Desalinated Water Delivery System: Application for modification of condition 2.6 of the Project Approval, relating to vibration

for

Water Delivery Alliance

Sydney's Desalination Project

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GLOSSARY of TERMS

CNVMP	WDA Construction Noise and Vibration Monitoring Plan
DECC	NSW Department of Environment and Climate Change
DECC Guideline	*Environmental Noise Management - Assessing Vibration: a Technical Guideline* (DEC, 2006)
DoP	NSW Department of Planning
EA	Environmental Assessment
EP&A Act	*Environmental Planning and Assessment Act 1979*
PPR	Preferred Project Report
PPV	Peak Particle Velocity
RMS	Root Mean Square
TBM	Tunnel Boring Machine
VDV	Vibration Dose Values
WDA	Water Delivery Alliance

Executive Summary

The Water Delivery Alliance (WDA) has been established to design, construct and commission the pump station and desalinated water delivery system linking the desalination plant on the Kurnell Peninsula with the existing distribution network at Shaft 11C, Erskineville.

Sydney Water has received Concept Approval for the desalination project and Project Approval for the desalinated water delivery system. These Approvals were granted following consideration of a number of supporting documents, including the Major Project Application, Environmental Assessments (EA) and Preferred Project Reports (PPR). These documents envisaged the need to optimise the design based on additional engineering and environmental information that was to become available during detailed design. Since receipt of the Project Approval, WDA has undertaken a range of engineering and environmental investigations to inform the detailed design. WDA has also prepared a number of consistency assessments as well as three applications for modifications to the Project Approval; relating to refinements to the route and changes to the construction method across the project, and modification of two Minister's Conditions of Approval.

This application for modification has been prepared to seek amendment of Condition 2.6 of the Project Approval under Section 75W(2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Condition 2.6 relates to the management of vibration resulting from the use of trenchless technology to construct and operate the water delivery system. This document also assesses the environmental impacts of the proposed amendment and concludes that overall, the proposed amendment will have no change in environmental and social impacts, compared with the approved project.

1 Introduction

1.1 Background

The WDA has been established to design, construct and commission the pump station and desalinated water delivery system linking the desalination plant on the Kurnell Peninsula with the existing distribution network at Shaft 11C, Erskineville.

An EA was prepared by Sydney Water in November 2005 for the design, construction, operation and maintenance of the Sydney Desalination Project, consisting of the desalination plant, intakes and outlets, and water delivery system. In November 2006, Sydney Water received Concept Approval for the desalination project as a whole and Project Approval for all its components with the exception of the water delivery pipeline, as the system required further investigations and assessment.

An EA was prepared by Sydney Water in April 2007 for the design, construction and operation of the desalinated water delivery system from the desalination plant at Kurnell to Sydney's water distribution infrastructure system at Shaft 11C, Erskineville. The EA responded to the requirements of the Director-General of the Department of Planning (DoP).

Subsequent to the EA for the delivery system, a PPR was prepared to respond to issues raised in submissions made to the DoP during exhibition of the EA. The responses drew on the EA, new information gained since exhibition of the EA, and changes as a result of public inputs. The PPR also detailed refinements to the route and changes to the construction method made since completion of the EA and described the project for which approval was sought. The Minister for Planning granted Project Approval for the delivery system, subject to conditions, on 22 October 2007.

The Concept and Project Approvals were granted following consideration of the EA and PPR, and supporting documents. These documents envisaged the need to optimise the design based on additional engineering and environmental information that was to become available during detailed design.

Detailed design has been progressing and construction has commenced along the route.

It should also be noted that consistency assessments have been prepared for other sections of the project where refinements to the route or changes to the construction method have been proposed. Those consistency assessments concluded that the proposed refinements/changes were generally in accordance with the Concept and Project Approvals. In addition, three applications for modification have been submitted to the DoP for:

- proposed refinements to the route within the Urban Sydney Sector: Sydney North;
- changes to the construction method and an amendment to Condition 2.19 of the Project Approval for the Botany Bay Sector;
- amendment of Conditions 2.18 and 2.19 of the Project Approval relating to the installation of silt curtains, the water quality monitoring requirements for the Botany Bay Sector works.

On 13 June 2008 WDA received modification to the Project Approval for the Urban Sydney Sector refinements. Modification to the Project Approval for the Botany Bay Sector changes and amendment was issued on 12 September 2008. Modification of Conditions 2.18 and 2.19 of the Project Approval was issued on 28 December 2008.

1.2 Purpose of this application for modification

Section 75W of the NSW EP&A Act relates to the modification of approved projects under Part 3A of the Act. Section 75W(2) allows a proponent to request that the Minister for Planning modify a project's approval. However, section 75W(2) also states that "…*approval for a modification is not required if the project as modified will be consistent with the existing approval."*

This application for modification has been prepared to:

- seek amendment to Condition 2.6 which requires the Proponent to ensure that the vibration resulting from construction and operation of the trenchless technology does not exceed the evaluation criteria presented in *Environmental Noise Management – Assessing Vibration: A Technical Guideline* (DEC, 2006); and
- assess the environmental impacts of the proposed amendment to Condition 2.6 compared with those described in the EA, PPR and Minister's Conditions of Approval.

Section 75W(4) allows the Minister to modify an approval (with or without conditions) or disapprove of the modification.

1.3 Approach to this application for modification

As discussed above, this application for modification has been prepared to amend Condition 2.6 of the Project Approval and assess the environmental impacts of the proposed amendment. This application for modification:

- Describes the proposed amendment to the conditions (refer Section 2)
- Assesses whether the amendment is permitted under the existing conditions of approval by considering:
    - whether the proposed amendment is generally in accordance with the documents listed in condition 1.1 of the Concept Approval "Terms of the Concept Approval" (refer Section 3)
    - whether the proposed amendment is generally in accordance with the documents listed in condition 1.1 of the Project Approval "Terms of the Project Approval" (refer Section 3)
- Assesses whether the amendment will make a material difference to anyone or the environment (refer Section 3)
- Assesses the potential environmental impacts of the amendment relative to those of the approved project (refer Section 4)
- Outlines issues relating to the amendment that were raised during consultation with affected stakeholders after receipt of the Project Approval, and during finalisation of the proposed amendment (refer Section 5)
- Identifies the next tasks following approval of the modification (refer Section 6).

Consideration is given to whether the proposed amendment is anticipated to result in any material changes to the impacts on the social or natural environment by examining the intent of the existing condition, and the Projects compliance with the condition to date.

2 Project descriptions and rationale for amendment

2.1 Description of the approved project – Water Distribution System

Chapter 10 of the PPR defined the project for which Sydney Water sought approval and states that:

"Sydney Water seeks Project Approval for construction, commissioning, operation and maintenance of a desalinated water delivery system linking the desalination plant on the Kurnell Peninsula with the existing distribution network.

Project Approval is sought for construction and operation of all components of the project, including those elements described in Chapter 5 of the Environmental Assessment of the Desalinated Water Delivery System, as amended by the refinements and changes outlined in Chapter 2 of this Preferred Project Report. In summary the indicative route is described in Table 10.1 and Figures 10-1, 10-2 and 10-3."

The delivery system will:

- *Be built to deliver an annual daily average of 500 ML of desalinated water per day;*
- *Link the desalination plant at Kurnell with Sydney's major water distribution system;*
- *Be generally located on the alignment indicated in Figure 10-1, Figure 10-2 and Figure 10-3;*
- *Be generally constructed using a combination of trenchless and trenched construction methods as indicated in Figure 10-1, Figure 10-2 and Figure 10-3;*
- *Require a range of construction related activities and facilities such as temporary laydown areas, temporary jetties, quays or work platforms, barges, site compounds, spoil stockpiles, connection to utility services and infrastructure, environmental controls etc;*
- *Include ancillary features to ensure safe operation and maintenance, including, but not limited to, air and scour valves, scour drain lines, isolation valves, pressure release valves, access chambers, cross connection pipework to the existing network, booster pump stations, surge protection equipment, and chlorine injection facilities;*
- *Require feasibility and pre-construction investigations, likely to include geotechnical, groundwater, soil, water and sediment studies along with other surveys and minor tasks or other activities likely to have minimal environmental impact; and*
- *Operate on a continuous (24 hours per day, 7 days per week) basis.*

The proposed amendment will not affect this overall project description.

2.2 Description of the proposed amendment to Condition 2.6

WDA propose to amend Condition 2.6 of the Project Approval, which relates to the management of vibration against criteria presented in *Environmental Noise Management – Assessing Vibration: A Technical Guideline* (DEC, 2006) for the construction and operation of trenchless technology along the desalinated water delivery system. Specifically, Condition 2.6 of the Project Approval requires that:

> *The Proponent shall ensure that the vibration resulting from construction and operation of the trenchless technology does not exceed the evaluation criteria presented in Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006).*

The existing Condition 2.6, as well as the proposed amendment to the text is identified in the table below.

Existing Condition 2.6 approval text	Proposed amendment to text
The Proponent shall ensure that the vibration resulting from construction and operation of the trenchless technology ***does not exceed the evaluation criteria*** *presented in Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006).*	*The Proponent shall ensure that the vibration resulting from construction and operation of the trenchless technology* ***is managed consistent with the guidance*** *presented in Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006).*

2.3 Rationale / justification for proposed amendments to Minister's Conditions of Approval

The intent of Condition 2.6 is to manage vibration generated by the use of trenchless technology during construction and operation of the pipeline, as per the *Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006)*. Both the EA and PPR identified the potential for vibration associated with the Project to impact the community, with the PPR stating:

> *Sydney Water will manage potential impacts by implementing Statement of Commitment 11 which requires that a Construction Noise Management Plan be developed. This includes identification of reasonable and feasible mitigation measures where the noise objectives cannot be achieved, and developing measures to limit vibration impacts on property and amenity of local residents and schools.*

The proposed amendment to Condition 2.6 is being sought in response to the following:

- The existing Condition 2.6 is very prescriptive. The technical document *Assessing Vibration: a technical guideline (DEC, 2006)* was intended as a guideline, and the document states "*The preferred vibration criteria contained in this guideline are not mandatory limits but should be sought to be achieved through application of all feasible and reasonable mitigation measures".* By amending Condition 2.6, the condition becomes more consistent with the technical guideline, as well as Condition 5.2b (Construction Noise and Vibration Management Plan) and Statement of Commitment 11 (Appendix C).
- Experience gained on the project has shown that construction using trenchless technology is generally compliant with the criteria identified in the technical guideline, as well as the predicted goals in the EA and PPR.
- WDA will continue to adopt the industry guidelines (DIN 4150 and BS 7385) relating to vibration velocity levels and structural damage, which are considered to be best practice.
- The amendment does not alter the extent or levels of potential vibration impacts associated with the approved project. Vibration impacts will be as predicted in the EA and PPR.

The environmental assessment in Section 4 demonstrates that WDA have generally complied with Condition 2.6 to date, and concludes that the proposed amendment will result in no net change to associated environmental or social impacts.

For the reasons described above, amending the condition as proposed increases the consistency of the planning approvals and associated documents with the technical guideline document, and at the same time, ensures that WDA continues to manage vibration to minimise impacts on the community.

3 Consistency Assessment

This application for modification has been prepared to amend Conditions 2.6 of the Project Approval. However, a consistency assessment was commenced for the proposed amendment to determine if the amendment would affect any condition other than 2.6 and to confirm that the amendment is generally in accordance with the associated documentation. The results are summarised below.

3.1 Consistency with the Concept Approval

The Concept Approval required an assessment of the potential vibration impacts be undertaken in the EA. The proposed amendments do not relate to the Concept Approval. As such, the proposed amendments are considered to be consistent with the Concept Approval. Refer to Appendix A for further details.

3.2 Consistency with the Project Approval

The Project Approval includes a number of conditions with which the project must comply. These conditions relate to requirements such as environmental monitoring, auditing, etc, or to other parts of the project, for example Botany Bay impacts and coordination. Appendix A includes details of consistency of the proposed amendment with the Project Approval. A copy of the Project Approval and Modified Approvals (13/06/08, 12/09/08 and 28/12/08) are included as Appendix B.

Condition 1.1 - Terms of the Project Approval requires the project to be carried out in accordance with various documents including the conditions of project approval. Of these conditions, Condition 2.6 is the only condition that directly relates to this application for modification. The reasons and justification for seeking amendments to this condition were discussed in Section 2.

Condition 5.2b is also relevant to this application for modification in that it will be used as the primary mechanism guiding environmental management. WDA does not propose to amend Condition 5.2b.

3.3 Are any new conditions required?

Section 4 assesses the potential environmental impacts associated with the proposed amendments and identifies the Minister's Conditions of Approval that will be implemented to manage impacts. As the impacts can be managed by implementing the existing Minister's Conditions of Approval (and Statements of Commitment), it is considered that new conditions are not required.

3.4 Assessing consistency with the approved project

When assessing consistency, it is generally accepted that the key tests must be drawn from the objectives of the project, description of the approved activity, and the described impacts of the project. The project objectives, description, and assessment of potential impacts are contained in a number of documents including:

- Major Project Application
- EA of the Concept Plan and PPR for Sydney's Desalination Project

- EA for the Desalinated Water Delivery System
- PPR for the Desalinated Water Delivery System

3.4.1 Objectives

The proposed amendment is generally consistent with the objectives of the project (refer to Appendix A).

3.4.2 Project Description

The proposed amendment is generally consistent with the project description in that the amendment relates to changing a condition of approval, rather than altering the construction methods or routes detailed in the EA and PPR. The project descriptions identified in the EA and PPR will not be changed by the proposed amendments.

3.4.3 Impacts

Section 4 assesses the potential impacts of the proposed amendment. When comparing whether the proposed and approved impacts are consistent, the following issues need to be addressed:

- Are there any significant impacts?
- Are the proposed impacts similar in scale to the approved impacts?
- Will someone be affected by an impact who was not previously impacted?
- Are there any new impacts and who/what will be affected?

These issues are discussed below.

Are there any significant impacts?

The proposed amendment applies to a specific condition, managing the potential impacts of vibration, and will not result in any significant environmental impacts. The proposed amendment will not affect the environmental and social impacts, compared to the approved project. Existing potential impacts will be managed by implementing the Minister's Conditions of Approval and Statements of Commitment (refer to Section 4).

Are the proposed impacts similar in scale to the approved impacts?

The proposed amendment will not affect the environmental or social impacts, compared to the approved project, and therefore the impacts are similar in scale to the approved impacts.

As described in Section 4, the proposed amendment will have no net effect on the overall environmental impacts. Potential impacts will be managed by implementing the Minister's Conditions of Approval and relevant Statements of Commitment (refer to Section 4).

Will someone be affected by an impact who was not previously impacted?

The proposed amendment will not affect anyone that was not previously impacted. As identified previously, neither the route nor the construction method will be changed as a result of the proposed amendment, and as such, the area and receiver's affected will be the same as the approved project.

Are there any new impacts and who/what will be affected?

The proposed amendment will not result in new impacts.

Based on the above considerations of consistency with objectives, project description and impacts, the proposed amendment is considered to be consistent with the approved project.

4 Environmental assessment

4.1 Gap Analysis / Summary of Change in Impact

This section compares the potential impacts from the proposed amendment against the approved project. The comparison uses the same basis of assessment for vibration as the EA and PPR. Table 4.1 summarises the relative change in environmental impact (vibration) associated with the proposed amendment. No other environmental or social impacts would occur as a result of the proposed amendment. Additional detail is provided in Sections 4.2 and 4.3.

Table 4.1: Change in environmental impact due to the proposed amendments

Aspect	Relative change in environmental impact	Additional management measures required
Vibration	No change in impacts associated with proposed amendment to Condition 2.6.	N/A

4.2 Summary of Approved Project

The approved project requires trenchless construction methods be used in residential (and other sensitive) sections along the water delivery system. The EA and PPR describe the locations of the sections of trenchless pipeline and the associated launch and receival pits, and identifies that potential impacts associated with these trenchless construction works may exceed the vibration criteria at nearby residences. Trenchless construction works with the potential for vibration generation include, for example, various forms of piling, vibratory rolling, excavator and crane tracking, and truck movements.

As identified above, the approved project required that vibration not exceed the evaluation criteria in *Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006) "DECC Guideline".*

Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006)

The DECC Guideline provides direction for assessing and evaluating particular types of vibration. Three vibration types (Continuous, Impulsive and Intermittent) are identified, which subsequently determine the appropriate criteria to be adopted for each situation encountered. Vibration can be quantified by measuring two parameter types: acceleration (m/s^2); and/or velocity (mm/s). The applicable criteria to the varying vibration types for both parameter types are described in more detail below.

The following section identifies the evaluation criteria associated with the three classes of vibration, and follows with an analysis of the Projects compliance with the DECC Guideline. However, it is worth noting, that the DECC Guideline explains that there is a low probability of "adverse comment" or disturbance to building occupants at vibration values below the preferred values (ie human annoyance). Adverse comment (complaints) may be expected if vibration values approach the maximum values. The DECC Guideline states that activities should be designed to meet the preferred values where an area is not already exposed to vibration.

Continuous Vibration

Continuous vibration is vibration which continues uninterrupted for a defined period (usually throughout day time and/or night-time). For this project, an operating tunnel boring machine would be an example of a continuous vibration source and as such, the criteria identified in Table 4.2 below would apply.

Table 4.2: Criteria for exposure to continuous vibration (Source: DEC, 2006)

Place	Time	Assessment criteria					
		rms acceleration (m/s^2) (& vib. accel. value) (dB re 10^{-6} mm/s)		rms velocity (mm/s) (& vib. velocity value) (dB re 10^{-9} mm/s)		Peak velocity (mm/s)	
		Preferred	Maximum	Preferred	Maximum	Preferred	Maximum
Critical working areas (eg hospital operating theatres, precision laboratories)	Day or night time	0.0050 (74dB)	0.010 (80dB)	0.10 (100dB)	0.20 (106dB)	0.14	0.28
Residences	Day time	0.010 (80dB)	0.020 (86dB)	0.20 (106dB)	0.40 (112dB)	0.28	0.56
	Night time	0.0070 (77dB)	0.014 (83dB)	0.14 (103dB)	0.28 (109dB)	0.20	0.40
Offices	Day or night time	0.020 (86dB)	0.040 (92dB)	0.40 (112dB)	0.80 (118dB)	0.56	1.1
Workshops	Day or night time	0.040 (92dB)	0.080 (98dB)	0.80 (118dB)	1.6 (124dB)	1.1	2.2

Impulsive Vibration

Impulsive vibration is generally associated with infrequent activities that create up to three distinct vibration events in an assessment period. It is defined as a rapid build up to a peak followed by a damped decay that may or may not involve several cycles of vibration. Impulsive vibration can also consist of a sudden application of several cycles at approximately the same amplitude, providing that the duration is short, typically less than 2 seconds. Occasional dropping of heavy equipment, occasional loading and unloading are examples of impulsive vibration. Table 4.3 identifies the criteria for impulsive vibration.

Table 4.3: Criteria for exposure to impulsive vibration (Source: DEC, 2006)

Place	Time	Assessment criteria					
		rms acceleration (m/s^2) (& vib. accel. value) (dB re 10^{-6} mm/s)		rms velocity (mm/s) (& vib. velocity value) (dB re 10^{-9} mm/s)		Peak velocity (mm/s)	
		Preferred	Maximum	Preferred	Maximum	Preferred	Maximum
Critical working areas (eg hospital operating theatres, precision laboratories)	Day or night time	0.0050 (74dB)	0.010 (80dB)	0.10 (100dB)	0.20 (106dB)	0.14	0.28
Residences	Day time	0.30 (110dB)	0.60 (113dB)	6.0 (136dB)	12.0 (142dB)	8.6	17.0
	Night time	0.10 (100dB)	0.20 (106dB)	2.0 (126dB)	4.0 (132dB)	2.8	5.6

Place	Time	Assessment criteria					
		rms acceleration (m/s^2) (& vib. accel. value) (dB re 10^{-6} mm/s)		rms velocity (mm/s) (& vib. velocity value) (dB re 10^{-9} mm/s)		Peak velocity (mm/s)	
		Preferred	Maximum	Preferred	Maximum	Preferred	Maximum
Offices	Day or night time	0.64 (116dB)	1.28 (122dB)	13.0 (142dB)	26.0 (148dB)	18.0	36.0
Workshops	Day or night time	0.64 (116dB)	1.28 (122dB)	13.0 (142dB)	26.0 (148dB)	18.0	36.0

Intermittent Vibration

Intermittent vibration can be defined as interrupted periods of continuous (eg a drill) or repeated periods of impulsive vibration (eg a pile driver), or a continuous vibration that varies significantly in magnitude. Intermittent vibration may originate from impulse sources or repetitive sources (eg pavement breakers) or sources which operate intermittently, but which would produce continuous vibration if operated continuously.

Intermittent vibration is assessed using the vibration dose concept, which relates to vibration magnitude and exposure time. Examples of intermittent vibration include activities such as sheet piling, jack hammers, rolling or general excavation work (such as an excavator tracking.)

Section 2.4 of the DECC Guideline provides acceptable values for intermittent vibration in terms of vibration dose values (VDV) which requires the measurement of the overall weighted root mean square (RMS) acceleration over the frequency range 1 to 80 Hz. The guideline provides a formula to calculate VDV. Acceptable VDV for intermittent vibration are identified in Table 4.4.

Table 4.4: Acceptable Vibration Dose Values (VDV) for Intermittent Vibration (Source: DEC, 2006)

Location	Daytime (7am – 10pm)		Night-time (10pm – 7am)	
	Preferred Value	Maximum Value	Preferred Value	Maximum Value
Critical Areas	0.10 $m/s^{1.75}$	0.20 $m/s^{1.75}$	0.10 $m/s^{1.75}$	0.20 $m/s^{1.75}$
Residences	0.20 $m/s^{1.75}$	0.4 $m/s^{1.75}$	0.13 $m/s^{1.75}$	0.26 $m/s^{1.75}$
Offices, schools, educational institutions and placed of worship	0.40 $m/s^{1.75}$	0.80 $m/s^{1.75}$	0.40 $m/s^{1.75}$	0.80 $m/s^{1.75}$
Workshops	0.80 $m/s^{1.75}$	1.60 $m/s^{1.75}$	0.80 $m/s^{1.75}$	1.60 $m/s^{1.75}$

Vibration monitoring has been undertaken for the various areas and activities across the Project (as detailed in the Construction Noise and Vibration Management Plan (CNVMP)) and used to assess the Project's compliance with industry standards and Condition 2.6.

Tables 4.5 and 4.6 provide a summary of vibration modelling undertaken from July to November 2008 for different activities associated with trenchless construction for residential and commercial/other areas. The values in the table are for the maximum vibration level measured during the period to ensure a conservative approach has been adopted for assessing compliance.

Table 4.5: Summary of Residential vibration monitoring July – November 2008

WDA Activity	Date / Monitoring Period (2008)	WDA Site	Type of Vibration	Geophone Position: ground / foundation	Site Related PPV (mm/s)	Dose Value (m/s)	Preferred Vibration Level	Within DECC Guideline Criteria (Yes / No)
Secant Piling	11, 12 Jul	Silver Beach	Impulsive	Ground	1.17	N/A	8.6mm/s	Yes
	11-20 Aug	Tasman & Dampier	Impulsive	Foundation	4.4	N/A	8.6mm/s	Yes
	20 Aug – 22 Sep	Tasman & Dampier	Impulsive	Foundation	8.7	N/A	8.6mm/s	Yes
Rock Drop	24 Jul	Silver Beach	Impulsive	Ground	0.46	N/A	8.6mm/s	Yes
	14 Aug	Silver Beach	Impulsive	Ground	0.95	N/A	8.6mm/s	Yes
Vibro Piling	30 Oct	Sydney Park North	Intermittent	Ground	0.64	0.32	$0.4m/s^2$	Yes
	6 Nov	Mitchell Estate shaft 2	Intermittent	Foundation	0.71	0.28	$0.4m/s^2$	Yes
Jet Grouting	22 Sep – 8 Oct	Tasman & Dampier	Impulsive	Foundation	7.65	N/A	8.6mm/s	Yes
	8 - 24 Oct	Tasman / Dampier	Impulsive	Foundation	2.41	N/A	17mm/s	Yes
	24 - 31 Oct	Tasman / Dampier	Impulsive	Foundation	2.38	N/A	17mm/s	Yes
Pre works	13 Oct	Euston / Campbell	Impulsive	Ground	<0.25	N/A	17mm/s	Yes
Pit Excavation	31 Oct – 7 Nov	Tasman / Dampier	Impulsive	Foundation	2.17	N/A	17mm/s	Yes
	7 - 14 Nov	Tasman / Dampier	Impulsive	Foundation	4.71	N/A	17mm/s	Yes
Tunnel Boring Machine	12-13 Nov	Cook Park	Continuous	Ground – top of the TBM shaft	Not perceptible	N/A	0.2 mm/s	Yes
	27 Nov	Cook Park – Tancred Ave	Continuous	Ground	Not perceptible	N/A	0.2 mm/s	Yes

Table 4.6: Summary of Commercial and other vibration monitoring July – November 2008

WDA Activity	Date / Monitoring Period	WDA Site	Type of Vibration	Geophone Position: ground / foundation	Site Related PPV (mm/s)	Dose Value (m/s)	Preferred Vibration Level	Within DECC Guideline Criteria (Yes / No)
Secant Piling	24-31 Oct	Captain Cook Drive	Impulsive	Foundation	12.6 on site 0.94 EA Switch house	n/a	36mm/s	Yes
	31 Oct – 7 Nov	Captain Cook Drive	Impulsive	Foundation	14.5 on site 1.86 EA Switch house	n/a	36mm/s	Yes
Vibration Roller	29 Jul – 5 Aug	Marsh Street	Intermittent	Foundation	9.32	n/a	n/a	Yes
Tunnel Boring Machine	21 Aug	Canal Road	Continuous	Ground – top of the TBM shaft	Not perceptible	N/A	0.2 mm/s	Yes
Vibro Piling	26 – 29 Sep	Marsh Street	Intermittent	Foundation	9.62	n/a	n/a	Yes
	29 Sep – 8 Oct	Marsh Street	Intermittent	Foundation	12.9	n/a	n/a	Yes
	8 - 23 Oct	Marsh Street	Intermittent	Foundation	18.7 Pipeline 8.6 Control Hut	n/a	n/a	Yes
	13 Oct	Euston / Campbell	Intermittent	Ground	n/a	n/a	n/a	Yes
	23 - 31 Oct	Marsh Street	Intermittent	Foundation	12.9 Pipeline <7 Control Hut	n/a	n/a	Yes
	6 Nov	Mitchell Estate shaft 2	Intermittent	Foundation	3.6 & 14.5	0.28	$0.4m/s^2$	Yes
Jet grouting	1 Oct – 7 Nov	Marsh Street	Impulsive	Foundation	<2	n/a	n/a	Yes
	7 - 17 Nov	Marsh Street	Impulsive	Foundation	3.1 Pipeline <2 Control Hut	n/a	n/a	Yes

As can be seen from the tables above, each monitoring event is compliant with the DECC Guideline criteria, and therefore, with Condition 2.6. As per the DECC Guideline, most of the activities are well below the preferred values criteria.

4.3 Assessment of Modified Project

Vibration monitoring will continue to be undertaken to ensure compliance with Condition 2.6. Where vibration levels exceed criteria presented in the DECC Guideline, appropriate mitigation measures will be adopted as detailed in the CNVMP. This is in accordance with the DECC Guideline, Condition 5.2b and Statement of Commitment 11.

Importantly, the amendment will not alter the vibration impacts associated with trenchless construction works predicted in the EA and PPR, or the measures proposed by the WDA to minimise potential vibration impacts. Further, consultation with local residents and stakeholders will be ongoing throughout the works.

4.4 Management Measures / Conclusion

Overall, the proposed amendment will result in no change in impacts to either residential or commercial receivers compared with the approved project. The CNVMP includes the requirement to undertake monitoring, as well as mitigation measures to minimise impacts. Mitigation measures identified in the CNVMP to minimise vibration and/or exposure duration at affected receivers, include:

- configuring site layouts to ensure maximum possible distance between vibration intensive plant and sensitive receivers;
- the use of alternative and less-vibration intensive construction methods and the selection of low vibration plant where possible;
- rescheduling the hours of operation of major vibration generating plant and equipment and the introduction of respite periods during vibration generating work where possible;
- the provision of timely and effective communications and notifications to potentially affected residences; and
- undertaking vibration monitoring at selected receivers.

In addition, the CNVMP recommends the adoption of alternative measures to minimise impacts on the community, such as the relocation of residents where exceedances of the nominated human annoyance criteria lead to sustained complaint.

No additional Statements of Commitments are considered necessary for the proposed changes.

5 Consultation

WDA has consulted with DoP in regards to the proposed amendment. Potential issues discussed primarily related to whether the methods of management and mitigation proposed are suitably effective. The measures have been identified in the CNVMP.

As the proposed amendments are already encapsulated and approved in the publicly available CNVMP, broader public consultation among local communities and governmental departments was not undertaken.

WDA will continue to consult and inform stakeholders in accordance with Statements of Commitment 37 and 38, and Conditions 2.2b, 2.8, 2.10, 2.12, 2.14, 2.15, 2.16, 2.26, 4.3, 5.2b, 5.2f, 5.2g, 5.3, 5.4, 6.1 of the Project Approval.

6 Implementation

6.1 Environmental Safeguards

The environmental assessment (Section 4) undertaken for the proposed amendment indicates there would be no change in environmental and social impacts for the project overall.

The existing Statements of Commitment and Minister's Conditions of Approval are considered sufficient to manage potential impacts associated with the proposed amendment. No additional or new Statements of Commitment or Conditions of Approval are considered necessary.

Relevant Statements of Commitment from the PPR which have been identified in this document have been included as Appendix C.

6.2 Tasks following approval of modification

Once the Minister for Planning approves the modification, WDA will review the terms of approval to determine whether any actions are required to ensure compliance with any additional requirements.

If required, WDA would then undertake review and update the CNVMP and any other relevant management plans or procedures required by the Approvals or Statements of Commitment, including those approved by the Director-General of the DoP. This process will be undertaken in accordance with the WDA procedure for *Altering an Activity Approved by the Minister*.

7 Conclusion

This application for modification has been prepared to seek amendment of Condition 2.6 of the Project Approval and to assess the environmental impacts of the proposed amendments across the Project.

This application for modification seeks to amend Condition 2.6 so the condition is consistent with the approved project, including the intent of the relevant guideline *Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006)*, as well as Minister's Conditions of Approval 5.2b and Statement of Commitment 11. Overall, there would be no net change in environmental and social impacts for the project, due to the proposed amendment, compared to the approved project. In addition, the potential vibration impacts identified in the EA and PPR would not change.

Section 75W of the EP&A Act provides for the Minister for Planning to modify a project approval, with or without conditions. WDA has assessed the environmental impacts associated with the proposed amendment and suggests modifying Condition 2.6 as follows:

Condition	Suggested amendment	Proposed modified condition
Condition 2.6 of the Project Approval	*Delete:* *does not exceed the evaluation criteria* *Replace with:* *is managed consistent with the guidance*	*The Proponent shall ensure that the vibration resulting from construction and operation of the trenchless technology is managed consistent with the guidance presented in Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006).*

References

British Standard *BS 7385-1:1990 Evaluation and measurement for vibration in buildings*

DEC (2006) *Environmental Noise Management – Assessing Vibration: A Technical Guideline*

German Standard *DIN 4150-3, 1999-2002: Vibration in building - Part 3: Effects on structures*

Appendices

A Summary of Consistency Assessment
B Copy of Project Approval 07_0054 and Modifications of Approval (13/06/08, 12/09/08 and 28/12/08)
C Relevant Statements of Commitment (PPR)

Appendix A – Summary of Consistency Assessment

Appendix A – Summary of Consistency Assessment

A.1 Consistency with the Concept Approval

The following sections assess consistency with the Concept Approval. The Concept Approval includes a number of conditions that relate to administrative conditions, compliance tracking, community information consultation and involvement, complaints management and environmental management. The following sections only address those conditions relevant to the proposed amendment in the context of the approved project.

A.1.1 Schedule 1

As stated in Schedule 1 of the Concept Approval, on 16 November 2006, the Minister for Planning approved the concept of:

'Construction and operation of a desalination plant on the Kurnell Peninsula and associated infrastructure for the supply of an annual daily average production of up to 500 megalitres of drinking water per day, including:

a) Intake and outlet pipelines to draw raw seawater into the plant and return seawater concentrate to the ocean (including tunnelling under Botany Bay National Park);

b) Pipelines and/ or tunnels from the plant across Botany Bay to the Sydney Water Corporation water supply system for the distribution of drinking water;

c) Connection of the plant to the electricity grid; and

d) *Temporary laydown areas for construction use.*

The amendment is consistent with the concept defined by the Concept Approval (Schedule 1) in that the delivery system will be able to supply up to an annual daily average of 500 ML of desalinated water per day. It is consistent with item (b) above as it involves a pipeline from the plant across Botany Bay to Sydney Water's water supply system. It also requires the use of temporary laydown areas for construction use, thereby evidencing consistency with item (d) above.

Items a) and c) above do not relate to the delivery system and so are not relevant to this consistency assessment.

A.1.2 Schedule 2 – Condition 1.1

Condition 1.1 requires that:

The Proponent shall carry out the concept plan and all related projects generally in accordance with the:

a) Major Project Application 05_0082;

b) Environmental Assessment of the Concept Plan for Sydney's Desalination Project, dated November 2005, and prepared by Sydney Water Corporation;

c) Sydney's Desalination Project, Preferred Project Report, dated August 2006, and prepared by Sydney Water Corporation; and

d) The conditions of this approval.

The following sections discuss whether the proposed amendment is generally in accordance with these documents.

Condition 1.1(a) - Major Project Application

The Major Project Application dated 10 November 2005 and its attachment (Sydney's Desalination Project; Major Projects Application Attachment; Project Description Report), contains the following three key references to the delivery system:

- On page 2 of 4 – '*pipelines and/or tunnels from the plant across Botany Bay to the Sydney Water Corporation water supply system for the distribution of drinking water*';

The amendment is consistent with this reference as the project involves a pipeline from the plant to the existing water supply system for the distribution of drinking water.

- On page 2 of the attachment – '*Infrastructure to deliver water to the existing distribution network, allowing any of the following:*
    - *50 ML/day delivered locally to Caringbah;*
    - *125 ML/day delivered to Kyeemagh and then to the existing distribution network; and*
    - *Up to 500 ML/day delivered to the major water distribution system consisting of the City and Pressure Tunnels via a pipeline or tunnel across Botany Bay*.'

The proposed amendment is consistent with this reference as the project involves delivery of up to an annual daily average of 500 ML/day of desalinated water to the City Tunnel via a pipeline via a pipeline or tunnel across Botany Bay.

- On page 3 of the attachment – '*to date, two water distribution methods (that is, distribution route and method of construction) are under consideration to connect the desalination plant to the water network. A pipeline and/or a tunnel could be used to distribute the water. Figures 1.2 and 1.3 show examples. Other distribution methods will be considered. Alternative distribution methods may arise during the detailed design process. Decisions on the route and method of construction will be made during detailed design*.'

Figures 1.2 and 1.3 of the Major Project Application were indicative of concepts under consideration at that stage of the project and are no longer reflective of the project. These concepts have been refined during the course of subsequent investigations as part of the:

- EA of the Concept Plan;
- Blueprint Design;
- EA for the Delivery System;
- PPR for the Desalinated Water Delivery System; and
- Detailed design following receipt of the Project Approval.

The proposed amendment does not alter the approved project described in the PPR, and subsequent modifications.

On the basis of the above, it is considered that the proposed amendment is generally in accordance with the Major Project Application.

Condition 1.1(b) - Environmental Assessment of the Concept Plan for Sydney's Desalination Project

Section 2.1 (page 2.2) of the EA of the Concept Plan identified one of the main components as being:

'Infrastructure to deliver water to the existing distribution network, allowing any of the following:

- *50 ML/day delivered locally to Caringbah;*
- *125 ML/day delivered to Kyeemagh and then to the existing distribution network; and*
- *Up to 500 ML/day delivered to the major water distribution system consisting of the City and Pressure Tunnels via a pipeline or tunnel across Botany Bay.'*

The proposed amendment is consistent with this reference as desalinated water will be delivered to the major water distribution system.

Section 2.1 of the EA for the Concept Plan also states that:

'To date, two water distribution methods (that is, distribution route and method of construction) are under consideration to connect the desalination plant to the water network. A pipeline and/or tunnel could be used to distribute the water. Figures 2.2 and 2.3 show examples of routes that have been investigated. Other distribution methods will be considered.

Alternative distribution methods may arise during the detailed design process. Decisions on the route and method of construction will be made during detailed design.

The precise details of the site layout, distribution routes and other infrastructure will not be available until further investigation and design are undertaken as part of the detailed design in the project procurement strategy. This will be subject to the applicable environmental approval process.'

The proposed amendments do not alter the overall concept of delivering desalinated water to the water supply system.

On the basis of the above, it is considered that the proposed amendment is generally in accordance with the EA of the Concept Plan.

Condition 1.1(c) - Preferred Project Report for Sydney's Desalination Project

Chapter 1.4 of the PPR for Sydney's Desalination Project (August 2006) outlined the following refinements to the delivery system proposed in the EA of the Concept Plan:

- A tunnel may not be required for a plant greater than 125 ML/day. Methods to deliver greater than 125 ML/day include one or more pipelines once across Botany Bay or a tunnel, both of which were described in the EA of the Concept Plan; and

- A pipeline to Miranda/Caringbah will not now form part of the project, as water can be supplied across Botany Bay more cost effectively.

Section 11.1.2 of the PPR for Sydney's Desalination Project stated that:

"Sydney Water will seek subsequent Project Approval/s for the remaining components of the desalination project, namely the desalinated water distribution methods (that is, distribution route and method of construction) from the desalination plant. This will be sought at a time that would allow construction to commence when storages are depleted to around 30 percent. Further studies, investigations and assessments will occur to better understand constraints and identify the preferred delivery route(s)."

The project, including the proposed amendment, is consistent with that presented in the PPR for Sydney's Desalination Project as:

- A tunnel is not required and a pipeline is able to cater for the ultimate design capacity of the desalination plant of 500 ML/day; and
- It does not involve a pipeline to Miranda/Caringbah.

Condition 1.1(d) – Conditions of the Approval

Condition 1.1d of Schedule 2 requires that the project be consistent with the requirements of the Concept Approval. There are a number of Conditions of Approval that do not relate to the design or assessment of the project. These are:

- Administrative conditions (Condition 1);
- Compliance monitoring and tracking (Condition 3);
- Community information, consultation and involvement (Condition 4); and
- Environmental management (Condition 5).

Where relevant, these conditions were incorporated into the Statement of Commitments in the PPR to ensure consistency with the Concept Approval.

Condition 2.1 (schedule 2) of the Concept Approval specifies assessment requirements for the project (refer to Table 3.1). These requirements were addressed by the EA and PPR for the desalinated water delivery system.

Table 3.1 Environmental assessment requirements

Requirement (as per condition 2.1 of the Concept Approval)	Consistency assessment
(a) details of the project, including route, capacity and proposed construction methods	Not relevant to the proposed amendment.
(b) a detailed project-specific Statement of Commitments, consistent with the Statement of Commitments prepared for the Kurnell Desalination Plant concept plan, with a clear indication of any new or amended commitments relating to the project	Chapter 11 of the PPR, Section 4 of the Application for Modification.

Requirement (as per condition 2.1 of the Concept Approval)	Consistency assessment
(c) a demonstration that the project is consistent with the requirements of this approval and generally consistent with the scope and intent of the concept outlined in the documents under condition 1.1 of this approval	This appendix.
(d) a demonstration that the project has been designed to take into account and, where relevant, mitigate against, the impacts of wave action and coastal processes both on project integrity and as a result of the project on surrounding areas	Not relevant to the proposed amendment.
(e) a demonstration that the project has been designed to minimise the loss of seagrasses during the construction and operation of the project	Not relevant to the proposed amendment.
(f) a framework Compensatory Seagrass Package, developed in consultation with the DPI, detailing a framework for how any loss of seagrass associated with the project will be offset. The Package shall include consideration of new and/or protected seagrass areas, or other compensatory measures agreed by the DPI, commensurate with the extent of seagrass impacts. The Package shall also consider how the compensatory measures will be implemented, timing for any proposed works, responsibilities for on-going maintenance and monitoring and funding arrangements	Not relevant to the proposed amendment.
(g) a demonstration that the project has been designed to minimise water quality impacts particularly turbidity in Botany Bay	Not relevant to the proposed amendment.
(h) a comprehensive water quality impact assessment for the project, undertaken in consultation with the Department of Environment and Conservation (DEC) and DPI, considering how the project will be constructed and operated to meet the outcomes specified in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 2000) and to contribute to the achievement of the objectives in Marine Water Quality Objectives for NSW Ocean Water (DEC, 2006). The assessment shall make specific references to the prevention of adverse impacts on the Towra Point Reserve and commercial and recreational fishing activities in and around Botany Bay	Not relevant to the proposed amendment.
(i) an assessment of potential noise and vibration impacts associated with construction of the project, and how these impacts will be mitigated, monitored and managed	Chapter 7.3 and 9.3 of the PPR, Section 4 of the Application for Modification.

A.2 Consistency with the Project Approval

The following sections assess consistency with the Project Approval. The Project Approval includes a number of conditions, however not all are relevant to the proposed amendment. These conditions relate to matters such as, but not limited to:

- Botany Bay Cumulative Impacts and Coordination (Condition 3);
- Environmental Monitoring and Auditing (Condition 4);
- Environmental Management (Condition 5); and

- Environmental Reporting (Condition 6).

The following sections only address those conditions relevant to the proposed amendment in the context of the approved project. Condition 1 was considered relevant to this consistency assessment and is assessed below.

In addition, WDA will review the Project Approval to determine whether information such as procedures and management plans required by Conditions 3 - 6 need to be amended to meet compliance obligations.

A.2.1 Condition 1.1 – Terms of the Project Approval

The Project Approval does not define the project for which approval was sought and Condition 1.1 requires that:

The Proponent shall carry out the concept plan and all related projects generally in accordance with the:

a) *Environmental Assessment of the Desalinated Water Delivery System, dated April 2007, and prepared by GHD on behalf of the Proponent;*
b) *Desalinated Water Delivery System: Preferred Project Report, dated August 2007, and prepared by Sydney Water Corporation;*
c) *Desalinated Water Delivery System: Application for Modification of Project Approval for the Urban Sydney Sector: Sydney North, prepared by the Water Delivery Alliance for Sydney's Desalination Project and dated 5 May 2008;*
d) *Desalinated Water Delivery System: Application for Modification of Project Approval for the Botany Bay Sector, prepared by the Water Delivery Alliance and dated 15 July 2008, and additional information dated 2 September 2008;*
e) *Desalinated Water Delivery System: application for modification of conditions 2.18 and 2.19 of the Project Approval, relating to the Botany Bay Sector, prepared by the Water Delivery Alliance for Sydney's Desalination Project and dated 24 November 2008;*
f) *The concept plan approval granted with respect to the Kurnell Desalination Plant concept plan (05_0082); and*
g) *The conditions of this approval.*

Consistency with the documents (a), (b), and (g) is discussed below. The proposed amendment is not applicable to documents (d) and (e). Section A.1.2 above discussed consistency with document (f).

Condition 1.1(a) - Environmental Assessment of the Desalinated Water Delivery System

The delivery system was described in Chapter 5 of the EA for the delivery system. Sections 7.3 and 9.3 of the EA described the noise and vibration environmental assessment associated with the land based sections.

The EA recommends the use of the German Standard DIN 4150 Part 3 1999, given the lower frequency range of vibrations. The criteria presented in the EA was as follows:

- *20mm/s for commercial type buildings (e.g. reinforced concrete)*
- *5mm/s for residential type buildings; and*
- *3mm/s for sensitive buildings (e.g. historical buildings with preservation orders).*

The EA then presents safe working distance from vibratory sources.

Condition 1.2 states that in the event of any inconsistency between the documents identified in condition 1.1a) and 1.1b), the most recent document prevails to the extent of the inconsistency. As such, the PPR prevails over the EA to the extent of any inconsistency. The following section assesses the consistency of the proposed refinements with the PPR.

Condition 1.1 (b) – Desalinated Water Delivery System Preferred Project Report

Chapter 10 of the PPR defined the project for which Sydney Water sought approval. This was based on the project described in Chapter 5 of the EA as refined and changed by Chapter 2 of the PPR.

Chapter 5.3 of the PPR addressed concerns regarding construction noise and vibration. The PPR references AS2670.2-1990 *Evaluation of human exposure to whole-body vibration – Part 2: Continuous and shock induced vibration in buildings (1-80 Hz).* The PPR indicated that there was the potential for construction activities to exceed the annoyance criteria associated with both tunnelling and trenching construction activities as follows:

- *Sheetpiling within 20m of residences;*
- *Rockbreaking (heavy) within 20m of residences;*
- *Vibratory rollers within 20m of residences; and*
- *Microtunnelling within 10m of residences.*

The proposed amendment involves altering how the vibration criteria would be enforced, rather than changing the methodology of construction of the route. As such, the potential impacts associated with vibration identified in the EA and PPR would remain unchanged.

Section 4 of the Application for Modification assesses the potential environmental impacts of the proposed amendments and concludes that overall, the amendments will result in no net changes of potential environmental or social impacts relative to those described in the PPR. Potential impacts are able to be managed by implementing the Statement of Commitments.

Condition 1.1(c) – Desalinated Water Delivery System: Application for Modification of Project Approval for the Urban Sydney Sector: Sydney North, prepared by the Water Delivery Alliance for Sydney's Desalination Project and dated 5 May 2008

Chapter 4.4 of the Application for Modification of Project Approval for the Urban Sydney Sector assessed noise and vibration. It determined that the implementation of existing Conditions of Approval and Statement of Commitments was adequate to mitigate against impacts associated with noise and vibration. The proposed amendment will not alter the vibration impacts identified in the Application for Modification of Project Approval for the Urban Sydney Sector.

Condition 1.1(d) – Desalinated Water Delivery System: Application for Modification of Project Approval for the Botany Bay Sector, prepared by the Water Delivery Alliance and dated 15 July 2008, and additional information dated 2 September 2008

Condition 1.1(d) is not relevant to the Application for Modification.

Condition 1.1(e) – Desalinated Water Delivery System: application for modification of conditions 2.18 and 2.19 of the Project Approval, relating to the Botany Bay Sector

Condition 1.1(e) is not relevant to the Application for Modification.

Condition 1.1(f) – Concept Plan granted approval with respect to the Kurnell Desalination Plant concept plan (05_0082)

Condition 1.1(f) is addressed in Section A.1.2 of this Appendix.

Condition 1.1(g) – Conditions of the Project Approval

The Project Approval includes a number of conditions with which the project must comply. These conditions relate to requirements such as environmental monitoring and auditing etc, or to other parts of the project, for example Botany Bay pipeline impacts and coordination. Of these conditions, condition 2.6 relates to the Application for Modification.

A.2.2 Condition 2.6

Condition 2.6 of the Project Approval relates to ensuring that vibration levels do not exceed the evaluation criteria presented in *Environmental Noise Management – Assessing Vibration: A Technical Guideline* (DEC, 2006). WDA is seeking an amendment to Condition 2.6 to clarify the application of the referenced DECC Guideline, which is based on British Standard BS 6472-1992, *Evaluation of human exposure to vibration in buildings (1 – 80Hz)*.

WDA considers the need for vibration levels to be within the DECC Guideline as impractical given the stringent nature of the human annoyance criteria during the construction of ancillary components of the trenchless technology. Section 2.4 of the Application for Modification details the rationale and justification for amending this condition, including the use of mitigation measures to minimise impact, and represent best management practice.

It should be noted that what was believed to be the intent of the condition, to minimise impact during the operation of 24 hour trenchless technology, is not affected by the proposed amendment. An Application for Modification has been prepared to obtain approval for the amendment proposed in the table below:

Existing approval text (Condition 2.6). Extracted from original Project Approval 22/10/07	Proposed amendment to text
The Proponent shall ensure that the vibration resulting from construction and operation of the trenchless technology does not exceed the evaluation criteria presented in Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006).	*The Proponent shall ensure that the vibration resulting from construction and operation of the trenchless technology* ***is managed consistent with the guidance*** *presented in Environmental Noise Management – Assessing Vibration: A Technical Guideline (DEC, 2006).*

Appendix B - Copy of Project Approval 07_0054 and Modifications of Approval (13/06/08, 12/09/08 and 28/12/08)

Project Approval

Section 75J of the *Environmental Planning and Assessment Act 1979*

I, the Minister for Planning, approve the project referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

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

Frank Sartor MP
Minister for Planning

Sydney 22nd Oct 2007 File No: 9039739

SCHEDULE 1

Application No:	07_0054
Proponent:	Sydney Water Corporation
Approval Authority:	Minister for Planning
Project:	"the desalinated water delivery system" project
Concept Plan:	the project is a component of the approved concept plan for the Kurnell Desalination Plant (05_0082)
Part 3A Project:	On 25 October 2005, the Minister for Planning formed the opinion pursuant to clause 6 of *State Environmental Planning Policy (Major Projects) 2005* that the proposal is for the purpose of development described in clause 25(2) of Schedule 1 to that Policy. The proposal is thus declared to be a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies.
Concept Plan Authorisation:	On 16 November 2005, the Minister for Planning authorised the submission of a concept plan for the proposal.
Critical Infrastructure:	On 16 November 2005, the Minister for Planning formed the opinion pursuant to clause 6A of the *State Environmental Planning Policy (Major Projects) 2005* that the proposal is for the purpose of development described in Schedule 5 to that Policy (clause 1 – Kurnell desalination project). The proposal is thus declared to be a critical infrastructure project within the meaning of section 75C of the Act.

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SCHEDULE 2

Act, the	*Environmental Planning and Assessment Act 1979*
Conditions of Approval	The Minister's conditions of approval for the project
DECC	Department of Environment and Climate Change
Department, the	Department of Planning
Director-General, the	Director-General of the Department of Planning, or delegate.
DPI	Department of Primary Industries
EA	*Environmental Assessment of the Desalinated Water Delivery System*, dated April 2007, and prepared by GHD on behalf of Sydney Water Corporation
Minister, the	Minister for Planning.
Proponent	Sydney Water Corporation, or any party acting under authorisation from and on behalf of the Sydney Water Corporation
Publicly Available	Available for inspection by a member of the general public (for example available on an internet site or at a display centre).
RTA	NSW Roads and Traffic Authority
Site	The land to which this approval applies

1. ADMINISTRATIVE CONDITIONS

Terms of Project Approval

1.1 The Proponent shall carry out the project generally in accordance with the:

a) *Environmental Assessment of the Desalinated Water Delivery System*, dated April 2007, and prepared by GHD on behalf of the Proponent;

b) *Desalinated Water Delivery System: Preferred Project Report*, dated August 2007, and prepared by Sydney Water Corporation;

c) the concept plan approval granted with respect to the Kurnell Desalination Plant concept plan (05_0082); and

d) the conditions of this approval.

1.2 In the event of an inconsistency between:

a) the conditions of this approval and any document listed from condition 1.1a) to 1.1b) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and

b) any document listed from condition 1.1a) to 1.1b) inclusive, and any other document listed from condition 1.1a) to 1.1b) inclusive, the most recent document shall prevail to the extent of the inconsistency.

1.3 Notwithstanding condition 1.2, if there is any inconsistency between this project approval and the concept plan approval for the Kurnell Desalination Plant concept plan, the concept approval shall prevail to the extent of the inconsistency.

1.4 The Proponent shall comply with any reasonable requirement(s) of the Director-General arising from the Department's assessment of:

a) any reports, plans or correspondence that are submitted in accordance with this approval; and

b) the implementation of any actions or measures contained in these reports, plans or correspondence.

Limits of Approval

1.5 This project approval shall lapse on 31 December 2015, unless works the subject of this project approval or any other project approval granted with respect to the Kurnell Desalination Plant concept approval are physically commenced on or before that date. The Director-General may extend this lapse date if the Proponent demonstrates to the satisfaction of the Director-General that the desalination plant technology remains current, appropriate and reflective of best practice at the date the approval would otherwise lapse.

Project Sectors

1.6 For the purpose of this approval, the project shall be considered in three sectors:

a) the **Kurnell Sector**, being the dry-land component of the project between the desalination plant site and Silver Beach (approximately 2.0 kilometres);

b) the **Botany Bay Sector**, being the water-based component of the project between Silver Beach and Kyeemagh, including construction compounds at Silver Beach and Kyeemagh (approximately 8.0 kilometres); and

c) the **Urban Sydney Sector**, being the dry-land component of the project between Kyeemagh and Erskineville (approximately 8.3 kilometres).

2. SPECIFIC ENVIRONMENTAL CONDITIONS

Construction Methods

2.1 Without limiting or restricting the selection of a construction method for other parts of the project, the Proponent shall ensure that the project parts identified in Table 1 are only constructed using a trenchless technology.

Table 1 - Trenchless Technology Project Segments

Sector	Description	Location
Kurnell Sector	Under residential streets	From under Captain Cook Drive (near the Kurnell subtransmission substation) to the corner of Tasman Street and Dampier Street, and along Dampier Street to Silver Beach (Figure 10-1 of the document referred to under condition 1.1b))
Botany Bay Sector	Under seagrass beds	From Silver Beach to a point around 800 metres from the mean high water mark into Botany Bay along the pipeline alignment (Figure 10-2 of the document referred to under condition 1.1b))
Urban Sydney Sector	Under residential streets and watercourses	From Cook Park along Tancred Avenue and under Muddy Creek to Riverine Park (Figure 10-3 of the document referred to under condition 1.1b))
	Under watercourses	Under Cooks River (near Marsh Street) to Tempe Recreation Reserve (Figure 10-3 of the document referred to under condition 1.1b))
	Under major rail infrastructure	Under Botany Freight Line (Figure 10-3 of the document referred to under condition 1.1b))
	Under major road infrastructure	Under Canal Road (Figure 10-3 of the document referred to under condition 1.1b))
	Under residential streets	From Sydney Park, near Mitchell Road, along Mitchell Road and Ashmore Street to the junction of Ashmore and Bridge Streets (Figure 10-3 of the document referred to under condition 1.1b))

Noise and Vibration Impacts

Construction Hours

2.2 Construction activities associated with the Botany Bay Sector (excluding trenching activities within one kilometre of the nearest residences) (refer to condition 1.6) and those parts of the Kurnell Sector and Urban Sydney Sector employing a trenchless construction technology (refer to condition 2.1), but not including establishment of launch and receival pits, may be undertaken 24-hours per day, seven days per week, subject to:

a) compliance with the relevant Construction Noise Management Plan (refer to condition 5.2b)); and

b) in the case of works associated with the Kurnell Sector or the Urban Sydney Sector, notification of the local council and potentially-affected residential landowners and occupiers at least 48 hours prior to any works being undertaken outside of the hours specified in condition 2.3.

2.3 The Proponent shall only undertake construction activities associated with the project, other than those referred to under condition 2.2, that would generate an audible noise at any residential premises during the following hours:

a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;

b) 8:00 am to 1:00 pm on Saturdays; and
c) at no time on Sundays or public holidays.

This condition does not apply in the event of a direction from police or other relevant authority for safety reasons or where required in an emergency to avoid the loss of lives, property and/ or to prevent environmental harm.

2.4 The hours of construction activities specified under condition 2.3 of this approval may be varied with the prior written approval of the Director-General. Any request to alter these hours of construction shall be:
a) considered on a case by case basis or activity-specific basis;
b) accompanied by details of the nature and need for activities to be undertaken during the varied construction hours;
c) accompanied by written evidence to the Director-General that activities undertaken during the varied construction hours are justified; appropriate consultation with potentially affected receivers and notification of the relevant local council has occurred; and all practicable and reasonable mitigation measures will be put in place; and
d) accompanied by any information necessary for the Director-General to reasonably determine that the noise impact of activities undertaken during the varied construction hours will not unreasonably impact on the acoustic amenity of receptors in the vicinity of the works.

Noise and Vibration Goals and Limits

2.5 The following construction noise goals shall apply to the project:
a) with respect to airborne noise, a construction noise goal:
i) developed in accordance with the DECC's *Noise Control Guideline Construction Site Noise* during the hours of construction specified under condition 2.3 of this approval;
ii) established on the basis of what can reasonably and feasibly be achieved using best practice noise mitigation outside of the hours specified under condition 2.3 of this approval. Where applying such mitigation measures results in a noise level exceeding more than 5dB(A) ($L_{A10(15\text{-minute})}$) above rating background noise levels at sensitive receiver locations, the requirements of condition 5.2b) i) 3 apply; and
b) with respect to ground-borne noise, a construction noise goal of:
i) 45dB(A) ($L_{Aeq(15\text{-minute})}$) between the hours of 7:00 am and 6:00 pm;
ii) 40dB(A) ($L_{Aeq(15\text{-minute})}$) between the hours of 6:00pm and 7:00am; except where ground-borne noise is predicted to occur for more than seven consecutive days in which case, 35dB(A) ($L_{Aeq(15\text{-minute})}$) between the hours of 10:00pm and 7:00am applies.

Ground-borne noise is to be assessed within any habitable room.

2.6 The Proponent shall ensure that the vibration resulting from construction and operation of the trenchless technology does not exceed the evaluation criteria presented in *Environmental Noise Management – Assessing Vibration: A Technical Guideline* (DEC, 2006).

Impacts on Buildings and Structures

2.7 Subject to the agreement of the landowner, building condition surveys shall be completed on the following buildings/ structures prior to proximate tunnelling or excavation associated with the project:
a) all buildings/ structures above the excavation/ tunnel and other buildings/ structures likely to be affected by tunnel/ excavation works or other major vibration-inducing construction activities in the vicinity of the buildings and structures in the Kurnell Sector and the Urban Sydney Sector. A suitably qualified person is required to certify that the survey area (and the buildings surveyed within) encompasses the maximum area that

could reasonably be expected to be affected by tunnelling/ excavation or other major vibration-inducing construction works associated with the project; and

b) all buildings/ structures of heritage significance listed in Table 9.18 of the document referred to under condition 1.1a) of this approval, unless otherwise determined following geotechnical and vibration analysis endorsed by a suitably qualified person that the building/ structure(s) is not likely to be adversely affected by tunnel/ excavation works or other major vibration-inducing construction works associated with the project.

2.8 All property owners of buildings/ structures to be surveyed, as required under condition 2.7, shall be advised at least 48 hours prior to the commencement of the survey of their property of the scope and methodology of the surveys and the process for making a claim in relation to any property damage attributable to the construction of the project. A copy of the final survey shall be provided to each affected landowner upon request. A register of all properties surveyed shall be maintained by the Proponent and provided to the Director-General upon request.

2.9 Any damage to buildings/ structures, attributable to the construction of the project, either directly and indirectly (that is, including as a result of vibration or changes in groundwater) shall be rectified by the Proponent within a reasonable period, at no cost to the owner(s).

Traffic Impacts

2.10 Prior to the commencement of construction of the Kurnell Sector and the Urban Sydney Sector, the Proponent shall provide to the relevant road authority, the following information:

a) where directional drilling/boring is proposed under roads, detailed plans (including vertical and horizontal alignment) of the pipeline route and mitigation measures proposed to reduce impacts to traffic and pedestrian safety during construction works on either side of the road. An indication of timing of works, hours of construction and maintenance arrangements during operation should also be outlined;

b) where trenching is proposed to cross roads or where trenching is proposed to occur within the road reserve, detailed design plans for the road works (including vertical and horizontal alignment) is to be provided as well as information regarding plant and equipment proposed to be used, construction compound locations, construction schedule and hours of construction, localised traffic diversions, need for short-term closure of roads or traffic lanes and restricted or modified access to adjacent properties.

c) details of all works that impact upon classified roads, including proposed mitigation measures to be implemented to reduce construction impacts such as traffic control measures for peak traffic periods (i.e. detours/diversions) and measures to ensure traffic and pedestrian safety during construction activities are required to be outlined. Ongoing maintenance arrangements for the operational phase should also be provided.

2.11 The Proponent shall ensure that any measures to restore roads to pre-existing conditions are undertaken in a timely manner, in accordance with the requirements of and to the satisfaction of the relevant road authority, at the full expense of the Proponent.

2.12 The Proponent shall ensure that all road crossings of classified roads, as defined in the *Roads Act 1993*, are constructed using underboring/directional drilling construction techniques unless otherwise agreed with the RTA. The construction method and depth of cover shall be determined in consultation with the RTA.

2.13 At all locations at which the project crosses:

a) an existing road corridor (or future road corridors) between the Cooks River and Campbell Road (inclusive), Alexandria,

b) at Marsh Street, along the Alexandra Canal north of the bridge crossing near the Tempe Recreation Reserve, and

c) at General Holmes Drive,

the project shall be concrete encased, or equivalent, in order to protect the project from future road transport infrastructure, in consultation with the RTA.

2.14 Prior to the commencement of construction of the Urban Sydney Sector the Proponent shall consult with the RTA with respect to construction methods, project alignment, methods for protecting the pipeline infrastructure and future on-going maintenance of the project in that area. The consultation shall specifically address and resolve the potential for the project to adversely affect the RTA's future plans for road enhancement and development in order to minimise the potential for conflicts between the project and existing and any future major road transport infrastructure.

2.15 The Proponent shall ensure that the project is designed and constructed to be maintenance free within any RTA road reservations identified in environmental planning instruments and any future corridors identified by the RTA, or as otherwise agreed with the RTA. The Proponent shall ensure that pits, valves, hydrants, access structures or other related fittings are only located within areas of the project which are not within an existing or future road corridor, or as otherwise agreed with the RTA.

2.16 The Proponent shall provide the RTA with "as built" plans of the project where it is located within classified roads, as defined under the *Roads Act 1993,* and RTA road corridors (existing and future), showing the horizontal and vertical alignment and provisions for the protection of the project including locations of concrete encasement, or equivalent, if applicable, within six months of completion of construction of the project within those locations.

Soil and Water Quality Impacts

2.17 The Proponent shall employ soil and water management controls to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction of the Kurnell Sector and the Urban Sydney Sector, in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).

2.18 Construction and maintenance activities associated with the Botany Bay Sector shall be carried out in a manner that minimises the potential for the re-suspension and dispersal of marine sediments and associated biota, including installation of silt curtains around the Silver Beach and Kyeemagh construction sites and dredge discharge barges within the Botany Bay Sector. Silt curtains, or equivalent, shall be installed around the cutter suction dredges where monitoring demonstrates that turbidity levels at a point two metres from the cutter suction dredges, due to dredging activities, exceeds the background turbidity by more than an equivalent suspended sediment concentration of 50mg/L.

Where silt curtains have been installed, they shall remain in place until the turbidity of the water within the silt curtains returns to background levels of turbidity in waters immediately outside the silt curtains.

2.19 The Proponent shall ensure that construction of the Botany Bay Sector, including all dredging, subsurface storage and reclamation works, is carried out in a manner such that turbidity outside the silt curtains (as required under condition 2.18) does not exceed the background turbidity by more than an equivalent suspended sediment concentration of 50mg/L at a point mid-depth in the water column and a distance of two metres from the silt curtain. No visible surface plume outside the silt curtains is permitted.

2.20 All equipment associated with the construction and operation of the project shall be operated and maintained in a manner that minimises the potential for oil and grease spills/ leaks.

2.21 During construction of the Botany Bay Sector, the Proponent shall ensure that equipment capable of responding to a worst case oil spill is available at all times.

2.22 Prior to the commencement of construction of the Botany Bay Sector seaward of the mean high water mark, the Proponent shall develop work practices and procedures to be applied during construction to mitigate potential impacts on water quality and aquatic ecology. The work practices and procedures shall be consistent with the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000) and shall include, but not be limited to management of sediment-bound contaminants and acid sulfate soils located along the pipeline route. The Proponent shall consult DECC and DPI in development of these work practices and procedures. The Proponent shall submit a copy of the final work practices and procedures to the Director-General, prior to their implementation.

Impacts on Ecology

2.23 The Proponent shall ensure that construction of the Botany Bay Sector is carried out in a manner that minimises the potential for disturbance and/ or the spread of *Caulerpa taxifolia*.

2.24 The Proponent shall ensure that construction and maintenance of the Botany Bay Sector, particularly dredging and land reclamation works, is carried out in a manner that minimises the potential for impacts on seagrass beds, water quality, aquatic ecology and estuarine wetland systems.

2.25 Where practicable, noisy or other potentially disturbing activities associated with the construction of the project within Botany Bay shall cease or be scaled back when cetaceans and other marine mammals are approaching or in the area of construction activities.

2.26 The Proponent shall ensure that all revegetation and rehabilitation works are undertaken, in consultation with the relevant local council, using locally native species. The Proponent shall ensure that the regeneration of revegetated/rehabilitated areas is managed for a period of six months, or as agreed by the Director-General, until the newly planted vegetation has fully established.

Air Quality Impacts

2.27 The Proponent shall construct the project in a manner that minimises dust emissions from construction areas, including wind-blown and traffic-generated dust. All construction shall be undertaken with the objective of preventing visible emissions of dust from the site.

Waste Management

2.28 All wastes generated by the project shall be beneficially reused, recycled or directed to a waste facility lawfully permitted to accept the materials.

3. BOTANY BAY CUMULATIVE IMPACTS AND COORDINATION

3.1 Prior to the commencement of construction of the project, the Proponent shall consult with Sydney Ports Corporation (with respect to the timing of construction works associated with the expansion of Port Botany) and with EnergyAustralia (with respect to the timing of construction works associated with the Botany Bay electricity cable) to identify any potential coincident construction works between the project and those developments. Should construction works coincide, the Proponent shall consult with Sydney Ports Corporation and EnergyAustralia, as relevant, for the purposes of the development of a **Coordinated Environmental Monitoring and Management Protocol**. The Protocol shall provide a framework for identification of reasonable and feasible opportunities for the coordinated and cooperative monitoring and management of environmental impacts from the developments. The Protocol shall include, but not necessarily be limited to:

a) procedures for access to, and provision of, monitoring data from each development, particularly in relation to water quality and ecological health;

b) identify and implement reasonable and feasible opportunities for coordinated and cooperative approach to the management of cumulative environmental impacts from the developments, with particular reference to water quality, noise impacts, construction traffic, dust impacts, aquatic ecology and reuse of spoil;

c) arrangements for communication between the parties, including designated contact persons and contact details;
d) notification procedures in the event of an incident at either development that may impact on the other development(s), or generate a significant common or cumulative impact;
e) mechanism for review of the Protocol from time to time; and
f) such other matters as parties may agree.

The Proponent shall provide a copy of the Protocol to the Director-General as soon as practicable after agreement on the terms of the Protocol.

4. ENVIRONMENTAL MONITORING AND AUDITING

Ecosystem Monitoring

4.1 Prior to the commencement of construction of the Botany Bay Sector seaward of the mean high water mark, the Proponent shall prepare an **Ecosystem Monitoring Program** to monitor the impacts of the project on ecosystems of Botany Bay. The Program shall be developed in consultation with the DECC and the DPI, and shall include, but not necessarily be limited to:

a) a sampling, data collection and assessment regime to establish baseline ecological health, with particular reference to seagrasses, sygnathid species and benthic biota and for ongoing monitoring of ecological health during construction of the Botany Bay Sector. The monitoring program should include specific provisions for monitoring in and around construction works, including Towra Point Aquatic Reserve and its mangrove habitat, and should also take into account spatial variability in species types and distribution;
b) criteria against which the impact of the project on the ecological health of Botany Bay will be assessed;
c) water quality monitoring in the context of potential ecological impacts, particularly in relation to turbidity;
d) mitigation measures to be implemented in the event that reduced ecological health is identified with reference to established assessment criteria, including a timetable for implementation; and
e) monitoring for ecological health and biodiversity outcomes following completion of construction works, and for the recovery of biodiversity within the areas directly and indirectly affected by the Botany Bay Sector for a period of at least twelve months, unless otherwise agreed or directed by the Director-General.

Beach and Foreshore Monitoring

4.2 Prior to the commencement of construction of the Botany Bay Sector, the Proponent shall prepare a **Beach and Foreshore Monitoring Program** to monitor the impacts of the project on beach and foreshore erosion and quality where it is likely to be materially affected by the project. The Program shall be developed in consultation with the DECC and DPI and shall include, but not necessarily be limited to:

a) surveys of beaches and foreshore areas around Botany Bay, including those areas likely to be materially affected by the construction of the project and at least one reference site to establish baseline profiles for those areas;
b) monitoring of those beaches and foreshore areas around Botany Bay referred to under part a) during construction of the project and following completion of construction to identify any changes in beach and foreshore profiles;
c) provisions to determine "source" and "sink" areas and to ameliorate any damage to habitat determined as a "sink" area for erosion sourced sediment;
d) contingency measures to be implemented in the event that beach and foreshore profile changes attributable to the project are identified, and a timetable for implementation; and
e) provision for amelioration of any damage to beach and foreshore areas as a result of the construction of the project.

Noise and Vibration Monitoring

4.3 Prior to the commencement of construction of the project, the Proponent shall prepare a **Construction Noise and Vibration Monitoring Program** for the purpose of assessing compliance with the goals and limits referred to under conditions 2.5 and 2.6. The Program shall be developed in consultation with the DECC.

5. ENVIRONMENTAL MANAGEMENT

Construction Environmental Management

5.1 The Proponent shall apply the **Construction Environmental Management System** required to be developed under the concept approval for the Kurnell Desalination Project during construction of the project.

5.2 In addition to the general requirements of the Construction Environmental Management System, the Proponent shall prepare and implement the following project-specific Construction Environmental Management Plans and Protocols during the construction of the project:

a) where soil testing prior to the commencement of construction identifies the presence of acid sulfate soils, an **Acid Sulfate Soil Management Plan** prepared in accordance with guidance provided in *Acid Sulfate Soil Manual* (Acid Sulfate Soil Management Advisory Committee, 1998);

b) a **Construction Noise and Vibration Management Plan**, in consultation with DECC, to detail how construction noise and vibration impacts would be minimised and managed, including, but not necessarily limited to:

i) as primary objectives:

1. attainment of the construction noise goals and vibration limits specified under this approval at all times;
2. where construction noise goals cannot be met, to achieve best practice noise control (including, for example, acoustic enclosures over micro tunnelling launch and receival pits), in terms of noise level and duration of noise emissions at affected receivers at all times;
3. where the use of best practice noise control cannot substantially achieve the construction noise goals, alternative measures to resolve noise impacts on affected receivers (including, for example, temporary relocation of receivers);

ii) details of construction activities and a schedule for construction works;

iii) identification of construction activities that have the potential to generate noise and/ or vibration impacts on surrounding land uses, particularly residential areas;

iv) a program for the periodic monitoring of noise emissions and vibration during construction, as required under condition 4.3;

v) procedures for notifying residents of construction activities that are likely to affect their noise and vibration amenity;

vi) development of reactive and pro-active strategies for dealing promptly with any noise complaints, including documentation of a fast response, the completed action on a complaint and feedback from the complainant;

vii) a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often this monitoring would be undertaken, how the results of this monitoring would be recorded; and, if any non-compliance is detected with the goals and limits specified under this approval; and

viii) mechanisms to consider and address cumulative noise impacts, particularly from other construction work potentially occurring in the area;

c) a **Construction Traffic Management Protocol** to detail how heavy vehicle movements associated with the project (other than in relation to spoil management) will be managed during construction. The Protocol shall specifically address the movement of oversize loads to and from the site, the management of construction

traffic, restrictions to the hours of heavy vehicle movements to avoid road use conflicts, and the transport of construction waste materials;

d) a **Spoil Management Plan**, consistent with the Spoil Management and Disposal Strategy required under the concept plan approval for the Kurnell Desalination Project. The Plan shall include procedures for undertaking further sediment samples at various depths along the trenched portion of the Botany Bay Sector to provide detail on particle size and quality of sediments to be disturbed;

e) a **Construction Water Management Plan** (for the Botany Bay Sector), in consultation with DECC, to detail how water quality will be managed during construction of the Botany Bay Sector, with specific reference to the minimisation and control of turbidity/ suspended solids. In particular, a turbidity criterion is to be established to enable instantaneous measurements to be obtained and used operationally.

f) an **Erosion and Sedimentation Management Protocol** (for the Kurnell Sector and Urban Sydney Sector), in consultation with DECC, to detail how surface water and stormwater will be managed during construction. The Protocol shall include use of appropriately-sized stormwater controls, in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).

g) a **Groundwater Management Protocol** (for the Kurnell Sector and Urban Sydney Sector), in consultation with DECC, to detail how groundwater will be managed during construction, with specific reference to identification and management of any contaminated groundwater along the pipeline route.

5.3 The Plans and Protocols referred to under condition 5.2 shall be submitted for the approval of the Director-General prior to the commencement of construction, or within such period otherwise agreed by the Director-General.

5.4 Nothing in this approval precludes the Proponent from developing the Plans and Protocols referred to under condition 5.2 as separate plans/ protocols, or as a single plan/ protocol, nor does it preclude the staging of submission of any of these plans/ protocols consistent with the staging of any construction works. Construction of the relevant component of the project must not commence until written approval of all Plans and Protocols relevant to that component of the project has been received from the Director-General.

Operation Environmental Management

5.5 The Proponent shall apply the **Operational Environmental Management System** required to be developed under the concept approval for the Kurnell Desalination Project during operation of the project.

6. ENVIRONMENTAL REPORTING

Incident Reporting

6.1 The Proponent shall notify the Director-General of any incident with actual or potential significant off-site impacts on people or the biophysical environment as soon as practicable and within 24 hours after the occurrence of the incident. The Proponent shall provide full written details of the incident to the Director-General within seven days of the date on which the incident occurred.

6.2 The Proponent shall meet the requirements of the Director-General to address the cause or impact of any incident, as it relates to this approval, reported in accordance with condition 6.1 of this approval, within such period as the Director-General may require.

Modification of Approval

Section 75W of the *Environmental Planning and Assessment Act 1979*

I, the Executive Director, Major Project Assessments Division of the Department of Planning, in accordance with the Instrument of Delegation issued by the Minister for Planning, on 7 June 2007, pursuant to section 75W of the *Environmental Planning and Assessment Act 1979* determine the modification to the approval referred to in Schedule 1 in the manner set out in Schedule 2.

Executive Director
Major Project Assessments
As delegate for the Minister for Planning

Sydney 13 June 2008 File No: 9039739

SCHEDULE 1

Project Approval:	granted by the Minister for Planning on 22 October 2007 (MP 07_0054).
For the following:	"the desalinated water delivery system" project as part of the approved concept plan for the Kurnell Desalination Plant (05_0082)
Modification:	Amendments to the alignment of the Urban Sydney Sector of the project, generally in Alexandria and Erskinville.

SCHEDULE 2

The approval is modified as follows:

1. Replacing existing condition 1.1 with new condition 1.1 as follows:

1.1 The Proponent shall carry out the project generally in accordance with the:
- a) *Environmental Assessment of the Desalinated Water Delivery System*, dated April 2007, and prepared by GHD on behalf of the Proponent;
- b) *Desalinated Water Delivery System: Preferred Project Report*, dated August 2007, and prepared by Sydney Water Corporation;
- c) *Desalinated Water Delivery System: Application for Modification of Project Approval for the Urban Sydney Sector: Sydney North*, prepared by the Water Delivery Alliance for Sydney's Desalination Project and dated 5 May 2008;
- d) the concept plan approval granted with respect to the Kurnell Desalination Plant concept plan (05_0082); and
- e) the conditions of this approval.

2. Replacing existing condition 1.2 with new condition 1.2 as follows:

1.2 In the event of an inconsistency between:
- a) the conditions of this approval and any document listed from condition 1.1a) to 1.1c) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and
- b) any document listed from condition 1.1a) to 1.1c) inclusive, and any other document listed from condition 1.1a) to 1.1c) inclusive, the most recent document shall prevail to the extent of the inconsistency.

3. Replacing existing condition 2.1 with new 2.1 as follows:

2.1 Without limiting or restricting the selection of a construction method for other parts of the project, the Proponent shall ensure that the project parts identified in Table 1 are only constructed using a trenchless technology.

Table 1 - Trenchless Technology Project Segments

Sector	Description	Location
Kurnell Sector	Under residential streets	From under Captain Cook Drive (near the Kurnell subtransmission substation) to the corner of Tasman Street and Dampier Street, and along Dampier Street to Silver Beach (Figure 10-1 of the document referred to under condition 1.1b))
Botany Bay Sector	Under seagrass beds	From Silver Beach to a point around 800 metres from the mean high water mark into Botany Bay along the pipeline alignment (Figure 10-2 of the document referred to under condition 1.1b))
Urban Sydney Sector	Under residential streets and watercourses	From Cook Park along Tancred Avenue and under Muddy Creek to Riverine Park (Figure 10-3 of the document referred to under condition 1.1b))
	Under watercourses	Under Cooks River (near Marsh Street) to Tempe Recreation Reserve (Figure 10-3 of the document referred to under condition 1.1b))
	Under major rail infrastructure	Under Botany Freight Line (Figure 10-3 of the document referred to under condition 1.1b))
	Under major road infrastructure	Under Canal Road (Figure 10-3 of the document referred to under condition 1.1b))
	Under residential streets	From Sydney Park, near the intersectiom of Euston Road and Campbell Road, along Euston Lane to Maddox Street and through Ashmore and Mitchell Industrial Estates (Figure 2.2 of the document referred to under condition 1.1c))

Modification of Approval

Section 75W of the *Environmental Planning and Assessment Act 1979*

I, the Executive Director, Major Project Assessments Division of the Department of Planning, in accordance with the Instrument of Delegation issued by the Minister for Planning, on 7 June 2007, pursuant to section 75W of the *Environmental Planning and Assessment Act 1979* determine the modification to the approval referred to in Schedule 1 in the manner set out in Schedule 2.

Executive Director
Major Project Assessments
As delegate for the Minister for Planning

Sydney 12 SEPTEMBER 2008 File No: 9039739

SCHEDULE 1

Project Approval:	granted by the Minister for Planning on 22 October 2007 (MP 07_0054).
For the following:	"the desalinated water delivery system" project as part of the approved concept plan for the Kurnell Desalination Plant (05_0082)
Modification:	Amendments to the construction methods and dredged material storage arrangements.

SCHEDULE 2

The approval is modified as follows:

1. Replacing existing condition 1.1 with new condition 1.1 as follows:

1.1 The Proponent shall carry out the project generally in accordance with the:

a) *Environmental Assessment of the Desalinated Water Delivery System*, dated April 2007, and prepared by GHD on behalf of the Proponent;

b) *Desalinated Water Delivery System: Preferred Project Report*, dated August 2007, and prepared by Sydney Water Corporation;

c) *Desalinated Water Delivery System: Application for Modification of Project Approval for the Urban Sydney Sector: Sydney North*, prepared by the Water Delivery Alliance for Sydney's Desalination Project and dated 5 May 2008;

d) *Desalinated Water Delivery System: Application for Modification of Project Approval for the Botany Bay Sector*, prepared by the Water Delivery Alliance and dated 15 July 2008, and additional information dated 2 September 2008;

e) the concept plan approval granted with respect to the Kurnell Desalination Plant concept plan (05_0082); and

f) the conditions of this approval.

2. Replacing existing condition 1.2 with new condition 1.2 as follows:

1.2 In the event of an inconsistency between:

a) the conditions of this approval and any document listed from condition 1.1a) to 1.1d) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and

b) any document listed from condition 1.1a) to 1.1d) inclusive, and any other document listed from condition 1.1a) to 1.1d) inclusive, the most recent document shall prevail to the extent of the inconsistency.

3. Replacing existing condition 2.19 with new 2.19 as follows:

2.19 The Proponent shall ensure that construction of the Botany Bay Sector, including all dredging, subsurface storage and reclamation works, is carried out in a manner such that turbidity outside the silt curtains (as required under condition 2.18) does not exceed the background turbidity by more than an equivalent suspended sediment concentration of 50mg/L at a point of approximately 0.2 metre depth for Silver Beach and between 1 and 1.5 metre depth in the water column for all other sites and equipment and a distance of less than 10 metres from the silt curtain. No visible surface plume outside the silt curtains is permitted.

Modification of Approval

Section 75W of the *Environmental Planning and Assessment Act 1979*

I, the Executive Director, Major Project Assessments Division of the Department of Planning, in accordance with the Instrument of Delegation issued by the Minister for Planning, on 7 June 2007, pursuant to section 75W of the *Environmental Planning and Assessment Act 1979* determine the modification to the approval referred to in Schedule 1 in the manner set out in Schedule 2.

Executive Director
Major Project Assessments
As delegate for the Minister for Planning

Sydney 28 DECEMBER 2008 File No: 9039739

SCHEDULE 1

Project Approval:	granted by the Minister for Planning on 22 October 2007 (MP 07_0054).
For the following:	"the desalinated water delivery system" project as part of the approved concept plan for the Kurnell Desalination Plant (05_0082)
Modification:	Amendments to the construction monitoring and management arrangements.

SCHEDULE 2

The approval is modified as follows:

1. Replacing existing condition 1.1 with new condition 1.1 as follows:

1.1 The Proponent shall carry out the project generally in accordance with the:

a) *Environmental Assessment of the Desalinated Water Delivery System*, dated April 2007, and prepared by GHD on behalf of the Proponent;

b) *Desalinated Water Delivery System: Preferred Project Report*, dated August 2007, and prepared by Sydney Water Corporation;

c) *Desalinated Water Delivery System: Application for Modification of Project Approval for the Urban Sydney Sector: Sydney North*, prepared by the Water Delivery Alliance for Sydney's Desalination Project and dated 5 May 2008;

d) *Desalinated Water Delivery System: Application for Modification of Project Approval for the Botany Bay Sector*, prepared by the Water Delivery Alliance and dated 15 July 2008, and additional information dated 2 September 2008;

e) *Desalinated Water Delivery System: Application for Modification of Conditions 2.18 and 2.19 of the Project Approval, Relating to the Botany Bay Sector*, prepared by the Water Delivery Alliance for Sydney's Desalination Project and dated 24 November 2008;

f) the concept plan approval granted with respect to the Kurnell Desalination Plant concept plan (05_0082); and

g) the conditions of this approval.

2. Replacing existing condition 1.2 with new condition 1.2 as follows:

1.2 In the event of an inconsistency between:

a) the conditions of this approval and any document listed from condition 1.1a) to 1.1e) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and

b) any document listed from condition 1.1a) to 1.1e) inclusive, and any other document listed from condition 1.1a) to 1.1e) inclusive, the most recent document shall prevail to the extent of the inconsistency.

3. Replacing existing condition 2.18 with new 2.18 as follows:

2.18 Construction and maintenance activities associated with the Botany Bay Sector shall be carried out in a manner that minimises the potential for the re-suspension and dispersal of marine sediments and associated biota, including installation of silt curtains around the Silver Beach and Kyeemagh construction sites and dredge discharge barges within the Botany Bay Sector.

Where silt curtains have been installed, they shall remain in place until the turbidity of the water within the silt curtains returns to background levels of turbidity in waters immediately outside the silt curtains.

All reasonable and feasible mitigation measures shall be employed during operation of the cutter suction dredges where monitoring demonstrates that turbidity levels at a point 2 metres from the cutter section dredges, due to dredging activities, exceed the background turbidity by more than an equivalent suspended sediment concentration of 50mg/L. These measures shall be detailed within the Botany Bay Sector Construction Water Management Plan as described under condition 5.2e.

4. Replacing existing condition 2.19 with new 2.19 as follows:

2.19 The Proponent shall ensure that construction of the Botany Bay Sector, including all dredging, subsurface storage and reclamation works, is carried out in a manner such that turbidity outside the silt curtains (as required under condition 2.18) does not exceed the background turbidity by more than an equivalent suspended sediment concentration

of 50mg/L at a point of approximately 0.2 metre depth for Silver Beach and between 1 and 1.5 metre depth in the water column for all other sites and equipment and a distance of less than 10 metres from the silt curtain.

All reasonable and feasible mitigation measures shall be employed so as to minimise prolonged visible surface plumes (outside silt curtains) in the Bay, and shall be detailed within the Botany Bay Sector Construction Water Management Plan as described under condition 5.2e.

Appendix C – Relevant Statements of Commitment (PPR)

Appendix C - Relevant Statements of Commitment

Desired Outcome	Action	Timing
Noise and Vibration		
Construction noise disturbance of local residents and schools minimised.	11. A Construction Noise Management Plan will be prepared to detail how construction noise and vibration impacts would be minimised and managed, including, but not necessarily limited to:. a. Undertaking an assessment of construction and traffic noise at the delivery infrastructure worksites and calculating project specific noise goals as follows; 1. Applying a construction noise objective in line with the Environmental Noise Control Manual (EPA, 1994) or any construction noise guidelines developed by DEC to replace that manual, as far as practicable, i.e. for activities at work sites operating for a period greater than 26 weeks (as measured by the LA10 (15 minute) descriptor) that the background LA90 noise level is not exceeded by more than 5dB(A) at any residence or other noise sensitive receiver. 2. If noise from a construction activity is substantially tonal or impulsive in nature (as described in Chapter 4 of the NSW Industrial Noise Policy), 5dB(A) will be added to the measured construction noise level when comparing the measured noise with the construction noise objective; b. Measures to limit vibration impacts on property and amenity of local residents and schools associated with construction activities in accordance with relevant Standards as far as practicable;. c. Identifying reasonable and feasible noise mitigation measures, where the noise objectives cannot be achieved and addressing noisy activities such as sheet piling for implementation during construction. This will include selection of less noisy construction method, noise controls on equipment, noise mitigation barriers such as noise shielding at construction compounds, timing and notification of construction activities and/or options identified; d. Consulting with local communities where construction activities occur, including pipelaying along roadways, to mitigate local issues of noise, access, working hours, safety and disruption to traffic movements; e. Developing a construction noise monitoring program to verify noise levels from key work sites; and f. Measures to minimise disturbance to marine mammals during construction of the delivery system, including, where practicable, stopping or scaling down at risk activities when marine mammals are approaching the area of construction.	During design (before construction commences).
Communications Processes		
The community and stakeholders have a high level of awareness of all processes and activities associated with the delivery system; Provision of accurate and accessible information; and A high level of responsiveness to issues and concerns raised by the community.	37. Communities directly impacted by construction will be provided with detailed information on the nature and timing of the proposed works including: a. Sydney Water will work with local Councils, stakeholder groups and the community to identify local issues and concerns prior to the commencement of construction to ensure that appropriate measures are put in place to mitigate local impacts; b. Measures will address issues such as access, local amenity, safety and traffic management; and c. Local communities will be consulted should site restoration works be required following construction.	During design (before construction commences).

Desired Outcome	Action	Timing
	38. Communications processes will be developed and implemented at appropriate times with impacted communities throughout delivery of the delivery system. These will include: a. Opportunities to input to mitigation measures for construction or operations; a. Methods to inform the community of the progress and performance of the project and issues of interest to the community; b. Notification of construction activities to potentially affected local residents and businesses; c. Processes to receive and manage complaints in accordance with Sydney Water's customer contract; d. Consultation with affected property owners including property inspections, where appropriate; e. Induction and training of construction personnel in communications requirements; and f. Protocols to notify stakeholders of relevant activities and any incidents should they occur.	During design (before construction commences).