Port Kembla Copper
Site Demolition Project:
Preparation for Future Use

Preliminary Environmental Assessment

Prepared by Port Kembla Copper Pty Ltd

For the NSW Department of Planning

25 September 2008

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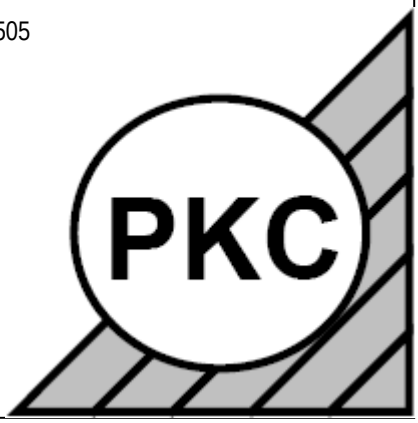

Executive Summary

Port Kembla Copper Pty Ltd (PKC) seeks approval from the NSW Minister for Planning to prepare its copper smelter and refinery site at Port Kembla, New South Wales for future redevelopment.

The 25 hectare site has been used as a copper smelter since 1908. The site's vicinity to the Port Kembla port and population centres mean it is of key strategic value for employment and revenue generation.

The proposed project will involve maximising material recovery, demolition, material removal and disposal, and final preparation of the site for future use.

PKC seeks to commence demolition of site structures early in 2009.

Given the strategic significance of the site due to its proximity to the Port, and consistent with the long term objectives of the State Government to expand job creating opportunities in the greater port zone, PKC has sought and gained declaration of a Part 3A project under the Environmental Planning and Assessment Act.

This Preliminary Environmental Assessment will enable the Department of Planning to issue the Environmental Assessment Requirements. The Environmental Assessment will include the Demolition Management Plan, which will detail the management measures which will be employed to protect the safety of workers and the community, and the environment.

The environmental risks of the project have been assessed as part of this document, and it has been concluded that main risks to the project will be:

- Hazard and safety
- Air emissions
- Noise and vibration

These risks are discussed in this document.

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1. BACKGROUND

1.1. THE PROJECT

PKC wishes to ready its main copper smelter and refinery site for divestment. This requires three key activities to be carried out:

1. Maximising recovery of equipment and materials at the site
2. Demolition of site structures
3. Material removal and disposal

This will involve removing all structures from the site. The processes are outlined in further detail in section *3.2.7 Environmental implications* for this project

This project will not impact on the environmental management and remediation carried out on the site over its recent history due to the practices planned by PKC.

As the future development is not yet determined, PKC intends to remove all structures down to but not below slab level. Any minor disturbance to the cap will be rectified immediately. The integrity of the overall cap is therefore maintained during and after the project works, thus quarantining any contaminated material from human or environmental exposure. It is likely that a future development may incorporate the existing slabs into the new development, or if for any reasons the slabs were to be removed, it would be a condition of re-development that any soil exposed during future activities was handled properly and exposed areas re-capped immediately.

The groundwater will continue to be monitored by PKC during its ownership, and then by a new owner as a condition of sale, for the period specified by the Department of Environment and Climate Change as part of the ongoing management of the formerly contaminated site. Should any monitoring indicate that the groundwater plume is no longer stationary, it will be the responsibility of the owner at the time to take necessary actions to avoid risk of harm to humans or the environment, which may include the use of the chemical stabilization previously successfully tested on the site.

Description of works required on page 30.

PKC is currently marketing useful plant and equipment for sale. By the conclusion of demolition and site clearance during 2010, it is anticipated that the site will have been sold for general industrial port related re-development.

Developments relating to other land owned by PKC will not form part of this application.

1.2. THE PROPONENT

PKC was established by a consortium of Japanese-based industrial companies. The main shareholder is Furukawa Metals & Resources Co Ltd, a long established Japanese industrial company with a history in mining, smelting and refining of copper.

The owners of PKC have shouldered all their regulatory, social and environmental responsibilities since ceasing operations in 2003, and fully intend continuing to honour all their obligations through until the conclusion of demolition, site clearance and sale of all assets.

1.3. OVERVIEW OF SITE HISTORY

Copper smelting has been carried out at the site at Port Kembla in New South Wales since 1908.

In February 1995, the smelter owned by Southern Copper Ltd closed and went onto Care and Maintenance.

In February 1997, the site was acquired by the present owners. A major upgrade to smelting, refining and environmental equipment was commenced in October 1997 to enable the production of 120 000 tonnes per annum of highly refined, high value copper (copper cathode).

Following a construction programme which lasted almost two and a half years, the plant started recommissioning in early 2000.

In July 2003 it was announced that, due to a crash in the international copper market, the plant was to be placed into Care and Maintenance.

Smelting operations ceased in early August 2003, and commercial refining ceased in late August 2003.

A care and maintenance plan was developed to ensure the ongoing maintenance of key items of plant and equipment and the management of ongoing environment issues.

A team of approximately 11 personnel were retained to manage the site during this period.

1.4. NEED FOR THE PROJECT

1.4.1. OVERALL SITE

While it was initially expected that the site would be prepared for sale and recommissioning, it is now established that there are no suitable options for acquisition of the site as a copper smelter and refinery.

In a global market, a 120 000 tonne smelter refinery complex is too small. Successful copper smelting and refining complexes in Europe and Japan are now in the 400-500 000 tonne range which enables economies of scale with respect to operating costs.

Expansion plans for the complex were contemplated by the owners, but the excessive capital cost was a significant deterrent to internal approval, particularly considering the proximity of the site to residential areas. Even considering that compliance with consent and license conditions were largely achieved, the site had a difficult relationship with a small number of its neighbours.

The primary commercial determinants of revenue for PKC were the terms agreed between PKC and its raw material suppliers (Treatment Charge T/C, Refining Charge R/C). These are globally derived parameters, which had fallen to very low levels in 2002, 2003. Whilst T/C and R/Cs, which are largely independent of copper price, have recovered somewhat they are still at a level that would be considered sub economic for PKC to operate and generate acceptable returns.

The only serious purchase enquiries for PKC since 2004 have been for alternate development opportunities. There have been none to re-open the site despite a global marketing effort during 2003 and 2004.

1.4.2. THE 200-METRE STACK

The stack has been thoroughly assessed to determine its current condition, and whether it complies with the necessary standards and regulations. The stack's two possible outcomes, demolition or management *ad infinitum*, have been considered in light of the assessment, and it is apparent that the public safety risk of retaining the stack is unacceptably high, and it must therefore be demolished.

Key findings from two expert reports include:

- The stack does not comply with the Concrete Code (URS, 2008);
- The stack does not comply with the Earthquake Code (URS, 2008);
- The stack's external structure is severely compromised due to carbonation. This is causing it to shed pieces of concrete as it deteriorates. It has been noted that the pieces "can travel relatively long distances from the chimney, particularly if dislodged during windy weather" (Southern Steeplejacks, 2008). The pieces can cause an especially high level of damage due to their acceleration during descent; and
- "Deterioration of some of the annular floors has now become severe. Since these floors support the heavy brick liner, the consequences of failure of these items could be catastrophic." (Southern Steeplejacks, 2008).

The stack cannot be renovated to a point where it complies with the Concrete or Earthquake Codes. The cost to render it a medium or better risk to public safety has been estimated by the two expert firms to be in the order of $1 000 000 (URS and Southern Steeplejacks). Ongoing maintenance would cost around $90 000 every 3 years to help prevent concrete from falling off the stack and onto the site or neighbouring sites.

PKC notes that the only viable option is to collapse the stack in a controlled manner to fell the stack within the PKC site.

1.5. CONSEQUENCES OF NOT PROCEEDING

The removal of plant and equipment and demolition of site structures is imperative for the future redevelopment of the site. Should the project not proceed, the site will be forced to remain under care and maintenance indefinitely, and the strategic potential of the site will be unable to be realised for the benefit of the region.

2. STATUTORY FRAMEWORK

PKC's proposed demolition works at Port Kembla require planning approval in accordance with NSW planning legislation. The Environmental Planning and Assessment Act 1979 (EPA Act) which is administered by the NSW Department of Planning (DoP) is the key legislation. Planning approval is also required to take into consideration any applicable State Environmental Planning Policies (SEPPs), and the development cannot be prohibited by any applicable regional environmental plan (REP) or local environmental plan (LEP). In addition to state planning and environmental legislation, PKC's approval will have to comply with applicable commonwealth environmental legislation.

Environmental protection in NSW is dealt with by the Protection of the Environment Operations Act 1997 (the POEO Act), which is administered by the Department of Environment and Climate Change (DECC). The proposed works must also be considered with regard to this Act.

2.1. STATE LEGISLATION

The key NSW legislation for PKC's proposal is the EPA Act and subordinate regulations.

2.1.1. ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

PKC's proposed demolition works have been declared by the Minister for Planning to be a project of state environmental planning significance. Therefore Part 3A of the EPA Act will apply which specifies that the Minister for Planning will be the consent authority for the proposed works.

Under Part 3A of the EPA Act an application for development approval is to be lodged with the Director-General (Section 75E). This lodgement is to include an Environmental Assessment (EA) for which requirements are to be requested from, and provided by, the Director-General.

In addition, Part 3A of the EPA Act provides that the development and environmental assessment processes under Part 4 and Part 5 of the Act do not apply in respect of an approved project. Further, under Part 3A environmental planning instruments (other than SEPPs) do not apply to an approved project. However, the project cannot be approved if the development is prohibited under any environmental planning instrument.

2.1.2. ENVIRONMENTAL PLANNING AND ASSESSMENT REGULATION 2000

The EPA Regulation provides further detail on the process to obtain development consent. This includes statutory timeframes, information to be made available to the public and applicable fees and charges. As the proposed project is subject to the provisions of the EPA Act, the EPA Regulation applies.

2.1.3. PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

The POEO Act is the key piece of environmental protection legislation in NSW and is administered by the DECC. The objective of the POEO Act is to protect the quality of the environment in NSW. The proposed demolition works will be carefully assessed to minimise or eliminate the risk of potential impacts to the surrounding environment.

As well, whilst not currently an operating facility, PKC has a current Environment Protection Licence under the POEO Act to authorise the carrying out of waste activities at the Port Kembla premises. This Licence will be relinquished upon completion of the demolition works.

2.1.4. OCCUPATIONAL HEALTH AND SAFETY ACT 2000

The OHS Act aims to protect the health, safety and welfare of people at work. PKC will ensure procedures for the safe handling, storage and transport of the materials generated from the works at the Port Kembla site are implemented and the works comply with the OHS Act.

2.1.5. OCCUPATIONAL HEALTH AND SAFETY REGULATION 2001

The OHS Regulation supports the OHS Act in achieving reductions in the incidence of workplace injuries and is applicable to all places of work. The regulation specifies that employers must identify and control all hazards to health and safety in the work place.

2.2. STATE ENVIRONMENTAL PLANNING POLICIES

SEPPs are legislative environmental planning instruments administered under the EPA Act. SEPPs deal with issues considered to be significant to the state and people of NSW. The SEPPs applicable to PKC's proposed works include:

- SEPP (Major Projects) 2005; and
- SEPP No. 55 – Remediation of Land (SEPP 55).

2.2.1. STATE ENVIRONMENTAL PLANNING POLICY (MAJOR PROJECTS) 2005

The SEPP (Major Projects) 2005 defines developments that are considered to be Major Projects and for which Part 3A of the EPA Act applies. PKC's proposed works are not specifically listed under the SEPP (Major Projects) 2005 at this time, however the project has been declared as a project of state significant development by the Minister for Planning. The "Three Ports State Significant Site Proposal" by the NSW Department of Planning proposes to designate the Port Kembla area as a site of state significance under the SEPP.

2.2.2. STATE ENVIRONMENTAL PLANNING POLICY NO. 55 – REMEDIATION OF LAND

The SEPP 55 states that land must not be developed if it is unsuitable for a proposed use due to contamination. The Port Kembla site was port related land prior to development of the existing facility. A Voluntary Remediation Agreement (VRA) (No. 26027) was carried out to address contamination present at the site, and a notice of satisfactory completion and a notice to end the remediation declaration were received on 11 July 2007. Upon the completion of the VRA, the contamination at the site was considered not to pose a significant risk of harm.

2.3. REGIONAL ENVIRONMENTAL PLANS

REPs are legislative environmental planning instruments made under the EPA Act. REPs deal with issues such as urban growth, commercial centres, extractive industries, recreational needs, rural lands and heritage and conservation. Projects approved under Part 3A of the EPA Act are not substantially governed by REPs; however a project cannot be approved under Part 3A if the development is prohibited by an applicable REP. There are no REPs applicable to PKC's proposed works.

2.4. LOCAL ENVIRONMENTAL PLANS

LEPs are legislative environmental planning instruments administered under the EPA Act. LEPs are prepared by local Councils and guide planning decisions for local government areas (LGAs). Similarly to the REPs, a project approved under Part 3A of the EPA Act is not substantially governed by LEPs. However, the relevant LEPs should be taken into consideration in an application for development consent as a project cannot be approved under Part 3A if it is prohibited by an applicable LEP. PKC's existing facility is located within Wollongong City Council LGA. The applicable LEP is the Wollongong Local Environmental Plan 1990.

2.4.1. WOLLONGONG LOCAL ENVIRONMENTAL PLAN 1990

The Wollongong LEP 1990 provides a framework to control and guide land use and development management within the Wollongong LGA. The Wollongong LEP outlines the objectives and relevant development controls of each Zone of land. The proposed demolition works is not prohibited under the Wollongong LEP.

The aim of the LEP is to provide a framework for land use management in the City of Wollongong to ensure that land is appropriately managed and developed and the environment and community are protected. The proposed demolition works are consistent with this aim and objectives, as the project will not detrimentally affect the local community or environment, but rather the community will benefit from the proposed works. After the works are complete, the value of the large PKC site for industrial use will be able to be realised, and the community will gain from the expected flow on effect of improved employment opportunities in the area.

The existing PKC facility is located within Zone 4(b) (Heavy Industrial).

The objectives of this zoning are:

> *(a) to provide suitable areas for those industrial enterprises that should be kept well away from residential neighbourhoods;*
>
> *(b) to make the best use of public utilities and infrastructure required by substantial enterprises; and*
>
> *(c) to allow some diversity of activities that will not prejudice achievement of the objectives referred to in paragraphs (a) and (b) or significantly detract from the operation of existing or proposed industrial enterprises.*

The proposed demolition works are consistent with these zoning objectives.

2.5. DEVELOPMENT CONTROL PLANS

Local Councils also prepare development control plans (DCPs) that provide more specific and comprehensive guidelines for development proposals. DCPs do not apply to a project approved under Part 3A of the EPA Act. However PKC recognises DCPs reflect local concerns and issues and accordingly has reviewed the proposed development in the light of one particular DCP: the Geotechnical Development Control Plan.

2.5.1. GEOTECHNICAL DEVELOPMENT CONTROL PLAN

The Geotechnical Development Control Plan aims to minimise the risk of inappropriate development of sites in the Wollongong Local Government area which may be subject to slope instability. The site is not located in an area conducive to slope instability, therefore the DCP does not apply.

2.6. COMMONWEALTH LEGISLATION

The relevant commonwealth planning and environmental legislation includes:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

There are three triggers under the EPBC Act whereby a Commonwealth Environmental Impact Assessment (EIA) may be required. These include actions that would or are likely to have a significant impact on matters of national environmental significance, actions that would or are likely to have a significant impact on commonwealth land and actions by the commonwealth or its agencies that would or are likely to have a significant impact on the environment inside or outside Australia. Matters of national environmental significance include World Heritage properties, RAMSAR wetlands, threatened species or ecological communities listed in the EPBC Act, migratory species listed in the EPBC Act, the environment in a Commonwealth marine area and nuclear actions.

PKC's proposed demolition works at Port Kembla does not fall into any category that would require an EIA. Therefore, the statutory requirements outlined in EPBC Act have not been considered further.

3. PROJECT DESCRIPTION

3.1. KEY STRATEGIC ISSUES

3.1.1. FUTURE USE OF SITE

The site falls within the jurisdiction of the proposed State Environmental Planning Policy, "Three Ports State Significant Site Proposal", prepared by the NSW Department of Planning. This aims to enhance the Port's employment and income generating capabilities. It is proposed the PKC site be rezoned IN1 General Industrial.

The new zoning's aims and objectives are:

- *To provide a wide range of industrial and warehouse land uses*
- *To encourage employment opportunities*
- *To minimise any adverse effect of industry on other land uses*

Permitted uses with consent are:

> *Depots; Freight transport facilities; Light industries; Neighbourhood shops; Standard industries; Warehouse or distribution centres*

Definitions of these activities are:

> ***standard industry*** *means an industry not being a heavy, light, offensive, hazardous or extractive industry or a mine.*
>
> ***light industry*** *means an industry, not being a hazardous or offensive industry or involving use of a hazardous or offensive storage establishment, in which the processes carried on, the transportation involved or the machinery or materials used do not interfere with the amenity of the neighbourhood by reason of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil, or otherwise.*
>
> ***warehouse*** *or* ***distribution centre*** *means a building or place used mainly or exclusively for storing or handling items (whether goods or materials) pending their sale, but from which no retail sales are made.*

Approval of this Project would enable the site to be used for any of the purposes outlined as meeting the aims and objectives of the proposed zoning of IN1 General Industrial.

3.1.2. ENVIRONMENTAL LEGACY

The PKC site has impacted on the environment over its 100 year history. When PKC purchased the site in 1996, the soil was impacted by contamination and there was a plume of contaminated groundwater. These have been aggressively managed by PKC, most particularly since the site has been under care and maintenance from 2003. In particular, the Department of Environment and Climate Change (DECC) has agreed that the groundwater plume has been cleaned up in compliance with the Voluntary Remediation Agreement (VRA) that was in place for the site, and that the contamination no longer poses a significant risk of harm.

For the site's further environmental impact to be minimised, and to ensure its safe future use, it is imperative that its environmental legacy is carefully managed. This project allows for the site to be prepared for its rezoned purpose of General Industry.

3.2. SITE INFORMATION

3.2.1. LOCATION, ZONING AND NEARBY LAND USE

3.2.1.1. PROJECT SITE

The project site, for consideration under this application, is located in Port Kembla, south of the city of Wollongong, in the Wollongong Local Government Area. Its location is shown in the following map.

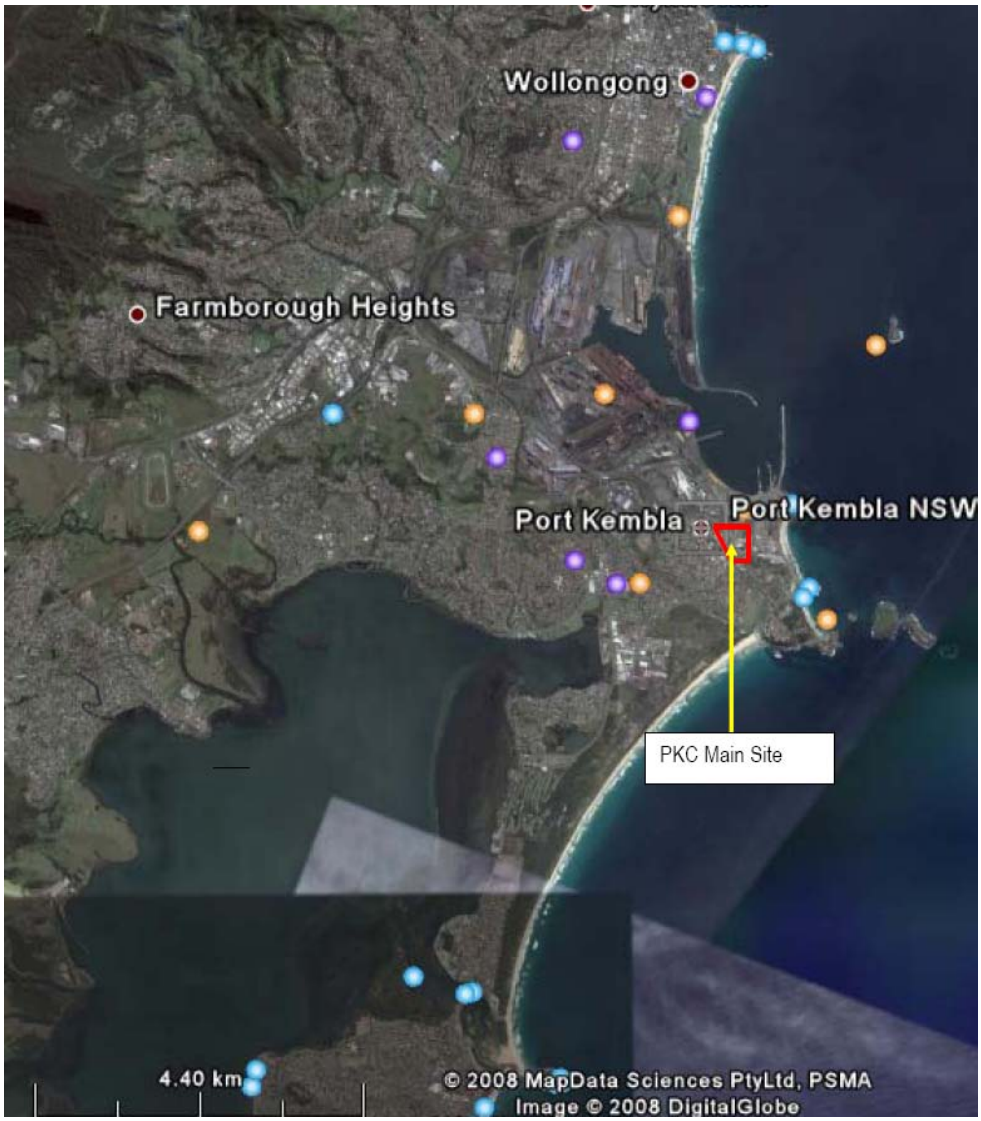

Figure 1 Site location

The project site is the land containing the disused smelting and refining equipment, which is to be demolished. This is located on the following Lots and DPs:

- Lot 21 on DP 546139
- Lot 127 on DP 257531

It is zoned 4B Industrial – Heavy. The zoning and surrounding land use is shown on the following diagram.

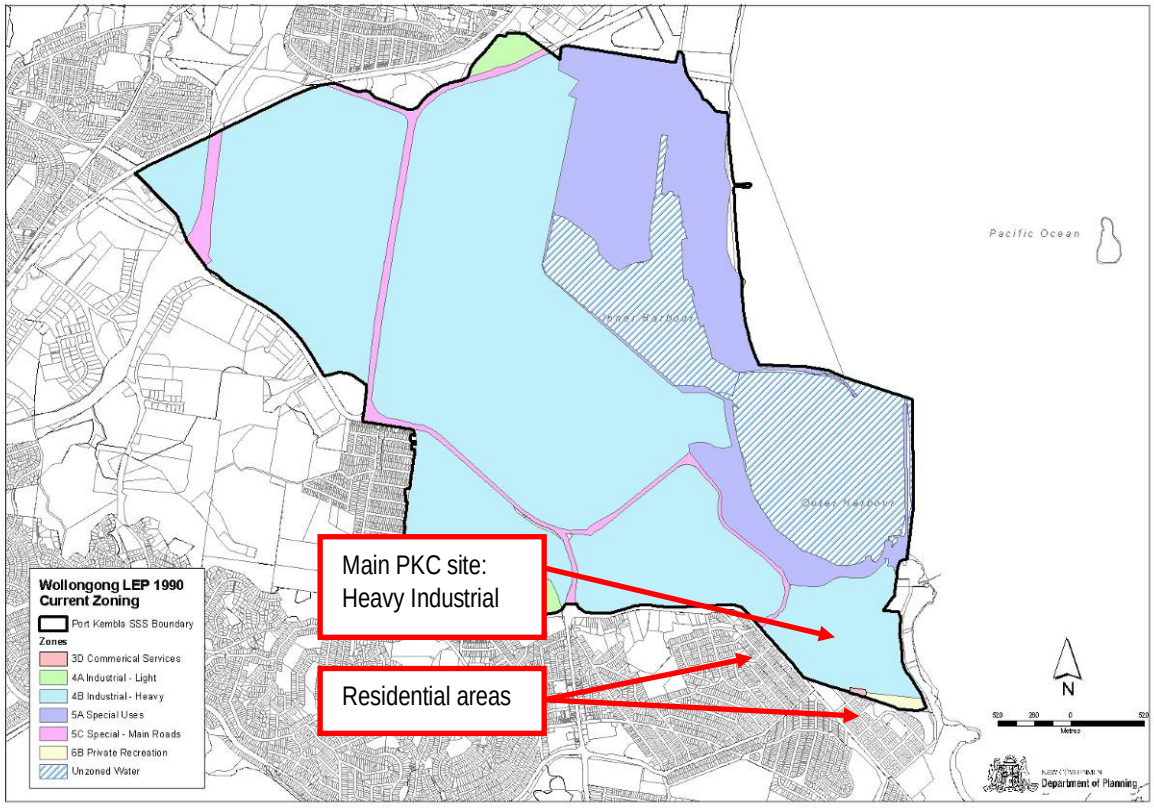

Figure 2 PKC site zoning - current

(Source: Three Ports Proposal, NSW Department of Planning)

The aims and objectives of the current zone under the Wollongong Local Environmental Plan 1990, 4B Heavy Industrial, are:

a) *To provide suitable areas for those industrial enterprises that should be kept well away from residential neighbourhoods, and*

b) *To make the best use of public utilities and infrastructure required by substantial enterprises, and*

c) *To allow some diversity of activities that will not prejudice achievement of the objectives referred to in paragraphs (a) or (b) or significantly detract from the operation of existing or proposed industrial enterprises.*

Reopening the copper smelter would not be possible under the current zoning, as the site immediately adjoins residential areas, thus failing objective (a).

3.2.1.2. OTHER PKC LAND HOLDINGS

In addition to the project location, PKC holds a number of other sites in the area surrounding the main industrial facility. PKC is exploring options for the future use of these sites. Any further development on these sites will be the subject of separate project approval applications.

The following table gives a summary of its property holdings.

Land Description	Zoning	Lot Number / DP	Rate category
Former Orica site (adjoining project site)	4B	Lot 22 DP 546139	Industrial
Old Primary School	3A	Lot 1 DP811699	Residential
Military Rd Park	4A	Lot 1-5 sec 3 of DP5868	Business
Old Fire Station	4A	Lot 13 & 14 sec 3 of DP5868	Business
93 and 97 Military Rd	4A	Lot 10 & 12 sec 3 of DP5868	93: Residential 97: Business Light
4 Reservoir St	2B	Lot B DP155577	Residential
8 Reservoir St	2B	Lot 17 sec 1 of DP978082	Residential
10 Reservoir St	2B	Lot 16 sec 1 of DP978082	Residential
12 Reservoir St	2B	Lot 15 sec 1 of DP978082	Residential
Kruger Ave	2B	Lot 429 DP809614	Residential
Kruger Ave	6A	Lot 501 DP809609	Residential
Korrungulla	7A	Lot 2 DP773067 Lot 1 DP653310	Residential

The properties are shown on the following diagrams.

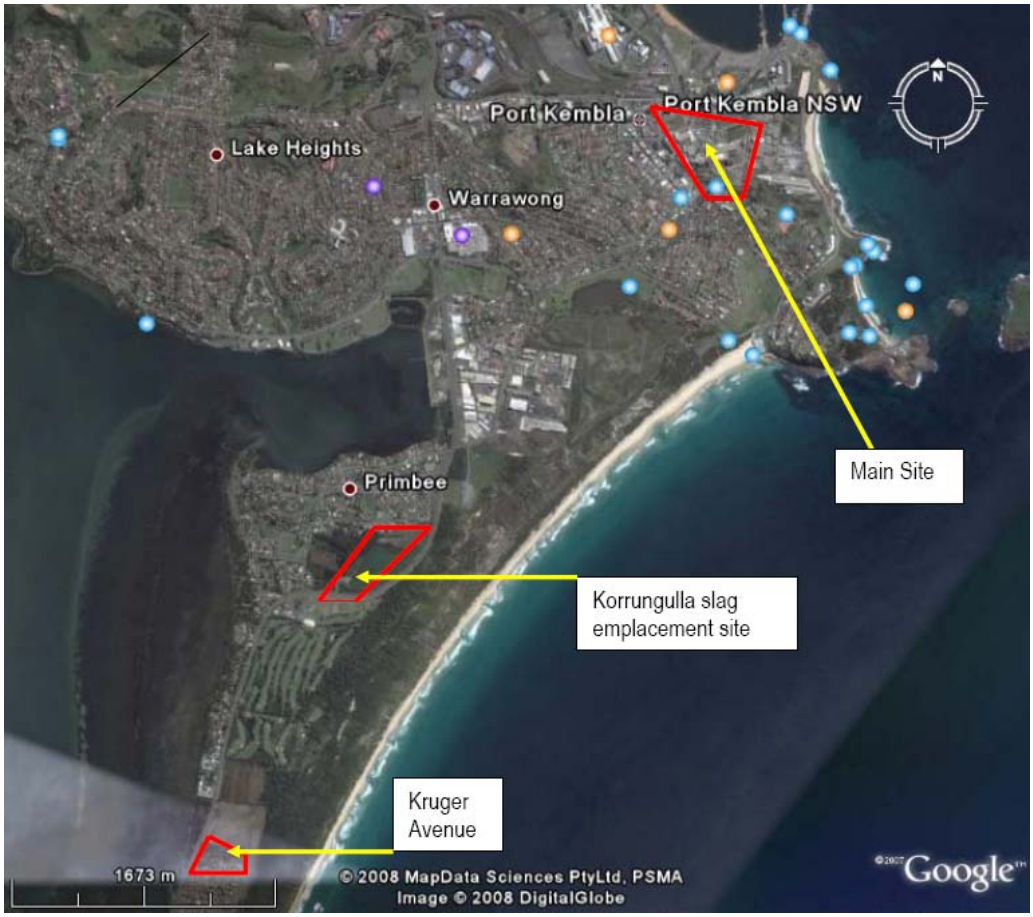

Figure 3 PKC large-scale property holdings

Figure 4 Korrungulla slag emplacement site

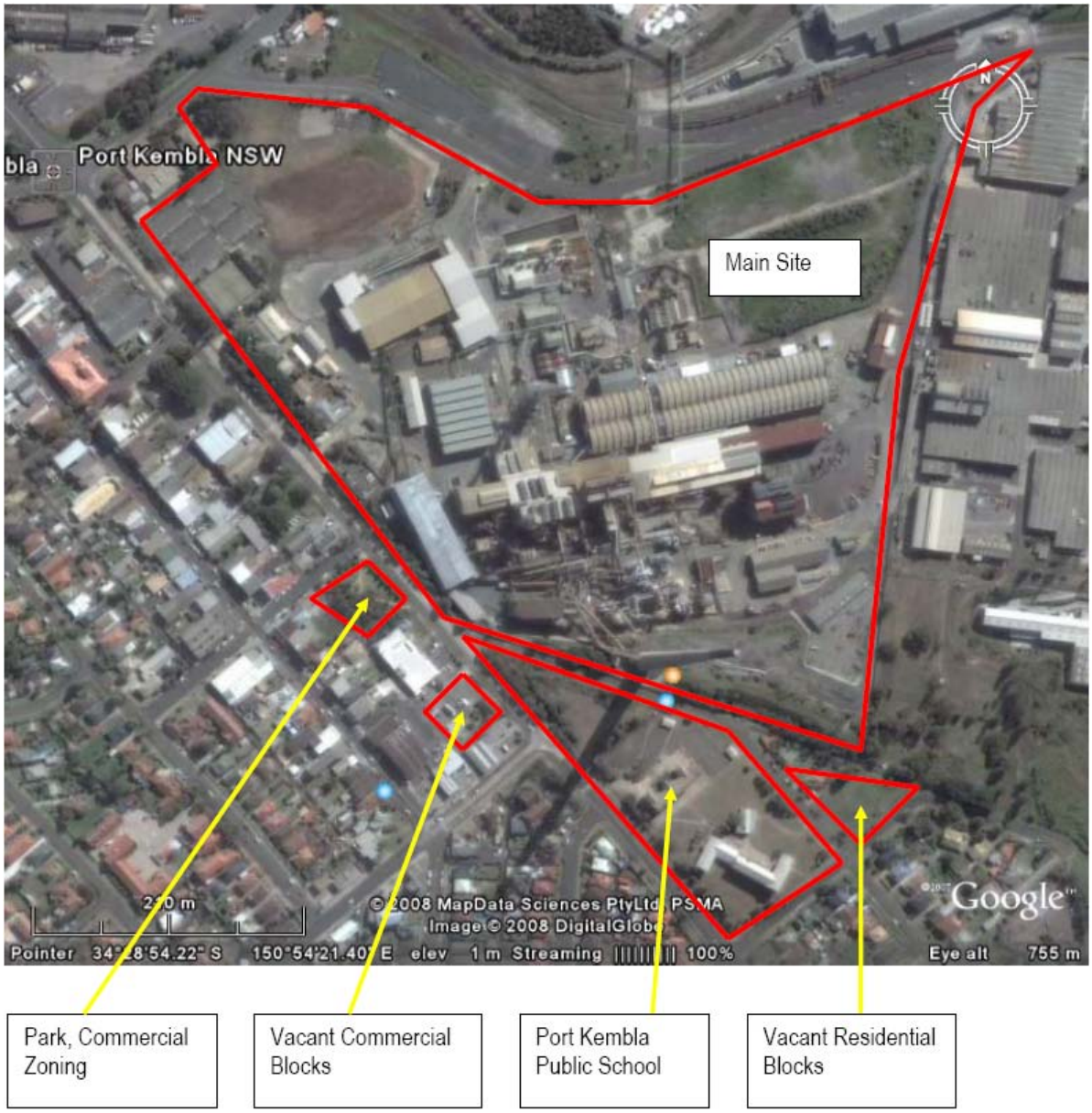

Figure 5 Main site and local properties

3.2.2. SITE LAYOUT

The plan on the following page shows the layout of the main site.

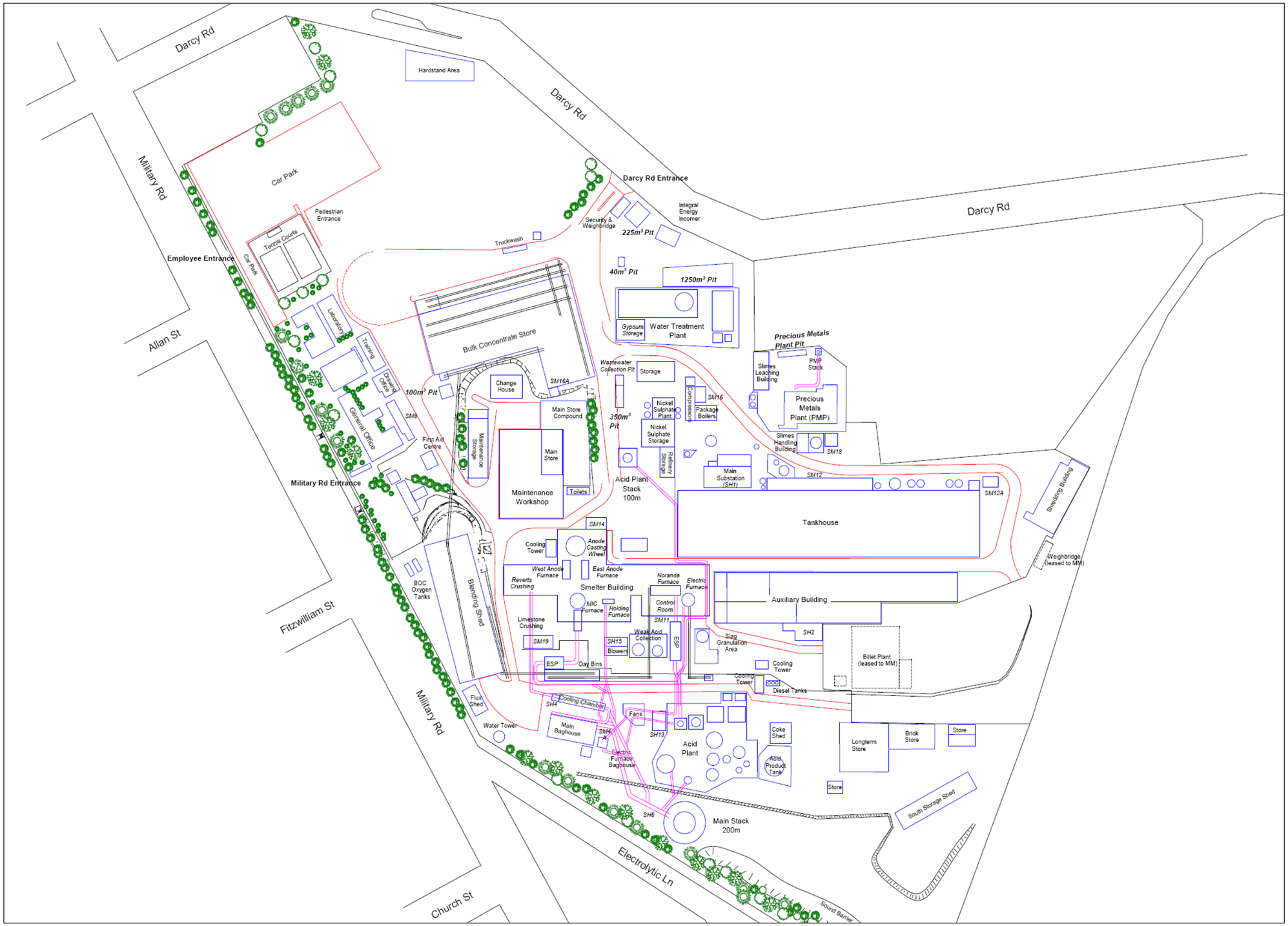

Figure 6 Site layout

3.2.3. FACILITIES

3.2.3.1. GAS HANDLING SYSTEM AND STACKS

The Smelter is attached to a ventilation system that delivered filtered air to the main 200m stack being the large prominent structure.

The first gas system managed off-gas emissions that were associated with low sulphur-bearing gases. These systems were designed to collect metal fumes emitted from various stages of the process due to the very high temperatures used.

Typically these off-gases were generated from the movement of the hot metals, and capture efficiencies were very high in order to ensure a safe and acceptable workplace environment.

The baghouse was used to remove the metal fumes from the collected off-gases by two fabric filters, prior to release via a 200 metre tall stack. The remaining Gas Handling System treated the medium to high sulphur bearing gases that are generated as a consequence of the smelting process.

The sulphur in these process off-gases was removed, prior to release via a separate 100 metre tall stack, by use of the Acid Plant.

As part of the off-gas handling process, prior to the Acid Plants, two Waste Heat Boilers (WHB) were used. These units reduced the amount of liquid effluent, and reused waste heat.

The Acid Plant offgas was fed to the 100m stack.

3.2.3.2. BILLET PLANT

The Billet Plant, built in the 1960's, is owned by PKC on PKC land and is currently operated under a lease by Metal Manufactures. It uses purchased copper scrap and refined copper (previously supplied by PKC) which are fed to an induction furnace. The liquid copper is drained from the furnace and continuously fed into a vertical billet caster. The cooled and now solid billet section is sawn into five foot lengths as it emerges from the continuous caster. The billets are fed to a tube and pipe making facility.

3.2.3.3. BULK CONCENTRATE STORE

The Bulk Concentrate Store housed the copper concentrate which was the main feed stock to the plant. It was in the form of a damp (about 6% moisture) powder.

The Concentrate was of the sulphidic type (containing sulphur), which generally contains around 25-35% copper.

These concentrates are primarily made of Copper (Cu), Iron (Fe), and Sulphur (S) in varying amounts. Associated with these concentrates are varying amounts of other impurities and unseparated parent rock (gangue).

The most common ore found in concentrates is Chalcopyrite (chemical formulae CuFeS2) having a nominal content of 34.5% copper and 35.0% sulphur.

3.2.3.4. BLENDING SHED

The Blending shed was used to combine feeds from multiple sources into the target blend suitable for efficient furnace operation.

3.2.3.5. SMELTER

During the time of the plant's operation, smelter feed was received onto site, stored, blended, in two large sheds, and fed to the Smelter. The Smelter consists of a number of large connected furnaces in the largest building on site.

The process of smelting Copper Concentrates (enriched ores) to produce anode copper (99%+ copper) was achieved by a unique blend of furnace technologies at PKC.

The anodes produced in the smelting process were loaded into the Tankhouse for the refining stage of the copper production process.

3.2.3.6. REFINERY (TANKHOUSE)

The Smelter output in the form of copper metal Anodes, was transported by internal road to the Auxiliary Building, a large open shed for storage prior to being fed to the Refinery. The Refinery consists of a large open building filled with 480 large tanks, that contained copper electrolyte, and a number of dedicated cranes and machines that handled the anodes and produced the final product being sheets of pure copper cathode.

3.2.3.7. AUXILIARY BUILDING

The auxiliary building has been unused since smelting and refining activities have ceased on the site. Previously, during operation, the building was used to store copper anode and cathode, and to prepare anode for sale. The building also housed the indirect cooling system for the MIC furnace and the small water softening plant.

3.2.3.8. ACID PLANT

Sulphur, present in the smelter feed, was recovered in a large Sulphuric Acid Plant, which is not enclosed within a building.

3.2.3.9. WATER TREATMENT PLANT

The Water Treatment Plant was designed to treat waste water to produce clean water suitable for re-use within the plant as process water. "Process waste water" was generated from various processes in the PKC plant, including the acid plant gas scrubbing system and wash water from various cleaning operations. In addition, the first 10mm of rain falling on the site is captured as "storm water" in a system of collection pits for treatment in the Water Treatment Plant.

The wastewater treatment plant is still operational at the site, and is treating the first flush of storm water runoff. The waste water from the plant is of suitable quality such that any excess that is discharged from site meets DECC regulatory requirements.

3.2.3.10. PRECIOUS METALS PLANT

The Precious Metal Plant, a part of the Southern Copper Limited process, was not actually used by PKC and due to its poor structural condition was demolished and cleared in 2007. That part of the site is currently being capped.

3.2.4. SITE OPERATIONS

3.2.4.1. PHASE 1: OPERATION OF COPPER SMELTER AND REFINERY

While the site was operational, smelting and refining of copper took place. The processes are highly complex, and do not directly pertain to this project application. A flow chart showing the processes which were previously carried out at the site, and the process elements, are shown in Appendix 4.

PKC has not carried out operation of the copper smelter and refinery since 2003, as the site is under care and maintenance. A key aim of the care and maintenance has been material recovery and rehabilitation.

3.2.4.2. PHASE 2: POST-CLOSURE MATERIAL RECOVERY AND REHABILITATION

The PKC Smelter/Refinery complex ceased operation due to the prevailing economic conditions in 2003. Expecting that the facility would be sold and re-started, the operation was very carefully decommissioned. The PKC Flow Sheet consists of a chain of linked unit processes, where economic value is added at each processing step. During the decommissioning process all valuable materials were progressively treated through the process to produce the high value refined copper final product. The result of this activity was that the burden of intermediate products that are difficult to dispose of from a commercial or environmental perspective was not increased and economic value was maximised.

A complete clean up of the site was identified as being absolutely necessary, regardless of the outcome for the business. It was recognised that the rate-determining step for site activities was management of long term environmental legacy issues. This meant that the most appropriate and efficient approach was not to dispose large quantities of material off-site, but rather to progressively sort materials on site, realise value where possible, reduce the characteristic of hazardous materials, and dispose of only the minimum quantity of material offsite. This approach has been diligently followed since 2003, as such there is very little extraneous material now left on the site.

Moving forward, the PKC approach continues to be one of safely extracting as much economic value as possible. Equipment that can be non-destructively removed sold and reused will be. This is currently being evaluated through a discrete marketing program. Once demolition approvals are in place a reputable and capable demolition contractor will be engaged to carry out the demolition and clearance of the remaining plant and equipment. The fabric of the site assets contains significant quantities of valuable materials. These have been identified, quantified and will be economically extracted as a part of demolition. The intent of the demolition is to reduce all site structures down to existing slab levels, but not below. A significant quantity of concrete will be generated by this activity. There are a number of pits and chambers on the site that are below the local ground level. It will be

proposed that rather than bring in fill or take concrete off site, the generated concrete will be used as local fill on site.

The overall philosophical approach employed will ensure that at the conclusion of demolition and site clearance, as much economic value has been recovered from the asset as possible and off-site disposal minimised, in bringing a site of some notoriety to a state ready for redevelopment and job creating activities consistent with long range plans for the region.

Since ceasing operations in 2003, the Management of PKC have carried out the following actions.

Corporate	▪ Running the corporation in a proper manner ▪ Working with and advising the government of plans and activities, for and on the site ▪ Managing media ▪ Working with all stakeholders ▪ Ensuring adequate funding for all foreseeable liabilities
Regulatory	▪ Ensuring compliance with license and other statutory obligations
Commercial	▪ Discharging responsibilities with ▫ Creditors ▫ Employees ▪ Sale of assets
Operational	▪ De-commissioning of plant and equipment ▪ C&M of the site, plant, equipment and buildings on the main and satellite properties ▪ Ensuring safe systems of work
Environmental	▪ Site Cleanup of various materials: ▫ Concentrate ▫ Dust & chemical residues ▫ Spent anode ▫ Copper 'skulls' ▫ Refractory materials ▫ Matte ▫ WTP sludge ▫ Electrolyte ▫ Dangerous Goods ▪ Capping of the site ▪ Ongoing monitoring and reporting (outlined in the following section 3.2.5 Environmental Management)

3.2.5. ENVIRONMENTAL MANAGEMENT

The PKC site has a very long history and a number of different owners, and has been regulated under a range of different measures. This section aims to outline key elements of the site's environmental management during the time of its ownership by PKC (ie since 1996).

3.2.5.1. VOLUNTARY REMEDIATION AGREEMENT

PKC entered into a Voluntary Remediation Agreement (VRA) with the NSW EPA on 19 April 2005 for remediation of groundwater contamination at the site (VRA Number 26027). URS Australia Pty Ltd was engaged by PKC to develop the remediation plan.

Groundwater at the site was contaminated with sulphuric acid and heavy metals including copper, lead, zinc, nickel, cadmium and manganese. The highest levels of contaminants were present in a deep groundwater aquifer in weathered latite bedrock which underlies the central and northern portion of the site – the Tankhouse plume. The primary source of contamination was the historic leakage of acidified copper sulphate solution from the Tankhouse building where electrolytic refining of copper was conducted between 1908 and 1995. There is also contamination in aquifers beneath the former Fume Storage Area (FSA).

The VRA included agreed milestones of remediation, which were:

1. Groundwater pump and treat performance (Milestone T1/6)
2. Groundwater modelling and associated investigations (Milestone T2)
3. Effectiveness of remedial works at the former Fume Storage Area (FSA) (Milestone T3)
4. Water quality in the shallow aquifer outside the former FSA (Milestone T4)
5. In situ chemical stabilisation assessment (Milestone T6)

Key remediation undertaken for each milestone is summarised below.

Groundwater pumping and decontamination

26 wells were installed in the shallow aquifer around the Tankhouse plume, and were used to pump out the groundwater, remove the contaminants, and replace the decontaminated water in the aquifer. Pumping from 2005 to 2008 has treated 95 Mega Litres of water, which is in excess of the VRA requirement of 15 ML. It has removed substantial masses of copper, nickel and sulphate.

Groundwater modelling

Key stages:

- Field investigations – to determine geology, hydrogeology and contaminant distribution, for shallow aquifer, deep aquifer and down gradient of site
- Geochemical testing – to determine the ability of the aquifers to attenuate and neutralise contaminated groundwater, to determine the release of contaminants when flushed, and to predict future conditions

- Detailed modelling – assess whether the plume is likely to migrate offsite, and whether any further remediation is required

Conclusion:

> *Taking into consideration a factor of conservatism and unquantified additional attenuation mechanisms, the modelling results indicate that migration of groundwater contamination from the PKC site does not represent a significant risk of harm to aquatic ecosystem in Port Kembla harbour, and no further groundwater remediation is warranted to address risk of harm.*[1]

Remedial works at FSA

Groundwater monitoring has shown that the shallow and deep aquifers beneath the FSA are contaminated. The main remediation undertaken has been to cap the site, which has prevented infiltration and thereby neutralising the risk of harm. There is no evidence of deep groundwater offsite migration, and so remediation is now complete.

Shallow groundwater outside the FSA

It was determined that the shallow aquifer is unlikely to enable contaminants to migrate offsite due to its discontinuous nature, and that a full cap the site would be effective in preventing any further infiltration. This work has subsequently been carried out.

In situ chemical stabilisation

The remediation plan proposed an in situ chemical stabilisation (ICS) of the groundwater, which is an accepted method proven at various heavy metal contaminated sites worldwide. It was proposed that chemicals would be injected into the aquifer to neutralise the acidity and stabilise heavy metals, through precipitation of the metal sulphides, to contain them and prevent cross-contamination of other aquifers or the harbour. It was determined that "if further remediation of the Tankhouse plume is required, injection of sodium hydroxide, possibly in combination with further groundwater extraction and treatment, should be considered."[2]

Extensive monitoring and modelling throughout the course of the groundwater treatment showed that the remediation work was effective, and that ICS "is not warranted to address Risk of Harm to the harbour"[3].

Other remediation

Lot 22

A neighbouring lot was found to also be contaminated, known as Lot 22. PKC bought the lot from Orica in late 2004 to enable free access to undertake remediation work. The recommended

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[1] PKC Stage 2 Modelling Program, URS Australia Pty Ltd, November 2006.

[2] Field Trial – Injection of Sodium Hydroxide and Calcium Polysulfide, Tankhouse Plume, Port Kembla Copper Pty Ltd, URS Australia, October 2006.

[3] Port Kembla Copper Groundwater Remediation Stage 1 Programme, URS Australia, December 2006.

remediation of the site was to regrade the site to prevent runoff, cap the site, and to install a stormwater management system.

The contractual arrangements between PKC and Orica are being finalised, which will allow for the completion of remediation on the site. This is expected to take place late in 2008.

Cut-off wall

To prevent migration of the Tankhouse plume, a mechanical option was considered in case the other measures were not effective. The concept was to construct a deep cut-off wall completely surrounding both the Tankhouse and the Tankhouse plume and to seal it. The wall was deemed to be feasible; however subsequent modelling showed it to be an unnecessary measure.

Key conclusion

The NSW Department of Environment and Conservation issued a Notice to End Remediation Declaration on 11 July 2007, and the DEC stated that:

> *…we are of the view that the requirements of voluntary remediation agreement (VRA) no. 26027 have been satisfactorily carried out and that contamination at the Port Kembla Copper site no longer poses a significant risk of harm.*

3.2.5.2. Environment Protection Licence

As outlined in Section 2.1.3, whilst not currently an operating facility, PKC does hold a current Environment Protection Licence under the POEO Act. This Licence is still current and will be relinquished upon completion of the demolition works. It is expected the licence will be amended to reflect the regulatory requirements for demolition activities.

3.2.5.3. NSW Department of Planning annual return

It was a condition of the 1996 development consent that PKC submits an annual return to the Department of Planning each year. This covers quantitative data and analysis of:

- Air emissions
- Air quality
- Water emissions
- Water quality
- Materials management
- Community complaints

The existing development consent will be surrendered pending the outcome of this application.

3.2.5.4. Care and Maintenance Environmental Management Plan

Since the cessation of copper smelting operations, the PKC site has been the subject of a Care and Maintenance Environmental Management Plan. PKC has managed the site to ensure its sustainability, and elements for monitoring and reporting required by the Environmental Protection Licence and the conditions of consent, which include:

- Water treatment plant operation
- Stormwater management
- Other water management issues
- By-product and waste management
- Site security and access

3.2.6. CURRENT SITE CONDITION

Extensive clean-up and remediation works have been carried out on site since 2003. As a part of the VRA, PKC is committed to repairing the existing concrete capping of the site and capping remaining uncapped areas of the site with a bitumen layer on top of road base fill. This project is currently being completed. The DECC will then be informed and invited to inspect the works carried out, thus ensuring compliance with the section 28 notice attached to the PKC EPL.

The following photographs give an impression of the site's current condition, and reflect the capping which will cover the entire site.

Figure 7 Entrance to Bulk Concentrate Store, showing full capping of surrounding area

Figure 8 Rehabilitated storage area near 200m stack, showing stormwater management system

Figure 9 Rehabilitated storage area near 200m stack

Figure 10 Tankhouse internal view, fully cleaned

3.2.7. ENVIRONMENTAL IMPLICATIONS FOR THIS PROJECT

This project will not impact on the environmental management and remediation carried out on the site over its recent history due to the practices planned by PKC.

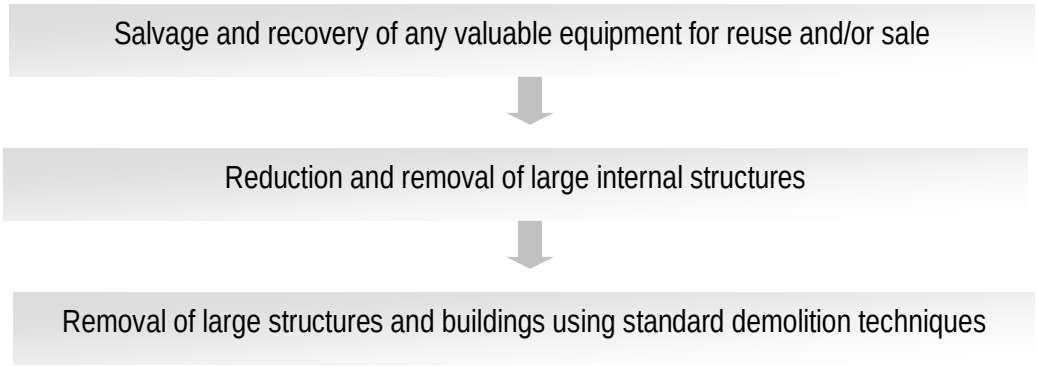
As the future development is not yet determined, PKC intends to remove all structures down to but not below slab level. Any minor disturbance to the cap will be rectified immediately. The integrity of the overall cap is therefore maintained during and after the project works, thus quarantining any contaminated material from human or environmental exposure. It is likely that a future development may incorporate the existing slabs into the new development, or if for any reasons the slabs were to be removed, it would be a condition of re-development that any soil exposed during future activities was handled properly and exposed areas re-capped immediately.

The groundwater will continue to be monitored by PKC during its ownership, and then by a new owner as a condition of sale, for the period specified by the Department of Environment and Climate Change as part of the ongoing management of the formerly contaminated site. Should any monitoring indicate that the groundwater plume is no longer stationary, it will be the responsibility of the owner at the time to take necessary actions to avoid risk of harm to humans or the environment, which may include the use of the chemical stabilization previously successfully tested on the site.

3.3. DESCRIPTION OF WORKS REQUIRED

Readying the site for future use will involve removing all structures from the site down to slab level.

PKC will clear the site in the most environmentally, socially and economically responsible way. In practice, this will mean that works are prioritised to have the highest level of efficiency, and therefore least possible impact. In practice, works will take place in the order of the following diagram.



The total cost of the demolition and site clearance is in the order of $7-10 million.

PKC will select a demolition contractor with the necessary skills and experience for the project, in an open tender process. It is expected the contract will be awarded by November 2008, at which time PKC will begin working closely with the contractor to plan the operation in detail.

3.3.1. MAXIMISING MATERIAL RECOVERY

Maximising recovery of valuable or reusable material from the site is a high priority for the demolition project. The reasons are twofold: firstly, there is a high intrinsic value in the plant and equipment retained in the site, and secondly, the environmental impact of the project will be minimised through careful dismantling rather than traditional demolition. For these reasons, any equipment that can be economically removed and sold for re-use will be.

There is a strong market for this high-value equipment, and PKC is actively seeking buyers through several means.

In addition to equipment which will be sold for reuse, it is estimated that some 15 000 tonnes of ferrous scrap will be recovered for recycling. It is further estimated that non-ferrous scrap such as stainless steel and copper will be recovered for recycling. There are also several thousand tonnes of clean concrete on site, which will be crushed and made available for recycling for various uses, such as road base. This material could alternatively be used on site to aid in its final levelling.

3.3.2. CONTAMINATED MATERIAL MANAGEMENT

At the time of closure, the intention was to re-open the smelter at some stage. The decommissioning process involved running out all process materials. As a result, there are minimal quantities of in-process materials left to be removed, and it is possible the demolition process may require small amounts of dusts and residues to be managed.

- No contaminated materials will remain on site after demolition.
- Any contaminated material will be treated by existing facilities before leaving site.
- PKC will ensure all occupational and community health matters are managed in the DMP according to regulations.

3.3.3. DEMOLITION

All structures on the PKC main site will be demolished to slab level. This section is to be read in conjunction with the Site Layout on page 19.

The proposed demolition methodology for the Port Kembla Copper site will use standard techniques. Similar techniques have been successfully applied for completed projects of similar size and nature in NSW such as the BHP Steel Mill Newcastle (100 000 tonnes scrap volume), Pasminco Newcastle (20 000 tonnes scrap volume) and other significant projects in WA and Qld for major companies such as BHP Billiton, Rio Tinto, Xstrata, QAL, Orica, and Incitec.

The prime method of deconstruction will be using heavy equipment such as 160 tonne, 87 tonne and 35 tonne excavators with special attachments such as grapples, pulverisers, shears, plus large mobile cranes. The contractor will also employ a variety of gear suitable for individual structures. These highly mechanised techniques ensure optimum operator safety through separation from the work faces. The main stack will be felled using specialty demolition explosives as successfully demonstrated on the Pasminco, Xstrata and many other sites.

Prior to the felling of structures, engineered methods will be modelled, discussed and reviewed by a team experienced in the demolition of similar structures. The structural integrity of the weakened structure will be designed, evaluated and approved by external, independent consulting engineers and technical advisors. The contractor will apply a controlled collapse technique using engineered cuts, pre-determined weak points, mechanical force and gravity to bring structures safely to the ground.

As the demolition of structures is considered a "special task", every step of the demolition process will be planned and scheduled using Work Method statements which form the basis for Job Hazardous Analysis and Demolition Risk Assessment Workshops which are essential to guarantee public and operator safety. The contractor holds a Demolition Class 1 licence that conforms with the requirements of *AS 2601-2001 – The demolition of structures*.

3.3.3.1. THE 200M MAIN STACK

The 200m main stack was internally washed and capped at the time of decommissioning in 2003. It consists of an internal brick and external steel reinforced concrete partitions.

A demolition specialist has provided a methodology for demolition, which will ensure the safety of the operation to workers and neighbours. This includes:

- Establishing an exclusion zone with a radius of around 240m for around 4 hours. This will require evacuation of the nearby residences and businesses for that period
- Acquiring permits to close the roads within the exclusion zone, and implementing the closures utilising specialist traffic contractors
- Minimising vibration through strategically emplacing rubble piles around the felling path
- Erecting a container wall to suppress fly material
- Making good any damage to buildings or other improvements which can be attributed to the stack's demolition

The demolition of the stack will be subject to the standard risk assessment and management procedures. The Demolition Management Plan (DMP) will include details of any additional measures required to minimise the environmental effects and workplace exposures.

3.3.3.2. GAS HANDLING SYSTEM AND 100M STACKS

The Gas Handling System consists of large ducts and fans, most of which are clad in synthetic mineral fibre, and may contain some dusts and residues. Specialist contractors will be engaged to remove any identified residual industrial materials within the ducts before standard demolition of the main structures.

3.3.3.3. BILLET PLANT

The billet plant is currently operated under lease by Metal Manufacturers Ltd. There are two options for the demolition of the plant:

1. Sale and relocation of equipment to the present owners, on their adjacent site, which is further removed from existing residences. Then demolition of the remaining building

2. Removal of equipment by sale or alternate disposal, and demolition of the remaining structure

Discussions between the parties will determine the most appropriate outcome; however, PKC will be seeking approval for both options as part of this project application.

3.3.3.4. BULK CONCENTRATE STORE AND BLENDING SHED

The equipment essentially consists of conveyor belts and trippers. The mechanical equipment is specialised, consisting largely of heavy steel, which will be removed prior to the main building being removed by standard demolition techniques.

3.3.3.5. SMELTER

The smelter is the largest building on site, and contains the most equipment, including the six furnaces and related service equipment. Large items such as furnaces and boilers will likely be removed by heavy-lift cranes and standard demolition practices. Removal of the large plinths may require the use of small-scale explosive assistance.

3.3.3.6. REFINERY (TANKHOUSE)

Refinery equipment will be removed by crane prior to standard demolition of the main structure.

3.3.3.7. AUXILIARY BUILDING

The auxiliary building is largely empty; the process equipment within the building will be easily removed before the building is removed using standard demolition practice.

3.3.3.8. ACID PLANT

The Acid Plant consists of large ducts and steel vessels. Specialist contractors will be engaged to remove any identified residual industrial materials within the ducts, and sulfuric acid in the converters. The main structures will be removed using standard demolition practice.

3.3.3.9. WATER TREATMENT PLANT

It is anticipated that the Water Treatment Plant will be required to treat run-off and storm water during demolition. Any discharge of storm water off site will be in accordance with the Environmental Protection Licence. The Water Treatment Plant, which consists of a few tanks and pipes, will be removed once it is no longer required.

3.3.4. MATERIAL REMOVAL AND DISPOSAL

As discussed above, PKC intends to maximise the reuse and recycling of materials on site. Any residual materials which cannot be reused will be disposed of in accordance with waste management regulations.

3.3.5. SITE SURFACING

An integral part of the site Voluntary Remediation was capping of otherwise uncapped areas. This work is underway and estimated to by complete by the end of August 2008. Any damage caused to the site cap during demolition will be made good at the conclusion of demolition activities.

The final profile of the site will ensure the protection of the existing cap and minimise any disturbance to underlying contaminated soil. This is also necessary to protect the groundwater aquifers which have been remediated under the Voluntary Remediation Agreement.

4. ENVIRONMENTAL RISK ASSESSMENT

The assessment and management of risk is a crucial part of industrial operations to identify and minimise major risk contributors in an industrial environment. The main steps involved in a risk analysis are: incident identification, consequence analysis, probability and frequency estimations, and lastly a quantitative risk assessment.

The potential environmental risks resulting from the demolition works at the Port Kembla Copper site are discussed further in the following sections. As outlined in Section 3.2.7 on page 30, the proposed demolition works will comprise three key components; the non-destructive removal of plant and equipment, the felling of large structures (including some equipment) and the recovery or disposal of materials on-site and off-site. The environmental aspects associated with the demolition activities have been listed, and the potential environmental impacts identified. The potential risks have been rated from low to very high in accordance with the methodology outlined in the Australian Standard AS4360:2004 Risk Management (AS4360) and HB436:2004 Risk Management Guidelines Companion to AS4360:2004 (HB436).

The environmental risks have been classified by the matrix method outlined in HB436, whereby the likelihood and consequence of a risk are identified to produce a level of risk rating. The consequence and likelihood of an event is measured on a qualitative scale using Table 6.2, 6.3 and 6.4 in HB436. The level of risk of an event is then determined by combining the likelihood and consequence of an event, as detailed in Table 6.6 in HB436. This approach allows the potentially significant risks to be determined and assessed further.

The risk of the project in an unmanaged scenario is shown, as well as the modified risk rating by undertaking the activities using standard safety and management practices. The risk ratings will likely further reduce after the management practices are further developed, and these will be reflected in the DMP.

Table 1 Potential environmental risks from the project

Environmental Aspect	Activity	Environmental Impact	Original Environmental Risk Rating	Managed Environmental Risk Rating
Hazard and safety	· Dismantling of absorption towers on acid plant	· Residual sulphuric acid in absorption towers will be removed with excess amounts of water resulting in an exothermic reaction and potential generation of acid mist	High	Medium
Air emissions	· Dismantling equipment, including the absorption towers on the acid plant · Felling of large structures · Size reduction and sorting of demolition materials	· Potential release of dust into the atmosphere from process areas and areas where building materials may be present in small quantities · Potential impacts on air quality and stormwater (through deposition) · Residual sulphuric acid in absorption towers will be removed with excess amounts of water resulting in potential generation of acid mist	High	Medium
Noise and vibration	· Dismantling equipment by mechanical means · Felling of large structures · Size reduction and sorting of demolition materials	· Intrusive noise experienced off-site for the short periods of activity · Vibrations damaging off-site structures	Medium	Medium

Environmental Aspect	Activity	Environmental Impact	Original Environmental Risk Rating	Managed Environmental Risk Rating
Traffic and transport	· Moving dismantled equipment around the site for packing and consolidation before despatch · Moving materials around site from demolition activities	· Spillage of material during transport impacting on stormwater or soil · Impact on road network and road safety	Medium	Low
Wastewater	· General demolition activities and release of dust and hazardous material into the air · Hosing down equipment · Spillage of water from plant · Hosing down recovered scrap	· Generation of wastewater contaminated from wash down of equipment and dust release · Escape of wastewater to environment and impacting on stormwater, surface water bodies and potentially soil	Medium	Low
Generation of waste	· Disposal of lubricants · Disposal of materials not able to be recycled · Disposal of hazardous building materials	· Potential for soil and groundwater contamination · Disposal of solid waste to landfill	Medium	Low
Soil	· Dismantling and removal of equipment and structures · Felling of large structures · Transport and disposal of materials from demolition activities	· Generation of waste and spills potentially leading to soil contamination · Exposure of demolition personnel to the soil contamination present at the site	Medium	Low

Environmental Aspect	Activity	Environmental Impact	Original Environmental Risk Rating	Managed Environmental Risk Rating
Water usage	· Consumption during washing down and dust suppression	· Use of potable water resources	Low	Low
Energy and greenhouse	· Dismantling of equipment and demolition by mechanical means · Size reduction and sorting by mechanical means	· Energy consuming implements and equipment · Greenhouse gas emissions from consumption of fossil fuels	Low	Low
Visual amenity	· Removal of site structures · Demolition works	· Probable overall improvement in visual amenity	Low	Low
Socio - economic	· All demolition related activities	· Temporary increase in local employment	Low	Low
Cumulative impacts	· Dismantling and removal of site structures, plant and equipment · Transport, size reduction, sorting and disposal of demolition materials	· Potential combined impacts on the community and environment from the demolition works and neighbouring industries	Low	Low

4.1. MEDIUM ENVIRONMENTAL RISKS

The environmental risk assessment identified three aspects associated with the demolition activities as posing a medium environmental risk after standard mitigation measures. These aspects are:

- Hazard and safety;
- Air emissions; and
- Noise and vibration.

4.1.1. HAZARD AND SAFETY

To reduce any potential for sulfuric acid mist to be generated from the dismantling of the absorption towers associated with the acid plant at the site, the absorption towers will be washed with excess quantities of water to remove any residual sulfuric acid coated on the inner surface of the towers.

The dismantling and washing of the absorption towers will be managed appropriately and in accordance with recognised procedures, and will be detailed in the DMP.

4.1.2. AIR EMISSIONS

The proposed demolition activities may result in the disturbance and release of some dust. Residual dust from the former smelter operations, such as the smelter building, ventilation ducting, main stack, refinery and storage areas, may contain some residues from industrial processes or building materials. The release of the dust and acid mist could adversely impact upon demolition personnel during the works as well as the local community, if not properly managed. In addition, the demolition of all buildings materials must be carefully managed to avoid the emission of hazardous substances.

A demolition air quality strategy will be applied to minimise the impact of airborne dust. The proposed demolition will involve a number of steps to mitigate and monitor possible air quality impacts. Operational areas and major access roads will be watered down during demolition. During strong winds felling operations will cease and commencement of works will be reassessed. Dust generation is best managed through the day-to-day assessment of operations. The effects of dust on health and amenity resulting from demolition activities will be communicated within the demolition team to minimise potential dust causing activities. Concentrations of Total Suspended Particulates (TSP) will be measured throughout the demolition process and monitored against benchmarks.

With regard to the 200m stack, the risk of contaminated emissions has been assessed and rated as low. The stack's surface has previously been decontaminated by low pressure internal washing, which took place shortly before the plant was decommissioned in 2003. The stack was then capped. As a result, there will be minimal or no surface dust in the stack.

The level of penetration into the bricks is negligible. Scaling on the bricks is very low. Samples of the scale and mortar have been sent for chemical analysis. If the scale and mortar analysis return non-hazardous results, the risk will be eliminated. If the analysis returns hazardous results, further quantitative work will be carried out such as sectioning, microscopic investigation and whole brick

chemical analysis. In either case, this risk can be effectively managed so as to minimise any impact on the environment.

Air quality management will be an inherent part of the Demolition Management Plan.

4.1.3. NOISE AND VIBRATION

Noise and vibrations will be generated from the proposed demolition activities potentially impacting on nearby locations. Previous mitigation works will minimise any impact on neighbouring residences, including the noise wall. Truck movements for the demolition activities will not make a material impact on noise due to the exclusive use of Darcy Road for all heavy vehicle movements.

Vibration due to the felling of structures will be minimised as part of the standard demolition practices. Management practices will include the strategic felling of structures to utilise existing buildings as noise shields, as well as emplacement of rubble material to cushion the impact of falling material.

The contractor will follow a demolition noise mitigation strategy for the site to minimise the social impact of noise. This includes informing potentially affected residences in advance as to the extent and timing of noisy activities, scheduling demolition activities such that the concurrent operation of noisy plant and/or activities is limited, limiting noisy activities to set times from Monday to Friday, using existing noise walls such as blending shed, offices and land profiles as temporary noise shields. In addition, the strategy includes noise control inductions of all employees, properly maintained equipment, controlled heavy vehicle movements, provision of a noise hotline, and an open dialogue with the community to explain the noise mitigation concept and community gains from the completion of the project.

The ground vibration will be monitored at strategic perimeter locations during felling of the main chimney, which will cause the most significant vibration impact throughout the project. The volume of explosives required for the felling will be calculated by the specialist explosives contractor uniquely to the construction of the stack and in accordance with the engineering handbook formula. Expected ground vibration due to impact will be predicted using empirical formula. Indications are that the amplitude is considered to be low compared to the relevant code criteria. The detonation of the charge will also cause minor ground vibration. Values will be converted into imperial units and plotted into diagrams to demonstrate that vibrations are expected to be well within the safe range. Seismographic vibration monitoring will be executed at defined location(s) and results will be recorded.

Vibration monitoring and noise management will be inherent parts of the Demolition Management Plan.

4.2. LOW ENVIRONMENTAL RISKS

The remaining nine environmental aspects associated with the demolition activities have been identified as posing a low risk. These aspects are outlined below.

4.2.1. GENERATION OF WASTE

Lubricants and materials generated from the demolition activities which cannot be recycled will be managed and disposed of appropriately. In particular, hazardous building materials will be carefully

and appropriately managed. As part of the demolition works, materials will be recovered and recycled where possible to minimise the environmental impact of the proposed project.

Appropriate and adequate management and mitigation measures are critical to the prevention or reduction of adverse environmental impacts. The generation, management and disposal of wastes from the demolition works will be outlined in the DMP. Any potential reuse options or improvements to management procedures will be identified, which will ensure that the effect of the demolition on resource consumption and landfilling will be minimised.

4.2.2. GENERATION OF WASTEWATER

Wastewater will be generated from the hosing down of equipment and scrap materials, and may also be generated from spillages of water from plant and equipment. The wastewater may contain heavy metals and contaminants from the former smelter operations at the site, or from hazardous building materials such as asbestos. Given that the site is capped and all stormwater and run-off is directed to the Water Treatment Plant, there is little potential for this wastewater to escape to the environment through contaminated stormwater, surface water bodies and soil.

All wastewater will be neutralised and treated at the on-site Water Treatment Plant (WTP) in accordance with the existing DECC licence.

4.2.3. WATER USAGE

Water will be consumed for the wash down of plant and equipment and in dust suppression. The former PKC copper smelting operations required large quantities of water, the proposed demolition works is expected to use significantly less water than the former PKC operations.

As discussed above, water will be treated in the WTP and reused to the maximum possible extent. Minimal top-up water will therefore be required.

4.2.4. TRAFFIC AND TRANSPORT

The proposed demolition works will generate some traffic above current levels to transport wastes and demolition equipment, and from the temporary increased employment. The local road network is adequate for the high levels of traffic associated with the smelter operation, as per the existing consent, and this project will have an insignificant impact on the network's capacity.

A short-term road closure will likely be necessary while the main stack is being demolished, for the course of one afternoon, to establish the exclusion zone. This will be targeted for a weekend so as to minimise the impact on residents and businesses.

4.2.5. SOIL

It is possible that some minor disturbance to the site cap may take place during demolition activities, in the form of cracking or shearing of the bitumen surface. This would not expose contaminated soil, but may render the cap permeable. Should any water ingress be possible, the cap would be repaired immediately to ensure its integrity is maintained.

All building slabs will remain intact during the project, and remain intact at the conclusion of works.

The risk of exposing contaminated soil is therefore very low, and the environmental or health impact of any minor exposure is negligible.

4.2.6. ENERGY AND GREENHOUSE

Energy will be used at the site for the mechanical demolition, dismantling and sorting of plant and equipment. Fossil fuels will be consumed at the site during the demolition works and greenhouse gases will be emitted, however these impacts will not be significant.

4.2.7. VISUAL AMENITY

Visual impacts associated with the proposed demolition works including temporary structures and demolition equipment, will be temporary. The removal of the existing structures will provide probable improvements to the visual amenity at the site.

4.2.8. SOCIO ECONOMIC

The proposed demolition works will generate a positive temporary increase in employment opportunities and the long term impact of the works will be to provide land for the attraction of new industry to the area.

4.2.9. CUMULATIVE IMPACTS

Potential combined impacts on the community and environment from the demolition works and neighbouring industries. Given the site location and proposed activities there is a low risk of cumulative impacts on the community and environment. The proposed facility will only generate short term air or noise impacts, and the traffic movements due to the facility will not be at levels likely to impact substantially on existing flows. As such, measurable cumulative impacts are not expected to result.

All relevant matters will be addressed in the EA in the accordance with their assessable risk and potential impact on the environment.

4.3. DEMOLITION MANAGEMENT PLAN

The EA will include the DMP, so that both can be considered concurrently. The DMP will outline the management of the activities to minimise potential impacts on the surrounding environment. The DMP will be drafted with guidance from the methodology outlined in the Australian Standard AS2601:2001 *The Demolition of Structures* and in accordance with any requirements from the DoP. It will include techniques and methodology, scope of works, a schedule of demolition phases, hazardous material register, traffic management, the environmental objectives and actions and the safety, emergency and contingency plans for the proposed demolition works.

In particular, the DMP will outline the key procedures associated with the demolition works including hazardous material removal, material handling strategy and waste management. In addition, control measures for potential environmental impacts will be examined and addressed in the DMP. This will include dust, stormwater management, noise and vibration and traffic. The DMP will be prepared as part of the EA.

5. CONSULTATION

PKC is committed to effective communication with relevant stakeholders, including the community.

5.1. COMMUNITY

5.1.1. PKC COMMUNITY LIAISON GROUP

Since the plant was recommissioned, and throughout the care and maintenance period, PKC has hosted a Community Liaison Group in order to keep interested locals informed of site activities, and to comply with the conditions of consent. The group continues to meet on a regular basis. The next meeting will be held on Wednesday 20 August at PKC, in which the Group will be informed of the Project, and to give an opportunity for feedback to the company. The Group with be further used as required during the assessment period. Members will also be advised of their right to formally respond to the Project Application.

5.1.2. PORT KEMBLA POLLUTION MEETING

The Port Kembla Pollution Meeting is an informal community, industry and regulator group that has met monthly for several years to discuss 'environmental matters' in the area. When PKC was in operation, it regularly participated in the meeting. PKC intends to prepare a brief for the PKPM. Members will also be advised of their right to formally respond to the Project Application.

5.1.3. MEDIA

PKC plans to also use media where appropriate to inform the community of development progress. Some outlets which will be considered are:

- Illawarra mercury
- Local Nine News
- Local Seven News
- Local Ten news
- Local ABC
- I98 radio
- Wave FM radio

5.2. OTHER STAKEHOLDERS

Further consultation will also be held with a range of regulatory and business contacts. This will primarily consist of face-to-face meetings to include the following stakeholders.

- Wollongong City Council
- Minister for the Illawarra
- Department of Environment and Climate Change
- Department of Planning
- Department of State and Regional Development
- Local parliamentarians
- Illawarra Business Chamber
- Relevant corporations

6. CONCLUSION

Under the requirements of the Environmental Planning and Assessment Act, Port Kembla Copper Pty Ltd (PKC) hereby submits its Preliminary Environmental Assessment for the Director-General of the Department of Planning to prepare the Environmental Assessment (EA) requirements.

Potential environmental impacts will be addressed in the EA, with focus on hazard and safety, air emissions and noise and vibration.