

s75W Modification Application Environmental Assessment Report



Penrith Lakes

Management of Residual Materials

Submitted to Planning and Environment
On Behalf of Penrith Lakes Development Corporation

October 2014 ■ 13467

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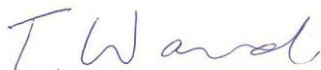
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8/10/2014

This report has been reviewed by:



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8/10/2014

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Executive Summary

Introduction

This report has been prepared by JBA, on behalf of the proponent, Penrith Lakes Development Corporation (PLDC), to support a modification application to carry out residual materials consolidation works at the Penrith Lakes Site under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Background

The Penrith Lakes Site has a broad range of past and current uses that range from historical Aboriginal cultural heritage uses to extensive agricultural practices to the more recent establishment of the Sydney International Regatta Centre (SIRC). The most extensive use of the site in recent times relates to the sand and gravel quarries that have operated intensively on site over the past 20 years.

Plans, known as the Penrith Lakes Scheme (PLS) and established within *Sydney Regional Environmental Plan No. 11 – Penrith Lakes Scheme* (SREP 11), have provided an intended rehabilitation and redevelopment structure outline for the Penrith Lakes Site since their conception in 1986.

Existing Development Consent (DA1)

The Penrith Lakes Site has been the subject of various DAs for quarrying, extraction and rehabilitation.

DA1 (DA 350/81) was approved by the Minister for Planning and Environment in July 1982 and allowed for the extraction of sand and gravel from approximately 100 hectares of land within the Penrith Lakes Site. Ongoing rehabilitation was also approved under DA1. The rehabilitation included extensively quarried areas of the site, undertaken before the approval of DA1.

A number of other development consents apply across the Penrith lakes Site. These other development consents will not be affected by the proposed modification to DA1.

The Proposed Modification

As part of the ongoing extraction, rehabilitation, reconstruction and landscaping works being carried out at Penrith Lakes, PLDC has identified the need to manage a large range of residual materials derived from previous agricultural and extractive industries at the Site.

PLDC has identified that the safe and efficient consolidation of some of these residual materials on-site would be beneficial compared with off-site transport and disposal. A suitable location for the consolidation of residual materials where some of these residual materials can be permanently stored on-site has therefore been identified in the south west part of the Penrith Lakes Site.

The proposed modification includes carrying out of works associated with the development of the residual materials consolidation area, the relocation of stable and non-putrescible residual materials for placement in the consolidation area, and the closure and capping of the of the area consistent with the approved final landform.

The proposed modification would provide for a residual materials consolidation area to be provided within the land to which DA1 applies. This consent is therefore proposed to be modified to include for the construction, operation and closure of the proposed residual materials consolidation area.

The purpose of this S75W Modification Application is to ensure that the scope of development consent DA1 is modified so that it provides for the proposed on-site residual material consolidation works. Accordingly, this Modification Application

has been submitted for consideration by the Minister for Planning under Section 75W of the EP&A Act.

Section 75W of the EP&A Act is the relevant statutory approval process to modify DA1 due to Clause 12 of Schedule 6A of the EP&A Act and clause 8J(8) of the *Environmental Planning and Assessment Regulation 2000*. Together, these provisions mean that Section 75W continues to apply to modifications of development consents issued by the (then) Minister for Planning and Environment under Section 101 of the EP&A Act, as was the case with DA1.

Environmental Impacts

The environmental impact assessment has addressed all of the issues specified in Schedule 2 of the Penrith lakes SEPP, as well as other relevant issues identified during the design of the consolidation area and the preparation of this Section 75W Modification Report. No significant environmental impacts have been identified.

The proposed modification will contribute to the delivery of the longstanding PLS through facilitating the efficient management of agricultural and quarry decommissioning materials on the completion and closure of quarry activities and the rehabilitation of the site.

The proposed modification will not impact on the ultimate delivery of the land for open space area as set out in the Penrith Lakes SEPP Structure Plan, and is not expected to result in any significant adverse environmental impacts. In particular, consolidation of the residual materials into the designated area will be carried out so that the land will comply with the criteria established as 'Health Investigation Levels C – Recreational' under the *National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No.1)* and is not expected to compromise future use of the Site for recreational land uses, as is provided for in the Penrith Lakes Scheme.

It will result in less heavy vehicles on local roads due to the reduced number of vehicles importing VENM (to create final design surface levels), and the reduced number of vehicles required to export residual materials off-site for disposal. As such, it will result in fewer impacts associated with heavy vehicles movements on local roads within Penrith LGA.

Appropriate mitigation and management measures have been set out, which generally reflect those controls currently in place for carrying out the ongoing quarrying and rehabilitation works – including standard noise, air quality and water management controls and monitoring during the works.

Additional mitigation and management measures include:

- Residual materials management controls – ensuring that the residual materials emplaced in the consolidation area are recorded in a report to be prepared by the site hygienist so as to inform future rezoning and development decisions.
- Existing groundwater monitoring bores will continue to be monitored during the course of the residual materials consolidation works, and the results recorded in the post construction report to be prepared by the site hygienist.

1.0 Introduction

This report has been prepared by JBA, on behalf of the proponent, Penrith Lakes Development Corporation (PLDC), to support a modification application to carry out residual materials consolidation works at the Penrith Lakes Site under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

In accordance with Section 75W(3) of the EP&A Act, a request for the Secretary's Environmental Assessment Requirements (SEARs) for this proposed modification was lodged on 6 November 2013. The Secretary did not issue SEARs for the modification.

The report describes the site, its environs and the proposed development, and includes an environmental assessment of the proposal. It should be read in conjunction with the information referenced within and appended to this report.

This report includes the following information:

- An overview of the site and the proposed development
- An outline of the key strategic and statutory planning framework
- A preliminary assessment of the environmental issues associated with the proposal.
- An overview of consultation taken to date for the proposal with authorities and the public.

1.1 Purpose of the Modification

As part of the ongoing extraction, rehabilitation, reconstruction and landscaping works being carried out at Penrith Lakes, PLDC has identified the need to manage a large range of residual materials derived from previous agricultural and extractive industries at the Site.

PLDC has identified that the safe and efficient consolidation of some of these residual materials on-site would be beneficial compared with off-site transport and disposal. A suitable location for the consolidation of residual materials where some of these residual materials can be permanently stored on-site has therefore been identified in the south west part of the Penrith Lakes Site.

The proposed modification includes carrying out of works associated with the development of the residual materials consolidation area, the relocation of stable and non-putrescible residual materials for placement in the consolidation area, and the closure and capping of the area consistent with the approved final landform.

The rehabilitation of the Penrith Lakes Site is the subject of a number of existing development consents. The relevant development consent for the proposed residual material consolidation works is known as DA1.

The purpose of this Modification Application is therefore to ensure that the scope of development consent DA1 is modified so that it provides for the proposed on-site residual material consolidation works.

Accordingly, this Modification Application has been submitted for consideration by the Minister for Planning under Section 75W of the EP&A Act.

1.2 Penrith Lakes Development Corporation

PLDC was formed to undertake the coordinated extraction and rehabilitation operations of its three shareholder companies in accordance with the expressed wish of the NSW Government and the Penrith City Council.

The shareholders, Boral, Hanson and Holcim exercise joint control by means of their ownership in the Corporation. The Corporation was established to:

- undertake detailed studies to test the technical, environmental and financial feasibility of the Scheme;
- obtain approvals for quarrying and rehabilitation;
- coordinate the sequential long-term quarrying and rehabilitation operations of the shareholder companies in the Penrith-Castlereagh floodplain;
- ensure that the quarrying and rehabilitation operations were undertaken in an economical and environmentally acceptable manner; and
- maximise the future urban potential of lands within the Scheme

The PLDC undertakes all the agreed earth works for the orderly extraction of the raw materials by the shareholders and the subsequent Scheme rehabilitation as outlined in the *Regional Environmental Study, 1984 (RES)* and agreement with the NSW State Government.

1.3 Background

The Penrith Lakes Site has a broad range of past and current uses that range from historical Aboriginal cultural heritage uses to extensive agricultural practices to the more recent establishment of the Sydney International Regatta Centre (SIRC). The most extensive use of the site in recent times relates to the sand and gravel quarries that have operated intensively on site over the past 20 years. As is detailed in section 1.3.1 below, the RES and subsequent approval of the Scheme were premised on the agreed four Lake system to restore the area after the extractive industries had completed their use on the site.

The plans, known as the Penrith Lakes Scheme (PLS) and established within *Sydney Regional Environmental Plan No. 11 – Penrith Lakes Scheme (SREP 11)*, have provided an intended rehabilitation and redevelopment structure outline for the Penrith Lakes Site since their conception in 1986. The Structure Plan that forms part of SREP 11 is provided **Figure 1**.

In relation to the site's background, this proposed modification will contribute to the delivery of the longstanding PLS through facilitating the efficient management of agricultural and quarry decommissioning materials on the completion and closure of quarry activities and the rehabilitation of the site.

1.3.1 Penrith Lakes Scheme

The PLS, first envisaged as part of the NSW Government's *1984 Regional Environmental Study – Penrith Lakes Scheme (RES)*, involves the creation of a major water based parkland on behalf of State Government.

The PLS covers an area of approximately 1935 hectares (ha) and upon completion would comprise approximately 1150 ha of open parklands (including potential land for urban development on the eastern side of the PLS between the lakes and Castlereagh Road), 700 ha of interconnected lake and 65 ha of wetland. The parklands will include approximately nine kilometres (km) of riverbank, which has been in private ownership for many years. As a result of the PLS almost the entire

nine km would become part of the parkland and in public ownership, thereby increasing public access to the Nepean River for recreational use.

The PLS involves rehabilitating sections of the Castlereagh floodplain concurrently with quarrying operations, requiring the excavation of overburden, sand and gravel to a typical depth of about 14m. The PLS is specifically defined in *State Environmental Planning Policy (Penrith Lakes Scheme) 1989* (Penrith Lakes SEPP), which is now the principal planning instrument applying to the development site. Approximately 50% of the material excavated is processed and sold as building materials (sand and gravel), while the remaining overburden is redistributed to create a variety of landforms within the Scheme lands.

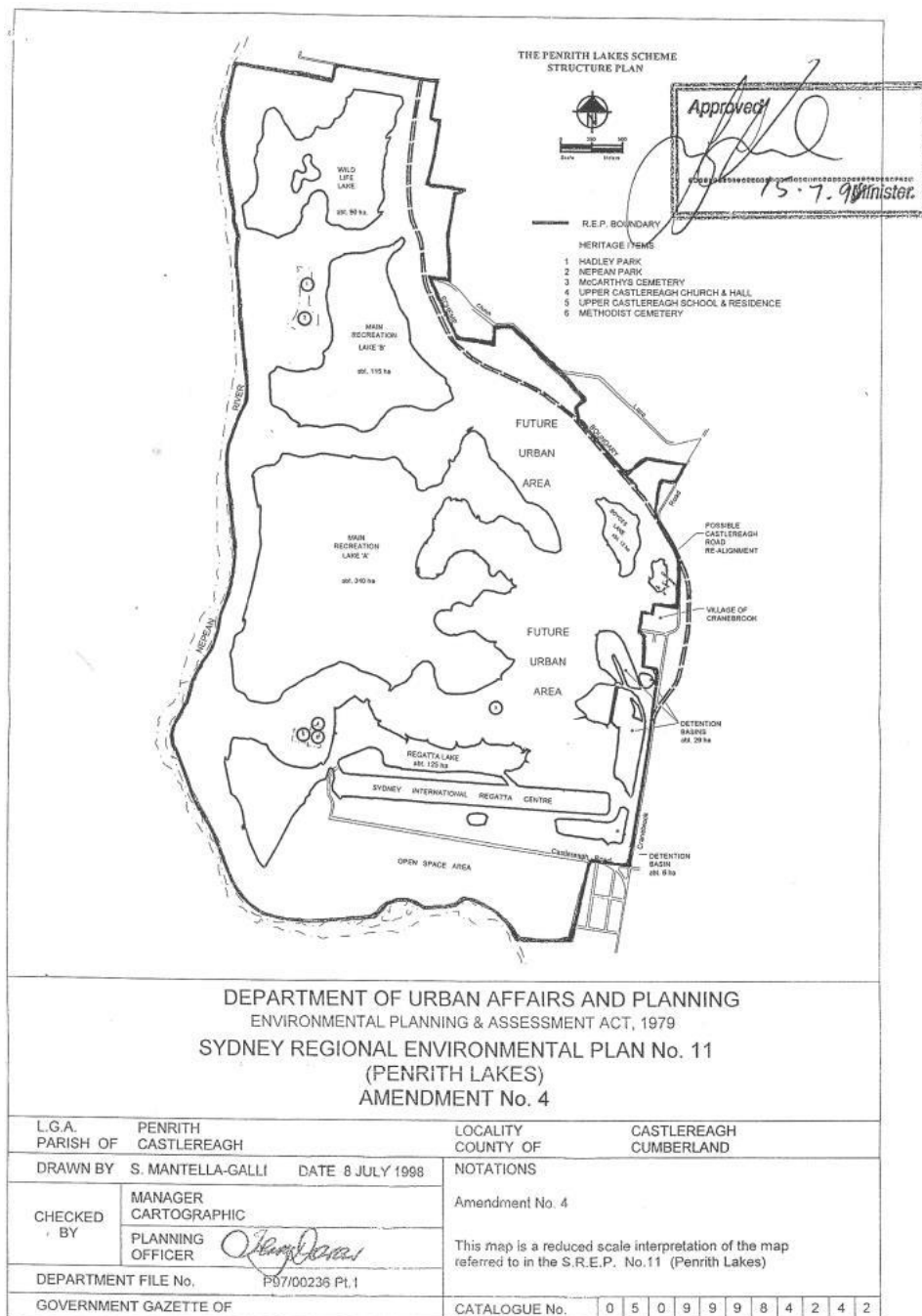


Figure 1 – Penrith Lakes Scheme – Structure Plan

Upon completion, the rehabilitated PLS would comprise five main lakes: two recreation lakes (Main Lake A and Main Lake B), a Wildlife Lake (the most northern lake which has been designed and constructed specifically as a wildlife sanctuary) and a warm up and competition lake associated with the already completed Sydney International Regatta Centre (SIRC). Approximately 75% of the PLS works have been completed.

The first stage of the PLS, the 196 ha SIRC was completed in 1995 and was first opened for the Sydney Olympics in 2000. The SIRC has already been dedicated to the NSW Government and is now managed by the NSW Office of Communities, Sport & Recreation. Recreational facilities at the SIRC include a five km track for cycling, walking and rollerblading and picnic facilities. It is now a popular sporting, corporate and social venue and receives an average of 50,000 visitors a month.

The second stage of dedication includes the eastern lakes which were dedicated to the State Government in November of 2013. The remainder of the PLS, is progressively being dedicated to the State Government by PLDC over the next 18 months.

The total land area excluding lakes and water bodies will be approximately 1,200 hectares. Approximately 410 hectares of this has been envisaged for possible future urban uses under the Penrith Lakes SEPP.

1.3.2 Site History and Uses

The Penrith area has been a major source of supply of medium to coarse grained sand and crushed river gravel for the Sydney construction industry since the 1880's. Initially, excavation of the sand and gravel was from deposits in the Nepean River, however, as these reserves were depleted during the late 1950's attention was turned to the reserves under the Penrith-Castlereagh floodplain. Development consents to quarry parts of the floodplain to the northwest of Penrith were subsequently obtained by five quarrying companies, which through acquisitions have reduced to three parties; namely Boral, Hanson and Holcim.

The idea of turning Penrith's sand and gravel quarries into lakes at the end of their life was first proposed in the late 1960's. Following the consolidation of quarrying interests under a single joint venture in 1980 to coordinate quarrying and rehabilitation activities in the PLS, the PLDC undertook a feasibility study. The study explored the technical, environmental and economic feasibility of creating a series of lakes in the old quarry voids as part of a rehabilitation solution.

In 1984 the State government published the Regional Environmental Study (RES), which included the findings of detailed investigations into this rehabilitation solution, including studies into lake drainage, lake water management and flood protection. The RES formed the basis for the gazettal of SREP 11 in 1986, which identified the development controls and framework for the ongoing coordinated development of quarrying activities and future aquatic based recreational land use outcomes within the PLS.

The historic development of the PLS demonstrates that the PLS has comprised a key part of the NSW Government's strategic and regional policy for Western Sydney and Penrith since the 1980's.

1.4 Planning History

The extensive deposits of sand and gravel occurring in the floodplain of the Nepean River, north of Penrith, have long been recognised by the State Government as a resource of regional significance. As a result, the resource has been identified in a number of planning instruments with the objective of providing a development control process establishing environmental and technical matters

which must be taken into account in implementing the PLS in order to protect the environment. The key documents governing the development of the Scheme since 1981 are listed in **Table 1**.

In 1986, SREP 11 was made. The aim of the SREP 11 was to permit the implementation of the PLS, to identify and protect items of environmental heritage and to identify land which could later be rezoned for urban purposes. SREP 11 was later amended to be the Penrith Lakes SEPP.

Table 1 – Key planning milestones

Date	Document/Report	Outcomes
1984	Penrith Lakes Scheme-Regional Environmental Study	Selection of preferred Scheme and description of its effects.
1986	Sydney Regional Environmental Plan No. 9 – Extractive industry	Identified Penrith Lakes as priority for extraction.
1986	Sydney Regional Environmental Plan No. 11–Penrith Lakes Scheme.	Statutory planning framework for implementation of Scheme.
1988	Amendment No. 1 to SREP 11	The amendment was an administrative amendment to remove the expiry clause.
1989	Amendment No. 2 to SREP 11	Amendment extended REP boundary and made provision to incorporate international standard rowing course into Scheme. This amendment increased the Scheme area by 50 hectares in the south west corner, and increased the Scheme's resources by another 12 million tonnes of sand and gravel. The Minister for Sport and Recreation lodged a development application in September 1989 to quarry and rehabilitate the area with PLDC as project manager. This was approved in November 1989.
1994	Amendment No. 3 to SREP 11	Amendment to incorporate results of flood and drainage studies, providing the Scheme with design changes to better define flood control and water management arrangements. The amendment established an urban area of 230ha.
1998	Amendment No. 4 to SREP 11 - Structure Plan	Proposed amendment to incorporate implications arising from geological review, providing changes to the lake shape and size.
2012	SREP 11 amended to become <i>State Environmental Planning Policy (Penrith Lakes Scheme) 1989</i> (Penrith Lakes SEPP).	Administrative

1.5 Development Consents

The Penrith Lakes Site has been the subject of various DAs for quarrying, extraction and rehabilitation. The following details the various DAs that have been approved and are being implemented across the Penrith Lakes Site. All of these approvals have been granted with the objective to deliver the PLS. **Figure 1** presents the land to which each DA applies.

1.5.1 Development Application No.1 (DA1)

DA1 (DA 350/81) was approved by the Minister for Planning and Environment in July 1982 and allowed for the extraction of sand and gravel from approximately 100 hectares of land within the Penrith Lakes Site. The approved extraction was designed to be an interim activity while the preferred Scheme for Penrith Lakes was developed. The approval allowed for an estimated 12.5 million tonnes of sand and gravel to be removed from the area. As the site was being quarried under this approval, a Structure Plan for the Penrith Lakes Scheme was finalised and SREP 11 was prepared and adopted by the Minister. Under SREP 11, provision was made for the submission of sequential development applications for the progressive release of resource-bearing land within the Penrith Lakes Site.

Ongoing rehabilitation was also approved under DA1. The rehabilitation was related to extensively quarried areas of the site, undertaken before the approval of DA1.

DA1 is the only development consent sought to be modified by this Modification Application, and is provided in **Appendix A**.

1.5.2 Development Application No.2 (DA2)

A second DA (DA86-2720 and P92/00744/001) was issued on the 24 February 1987 by the Minister for Planning, for sand and gravel extraction and rehabilitation works. The main scope of the approval for DA2 (as amended) includes:

- extraction of approximately 786 ha of land to generate an anticipated yield of an estimated 39 million tonnes of sand and gravel and 20 million tonnes of overburden;
- rehabilitation and land reformation to give effect to the PLS; and
- importation of Virgin Excavated Natural Material (VENM) to fill areas where extraction has occurred and to assist in land reformation.

In 1989 DA2 was modified to facilitate the construction of the rowing lake and associated facilities (known as SIRC), and the Castlereagh underpass.

On 20 December 2006, DA2 was further modified to undertake trials of dynamic compaction within a 39 hectare area (the DC extension area) within the 327 hectares covered by DA2.

The dynamic compaction testing objective was to assess its effectiveness in alleviating the need for the site to be rehabilitated via more intrusive means such as the re-excavation, re-filling and layered compaction of land, which would generate considerable additional noise and dust impacts.

1.5.3 Development Application No.3 (DA3)

DA3 (P92/00744/001) was approved in July 1995 and allowed for the continuation of quarrying activities to the north of the area quarried under DA2. Approximately 406 hectares of land was approved for quarrying, and this area yielded an estimated 35 million tonnes of sand and gravel resource.

DA3 also provided for ongoing rehabilitation and land reformation to give effect to the PLS.

1.5.4 Development Application No.4 (DA4)

DA4 (P97/00237 Pt4) was lodged in November 1997 for the extraction of the remaining resources on the site, being west of Castlereagh Road. Consent was granted by the Minister for Planning on 9 September 1998 and allowed for extraction of resources from approximately 737 hectares of land primarily between the Nepean River and Castlereagh Road in the western part of the site. The quarrying of smaller areas of land to the north of Church Lane was also approved under DA4.

The quarrying approved by DA4 (as amended) is expected to yield in the order of 57 million tonnes of sand and gravel and 6 million tonnes of fine sand. Approval under DA4 has been granted for:

- the ongoing rehabilitation approximately 407 ha of the Penrith Lakes Site consistent with the eventual development of the PLS; and
- importation of VENM to fill areas where extraction has occurred over the Penrith Lakes Site and to contribute to the work to create final landforms in accordance with the PLS.

Since September 1998 six subsequent modifications have been made and approved relating to DA4 which were minor in nature. Modification 7 was approved by the Department of Planning and Infrastructure on 2 February 2014, for the formalisation of the use of the existing water body, known as "Lewis Lagoon" as a Water Quality Control Pond to treat water before it enters the Wildlife Lake.

1.5.5 Modifications to DA2, DA3 and DA4 – Importation of VENM

The Department of Planning and Infrastructure approved a collective modification to all three DAs on the 2 February 2014 for the following amendments relating to the Penrith Lakes Site:

- to extend the timing of the consent to late 2015;
- to alter the source of the VENM used to rehabilitate the Penrith Lakes Site;
- minor changes to haulage routes into the Penrith Lakes Site;
- removal of one access point into the Penrith Lakes Site; and
- a change in acoustic legislation in NSW has necessitated updated noise monitoring to assess the works against noise criteria.

1.5.6 Pending Development Applications

There are various development applications and modifications to existing approvals that are currently being assessed at the time of preparing this DA.

DA – Nepean River Pump and Pipeline

PLDC have submitted an application to the Department of Planning & Infrastructure for the construction of a pumping station and pipeline on the banks of the Nepean River for the purpose of extracting water for use in the PLS. The pumping station is part of the infrastructure required for the first filling and maintenance of lake water levels. The pumping station was envisaged in the RES 1984 as a key piece of infrastructure required by the State government to manage the water based parklands.

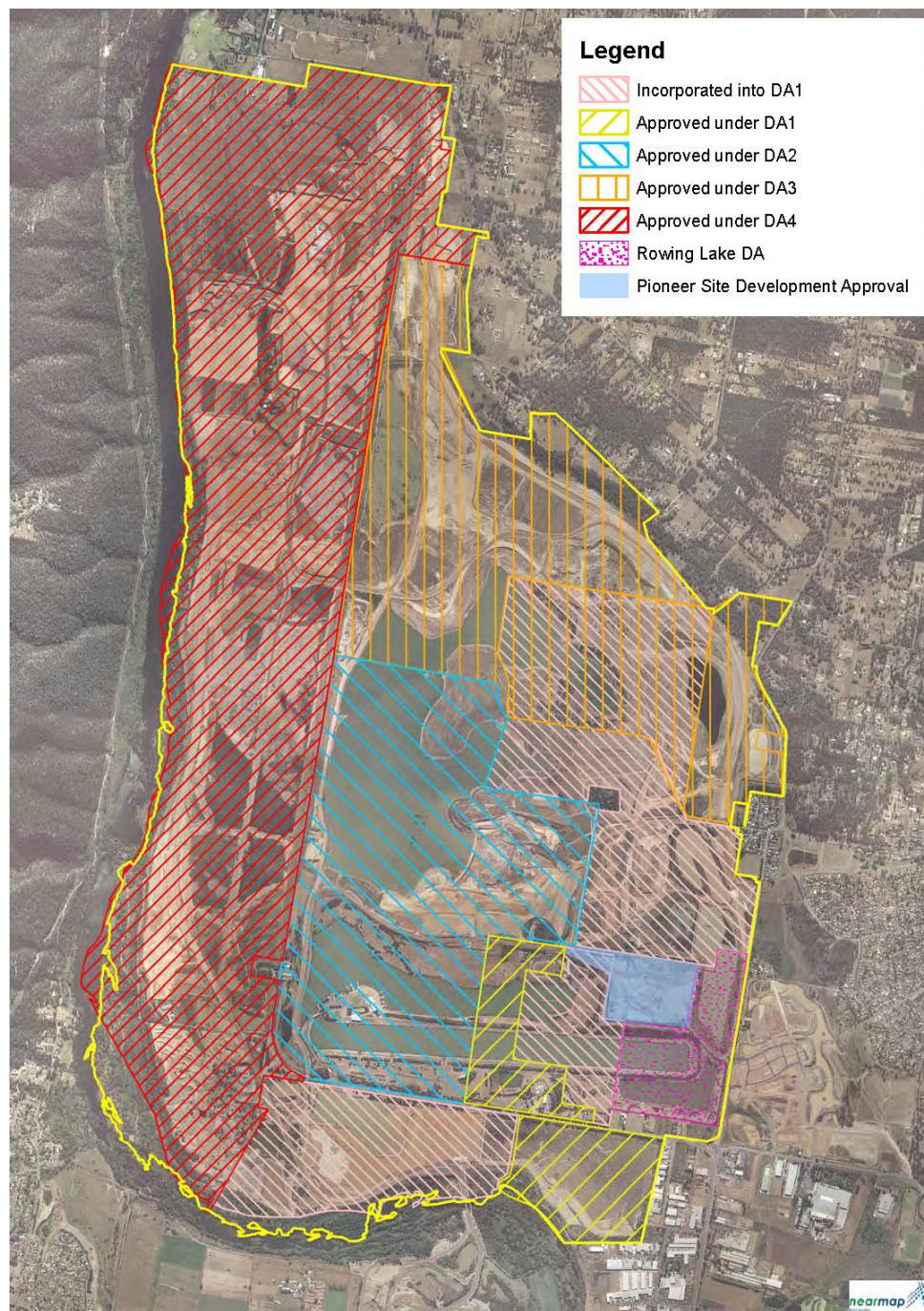


Figure 2 – Existing Development Consents

Source: Nearmap & PLDC

2.0 Site Analysis

2.1 Site Location and Context

The Penrith Lakes Site is located across the suburbs of Castlereagh and Penrith on the Castlereagh floodplain of the Nepean River, approximately 3 km to the north of the Penrith CBD (Figure 1). The site is 1,935 hectares in area and is approximately 6.5 km long and 3.5 km wide (at its widest point).

It is located at the edge of the Sydney Basin adjacent to the Blue Mountains and bounded by the Nepean River to the south and west, Cranebrook Village and the Cranebrook Escarpment to the east, and rural land to the north.

The site sits adjacent to existing rural residential land uses, villages and residential development. Penrith Lakes is easily accessed by the M4 and in close proximity to Penrith CBD, a key regional city within metropolitan Sydney.

Before European settlement the Darug people used the land for hunting, gathering and as a meeting place. Before quarrying operations the land was used for agriculture and horticulture, particularly orchards and dairy farming. Due to the current quarrying uses the site has limited vegetation left. The majority of the site now consists of exotic grasslands or quarried land in various stages of rehabilitation. The site's locational context is shown at Figure 1.

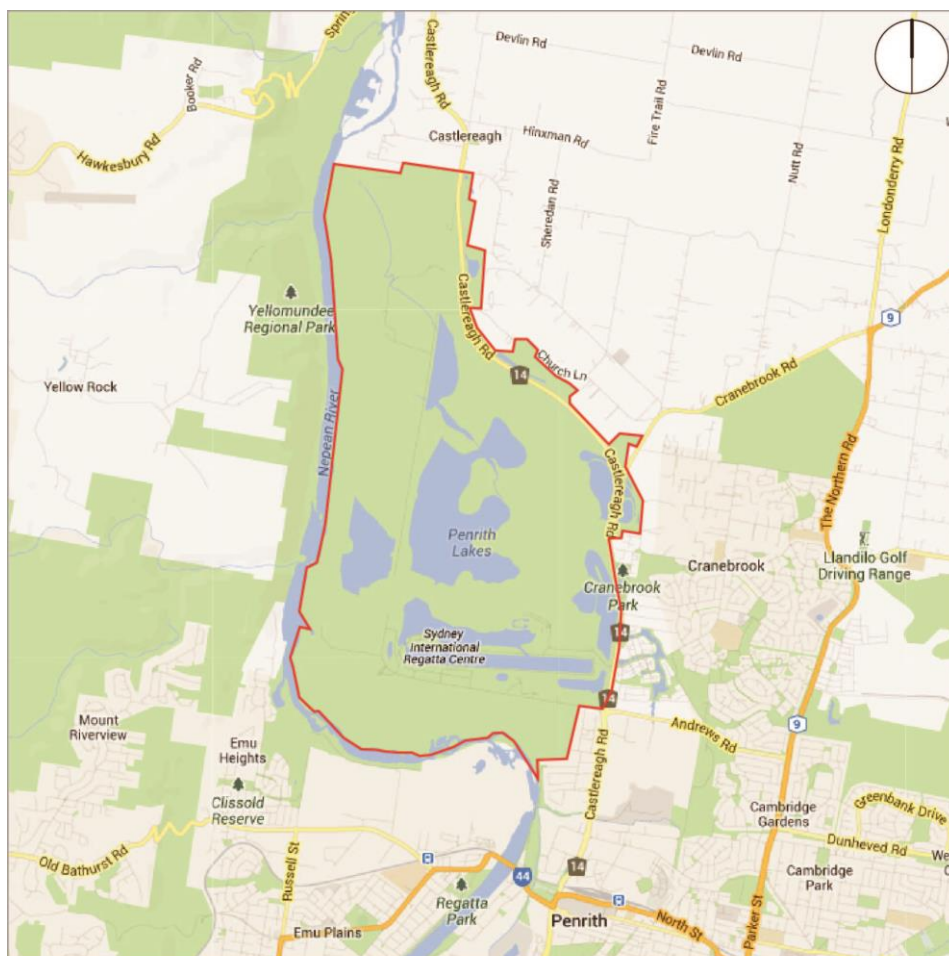


Figure 3 – Location Plan

Source: Google Maps and JBA

2.2 Site Description

The Penrith Lakes Site covers an area of approximately 1,935 hectares and upon completion would comprise approximately 1150 ha of open parklands. An aerial photo of the site is shown at **Figure 1**.



Figure 4 – Aerial photo of the Penrith Lakes Site

Source: Nearmap February 2014

2.2.1 Heritage and Archaeology

During preparation of the RES, an extensive specialist study was undertaken by Fran Bently and Judy Birmingham in 1981 (RES: History of European Settlement, Working Paper). The study identified 75 heritage items including cemeteries, landscape features and structures. As a result of these investigations, six items within the PLS area were identified under the *State Environmental Planning Policy (Penrith Lakes Scheme) 1989* (PLS SEPP) as requiring retention. Importantly, the proposal for the residual material consolidation area will not give rise to any additional heritage impacts that have not already been assessed and mitigated in the previous quarrying related development applications (refer to section 3.0).

Before quarrying operations the land has been used for agriculture and horticulture, particularly orchards. The Darug people used the land for hunting, gathering and as a meeting place before European settlement.

2.2.2 Topography

The study area is located at the base of the Blue Mountains on the Nepean River floodplain. The floodplain is relatively flat with gently undulating hills. The river bank heights vary along the length of the river and reach heights as high as 15 m with bank slopes of up to 45°.

The floodplain is bound to the west by the Blue Mountains escarpment which rises steeply from the floodplain, flanking the Nepean River, rising to a height of approximately 220 m at Mt Riverview.

2.2.3 Flora and Fauna

Due to the current and post European settlement uses the Penrith Lakes Site has limited vegetation left, however, there are stands of native vegetation remaining including Cumberland Plain Woodland. The majority of the Penrith Lakes Site now consists of exotic grasslands or quarried land in various stages of rehabilitation. Consequently, the main environmental considerations relate to the physical heritage and the existing geotechnical and hydrological conditions.

At the development site, the bank of the river is densely vegetated with exotic species mixed with alluvial woodland and riparian forest. Vegetation is generally dominated by a dense layer of introduced shrub, herb, grass and vine species with limited upper stratum present.

2.2.4 Geology and Groundwater

Inspection of the 1:100,000 scale geological map of Penrith (Geological Survey NSW, 1991) reveals that the development site is located on the Cranbrook Formation. The Cranbrook Formation is a quaternary deposit made up of gravel, sand, silt and clay. This is underlain by Ashfield and Bringelly shales of the Wianamatta group and alluvium from the Quaternary period.

The Penrith 1:100,000 soil landscape map (Hazelton and Bannerman, 1989) identifies the soils at the development site as being Richmond soils. The soils are likely to be poorly structured orange to red clay loams, clays and sands. Due to high levels of disturbance as a result of quarrying it is unlikely that this soil profile has been retained within the majority of the Penrith Lakes Site. Some areas of the development site could be composed of overburden where backfilling has occurred as part of the Penrith Lakes Site.

The south western portion of the Penrith Lakes Site which includes the development site is situated on an alluvial terrace (IEP, 2005). The groundwater depth within this lower terrace is estimated by the IEP report to be between approximately 12-20m AHD. Existing groundwater monitoring at the Penrith

Lakes Site identifies that groundwater in the residual materials consolidation area is at approximately 11.5-12m AHD.

2.3 Existing Site Functions

The Penrith Lakes Site has been intensively quarried for sand and gravel over the past 20 years (see **Figure 6**) and is a major source of sand and gravel for Sydney's building industry. The total sand and gravel resource on the site was approximately 220 million tonnes, of which 200 million tonnes has been extracted. Approximately 1% of the original sand and gravel resource remains available for extraction. The extraction works are programmed to finish April 2015.

As quarrying operations are completed the Penrith Lakes Site is being progressively rehabilitated to form a series lakes and open space areas. Rehabilitation is also being undertaken to allow for future urban development over a portion of the Penrith Lakes Site.

2.4 The Site of the Proposed Modification

The modification application is limited to construction, operation and closure of the proposed residual materials consolidation area. The residual materials consolidation area is located near the southern boundary of the Penrith Lakes Site, as shown in **Figure 5**, within the land subject of development consent DA1.

The location of the proposed residual materials consolidation area is immediately adjacent, to the north, of the internal access road known as the River Haul Road and within the area that is covered by DA1. It has been heavily modified by historical quarrying activities, and currently contains an existing depression in the land surface related to these historical quarrying activities.

The land around the proposed residual materials consolidation area is at approximately 26m AHD with the base of the existing depression some 3-4m below this level (i.e. 22-23m AHD).

Immediately to the south of the proposed residual materials consolidation area is the River Haul Road, which is at a level of approximately 24m AHD. Beyond the River Haul Road is the Penrith Lakes Site boundary, beyond which is vegetated land that falls away to the Nepean River (at approximately 7-10m AHD). The northern bank of the Nepean River is over 200m away from the site of the proposed residual materials consolidation area.

To the north of the proposed residual materials consolidation area is land that has been modified by historical quarrying activities, comprising cleared land and artificial waterbodies.

The current condition of the residual materials consolidation area can be seen in **Figure 4**, and in more detail in the general arrangement plan in **Appendix B**.

The proposed residual materials consolidation area is on land that has been identified as future open space and parkland under the PLS. Under condition 8 of DA1 a Land Management Plan is required to be prepared which includes contour maps and plans showing the final contours of post extraction land forms after final rehabilitation. These plans are provided in **Appendix C**.

3.0 Description of Proposed Modification

3.1 Identified Residual Materials Stockpiles

PLDC currently manages a number of stockpiles of residual materials associated with historical land uses at the site, including historical quarrying activities. Approximately 35ha of land at the site has been the subject of investigations to identify buried stockpiles of residual materials that are located at the site.

The following sources of inert non-putrescible residual materials have been identified throughout the Penrith Lakes Site, as follows:

- **General Construction Materials:** Existing stockpile areas located at Riverbank Fire Scar, Former Pioneer Park site and The Poplars Tip area include buried and above ground stockpiles of residual materials. Materials include concrete, rubber tyres, metal piping, general plastics and vehicle parts. Heavy metals testing of existing stockpile areas provide that the residual material is suitable for on-site consolidation and storage. In total this is estimated to require approximately 10,000m³ of stockpiled material requiring on-site management and consolidation.
- **Asphalt/Road Base Stockpiles:** Stockpiled material collected from various locations within the Penrith Lakes Site, including bitumen and other road materials associated with the removal of Old Castlereagh Road. In total approximately 12,000m³ of asphalt and road base materials will require on-site management and consolidation.
- There are two stockpiles (approximately 1,500m³) of tyres located at the site which require management and consolidation.

The residual materials to be placed in the consolidation area will be limited to glass, plastic, rubber, plasterboard, bricks, concrete, bitumen, metal, garden materials, wood, non-putrescible vegetative materials, tyres and demolition materials.

The existing stockpiles are not known to contain asbestos or asbestos containing materials (ACM). If ACM is discovered as part of the residual materials consolidation works it will be separated from the residual materials in accordance with asbestos removal licences issued by WorkCover and in accordance with the *How to Safely Remove Asbestos Code of Practice* and the *Work Health and Safety Regulation 2011*. Any ACM collected in this way will be transported off-site for disposal at a suitably licenced facility legally authorised to accept it, in accordance with the *Protection of the Environment Operations (Waste) Regulation 2005*.

In total approximately 23,500m³ of known inert non-putrescible residual materials have been identified by PLDC at the Penrith Lakes Site, and are proposed to be consolidated in the on-site residual materials consolidation area.

Investigations to identify residual materials stockpiles (including buried stockpiles) throughout the Penrith Lakes Site are ongoing as part of the site-wide rehabilitation processes under the existing development approvals. Residual materials from other locations within the Penrith Lakes Site may be disposed of in the proposed residual materials consolidation area should it be of a type specified above.

The proposed on-site residual materials consolidation area will only provide for residual materials generated within the Penrith Lakes Site and will not receive any materials from off-site sources.

3.2 On-Site Consolidation Strategy

As part of the ongoing rehabilitation, reconstruction and landscaping of the Site, this modification seeks to account for the relocation of residual materials (primarily bitumen, concrete and rubber tyres) to a single location within the Penrith Lakes Site. The residual materials consolidation area is located in the south west corner of the Penrith Lakes Site, as presented in **Figure 5**. At this stage the potential volume of residual materials requiring consolidation is estimated at 23,500m³.

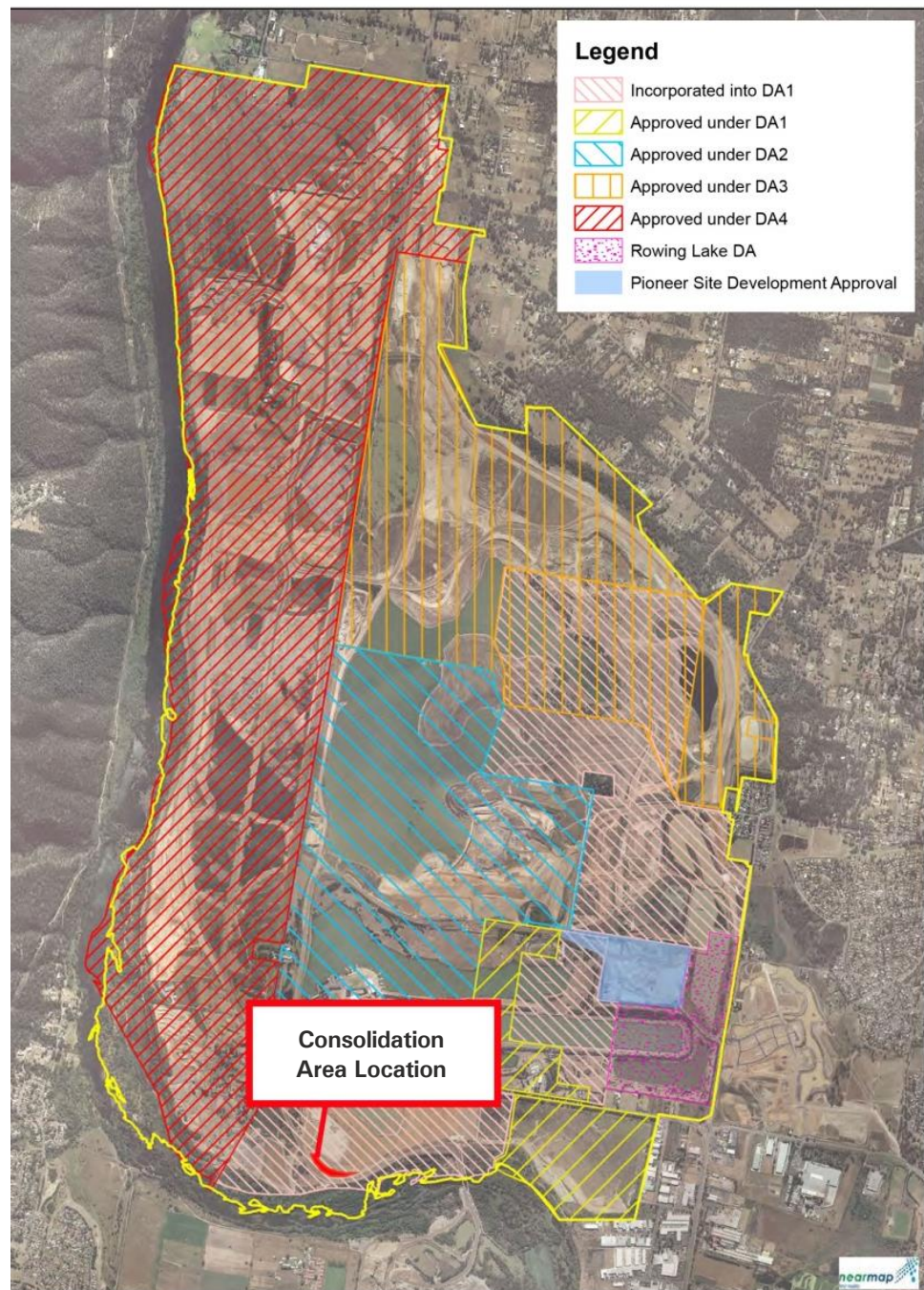


Figure 5 – Residual materials consolidation area location

Source: Nearmap, PLDC and JBA

3.3 Residual Materials Consolidation Area Design

The proposed residual materials consolidation area will be located in the south western portion of the Site, within the area under the existing approval of DA1. The area has been located to take advantage of the existing void in the landform which will be enlarged as part of the rehabilitation works.

The site of the proposed residual materials consolidation area has been selected since it is located in an elevated and stable part of the Penrith Lakes Site, with minimal interactions with external receptors and no connectivity with groundwater. It is also located in a part of the site that is intended for future open space uses and which currently has an unnatural landform that will require extensive re-forming as part of its rehabilitation.

As shown in **Figure 6**, the level of the land around the outskirts of the residual materials consolidation area is currently at approximately 26m AHD. The consolidation area will be excavated to create a void with a depth of approximately 4m (i.e. to approximately 22m AHD). After filling with residual materials, the area will be capped with an impervious 500mm clay seal and land surrounding the area will be built up to between 27-29m AHD in accordance with the approved design surface level established under of DA1.

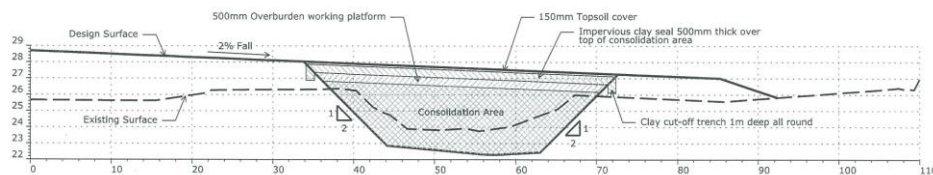


Figure 6 – Schematic of proposed residual materials consolidation area

Source: Extract from Appendix B

3.4 Residual Materials Consolidation Area Construction

The construction method for the residual materials consolidation area will be designed to permit cost efficient trafficking by heavy machinery available on site and suited to the site conditions. The proposed method for consolidation is outlined below:

- Excavation of the area using excavators and articulated dump trucks, which are pieces of standard quarrying equipment used routinely in the ongoing quarrying and rehabilitation activities at the site. The area will be excavated to create a void of approximately 4m in depth.
- Establishment of access ramps and access tracks.
- Dewatering of the consolidation area following rain events.
- Filling of the residual materials consolidation area with residual materials which have been obtained from stockpiles and other storage areas at the Penrith Lakes Site.
- Residual materials consolidated into the consolidation area will be recorded – including, a general description of each type of material and the volume of each type of material. Where chemical testing of the residual material is carried out, the results of the testing will be recorded.

- Control layers of overburden may be emplaced within the consolidation area to allow adequate geotechnical compaction and other geotechnical targets to be achieved.
- Once filled, a 500mm layer of overburden will be placed over the top of the residual materials, followed by a 500mm impervious clay seal, and then a 150mm deep layer of topsoil.

3.5 Final Landform and Future Uses

The vertical extent of the final landform will be approximately 1-1.5m above the existing ground level, consistent with the design surface level for this part of the Penrith Lakes Site. The design surface level has been approved by the Department of Planning and Environment under Condition 8 of DA1. The approved plans that establish the approved design surface levels are provided in **Appendix C**.

The residual materials consolidation area falls within land that has been identified as future open space and parkland under the PLS. Consolidation of the residual materials into the designated area will be carried out so that the land will comply with the criteria established as 'Health Investigation Levels C – Recreational' under the *National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1)* (the NEPM) and is not expected to compromise future use of the Site for recreational land uses.

The lateral and vertical extent of the residual materials consolidation area will be surveyed and recorded on site plans. A report will be developed by the site hygienist for the purpose of recording the contents of the residual materials consolidation area, limitations on the land use, and any ongoing maintenance requirements.

3.6 Proposed Modifications to DA1

The proposed residual materials management works, including the construction, operation and closure of the residual materials consolidation area, do not require any specific amendments to DA1, other than to include the scope of works into the development as described in the development consent being (new text **underlined and in bold**):

DEVELOPMENT APPLICATION	To carry out gravel and sand extraction and the rehabilitation of land within the Penrith Lakes Scheme Area, in particular:- - To carry out gravel and sand extraction on the land described in Schedule 1; - To carry out the rehabilitation of the land described in Schedules 1 and 2, <u>including the construction, operation and closure of a residual materials consolidation area, as described in the Modification Application Environmental Assessment Report dated September 2014.</u>
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No amendments are required to any other DA at the Penrith lakes Site. Residual materials obtained in areas outside of the DA1 area will be handled and transported in accordance with the controls and requirements set out in the relevant existing approvals insofar as they relate to rehabilitation (the removal of residual materials is part of the rehabilitation process) of those areas.

4.0 Statutory Requirements

4.1 Legislation

4.1.1 Environmental Planning and Assessment Act 1979

The works required for the progressive extraction, rehabilitation, reconstruction and landscaping of the land at Penrith Lakes have been approved by the (then) Minister for Planning under Part 4 of the EP&A Act.

However, under clause 8J(8) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), for the purposes only of modification, the following development consents are taken to be approvals under Part 3A of the Act and section 75W of the Act applies to any modification of such a consent:

- (a) *a development consent granted by the Minister under section 100A or 101 of the Act,*
- (b) *a development consent granted by the Minister under State Environmental Planning Policy No 34—Major Employment-Generating Industrial Development,*
- (c) *a development consent granted by the Minister under Part 4 of the Act (relating to State significant development) before 1 August 2005 or under clause 89 of Schedule 6 to the Act,*
- (d) *a development consent granted by the Land and Environment Court, if the original consent authority was the Minister and the consent was of a kind referred to in paragraph (c).*

DA1 for Penrith Lakes was approved by the (then) Minister for Planning and Environment under Section 101 of the EP&A Act, and as such, for the purposes of modifying the consent Section 75W of the EP&A Act applies.

Section 75W of the EP&A Act was subsequently repealed in 2011, as part of the broader repeal of Part 3A of the EP&A Act. However, as part of the repeal of Part 3A, transitional arrangements were inserted. Clause 12 of Schedule 6A of the EP&A Act specifically provides that section 75W continues to apply to modifications of the development consents referred to in clause 8J (8) of the EP&A Regulation, and so continues to apply in respect of this modification application.

4.1.2 Environmental Planning and Assessment Regulation 2000

Management and consolidation of the residual materials would take place entirely on the Penrith Lakes Site and so establishment of the consolidation area is not considered to be a waste management facility and waste management works as defined in clause 32 of Schedule 3 of the EP&A Regulation.

Irrespective of this, clause 37A of the Schedule specifies that clause 32 does not apply if the development is ancillary to other development and is not carried out independently of that other development. In this case the residual materials management and consolidation works are ancillary to the development approved under DA1 and will be carried out as part of the extraction, rehabilitation, reconstruction and landscaping works approved under DA1.

As such, the proposed residual materials management and consolidation works are not 'designated development'.

4.1.3 Protection of the Environment Operations Act 1997

Quarrying activities at Penrith Lakes are already subject of an Environment Protection Licence (EPL) – being Licence 2956. This EPL will be amended to include the construction, operation and closure of a residual materials consolidation area for the on-site consolidation of residual materials comprising glass, plastic, rubber, plasterboard, bricks, concrete, bitumen, metal, garden materials, wood, non-putrescible vegetative materials, tyres and demolition materials.

Further, consolidation of the residual materials will be carried out so that the land will comply with the criteria established as ‘Health Investigation Levels C – Recreational’ under the NEPM and is not expected to compromise future use of the Site for recreational land uses, as is provided for in the PLS.

4.2 Environmental Planning Instruments

The relevant environmental planning instruments that apply to the site and/or the proposed development are:

- *State Environmental Planning Policy (Penrith lakes) 1989* (Penrith Lakes SEPP)
- *State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55)

Consideration of the provisions of these environmental planning instruments is provided below.

4.2.1 Penrith Lakes SEPP

The Penrith Lakes SEPP provides for the implementation of the PLS (as shown in **Figure 1**).

Clause 8 of the Penrith Lakes SEPP provides that any development for the purposes of implementing the PLS is permissible with development consent.

Schedule 2 of the Penrith Lakes SEPP sets out the matters that need to be addressed in any Statement of Environmental Effects which supports a development application made under the SEPP.

This EAR, which has been prepared to support the Modification Application for the residual materials consolidation area, has considered and addressed the matters listed in Schedule 2 of the Penrith Lakes SEPP. This assessment is provided in Section 5.1 of this report.

4.2.2 SEPP 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) and its associated contaminated land planning guidelines establish the requirements for the investigation and remediation of contaminated land as part of the development of land in NSW.

Clause 7 of SEPP 55 effectively states that a consent authority must not consent to the carrying out of any development on land unless it has considered whether the land is contaminated, and it is satisfied that the land is suitable in its present state, or will be made suitable after remediation, for the proposed land use.

The proposed land use is for a residual materials consolidation area, and related works, which is associated with the ongoing quarrying and rehabilitation works being carried out at the Penrith Lakes Site. As such, there is no change in land use as a result of the works proposed in this Modification Application.

The future intended land uses of the residual materials consolidation area is for future open space and parkland under the PLS. However, the land is not currently zoned for this purpose. The suitability of the intended future land uses, in the context of the residual materials consolidation area, will be assessed as part of the key stages in the future land use planning processes for the land, including:

- As part of the rezoning process, where specific permissible land uses are identified and particular limitations on future development are considered and addressed.
- As part of future development applications for specific works and/or developments at the site.

Notwithstanding this, consolidation of the residual materials will be carried out so that the land will comply with the criteria established as 'Health Investigation Levels C – Recreational' under the NEPM and is not expected to compromise future use of the Site for recreational land uses, as is provided for in the PLS.

All areas within the PLS affected by PLDC quarrying and earth moving activities will ultimately be suitably validated and independently audited by an EPA Accredited Site Auditor prior to final handover of the land to the NSW Government for its intended future uses. The validation of the Penrith Lakes Site (including any remediation, if required) is not part of this S75W Modification Application.

4.3 Strategic Plans

The delivery of the PLS to achieve a new centre for housing, employment and recreational uses in the longer term is a metropolitan priority set out in the *Draft Metropolitan Strategy for Sydney 2031* for the West Subregion.

The proposed modification does not affect any aspect of the final approved land form. Further, whilst the proposed residual materials consolidation area may result in limitations of what kinds of development and/or vegetation can be established above it, it will not jeopardise the use of the land (on the surface) for future open space or parkland.

As such, the local, regional and State strategic planning documents have no bearing on the proposed residual materials consolidation area, other than that the consolidation area provides for works that will ultimately facilitate the efficient and effective delivery of the PLS.

5.0 Environmental Assessment

The following assessment is provided to support the request for DGRs to guide preparation of the Environmental Assessment Report (EAR) for the proposed development. The assessment provides an outline of the potential environmental and planning impacts that may be associated with the proposal, with particular consideration of the matters to be addressed in listed in Schedule 2 of the Penrith Lakes SEPP.

5.1 Penrith Lakes SEPP – Schedule 2 Matters for Consideration

A summary of the matters listed in Schedule 2 of the Penrith Lakes SEPP is provided at **Table 1**. Where relevant, issues have been further considered in subsequent sections. Specialist studies have been undertaken where necessary as part of the proposal to assist in addressing these issues.

Table 2 – Penrith Lakes SEPP Schedule 2 Matters for Consideration

No.	Matter for Consideration	Assessment
(a)	relationship and extent of the proposed development to the completed scheme.	The proposed residual materials consolidation area has been designed and will be constructed so as not to prevent the future use of the land as Open Space Area specified in the Penrith Lakes SEPP Structure Plan.
(b)	where appropriate, the integration of the proposed development with development previously carried out.	The purpose of the residual materials consolidation area is to manage residual materials that have been generated through previous site activities.
(c)	the sequence of extraction and rehabilitation where the proposed development is for or includes an extractive industry.	N/A (the proposal is not for extractive industry).
(d)	unless the land is to be dedicated to the Crown, the proposed control and management of the land.	In the short term the land will remain in the control of PLDC. However, in the longer term the land will be transferred to the NSW Government as part of the Deed of Agreement between PLDC and Government in relation to the closure and development of the Penrith Lakes. Upon completion, the residual materials consolidation area will be subject of a report by the site hygienist, which would establish the ongoing maintenance requirements.
(e)	the management and control of water resources including:	
(i)	the source of water in order to fill any lake (including the quality and quantity of water from that source),	N/A (the proposal is not for filling of a lake).
(ii)	water reticulation systems from the Nepean River to any lake, from lake to lake and from any lake to the Nepean River,	N/A (the proposal will not impact on the water reticulation system between the lakes and the Nepean River).
(iii)	the water quality of any lake (including the aquatic ecosystem),	The residual materials consolidation area is located approximately 360m to the south of the closest lake, being the wetland lake system. Water quality is addressed in Section 5.3 below.
(iv)	water treatment facilities,	N/A (the proposal is not for a water treatment facility).
(v)	water depth of any lake,	N/A (the proposal is not for the construction of a lake).
(vi)	flood control,	The proposal is for filling of a void to the approved design surface level, and to which filling is already approved.
(vii)	storm water control,	Stormwater controls will be established for the surface of the landform and will be consistent with

No.	Matter for Consideration	Assessment
		PLDC rehabilitation requirements of the existing DAs.
(viii)	the effect that development would have upon the quantity and quality of the existing groundwater as well as the level of the existing groundwater table,	The base of the residual materials consolidation area is above the water level of the lakes system and the Nepean River, which will define the long term groundwater level at the site. Groundwater is considered further in Section 5.2 below.
(ix)	lake usage,	N/A (the proposal will affect usage of any lake).
(x)	staged development of the lakes and their usage during staged development,	N/A (the proposal will affect usage of any lake).
(xi)	the need to monitor the water quality of the lakes having regard to their intended use, and	The materials to be consolidated in the residual materials consolidation area are not likely to impact water quality in the landform or lakes. See Section 5.2 .
(xii)	the effect upon the Hawkesbury/Nepean River system,	The residual materials consolidation area is approximately 200m north of the Nepean River with a change in topography of over 10m across this distance (between the water level in the Nepean River and the base of the consolidation area). It is not expected that the residual materials consolidation area would cause any effect on the Nepean River. See Section 5.2 and Section 5.3 .
(f)	the rehabilitation and reconstruction of the land including: (i) landscape design, (ii) the structural stability and soil compaction of landforms (including, where appropriate, the land shown on the structure plan as future urban), (iii) the stability and impermeability of the Nepean River embankment, (iv) soil conservation, and (v) revegetation,	The residual materials consolidation area is located within an existing void that is in a structurally stable part of the Penrith lakes Site. Final landform, landscaping, revegetation are details to be approved under the processes set out in the conditions of existing development consent DA1. The proposed residual materials consolidation area will not impact on the final contours as approved under DA1, but may result in a limitation as to what form of landscaping can be achieved immediately above the consolidation area. Details of landscaping will be developed as part of the processes established in DA1.
(g)	any effect upon a locality, place or building not listed in Schedule 3 having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations,	The proposal will only impact on land that has been subject of extractive industry. As such, the proposal will not impact on any places of heritage significance, and it will not prevent the future conservation and preservation of items of environmental heritage listed in Schedule 3 of the Penrith Lakes SEPP.
(h)	measures to be taken to conserve and preserve items of environmental heritage listed in Schedule 3 including, where appropriate, a conservation plan, and	Extraction of residual materials would be carried out in accordance with the existing AHIP (1131345) that applies to the Penrith Lakes Site.
(i)	access to, the supply of water from any existing service to, and the supply of and access to municipal and utility services to, land to which this Policy applies other than that part of that land the subject of the application.	The proposed residual materials consolidation area will not change access to, or the supply of water, or the supply of utility services to any land within the Penrith Lakes SEPP area.

5.2 Soils, Groundwater, Geotechnical

As detailed in Section 2.2 of this report, the existing geotechnical conditions of the Penrith Lakes Site have been highly modified through the extensive quarrying uses. The geology and hydrogeology of the site and its surroundings are described in a Hydrogeological Assessment of the PLS, prepared by Nation Partners, which is provided in **Appendix D**.

5.2.1 Soils and Geotechnical

The residual materials consolidation area has been designed to maximise structural integrity of the land form. The physical barrier of the residual materials consolidation area would consist of a 500mm thick highly impervious clay seal, overlying 500mm of overburden, providing adequate engineering of the capping layer.

A 1m clay cut-off trench will enclose the residual materials consolidation area further isolating the buried residual materials. The surrounding landscape of the consolidation area will undergo land forming and compaction to stabilise the structure, with a view to ensuring it is suitable for future public open space land uses. Specific land uses and the nature and extent of development and re-vegetation above the residual materials consolidation area will be determined as part of the rezoning and masterplanning development processes that are envisaged to take place in the future.

5.2.2 Groundwater

A series of existing groundwater bores has been established across the Penrith Lakes Site, including nine boreholes in the vicinity of the residual materials consolidation area. Data from these bores has been analysed by Nation Partners (see **Appendix D**) to establish groundwater contours across the site. In the vicinity of the residual materials consolidation area the groundwater levels are inferred to be at approximately 11.5m-12m AHD. This would mean that the groundwater levels are approximately 10m below the base of the consolidation area (which would be at approximately 22m AHD).

In the southwest corner of the Penrith Lakes Site, the groundwater model generated by the contours indicates that the Wetlands Ponds and Quarantine Lake appear to act as recharge zones with local groundwater flowing south and southwest before discharging to the Nepean River.

Given that the base of the proposed residual materials consolidation area is at a minimum of 10m above the level of the Nepean River, and similarly above the water-level that will be created in nearby lakes system and the underlying groundwater level, the proposed modification will not impact on existing groundwater flows and will not require dewatering except in the case of an extreme rain event during construction.

The 500mm clay capping layer will minimise the amount of water infiltrating into the residual materials consolidation area and so will minimise the amount of water coming into contact with buried residual materials. The inert dry materials proposed to be consolidated are relatively stable in the natural environment and are not characteristic of products that generate contaminated leachate.

5.2.3 Management and Monitoring

The existing groundwater bores will continue to be monitored during the course of the residual materials management works, and recorded in the post construction report to be prepared by the site hygienist.

5.3 Hydrology and Surface Water Quality

The Nepean River lies to the west and south of the site with a bank height of around 7-10m AHD.

Surface water systems across the site have been dramatically altered by the quarry operations and the creation of the lakes system under the PLS. The recreational lakes have been designed to accommodate the natural water flows that existed in the floodplain prior to quarrying whilst providing recreational, social and environmental benefits for the community.

Once completed the lakes system will operate as a gravity flow system that replicates the natural south to north flow direction of the adjacent Nepean River and will include wetlands and water(bodies intended to optimise water quality in order to accommodate recreational end(uses in nominated lakes. The primary sources of water inflow to the lakes include direct rainfall and runoff from semi-rural and residential catchments to the east and northeast. The primary outflows from the lakes include evaporation and discharge to the Nepean River at the northern end of the Scheme, where the lake operating levels will allow gravity discharge to the river.

The proposed residual material consolidation area will not impact on any of the lakes, and will not change the design surface level (as shown in **Appendix C**) that has been approved by the Department of Planning and Environment under Condition 8 of DA1. This approved landform indicates that that the residual materials consolidation area will form the edge of the Penrith Lakes Site catchment, with overland flows to the north, into the proposed future wetland lakes system. This already approved hydrological regime will not be impacted once the consolidation works are complete.

5.3.1 Construction Management and Monitoring

During extraction and filling activities sediment and erosion control measures will be put in place around the works areas in order to prevent erosion and sedimentation issues. PLDC has developed robust management and operating procedures which include for the control of erosion and sedimentation. Management measures would include (but not necessarily be limited to):

- Identification of locations within the development site and/or site specific activities which are likely to pose the highest risk of erosion and sedimentation.
- Identification of a standard list of practices that would apply to the site as a whole and identification of location and activity specific measures that would apply to manage specific areas of erosion and sedimentation risk.
- Provision of location and/ or activity specific site plans identifying the location and type of mitigation measures to be implemented for that location/ activity to guide day to day construction management on site.
- Implementing existing protocols for the management of machinery, oils and other liquid spills.
- Monitoring and review protocols to identify the frequency of inspection of site measures and review of measures to determine their effectiveness and appropriateness as construction progresses.
- Responsibilities of site personnel, outlining who is responsible for implementing, monitoring, reviewing and maintaining the measures on site.

Water quality monitoring is required as part of EPL 2956 which applies to the Penrith Lakes Site, and this monitoring will continue during the residual materials management works.

5.4 Access, Transport and Traffic

The proposal will not require access to/from the site from outside the site. The proposed residual materials consolidation works will result in less heavy vehicles on local roads due to the reduced number of vehicles importing VENM (to create final design surface levels), and the reduced number of vehicles required to export residual materials off-site for disposal. As such, it will result in fewer impacts associated heavy vehicles movements on local roads within Penrith LGA.

Approximately 23,500m³ of residual materials will be trucked from existing stockpiles throughout the Penrith Lakes Site to the proposed residual materials consolidation area. The relocation of residual materials from these locations will utilise the existing haulage routes resulting in minimal disturbance to existing truck movement patterns within the site. Existing haulage routes are presented in Figure 6 below.



Figure 7 – Existing haulage routes from known residual materials stockpile locations

Source: PLDC

Dump trucks are likely to have a capacity of between 20-40m³, meaning that less than 1,200 loads of material are expected to be required over the course of the filling activities.

On-site traffic arrangements will be the same as currently in place for ongoing quarrying and rehabilitation works.

5.5 Noise and Vibration

The proposal will include bulk earthworks and the operation of construction equipment, including dump trucks, loaders and excavators. Compacting equipment may be used for a short period of time at the closure of the residual materials consolidation area. No major rock breaking is required.

These activities are consistent with the approved quarry extraction and land rehabilitation activities, and will take place during the approved hours of work. As such, the proposal is unlikely to generate additional noise impacts beyond that already approved at the nearest receivers.

The proposed residual materials consolidation and management works would be located near the southern boundary of the Penrith Lakes Site. The closest commercial and industrial receivers (including the Emu Plains Correctional Centre) are located to the south of the site, over 500m from the proposed residual materials consolidation area. McCarthy Catholic College and nearby residential area are located over 1.2km away at Mackellar Street, to the south-east of the residual materials consolidation area, and the residential suburb of Emu Plains is located some 1.5km to the west of the residual materials consolidation area.

Due to the distance between the proposed works and the closest sensitive receptors, and the nature of the proposed works (being of the same type and scale as is part of the current quarrying and rehabilitation works), it is considered that the existing noise limits remain suitable and can be complied with using existing noise management measures.

In particular, Wilkinson Murray recently (in March 2014) carried out compliance noise monitoring (see **Appendix E**) in relation to the ongoing quarrying and site rehabilitation works being carried out at the site. The compliance noise monitoring report demonstrates that the ongoing activities at the site are being carried out without exceeding the noise limits established within various development consents for the Penrith lakes Site

The following noise management measures will be implemented to ensure noise impacts are minimised:

- Noise monitoring to be undertaken in response to complaints.
- Plant and equipment would be operated in a quiet and efficient manner, including:
 - Turn off plant that is not being used.
 - Examine, and implement where feasible and reasonable, alternative work practices which generate less noise – for example use electric equipment instead of diesel or petrol powered equipment.
 - Examine, and implement where feasible and reasonable, the option of using silenced equipment.
 - Ensure plant is regularly maintained.
 - Locate noisy plant away from potentially noise-affected neighbours or behind barriers, such as stockpiles.
 - Where reasonable, provide respite periods for very noisy activities.

- Talk to workers about noise from the works and how it can be reduced; and
- Review, and implement where feasible and reasonable, work practices to minimise noise from construction that are the subject of noise complaints.

5.6 Air Quality

5.6.1 Construction Management

As with any project which involves large scale earthworks there is the potential for air quality impacts arising from the generation of dust and the emission of pollutants from plant and equipment.

The following mitigation measures would be implemented during the residual materials management works to ensure the development would be constructed in a manner that minimises dust and other air quality emissions from the site. The measures outlined below include those contained within the existing Dust Management Protocol for the Penrith Lakes Site.

- All vehicle loads entering or leaving the site would be covered and secured.
- On site vehicle speed limits would be established and enforced.
- Vehicles and activities would be confined to designated work areas to prevent any inadvertent encroachment into exposed and stripped areas of ground.
- Access and haul roads would be watered via water cart or truck as required.
- Exposed stockpiles and unsealed areas would be sprayed or stabilised with mulch as soon as possible.
- Rehabilitation of the work area to be undertaken as soon as practicable, including progressive stabilisation/revegetation of exposed surfaces and landforms.
- During extreme weather events where dust generation cannot be effectively minimised, dust generating works would cease until adequate controls can be implemented to alleviate visible dust or until such weather conditions cease.

In addition to the above dust suppression measures, the following emission control measures would also be implemented:

- All emission controls used on vehicles and demolition equipment would comply with standards listed in Schedule 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010*.
- Vehicles and plant would be regularly serviced and maintained in good working order.
- Vehicles and plant would be switched off when not in use for extended periods of time.

5.6.2 Dust Monitoring

EPL 2956 includes requirements to monitor dust emissions from the Penrith Lakes Site using depositional / directional gauges at nine locations around the boundary of the site. The depositional / directional gauges provide information of which direction the dust has been originated, and measure the deposition of larger dust particles that settle out from the air over approximately one month in the vicinity of the gauge locations.

The air quality monitoring requirements also include continuous monitoring using high volume air samplers of Total Suspended Particles and PM10 (particulate matter less than 10 microns) at the site for a period of 24 hours on every 6th day.

This monitoring will continue during the residual materials management works.

5.6.3 Post-Closure

Non-putrescible inert residual materials will be placed into the consolidation area. The residual materials will comprise inert materials derived from former agricultural and quarrying activities which are not expected to release any landfill gas emissions.

5.7 Waste Management

The purpose of the residual materials consolidation area is to provide for the permanent storage of residual materials located at the site that have been derived from historical activities, including quarrying.

It is not expected that substantial quantities of waste would be generated as a result of the construction of the residual materials consolidation area. The operation of the residual materials consolidation area is not expected to result in any additional wastes requiring disposal.

All residual materials placed in the proposed consolidation area will be sourced from the Penrith Lakes Site. No waste materials from off-site will be received or placed in the residual materials consolidation area.

Details of all residual materials emplaced in the residual materials consolidation area will be recorded in the post construction report to be prepared by the site hygienist.

5.8 Biodiversity, Flora and Fauna

The proposal will only impact on land that has been subject of extractive industry and/or the location of buried residual materials or above ground stockpiles of residual materials. As such, the proposal will not impact on any native vegetation, threatened species, populations or communities.

5.9 Social and Economic Impacts

The proposed residual materials consolidation works will result in fewer impacts associated heavy vehicles movements on local roads within Penrith LGA, improving local amenity and minimising impacts on the surrounding community.

5.10 Consultation

Consultation with the EPA has taken place. The EPA has raised no specific issues or concerns in relation to the proposed residual materials consolidation area. It is understood that EPL 2956 will be updated to provide for the proposed residual materials management works.

6.0 Conclusion

The proposed modification application provides for a residual materials consolidation area for permanent emplacement of the buried residual materials, and surface stockpiles of residual materials at the Penrith Lakes Site.

The proposal will impact on land that is located within the area affected by development consent DA1, and this consent is proposed to be modified to include the construction, operation and closure of the proposed residual materials consolidation area. All other conditions within DA1 remain relevant and sufficient to the works.

The residual materials have been generated through historical quarrying and rehabilitation activities at the site, and are currently being managed and handled in accordance with the provisions of the various development consents that apply at the Penrith Lakes Site for quarrying and rehabilitation activities. No modifications to these development consents are required.

Appropriate mitigation and management measures have been set out, which generally reflect those controls currently in place for carrying out the ongoing quarrying and rehabilitation works – including standard noise, air quality and water management controls and monitoring during the works. Additional mitigation and management measures include:

- Residual materials management controls – ensuring that the residual materials emplaced in the consolidation area are recorded in a report to be prepared by the site hygienist so as to inform future rezoning and development decisions.
- Existing groundwater monitoring bores will continue to be monitored during the course of the residual materials consolidation works, and the results recorded in the post construction report to be prepared by the site hygienist.

The proposed modification will not impact on the ultimate delivery of the land as open space area as set out in the Penrith Lakes SEPP Structure Plan, and is not expected to result in any measurable environmental impacts. In particular, consolidation of the residual materials will be carried out so that the land will comply with the criteria established as 'Health Investigation Levels C – Recreational' under the NEPM and is not expected to compromise future use of the Site for recreational land uses, as is provided for in the PLS.

It will result in less heavy vehicles on local roads due to the reduced number of vehicles importing VENM (to create final design surface levels), and the reduced number of vehicles required to export residual materials off-site for disposal. As such, it will result in fewer impacts associated heavy vehicles movements on local roads within Penrith LGA.