

ASSESSMENT REPORT

Penrith Lakes Scheme Wildlife Lake Modifications (DA4 Mods 4 and 5)

1 BACKGROUND

The Penrith Lakes Scheme (the Scheme) currently supplies around half of Sydney's sand and gravel demand and covers an area of just under 2,000 hectares of the Penrith Castlereagh floodplain in the Penrith LGA (see Figure 1).

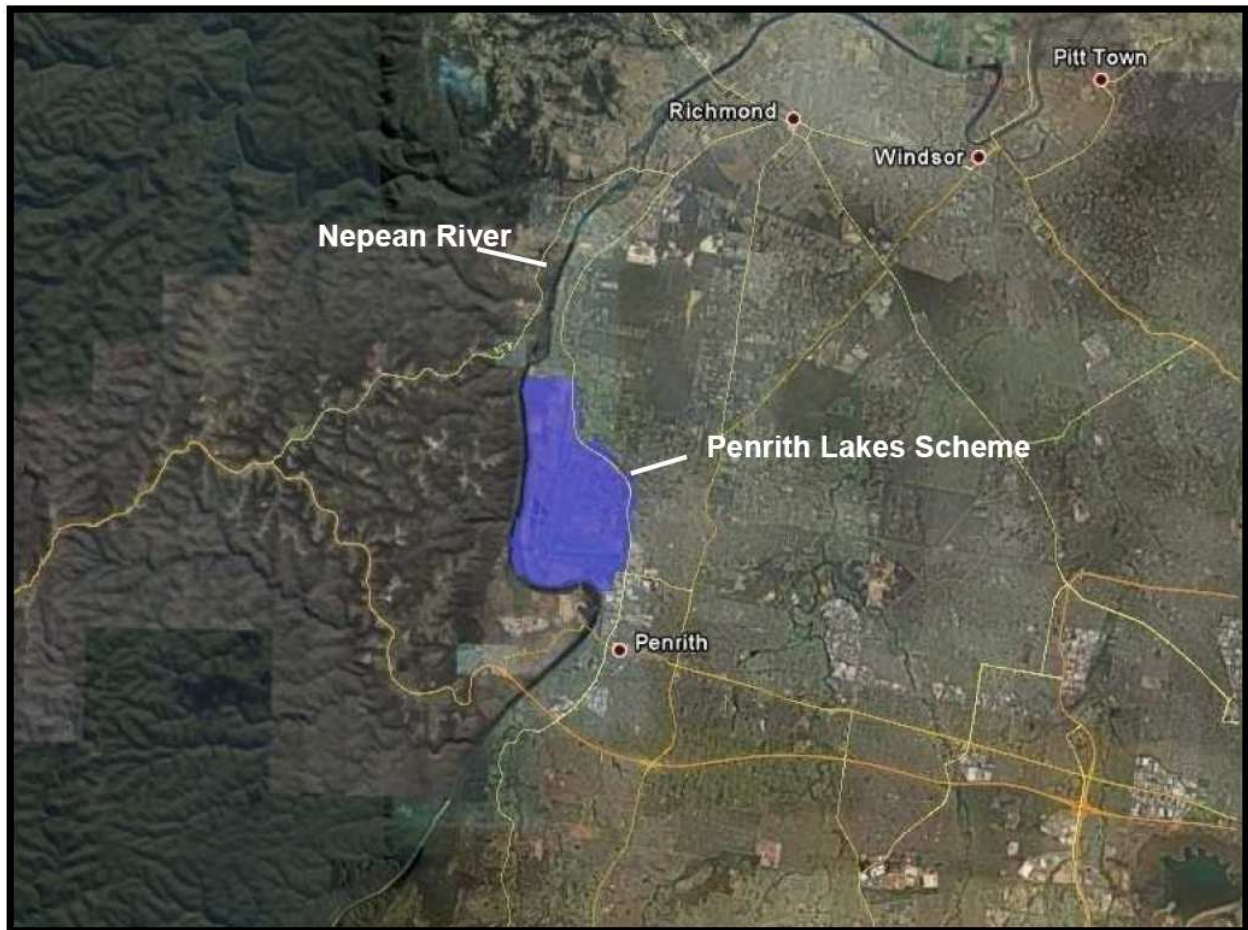


Figure 1: Location of the Penrith Lakes Scheme

Extraction operations are scheduled to be completed by around 2014 and the subsequent rehabilitation of the site for residential and recreational use is expected to be completed by 2023.

The Scheme's extraction and rehabilitation operations are governed by the *Sydney Regional Environmental Plan No. 11 – Penrith Lakes Scheme* (SREP 11) and co-ordinated by the Penrith Lakes Development Corporation (PLDC).

The Scheme is regulated by a number of development consents granted by the Minister. Operations to the west of Castlereagh Road are covered by Development Consent 4 (DA4), while operations to the east of Castlereagh Road are generally covered by Development Consents 2¹ & 3 (DA2 & DA3) (see Figure 2).

¹ DA2 is also identified as DA 86/2720

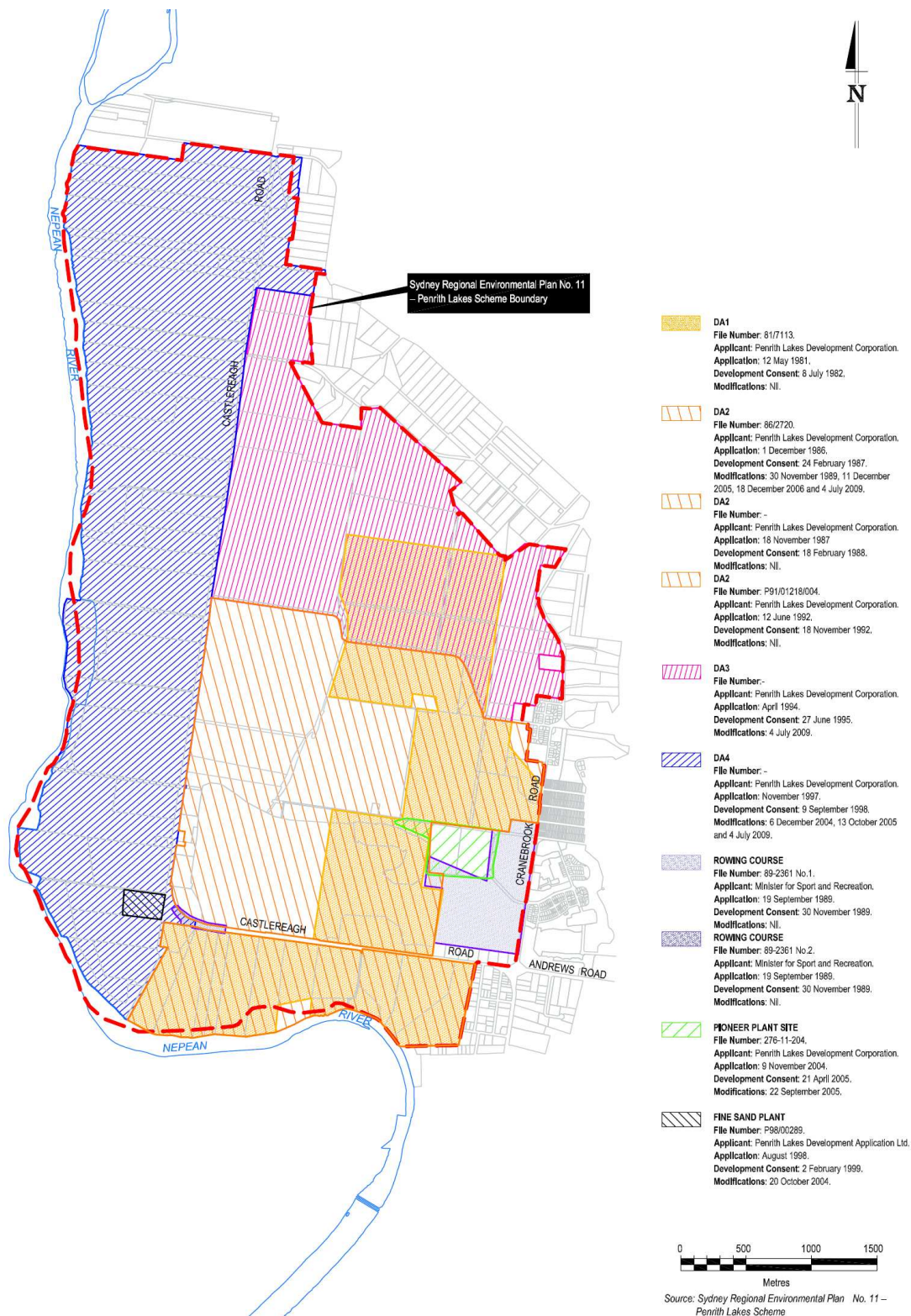


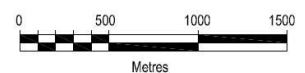
Figure 2: Penrith Lakes Scheme Development Consents

SREP 11 includes a provision for the final landform of the Scheme, set out in a Structure Plan, which comprises a series of lakes (see Figure 3). In recent times, PLDC has been consulting with the NSW Government regarding a proposed amendment to the final landform as set out in the Structure Plan. This amendment would involve a number of changes to the layout of the lakes within the Scheme, most notably the consolidation of the two main lakes into a single lake (see Figure 4). In December 2010, the Penrith Lakes Task Force reached an in-principle agreement for the proposed amendment to the Structure Plan, including the single-lake scheme, subject to obtaining the necessary approvals.



Heritage Items

- 1 - Hadley Park
- 2 - Nepean Park
- 3 - McCarthys Cemetery
- 4 - Upper Castlereagh Church & Hall
- 5 - Upper Castlereagh School & Residence
- 6 - Methodist Cemetery



Source: Sydney Regional Environmental Plan No. 11 –
 Penrith Lakes Scheme (Amendment No. 4 Plan dated
 8 July 1996) ; Aerial Photo Department of Lands
 (SIX Image - Ausimage SKM 2008)

Figure 3: Penrith Lakes Scheme Structure Plan – As Approved



Figure 4: Penrith Lakes Scheme Structure Plan – As Proposed
 (Note. The left structure plan shows the proposed single-lake scheme, which is subject to separate approval. The right structure plan shows the approved two-lake scheme, with the proposed changes to the Wildlife Lake)

2 PROPOSED MODIFICATIONS

PLDC is proposing to modify DA4 to address one component of the proposed change to the Structure Plan, namely the shape and discharge characteristics of the Wildlife Lake (ie. the northern-most lake in the Scheme). The proposed modifications include changes to:

- the layout of the Wildlife Lake from that approved in the Structure Plan;
- the configuration and location of the Wildlife Lake Weir; and
- the configuration and location of the Wildlife Lake Flood Outlet Pipe.

The proposed change to the layout of the Wildlife Lake is shown on Figure 5. The revised layout results in a lake of approximately 110 hectares, which is approximately 20 hectares larger than the approved lake layout.

The approved location of the Wildlife Lake Weir is on the south-western boundary of the lake, connecting directly to the Nepean River (see Figure 3). PLDC proposes to relocate the weir to Hunts Gully in the north-western area of the Wildlife Lake, to reduce the impact on the sensitive banks of the Nepean River, and to reduce downstream flood impacts.

The approved location of the Wildlife Lake Flood Outlet Pipe was also in the south-western area of the lake (associated with the weir location). PLDC proposes to relocate the flood outlet pipe to the north-western corner of the lake, discharging directly to the Nepean River.

PLDC has also sought to modify the terms of DA 4 under section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act). PLDC has submitted two modification applications in support of the proposed modifications, including one for the Wildlife Flood Outlet Pipe (Mod 4) and one for the Wildlife Lake Weir (Mod 5). PLDC subsequently amended the applications to include the proposed changes to the layout of the Wildlife Lake.

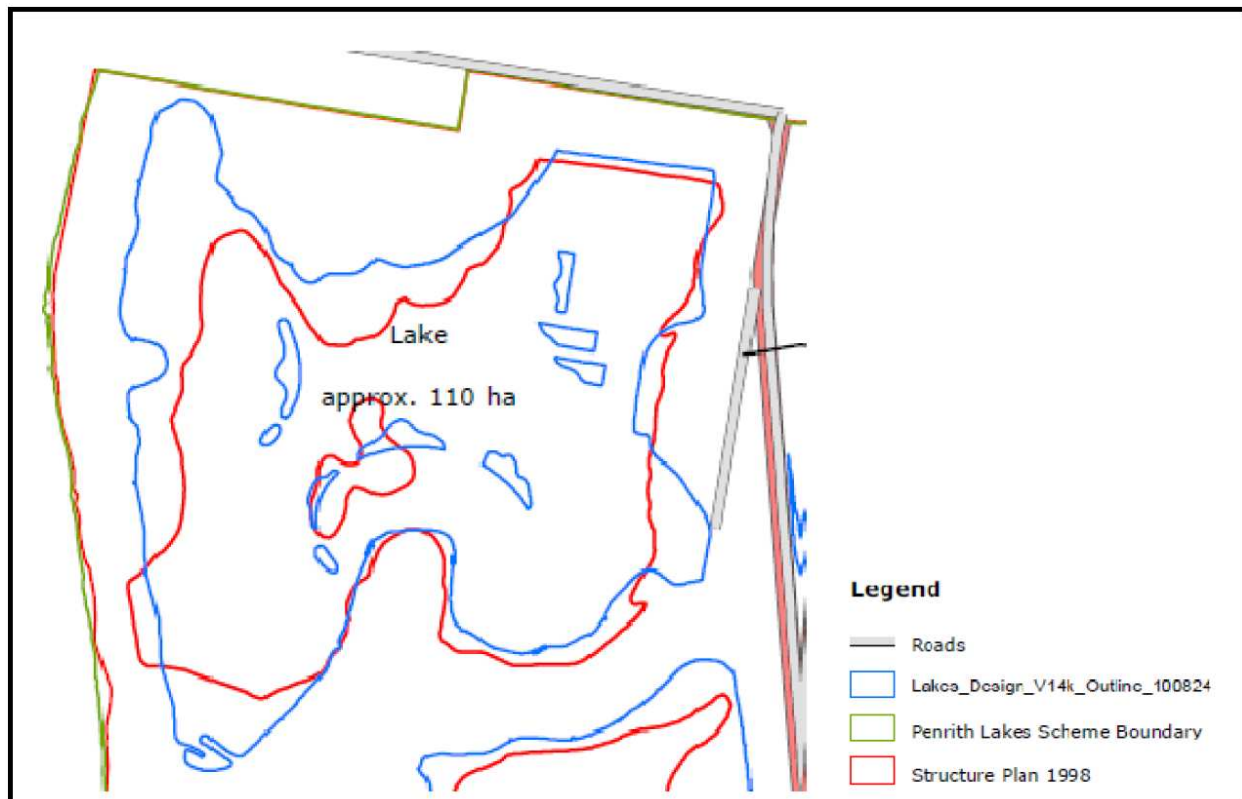


Figure 5: Proposed change to layout of the Wildlife Lake (in blue)

3 STATUTORY CONTEXT

3.1 Consent Authority

The Minister was the consent authority for DA4, and is consequently the consent authority for the modification applications. However, the Director-General may determine the applications under the Minister's delegation of 25 January 2010.

3.2 Modification

Under clause 8J(8)(c) of the *Environmental Planning and Assessment Regulation 2000*, section 75W of the EP&A Act applies to any modification of a development consent granted by the Minister under Part 4 of the EP&A Act before 1 August 2005. DA4 was granted prior to 1 August 2005; and must therefore be modified under section 75W of the EP&A Act.

The Department notes that:

- the proposed modifications would not change the essential function of the development for which consent was originally granted, namely a sand and gravel quarry to be rehabilitated to a system of lakes;
- the proposal would not change the quarrying, processing and transport methods, operating hours, rehabilitation methodology or life of the development consent;
- the proposed modifications would not alter the design principles of the Wildlife Lake;
- the proposed amendments to the weir and pipe infrastructure involve relocating infrastructure previously contemplated in the structure plan; and
- the proposed additional disturbance necessary for the proposal would be relatively minor.

Consequently, the Department is satisfied that the proposal can appropriately be characterised as a modification to the originally approved quarry, rather than a new project in its own right, and that the applications may be determined under section 75W of the EP&A Act.

3.1 SREP 11 Penrith Lakes Scheme

Under clause 12 of SREP 11, a consent authority may amend the structure plan for the Penrith Lakes Scheme in relation to changing the size and shape of a lake, if:

- (a) the proposed size and shape of the lake is generally in accordance with the structure plan before its amendment, or
- (b) the consent authority is of the opinion that the proposed size and shape is in the public interest and will not significantly reduce the public enjoyment or use of the Penrith Lakes Scheme on completion.

The Department is satisfied that the proposed change to the size and shape of the Wildlife Lake:

- is relatively minor and remains generally consistent with the approved structure plan;
- is in the public interest, as the change would assist in reducing downstream flooding (see Section 5.1) and increase the supply of sand and gravel to the Sydney construction industry; and
- would not significantly reduce the public enjoyment or use of the Penrith Lakes Scheme on completion.

Clause 8 and schedule 2 of the SREP detail a number of matters that a consent authority must consider when assessing applications within the Scheme. The Department has considered these matters in its consideration of the proposed modifications, and is satisfied that the proposal is able to be undertaken in a manner that is consistent with the provisions of the SREP.

4 CONSULTATION

Under section 75W of the EP&A Act, the Department is not required to notify modification applications. However, after accepting the EA, the Department:

- made the EA publicly available from 10 to 24 December 2010:
 - on the Department's website,
 - at the Department's Information Centre; and
 - at the offices of Penrith City Council and the Nature Conservation Council;
- notified relevant State and local government authorities; and
- advertised the exhibition in the Sydney Morning Herald and the Penrith Press.

The Department received a total of 6 submissions in response to exhibition of the EA, including 5 from government authorities and 1 from a neighbouring landowner.

The **Department of Trade & Investment, Regional Infrastructure and Services (DTIRIS)** (formerly Industry & Investment NSW, or I&I NSW) noted that a controlled activity permit for the proposed weir is not necessary and commented on bank stabilisation and scour protection, erosion and sediment control measures and water quality protection.

The **Office of Environment and Heritage (OEH)** (formerly Department of Climate Change and Water, or DECCW) made comments relating to:

- Aboriginal Heritage - the lack of an assessment of archaeological or cultural heritage in the conservation zone to be impacted by the proposed weir, further information on proposed mitigation and management measures for Aboriginal Cultural Heritage and the need to apply for a separate permit under the *National Parks and Wildlife Act 1974*, rather than modify its existing permit;
- flood management for the whole Scheme;
- water quality management, including releases to the Nepean River; and
- threatened species, air quality and noise management, noting that existing conditions or proposed mitigation measures would be applicable to the proposed works.

The **Department of Primary Industries (DPI)** (formerly NSW Office of Water, or NOW) sought clarification about the interaction between the Wildlife Lake and the Hawkesbury Alluvials Groundwater Source, noting that its preference is for an impermeable lining of the Wildlife Lake to prevent water interchange between the lake and the aquifer. DPI also noted that the Scheme would need adequate licences to access water from the Nepean River.

Penrith City Council (Council) made comments relating to:

- flooding - the potential changes to the flooding regime and associated risks to surrounding properties as a result of the proposed modifications; and
- site rehabilitation – concerns about the potential for final landforms for urban and parkland areas to not meet approved designs.

The former **Heritage Branch** (now part of OEH) did not object to the proposed modifications and supported the recommended mitigation measures for heritage management.

The public submission raised concerns about conflicting information about predicted flooding changes, visual impacts of the weir and a lack of information about potential scouring and instability at the pipe outlet.

PLDC has prepared a response to the issues raised in submissions, and this has been considered by the Department in its assessment of the merits of the proposed modifications.

5 ASSESSMENT

The Department considers the key issues for assessment are flooding, Aboriginal heritage, flora and fauna and visual amenity. The assessment of these and other issues associated with the proposal is presented below.

5.1 Water Resources

Flooding

The EAs include a Flood Infrastructure Concept Design prepared by Cardno, which provides an assessment of the flood impacts associated with the Penrith Lakes Scheme, including the proposed changes to the Wildlife Lake.

The flood assessment is based on the proposed 'single main lake' design for the Scheme, which as discussed in Section 1 above, is subject to separate approval. Accordingly, the flood assessment in the EAs also includes an 'Alternative Scheme' flood assessment, which is based on the two-lake scheme as currently approved in the Structure Plan, along with the Wildlife Lake as proposed (as shown on Figure 4). The Alternative Scheme assessment includes flood modelling which indicates that there would be negligible difference in flood impacts between the single-lake scheme and the two-lake scheme.

The flood assessment indicates that the proposed lake layout and proposed flood management infrastructure (including the proposed weir and flood outlet pipe) would reduce flood levels for much of the area surrounding the Penrith Lakes Scheme during key flood events, including the 100 year and 200 year events. This would considerably reduce the number of residences/buildings inundated during key flood events, and the resulting damages bill, as indicated in the following table.

Table 1: Flood Impacts

Flood Event	Estimated No. of Properties with Overfloor Flooding		Estimated Flood Damages Cost	
	Approved Structure Plan	Proposed Structure Plan	Approved Structure Plan	Proposed Structure Plan
10 year	16	16	\$1.2M	\$1.2M
20 year	25	25	\$1.8M	\$1.8M
50 year	105	85	\$6.1M	\$5.1M
100 year	1,027	665	\$117.7M	\$61.4M
200 year	2,743	2,422	\$357.7M	\$294.2M
500 year	3,505	3,135	\$505.0M	\$466.2M

However, flood levels would increase for some localised properties to the north of the Scheme (ie. north of Smith Street). The assessment indicates that flood levels would increase by up to about 0.4 metres during the 100 year event and 0.1 metres during the 200 year event. However, the impacted area is rural land that is already within the floodplain, and the increases would not affect any residences.

The proposed weir on Hunts Gully would also be expected to increase inundation of these properties during flood events less than the 100 year event (as the weir would act to block backwater flooding up Hunts Gully during events less than the 10 year event), however the flood assessment indicates that this flooding would be confined to the Hunts Gully riparian area and surrounding floodplain.

The flood assessment also indicates that the proposed flood infrastructure would not significantly increase flood velocities in the area. Relatively minor increases are predicted along the Nepean River (up to 0.5m/s), and to the north of the proposed Wildlife Lake Weir (up to 1.4m/s), however the assessment concludes that these velocities are relatively low and would not result in any additional erosion.

The assessment does acknowledge the potential for localised erosion and scouring associated with flows through/over the flood outlet pipe and weir. To mitigate these impacts, PLDC proposes to:

- design and construct the weir and flood outlet pipe with appropriate erosion protection features, including moderate slopes, energy dissipation structures and scour protection; and
- prepare an Erosion and Sediment Control Plan for the works, as well as a Flood Emergency Response Plan.

The Department is satisfied that the proposal can be managed such that it would not result in any significant adverse flood impacts in the locality. Indeed, the flood modelling suggests that the broader proposed changes to the Scheme would considerably reduce flood impacts and damages in the surrounding area.

The Department notes that the existing consent includes conditions requiring PLDC to prepare and implement a Water Management Plan for the Penrith Lakes Scheme. The Department has

recommended conditions requiring PLDC to review and update this plan to accommodate the proposal, in consultation with the relevant authorities. The revised plan would be required to include a detailed Flood Management Plan and Erosion and Sediment Control Plan.

Water Quality and Quantity

OEH and DPI are satisfied that the proposal is unlikely to result in any significant water quality impacts, although OEH noted that it would give careful consideration to water quality issues associated with the broader Scheme through its Environment Protection Licence (EPL) for the Scheme, including consideration of thermal pollution, sediments and algal blooms and other toxins.

The Department is satisfied that the proposed changes to the layout of the Wildlife Lake, and the proposed weir and flood outlet pipe, would not significantly alter the existing water quality issues associated with the Penrith Lakes Scheme. As noted above the existing consent requires PLDC to prepare and implement a detailed Water Management Plan for the Scheme. The Department has recommended a condition requiring PLDC to update this plan to accommodate the proposal, including a surface water management and monitoring plan.

With regard to water quantity, DPI noted that the water supply for the Scheme is required to be appropriately licenced, and that PLDC's existing licences (ie. approximately 3 gigalitres) appear to adequately cover the licensable quantity. The Department is satisfied that the proposal would not significantly affect water supplies or water sharing in the catchment, and notes that PLDC is required under the *Water Management Act 2000* to ensure that it holds adequate water entitlements to cover its water supply. The Department has recommended conditions reflecting this requirement.

Groundwater

DPI also commented on its preference that groundwater interaction between the Wildlife Lake and the surrounding shallow groundwater resource – known as the Hawkesbury Alluvials Groundwater Source – is minimised through installation of a clay liner or other impermeable barrier on the floor of the lake. Alternatively, DPI states that water ingress from the groundwater source to the lakes would need to be licenced. PLDC subsequently confirmed that the lakes have been designed to minimise interaction with the Hawkesbury Alluvials Groundwater Source.

The Department notes that the existing consent includes requirements on PLDC to prepare 'two year plans' which provide detailed engineering design, landscape design and rehabilitation activities for each two year period of the quarry. These plans include specifications for detailed design of the final lakes, including provision for minimising interaction with the groundwater resource.

As detailed above, the existing consent also includes a requirement on PLDC to prepare and implement a detailed Water Management Plan for the Scheme. The Department has recommended a condition requiring PLDC to review and update this plan in consultation with DPI, including a groundwater management plan.

5.2 Aboriginal Heritage

The EAs did not include any specific Aboriginal heritage assessment for the proposed disturbance areas, rather they relied on previous assessments undertaken for the wider Penrith Lakes Scheme. The EAs acknowledged that the proposed Wildlife Lake Weir in particular would partially encroach into an area originally set aside in DA4 as a conservation area, due to the presence of concentrated Aboriginal objects in the area and its cultural significance. The EAs acknowledge that the proposed weir could impact a number of Aboriginal objects in this area.

Indeed, both the Wildlife Lake Weir and Wildlife Lake Flood Outlet Pipe would encroach into the Scheme's conservation areas, as shown on Figure 6. The weir would disturb approximately 0.75 hectares of the Smith Street conservation area, which is known to contain a high concentration of Aboriginal objects, and is culturally significant due to its elevated nature above the surrounding floodplain, which would have made the area valuable as a camping area. The site has also been connected by one Aboriginal stakeholder to a purported nearby massacre site, however PLDC's archaeologist argues that this connection is not substantiated.

The flood outlet pipe would disturb approximately 0.75 hectares of the riverbank conservation area, which is also known to contain Aboriginal objects.

OEH and the Department were critical of the lack of Aboriginal heritage assessment in the EAs. PLDC subsequently undertook an Aboriginal heritage assessment of the proposal area, in consultation with the Aboriginal community.



Figure 6: Penrith Lake Scheme Conservation Areas

The assessment and associated surveys did not identify any Aboriginal objects within the proposed disturbance area, however this was considered to be the result of dense grass cover over the study area rather than a lack of archaeological sites. Accordingly, the assessment recommends that test excavations, and salvage excavations if warranted, be undertaken for the two areas in accordance with OEH guidelines. The Aboriginal groups generally support these recommendations.

In the wider Penrith Lakes Scheme area, the assessment notes that 42 Aboriginal objects/sites have been previously identified, of which 25 have been destroyed following approval (see Figure 6). 17 of the sites within the Scheme are protected in the conservation areas.

Although the proposal would disturb some of the conservation areas established in the original DA4, the Department is satisfied that these areas are relatively minor and would not result in any significant adverse impacts on the Aboriginal heritage values of the conservation areas or the wider locality. The Department notes that the existing conditions require PLDC to obtain approvals from OEH under the *National Parks and Wildlife Act 1974* (NPW Act) prior to disturbing Aboriginal objects/sites. The Department is satisfied that the proposed test excavations and salvage works can be appropriately managed through the approval process under the NPW Act, and notes that PLDC has recently submitted an application to OEH in this regard.

The Department has also recommended conditions requiring PLDC to provide for the long term conservation of the identified conservation areas.

5.3 Non-Aboriginal Heritage

The EAs include a non-indigenous heritage assessment, undertaken by Goddan Mackay Logan.

The assessment identified 3 heritage items in the vicinity of the proposed disturbance area, including:

- an existing property at 43 Smith Road (including a number of buildings), approximately 150 metres to the east of the proposed Wildlife Lake Weir;
- possible remains of a building (identified from aerial photographs only), upslope and to the east of the proposed Wildlife Lake Weir; and
- a small timber walkway, of low significance, within the site of the proposed Wildlife Lake Flood Outlet Pipe.

Neither of the 2 items in the vicinity of the weir would be disturbed by the proposal, and the heritage assessment concludes that the proposal would not have any significant impact on the heritage values of these items. The timber walkway within the flood outlet pipe site may be impacted by the works, however the heritage assessment concludes that this item does not have any particular heritage significance.

The Heritage Branch concurs with the findings of the heritage assessment, and is satisfied that the proposal would not result in any significant heritage impacts. The Department agrees with the views of the Heritage Branch in this regard.

5.4 Noise

The nearest sensitive receiver to the proposal area is the rural residence approximately 200 metres to the north of the proposed Wildlife Lake Weir. Although the weir (and revised lake) is closer to these receivers than the existing quarry, the EAs consider that the noise associated with the proposed works would be similar to the noise associated with the existing quarry. The EA also notes that the noise would be of a temporary nature only.

The Department notes that the existing consent contains noise limits for the existing quarry, and that PLDC would be required to comply with these noise limits for the proposed works. The conditions also require PLDC to undertake periodic (6 monthly) noise monitoring at residential receivers in proximity to the operations. Subject to complying with the established noise limits and hours of operation for the existing Scheme, and undertaking noise compliance monitoring at the surrounding residences, the Department is satisfied that the proposal can be managed such that it would not result in any significant noise impacts to the surrounding receivers. The Department has recommended conditions requiring additional noise monitoring at the nearest sensitive receiver during the proposed works.

5.5 Flora and Fauna

The proposed modifications have the potential to impact flora and fauna through the disturbance footprints of the infrastructure and lake layout changes, sedimentation of the river during construction and the effects of pipe discharge or weir overflow during operation.

The EAs for the modifications include an assessment of the terrestrial and aquatic flora and fauna impacts of the proposal by Cardno, which includes consideration of various monitoring studies previously undertaken for the Scheme.

The assessment found that the areas to be disturbed by the proposed modifications, outside the approved quarrying area, have been predominantly disturbed through previous agricultural and quarrying activities. Although the weir would be constructed across the creek which runs through Hunts Gully, the EA found that the creek downstream of the weir is heavily modified (the drainage line enters an

underground pipe approximately 100m north of the proposed weir, where it discharges into the Nepean River 170m further along). The Wildlife Lake Flood Outlet Pipe would be installed through the Nepean river bank and is predicted to disturb approximately 0.75 hectares of the bank. The lake layout changes are generally confined to areas of cleared grazing land.

No threatened flora or fauna species were identified within the proposed disturbance area. Surveys identified some species which form part of the River Flat Eucalypt Forest on Coastal Floodplain Endangered Ecological Community (EEC), although these comprise less than 5% of the total species composition, which the assessment found is not enough to be of conservation value.

PLDC proposes a range of mitigation measures to protect native flora and fauna including erosion and sediment controls, exclusion fencing and minimising the area of disturbance as far as practicable. In addition, the proposal is a component of the larger Scheme, and the design and rehabilitation of the wildlife lake is intended to improve the habitat values of the area.

OEH and the Department are satisfied that the potential impacts of the proposed modifications, with the implementation of the mitigation measures outlined in the EAs, would not significantly impact terrestrial or aquatic flora and fauna species. With the proposed rehabilitation of the site, the Department is satisfied that the modifications could be considered to improve or maintain the biodiversity values of the area over the medium to long term.

5.6 Visual Amenity

The public submission received on the proposal raised concerns about the visual impact of the proposed Wildlife Lake Weir when viewed from the neighbouring property/ies to the north. In its Response to Submissions PLDC acknowledged that the weir would have some visual impact on the properties to the north, whilst also noting that the Wildlife Lake would be a marked improvement to the current view of the quarry. To minimise visual impacts on these receivers, PLDC offered to implement tree screening along the northern boundary of the site.

The Department is satisfied that, subject to adequate screening, the proposal is unlikely to result in any significant adverse visual impacts. The Department has recommended a condition requiring PLDC to implement vegetative screening along the northern boundary, in accordance with a Landscape Plan prepared in consultation with the neighbouring landowners.

5.7 Other Issues

The Department is satisfied that other issues associated with the proposal are minor issues, are unlikely to cause any significant environmental impacts, and can be suitably mitigated and/or managed under the existing conditions of consent.

6 RECOMMENDED CONDITIONS

The Department has drafted recommended conditions for the modification applications. 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.

7 CONCLUSION

The Department has assessed the modification applications in accordance with the relevant requirements of the EP&A Act. Based on this assessment, the Department is satisfied that:

- the proposed changes to the Wildlife Lake are consistent with the provisions of the relevant planning instruments;
- the potential environmental impacts are not significant and can be adequately minimised, mitigated and/or managed;
- the site is suitable for the development; and
- the proposed modifications can be carried out in a manner that is consistent with the objects of the EP&A Act, including the principles of ecologically sustainable development.

The Department therefore believes that the proposed modifications are in the public interest and should be approved, subject to conditions.

8 RECOMMENDATION

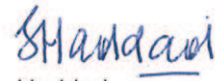
It is RECOMMENDED that the Director-General:

- **consider** the findings and recommendations of this report;
- **determine** that the proposed modifications are within the scope of section 75W of the EP&A Act;
- **approve** the proposed modifications under section 75W of the EP&A Act; and
- **sign** the attached notice of modification.



6/5/11

Richard Pearson
Deputy Director-General



6/5/2011

Sam Haddad
Director-General