

Your reference: DOC12/3676
Our reference: 10/2188_06_0184 Mod 3
Contact: John Coffey

Mr Chris Ritchie
Department of Planning & Infrastructure
23 Bridge Street
Sydney NSW 2000

Dear Mr Ritchie

Pasminco Cockle Creek Remediation (06_0184 Mod 3)

I refer to your correspondence of 24th January 2012 and subsequent information from Minter Ellison of 14 March 2012 with regard to the application by Pasminco Pty Ltd for an amendment to their existing development approval to amend the containment cell liner and capping design. The application being made under Section 75W of the *Environment Planning and Assessment Act 1979*.

The amendment seeks to change to the use of a composite cell liner (geomembrane and compacted clay) and geosynthetic drainage system on the barrier layer and to flatten the gradient of the new drainage layer/barrier slope from 3% to 2%. This change would apply only to those areas of the cap that have not already been completed, using the currently approved capping design.

As you requested, the Environment Protection Authority (EPA) has reviewed this application, most specifically the documents:

- Letter from Minter Ellison titled *Section 75W – Application to Modify Project Approval No. 06_0184 Pasminco Cockle Creek Smelter Pty Ltd (Subject to Deed of Company Arrangement)* and dated 16 December 2011.
 - Letter from Golders Associates titled *Pasminco Cockle Creek Smelter: Proposed design changes for containment cell cap* dated 15 December 2011
 - Letter from Minter Ellison dated 14 March 2012, with attachments from Golder Associates.
- Noting that the finalisation this response has been delayed, pending a reply from the applicant on our questions raised about some of the design details which was not received until 20 March 2012.

Based on our review we provide our comments and recommended consent conditions in Attachments 1 and 2 respectively.

Should you have any questions with regard to this matter, please contact John Coffey on 9995-5621.

Yours sincerely

NJL 29/3/2012

NIALL JOHNSTON
Manager Contaminated Sites
Environment Protection Authority

ATTACHMENT 1 – Comments

The EPA considers the general concept of a change from the use of a compacted clay barrier layer and drainage system to a synthetic barrier layer and geosynthetic drainage system as justified, both in terms of the difficulty in sourcing the volume of appropriate clay for the currently approved barrier layer and the need for increased storage space. We consider the change to a LLDPE liner feasible in the light of the high compaction rates being achieved for fill in the cell and the resulting low potential for both the likelihood and the degree of settlement of the cell.

We provide the following advice with regard to our opinion of the details of this amendment.

Barrier layer system:

It is proposed to change the cell barrier layer from:

- 600 mm thickness clay liner; to
- 1 layer of 1mm thick linear low density polyethylene (LLDPE) with 100 mm clay

The use of LLDPE as a cell barrier material is very commonly backed up by an effective secondary clay barrier, for which the clay layer would be in the range of 500 to 1000 mm. So while there is a clay layer, we consider the thickness of only 100 mm thickness provides mainly a protective bedding material rather than a secondary barrier layer.

Accepting that one of the objectives of this amendment is to increase the storage volume of the cell by reducing the thickness of the clay barrier by 500 mm, we consider that the barrier performance of the cell capping is now totally dependent on the LLDPE. To have an appropriate level of barrier protection with this design, with only the underlying 100 mm of clay, the EPA recommends that the LLDPE barrier should be a minimum thickness of 1.5 mm.

Drainage layer

The proposal is to change from:

- 150 mm of drainage gravel, overlaid by a geotextile and containing a network of drainage pipes; to
- A geocomposite drain (geonet drain core with geotextile filter, bonded to both sides) of thickness of 5-10 mm placed over a network of drainage pipes on the LLDPE liner.

The use of geocomposites for this function is widely practised and accepted by the EPA. Based on our experience of the use of geocomposites in such service the EPA recommends that:

1. proposed geocomposite drainage system must provide equivalent hydraulic transmissivity to the currently approved gravel layer;
2. the geonet must be tri-planar high density polyethylene, manufactured or covered with a geotextile fabric on the upper surface;
3. the thickness of the internal drainage core of the geonet must be minimum of 10mm, and
4. to ensure the effectiveness of the drainage pipes system, they be positioned in an invert in the LLDPE barrier system as suggested by the applicant or an equivalent system.

Top and subsoil layers

The proposed use of the cap for recreational purposes is supported by the EPA, enabling community use of the area and engaging the local stakeholders in a portion of the site grounds works. An initiative anticipated to make the maintenance of the cell cap more sustainable. This does though increase the level of activity, including construction and hence the potential for disturbance of the cell LLDPE barrier layer. If approved the cell would only have a 1.5 mm LLDPE barrier to water recharge into the cell and at the same time, no longer have an evident indicator gravel drainage layer of the starting of what would have been the clay barrier layer.

For these reasons the EPA considers the level of protection of the proposed LLDPE barrier layer is not adequate and needs to be increased. To achieve this, the EPA recommends amendments to the top and subsoil layers above the LLDPE:

1. An increase in the total thickness of topsoil and subsoil above the geocomposite drain and LLDPE barrier by 250 mm, taking the total thickness from 750 mm to 1000 mm; and
2. That at no less than 250 mm above the geocomposite drain and LLDPE barrier a high visibility marker mesh layer be placed across the cell cap; or
3. an equivalent increase in the protection of the LLDPE barrier layer be provided.

The proponent should submit a comprehensive design, manufacturing and construction and Quality Assurance/Quality Control details to the EPA. The submission must contain full design details of the engineered features of the proposed alternative cap, including detailed plans, specifications and engineering drawings. Particular attention should be paid to the design of cap drainage and cap penetration points in connection with the proposed future use as a football facility. The manufacturing and construction quality assurance program must contain sufficient details of the proposed installation methods, tests, inspections and other verifications to demonstrate that all materials and constructed features will conform to the required plans and specifications.

ATTACHMENT 2 – Consent conditions

Prior to commencement of construction of the containment cell LLDPE capping system the Proponent shall prepare and submit to the Department of Planning and Infrastructure (DP&I) and Environment Protection Authority (EPA) a **Containment Cell LLDPE Cap Detailed Design and Construction Report** prepared generally in accordance with the proposal by Golders and Associates dated 15 December 2011, titled *Pasmirco Cockle Creek Smelter - Proposed Design Changes for Containment Cell Cap*. The cell design to include:

- An LLDPE liner thickness of a minimum of 1.5 mm;
- Protection of the LLDPE barrier layer be improved by;
 - increasing total thickness of topsoil and subsoil layers above the geocomposite drain and LLDPE barrier to 1000 mm;
 - placement of a high visibility marker mesh across the LLDPE capped portion of the cell at no less than 250 mm above the geocomposite drain and LLDPE barrier. The marker mesh must not impede the functioning of the capping system; **or**
 - by an equivalent enhancement to the protection of the LLDPE barrier layer
- A geonet drainage layer above the LLDPE liner must be; minimum tri-planar, of high density polyethylene and manufactured or covered with a geotextile fabric on the upper surface. The thickness of the internal drainage core of the geonet must be minimum of 10mm.
- Confirmation that the hydraulic transmissivity of the geocomposite/geonet system is at least equivalent to the hydraulic transmissivity of the currently approved gravel drainage system.
- **drainage pipe system above the LLDPE liner designed to maximise water collection with placement of pipes. In proposed inverts or similar.**

The **Containment Cell LLDPE Cap Detailed Design and Construction Report** must include:

- Full design details of the engineered features of the proposed alternative cap, including detailed plans, specifications and engineering drawings;
- Design details of the cap drainage and cap penetration points in connection with the proposed future use as a football facility; and
- A manufacturing and construction quality assurance and quality control program which must contain sufficient details of the proposed installation methods, tests, inspections and other verifications to demonstrate that all materials and constructed features will conform to the required plans and specifications.

The design shall be in accordance with requirements of the Environmental Protection Licence for the project and be prepared in consultation with the EPA.