NSW GOVERNMENT | Planning

MAJOR PROJECT ASSESSMENT: IFL Cockle Creek Remediation Project Stage 2

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

October 2010

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EXECUTIVE SUMMARY

Incitec Fertilizers Limited (IFL) proposes to remediate its site at Cockle Creek, Boolaroo in the Lake Macquarie local government area.

The site once formed part of the Pasminco Cockle Creek Smelter (PCCS) and until recently was used for the manufacturing of fertilisers. IFL has ceased production of fertilisers on site but will continue to distribute fertilisers from the site until stored stocks are depleted (sometime towards the end of 2010).

As a result of previous operations, the IFL site (soil and groundwater) is contaminated with a range of substances including heavy metals, phosphorus, sulphate, calcium and asbestos. Of particular concern are the elevated levels of heavy metals present in the soil and groundwater. Due to risks this poses to the environment, the site was declared a remediation site under the *Contaminated Land Management Act 1997* by the Department of Environment, Climate Change and Water.

IFL proposes to remediate the site in stages to enable the land to be used for residential purposes and open space.

The first stage (phase 1), to address the immediate risk of contaminated groundwater migrating from the site, was approved by the Director-General on 17 August 2009. On 12 March 2010 the approval was modified to expand the groundwater treatment system to the southern sections of the site. IFL is now seeking approval for Stage 2 remediation works. These works, described as phases 2, 3 and 4 involve:

- establishment of a containment cell and early remediation works in the northern portion of the Site;
- demolition of the majority of the Site buildings and infrastructure, and the remediation of the underlying soil; and
- excavation and remediation of the soil in the southern portion of the Site, in front of a dam wall shared with the neighbouring PCCS lands.

The Department exhibited the Environmental Assessment of the project from 16 November 2009 until 21 December 2009 and received seven submissions on the proposal, all but one of which were from government authorities. None of the submissions objected to the project subject to the Proponent addressing issues of concern and the inclusion of a number of conditions of approval.

In particular, Lake Macquarie City Council (LMCC) supported the project but requested further detail, particularly in the area of water quality monitoring. Council's main concern was the adequacy of the Heritage Assessment.

Administrators of the adjacent PCCS Remediation and Redevelopment Project strongly supported the project in principle but expressed a number of concerns, notably the need to address cross-boundary implications impacting the PCCS site remediation.

The Department has assessed the merits of the project in detail, in accordance with the relevant requirements of the EP&A Act.

This assessment has found that the remediation strategy proposed is appropriate, and that impacts of the strategy can be adequately mitigated and/or managed to ensure an acceptable level of performance.

In addition, the Department's assessment recognises the need for the project in facilitating the remediation of the IFL site, as well as the adjoining PCCS site, to meet the growing need for residential land and open space areas in the Lake Macquarie local government area.

The Department is satisfied that the project has significant environmental benefits for the area and that it is therefore in the public interest.

Consequently, the Department recommends that the Stage 2 remediation works be approved, subject to conditions.

1. BACKGROUND

1.1 Project Setting and Need

Incitec Fertilizers Limited (IFL) is a large manufacturer of fertilisers and until recently operated a fertiliser manufacturing facility at Cockle Creek, Boolaroo in the Lake Macquarie local government area (see Figure 1). The manufacturing facility was closed in January 2009; however stored stocks will be distributed from the site until the end of 2010.

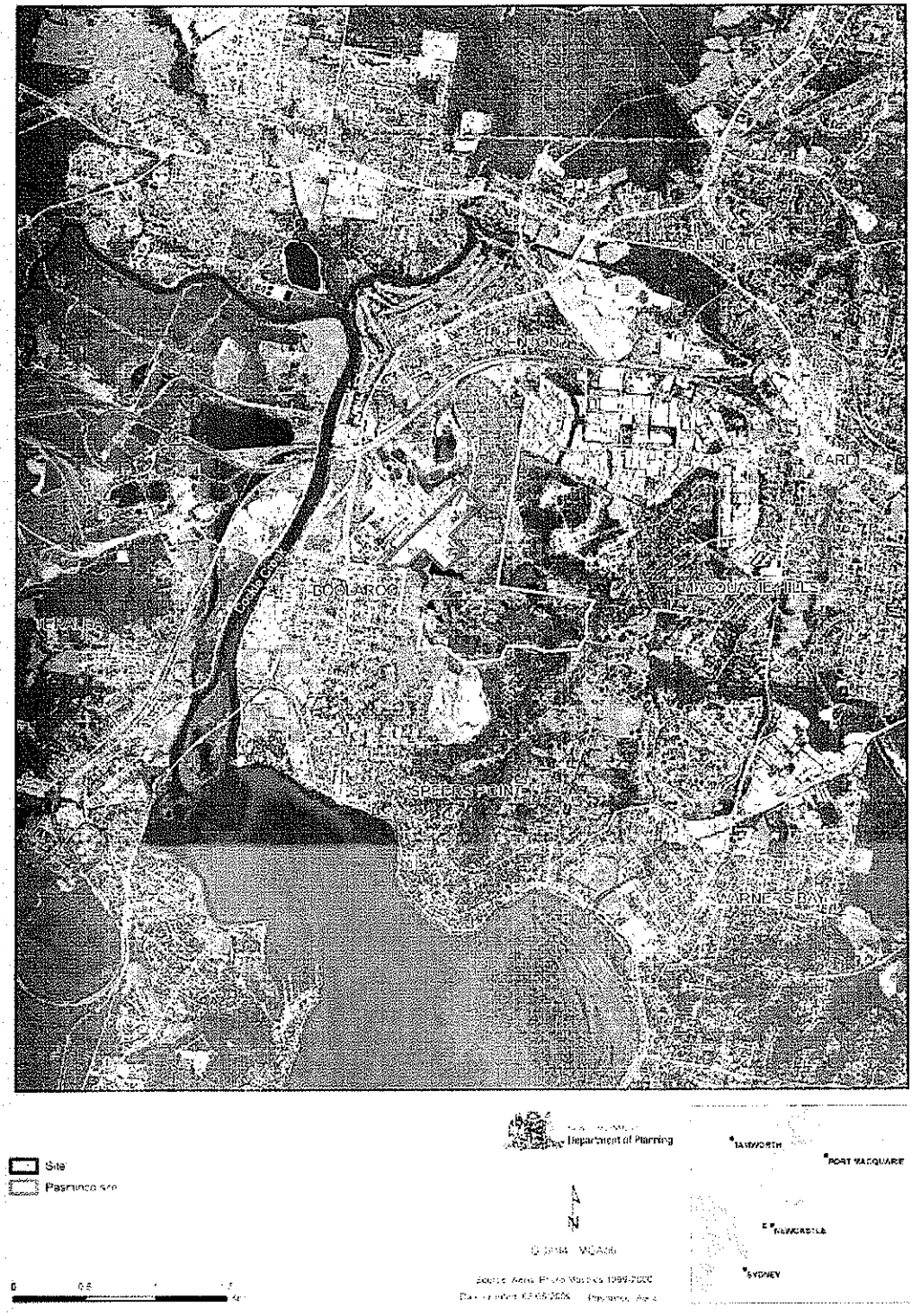

Figure 1: Regional Context

The site once formed part of the Pasminco Cockle Creek Smelter (see the area marked yellow in Figure 1) and was the location of the superphosphate (type of fertiliser) manufacturing facility (production commenced around 1913). When the site was sold to a predecessor of IFL in 1969, the manufacturing of fertilisers at the site continued until early 2009 (see area marked in red in Figure 1).

The site consists of a manufacturing plant, a mill, a number of storage sheds and associated infrastructure including a weighbridge, above ground storage tanks (AST), an office and maintenance area, and a former railway line and gantry.

The layout of the site is shown in Figure 2.

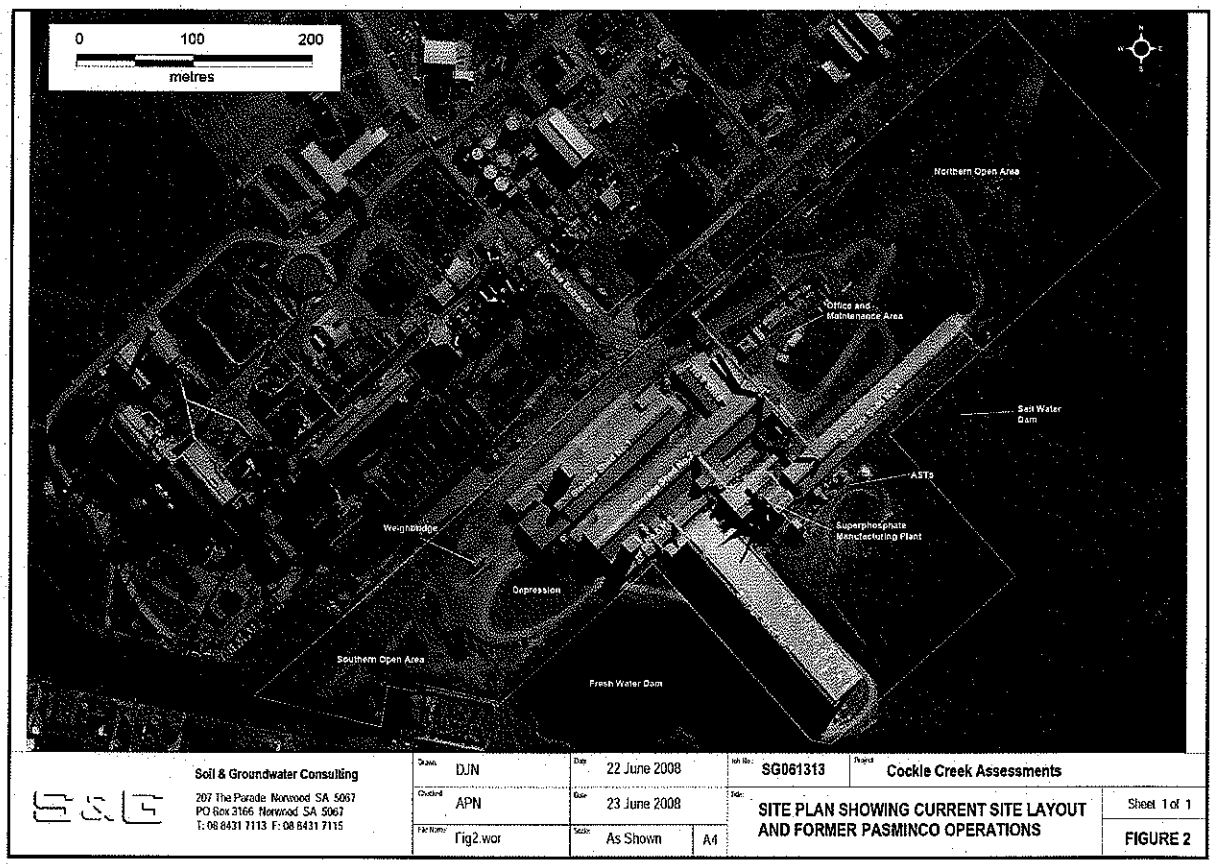

Figure 2: Site Layout

The site is surrounded by the PCCS site. Residential areas are located to the north at Argeton (~800m from the northern site boundary), Macquarie Hills (~550m from the eastern site boundary) and south at Boolaroo (located adjacent to the southern boundary of the site). The Cardiff Industrial Estate lies ~500m to the north-east of the site and is characterised by large light industrial allotments. Cockle Creek, which discharges to Lake Macquarie, is located ~600 to 800m to the west of the site.

As a result of previous operations on site, the IFL site (soil and groundwater) was contaminated with a range of substances including heavy metals, phosphorus, sulphate, calcium and asbestos. The primary source of contamination has been identified as contaminated fill that was placed on the site some time prior to the mid-1950s.

The thickness of the impacted fill ranges from 2 to 3m for the majority of the site, and over 10m along the western edge of the site and in a former creek bed gully. Analysis of the impacted fill material indicates that heavy metals are moderately to highly leachable (i.e., readily released from the fill).

Analysis of the groundwater indicates that the northern portion of the site has the highest levels of heavy metal contamination, which corresponds to the highest soil contaminant concentrations that have been observed on site (see Figure 3).

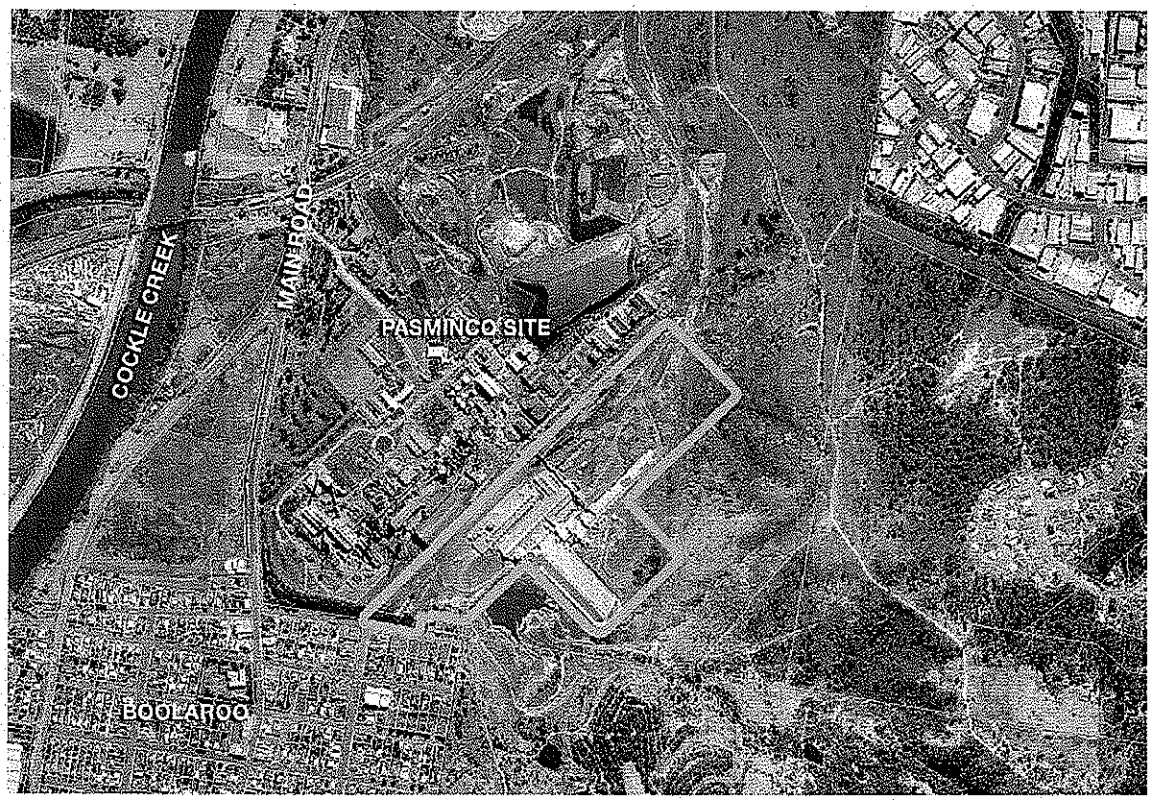

Figure 3: Indicative Contamination Hot Spots at the Site

The Department of Environment, Climate Change and Water (DECCW) considers that the site has been contaminated to an extent that presents a risk of harm to the environment. On 22 July 2005, the IFL site was declared a remediation site under the *Contaminated Land Management Act 1997* (declaration number 21077, area number 3204).

On 27 February 2007, the then Minister for Planning granted project approval for the remediation of the surrounding PCCS site to allow the site to be redeveloped for a range of uses including residential, industrial/commercial and open space. Remediation of the PCCS site is in its final stages and areas to the north, east and west of the IFL site are currently being remediated.

IFL now proposes to remediate its site to enable the land to be used in the future for residential purposes and open space On 23 July 2008, IFL submitted a Voluntary Remediation Proposal (VRP) outlining the proposed remediation works and timeframes for reporting and staging of the remediation works. On 7 August 2008, the DECCW executed a Voluntary Remediation Agreement (VRA), which confirmed that the terms of the VRP were appropriate. The Voluntary Remediation Agreement is now taken to be a Voluntary Management Proposal under recent amendments to the CLM Act.

To address the immediate concern of contaminated groundwater migrating off-site and re-contaminating areas currently being remediated on the PCCS site, IFL proposed to remediate the site in two stages. On 17 August 2009, the Director-General of Planning approved the first stage (phase 1), which covered remediation of groundwater along the north-western boundary of the site including the construction and operation of a groundwater recovery and treatment system. The location of Stage 1 is shown on Figure 4. On 12 March 2010 the approval was modified to expand the groundwater treatment system to the southern sections of the site.

On 12 April 2010, the EPA approved an addendum to the VRP, which reflected the changes to the proposed timing and staging of the project.

Stage 2, the subject of the current project application, is broken down into three phases:

- establishment of a containment cell and early remediation works in the northern portion of the Site;
- demolition of the majority of the Site buildings and infrastructure, and the remediation of the underlying soil; and
- excavation and remediation of the soil in the southern portion of the Site, in front of a dam wall shared with the neighbouring PCCS lands.

The four phases of the remediation are shown in Figure 4.

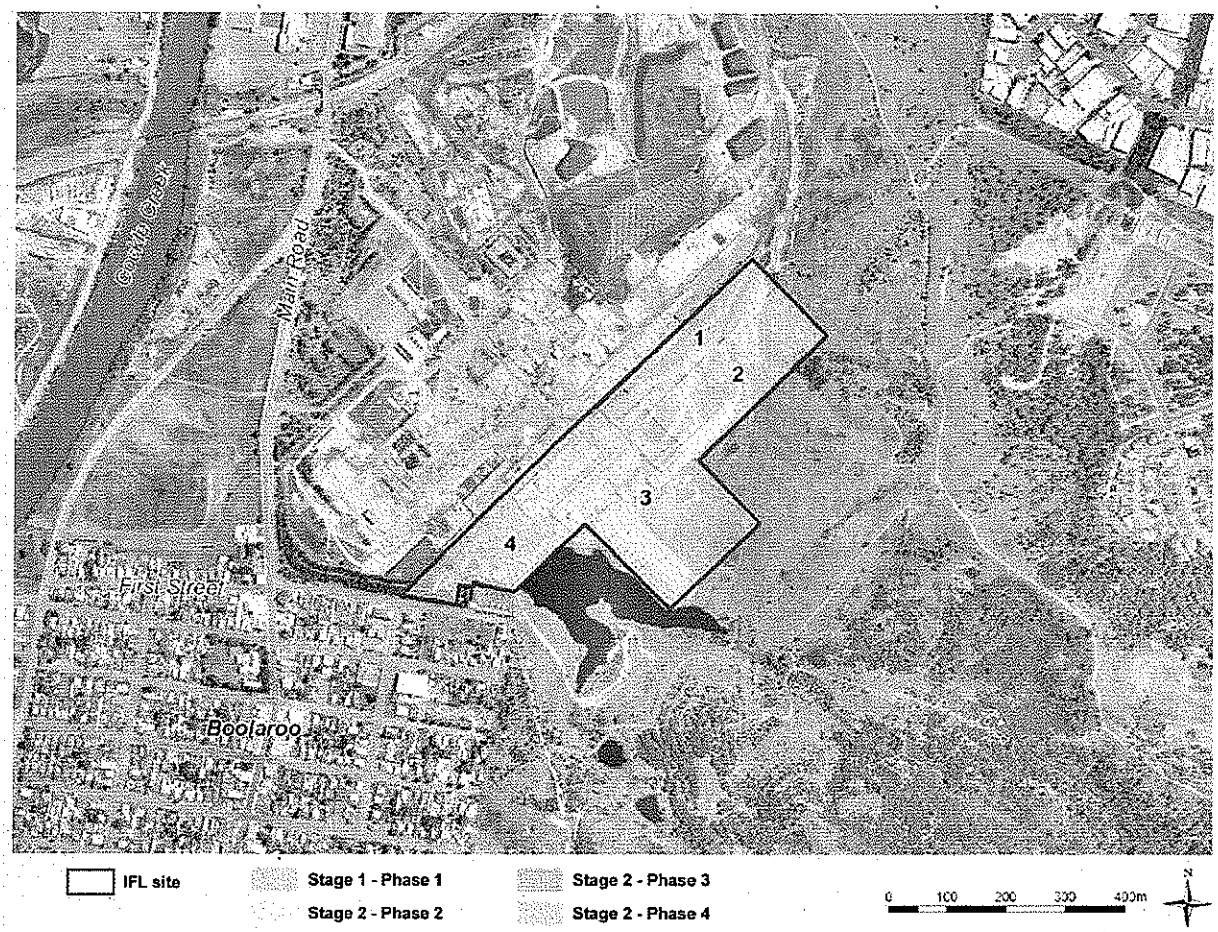

Figure 4: Staging of the Remediation of the IFL Site

1.2 Lower Hunter Regional Strategy and State Plan

The Lower Hunter Regional Strategy identifies land to accommodate the projected housing and employment needs for the region (Newcastle, Lake Macquarie, Port Stephens, Maitland and Cessnock local government areas [LGAs]) over the next 25 years. With an increase in population expected, the strategy outlines that an additional 115,000 dwellings would be required to accommodate the expected population increase of 160,000 people. It is expected that of these 115,000 dwellings, 36,000 would need to be located within the Lake Macquarie LGA. The site is strategically located near the major regional centre of Glendale-Cardiff, where it is expected that 6,200 jobs would be created requiring around 4,000 new dwellings.

The project would facilitate the remediation of the site, to allow the site to be used in the future for residential purposes. As such, the proposal is required to assist in achieving housing targets identified in the Lower Hunter Regional Strategy and as a priority of the State Plan (jobs closer to home).

2. PROPOSED PROJECT

As noted earlier, the Stage 2 works would consist of three phases (phases 2 to 4). While IFL has assessed the impact of all phases being carried out concurrently, it is unlikely that these would all occur at the same time. Further, cross-boundary issues may require flexibility in the phasing of the various components of the remediation, as described below:

2.1 Phase 2 – Northern Area Remediation

Phase 2 would involve the remediation of the contaminated fill and soil in the northern area of the Site, and the progressive construction of the containment cell that would be the final repository for the contaminated material. The cell landform would generally be rectangular in shape, approximately 150m wide by 400m long, with a shaped north-east corner to allow for free surface water drainage around the cell.

The proposed cell extent and landform are shown in Figure 5.

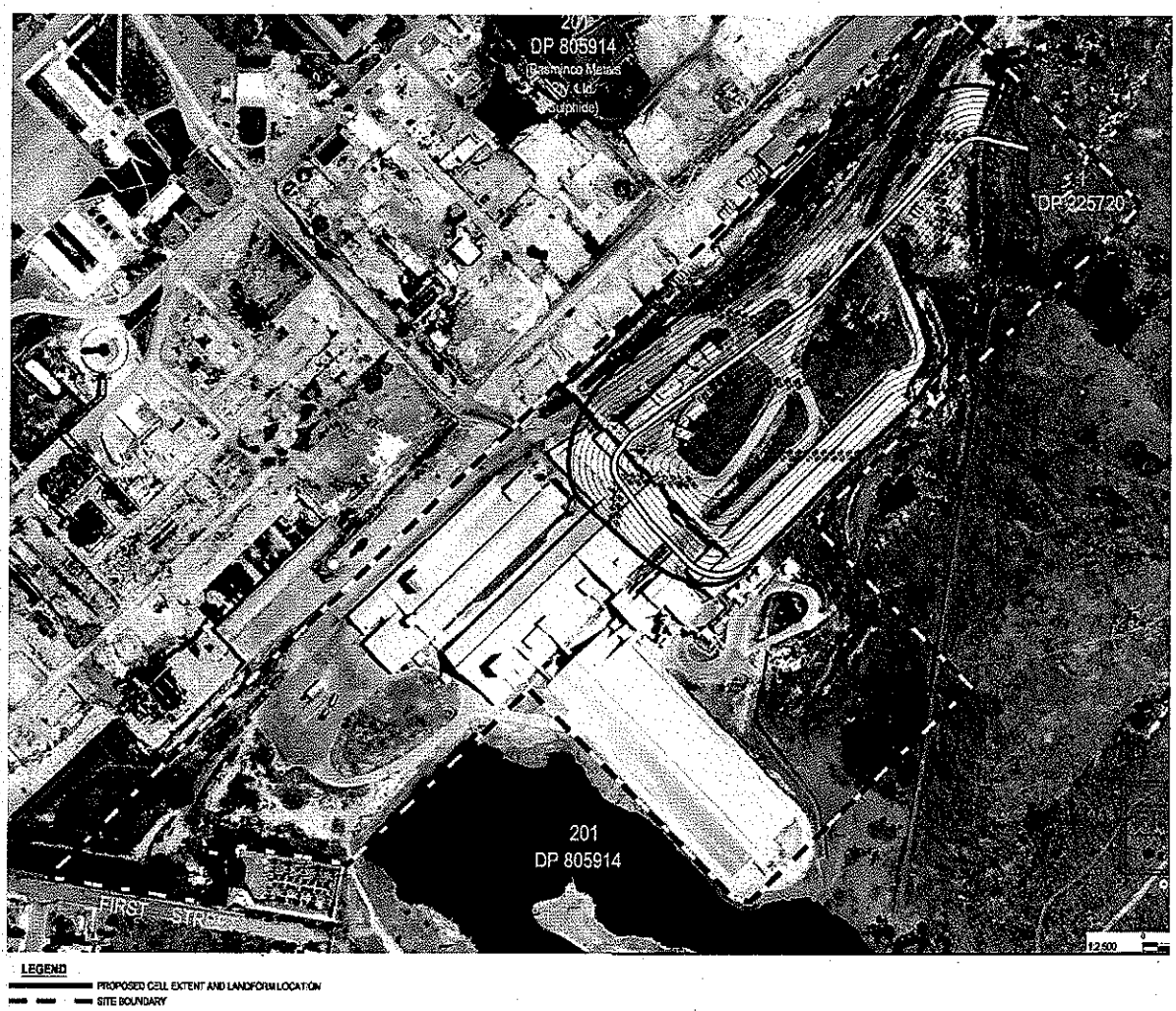

Figure 5: Cell Extent and Landform

Following site establishment activities, the containment cell would be progressively built in sections, starting at the northern part of the site, working southwards. The sequence within each section is shown in Figure 6.

As each section of the cell is excavated, the material would be transferred to dedicated on-site stockpile areas, where materials would be screened. This would be followed by installation of the cell lining system. Once the lining system has been installed, the screened material would be placed in the cell.

Excavated fill and soil would be visually inspected for the presence of asbestos containing material and, after screening to remove other deleterious material, would be stockpiled in dedicated areas. The final excavated surface of the cell would be validated in accordance with the protocol described in the conceptual Remedial Action Plan (RAP).

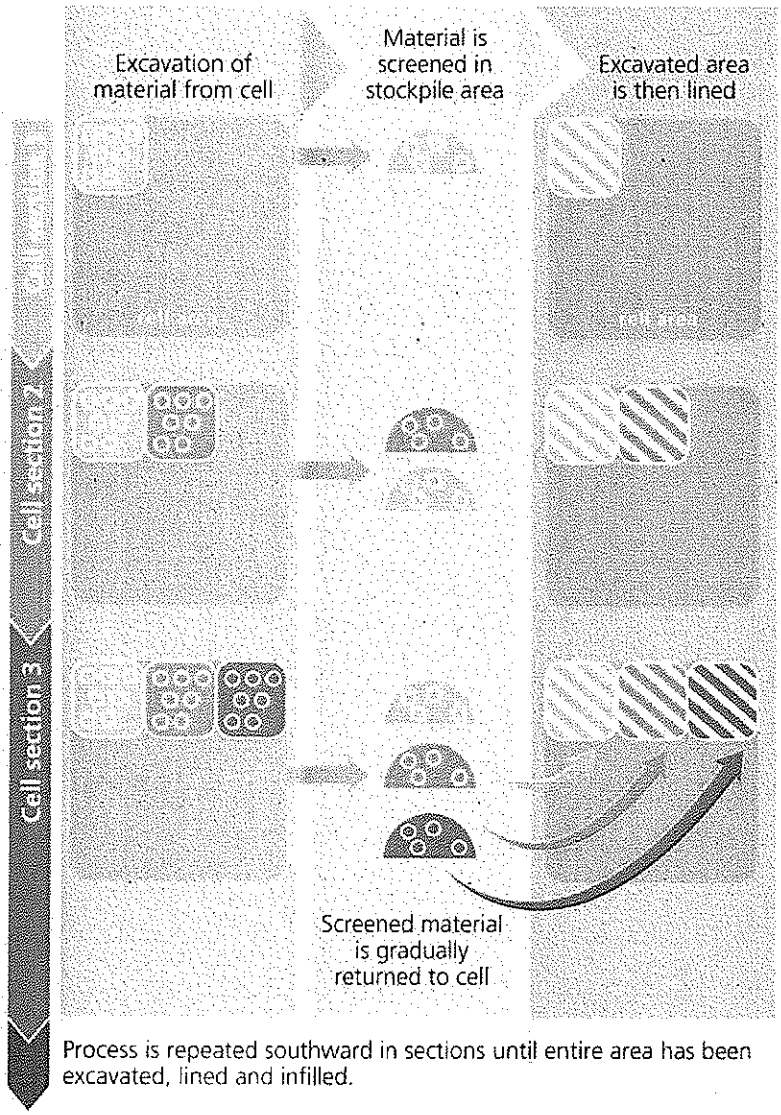

Figure 6: Cell Construction Sequence

During this phase, the groundwater treatment facility would be used to continue treating groundwater and any seepage water from stockpiles and leachate from within completed portions of the cell. Periodic groundwater monitoring would be conducted throughout the remediation program and into the post-remediation phase to validate the effectiveness of the remediation.

The cell would be located in the northern portion of the site, selected on the basis of soil and distribution and site operational constraints. The cell would be designed based on an expected life span of 100 years. The main elements of the cell design would include:

- a moulded landform setback from the property boundaries;
- a graded cell base above the groundwater level to provide for drainage;
- a geo-synthetic composite liner; and
- a geo-synthetic composite top layer with an overlying drainage system and revegetation layer.

The total amount proposed to be excavated during Phase 2 is around 100,000 m^3, with about 10,000 m^3 of screened oversize inert materials to be progressively disposed off-site.

2.2 Phase 3 – Demolition of Central Site Buildings and Infrastructure

Phase 3 of the Stage 2 remediation program would involve the demolition of all site buildings and infrastructure within the central area of the Site. This would include removal of all manufacturing and storage facilities and hardstand areas not required for traffic movements as part of the remediation program.

Uncontaminated waste materials would be disposed of off-site, while asbestos containing materials would be buried within the containment cell during Phase 4.

Following removal of the site buildings, pavements and infrastructure, the contaminated soil from this area of the site would be excavated and placed within the containment cell. As with Phase 2, excavated material would be screened and segregated. Phase 3 will also involve the disconnection of services to the main site buildings.

There would be a total of 20,000 to 25,000 internal truck movements during this phase, together with around 1700 external movements.

2.3 Phase 4 – Demolition of Remaining Site Buildings and Infrastructure

Phase 4 would involve demolition and removal of all remaining site infrastructure, mostly in the Southern area of the site. Screening and segregation of demolition waste and excavated material would be dealt with in a similar manner to the earlier phases.

The final site landform would approximate the natural landform prior to the deposition of waste fill materials from the former smelter operations.

2.4 Subdivision and Easements

IFL proposes a two lot plan of subdivision to separate the containment cell at the northern end of the site from the balance of the site, as shown below in Figure 7.

The subdivision would allow Lot 1 to be managed by IFL in perpetuity, freeing Lot 2 for future low density residential development. It is not proposed that Lot 1 would be further developed. It is intended that it be remediated to a level suitable for open space with low-maintenance vegetation to obviate the need for ongoing erosion and sediment control measures.

There would be some flexibility in the placement of the southern boundary of Lot 1 to allow for a reduction in the length of the cell should the volume of contaminated soil requiring placement be less than anticipated. This is shown by a dotted line in Figure 7.

Both lots created by the proposed subdivision would be provided with appropriate access and services, including electricity and drainage services to Lot 1 for the monitoring and leachate collection system. Lot 2 has access from First Street as well as a right of carriageway across the PCCS site. It is also serviced by power and water.

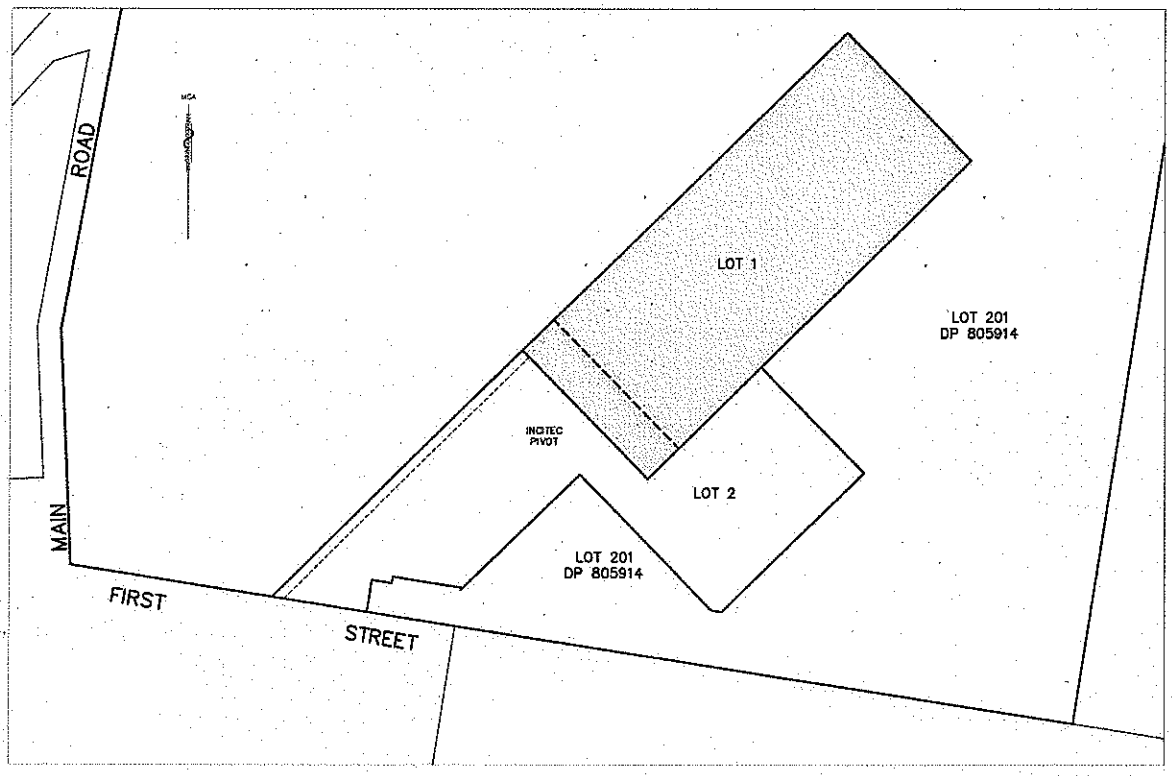

Figure 7: Proposed Subdivision

A number of easements in favour of Pasminco currently exist over the proposed containment cell area in Lot 1. With the cessation of operations at PCCS and the remediation of that site, the easements will no longer be required. The adminstrators of the PCCS site have indicated, however, that easements need to be retained until remediation of the site is completed, although this has been questioned by IFL.

The locations of the current easements are such that is not feasible to relocate the containment cell so as to avoid them. IFL has proposed relocating the affected easements so that they are not affected by the containment cell. The easements affecting Lot one and their possible relocation are shown in Figure 8, which also shows the existing easements:

- Easement for Drainage of Saltwater and Freshwater (marked "C" on in Figure 8);
- Right of Carriageway (marked "F" in Figure 8); and
- Easement for Electricity Purposes (marked "D" in Figure 8).

Up to the present, the PCCS administrators have been unwilling to surrender any of the easements or agree to modify their alignment.

To address the matter, IFL suggested a number of options, which included advice they obtained on the possibility that the Minister could rely on powers under s28(2) of the EP&A Act to suspend the easements. The Department has considered the advice and options provided.

Notwithstanding the Department's desire to resolve this issue, it appears there is some doubt as to the Minister's ability to suspend easements under s28(2) of the Act or to override the easements, and any decision may be the subject of a legal challenge. Despite the Department's view, the option is still available for IFL to pursue matters based on their own advice.

The Department considers that the preferred approach is for IFL to continue to negotiate an agreement with the administrators of the former Pasminco smelter on extinguishing the easements within the area occupied by the containment cell or modify the terms of the easements before the commencement of construction of the containment cell.

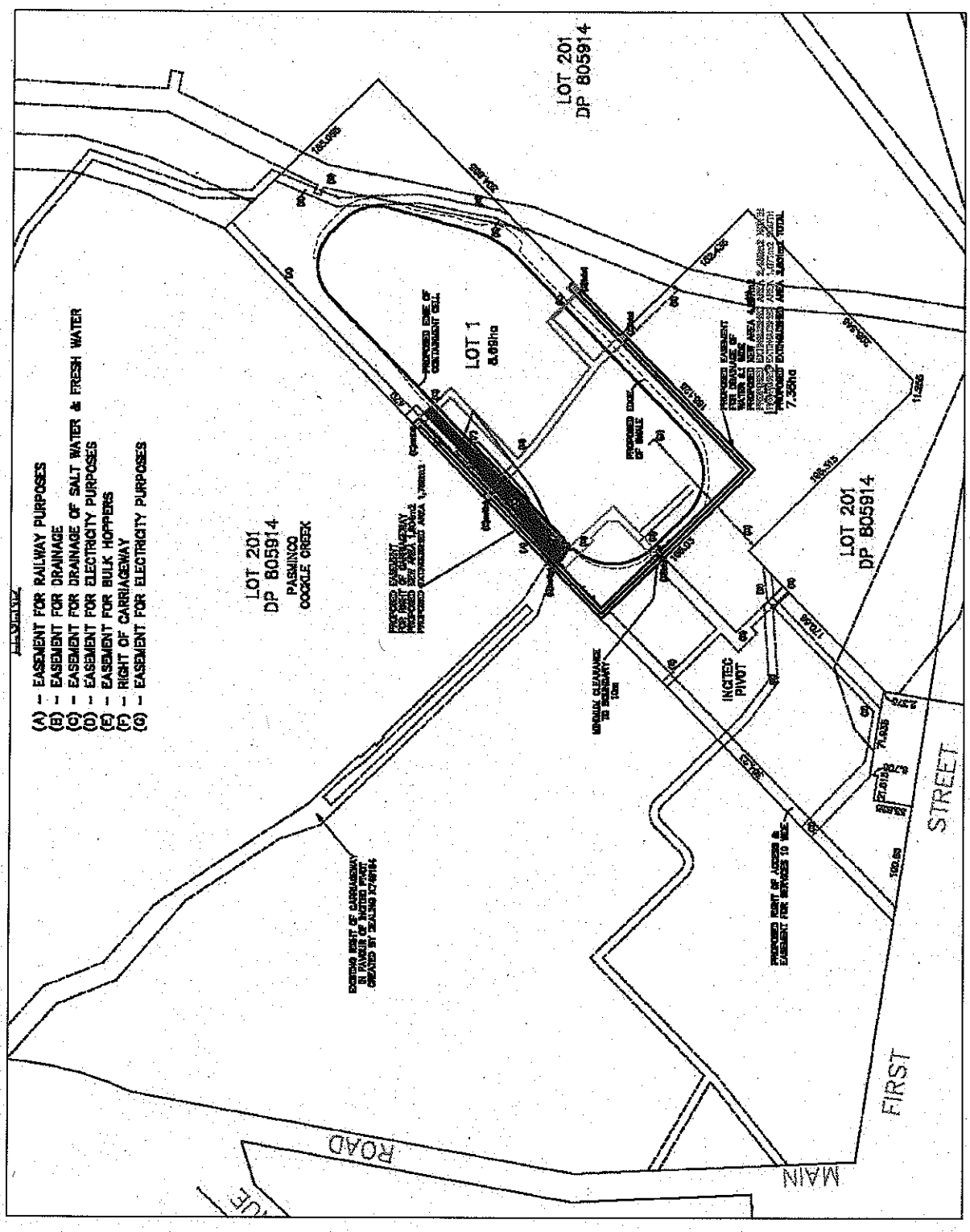

Figure 8: Existing Easements and Possible Relocations

3. STATUTORY CONTEXT

3.1 Major Project

The proposed remediation of the site is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), because it is development for the purpose of remediation of land that is category 1 remediation work on a remediation site, and therefore triggers the criteria in Clause 28(1) of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*.

Under the EP&A Act the Minister is the approval authority for a major project. However, on 25 January 2010, the Minister delegated his powers and functions as an approval authority for certain projects under section 75J of the EP&A Act to the Deputy Director-General. As fewer than 25 public submissions were received objecting to the project, the Deputy Director-General may determine the application under delegated authority.

3.2 Permissibility

The site is zoned 4(1) Industrial (Core) under the *Lake Macquarie Local Environmental Plan 2004* Development for the purpose of remediation is not expressly permissible within this zone.

Notwithstanding the provisions of the local environmental plan, *State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55) stipulates that remediation works are permissible on the land, "despite any provision to the contrary in an environmental planning instrument, except as provided by clause 19(3)". Clause 19(3) is not relevant in this instance as the proposed remediation works are part of a project that is defined as "category 1 remediation works". The proposal is therefore permissible on the site.

Consequently, the Deputy Director-General may approve the project.

3.3 Exhibition and Notification

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

After accepting the EA for the project, the Department:

- made it publicly available from 16 November 2009 until 21 December 2009:
  - on the Department's website, and
  - at the Department's Information Centre, Lake Macquarie City Council's office and the Nature Conservation Council;
- notified relevant State government authorities and Lake Macquarie City Council by letter; and
- advertised the exhibition in the Newcastle Herald and Lake Macquarie News.

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

3.4 Environmental Planning Instruments

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

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

The Department has considered the project against the relevant provisions of several environmental planning instruments (including *State Environmental Planning Policy No. 55 – Remediation of Land*, *Hunter Regional Environmental Plan 1989* and the *Lake Macquarie Local Environmental Plan 2004*).

The Department is satisfied that, subject to the implementation of the recommended conditions of approval, the proposal is generally consistent with the aims and objectives of these instruments (see Appendix C).

3.5 Objects of the Environmental Planning and Assessment Act 1979

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

'The objects of this Act are:

(a) to encourage:

(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,

(ii) *the promotion and co-ordination of the orderly and economic use and development of land,*
(iii) *the protection, provision and co-ordination of communication and utility services,*
(iv) *the provision of land for public purposes,*
(v) *the provision and co-ordination of community services and facilities, and*
(vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
(vii) *ecologically sustainable development [ESD], and*
(viii) *the provision and maintenance of affordable housing, and*

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

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

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

The Department is satisfied that the project can be conducted in a manner that is broadly consistent with the objects of the EP&A Act.

3.6 Statement of Compliance

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

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

4. ISSUES RAISED IN SUBMISSIONS

4.1 Submissions

During the exhibition period, the Department received a total of seven submissions on the project, five from public authorities, one from Lake Macquarie City Council and one from WSP Environmental Pty Ltd on behalf of the Administrators of the Pasminco Cockle Creek Smelter Remediation and Redevelopment Project.

A summary of the issues raised in submissions is provided below. A full copy of these submissions is attached in Appendix E.

The **Department of Environment, Climate Change and Water (DECCW), Mine Subsidence Board, Roads and Traffic Authority (RTA)** and **NSW Health** did not object to the project and provided recommended conditions of approval. In particular, the DECCW indicated a need for the Proponent to make application to amend its Environment Protection License (EPL) No 208 to include *waste activities* as a scheduled activity. A number of new and amended licence conditions were specified by the Agency.

The **Office of Water** (now part of the DECCW) raised concerns that groundwater contamination is likely to persist even after remediation is complete. It recommended that the extraction of potentially contaminated groundwater be prohibited.

Lake Macquarie City Council (LMCC) supported the project but requested further detail, particularly in the area of water quality monitoring. Council's main concern was the adequacy of the Heritage Assessment. Council proposed a number of conditions of approval.

WSP Environmental Pty Ltd strongly supported the project in principle but expressed a number of concerns, including:

- lack of detail in the description of the project, particularly in relation to timing;
- insufficient information on contaminated groundwater issues in the southern part of the site;
- insufficient attention to cross-boundary implications impacting the adjacent PCCS site remediation; and
- cumulative noise and air impacts.

4.2 Response to Submissions

IFL has provided responses to the issues raised in submissions (see Appendix D), as well as a revised Statement of Commitments for the project. These have been made publicly available on the Department's website.

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

5. ASSESSMENT

5.1 Remediation

Need for Soil Remediation

Given that groundwater contamination has been addressed in Stage 1 of the project, one question that arises is whether further soil remediation is required. The extent of contamination in soil and groundwater is detailed in the Conceptual RAP.

Major findings of the soil investigations included:

- elevated concentrations of heavy metals for a large number of fill soil samples with many exceeding the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) health-based investigation levels for commercial industrial land use (HIL F);
- concentrations of total phosphorus were generally elevated in surface and fill samples. The maximum concentration detected was 102,000mg/kg, which significantly exceeds the NEPM ecological investigation level (EIL) of 2,000mg/kg;
- concentrations of sulphate were generally elevated with the maximum concentration detected of 14,000mg/kg;
- Concentrations of calcium were generally elevated with the maximum concentration detected of 241,000mg/k; and
- US EPA Toxicity Characteristic Leach Procedure (TCLP) and Australian Standard Leaching Procedure (ASLP) results indicate that the metals in fill materials at the Site are highly leachable.

Given the degree of leachability of the metal contaminants, in particular, it is clear that remediation of the groundwater without concurrent removal of soil contaminants would be ineffective in the longer term.

Remediation Strategy

Of key concern to the DECCW, is the elevated levels of heavy metals and in particular zinc, lead and nickel, that have been identified on site and their potential leachability towards Cockle Creek.

The *Guidelines for the NSW Site Auditor Scheme (2nd edition)* indicates that soil remediation and management should be implemented in the following preferred order:

1. On-site treatment of the soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level.
2. Off-site treatment of excavated soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level, after which the soil is returned to the site.

3. Removal of contaminated soil to an approved site or facility, followed where necessary by replacement with virgin excavated natural materials (VENM) or material which is in compliance with the relevant guidelines issued by the DECCW at the time of the works.
4. Consolidation and isolation of the soil on-site by containment within a properly designed barrier.

The conceptual Remediation Action Plan prepared for the site investigated alternative options for the treatment and disposal of contaminated soils and groundwater. These included:

Contaminant Destruction

The main contaminants at the site are heavy metals, which are not amenable to destruction techniques.

Treatment Technologies

Two categories of treatment were considered;

- Metal Removal - Soil washing methods can be used for small-scale extraction of contaminants but are considered impractical for the IFL site.

- Soil Stabilisation - Soil stabilisation trials were carried out but were found to be not fully effective in reducing the leachability of the metal contamination.

Off-site Disposal

While off-site disposal would be effective in removing the contaminants from the site, it would involve high transport costs, run the risk of dispersion of contaminated materials during transport and take up valuable landfill space.

Soil Containment

Due to the large volumes of soil requiring treatment and disposal (~200,000m^3), type of contaminants and the end use proposed for the site (low density residential as well as open space), the preferred option for the remediation of the site is removal of the metal impacted soils, which are the primary source of the identified groundwater contamination, to a fully lined and sealed engineered containment cell. This would also remove the primary ongoing source of groundwater contamination at the site.

The Department concurs with the Proponent's conclusion that on-site containment of the contaminated materials should be favoured over off-site disposal.

Asbestos

Site buildings contain a large amount of asbestos containing material estimated to be of the order of 2000 m^3. Two options have been considered for disposal of this material:

- management and transport off-site to licensed waste receiver; and
- management and inclusion within the proposed containment cell on-site.

Off-site disposal carries with it the same disadvantages as with the soil remediation. Accordingly, the Proponent intends to bury asbestos containing material within the film materials placed on the containment cell, ensuring that these materials are encapsulated within the film material and then encapsulated within the containment cell and its capping.

The Department is satisfied that the Proponent has demonstrated that the proposed method of remediation is feasible and effective.

Until commencement of soil remediation, there is potential for contaminated groundwater from the IFL site to re-contaminate areas of the PCCS site that are currently being remediated. Hence, IFL has sought and gained approval to initiate Stage 1 of the remediation project to treat groundwater hotspots.

IFL will continue with groundwater treatment until the DECCW and the site auditor are satisfied that the contaminated groundwater no longer poses a risk to the environment. In addition, the Department has recommended that IFL be required to undertake ongoing groundwater monitoring to confirm the effectiveness of the groundwater treatment process.

Staging of Remediation Works

IFL has discussed its Staging Plan with the DECCW and has submitted a draft *Construction Environmental Management Plan* (CEMP), covering plans for each aspect of the remediation project, including surface water treatment, groundwater management, noise and vibration.

The VMP sets out the requirements for the preparation of *Detailed Remediation Action Plans* (D-RAPs) for each phase of the project and the DECCW has recommended conditions of approval to ensure these plans are consistent with NSW EPA requirements and that they pay specific attention to prevention of off-site migration of dust, sedimentation and contaminated water.

Recommended conditions of approval require the Proponent to:

- prepare and submit a Staging Plan and a final CEMP to the Director-General and the DECCW for approval prior to the commencement of remediation works;
- carry out remediation and validation generally in accordance with the Staging Plan; and
- prepare detailed Remediation Action Plans for each phase of the remediation works.

Containment Cell

The integrity of the containment cell is crucial to the success of the project. The Site Auditor has commented that the draft cell design is in general accordance with the relevant sections of the NSW EPA guidelines. The DECCW has recommended conditions of approval, which will ensure that the final cell design is reviewed and approved by the Side Auditor, prior to submission to the DECCW for final approval before commencement of construction.

The site is located within a Coal Mining Lease within the Lake Macquarie Mine Subsidence District. The Mine Subsidence Board has indicated the need to ensure the cell will not be damaged by predicted levels of mine subsidence in the area. Recommended conditions of approval include design parameters and require the proponent to submit final drawings to the Board prior to the commencement of construction. Certification of the drawings by a qualified geotechnical or structural engineer would also be required.

The DECCW has also indicated that its officers will progressively inspect construction of the various parts of the cell and review quality assurance information before giving approval to fill the cell.

As indicated in section 2.4, the area to be occupied by the containment cell is affected by a number of easements in favour of Pasminco. As previously discussed, the Department has considered a number of options to either extinguish or modify these easements. However, the Department considers that at this stage, the most appropriate option is for IFL to continue their negotiations with the administrators of the former Pasminco smelter towards an agreed outcome.

Once the construction phase of the project and the filling and capping of the cell are complete it will be vital to ensure that contaminated material continues to be fully contained within the cell. The recommended conditions of approval require the proponent to prepare and implement a Site Environmental Management Plan (SEMP) covering such aspects as:

- plans for groundwater and surface water quality monitoring;
- a description of the roles and responsibilities of all relevant employees involved in the operation of the cell;
- a Cell Operation and Maintenance Plan which details environmental controls and measures to be applied to the operation of the containment cell including details of leachate management and inspection and maintenance of the capping;
- means by which environmental performance can be periodically monitored, reviewed and improved, where appropriate; and

- operational requirements prescribed by the Site Auditor and the qualified geotechnical engineer overseeing the works.

Additionally, the recommended conditions of approval require IFL to certify there is a public positive covenant over the cell to ensure the ongoing maintenance, funding and monitoring of the completed containment cell.

Validation

A key requirement of the soil remediation program is that it should provide a final surface that is suitable from both a contaminant status and aesthetic perspective that is suitable for low density residential use for the area of the site outside the containment cell and its associated buffer areas.

The containment cell and associated infrastructure at the northern section of the site is intended to be suitable for open space uses. The central and southern areas are intended to be suitable following remediation for residential or open space uses.

The validation of the final surface as being suitable for the intended uses is a critical element of the remediation. The conceptual RAP notes that the protocol for surface validation is yet to be confirmed with the site Auditor, although provisional discussions have occurred. It is intended that a detailed site validation plan would be developed for the site in consultation with the Site Auditor to ensure that all stakeholders are aware of the validation works proposed and to provide a documented basis for the validation works. The validation plan would include a:

- statement of the validation objectives and a summary of the validation methods to be used;
- description of the validation criteria and the methodology for determining compliance;
- protocol for the field testing and the laboratory analytical program;
- plan of the validation program;
- protocol for addressing areas of the site that do not meet the validation criteria, including delineation, excavation and re-validation; and
- a method for reporting the validation results.

The Department is satisfied that this approach is in accordance with the requirements of SEPP 55 and will ensure that the site will be suitable for its proposed future use. Conditions of approval are recommended to require that:

- Site Audits are conducted throughout the project and at its conclusion;
- remediation is certified as having been carried out in accordance with the D-RAPs and any recommendations of the Site Auditor and conditions of the Project Approval; and
- validation reports, Site Audit Statements and Site Audit Reports are submitted to the Department and the DECCW.

Additionally, the Department has recommended a condition of approval requiring IFL to commission an annual independent environmental audit during the duration of the project.

The Department is satisfied that with the recommended conditions of approval, any potential impacts of the remediation on the environment would be adequately managed.

5.2 Other Issues

Other issues raised during the assessment process, and the Department's consideration of the issues, are summarised in Table 1 below. It should be noted that a number of these issues were also dealt with during the assessment of the approved Stage 1 remediation project, which covered the commencement of groundwater treatment. Any conditions of approval of that project will remain in force unless modified by conditions associated with the current project.

Table 1: Summary of Other Issues

Issue	Assessment	Recommended Conditions
Soil and Water	• Potential construction impacts relate to erosion and sedimentation and exposure of contaminated soils/materials as well as acid sulphate soils during excavation and demolition works. • IFL proposes to conduct a baseline groundwater monitoring program before commencement of Stage 2. Periodic groundwater monitoring of selected wells across the site would also be carried out throughout the remediation program. • Detailed surface water and groundwater management plans would be prepared for each phase of the project. • Water quality impacts from the operation of the project are expected to be minimal. • All chemicals used for the treatment of groundwater would be stored within an enclosed structure and IFL would rely on its existing stormwater management system to treat and dispose of stormwater. • Groundwater from the site flows to Cockle Creek. The project is to remediate known contamination and as such the Department is satisfied that the project would improve groundwater quality and ultimately the water quality of Cockle Creek. • However, it is acknowledged that some groundwater contamination is likely to persist even after the completion of remediation. There is a need to ensure that potentially contaminated groundwater is not extracted by future landholders.	• Recommended conditions require IFL to: - not pollute nearby waters; - maintain strict discharge limits; - report to the DECCW on the design, operation and performance indicators of the selected surface water and groundwater treatment plant(s); - use only Excavated Natural Material or Virgin Excavated Natural Material for any filling required; - revise the Surface Water Management Plan; - store chemicals, oils and fuels in accordance with Australian Standards and DECCW's guidelines; and - monitor groundwater levels and quality to monitor the effectiveness of the groundwater treatment system. • Recommended conditions prohibit the extraction of shallow groundwater from the site, except for use on unremediated areas during the remediation process.
Noise	• Potential noise impacts relate to: - construction of the containment cell - excavation and screening of impacted material; - placement of impacted material in the cell; - demolition of buildings and plant; - operation of groundwater/surface water treatment plants; - internal and external truck movements; and - reinstatement of the site; • The greatest noise levels are predicted to be during Phase 3. • The closest noise sensitive receivers are located at Boolaroo approximately 500m to the south of the proposed remediation works Residents are Macquarie Hills are located approximately 800m to the east of the site. • Given the limited hours of construction and operation, the construction works would have minimal impacts on nearby sensitive receivers. • The water treatment plant(s) would operate 24 hours a day, 7 days a week. However, operational noise is expected to be minimal. • The Department is satisfied that noise impacts from the project would be satisfactorily managed.	• Recommended conditions require IFL to; - comply with strict hours of construction and operation; - comply with noise limits as specified in the environment protection licence for the site during operation; - prepare a Traffic Noise Management Strategy (TNMS) to ensure that all feasible noise management strategies for vehicle movements are identified and implemented; and - limit truck movements to and from the site to the operating hours of the project.

Issue	Assessment	Recommended Conditions
Air Quality	• Construction works have the potential to disturb contaminated soils and generate dust emissions. • Traffic movements may also be the source of dust emissions. • IFL has indicated that DECCW criteria for heavy metals and in particular lead would not be exceeded. • IFL has outlined a number of measures to minimise dust emissions including storing fill in enclosed areas, watering of exposed areas, covering of any stockpiles and incoming or outgoing truck loads and cleaning of roads. • At Council's request, IFL has undertaken to provide Council with air quality monitoring results. • The Department considers that the measures proposed are suitable. • Given the separation distance to residents (>500m), the Department is satisfied that impacts would be minimal and that any residual impacts could be managed.	• Recommended conditions require IFL to: - implement dust management measures during the life of the project; - update and implement the Air Quality Management Plan; and - control dirt and dust arising out of vehicle movements.
Heritage	• No known Aboriginal heritage items are located on site. • Stage 1 works required the removal of the disused railway line and gantry. Additionally, Stage 2 would involve removal of a sandstone and brick building dating from the late 1890s and a number of sheds. • While these items are not listed as heritage items under the Lake Macquarie LEP or State Heritage Register, IFL and Council agree that these items are of local significance. • Council considers that IFL should further assess the significance and investigate options for the retention and re-use of these structures on site. • IFL has commented that retention of many of the heritage items would be difficult because of the level of contamination. Additionally, it considers that the Heritage Assessment has been undertaken in accordance with the NSW Heritage assessment criteria and is adequate for the assessed level of significance. • While the Department is generally satisfied with the steps proposed by IFL, it agrees with Council that it is desirable to consider the IFL and adjacent PCCS sites as a unified whole. Accordingly, the Department recommends that the work be carried out consistently with the Heritage Interpretation Plan (HIP), for the two sites, lodged with Council.	• Recommended conditions require IFL to: - cease works if any previously unidentified Aboriginal or historical objects are uncovered during the remediation works; and - engage in further consultation with respect to retention and storage of artefacts, identified and removed as part of the demolition process.
Waste	• Waste generated during construction would mainly consist of contaminated soil displaced by trenching or drilling of wells for the groundwater treatment system or excavation for cell construction. • Waste generated during operation would include waste from: - clearing of grass and shrubs (green waste); - machines and vehicles; - screening of oversized material from excavated materials; - demolition of buildings (including asbestos); and	• Recommended conditions require IFL to: - classify waste generated by the project according to DECCW guidelines; - minimise off-site migration of stored waste; and - ensure lawful disposal of any waste that cannot be re-used or retained on site.

Issue	Assessment	Recommended Conditions
	- domestic waste • IFL proposes to store all contaminated materials on-site (either within an enclosed building or stockpiled), with these materials to be placed in the containment cell. • Other non-contaminated waste would be disposed of at an appropriate facility or re-used on site. • The Department considers that the measures proposed by IFL to manage waste generated by Stage 2 are appropriate.	
Traffic and Access	• Traffic impacts from the project are anticipated to be relatively minor in relation to the background traffic levels. However, the RTA has raised concerns over turning vehicles at the intersection of the site access road with TC Frith Avenue, which is a classified (State) road. • Accordingly, the RTA considers that there should be turning restrictions at the intersection during morning and afternoon peaks and that warning signage should be erected. • The RTA has also recommended that IFL should be required to prepare a formal Traffic Management Protocol (TMP). • The Department considers that the measures proposed by the RTA will facilitate safe vehicular access to the site.	• Recommended conditions require IFL to: - provide parking and queuing areas on-site for all vehicles accessing the site during remediation works; - install warning road signs along the entrance to the site; - if required, enter into a Works Authorisation Deed (WAD)or other arrangement with the RTA; - prepare a Traffic Management Protocol; and - comply with turning restrictions.
Flora and Fauna	• Impacts on flora and fauna during construction and operation are expected to be minimal, given the developed nature of the site. The main impact is likely to be from weed invasion. This would be managed through the final Construction Environmental Management Plan (CEMP) • The Department is satisfied that Stage 2 would have minimal impacts on flora and fauna.	• NA

6. RECOMMENDED CONDITIONS

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

- prevent, minimise, and/or offset adverse impacts of the project;
- set standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The Department has provided the draft conditions of approval for the project to relevant government authorities for comment, and has incorporated these comments into the conditions of approval where appropriate.

7. CONCLUSION

The Department has assessed the merits of the project in accordance with the requirements in the EP&A Act.

This assessment has found that the impacts of Stage 2 works can be mitigated and/or managed to ensure an acceptable level of environmental performance.

The project is required to address the ongoing risk of contaminated groundwater migrating from the site and the Department is satisfied that it would reduce the risk to the environment through the removal of known contamination

The project would also facilitate the remediation of site and the adjoining PCCS site, which would be used in the future for residential purposes, and as such would assist in achieving the housing targets identified in the Lower Hunter Regional Strategy.

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

8. RECOMMENDATION

It is RECOMMENDED that the Deputy Director-General:

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

Chris Ritchie 5/11/10
Manager, Industry
Mining and Industry Projects

Chris Wilson 8.11.10
Executive Director

Richard Pearson 11/11/10
Deputy Director-General
Development Assessment and Systems Performance

APPENDIX A: SUMMARY OF CONDITIONS OF APPROVAL

Aspect	Condition	Requirement
Schedule 2: Administrative Conditions		
Administrative Conditions	1	Places a general obligation on the proponent to minimise harm to the environment
	2 - 6	Specify the Terms of Approval and Limit of Approval.
	6 - 7	Requirement to meet all statutory requirements and amend EPL 208 to include *Waste Activities* and *Contaminated Soil treatment* as scheduled activities.
	8	Requirement that the proponent shall make relevant information available to the public free of charge.
	9 - 10	Requirement that the Department and the DECCW shall be promptly informed of any circumstances that could affect the success of the remediation or any failure to comply with project conditions or requirements.
Structural Adequacy	11	Required that the Proponent ensure that any new buildings and structures or modifications meet relevant BCA requirements
Demolition	12 - 13	Requires all demolition work to be carried out in accordance with the relevant Australian Standard and that an Asbestos Management Plan be prepared before commencing any work involving the handling of asbestos.
Protection of Public Infrastructure	14	Requires the Proponent to bear the costs of relocating or repairing any public infrastructure affected by the project.
Operation of Plant and Equipment	15	Requires the Proponent to properly operate and maintain all plant and equipment used on site.
Subdivision	16	Requires the proponent to ensure lots are serviced, easements created and plans submitted to the Director-General before issue of a Subdivision Certificate
Staged Submissions	17	Allows the Proponent to progressively submit plans or programs with the approval of the Director-General
Schedule 3: Remediation Works		
Plans and Programs	18 - 19	Requirement to prepare a staging plan and a final CEMP and to carry out remediation and validation generally in accordance with the plans.
	20	Requirement that Detailed Remediation Action Plans (D-RAPs) be prepared and approved for each phase of the remediation.
	21 - 23	Requirements covering engagement of a Site Auditor and the preparation, submission and approval of validation reports, Site Audit Reports and Site Audit Statements.
Containment Cell	24 - 25	Requirements that various elements of the cell design be submitted to, and approved by, the Mine Subsidence Board, the Site Auditor, and the DECCW prior to the commencement of cell construction.
	26	Requirement that construction not commence until agreement is reached on extinguishment or modification of easements within the area to be occupied by the cell.
	27 - 33	Requirements covering containment cell construction restrictions, quality assurance and compliance certification at the completion of the cell.
Schedule 4: Environmental, Management, Monitoring and Auditing Conditions		
Project Works	34 - 35	Requirements that the Proponent submit the CEMP to the Site Auditor and to the DECCW for approval and then implement and maintain all the measures and controls in the CEMP.
Soil and Water	36 - 37	Discharge limits, and requirements covering the bunding and storage of chemicals, fuels and oils.
	38	Requirement that all fill brought to the site be VENM or ENM unless otherwise agreed by the DECCW.
	39 - 40	Requirement for the Proponent to revise the Surface Water Management Plan and not to commence installation of the groundwater/surface water treatment plant(s) until the DECCW has approved the variation to EPL 208.
	41	Prohibits extraction of potentially contaminated shallow groundwater on the site, except for use on unremediated areas during the remediation process.
Air Quality	42 - 45	Requirements to minimise dust and odour generated by the project, to revise the Air Quality Monitoring Plan in the CEMP prior to commencement of construction and to share monitoring data with the adjoining PCCS remediation project.
Noise	46 - 47	Noise limits and limits on construction and operation hours.
	48	Requires a Noise Audit of the project to the satisfaction of the Director-General at prescribed intervals.
Cultural Heritage	49	Requirement to cease works if any previously unidentified heritage items are uncovered and to seek expert advice.

Aspect	Condition	Requirement
	50	Requirement to consult in respect of the re-use or retention and storage of artefacts for future use in interpretive displays.
Waste Management	51	Requirement to store and dispose of waste appropriately.
Traffic and Transport	52 - 54	Requirement covering access restrictions, safety signage and preparation and implementation of a Traffic Management Protocol (TMP).
	55	If required by the RTA, requires the Proponent to enter into a Work Authorisation Deed or other agreed arrangement with the RTA.
	56	Requires that all parking generated by the project be accommodated on site and that there is no queuing on public roads.
Annual Report	57	Requires the proponent to commission and submit to the Director-General an annual Environmental Management Report for the duration of the remediation works.
Auditing	58	Requires the proponent to commission and submit to the Director-General an annual Independent Environmental Audit of the Project for the duration of the remediation works.
Post-completion Management	59	Requires the Proponent to prepare and implement a Site Environmental Management Plan for ongoing post-completion management of the containment cell.
	60	Requires IFL to satisfy the Director-General that there is a public positive covenant over the cell to ensure the ongoing maintenance, funding and monitoring of the completed containment cell.
Incident Reporting	61	Requirement to report any incidents.
Compliance	62	Provides for the Director-General to require updates from the Proponent on compliance with any of the conditions of the approval.