conditions that should be complied with if a development authorisation is granted.

2 THE PROPOSED DEVELOPMENT

2.1 THE SITE AND LOCALITY

The existing smelter is located immediately north of the regional city of Port Pirie, approximately 225 km north of Adelaide, in the Mid North region of South Australia. Port Pirie is located on the eastern shore of the Spencer Gulf, on the bank of the Port Pirie River estuary, and has been developed on land that is relatively flat, low-lying and originally comprised mangrove, saltmarsh and coastal shrubland habitats. The city is South Australia's fourth largest urban area (with a current population of 14,000 residents) and is a major manufacturing centre, being primarily based around the smelter.

2.2 THE SUBJECT LAND

The smelter site was established over 120 years ago and has progressively expanded to cover an area of approximately 180 hectares of land. The site is highly modified (with about 60 ha filled using waste slag) and contaminated from long-term smelting activities. The site is surrounded by a mix of low-density housing, vacant public purpose land and land used for commercial and industrial purposes. The site also includes a port facility and wharf on the Port Pirie River that is used for the import of feedstock and the export of finished product.

The current smelter comprises an integrated multi-metals recovery facility that can process a wide range of lead-rich concentrates and smelting industry by-products. It is one of the world's largest lead smelting facilities and a major silver producer. The current plant includes a lead smelter and refinery (currently producing on average 195,000 tonnes of lead), a zinc plant (producing 30,000 tonnes of zinc), a copper plant (producing 4,000 tonnes of copper) and a precious metals refinery (producing 18.5M troy ounces of silver and 36,000 ounces of gold).

Over the decades, the facility has been progressively expanded and supplemented (including the adoption of new technologies), with the existing sintering plant being in operation since 1956. Some of the major components of the plant are now ageing and considered to be past their operating efficiency, thus contributing to unnecessary pollution and scope for future improvement.

2.3 NATURE OF THE PROPOSAL

Nyrstar proposes to upgrade the existing smelter to establish an advanced poly-metallic processing and recovery facility. The transformation proposal presents an opportunity to review the operating efficiency and contamination sources of the smelter operations and to substantially upgrade the smelter. This approach not only enables the environmental performance of the smelter to be improved, but also the operational performance to be improved. Production rates have steadily declined over the past five years (i.e. from around 265 – 270,000 tonnes/year in 2002-03 to around 195 – 198,000 tonnes/year in 2010-11) and the transformation would enable the smelter to return to previous output capacity.

Essentially, the proposal comprises the replacement of the out-dated sinter plant with an Enclosed Bath Smelter (EBS) oxidation furnace with modern emissions capture and treatment. The existing blast furnace would continue to operate, but would have upgraded emissions capture and treatment. The environmental performance of the existing furnace would be significantly improved by the upgrade (due to improved feed consistency and better drafting). Upgrading and



Figure 1 - Location and Site Plan

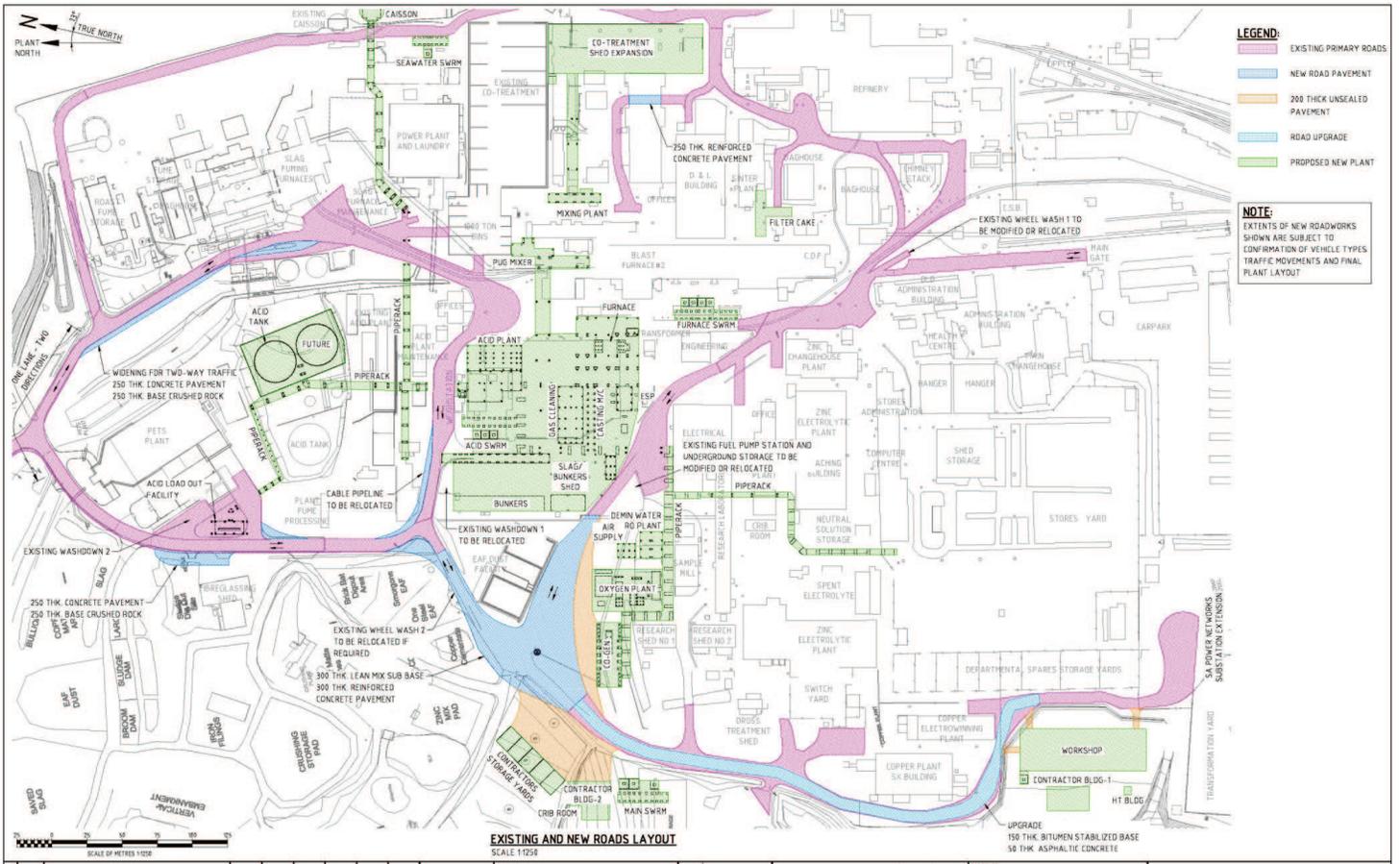


Figure 2 - Proposed Development Concept Plan Layout

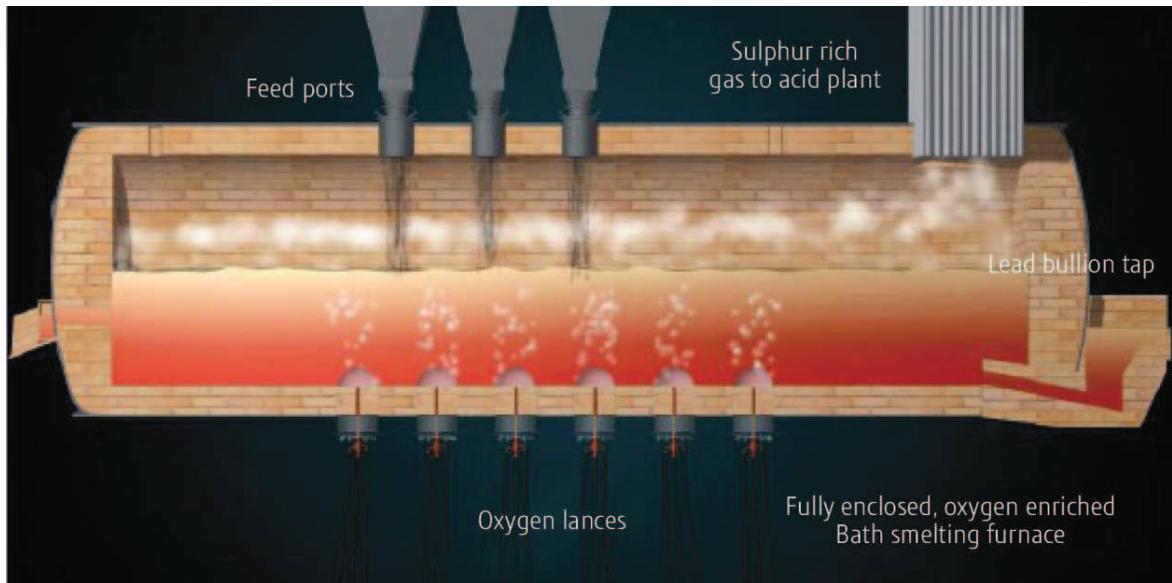


Figure 3 - Proposed Enclosed Bath Smelter (EBS) Concept Design

automation of the blast furnace feed system (including complete enclosure of conveyors) may be considered to further reduce fugitive emissions.

The proposal also includes a potential replacement of the existing blast furnace with an EBS reduction furnace in the future. The decision to replace the furnace would be based upon its improved operation and performance following the upgrade to new smelting technology and a cost-benefit analysis of using a second EBS as a replacement.

The proposal also includes the replacement of the existing acid plant with an upgraded plant of larger capacity. The upgraded process would enable the capture of a substantially greater proportion of sulphur dioxide from the furnace (i.e. reducing the emissions of SO₂ from the tall stack by 90%), which would result in increased production of sulphuric acid. A new Oxygen Plant would also be installed.

The new EBS eliminates the need for the existing sinter plant, which would be removed at a later stage. In addition, the stockpiled materials currently fed into the sinter plant would be used in the new plant, enabling the storage area to be substantially reduced (which would reduce a significant source of fugitive emissions). New concentrate storage and handling procedures for the upgraded plant would further reduce emissions. Replacement of the sinter plant with an EBS furnace would also result in surplus baghouse capacity that would be used to capture emissions from other parts of the facility.

The new EBS also operates at higher temperatures, so additional cooling water intake and discharge infrastructure is needed to cater for increased water demand. The new cooling system would continue to draw water from the Port Pirie River, but would discharge back into the river (rather than adding to the First Creek discharge, as currently occurs).

The PER (Section 6) provides a detailed description of each component of the proposal.

2.4 CONSTRUCTION STAGING AND OPERATION MANAGEMENT

The PER (Section 6.3) states that construction would take 24 months and be undertaken from 2014 to 2016 (if approved), with commissioning of the new facility in 2016. The construction of the replacement acid plant may be part of the early works, due to the poor state of the existing facility. Current smelter production would continue during the construction phase. The construction phase would be undertaken in accordance with a Project Implementation Plan, a Project Charter and a Construction Management Plan (including a Project Quality Management Plan). This approach would ensure current smelting operations are integrated with demolition/decommissioning works and construction activities.

In regard to transitional arrangements, decommissioning of each existing process would not occur until its replacement equipment and infrastructure is installed and commissioned. Contingency planning would allow for existing facilities to remain operable until commissioned equipment has proven serviceable.

The PER (Section 6.4) states operational management of the transformed facility would be similar to the current smelter operations, although it would be more efficient. Emissions and environmental and community impacts would be significantly reduced and would be managed

under an Environmental Management Plan. Current operating procedures are likely to be modified to cater for the upgraded plant.

2.5 INFRASTRUCTURE REQUIREMENTS AND AVAILABILITY

The PER (Section 14.3) states the site is currently serviced by electricity, gas and water utilities and the smelter has sewerage infrastructure (including a sewage treatment facility). The current demand for 5,167 kilolitres/day of potable water is supplied from the Port Pirie mains. The annual electricity demand for 300 MWh is supplied by SA Power Networks, via the Allendale substation. The natural gas mains supply provides 700 kPa to the smelter, which uses 2,025,956 Nm³ per month.

3 EXISTING ENVIRONMENT

3.1 GENERAL

The proposed development is located on the site of an existing smelter facility (i.e. a ‘brown-field’ site), which occupies a significant area of land to the north of the Port Pirie town centre. Being used as an industrial site for over 120 years, the subject land is has been extensively cleared of native vegetation, is highly modified (especially from the disposal of slag materials) and soils and groundwater have high levels of contamination. The surrounding coastal and marine environment (including the Port Pirie, Weroona Bay and Germein Bay areas) has also been heavily contaminated by air emissions and liquid waste discharges, largely by heavy metals (including lead, zinc, cadmium and manganese). The PER (Section 5) provides a detailed description of the site, the existing environment, surrounding land uses and the previous and current smelter operations.

3.2 SOCIO-ECONOMIC CHARACTERISTICS

The smelter is located within the Port Pire Regional Council Area. Port Pirie has historically been developed to support the smelter and has become the main service centre for the region. The smelter remains the main industry and means of employment and is also the main contributor to the regional economy.

3.3 CURRENT SMELTER EMISSIONS

Air quality in Port Pirie is influenced by the emissions from the smelter, the pattern of wind directions and the smelter being located at the northern end of town. Winds are predominantly from the SSE sector (70% of the time), dispersing and transporting smelter emissions away from the town. The PER (Section 5.2.6) states that, for winds where the smelter is upwind from the town, the winds are principally from the NNW (15-20% of the time) or from the NE (10% of the time).

The PER (Sections 7 and 8) provides a detailed discussion on the influence of the site’s meteorological characteristics on the distribution and impacts of air emissions on the surrounding environment and community. In general, long-term emissions from the tall stack and fugitive emissions from various on-site sources have resulted in lead contamination affecting the health of residents (especially children), primarily around the residential part of Port Pirie to the south-east of the smelter.

4 CONFORMITY WITH LEGISLATION AND POLICIES

Section 48(5) of the *Development Act 1993*, requires that, before the Governor considers a proposal that has been declared a Major Development, the Governor must have regard to (amongst other things) the provisions of the appropriate Development Plan and the regulations (so far as they are relevant) and the Planning Strategy. Other matters considered relevant by the Governor can also be taken into account.

The Crown Solicitor has advised that, in respect of applications being assessed as Major Developments under the Act, the appropriate Development Plan and Planning Strategy are those current at the time of the decision, as Section 53 of the Act does not apply to the Major Development provisions.

4.1 DEVELOPMENT PLAN

4.1.1 Development Plan Provisions

The relevant Development Plans are the Port Pirie Regional Council Development Plan consolidated 10 January 2013 and, as the subject land adjoins the Council's Development Plan boundary, the Land Not within a Council Area (Coastal Waters) Development Plan consolidated 4 July 2013.

4.1.2 Assessment Against the Development Plans

Port Pirie (RC) Development Plan

Council Wide Objectives and Principles of Development Control in the Port Pirie (RC) Development Plan encourage a number of outcomes, which include the following:

- To identify and provide economic development opportunities based on existing resources or opportunities.
- To ensure development and revitalisation is consistent with the principles of ecologically sustainable development.
- Orderly and economic development.
- A proper segregation of living, working and recreation areas.
- To maintain existing townships as the primary areas of urban development.
- The redevelopment of localities which have a bad or unsatisfactory layout or unhealthy or obsolete development.
- Development located and designed to prevent adverse impact between land uses.
- Remediation of the adverse impacts including land contamination of existing or past activities and cleaning up such land where a risk of harm to human health exists.
- Sites made suitable for their intended use to ensure a safe and healthy living and working environment.
- Preserve and manage the health of natural systems including areas of native vegetation, reserves, the coast, rivers, wetlands, floodplains and marine resources.
- Minimisation of pollution of air, land and water.
- To promote diversity by protecting and rehabilitating riverine, floodplain, wetland, estuarine and associated ecosystems.
- Protect the physical and economic resources of the coast from inappropriate development.

The Plan indicates that development should not significantly impair the character and amenity of the surrounding landscape, or lead to deterioration of health and living standards, and should not generate conditions likely to cause pollution of the environment or unduly impair the amenity of the locality. Development should only take place in a manner that minimises significant adverse impact on adjoining uses due to hours of operation, traffic, noise, fumes, smell, dust, paint or other chemical over spray, vibration, glare or light spill, electronic interference, ash or other harmful or nuisance creating impacts. Industrial development should take place in environmentally acceptable areas and should be developed in an orderly manner.

An assessment against the Council Wide policies of the Plan suggests that the proposal is generally compatible with the policies that relate to economic and orderly development and employment generation, which originate from the proposed development's potential to encourage employment growth (primarily during the construction phase). The proposal would generate substantial employment (primarily the maintenance of current employment levels), whilst consolidating, broadening and diversifying the employment and economic base of the region.

In relation to the environmental policies, the proposal would generate disturbance of the coastal and marine environment at a significantly decreased level compared with the existing operations (primarily due to a reduction in lead and sulphur emission). Other potential impacts would include the effects of constructing the cooling water intake/discharge infrastructure (including turbidity and disturbance of contaminated sediment) and an increase in cooling water discharge (thermal plume) from the smelter. The reduction in emissions and the removal of potentially contaminating materials from the intermediate storage area and the old sludge dewatering dams would reduce air, soil, groundwater and surface water contamination. These aspects of the proposal are strongly supported by the Development Plan provisions.

There would also be the generation of additional traffic (including heavy vehicle and light vehicle movements) and noise associated with the proposed activities, primarily during the construction and commissioning phases. Increased shipping movements would also take place during construction. Most of the construction plant and materials transport requirements would be met by shipping, with 20% transported by road. It is estimated that during the construction phase, road transport would increase road traffic by 20 - 40%. After construction is completed, it is expected that traffic flows (including shipping) would revert to existing levels.

The proponent has indicated that further consultation would be undertaken with the Port Pirie Regional Council and the Department of Planning, Transport and Infrastructure (Transport Services) during the detailed design phase to reach agreement on the scope of any potential road traffic implications, particularly in relation to wide loads/oversize vehicles, road positioning of mobile cranes and the provision of turning/acceleration lanes for heavy vehicles on the adjacent roads (if required).

Within the Port Pirie (RC) Development Plan the subject land is located within the following discrete Zone and Policy Area:

Industry Zone and Policy Area 15: Pasminco Metals Policy Area.

The majority of the proposal's components (except the proposed cooling water system infrastructure) are located in these areas.

Consideration of the proposal against the policies for the Zone and Policy area within the Port Pirie Development Plan suggest that the type of land use proposed is generally envisaged by the Plan. In particular:

- The Industry Zone seeks to accommodate industrial, storage and warehouse development to satisfy the requirements of the region and seeks a high standard of development.
- The Policy Area 15: Pasmenco Metals Policy Area seeks to accommodate major special industrial, commercial and storage activities and associated minor industrial activities (including the handling of goods by transport by sea, road or rail). No development prejudicial to the processing and storage of minerals should be undertaken.
- Development in proximity to the Residential Zone should not impair the amenity of the land in that Zone.
- There should be no treatment or depositing of hazardous waste materials in proximity to the Residential Zone or the Public Purposes Zone.

Land Not Within a Council Area (Coastal Waters) Development Plan

The site boundary also extends into the coastal area (i.e. the Port Pirie River) where the policies for the adjacent Land Not Within a Council Area (Coastal Waters) Development Plan apply. The Plan states that industrial development should take place in suitable areas. The Plan also contains Objectives and Principles of Development Control for the environmental protection of coastal and marine areas, the retention of public access and the protection of sites of cultural, heritage or scientific significance. Development should only be undertaken on land that is not subject to coastal hazards and does not require public expenditure on protection of the development or the environment.

The objectives for the Coastal Waters Zone include the following provisions:

- Orderly and economic development.
- A proper distribution and segregation of living, working and recreational activities.
- The conservation, preservation and enhancement of scenically attractive areas.
- The conservation and preservation of terrestrial and marine flora, fauna and scenery.
- Sustain and enhance the natural coastal environment.
- Location of activities, uses and development in areas zoned for that purpose.
- Manage development in coastal areas to sustain or enhance the natural coastal environment.

The proposal has the potential to create a number of on-site and off-site impacts on a range of environmental aspects in the areas covered by this Plan. These include impacts associated with changes in the frequency of visiting shipping vessels during construction. This has the potential to impact on the immediate coastal environment and the surrounding marine environment.

The key potential impacts to marine flora and fauna are expected to relate to terrestrial activities upon the adjacent land and disturbance of the Port Pirie River during construction of the cooling water system infrastructure and from an increased number of visiting vessels during construction. This impact is expected to be limited to a small area of direct influence and would not damage any areas or species of conservation significance.

Conclusion

The transformation proposal is also generally consistent with the intent of the Industry Zone, within which the majority of the development would be situated. The proposal reinforces intensive industrial activity in a zone intended for major special industrial, commercial and storage activities and associated minor industrial activities (including the handling of goods by transport by sea, road or rail). No development prejudicial to the processing and storage of minerals would be undertaken. The scale and nature of development is consistent with what the Development Plan envisages for the Zone. The proposal has includes measures, which when implemented, would seek to minimise (as far as is practicable) the impacts of pollution, noise, traffic and environmental disturbance.

The proposal provides for redeveloped and improved smelting activities on land adjacent the Coastal Waters Zone, where development of the type proposed is not a specifically envisaged use. However, the proposal is consistent with a number of the Zone policies that relate to coastal hazards and design measures to minimise impacts. The relationship of the proposal to other Zone policies that relate to the protection and enhancement of the environment (particularly effects on the coastal and marine environment), requires any impacts need to be carefully managed (should the proposal be approved).

A smelter Operations Environmental Management Plan would be prepared to manage the operational activities to minimise impacts on the local environment and community. This would ensure that many of the environmental outcomes sought by the relevant Development Plans would be achieved.

It is concluded that, on balance, the proposal is consistent with a number of the relevant zone, policy area and Council wide policies within the Port Pirie Regional Council Development Plan. The proposal is also broadly consistent with the Land Not Within a Council Area (Coastal Waters) Development Plan. The proposed development is considered to have sufficient value, benefit and merit to warrant a positive assessment. The proposal is considered not to be seriously at variance with the relevant Development Plans.

4.2 PLANNING STRATEGY

The South Australian Planning Strategy provides broad strategic direction for land use changes and development within the State.

The Mid North Region Plan - A Volume of the Planning Strategy (April 2012), is one of seven regional volumes that make up the Strategy. The Plan seeks to build on traditional industries and develop new industries in response to local, regional and international market opportunities. In particular, mining and resource processing and the export of these products are seen as industries that should be further developed. However, such development needs to ensure that the coastal and marine environment is suitably protected.

The Mid North Region Plan seeks to:

- Balance the social, economic and environmental demands of the region.
- Maximise the region's competitive advantages in renewable energy, mining, tourism and aquaculture.
- Manage natural resources and protect vulnerable environments and species.

- Manage and facilitate existing and planned infrastructure to maximise economic development and job growth.

Port Pirie is identified as the major commercial and service centre (containing 33% of the region's population), with the world's largest lead-zinc-silver smelter. Part of the 'Vision' for the region is to increase industrial investment, with Port Pirie identified as an industrial hub.

The subject site is subject to a range of broad strategies and those specific to the Mid North Region Plan (such as those related to *Economic development; Environment and culture; Population and settlements; and Infrastructure and services provision*), which supersede the relevant sections of the previous Planning Strategy for Regional South Australia (last updated in 2007).

Overall, it is considered that the proposal is consistent with the general objectives contained in the Planning Strategy (i.e. as reflected in the Mid North Region Plan). The objectives encourage economic development, particularly in the resources sector, focussing on the natural and mineral resources of the region. Specific policies relevant to coastal development encourage the expansion of mineral production and export, in environmentally acceptable areas.

The proposal satisfies the strategies for the Mid North Region through the consolidation of the existing smelter and port facility to support the further development of mineral production in the region. The consolidation of the existing smelting operations would provide improved infrastructure and associated support services, which could enable the future expansion of these activities.

Regional confidence and employment is also promoted, including the provision of support facilities necessary to support the upgraded smelter. It is anticipated there will be flow-on economic benefits for businesses in the immediate area and nearby communities, including Port Germein, Napperby, Warnertown and Laura.

In conclusion, the proposal responds to a need to provide an upgrade and improved smelter facility to meet current and future environmental standards and to broaden the range of mineral products available for export. The proposal is consistent with the overarching objectives contained in the Planning Strategy (i.e. as reflected in the Mid North Region Plan) and is considered to be consistent with the provisions relating to resource development and economic development.

In relation to environmental issues, the proposal would involve some disturbance to the local environment, particularly during the construction phase. Appropriate medium and long-term measures to mitigate environmental impacts are necessary, in order to meet the strategies relating to the protection and enhancement of biodiversity.

The Mid North Region Plan recognises that some impacts will take place in coastal and sensitive areas, but seeks to ensure an appropriate balance is achieved between environmental protection, preservation of the regions assets and the need for appropriate development, together with the resultant economic benefits that result from development utilising the region's natural competitive advantages.

The proposal is considered to be compatible with the relevant objectives of the Planning Strategy.

4.3 BUILDING RULES

Buildings and structures associated with a proposed development (i.e. as defined under the *Development Act 1993*) would normally require Building Rules Consent (and a Certificate of Occupancy) to be obtained, prior to the commencement of construction or operations on the site. However, for the development or re-development of an industrial plant the Building Rules may not generally apply, as most of the components comprise plant and equipment. Where such plant and equipment is proposed to be housed within a structure, such as a shed, then Building Rules Consent would be required for the structure.

For plant and equipment (and other infrastructure, such as the cooling water intake caisson and discharge diffuser structures), relevant engineering standards for structural stability/integrity (such as Australian/New Zealand Standards) would apply.

Demolition and decommissioning works may also require Building Rules Consent if buildings or structures that house plant and equipment are to remain (possibly in a refurbished condition).

Thus, final designs for the proposed transformation would need to be checked by a qualified Private Certifier to determine whether Building Rules Consent is required or whether some other relevant standard would apply for each component.

4.4 ENVIRONMENT PROTECTION ACT

The proposed development involves activities of environmental significance, as defined in Schedule 1 of the *Environment Protection Act 1993*, as extracted from the Act below.

Part A—Activities

The activities that Nyrstar are licensed for and would form part of this development are:

- 1(1) *Chemical Storage and Warehousing Facilities.*
- 1(2)(a)(i) *Chemical Works: inorganic.*
- 2(11) *Scrap Metal Recovery.*
- 2(7) *Ferrous and Non-ferrous Metal Melting.*
- 2(8) *Metallurgical Works.*
- 3(3) *Waste or Recycling Depot.*
- 3(4) *Activities Producing Listed Waste (refer to Part B listed wastes – Lead compounds and solutions).*
- 7(1) *Bulk Shipping Facilities.*
- 7(3)(c) *Crushing, Grinding and Milling: rock, ores or minerals.*
- 8(2)(a) *Fuel Burning: rate of heat release exceeding 5 megawatts.*
- 8(7) *Discharge to Marine or Inland Waters.*

When proposals involve activities of major environmental significance the Governor, before making a decision on the proposed development, must have regard to the objects of the Act, the general environmental duty and any relevant environment protection policies. The objects of the Act are:

- *To promote the principles of ecologically sustainable development; and*

- *To ensure that all reasonable and practicable measures are taken to protect, restore and enhance the quality of the environment having regard to the principles of ecologically sustainable development, and to prevent, reduce, minimise and, where practicable, eliminate harm to the environment.*

In addition, proper weight should be given to both long and short-term economic, environmental, social and equity considerations in deciding all matters relating to environmental protection, restoration and enhancement. The Environment Protection Authority (EPA) is required to apply a precautionary approach to the assessment of risk of environmental harm and ensure that all aspects of environmental quality affected by pollution and waste are considered in decisions relating to the environment.

The following Environment Protection Policies are applicable:

- *National Environment Protection (Ambient Air Quality) Measure (1998).*
- *Environment Protection (Air Quality) Policy 1994.*
- *Environment Protection (Noise) Policy 2007.*
- *Environment Protection (Water Quality) Policy 2003.*
- *Environment Protection (Waste to Resources) Policy 2010.*
- *Environment Protection (National Pollutant Inventory) Policy 2008.*
- *National Environment Protection (Assessment of Site Contamination) Amendment Measure (1999).*

The EPA's comments on the proposal are summarised in Section 5 of this AR.

4.5 OTHER MATTERS

4.5.1 South Australia's Strategic Plan

The Governor has regard to any other matters considered relevant when making a decision. In this context, an assessment has been carried out with reference to *South Australia's Strategic Plan (2011)*. The Plan seeks to widen opportunities for all South Australians through the pursuit of the following strategic objectives:

- Growing prosperity.
- Improved wellbeing.
- Attaining sustainability.
- Fostering creativity and innovation.
- Building communities.
- Expanding opportunity.

The relevant targets in relation to the proposal are:

- *Target 35 : Exceed the national economic growth rate over the period to 2020.*
- *Target 37: Increase the value of South Australia’s export income to \$AUD25 billion by 2020.*
- *Target 42: Increase the value of minerals production and processing to \$AUD 10 billion by 2020.*
- *Target 46: Increase regional populations outside of Greater Adelaide by 20,000, to 320,000 or more, by 2020.*

The transformation proposal supports a number of the objectives. In terms of ‘growing prosperity’, the priority of the Plan is sustained economic growth resulting in rising living standards, with all South Australians sharing in the benefits through more and better job opportunities and access to quality services. The proposal (if approved) would result in a new, upgraded smelter facility for the processing of a range of mineral products. In addition, the increased and consolidated workforce base (both construction and ongoing) would have a positive impact on support industries and the general economic well-being of the region. On this basis, the proposal is consistent with the target of ‘growing prosperity’.

The Plan also deals with ‘building communities’ through the maintenance and development of viable regional population levels and the reduction of unemployment rates. The proposal would assist in maintaining regional population levels in the area and would consolidate and increase jobs in the area.

The proposal would also assist in reaching the targets by increasing the value of mineral production and exports in the Mid North Region.

It is concluded the proposal is consistent with the thrust of South Australia’s Strategic Plan.

4.5.2 Native Vegetation Act

Under the Regulations of the *Native Vegetation Act 1991* the proponent is exempt from the requirement to obtain approval for vegetation clearance if the proposal has been the subject of a PER and the comments of the Native Vegetation Council (NVC) on the PER are included in the relevant Assessment Report. The NVC has been formally consulted and its comments have been considered in the preparation of this AR. No statutory approval for vegetation clearance is required from the NVC, although suitable off-set provisions for such clearance needs to be to the satisfaction of the NVC.

Under Regulation 5(1)(c) of the Native Vegetation Regulations, native vegetation may, subject to any other Act or law to the contrary, be cleared if:

- (i) *the clearance is incidental to a proposed development to which section 48 of the Development Act 1993 (the Major Developments Process) applies; and*
- (ii) *an environmental impact statement, public environmental report or development report; and an Assessment Report, relating to the development have been prepared under that Act; and*
- (iii) *the Minister responsible for the administration of the Development Act 1993 referred the environmental impact statement, public environmental report or development report to the Native Vegetation Council for comment and report and –*

- (a) *the Council provided comments which were included (wholly or substantially) in the relevant Assessment Report; or*
- (b) *the Council failed to provide comments within 8 weeks after receiving the Minister's invitation for comment and report; and*
- (iv) *the Governor has granted his or her consent to the proposed development under section 49 of the Development Act 1993; and*
- (v) *the clearance is undertaken in accordance with that consent; and*
- (vi) *the clearance is undertaken in accordance with a management plan that has been approved by the Council that results in a significant environmental benefit on the property where the development is being undertaken, or the owner of the land (or a person acting on his or her behalf) has, on application to the Council to proceed with clearing the vegetation in accordance with this provision, made a payment into the Fund of an amount considered by the Council to be sufficient to achieve a significant environmental benefit in the manner contemplated by section 21(6) of the Act.*

The Act also includes within the definition of native vegetation, native plants growing “in or under waters of the sea” where the “waters of the sea” includes “any water that is subject to the ebb and flow of the tide”.

Construction of the cooling water discharge pipeline is proposed through a 10 metre section of tidal flats adjacent the smelter, to enable discharge into the Port Pirie River. This would result in the temporary loss of up to 100 m² of seagrass (Eelgrass or *Zostera* spp.). The proposed construction of the intake caisson within the river may also require seagrass clearance. This would require a Sustainable Environmental Benefit (SEB) offset, as determined by the NVC.

Accordingly, if the Governor approves the development, the proponent will need to negotiate with the NVC a suitable form of compensation in the form of a SEB, prior to the clearance or modification of native vegetation in the development area. The proponent would need to seek direction from the NVC on how to achieve the required SEB.

4.5.3 Marine Parks Act

The *Marine Parks Act 2007* establishes a representative system of marine parks in the State's waters. It aims to protect and conserve marine habitats and biodiversity, primarily through management plans for each park. The coast and marine environment surrounding Port Pirie is within the Upper Spencer Gulf Marine Park. The *Management Plan for the Upper Spencer Gulf Marine Park (2012)* identifies the Port of Port Pirie (including the shipping channel into the Gulf) as being within Special Purpose Area 2, in which specified activities (i.e. harbor activities) are permitted under the terms of the Plan.

4.5.4 Commonwealth Environment Protection and Biodiversity Conservation Act

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), came into operation on 16 July 2000. The Act includes an environmental assessment and approval process focussed only on matters of national environmental significance, as defined under the Act, which is separate and distinct from State regulatory processes. If a proposal may or is likely to have a significant impact on a matter of ‘national environmental significance’, the Act requires the proponent to seek a determination regarding whether or not their action is a ‘controlled action’ and therefore, subject to assessment and approval by the Commonwealth Environment Minister.

A referral by the proponent under the Act culminated in formal advice that the proposed development was not a 'controlled action'.

5 CONSULTATION

The PER was placed on exhibition from 7 August to 18 September 2013, with a total of nine submissions received. The proponent's Response Document addressed all the comments made in submissions, with a copy of each submission provided as an appendix.

5.1 PUBLIC

Three submissions were received from the public, including one from a non-Government organisation (Doctor's for the Environment) and one from a Parliamentary Member (Mark Parnell, MLC). The main issues raised in public submissions included:

- Important that the upgrade proceeds on economic grounds.
- Need for greater improvements in children's health and development.
- Communities in lead contaminated suburbs need to be offered an opportunity to relocate to clean areas (or relocate the smelter away from town).
- Need to consider a greater level of emissions reduction (including alternative technologies and processes to deliver better outcomes).
- Need to consider alternative energy supply options, such as solar or wind energy co-located at the site.
- Overall reduction in lead-in-blood levels dependent upon factors outside of the proponent's control (i.e. due to legacy pollution).
- Commitment to undertaking the Targeted Lead Abatement Program should be a condition of any development approval.
- Concern that the proposed new legislation for the smelter (i.e. the Port Pirie Smelting Facility (Lead-In-Air Concentrations) Bill) would prevent the EPA exercising its responsibility for pollution licensing for a 10 year period.

It should be noted an additional six 'submissions' were received by the proponent, via Nyrstar's public information 'shop front' in Port Pirie that was set up to assist the community during the consultation period. The RD (Appendix A: Section 2.1) includes copies of the 'feedback or question' sheets received by the proponent, with the comments addressed with the formal public submissions received by the Minister for Planning. The comments made were similar to those made in the formal submissions (as detailed above).

5.2 COUNCIL

The Port Pirie Regional Council lodged a letter in support of the proposal, as it would transform Nyrstar's business and be a catalyst for transforming the economy of Port Pirie. Combined with the Targeted Lead Abatement Program, it would achieve the community's objectives of reducing lead-in-blood levels of children. It would also assist in attracting more people, tourists and business investment (and create economic activity during construction).

5.3 GOVERNMENT

A detailed summary of the key comments provided by South Australian Government agencies is included below:

Environment Protection Authority (EPA)

- Supportive of the intent of the transformation, but insufficient detail to undertake a full assessment (especially to verify modelling data and likely improvements). In particular, air quality modelling needs to be re-examined.
- Preferred option for cooling water discharge (i.e. to First Creek or to the Port Pirie River) not specified.
- Need for Nyrstar to work with an EPA accredited site contamination auditor to carefully plan the construction program.

[More detailed comments were provided as an attachment to the submission]

SA Health

- No comment, except to clarify the proponent's interpretation of SA Health data on the number of children with blood lead levels equal to or exceeding 10 µg/dL.

Department of Environment, Water and Natural Resources (DEWNR)

- Misrepresentation of DEWNR's position regarding addressing coastal inundation and provides insufficient justification for the chosen protection strategy.
- Modelling for cooling water thermal discharges appears minimal and based on limited data. Additional work required, including data collection and modelling.
- PER misrepresents CSIRO mapping of acid sulfate soils (which is a guide only). Draft Environmental Management Plans lack detail on the management of acid sulfate soils. Need to have regard to the Coast Protection Board *Strategy for Implementing Policies on Coastal Acid Sulfate Soils in South Australia* and consult further with the agency.

Department of Planning, Transport and Infrastructure - Transport Services

- Requested a formal assessment be undertaken of potential traffic impacts (including traffic volumes, affected routes, types/numbers of vehicles, impact on rail crossings and current/future tonnages exported by road, rail and sea), especially to inform future Traffic Management Plans for the construction and operational phases.

Department of the Premier and Cabinet - Aboriginal Affairs and Reconciliation

- Advised there are no registered sites or objects of Aboriginal heritage.
- Detailed the proponent's obligations under the *Aboriginal Heritage Act 1988* in regard to the potential discovery of any sites of significance during construction.

Department for Education and Child Development

- No comment.

5.4 RESPONSE DOCUMENT

It is considered that the proponent's Response Document (RD) satisfactorily addressed all comments and concerns raised in public and State Government agency submissions (especially those of the EPA). Additional information and clarification was provided on various aspects. In particular, the proponent has now selected the option for cooling water disposal, being discharge to the Port Pirie River (i.e. rather than to First Creek).

6 ASSESSMENT OF THE MAIN ISSUES

The need for a major upgrade of the Port Pirie Smelter is not only essential for the continued economic viability of one of Nyrstar's business assets, but it is also vital for the economic sustainability and social well-being of the Port Pirie community. The smelter is also a key industrial and manufacturing asset from a state and national perspective, as is a major export producer. Just as importantly, the predicted emissions reductions would lead to an improvement in the health of the Port Pirie community, especially for young children. It would also improve the general wellbeing of residents by addressing the sometimes stated stigma attached to Port Pirie of it being perceived as a 'polluted city' (especially the effect of lead on children's brain development and IQ). The transformed smelter would also improve the efficiency and diversity of production, which increases the certainty that the smelter will continue to support the economic base of Port Pirie.

Being an existing industry, the proposal would not be introducing a new industrial development and resultant impacts on the community. In fact, the community is highly supportive of the smelter upgrade as it would ensure the future of Port Pirie (especially job opportunities for young people). Being a 'brown field' site, the smelter upgrade would have a relatively low level of impact on the environment. Improvements to air emissions would reduce the current level of on-going contamination of the surrounding environment. The main concern would be the greater demand for cooling water and the resultant increased discharge of heated water to the coastal and marine environment.

It is considered that the PER provides a comprehensive description of the proposal, the character of the receiving environment and surrounding region (physical, biological, social and economic aspects). Adequate investigations have been undertaken to predict the potential impacts that could arise from the proposal. In particular, extensive research was undertaken to select the most suitable technology for the smelter upgrade and detailed data collection and modelling used to demonstrate the level of improvements that could be made. The PER (Section 7.3) also details satisfactory mitigation measures that would be implemented to avoid, minimise and manage any adverse effects from the development (if approved). Suitable monitoring programs would be established to measure both the effectiveness of the emission improvement measures and impact mitigation.

This assessment primarily focuses on interrogating whether the proposed smelter operating and emissions improvements can be delivered, rather than the traditional assessment of how the potential impacts of a new development for a 'green field' site can be avoided or minimised (and whilst maximising the economic benefits).

The Assessment Report (AR) has also been framed in recognition that the existing smelter facility, along with the proposed transformation works, is and will continue to be subject to a rigorous licensing framework by the Environment Protection Authority (EPA). The licensing framework has primacy in this regard, with this AR examining issues around the redevelopment of the existing land use (and remodelling of emission levels), and the potential environmental, social and economic impacts of the proposal.

Questions of prescribing emission limits, along with other specific on-site management strategies, are primarily left to the function of the detailed licence conditions. To this end the EPA has vetted in detail each of the proposed conditions of approval outlined in this AR. Where required and agreed with the EPA, management requirements or strategies have been determined

and outlined in this AR. Where required, there is opportunity for these conditions to be subsequently refined with EPA agreement without the need for further development approval.

For this particular proposal, the quantum of emissions or other outputs is not being determined in precise terms as this will remain the sole province of the post-approval EPA licensing process.

6.1 NEED FOR THE PROPOSAL

The PER (Section 2) describes why the proposal is needed, the proposal objectives, the benefits of the proposal and potential alternatives (including the ‘Do Nothing’ option). The PER states that the transformation would be the first step in Nyrstar’s strategy to upgrade the smelter into an advanced poly-metallic processing and recovery facility, employing cleaner production techniques and best available technology.

It should be noted that without the support of the State Government and Council, Nyrstar would be faced with the prospect of closing the smelter, which would have a significant economic and social effect on the Port Pirie community (and the State economy). The Australian Government also recognises the value of the smelter as an export industry and has provided support for the upgrade. The improved environmental footprint and ‘step change’ reduction in lead emissions envisaged would not have been viable without the economic and policy support of all levels of government.

6.1.1 Justification

The current smelter comprises a collection of plant of various ages and levels of technology that is not capable of meeting air quality standards in the future. Environmental requirements and improvements necessitate the need for a substantially upgraded plant. A ‘step change’ is needed to transform an ageing industrial site into a modern, state-of-the-art multi-metallurgical facility (an advanced metals recovery centre). The smelter upgrade into a world class operation would not only improve the efficiency of the smelter, but would also provide greater diversity and flexibility of production.

A public submission expressed a view that a greater level of emissions reduction should be pursued. The RD (Section 5.1) states that the introduction of new technology (plant and processes) is expected to reduce air lead emissions by at least half. The approach taken would achieve the most effective air lead reduction over the shortest possible time frame, especially by eliminating the largest contributor to emissions – the sintering plant (and associated activities). A fundamental metallurgical change would also provide opportunities for further improvements in the future.

6.1.2 “Do Nothing” Option

The PER (Section 2.6) states that the ‘do nothing’ option basically means closing the smelter. This is due to the existing plant not being able in the near future to meet increasingly higher air emission standards required by EPA licensing (especially to meet the requirements of the various emission policies and the continuous improvement obligations of the Environmental Monitoring and Reporting Program). Alternatively, to meet such standards would necessitate substantial site remediation or on-going plant upgrades that would not be as cost-effective or viable as the proposed transformation (especially as the sinter plant smelting process is considered out-dated technology).

Closure of the plant would have significant negative social, environmental and economic impacts on the local community and the State economy.

6.1.3 Alternatives

Relocating the smelter to a location away from Port Pirie is not considered viable, especially due to substantial costs of decommissioning the existing plant and infrastructure, remediating the land and establishing a new smelter. Nyrstar has a substantial investment in the existing operations and is committed to Port Pirie and working with the community (including all levels of government) to improve emission levels and the legacy of lead contamination.

6.2 EMISSIONS AND AIR QUALITY

Essentially, the aim of the smelter transformation proposal is to substantially reduce contaminated air emissions to significantly reduce the detrimental health impacts on the Port Pirie community (i.e. to continue to reduce blood lead levels). The PER (Section 7) estimates a approximately 50% reduction in Port Pirie's air lead concentrations could be achieved, with further reductions possible from continuous improvement. Significant reductions of sulphur dioxide and particulates emissions would also result. Removal of the sinter plant would free-up the capacity of the baghouse to capture fume and dust emissions from other parts of the smelter. A range of dust reductions (sources of fugitive emissions) would also be achieved through improved smelter operations and hygiene.

The PER (Section 7.5) identifies the main sources of lead emissions as currently emanating from the sinter process (27%), blast furnace (24%), slag fumer (29%) and the intermediate materials storage area (14%). Total air lead emissions amount to 62.2 tonnes per annum (tpa), although a total figure is difficult to estimate due to considerable uncertainty in emissions factors, variability in the sources and dust control procedures etc. Post-transformation, this amount is anticipated to be reduced by 53% to 29 tpa, with the major lead sources being the slag fumer (31%), blast furnace (15%) and point sources (12%). The PER (Figure 7-11) estimates that current annual average air lead concentration contours (especially the 0.5 microgram per cubic metre ($\mu\text{g}/\text{m}^3$) National Environment Protection Ambient Air Quality) Measure (Air NEPM) Standard) that currently extend south to the boat ramp and Solomontown area, would contract to an area immediately surrounding the smelter site. Thus, only a small area near the smelter would exceed the Air NEPM Standard.

The air quality modelling presented in the PER (Section 7) examined the potential impacts of three key pollutants (lead, sulphur dioxide and particulates) on air quality for both the existing and post-transformation operations of the smelter.

The EPA considered that the anticipated environmental benefits (i.e. reduction in current ambient lead in air levels and 1- hour SO_2 exceedences) were reasonable estimates of what to expect from an air quality perspective. However, there were some technical gaps identified in the information that need to be further improved to validate the assumptions and claims made from air quality modelling. This would give greater confidence in the actual concentration levels predicted.

Modelling of the lead impact was undertaken by modelling scenarios for existing and post-transformation emissions. Due to inherent uncertainties associated with air quality modelling, it is important to have suitable monitoring before, during and post-transformation. In particular, monitoring is required for lead and sulphur dioxide to validate model predictions. Performance of the model was tested for the years 2010 and 2011 by comparing model annual average

predicted lead in air values with annual average monitored data (Nyrstar high volume air samplers (HVAS) data), which showed that lead was over predicted on the western side and under predicted on the eastern side of the Port Pirie Township. The EPA considers the modelling could have been further improved to correct the directional bias of the prediction by improving the meteorology dataset. Therefore, the lead-in-air model is best utilised to estimate relative improvements post-transformation.

Air quality modelling was undertaken for the post-transformation operations scenario by using the following estimated improvements to emission sources:

- Reducing fugitive lead emissions from the proportioning plant by 50%.
- Reducing existing blast furnace lead emissions by 70%.
- Reducing paved and unpaved road lead emissions by 80%.
- Reducing stockpile lead emissions (related sinter returns) by 80%.
- Replacing the existing sinter plant source emissions with a single emission source for the proposed EBS (resulting in approximately 90% reduction in SO₂ emissions from the Tall Stack).

The post-transformation model presented in PER (Appendix B) did not consider the replacement of the blast furnace with a second EBS. The EPA considers that replacement of the blast furnace would result in further reductions for lead-in-air emissions.

6.2.1 Lead-in-Air Emissions

It was estimated that the overall transformed plant would achieve an approximate 47% reduction in lead-in-air emissions, based on production levels of 2010 and 2011. The upgraded plant is likely to operate at a greater throughput than in 2010-11, estimated to be 262,000 tonnes of lead produced per annum compared to 207,000 tonnes per annum for 2010-11 (i.e. increase production capacity by 27%), which was accounted for in the RD (Table 7.3) by increasing post transformation lead-in-air concentrations by 21%. This improvement ranges from 2.22 micrograms per normal cubic metre ($\mu\text{g}/\text{Nm}^3$) (current) to 1.29 $\mu\text{g}/\text{Nm}^3$ (post-transformation) at Ellen Street and 0.11 $\mu\text{g}/\text{Nm}^3$ (current) to 0.06 $\mu\text{g}/\text{Nm}^3$ (post-transformation) at St Marks College monitoring sites.

The estimate provided in the PER (Table 5.3 of Appendix B) and the revised estimate in the RD (Table 7.3) demonstrates there are some inherent uncertainties (such as production rates, meteorology, equipment performance etc) in predicting absolute concentrations that are likely to be achieved post-transformation. Given that this proposal is to transform the existing smelter and produce improvements in emissions, it is important to know the absolute concentration levels that would be achieved post-transformation. To obtain the best prediction from modelling it is important to either utilise production rates, corresponding emissions and ambient lead-in-air concentrations at the time of transformation or use a consistent air quality monitoring network during and after transformation. Ultimately, the connection of plant process and ambient lead with respect to causation, contribution and control, is best demonstrated through well collected gas management, in-line process measurement and reporting and a simple, appropriate, consistent and publicly reported site and off-site monitoring data set (as well as clearly articulated mass balance data).

6.2.2 Sulphur Dioxide (SO₂) Emissions

Major sources of sulphur dioxide (SO₂) from the smelter are the tall stack, the slag fumer baghouse stack, the KDR stacks and the acid plant stack. The impact on sulphur dioxide levels, from the current and post-transformation smelter operations, was assessed using air quality modelling and using 2005/06 emissions inventory data. Important features of the sulphur dioxide model are:

- Modelling was performed using The Air Pollution Model (TAPM; version 4.05).
- Meteorology data was generated by TAPM (although TAPM predicted NNW winds as being more northerly than observed and no attempt was made to improve wind predictions).
- Modelling was conducted for a 12 month period from 1 July 2005 to 30 June 2006. This period was selected as it had the best ambient monitoring site data and throughput hadn't changed since then. However, the PER (Figure 5.1 of Appendix C) highlights the fact that the number of exceedences of sulphur dioxide has increased in last three years.

Sulphur dioxide concentrations predicted by the model were compared with observed values. The EPA considers the model tends to under predict the maximum 1-hour concentrations, but over predicts the lower percentile concentrations (such as the 1-hour 90th and 95th percentile). The model provided good agreement of the 99.9th to 99th percentiles and the number of days with exceedences of the 1-hour 200 parts per billion Air NEPM Standard. The model was repeated for post-transformation operations by changing the emissions estimates, which predicted the concentrations of sulphur dioxide would generally be reduced by 50% (with the maximum 24 hour concentrations predicted to be reduced to 76% of current levels). However, there is still an area closer to the smelter and along the Port Pirie River in which occasional exceedences are predicted.

6.2.3 Particulate Matter (PM₁₀) Emissions

Modelling of particulate matter (PM₁₀) emissions was not undertaken, although the RD provides qualitative assessment of PM₁₀ emissions based on mass balance equations to demonstrate that PM₁₀ emissions will be reduced post-transformation. In the absence of modelling calculations, this can be validated by long-term air quality monitoring post-transformation.

In regard to all the proposed emission reduction measures discussed above, the EPA considers there is a need for further modelling and validation using improved air quality monitoring, including:

- Additions to the current air quality monitoring network (which should continue) for a minimum 12 months before transformation (i.e. prior to start-up of new equipment), during transformation (i.e. during commissioning of new equipment) and for 12 months after transformation (i.e. once new equipment is fully operational), including:
 - a) Continuing to operate all High Volume Air Samplers (HVAS) in the sector of dominant wind (i.e. to the north-west of the smelter). The current HVAS network should suffice for this requirement.
 - b) Establishment of a Sulphur Dioxide (SO₂) monitor on the western side of Port Pirie (such as a location at the Pirie West Primary School); and

- c) Establishment of one continuous (i.e. ‘real-time’), mobile lead monitor, together with relevant meteorological monitoring, to be used on a campaign basis at locations determined in consultation with the EPA, to aid in event recognition, source reconciliation and for process management (i.e. for site performance improvement).
- Quantification of the reduction in PM₁₀ levels by developing and implementing a monitoring plan for PM₁₀ before, during and after transformation.

6.2.4 Improved Storage and Handling of Materials

The PER (Section 6.2.8) states that removal of the sinter plant avoids the need for the intermediate materials feed stock and the requirement for many of the existing open conveyor belts. The use of EBS technology also allows some of the intermediate materials stockpile to be used in the new smelter process (including all the lead oxide-bearing sinter). The existing intermediate materials (in-process and waste materials) storage area would be progressively reduced in size and rehabilitated. The Environmental Improvement Program (EIP) would investigate opportunities to reuse the remaining stockpile and reduce the footprint of the storage area (and ultimately closure and remediation).

The tracking of materials from the storage area onto internal roads by vehicles (i.e. during wet periods or from wetting down of materials for dust suppression) would also be significantly reduced. This would significantly reduce another persistent source of contaminated dust emissions. In addition, feed materials would be stored in enclosed facilities (with appropriate ventilation) and be located close to where they are needed. Thus, a number of potential point sources for dust emissions (especially on windy days) would be significantly reduced.

In conclusion, it is considered that the proposed upgrade measures (especially the adoption of the current standard for lead smelting and emissions management technology) and predicted emissions reductions would have the potential to achieve improvement in environmental performance for the smelter facility. The extent of environmental improvement would ultimately depend upon how Nyrstar chooses to operate the equipment installed at the facility. Monitoring of emission levels prior to, during and post-transformation would be required to verify the predictions estimated by modelling and to measure the actual levels of reductions capable of being met. This information would then be able to be used by the EPA in measuring the performance of the transformed plant against the mandated licence levels. The EPA has absolute discretion in the setting of emission levels. It also has significant powers to enforce requirements.

6.3 EFFECTS ON COMMUNITIES

The two main impacts of the proposal on the local community are the beneficial effects on human health from reduced emissions (primarily lead and sulphur) and the continued economic sustainability of Port Pirie from maintaining smelter operations.

6.3.1 Human Health Issues

Physical Effects

The effects on human health from the existing smelter operations are outlined in the PER (Section 8.1), which discusses the impacts of lead in blood and the testing that has occurred in

Port Pirie. High blood lead levels in humans, particularly children, are known to be detrimental to their health and development.

Lead-in-blood is measured in micrograms of lead per decilitre ($\mu\text{g}/\text{dl}$). Exposure to lead occurs through ingestion, inhalation and dermal (skin) contact. When exposed to lead, lead enters the bloodstream and elevates a person's blood lead levels. When exposed to dangerously high levels of lead, adults can experience a range of negative health impacts including anaemia, hypertension, kidney problems and fertility issues. In the case of children, they are susceptible to damage from lead exposure at lower levels than adults, and neurological problems can occur in children with blood lead levels less than $10 \mu\text{g}/\text{dl}$.

The National Health and Medical Research Council recommends that all Australians should have blood lead levels of less than $10\mu\text{g}/\text{dl}$ and that children's lead exposure should be minimised.

The transformation proposal aims to increase the number of Port Pirie children with blood lead levels below $10 \mu\text{g}/\text{dl}$ from 75% currently to 85 - 90% post-transformation. This would be a significant improvement over the current situation. With technology currently available there is little prospect of a 100% blood lead level below $10\mu\text{g}/\text{dl}$ for a smelter of this type, as discussed in public submissions.

The PER (Section 8) provides an accurate account of the testing and management of blood lead levels in Port Pirie.

Public submissions raised the issue that environmental lead exposure of residents in Port Pirie remains a concern. There will remain a level of existing environmental lead that will cause ongoing concern. This issue is considered in the RD (Section 7.1). Ongoing programs for managing this issue will occur and the proponent is committed to these ongoing programs to manage environmental lead levels. This is supported and such programs are of significant benefit in furthering the improvements the proposed transformation would accrue, in terms of reductions to fugitive and point source emissions.

Sulphur Dioxide

As described in the PER (Section 8.3.8), sulphur dioxide affects human health, particularly the respiratory system, with special impact on those who suffer from asthma. The proposed transformation would result in a reduction in exceedences of the 1-hour Air NEPM Standard by 50%, compared to what currently occurs. It is considered that this improvement in sulphur dioxide outputs is a significant positive outcome of the proposal.

Particulate Matter (PM_{10})

The PER (Section 8.3.10) discusses the issue of particulate matter. It is expected that post-transformation there would be further reductions in particulate matter that are well within the NEPM measures. The monitoring data of the past previous three years has not exceeded the NEPM measures in any case.

Refer to Section 6.2 of this AR for more discussion on air emissions.

Psychological Effects

There would be a significant reduction in emissions from the smelter that should improve the view of the town as a clean place to live and do business. The proposal (and the significant investment being made) is to adopt the best available technology to reduce pollution from lead, sulphur dioxide and particulate matter. A range of community programs and initiatives promoted by Nyrstar, Council and the South Australian Government are also employed to reduce blood lead levels and improve general wellbeing. This could make significant in-roads into the sometimes stated stigma attached to Port Pirie that it is a 'polluted town' (including the effects of lead on the brain development of children).

Mental stress for some individuals also has the capacity to improve when the future of the town is secured (and with it employment and indirect benefits), through the provision of an upgraded (and less polluting) smelter.

Security of tenure and operation of the new, upgraded plant should also provide a supportive background for the maintenance of business activity and property values in Port Pirie. The alternative scenario of plant closure or reduced output would have a definite negative result for the town.

6.3.2 Construction and Operational Workforce

A construction plant would be developed on-site that would ensure minimal impact on normal smelter operations during construction. Thus, the current operational workforce would not be affected.

The PER (Section 6.3.1) estimates the construction workforce requirements would result in the employment of approximately 250 - 400 personnel at the peak of construction. The construction period is estimated to be 24 months in duration. The proponent has committed to sourcing local construction workforce participants wherever possible. Employment with the company is based on merit principles both for construction and ongoing workforce employees. The proponent is committed to safe work practices.

There is likely to be a requirement for some additional workforce accommodation in Port Pirie (especially to avoid a reduction in accommodation availability for residents and visitors), but this will be the subject of further investigations. This may result in a separate Development Application to the Port Pirie Regional Council for a purpose built workers accommodation village.

The ongoing employment workforce is not expected to increase substantially, rather as retirements and staff turnover, there will be future work opportunities with Nyrstar. The development would consolidate the future of this significant employer in Port Pirie.

6.3.3 Traffic and Transport

Being an existing industrial operation, the proposed transformation is not anticipated to significantly increase traffic levels in the long-term (especially given the upgrade would not substantially increase production and would largely maintain, rather than significantly increase employee numbers). A short-term increase in traffic movements would occur during the construction period, although the PER (Section 14.2.1) states that road transport would be used only to deliver equipment for construction, minor construction materials and during demolition

(i.e. no over-sized loads). The majority of construction materials (especially large plant modules) would be delivered by sea transport. Buses would be used to transport construction personnel between workers accommodation and the site. It is considered the predicted increase in road traffic (20 - 40%) would have some impact on local roads and road users, but any impacts could be managed through the implementation of an appropriate Traffic Management Plan (TMP). The PER (Section 14.2.3) states that operational traffic (i.e. via sea, road and rail) is expected to be similar to current volumes. Notwithstanding this, the proponent would be required to formulate an additional TMP for the operational phase of the transformation that would address how any consequential changes in operations would be managed.

The RD (Section 14) states that a Traffic Impact Study has been initiated that would be used for the preparation of a TMP (i.e. that would be completed in consultation with DPTI prior to construction). It is considered the Study would need to address the current situation, the construction phase and the future operation of the smelter. The resulting Plans would need to be incorporated into both the construction and the operations Environmental Management Plans.

Transport and Storage of Construction Materials

The PER (Section 6.3.1) states that around 80% of construction materials would be delivered by sea, with the remaining 20% delivered by road. This would result in minimal change to current shipping traffic and require no changes to the existing wharf. Temporary laydown areas within the smelter site would be established for the storage of construction materials.

6.4 ENVIRONMENTAL ISSUES

Existing smelter operations have been conducted on the site for over 120 years, which has had an impact on the surrounding coastal and marine environment. The subject land is a 'brown-field' site and has a low ecological value, as it has been extensively cleared of native vegetation and is highly modified. Local soils and groundwater have high levels of contamination (especially from lead deposition) and cooling water discharges (i.e. thermal plumes) have impacted on First Creek habitat. Surrounding saltmarsh, mangrove and seagrass communities (including the Port Pirie River estuary) have been affected by deposition and accumulation of heavy metals. Thus, the receiving environment has been significantly degraded by long-term pollution from the smelter.

The reduction in emissions resulting from the transformation would substantially reduce the ongoing level of exposure and accumulation of pollutants within the surrounding habitat, which would reduce the rate of environment degradation (especially a 90% reduction of sulphur). In addition, the progressive removal of intermediate materials stored around the site (especially lead-bearing particulates from the sinter plant) would progressively be processed through the new facility, resulting in the removal of a significant source of contaminated dust.

The main environmental issue associated with the proposed transformation is considered to be the effect of increased discharges of heated cooling water on the coastal and marine environment (discussed below).

6.4.1 Coastal and Marine Environment

The proposal's coastal location, being within the relatively sheltered embayment of the Spencer Gulf, is subject to low to moderate wave energy and dominant currents are tidal driven. The smelter site is on the banks of the Port Pirie River, which is a tidal estuary system comprising a wide expanse of flat and low-lying intertidal and supratidal flats, likely to have very little

freshwater input. The smelter site and surrounding area is highly modified and does not provide critical or significant habitat for any threatened species.

Numerous studies since the 1970's have shown that the Port Pirie River and First Creek have very high levels of heavy metals in waters and sediments. The historical and current discharge of contaminants has extended into Spencer Gulf (and the Port Pirie River estuary), with evidence of ecological effects on biota more than 10 km away (such as reduced biodiversity). Since the 1990's, the level of contamination in First Creek discharges has been substantially reduced (especially since 2002 when the Process Effluent Treatment System was commissioned). However, both the First Creek and Port Pirie River continue to have long lasting contamination and permanently altered ecology. Recent studies have shown that ecologically significant concentrations of metals remain bio-available (i.e. dissolved in the water column) and that the Port Pirie River may have shifted from a sink of metal contamination to a source of metals in adjacent marine waters.

The site lies within the broader Upper Spencer Gulf Marine Park, although the Port of Port Pirie is zoned as a Special Purpose Area in recognition of the existing use. The boundary of a Habitat Protection Zone lies approximately 5 km west of the site (and a Sanctuary Zone approximately 8 km to the west) and would have been exposed to historic and current discharges of pollutants (especially around First Creek). This recently established marine park is not expected to be affected by the transformation proposal, especially now that cooling water discharges are to be directed to the Port Pirie River. The short-term marginal increase in shipping movements during construction could result in a minor increased risk to marine communities (such as from a hydrocarbon spill or collision with a marine mammal). Such a risk is broadly addressed by the Port operator (Flinders Ports) and the shipping industry (especially under International laws) as part of the general management of shipping activities within the Gulf (such as the requirement to have an Emergency Response Plan in place).

Cooling Water Intake/Discharge

The proposed transformation would require a substantial increase of cooling water intake from the current rate of approximately 2 megalitres per hour (ML/hr) (or 0.56 m³/s) to a rate of 7.8 ML/hr (or 2.18 m³/s). A new seawater intake system would be constructed to complement the existing cooling system (i.e. an additional caisson in the Port Pirie River). The PER (Section 12.5.5) states that, based on studies of NSW power stations, intake velocity would be 0.6 m/s in order to minimise impingement or entrainment of marine organisms (especially phytoplankton, zooplankton and larval fish). However, this study also states that impingement (entrapment) would be minimised at an intake velocity of less than 0.6 m/s, whilst a velocity of less than 0.1 m/s would be protective against entrainment.

The EPA advised that ideally the intake velocity should be no more than 0.2 m/s to remove the possibility of any entrainment or entrapment (i.e. as required for large seawater intake facilities, such as desalination plants). The Response (Section 10.3) considers this requirement to be conservative, although the design would take this into consideration. However, if this does not prove feasible, then a velocity of 0.6 m/s would not be exceeded.

It is considered that the cooling water intake should strive to achieve an intake velocity no greater than 0.2 m/s, as this is a standard requirement of the EPA. The final velocity level would be determined by the EPA. A recommended approval requirement prescribes the velocity to be as close as possible to 0.2 m/s, but no greater than 0.6 m/s in order to minimise entrainment and

entrapment of marine organisms. Depending on the EPA requirement for this particular proposal (especially given the degraded condition of the Port Pirie River), sufficient flexibility needs to be provided to enable the level to be amended without the need for further assessment. The EPA would need to be consulted during the detailed design stage of the cooling water intake to ensure impacts on marine organisms are minimised as far as practicable.

Whilst the PER stated the discharge of additional cooling water would either be to First Creek or the Port Pirie River, the RD (Section 10.1) now states the discharge would be to the Port Pirie River using a diffuser on the river bed. Existing discharges to First Creek would continue. This option enables discharge into deeper water, where the warmer water would rise to the surface and entrain/mix with ambient seawater, providing more efficient dilution. The RD (Section 10.5) states discharges from the diffuser ports would be at an angle of around 15 - 20 degrees to avoid erosion of the river bed and mobilisation of bottom sediments.

The discharge of cooling water would produce thermal effluent flows approximately 10°C above the intake temperature. The EPA requirement is for temperature in the discharge point to be no greater than 2°C above the ambient (i.e. background) temperature when measured 20 metres from the outfall. The RD (Section 10.2) states that a design sensitivity study was undertaken to investigate the dilution performance of a wide range of diffuser configurations in meeting the EPA target (including port size, number of ports, exit velocity etc.). The study showed that the vast majority of options meet the dilution target. More refined modelling of the diffuser design would be made during the detailed design stage. The modelling would also need to examine the implications of short circuiting, given the intake is proposed to be located 300 m from the outfall, and possibly alternative intake/outtake locations (i.e. a suitable separation distance). Once the discharge diffuser is constructed, monitoring to validate the model predictions would be required to ensure the predictions are accurate and compliance with EPA criteria can be achieved.

The RD (Section 10.1) states that additional model validation for the Port Pirie River option would need to be undertaken to verify the final design (possibly including the collection of further water quality and meteorological data and a bathymetric survey of the River). Prior to this, a sensitivity analysis would be undertaken to determine whether heat exchange with the atmosphere or water exchange with the Spencer Gulf is the main mechanism of heat removal from the river estuary (i.e. what additional data needs to be modelled).

The cooling water is proposed to be dosed with the chemical 'Mexel 432', which acts as a surfactant to minimise bio-fouling of the cooling system infrastructure (as is currently used). The PER (Section 12.5.4) considers this chemical to be non-toxic to mammals, bacteria, algae, crustaceans, molluscs and fish. The EPA advised that this information is seen to be incorrect, as literature suggests that the product is toxic to at least mussels, fish and algae. Therefore, the concentration that would be used is paramount to enable a risk assessment of the proposed discharge of this chemical. The RD (Section 10.4) clarified that 'Mexel 432' is considered by regulators to be a 'green' alternative and 'best available technology' for use in cooling systems. However, this position is not accepted by the EPA and this matter would need to be further investigated.

The dose rate would be reliant on construction and operational variables and is unlikely to be known with certainty until the infrastructure has been designed. Although, the RD (Section 10.4) estimated that a daily (20 minute) dosing of 2.5 micrograms/litre (mg/L) may be required. Given most of the chemical would be consumed within the cooling system, it is estimated the concentration discharged would be 0.3 mg/L, which would likely have a negligible effect on the

ecology of the Port Pirie River. The proponent would need to provide the final details of the likely dosing of any water treatment chemicals proposed to be used, in order for the EPA to undertake an adequate assessment of risk.

The construction of the intake caisson and discharge pipeline/diffuser structures would require dredging of highly contaminated sediments (possibly including acid sulfate soils) along the bed of the Port Pirie River. This activity could result in turbidity and resuspension of contaminated sediments. Given this, it is likely that there would need to be very stringent conditions on the dredge operator to prevent the generation of plumes of contaminated sediment. The PER proposes that turbidity would temporarily increase (i.e. for one to two weeks) up to one kilometre from the dredge site, which the EPA considered to be unacceptable under this scenario. Metals will likely bind to sediment particles so that turbidity plumes will also be high in metals, which may be toxic to any exposed marine organisms. The EPA advised that the dredge operator must adequately control all turbidity generation so that any plume is controlled to reduce the movement of this pollution. The Construction Environmental Management Plan would need to include pollution control mechanisms that are effective in deep, tidal environments in order to reduce the likelihood of metal contaminated turbidity plumes spreading away from the dredge site (i.e. to ensure that practices are undertaken using the best available technology). The handling and disposal of contaminated spoil would also need to be adequately addressed.

In addition, the EPA advised that during construction all reasonable and practicable measures should be taken to avoid impacting on any sensitive biological community whether through the location of the pipe or the methodology of construction (e.g. horizontal directional drilling). Seagrass communities may be affected by construction activities. Seagrass (and other marine flora) is defined as native vegetation and any clearance would need to be compensated for in accordance with the *Native Vegetation Act 1991*. If construction includes the need for piling in the marine environment, then an Underwater Noise Management Plan would need to be developed to address the potential for impacts on marine mammals and other sensitive receivers.

In conclusion, the cooling water intake would need to be designed to EPA specification, with an intake velocity that would adequately minimise the impacts of entrainment and entrapment of marine organisms. The discharge of cooling water into the Port Pirie River is likely to have minimal impact on a receiving environment that is already degraded by past industrial activities. The EPA considers the slight increase in water temperature is unlikely to change the metal solubility/bioavailability of contaminated sediments nor would flows significantly change the hydrodynamics of the harbour. Therefore, thermal discharges are unlikely to have any substantial impacts the remaining ecology or ecological processes within the receiving environment. Turbidity would need to be controlled during construction to avoid any detrimental effects on marine communities from the disturbance of contaminated sediments.

6.4.2 Sustainability and Climate Change

The PER (Section 15) considers the transformation would result in a more environmentally sustainable smelter operation, as an ageing industrial plant would be substantially upgraded to a modern base metals facility that is more efficient and has less negative impacts. In particular, it would result in energy efficiency gains, including:

- Avoidance of intermediate materials and the energy required to process them multiple times.
- Enclosure of the smelting process, retaining and concentrating heat.

- Reduction in greenhouse gas emissions per tonne of production.

Whilst the transformation would increase electricity demand by 20 megawatts per year (MW/yr), this would be partly offset by installing a heat recovery and electricity co-generation facility (which could generate between 4.8 to 8.1 MW).

The PER (Section 6.2.1) states that the carbon footprint of the smelter operations would increase, although the carbon intensity (i.e. carbon dioxide-equivalent emissions per unit of production - tCO₂-e) would decrease. Post-transformation greenhouse gas emissions were estimated to be around 500 kilotonnes per year (kt/yr) tCO₂-e, compared with current emissions of 350 kt/yr. The carbon intensity would decrease from 0.96 tCO₂-e/tonne (based on 350 tCO₂-e to produce 365 kt of product) to 0.84 tCO₂-e/tonne (based on 500 tCO₂-e to produce 600 kt of product).

Thus, the trade-off for greater efficiency and reduced air emissions (and resultant community health benefits) would be an increase in carbon emissions overall, resulting from increased energy demand from the EBS operating at higher temperatures and the greater capture of sulphur dioxide (and greater production of sulphuric acid).

The PER (Section 15.2) states that auditing of sustainability activities would be conducted during construction and operation of the transformation. Auditing would be incorporated into the Environmental Management Plans (including the current ISO 14001 certified environmental management system). It would also be incorporated into the annual sustainability performance reporting program under the National Greenhouse and Energy Reporting Scheme and the National Pollutant Inventory.

6.5 ECONOMIC ISSUES

6.5.1 Employment

The construction and operational workforce numbers are discussed in Section 6.3.2 of this AR. The most important aspect of the transformation project is that the future of the smelter operations in Port Pirie is consolidated. This would be achieved through an appropriate South Australian and Commonwealth Government commitment to the development, as well as private investment by Nyrstar. This commitment should ensure the ongoing operation of the smelter and the attendant employment (direct and indirect) related to this.

6.5.2 Investment

From information provided in the RD (Section 6.2) there would be investment in this proposal as follows:

- \$100 million investment by Nyrstar.
- \$100 million capital contribution via a forward sale arrangement of some of the incremental free metal units produced at the upgraded smelter.
- \$150 million via structured investment to third party investors (benefiting from a guarantee from the Commonwealth's Export Finance & Insurance Corporation).
- \$5 million contribution from the State Government towards funding Nyrstar's feasibility studies, being an amount that would be applied by Nyrstar towards a Targeted Lead Abatement Program (TLAP), if the proposed transformation proceeds to financial close.

Further information on the financial commitments and the legislation relating to the regulatory certainty to the required EPA operating licence conditions are provided in Section 1.2 of this AR.

As outlined in the PER (report by Deloitte Access Economics in the Executive Summary), the proposed transformation would underpin the employment base of Port Pirie, thereby retaining population in the region, maximising the use of major infrastructure and contributing in a number of areas to meeting the targets of South Australia's Strategic Plan.

It should be noted there are a number of processes that need to play out in developing ongoing certainty in the provision of the transformation proposal, including Development Authorisation, due diligence processes, legislation proclamation and State and Commonwealth Government commitments for funding. At the time of writing this AR, those parallel processes are considered to be 'on track', although not all have been completed.

As a requirement of the proposal being granted Major Development status, the proponent has to develop a South Australian Industry Participation Plan. The Plan ensures competitive small and medium enterprises are given reasonable opportunity to be considered for major work by the public and private sector. Nyrstar has provided such a Plan that has been assessed by the Department of Manufacturing, Innovation, Trade, Resources and Energy (through the Industry Capability Network of South Australia) as being satisfactory.

6.6 DECOMMISSIONING AND DEMOLITION OF EXISTING INFRASTRUCTURE

The PER (Section 6.3.2) identifies various existing facilities and infrastructure that would become redundant and be demolished. The existing sinter plant and acid plant would be demolished at a later stage (i.e. once the new plant becomes fully operational). The PER (Section 6.3.3) states that decommissioning of each existing process would not occur until its replacement infrastructure is installed and fully operational. Removal of contaminated materials and remaining legacy contamination would be undertaken in accordance with the proposed Environmental Management Plans (and in accordance with relevant legislation and regulations). The transport and disposal of demolition materials would also need to be addressed to minimise mobilising particulates and lead. The RD (Section 6.4) further clarifies these aspects.

6.7 CONSTRUCTION AND OPERATIONAL EFFECTS

The PER (Section 6.3) states that construction would take 24 months and be undertaken from 2014 to 2016 (if approved). Smelter production would continue during the transformation construction phase, as construction activity areas would be identified and segregated from operations areas (i.e. so as not to impede both and to avoid risk to personnel).

Being an existing smelter site, construction would not require the extensive clearance of native vegetation nor involve large-scale earthworks that are generally associated with 'greenfield' sites. Apart from demolition works, most of the construction activity would involve installation of additional new plant or the replacement of existing plant with new plant. Most of the construction materials (which mainly comprise plant modules and components) would be delivered via ship using the facility's wharf. Thus, most of the standard impacts associated with construction (especially dust, noise, stormwater control and effects on local roads) would be confined to within the smelter site, where such impacts are already managed. The most sensitive construction areas would be the sites for the cooling water intake and discharge structures within the Port Pirie River. In these locations, specific management measures would need to be employed to minimise turbidity and the remobilisation of heavy metals in contaminated

sediments. During the construction phase, activities and impacts would be managed in accordance with the proposed Construction Environmental Management Plan.

During the operational phase, management of the transformed facility would be similar to the current smelter operations, although it would be more efficient. Emissions and environmental and community impacts would be significantly reduced and would be managed in accordance with the proposed Operations Environmental Management Plan.

6.8 RISK & HAZARD MANAGEMENT

Hazards and risks are well known and the knowledge and experience gained from the long-term management of the smelter provides a level of confidence to ensure they are (and would be) suitably managed. In addition, the smelter operates under a rigorous EPA licensing regime and employs an AS/NZ ISO 31000:2009 certified risk management framework (including fire/explosion, chemical storage/handling and contaminated surface and groundwater). The existing risk management framework would need to be modified to address the implications of the new plant and infrastructure. The PER (Section 16) includes a risk assessment for a range of potentially new risks (or changes to existing risks) associated with the proposed transformation.

6.8.1 Site Contamination

Over 120 years of smelter operations has resulted in extensive soil and groundwater contamination of the site, including a range of metals/metalloids (including lead, zinc, cadmium, manganese, copper, silver and arsenic), acids and some hydrocarbons. In addition, an extensive layer of slag and other material (4 - 5 metres deep) has historically been used to raise the low-lying ground surface over the site. This has led to the presence of a contaminated aquifer under the site (the 'Fill Aquifer') that is managed as part of site remediation (i.e. in accordance with a Groundwater Management Plan).

The EPA advised that, due to the site contamination issues present, any proposed activities undertaken at the site must not further pollute the environment and cause further harm. The activities proposed may increase the level of risk of site contamination, due to the proposed earth movements and sludge dewatering. Appropriate consideration must be given, in accordance with the Construction Environmental Management Plan (CEMP), to maintaining the current hydraulic head balance of the surface and groundwater during the construction works, earth movements and the dewatering or recharging of surface water and groundwater. This is to ensure that potential risks to human health and/or the environment are avoided.

The PER (Section 11.1) states assessment of the surface and groundwater environments at the smelter have been the subject of many studies over more than 15 years, with intensive investigations undertaken over the last two to three years. Since December 2011, Nyrstar has employed an EPA accredited contamination auditor to address the continuous improvement of groundwater, surface water and sub-surface management of the site. The PER (Section 11.3.2) identifies all risks and mitigation requirements for soil, groundwater and surface water.

There is a need to avoid cross contamination of aquifers during construction, particularly from the Fill Aquifer to underlying aquifers. Geotechnical testing and appropriate pile designs and drilling methodologies (based on the existing numerical groundwater model) would be required to minimise this risk. There is also a need to minimise groundwater recharge (especially through the removal of pavements). Stringent management of groundwater is essential to prevent contaminated water moving from the site and being discharged to the marine environment

(primarily the Port Pirie River). In addition, current remediation measures need to avoid being compromised by construction works.

Current strategic groundwater monitoring and management protocols would need to be maintained and modified to take account of works associated with the proposed transformation.

Stormwater run-off is currently contained within the site and is directed to the existing sedimentation ponds for treatment, prior to discharge to the marine environment (i.e. via First Creek). Potentially contaminated run-off during demolition and construction would be managed in the same manner.

Existing sub-surface contamination would be reduced by the removal of existing sources of contamination (such as the intermediate materials in storage).

6.8.2 Acid Sulfate Soils

The PER (Section 11.2.4) states that potential acid sulfate soils have been identified as occurring in surface soils of the St Kilda Formation, which have been substantially covered by slag and other materials. Thus, they are unlikely to be disturbed, except during piling activities. They may also be encountered during construction works on the Port Pirie River for the cooling water system infrastructure.

The Department of Environment, Water and Natural Resources (DEWNR) advised that where coastal acid sulfate soils are disturbed without appropriate management and remediation, they pose a significant threat to development and the natural environment. The release of acid and metal ions into the environment can cause a range of detrimental effects on marine communities. In addition, the lowering of pH would increase the likelihood of metals in sediments being mobilised, so it is particularly important that acid sulfate soils, and any other acid from the plant, be carefully managed. The Coast Protection Board's policies on acid sulfate soils would need to be addressed in regard to risk and management measures that would need to be included in the CEMP.

6.8.3 Hazardous Materials/Dangerous Substances Risk

In general, the management of chemical storage areas and quantities would remain similar to the current operation. The PER (Section 6.4.2) states that the Operations Environmental Management Plan (OEMP) would address chemical storage, feedstock stockpiles, materials handling, the management of storage facilities (including bunding and drainage) and the handling and recovery of spills and emergencies. Storage and handling of materials (especially stockpiles) would comply with Australian Standards/Codes and Occupational Health, Welfare and Safety requirements.

The PER (Section 6.3.1) states that, depending on process inputs and off-gas treatments, undesirable chemicals can form in the off-gases produced by the EBS. As part of the off-gas management technology, a quenching tower would be installed as a preventative measure (i.e. to prevent formation of such chemicals).

The RD (Section 6.4) describes the procedures that would be put in place in the event of an Acid Plant trip.

6.8.4 Coastal Flooding

The PER (Section 15.5) considered the climate change implications for site, primarily related to coastal flooding and inundation. Being a low-lying site, inundation of some operational (non-plant) areas of the smelter has occurred in the past during king tides, especially when exacerbated by storm surges and/or high river flows.

DEWNR suggested a range of options for providing adequate flood protection (especially to address sea level rise and increased storm surge), with minimum site and floor levels prescribed by the Coast Protection Board being the preferred option. The proponent considers raising the site to such levels as impractical and has chosen levee bank protection as the safest and most cost-effective option as its protection strategy. The proponent is currently working with the Port Pirie Regional Council on investigations for the best option for extending the existing Council levee (i.e. as part of the Site Levee Bank Project), including an extension of the levee into the smelter boundary. The levee would not only protect the smelter site from inundation, but also the town's central business district from floodwater flowing through the smelter and the possibility of contaminated waters entering the Port Pirie River. This option is supported.

6.8.5 Biosecurity

The PER (Section 12.2.6) states that no introduced marine pest species were recorded in the Port Pirie River, although the European Fan Worm, Pearl Oyster and Slime Feather-duster Worm are found in the Spencer Gulf. DEWNR advised that, if new structures are placed underwater, they should be monitored for the first few years to make sure the bare structures do not provide a substrate for opportunistic invasive species. The RD (Section 10.8) commits to such monitoring and the proponent would liaise with the Department of Primary Industries and Regions (Biosecurity) if any invasive species are found. Such monitoring would need to be addressed in the OEMP.

6.8.6 Shipping Effects

The RD (Section 10.5) states mobilisation of sediments in the Port Pirie River by shipping movements would be slightly greater during construction due to an increased number of shipping movements during this phase. This could result in turbidity problems and resuspension of contaminated sediments that could affect marine communities. Measures to minimise turbidity and erosion from shipping activities would need to be addressed in the CEMP.

Shipping movements within the Spencer Gulf (especially through the recently established Upper Spencer Gulf Marine Park) potentially pose a hazard to marine communities due to the risk from a hydrocarbon spill or collision with a marine mammal. This has recently become more of an issue, due to a range of proposed Port facilities within the Gulf and a potential substantial increase in shipping traffic from a predicted increase in mineral exports. The PER (Appendices J and K) addressed this issue and proposes a number of actions that would be considered in the OEMP (i.e. the Natural Resources Management Strategy). These actions are supported.

6.9 INFRASTRUCTURE

6.9.1 Water and Power Supply

The main utility infrastructure requirements would be for electricity, gas and potable water for which the site is adequately serviced to cater for any increase in demand.

The additional 20MW of electricity required for the transformation would be met by the installation of a new cogeneration facility and an upgrade of the Allendale sub-station (including upstream augmentation). During construction, additional electricity would be provided by generators.

The additional raw water supply for the plant cooling system would continue to be sourced from the Port Pirie River, via an additional (but larger capacity) intake structure.

6.9.2 Waste Management

The PER (Section 17) describes how the variety of waste management and recycling activities are conducted at the smelter under the current EPA licence and in accordance with the existing *Nyrstar Port Pirie Procedure: Recycling and Waste Management*. Thus, the site is managed according to a waste management hierarchy that prescribes a preferred order of waste management practices. There is also a licensed landfill on-site that can also be used for the disposal of asbestos. Waste sources generated during demolition, construction and operation would be managed in accordance with existing waste management protocols.

The *Nyrstar Port Pirie Procedure: Recycling and Waste Management* would need to be updated to address the management of all waste streams generated by the transformation activities.

7 PROPOSED MANAGEMENT AND MONITORING OF ISSUES

The PER (Section 18) states that the smelter currently operates under an Environmental Management System (EMS) certified to Australian Standards (SA/NZS ISO 14001, 2004). Construction and operational activities associated with the transformation would be managed via Environmental Management Plans that would be incorporated with the existing Environmental Monitoring and Reporting Program (EMPR). The PER (Appendix J and Appendix K respectively) provides a draft Construction Environmental Management Plan (CEMP) and a draft Operations Environmental Management Plan (OEMP). The CEMP, OEMP and modified EMRP would be integrated with the existing EMS.

The CEMP and OEMP would adhere to any relevant conditions of the current EPA licences to ensure all on-site works are compliant. This would include the existing Lead Emission-to-Air Environmental Improvement Program (EIP), implemented through the EPA licensing regime, that contains a number of compliance actions aimed at further reducing emissions (especially dust sources from roads and pavements).

7.1 CONSTRUCTION AND OPERATIONAL ENVIRONMENTAL MANAGEMENT PLANS

A comprehensive Environmental Risk Assessment was undertaken by the proponent to identify measures required to manage impacts and minimise the environmental footprint of the upgraded smelter. The outcomes of this were used in the preparation of the draft EMP's. The draft EMP's address the following:

- Background and smelter summary information.
- Roles and responsibilities of parties involved.
- Regulatory, licensing and legislative requirements.
- Identification of potential environmental and social aspects.
- Identification of quality control measures to manage impacts and achieve risk levels that are as low as reasonably practicable (ALARP) for each aspect.

The CEMP would also incorporate the following:

- Earth Moving Plan (including dust suppression).
- Demolition Plan.
- Material Handling Procedures.
- Waste Management and Recycling Plan.
- Groundwater Management and Monitoring Plan.
- Traffic Management Plan.

A Soil Erosion and Drainage Management Plan (SEDMP), as prescribed by the EPA for building sites, and a Dredging Management Plan would also need to be incorporated into the CEMP. The CEMP would also need to include measures to minimise turbidity and erosion from shipping activities associated with the delivery of construction components and materials.

The OEMP would also address the following:

- Air quality (including performance criteria and an Air Quality Management Strategy).

- By-products and waste generation.
- Community health (including performance criteria and a Community Health Management Strategy).
- Community amenity (including performance criteria and a Community Amenity Management Strategy).
- Natural resources (including performance criteria and a Natural Resources Management Strategy).
- Odour (including performance criteria and an Odour Management Strategy).
- Sub-surface quality (including performance criteria and a Sub-surface Quality Management Strategy).
- Surface Water quality (including performance criteria and a Surface Water Quality Management Strategy).
- Groundwater (including performance criteria and a Groundwater Management Strategy).
- Visual Amenity (including performance criteria and a Visual Amenity Management Strategy).

The OEMP would also need to incorporate the following:

- A Traffic Management Plan, to address any future changes to the delivery of products into and from the smelter site.
- Monitoring of new structures placed underwater in the Port Pirie River to ensure the bare structures do not provide a substrate for opportunistic invasive species (especially during the first few years of operation).

The PER (Section 11.5) states that the EPA accredited Contamination Auditor would review and approve the CEMP and OEMP (especially strategies and procedures for managing contaminated groundwater and for handling contaminated materials).

As part of any development approval, the EMP's would need to be satisfactorily completed, in consultation with relevant South Australian Government agencies (and where applicable the Port Pirie Regional Council), and approved by the Minister for Planning prior to any works commencing.

8 CONCLUSIONS

The proposed transformation of the existing Port Pirie smelter into an advanced poly-metallic processing and recovery facility would not only improve the operational performance of the plant, but more importantly it would substantially improve its environmental performance. Upgrades to the plant (especially the replacement of the sinter plant with an Enclosed Bath Smelter) would introduce best practice technology and, coupled with improved operational practices, would significantly reduce point source and fugitive emissions from the facility. In particular, lead emissions would be reduced by approximately 50% and sulphur by approximately 90%. Reduced emissions of particulate matter (PM₁₀) would also be achieved. The predicted reductions, in combination with the Targeted Lead Abatement Program and continuous improvement of smelter activities, is expected to increase the percentage of children with blood lead levels within the relevant current guidelines to 95% within a ten year period.

The proposed transformation would involve a ‘step change’ to current operations and emission levels, whilst providing a basis for continuous improvement to further reduce emissions. This approach should ensure the smelter facility is able to comply with current and future environmental standards for air emissions, specifically the National Environment Protection Council’s *National Environment Protection (Ambient Air Quality) Measure 1998* and the South Australian Environment Protection Authority’s *Environment Protection (Air Quality) Policy 1994*. The predicted emissions reductions would be essential for meeting Nyrstar’s current EPA licence compliance requirements (including the smelter’s Environmental Improvement Program).

The EPA and SA Health are satisfied that the proposed upgrade measures (especially the adoption of best practice technology) and predicted emissions reductions would achieve the required improvements in environmental performance for the smelter facility. Monitoring of emission levels prior to, during and post-transformation would be required to verify the predictions estimated by modelling and to measure the actual levels of reductions.

The potential detrimental impacts of the proposal would largely be mitigated by virtue of the site being already highly modified and contaminated as a result of smelter operations over the past 124 years. The surrounding environment, especially the Port Pirie River estuary, has also been affected by contamination from air emissions and discharges over a long period of time. Thus, the receiving environment has relatively low habitat and conservation values, although aspects of local amenity are high (such as the Port Pirie River bank parkland and seating/barbeque areas). Whilst any impacts on the environment are unlikely to be significant, careful management of construction activities is required to avoid exacerbating existing environmental problems, particularly contaminated soil and dust mobilisation. In particular, construction of the cooling water system intake and discharge structures in the Port Pirie River would need to be suitably managed to minimise turbidity and the remobilisation of heavy metals in contaminated sediments (and consequent effects on marine ecology). The potential impacts from the cooling water intake and discharges (such as thermal pollution effects) would also need to be minimised, primarily through the design of the diffuser structure to ensure adequate intake and dilution rates. The on-going management of contaminated groundwater under the site also needs to take into consideration the effects of construction to ensure it is not exacerbated.

The EPA and the Department of Environment, Water and Natural Resources are both satisfied that the potential environmental impacts from the construction and operation of the cooling water system can be suitably minimised through appropriate design and operation. Construction

impacts within the smelter site would be suitably contained and are not expected to affect the surrounding environment or community.

Overall, it is considered that the relatively low level of impacts and risks for the environment and the community can be suitably minimised and mitigated, primarily through management measures and monitoring programs proposed in the Environmental Management Plans for the construction and operational phases. The Plans would be integrated with the current ISO 14001 certified Environmental Management System. In particular, the licensing regime under the *Environment Protection Act 1993* would provide a stringent framework/mechanism for ensuring any impacts from construction and operation are adequately controlled. It would also ensure the predicted emission reductions are achieved.

Finally, the proposed transformation would have a significant beneficial effect on the health of the Port Pirie community, especially children. A more efficient and diverse plant would also help ensure the sustainable future of smelter facility. This would have a significant beneficial effect on the economic sustainability of Port Pirie, which would also help improve the general well being of Port Pirie residents.

9 RECOMMENDATIONS

Should the Governor grant a development authorisation, it is recommended the approval should be based on the following requirements:

CONDITIONS

1. The proponent shall carry out the development generally in accordance with the:
 - (a) Development Application, prepared by Parsons Brinkerhoff Australia Pty Ltd on behalf of Nyrstar, dated March 2013;
 - (b) Public Environmental Report, prepared by COOE Pty Ltd (and Associates) on behalf of Nyrstar Port Pirie, dated August 2013; and
 - (c) Response Document prepared by COOE Pty Ltd (and Associates) on behalf of Nyrstar Port Pirie Pty Ltd, dated October 2013.
2. The proponent shall prepare final engineering designs for the cooling water intake structure (and associated infrastructure) and the cooling water discharge pipeline and diffuser structure (and associated infrastructure) for approval by the Minister for Planning, prior to construction commencing. These designs shall demonstrate predicted dilution to meet EPA temperature criteria and shall be prepared in consultation with the Department for Environment, Water and Natural Resources and to the satisfaction of the Environment Protection Authority.
3. Once the cooling water discharge diffuser structure has been constructed and is operating, the achieved discharge dilution rate shall be field validated to test achievement of modelled predictions, including under worst case scenarios (such as a summer dodge tide with no wind).
4. The proponent shall undertake further air quality modelling and monitoring to validate modelled predictions, to the satisfaction of the Environment Protection Authority (EPA), as follows (unless modified by the EPA through future EPA licence conditions):
 - (a) Additions to the current air quality monitoring network (together with the existing network) shall collect data for a minimum period of 12 months before start-up of new equipment, during commissioning of new equipment and for 12 months after new equipment is fully operational, including:
 - (i) Continuing to operate High Volume Air Samplers in the sector of dominant wind (i.e. to the north-west of the smelter);
 - (ii) Establishment of a sulphur dioxide (SO₂) monitor on the western side of Port Pirie (such as a location at the Pirie West Primary School); and
 - (iii) Establishment of one continuous (i.e. 'real-time'), mobile lead monitor, together

with relevant meteorological monitoring, to be used on a campaign basis at locations determined in consultation with the EPA, to aid in event recognition, source reconciliation and for process management (i.e. for site performance improvement).

- (b) The proponent shall quantify the reduction in PM₁₀ levels by developing and implementing a monitoring plan for PM₁₀ before, during and after construction.
5. The proponent shall prepare final detailed plans for the development (drawings, cross-sections and elevations), to the satisfaction of the EPA, for approval by the Minister for Planning, prior to construction commencing.
 6. For the purposes of Section 48(11)(b) of the *Development Act 1993*, the proponent shall commence the development by substantial work on the site of the development within two years of the date of this authorisation.
 7. The proponent shall have completed the development within five years of the date of this authorisation, failing which the authorisation may be cancelled.
 8. No building work shall be undertaken unless the work has been certified by a private certifier, the Port Pirie Regional Council or by some person determined by the Minister for Planning, as complying with the provisions of the Building Rules (or the Building Rules as modified according to criteria prescribed by the Regulation). For the purposes of this condition 'building work' does not include plant and equipment or temporary buildings that are not permanently attached to the land.
 9. Final engineering designs structures and equipment not covered by the provisions of the Building Rules shall be prepared and independently certified by a registered engineer, to the satisfaction of the Department of Planning, Transport and Infrastructure (Planning Division). A certificate as to the structural soundness of the proposed structures shall be submitted to the Department of Planning, Transport and Infrastructure (Planning Division), prior to the commencement of construction.
 10. The proponent shall prepare a Construction Environmental Management Plan (CEMP), to the satisfaction of the Environment Protection Authority and in consultation with an EPA accredited Site Contamination Auditor, the Department of Planning, Transport and Infrastructure (Transport Services) and the Port Pirie Regional Council, for approval by the Minister for Planning prior to the commencement of any construction or demolition works. The CEMP must include an Earth Moving Plan (including dust suppression), a Demolition Plan, a Dredging Management Plan, a Soil Erosion and Drainage Management Plan (SEDMP), a Material Handling Procedures, a Waste Management and

Recycling Plan, a Groundwater Management and Monitoring Plan and a Traffic Management Plan. The matters to be addressed in the CEMP shall generally include, but shall not be limited to, the management, mitigation, and monitoring of, and corrective actions/contingency plans in relation to the following matters:

- dust and sediment control;
 - odour emissions;
 - surface and ground water management;
 - site contamination;
 - waste management (for all waste streams) and overall site clean-up (including litter);
 - use and storage of chemicals, oil, construction-related hazardous substances and of other materials that have the potential to contaminate stormwater, groundwater or the marine environment (including emergency responses);
 - noise emissions (including ongoing noise assessment and monitoring to ascertain the effectiveness of noise control measures);
 - Aboriginal heritage requirements in accordance with the Aboriginal Heritage Act 1988;
 - vegetation clearance;
 - introduced plants and animals (including marine species);
 - impacts on seagrass and marine flora;
 - impacts on the marine environment (especially noise, erosion and turbidity);
 - traffic management strategies;
 - effect on existing infrastructure;
 - impacts on adjacent land users;
 - site security, fencing and safety and management of impacts on local amenity for residents, traffic and adjacent land users;
 - periods and hours of construction and operation in accordance with the requirements of the Environment Protection (Noise) Policy 2007; and
 - community complaints register regarding the above matters.
11. The proponent shall prepare an Operations Environmental Management Plan (OEMP) for the operational phase of the development, to the satisfaction of the Environment Protection Authority and in consultation with the Department of Planning, Transport and Infrastructure (Transport Services) and the Port Pirie Regional Council, for approval by the Minister for Planning prior to the operation of new plant. The OEMP must include an Air Quality Management Strategy, a Community Health Management Strategy, a Community Amenity Management Strategy, a Natural Resources Management Strategy, an Odour Management Strategy, a Sub-surface Quality Management Strategy, a Surface

Water Quality Management Strategy, a Groundwater Management Strategy, a Visual Amenity Management Strategy and a Traffic Management Plan. The matters to be addressed in the consolidated OEMP shall generally include the management, mitigation, and monitoring of, and corrective actions/contingency plans in relation to impacts related to the operation of the upgraded smelter facility.

12. All works and site activities shall be undertaken in accordance with the approved Construction Environmental Management Plan (CEMP) and Operations Environmental Management Plan (OEMP).

NOTES TO PROPONENT

1. In respect of Condition (2), the cooling water intake structure should be designed to have an intake velocity as close as possible to 0.2 metres/second, but no greater than 0.6 metres/second in order to minimise entrainment and entrapment of marine organisms as far as practicable. Where 0.2 metres/second cannot be achieved, the proponent should provide the rationale for the engineering designs.
2. Pursuant to Development Regulation 64, the proponent is advised that the Port Pirie Regional Council or private certifier conducting a Building Rules assessment must-
 - (a) provide to the Minister a certification in the form set out in Schedule 12A of the Development Regulations 2008 in relation to the building works in question; and
 - (b) to the extent that may be relevant and appropriate-
 - (i) issue a Schedule of Essential Safety Provisions under Division 4 of Part 12; and
 - (ii) assign a classification of the building under these regulations; and
 - (iii) ensure that the appropriate levy has been paid under the *Construction Industry Training Fund 1993*.

Regulation 64 of the Development Regulations 2008 provides further information about the type and quantity of all Building Rules certification documentation for Major Developments required for referral to the Minister for Planning.

3. The Port Pirie Regional Council or private certifier undertaking Building Rules assessments must ensure that the assessment and certification are consistent with this development authorisation (including any Conditions or Notes that apply in relation to this development authorisation).

4. Should the proponent wish to vary the Major Development or any of the components of the Major Development, an application may be submitted, provided that the development application variation remains within the ambit of the Public Environmental Report and Assessment Report referred to in this development authorisation. If an application variation involves substantial changes to the proposal, pursuant to Section 47 of the *Development Act 1993*, the proponent may be required to prepare an amended Public Environmental Report for public inspection and purchase. An amended Assessment Report may also be required to assess any new issues not covered by the original Assessment Report and a decision made by the Governor pursuant to Section 48 of the *Development Act 1993*.
5. The proponent's CEMP and OEMP should be prepared taking into consideration, and with explicit reference to, relevant EPA policies and guideline documents, including, but not limited to: the Environment Protection (Air Quality) Policy 1994, the National Environment Protection (Ambient Air Quality) Measure 1998, the Environment Protection (Noise) Policy 2007, the Environment Protection (Water Quality) Policy 2003, the Environment Protection (National Pollutant Inventory) Policy 2008, the National Environment Protection (Assessment of Site Contamination) Measure 1999, the EPA Code of Practice for Materials Handling on Wharves 2007, EPA Bunding and Spill Management Guidelines 2012, EPA Handbooks for Pollution Avoidance and the EPA Stormwater Pollution Prevention Codes of Practice, in addition to other legislative requirements and Guidelines/Australian Standards requiring compliance.
6. The proponent is reminded of its obligations under the *Environment Protection Act 1993* to seek to vary the current EPA licence that applies to the smelter facility to take into account any relevant changes resulting from the approved development. The EPA has the responsibility of imposing licensing conditions, including the setting of air quality standards that must be met and it may impose more stringent requirements than are detailed in this authorisation.
7. All works and activities must be undertaken in accordance with the General Environmental Duty as defined in Part 4, section 25(1) of the *Environment Protection Act 1993* (which requires that a person must not undertake any activity, which pollutes, or may pollute, without taking all reasonable and practical measures to prevent or minimise harm to the environment), relevant Environment Protection Policies made under Part 5 of the *Environment Protection Act 1993* and other relevant publications and guidelines.
8. The proponent is reminded of its obligations under the Native Vegetation Regulations 2003 whereby any native vegetation clearance must be undertaken in accordance with a management plan that has been approved by the Native Vegetation Council that results in a significant environmental benefit on the property where the development is being

undertaken, or a payment is made into the Native Vegetation Fund of an amount considered by the Native Vegetation Council to be sufficient to achieve a significant environmental benefit in the manner contemplated by section 21(6) of the *Native Vegetation Act 1991*, prior to any clearance occurring. It should be noted the Act also includes within the definition of native vegetation, native plants growing “in or under waters of the sea” where the “waters of the sea” includes “any water that is subject to the ebb and flow of the tide”.

9. The proponent is reminded of its obligations under the *Aboriginal Heritage Act 1988* whereby any “clearance” work, which may require permission to disturb damage or destroy Aboriginal Sites, must be undertaken with the full authorisation of the Minister for Aboriginal Affairs and Reconciliation, according to Section 23 of the *Aboriginal Heritage Act 1988*.
10. The proponent, and all agents, employees and contractors, such as construction crews, must be conversant with the provisions of the *Aboriginal Heritage Act 1988*, particularly the requirement to immediately contact the Department of the Premier and Cabinet (Aboriginal Affairs and Reconciliation) in the event that archaeological items (especially skeletal material) are uncovered during earthmoving.
11. The proponent is reminded of its obligations under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, not to undertake any activity that could have a significant impact on any matter of National Environmental Significance, without first referring it to Commonwealth Minister for the Environment for consideration.
12. As foreign vessels are allowed to berth at the wharf, the proponent would need to consult with the Department of Planning, Transport and Infrastructure (Marine Safety) to address any requirements of the Australian Quarantine Inspection Service and the Australian Customs Service.
13. The Minister has a specific power to require testing, monitoring and auditing under Section 48C of the *Development Act 1993*.