



Environmental Assessment Addendum

Replacement Flows Project –
Cumberland Plain Woodland
community near the Quakers Hill
concentrate storage pond



November 2008

Executive Summary

An Environmental Assessment (EA) for the Replacement Flows Project was completed in November 2006. The EA showed that the approximate footprint of the concentrate pond at Quakers Hill STP was 13,600 m². The pond was required to store a maximum of 25 ML of concentrate from the Advanced Water Treatment Plant (AWTP) in the event that discharge to the North Suburb Ocean Outfall system (NSOOS) is not possible during periods of extended wet weather.

Further design work has identified the configuration requirements of the pond and taken into account a number of site constraints. The footprint of the concentrate pond has increased by 7,800 m² (27%) to 21,499 m². This increase in footprint is due to the need to elevate the pond 5 m above ground level to avoid water logged ground, avoid potentially contaminated soil and to prevent concentrate seepage to groundwater. The maximum capacity of the ponds is unchanged.

The project was approved by the Minister for Planning in June 2007, with a specific Condition of Approval (CoA 2.11) requiring that the Project does not *directly impact* threatened species and endangered ecological communities, such as the River-Flat Eucalypt Forest and the Cumberland Plain Woodland.

Investigations to move the concentrate pond to accommodate the increased footprint found that it could not be moved north due to the presence of a substantial stand of Cumberland Plain Woodland and could not be moved south or east because of existing high voltage transmission lines.

The option proposed in this modification is to expand the concentrate storage pond site to the southwest. This option avoids the significant vegetation to the north, the high voltage powerlines to the south and east but involves the clearing of some 4,000 m² of River-Flat Eucalypt Forest community. The impact on the River-flat Eucalypt Forest was the subject of a modification that was approved by the Department of Planning on 1 November 2008.

Further flora surveys identified an additional three mature Grey Box (*Eucalyptus mollucana*) that would be impacted by the redesigned concentrate storage pond. These trees form part of the Cumberland Plain Woodland community. A Flora and Fauna Assessment undertaken in November 2008 for the Cumberland Plain Woodland concludes that this vegetation has minimal conservation significance and value due to the very high level of disturbance, its small and fragmented nature and ground conditions. An assessment of the significance of the potential impacts concluded that the direct and indirect impacts of the revised concentrate storage pond would not result in a significant impact on the extent and condition of River-Flat Eucalypt Forest or the Cumberland Plain Woodland in the locality.

This Environmental Assessment Addendum has been prepared to assess the potential environmental impacts associated with a revised concentrate pond layout which impacts on three Grey Box which form part of the Cumberland Plain Woodland. This Addendum forms the basis for a request for a modification of the Minister's Approval under Section 75W of the *Environmental Planning and Assessment Act 1979* for Condition of Approval 2.11.

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1. Introduction

1.1 Background

The Replacement Flows Project (RFP) is a key part of the Western Sydney Recycled Water Initiative, which is one of the measures proposed by the NSW Government to secure Sydney's water needs by increasing the use of recycled water for residential, irrigation and environmental purposes. This strategy is further outlined in the 2006 Metropolitan Water Plan (NSW Government, 2006).

The project will see the Penrith, St Marys and Quakers Hill sewage treatment plants (STPs) connected by pipes to allow treated wastewater from the three plants to be further treated at a new Advanced Water Treatment Plant (AWTP) at St Marys. The highly treated recycled water will be released into the Hawkesbury-Nepean River below Penrith Weir for the purpose of substituting for up to 18 billion litres of drinking water currently being released each year from Warragamba Dam for environmental flows.

An Environmental Assessment (EA) for the RFP was placed on public exhibition from November to December 2006. A Preferred Project Report (PPR) was submitted to the Department of Planning in February 2007 and the Minister for Planning approved the Project on 20 June 2007, subject to Conditions of Approval (CoA).

On 17 August 2007 Sydney Water awarded the delivery and operation contract for the RFP to Deerubbin Water Futures (DWF) Consortium consisting of United Group Infrastructure (UGI), McConnell Dowell (McD) Constructors (Aust) and General Electric Betz who will work with Sydney Water to deliver and operate this significant water recycling project. It is anticipated that highly treated recycled water from the St Marys AWTP will flow into the Hawkesbury-Nepean River from early 2010. The Project is currently in the detailed design and construction phase. The pilot plant is currently operational and construction on the AWTP site at St Mary's STP has commenced. Pipeline construction commenced in mid September 2008.

The treatment process proposed for the Project would produce a concentrated waste stream (the concentrate) which would be piped from the St Mary's AWTP to Quakers Hill STP and then discharged to the Northern Suburbs Ocean Outfall Sewer (NSOOS). The concentrate would be temporarily stored in the concentrate storage pond at Quakers Hill STP when the NSOOS is not available for discharge (for example during periods of extended wet weather).

The Department of Planning has previously approved a modification to the Project on 1 November 2008 for the impact on River-flat Eucalypt Forest as a result of the revised concentrate storage pond design.

1.2 Requirement for this Addendum

The approved layout of the concentrate pond is as indicated in Figure 3.8 of the EA. The EA indicates that the footprint of the concentrate pond is approximately 13,600 m² and states that up to 2 hectares of vegetation may need to be cleared for the concentrate pond, (EA Appendix E, Section 4.1.3).

The layout in the EA was indicative only because the detailed design had not been undertaken at the EA stage. The detailed design of the concentrate pond is the subject of a separate submission to the Department of Planning, as per the requirements of Condition of Approval 2.8.

Detailed design has progressed on the layout of the concentrate storage pond at Quakers Hill STP since the contract was awarded in August 2007. **Figure 1** shows the revised footprint of the concentrate storage pond. Detailed design has identified that the concentrate pond needs to be raised above ground level to:

- prevent concentrate seepage to the groundwater
- avoid the water logged ground
- avoid the existing potentially contaminated soil on the site of the concentrate pond.

As a consequence, the footprint of the concentrate storage pond has increased by 7,800 m² (27%) from the footprint shown in the EA to allow for 2:1 batters. Three mature Grey Box (*Eucalyptus mollucana*) at the northern boundary of the concentrate storage pond would need to be cleared. These trees form part of the Cumberland Plain Woodland Community that is listed as an EEC under the NSW *Threatened Species Conservation Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The project was approved by the Minister for Planning, with a specific Condition of Approval (CoA 2.11) requiring that the Project does not *directly impact* threatened species and endangered ecological communities.

A flora and fauna report was prepared by SKM (November 2008) for the revised concentrate storage pond and is included in Appendix A. To ensure that the cumulative impacts of the revised design area assessed the flora and fauna report included an assessment of the potential impacts on Cumberland Plain Woodland and River-flat Eucalypt Forest from the construction of the revised concentrate storage pond.

1.3 Purpose of this Addendum

This Environmental Assessment Addendum has been prepared by Sydney Water to assess the potential environmental impacts associated with a revised concentrate storage pond which impacts on Cumberland Plain Woodland, at the Quakers Hill concentrate storage pond.

It provides:

- a comparative assessment of impacts associated with the revised and approved concentrate storage pond
- a justification for the revised concentrate storage pond
- details of the construction methods that would be undertaken at this location
- an outline of the mitigation measures that would be implemented to minimise adverse impacts on the endangered community, Cumberland Plain Woodland.

This Addendum forms the basis for a request for a modification of the Minister's Approval under Section 75W of the *Environmental Planning and Assessment Act 1979*.

2. Description of the original concentrate storage pond location

The original location for the concentrate storage pond at Quakers Hill STP is illustrated in Figure 3.8 of the EA (extract below) and described in Section 3.6.1 of the EA:

"A storage pond with a capacity up to 25 ML would be constructed at Quakers Hill STP. The storage pond would be used to provide storage for concentrate in the event that discharge to the NSOOS is not possible during periods of extended wet weather. Operation of the AWTP would be reduced or possibly stopped if the capacity of the storage pond were to be exceeded."

Table 8.2 of the EA (Section 8.3.2) indicates that 25,000 m³ (40,000 m³ loose) of spoil would be excavated for the concentrate pond.

Further to this Section 3.10 of the PPR states that the concentrate pond would be capable of storing up to 3 days of concentrate when the AWTP is running at full capacity.

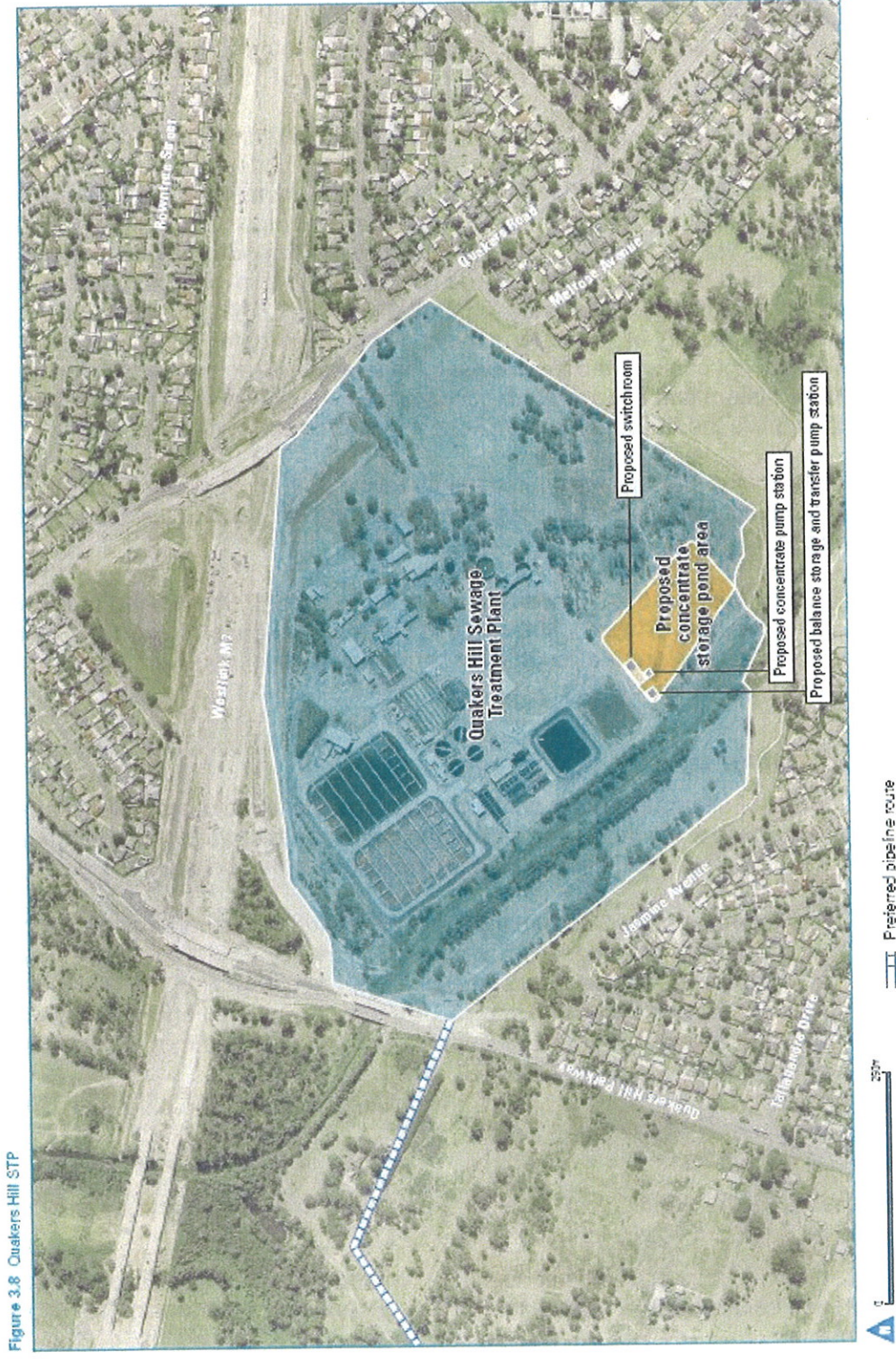
The EA (Section 8.2.3) indicates that there would be minor impacts on vegetation as a result of the clearing for construction of the concentrate storage pond. The EA states that this would be limited to impacts on isolated trees or small stands or regrowth within predominantly cleared areas. The EA does not specify any impacts on endangered ecological communities or threatened species as a result of the construction of the concentrate storage pond.

Section 4.1.3 of the Terrestrial Ecology Assessment (Oct 2006), Appendix E of the EA (p.21 and 26) indicates:

"The site of the proposed concentrate storage pond has been previously cleared and currently supports degraded lands covered by a dense growth of Kikuyu with a small number of standing dead trees which exhibit hollow cavities that provide some value for hollow-dependent fauna. Construction of the concentrate storage pond would require the removal of approximately 2ha of vegetation at the Quakers Hill STP site. The area to be disturbed has previously been cleared, is highly degraded and weed infested. The dead trees should be checked for nesting fauna prior to removal."

No threatened flora or fauna species have been recorded within the proposed disturbance area. Due to the high level of degradation the site is unlikely to provide important habitat for threatened fauna species. The clearance of approximately 2ha of vegetation is unlikely to have a significant impact on the flora and fauna values of the local or regional area."

Figure 3.8 from EA



3. Justification for project change

3.1 Design requirements

The EA did not specify design requirements for the concentrate storage pond. During the detailed design of the concentrate storage pond it was determined that the Project requires three new storage ponds at the Quakers Hill STP. These ponds will together store either concentrate and effluent or both concentrate and effluent and will be arranged as follows:

- an effluent pond with a storage capacity of 1.5 ML
- a dual use pond with a storage capacity of 8.5 ML
- a concentrate pond with a storage capacity of 15.5 ML.

The effluent pond will be dedicated to the storage of tertiary treated effluent from the Quakers Hill STP. This pond will provide temporary buffer storage for the effluent before it is pumped to the St Mary's AWTP for treatment. The concentrate pond will be dedicated to the storage of concentrate that is pumped from the St Mary's AWTP for disposal via the NSOOS. This pond will provide temporary buffer storage for the concentrate before it is pumped to the NSOOS. The dual use pond will be normally used for effluent and will operate in parallel with the 1.5 ML effluent pond to provide a total buffer capacity of 10 ML for effluent pumping. In the event that the NSOOS cannot accept concentrate for disposal, the dual use pond will be isolated from the effluent system and used to store concentrate in parallel with the concentrate pond. By doing this the maximum storage capacity for the concentrate is 24 ML.

In addition, the storage pond needs to be raised 5 m above ground level to avoid the water logged ground and potentially contaminated soil and to prevent concentrate seepage to groundwater.

As a consequence, the concentrate storage pond footprint will need to increase from 13,600 m² in the EA to 21,400 m² to accommodate these storage ponds and raise them 5 m above ground level. This is an increase of 7,800 m² or 27% over the footprint identified in the EA.

3.2 Other options

A number of alternative pond configurations and site layouts have been considered to accommodate the increased size of the concentrate storage pond footprint. These options have, however, been limited by the following site constraints:

- the presence of Cumberland Plain Woodland to the north of the pond site, which is an Endangered Ecological Community (EEC) under the NSW *Threatened Species Conservation* (TSC) Act 1997 and the Commonwealth *Environment Protection and Biodiversity Conservation* (EPBC) Act 1999
- the presence of River-Flat Eucalypt Forest to the south of the pond site which is an EEC under the NSW TSC Act
- the presence of high voltage powerlines preventing the extension of the pond to the east or south of the site.

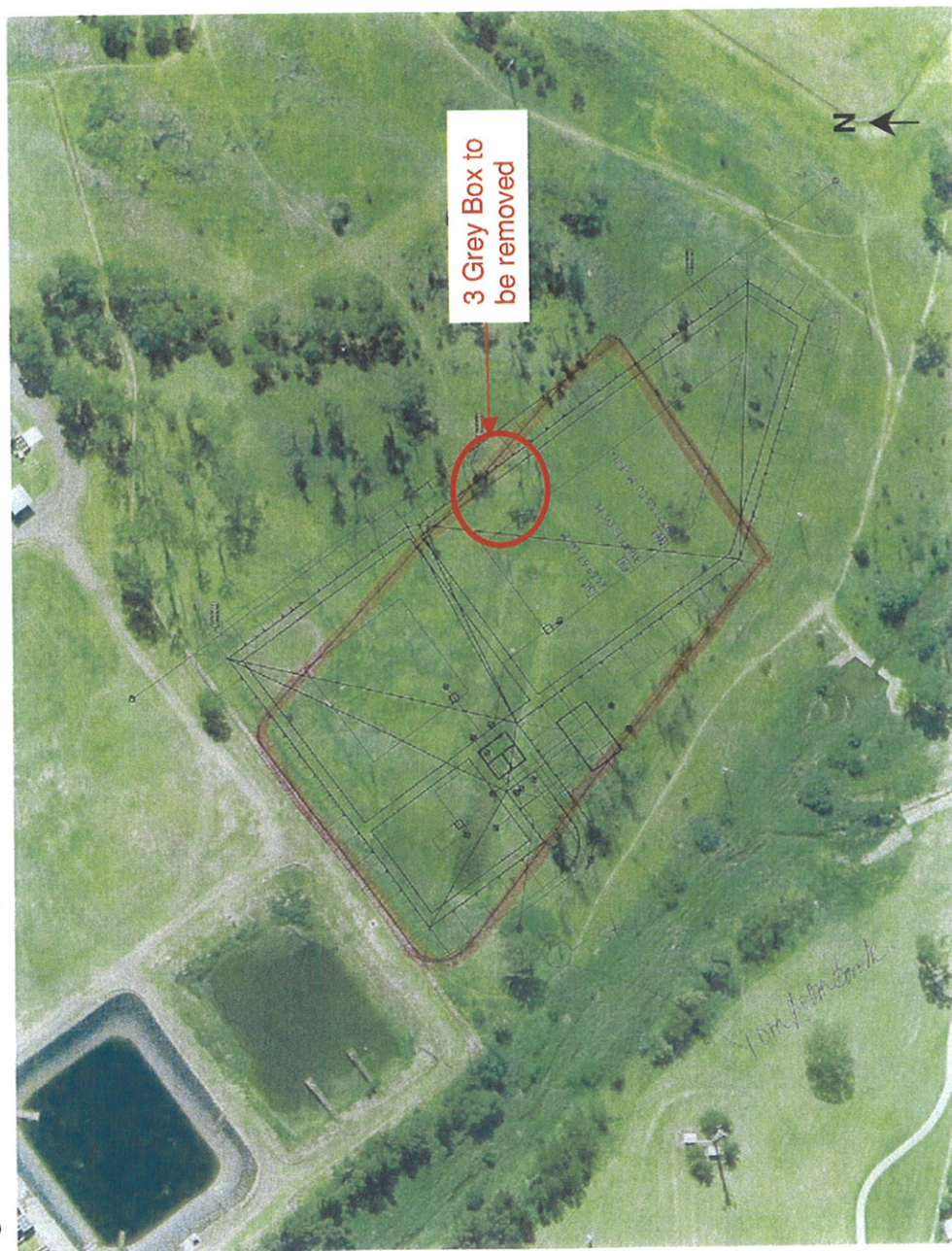
The Endangered Ecological Communities located to the north and south of the pond site were not previously identified in the EA.

The option of expanding the concentrate pond to the north of the site was not pursued because the Cumberland Plain Woodland to the north was found to contain

significant stands of mature Eucalypts and the ecologist recommended that the clearing of this EEC would require a further referral to the Commonwealth.

The option proposed in this modification is to expand the concentrate storage pond site to the southwest, as per **Figure 1**. This Figure shows the original EA layout in pink with the revised layout and design in black. This option avoids the significant vegetation to the north, the high voltage powerlines to the south and east but involves the clearing of some River-Flat Eucalypt Forest community. In addition further surveys have identified 3 Grey Box trees which form part of the Cumberland Plain Woodland and will be cleared. These trees have been assessed by the ecologist to have minimal conservation significance.

Figure 1 Concentrate storage pond - EA and revised layouts



4. Description of revised design and construction methods

The EA described the concentrate pond as being excavated into the Quakers Hill STP site, requiring the excavation of 40,000 m³ (loose) of spoil. Due to the site conditions, the revised concentrate storage pond will be constructed above ground as discussed in Section 3.

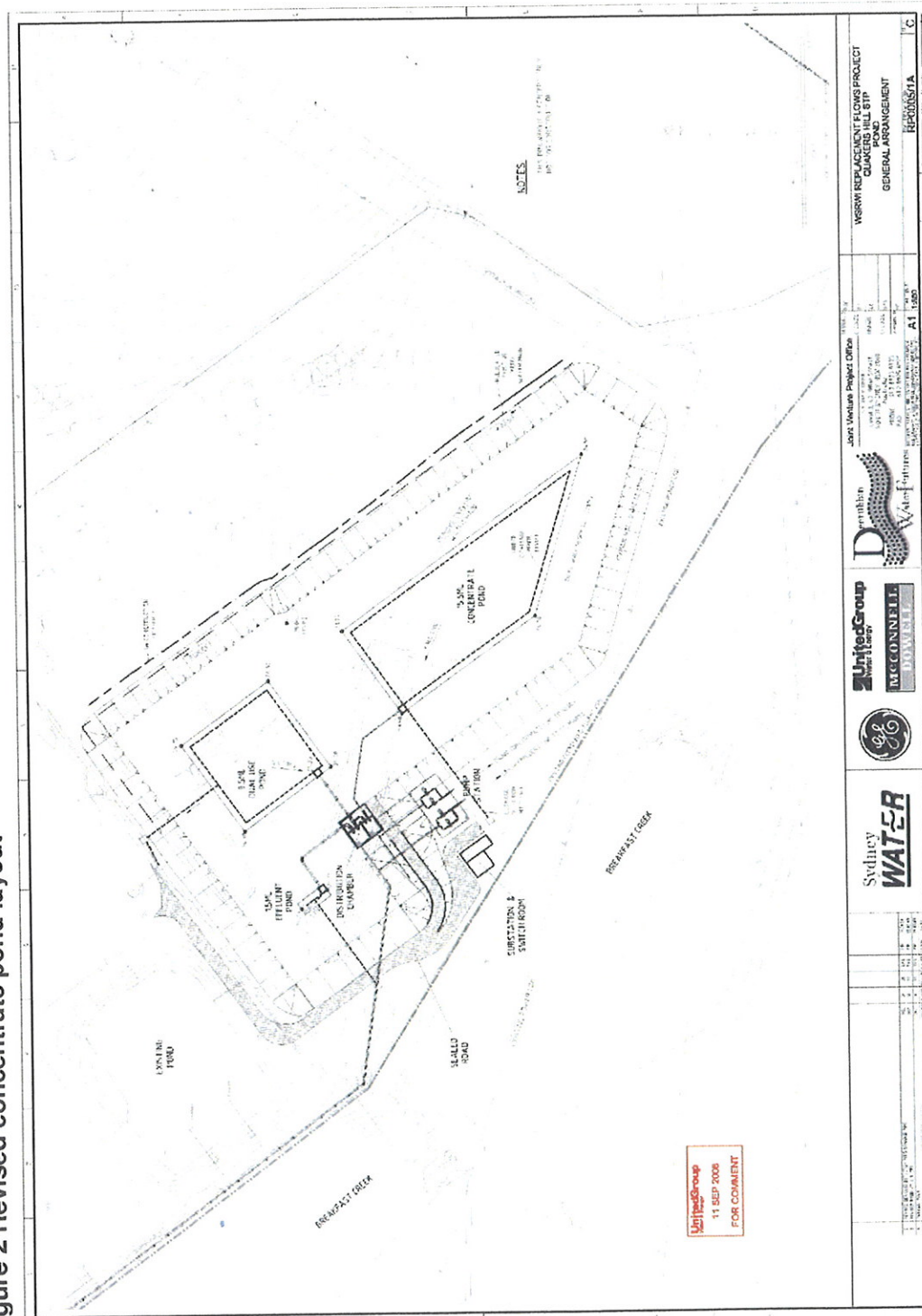
This means that approximately 80,000 tonnes of crushed sandstone virgin excavated natural material (VENM)) will be imported to create a base for the pond. The pond walls would be constructed as 2:1 batters and would stand approximately 5 m aboveground.

The footprint of the revised concentrate storage pond would be 21,400 m² and the layout would be as shown in **Figure 2**.

4,000 m² of River-Flat Eucalypt Forest and three Grey Box would need to be cleared for the construction of the revised concentrate storage pond. 3,800 m² of degraded, weed infested groundcover would also need to be cleared.

The construction and operation of the revised pond will not impact on the significant stand of Cumberland Plain Woodland to the north of the site and there will be a 10 m buffer to the banks of Breakfast Creek to the south. A 4-5 m working distance from the high voltage powerlines would be maintained to ensure construction and operations are within the TransGrid requirement for a 3 m distance from work or plant.

Figure 2 Revised concentrate pond layout



4.1 Construction methods

The construction of the proposed concentrate storage pond will include the following activities:

- potholing to determine the extent of water logging and assess fill and compaction requirements
- groundwater testing to determine if contaminated water will require removal to a licenced waste facility
- erection of a site fence to define the new operational and construction area
- erection of sediment fences and other erosion and sediment controls
- fencing of no-go areas to protect surrounding sensitive environmental areas and provide adequate site protection
- weed management and clearing of vegetation approved for removal
- strip topsoil and stockpile it in the construction area
- establishment of a groundwater collection system
- import stockpiled VENM to create new concentrate storage pond batters
- establishment of three separate bunded areas to store both final effluent from Quakers Hill STP and concentrate from the AWTP at St Marys
- construction of a bund to a height of about 5 m above the surrounding ground level
- lining of bunds with a water proof high density polyethylene membrane line
- construction of a leakage detection system underneath the liner to ensure the bund contents are not leaking into the surrounding ground
- establishment of a valve chamber which provides the flexibility to use the separate bunded areas in different operational modes
- establishment of effluent pumps (to send flows to St Marys AWTP) and concentrate pumps (to send flows to NSOOS) in an above ground structure next to the ponds. A local control room, substation and switchroom are also required as shown in Figure 2.

4.2 Worksite rehabilitation

The worksite would be rehabilitated with locally native grasses and shrubs representative of the Cumberland Plain Woodland and River-Flat Eucalypt Forest communities. Regeneration works would be maintained for a period of at least six months as per Condition of Approval 2.15. This maintenance program would include weeding and plant replacement as necessary to ensure the establishment of native vegetation.

In addition an offset for the River-flat Eucalypt Forest will be implemented as committed to by Sydney Water in the previous modification application.

4.3 Benefits of the revised concentrate storage pond

Raising the concentrate storage pond above ground level will avoid the water logged ground, prevent concentrate seepage to groundwater and avoid potentially contaminated soil.

In addition, the revised storage pond design will provide Sydney Water with greater flexibility in harvesting effluent at Quakers Hill STP and storing concentrate during periods of extended wet weather when discharge to the NSOOS is not possible.

4.4 Comparative assessment

	Advantage	Disadvantage
Concentrate storage pond layout in EA	Smaller footprint requiring less clearing. Clearing primarily in highly degraded, weed infested area. Approximate footprint 13,600 m ² .	The pond configuration is not detailed in the EA, however detailed design has shown that the original footprint is too small for raised storage ponds.
	The proposed site was not found to be water logged during the EA assessment and ground conditions were considered suitable for excavation. Pond construction requiring the excavation of 40,000 m ³ of spoil. Fill not required.	Potentially contaminated soils and water logged ground would be disturbed. Potential concentrate seepage to groundwater.
Revised concentrate storage pond layout	The revised storage pond design will provide Sydney Water with greater flexibility in harvesting effluent at Quakers Hill STP and storing concentrate during periods of extended wet weather when discharge to the NSOOS is not possible.	4,000 m ² of the River-Flat Eucalypt Forest community and three Grey Box would need to be cleared in addition to 3,800 m ² of degraded, weed infested groundcover.
	Issues with building on a water logged site will be avoided.	80,000 m ³ of fill is required to raise the pond 5 m above ground level.
	Raising the storage pond will minimise the disturbance of potentially contaminated soil and prevent potential concentrate seepage to groundwater.	As per above
	The significant area of Cumberland Plain Woodland to the north has been avoided.	4,000 m ² of River-flat Eucalypt Forest and three Grey Box with minimal conservation significance would be cleared.

5. Regulatory requirements

5.1 Statutory context

The RFP was assessed under Part 3A of the *Environmental Planning and Assessment Act 1979 (EP & A Act)* and approved by the Minister for Planning on 20th June 2007, subject to Conditions of Approval (CoA).

Sydney Water has identified that the concentrate storage pond footprint will need to increase from 13,600 m² to 21,400 m² to accommodate the concentrate storage ponds and raise them 5 m above ground level. This is an increase of 7,800 m² or 27% over the footprint identified in the EA and would involve the clearing of 3,800 m² of degraded, weed infested groundcover and approximately 4,000 m² of River-Flat Eucalypt Forest community and 3 stands of Grey Box from the Cumberland Plain Woodland community.

The need to clear the River-Flat Eucalypt Forest community and the Cumberland Plain Woodland means that the RFP is inconsistent with CoA 2.11. A modification to the Minister's Approval has already been approved for the impact on River-flat Eucalypt Forest. A new modification to the Minister's Approval is required for the three Grey Box. CoA 2.11 states:

*The Proponent shall ensure that the project avoids the direct impact to *Grevillea juniperina* subsp *juniperina* individuals, the habitat of *Meridolum corneovirens*, *Litoria aurea* and *Miniopterus schreibersii*, or the following Endangered Ecological Communities:*

- a) Cumberland Plain Woodland (with the exception of the minor impacts described in the document referred to under condition 1.1(d));*
- b) River-flat Eucalypt Forest on Coastal Floodplains (with the exception of the impacts described in the documents referred to under condition 1.1(g)). The Proponent is required to prepare a Vegetation Offset Strategy, in consultation with the Department of Environment and Climate Change, that establishes, conserves and maintains at least 1.2 hectares of the endangered ecological community River-flat Eucalypt Forest in an area that creates or enhances connections between existing remnants either within the site or in close proximity (such as along Breakfast Creek). The Vegetation Offset Strategy shall be submitted to, and approved by, the Director-General prior to construction works commencing on the concentrate storage pond within the Quakers Hill STP site. The Vegetation Offset Strategy is required to be implemented within 12 months of the commencement of construction of the concentrate storage pond; and*
- c) Freshwater Wetlands on Coastal Floodplains*

Section 75W of the *EP & A Act* caters for amendments to projects approved under Part 3A of the *EP & A Act*. This provision of the *EP & A Act* allows a proponent to request the Minister for Planning to modify an approval if the proponent intends to modify the approved activity so that it will be inconsistent with the approval.

6. Environmental assessment and mitigation measures

The key environmental impact associated with the revised concentrate storage pond is the potential impact on the River-Flat Eucalypt Forest on Coastal Floodplain and Cumberland Plain Woodland. The impact on the River-Flat Eucalypt Forest has already been considered in a previous Environmental Assessment Addendum dated September 2008. Flora and fauna impacts for the Cumberland Plain Woodland are considered in Section 6.1 below, while all other environmental issues associated with the revised concentrate storage pond are briefly considered in Section 6.2 below.

6.1 Flora and fauna impacts and mitigation measures

Cumberland Plain Woodland

A flora and fauna study dated November 2008 (refer to Appendix A) was undertaken to assess the potential impacts from the construction and operation of the revised concentrate storage pond on the Cumberland Plain Woodland. The significance of these potential impacts were also assessed under Part 3A of the NSW EP&A Act and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The following section provides a summary of this assessment.

6.1.1 Impact assessment

The site proposed for the construction of the concentrate storage pond occurs on a river flat terrace associated with Breakfast Creek (located west of the site) and is characterised by alluvial soils with a high degree of water logging. Most of the site has been cleared previously and contains a dense cover of exotic groundcover plant species, particularly Kikuyu (*Pennisetum clandestinum*), but also Slender Pigeon Grass (*Setaria parviflora*), Purpletop (*Verbena bonariensis*), Common Sowthistle (*Sonchus oleraceus*) and Plantain (*Plantago lanceolata*) as well as several dead trees.

Cumberland Plain Woodland

The proposed northern boundary of the pond will require the direct removal of 3 Grey Box (*Eucalyptus mollucana*), which are located at the extreme edge of the Cumberland Plain Woodland community, in a transitional zone between this community and the River-Flat Eucalypt Forest. Two of these three trees exhibit advanced signs of dieback, which is expected to be due to the high water table and elevated nutrient concentration from the previous STP landuse. The impact to the community as a whole by removal of these three trees is not considered significantly adverse or of long term consequence.

Conclusion

The report identifies that the proposed work area does not contain any significant or critical habitat for threatened or significant fauna species and considers that the proposal is unlikely to impact on native fauna species and habitat in the locality, provided that suitable construction mitigation measures are employed such as those recommended in the report.

The report concludes that the direct and indirect impacts of the proposal would not result in a significant impact on the extent and condition of these two endangered communities in the locality. The assessment also determined that this conclusion is consistent with the EA conclusion that there would be no significant impact on Endangered Ecologies Communities.

6.1.2 Mitigation measures

Site specific environmental work method statements (EWMSs) will be prepared, which will show how the remaining vegetation will be protected from construction. These EWMSs, which will refer to the requirements of the EA and subsequent Addendums, will be reviewed and agreed by Sydney Water before any construction work starts.

The Contractor will employ its own site based environmental specialists to ensure that its own team follows the EA, EWMSs and other approvals. Sydney Water will have onsite site surveillance officers that monitor the construction contractor to ensure that all environmental controls are appropriately implemented.

The other site specific environmental mitigation measures that have been adopted include the following:

Pre Construction

- fencing no-go areas and sensitive vegetation to prevent construction encroachment and
 - ensure a 10 m buffer to the banks of Breakfast Creek
 - ensure a suitable barrier to protect the Cumberland Plain Woodland in the area bordering the concentrate storage pond to the northwest
- testing water and groundwater on site for the presence of contaminants and to identify the appropriate management required
- site pre-weeding to ensure that the topsoil can be stockpiled and reused on the concentrate storage pond batters
- establishment of erosion and sediment controls at the concentrate storage pond batter to prevent potential impacts on Breakfast Creek from run-off occurring during a heavy rain event during excavation
- a Vegetation Clearing Form to be completed by the Site Environmental Advisor prior to clearing
- removal of suitable hollow trees and logs to suitable neighbouring bushland
- checking and removal of fauna in hollow bearing trees to be cleared.

Construction

- establish a groundwater collection system
- ensure imported fill is clean fill/VENM
- avoid construction vehicle entry into adjacent woodland areas or edge areas where weed seed could be transported and deposited.

Site rehabilitation

- reuse stockpiled topsoil on batter
- plant species from the Cumberland Plain Woodland community
- Ongoing weed management and plant replacement as necessary to ensure the establishment of locally significant native vegetation.

6.2 Other environmental impacts and mitigation measures

Aspect	Potential Additional Impacts to EA	Additional Mitigation Measures
Waste Management	40,000m ³ of spoil would not need to be removed.	None required
Noise and	Impacts would not substantially	None required

Aspect	Potential Additional Impacts to EA	Additional Mitigation Measures
Vibration	change compared to the original EA design.	
Geology, Soils and Water	Avoid potentially contaminated soil and prevent potential concentrate pond seepage to groundwater by raising the concentrate pond above ground.	None required
Heritage	Impacts would not substantially change compared to the original EA design.	None required
Landuse and Tenure	Impacts would not substantially change compared to the original EA design.	None required
Visual	Raising the concentrate storage pond could create a greater visual disturbance.	Undertake appropriate consultation with the adjacent residents. Screen the concentrate storage pond through the proposed revegetation works.
Air Quality	Impacts would not substantially change compared to the original EA design.	None required
Traffic	Additional traffic associated with importing fill.	Truck movements will be scheduled to minimise impact of traffic flows on local roadways.

7. Conclusion and proposed modification

This EA Addendum has been prepared to assess the potential environmental impacts associated with a proposed change to the design of the Quakers Hill concentrate storage pond. An additional 7,800 m² of land would be needed, which would involve the clearing of 4000 m² of River-Flat Eucalypt Forest and three Grey Box, to accommodate the revised concentrate storage pond.

The removal of approximately 4,000 m² of River-Flat Eucalypt Forest has already been approved through a modification to the Project Approval on 1 November 2008. The removal of three Grey Box that form part of the Cumberland Plain Woodland means that Sydney Water would not be able to meet the requirements of CoA 2.11 that specifies no direct impacts on this endangered ecological community.

Construction of the concentrate storage pond is critical to the Project and the anticipated impact on the Cumberland Plain Woodland cannot be avoided due to other environmental aspects of the site.

A flora and fauna assessment was undertaken and it concludes that the vegetation that is proposed to be cleared for the revised concentrate pond has minimal conservation significance and value due to the very high level of disturbance and its small and fragmented nature. The assessment also states that there would be no significant impacts to individual threatened species or critical habitats as listed in the TSC Act. The proposed impact on the Cumberland Plain Woodland is considered to be minor and justified.

The worksite and concentrate storage pond batters would be rehabilitated following construction with native grasses and shrub species representative of the River-Flat Eucalypt Forest and the Cumberland Plain Woodland. Maintenance of the rehabilitated area, including a weeding program, would occur for a period of at least six months to ensure successful establishment.

To enable the Project to proceed, Sydney Water requests the following modification to CoA 2.11 (**in bold**):

*The Proponent shall ensure that the project avoids the direct impact to *Grevillea juniperina* subsp *juniperina* individuals, the habitat of *Meridolum corneovirens*, *Litoria aurea* and *Miniopterus schreibersii*, or the following Endangered Ecological Communities:*

- a) *Cumberland Plain Woodland (with the exception of the minor impacts described in the document referred to under condition 1.1(d));*
- b) *River-flat Eucalypt Forest on Coastal Floodplains (with the exception of the impacts described in the documents referred to under condition 1.1(g) and the Environmental Assessment Addendum for the Cumberland Plain Woodland community near the Quakers Hill concentrate storage pond). The Proponent is required to prepare a Vegetation Offset Strategy, in consultation with the Department of Environment and Climate Change, that establishes, conserves and maintains at least 1.2 hectares of the endangered ecological community River-flat Eucalypt Forest in an area that creates or enhances connections between existing remnants either within the site or in close proximity (such as along Breakfast Creek). The Vegetation Offset Strategy shall be submitted to, and approved by, the Director-General prior to construction works commencing on the concentrate storage pond within the Quakers Hill STP site. The*

Vegetation Offset Strategy is required to be implemented within 12 months of the commencement of construction of the concentrate storage pond; and

- c) *Freshwater Wetlands on Coastal Floodplains*

Appendix A – Flora and Fauna Addendum, SKM, November 2008