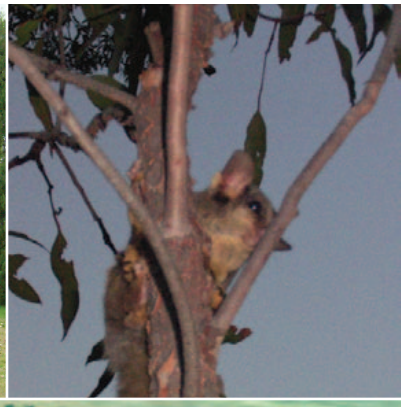

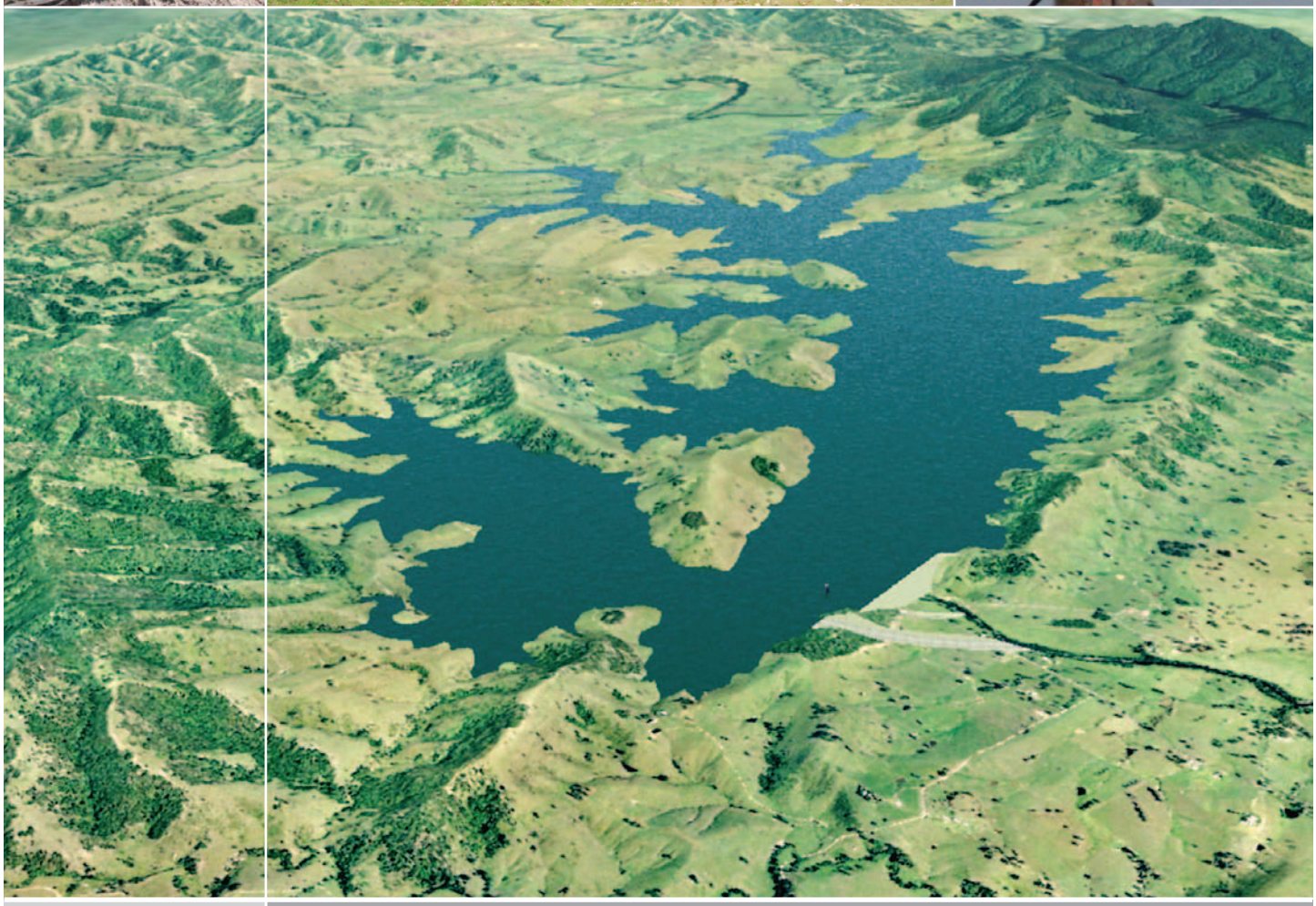

Tillegra Dam Planning and Environmental Assessment

# Preliminary Environmental Assessment

HUNTER WATER

October 2007

Connell Wagner

# Hunter Water Corporation

# Tillegra Dam Planning and Environmental Assessment

# Preliminary Environmental Assessment

October 2007

Connell Wagner

# Executive Summary

*Introduction and overview*

On 13 November 2006 the NSW Government announced a $342 million package of works to secure the water future of the lower Hunter and the Central Coast regions for at least the next 60 years. This included construction of a 450 GL dam at Tillegra that will approximately double the existing water storage capacity of the lower Hunter region. The dam is deemed an important component of the NSW Government's State Plan to secure the water future of the region for at least the next 60 years.

The scope of works, the subject of this Project Application Report, is to undertake an environmental assessment and to secure development approval for the Tillegra Dam project.

The Project would comprise the following components:

- Dam wall and spillway construction.
- A multi-level offtake tower.
- A hydropower generation plant.
- A pipeline and pump station connecting Tillegra Dam to the Chichester Trunk Gravity Main (CTGM).
- Relocation and reconstruction of Salisbury Road (including construction of three waterway crossings) and provision of alternative access currently provided from Quart Pot Creek Road.
- Relocation of electrical and telecommunication services (approx 20 km route).
- Relocation/upgrade of other public infrastructure (such as the RFS station).
- Heritage conservation works (including relocation of a cemetery and preservation of a historic house).
- Significant tree planting (1.5 million trees) for carbon offsetting.
- Ancillary works as required (such as potential recreational access areas, lookouts and related facilities).

*Planning and assessment process*

The *Environmental Planning and Assessment Act 1979* (EP&A Act) provides a framework for environmental planning and assessment in NSW. Part 3A of the Act provides an assessment and approval process for major infrastructure projects.

Part 3A applies to the carrying out of development that is declared by a State environmental planning policy (SEPP) or by an Order of the Minister to be a Project to which Part 3A applies.

HWC has sought that the Minister for Planning declare, pursuant to Section 75B of the EP&A Act, the Project as being subject to Part 3A.

HWC intends to lodge an application under Part 3A of the EP&A Act for approval to carry out the Project.

*Need for the Project*

The current proposal to build Tillegra Dam has come about as a result of:

- The need to improve drought security for existing customers in the lower Hunter

region.

- Long term climate change implications and the current drought being experienced across the country.
- Significant predicted growth in the lower Hunter region as reported in the NSW Government's *Lower Hunter Regional Strategy* (2006).

The construction of Tillegra Dam also provides opportunities to assist the Central Coast in terms of a reliable water supply for that region in the longer term.

*Proposed scope of the environmental assessment*

Environmental issues identified by HWC during the preliminary environmental assessment are detailed in this Project Application report. HWC proposes to assess the following key environmental issues in detail in the environmental assessment:

- Fluvial geomorphology.
- Water quality and environmental flows.
- Aquatic ecology.
- Terrestrial ecology.
- Sustainable resource use.
- Socioeconomic issues.
- Landscape and visual amenity.
- Contemporary heritage
- Aboriginal heritage.

These key environmental issues are likely to have unique project-specific issues that may require the application of project specific mitigation measures. Further assessment and studies have been identified in Chapter 7 of this report to support the development and implementation of procedures, practices and protocols for identifying and managing the environmental impacts of the Project. These procedures, practices and protocols would be included in the Statement of Commitments for the Project.

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# Glossary

| Acronym | Definition |
|---|---|
| AHIMS | Aboriginal Heritage Information Management System |
| ANCOLD | Australian National Committee on Large Dams |
| AQMP | air quality management plan |
| BMP | blast management plan |
| CBA | cost benefit analysis |
| CGE | computable general equilibrium (modelling process) |
| CEA | cost effectiveness analysis |
| CEMP | construction environmental management plan |
| CFRD | concrete faced rockfill dam |
| CMA | Catchment Management Authority |
| CoPS | Centre of Policy Studies (at Monash University) |
| CRAFTI | Aerial photographic mapping process (Integrated Comprehensive Regional Assessment Aerial Photographic Interpretation) |
| CRG | Tillegra Dam Community Reference Group |
| CTGM | Chichester Trunk Gravity Main |
| DECC | NSW Department of Environment and Climate Change |
| DEW | Commonwealth Department of the Environment and Water Resources |
| DIPNR | (former) NSW Department of Infrastructure, Planning and Natural Resources |
| DLWC | (former) NSW Department of Land and Water Resources |
| DNR | (former) NSW Department of Natural Resources |
| DoP | NSW Department of Planning |
| DSC | NSW Dams Safety Committee |
| DSEP | Dam Safety Emergency Plan |
| DWE | NSW Department of Water and Energy |
| EA | environmental assessment |
| ECRD | earth core rockfill dam |
| EEC | endangered ecological community |
| EIA | environmental impact assessment |
| EP&A Act | *Environmental Planning and Assessment Act 1979* |
| EPBC Act | *Environment Protection and Biodiversity Conservation Act 1999* |
| GL | gigalitre (one thousand million litres or one thousand megalitres) |
| ha | hectare |
| HRC | NSW Healthy Rivers Commission |
| HRMP | hazard and risk management plan |
| HVRF | Hunter Valley Research Foundation |
| HWC | Hunter Water Corporation |
| $km^2$ | square kilometre |
| LEP | local environmental plan |
| LGA | local government area |
| LoS | level of service |

| Acronym | Definition |
|---|---|
| mAHD | metres (above) Australian Height Datum |
| ML | megalitre (one million litres) |
| ML/d | megalitres per day |
| ML/y | megalitres per year |
| mm | millimetre |
| mm/s | millimetres per second |
| NES | (matter of) national environmental significance |
| NVMP | noise and vibration management plan |
| PA | project application |
| PAD | potential archaeological deposit |
| PEA | preliminary environmental assessment |
| dB(A) | decibel (A-weighted scale) |
| POEO Act | *Protection of the Operations Act 1997* |
| RCCD | roller compacted concrete dam |
| REP | regional environmental plan |
| RFS | NSW Rural Fire Service |
| RTA | NSW Roads and Traffic Authority |
| SEPP | State environmental planning policy |
| SIS | State Infrastructure Strategy |
| SWMP | soil and water management plan |
| TSC Act | *Threatened Species Conservation Act 1995* |
| WMP | waste management plan |

# 1 Introduction and Methodology

## 1.1 Background

Hunter Water Corporation (HWC) is proposing to construct a 450 GL dam at Tillegra near the town of Dungog in the Hunter Valley (refer Figure 1.1). Tillegra Dam would approximately double the total existing water storage capacity of the lower Hunter region. The dam is deemed an important component of the NSW Government's State Plan[1] to secure the water future of the region for at least the next 60 years.

The scope of works, the subject of this Project Application Report, is to undertake an environmental assessment and to secure development approval for the Tillegra Dam project. The Project would comprise the following components:

- Dam wall and spillway construction.
- A multi-level offtake tower.
- A hydropower generation plant
- A pipeline and pump station connecting Tillegra Dam to the Chichester Trunk Gravity Main (CTGM).
- Relocation and reconstruction of Salisbury Road (including construction of three waterway crossings) and provision of alternative access currently provided from Quart Pot Creek Road.
- Electrical and telecommunication installations (approx 20 kilometre route).
- Relocation/upgrade of other public infrastructure (such as the RFS station).
- Heritage conservation works (including relocation of a cemetery and preservation of a historic house).
- Significant tree planting (1.5 million trees) for carbon offsetting.
- Ancillary works as required (potential recreational access areas, lookouts and related facilities).

The dam and associated infrastructure are expected to have a capital construction cost of approximately $300 million.

## 1.2 Project development history

The site was first proposed for a dam during the 1950s due to the large catchment area, good rainfall and low environmental impacts. HWC began purchasing land in the Tillegra area in the early 1980s. In the mid to late 1980s, HWC deferred plans for the construction of Tillegra Dam as a result of the community's response to pay-for-use water pricing and an overall reduction in water demand.

The current proposal to build Tillegra Dam has since come about as a result of:

- The need to improve drought security for existing customers in the lower Hunter region.
- Long term climate change implications and the current drought being experienced across the country.
- Significant predicted growth in the lower Hunter region as reported in the NSW

[1] *A new direction for NSW* (NSW Government, Nov 2006)

Government's *Lower Hunter Regional Strategy* (2006).

The construction of Tillegra Dam would also provide opportunities to assist the Central Coast in terms of a reliable water supply for that region in the longer term.

Subject to HWC securing all necessary environmental planning approvals, construction work would commence in 2009 with the relocation of Salisbury Road. Construction of the dam is expected to begin in late 2010. The upper Williams River catchment receives large, regular flood flows which would allow the dam to fill in approximately five years. Although the dam would still be filling, the first water would be expected to be available in 2013.

HWC is proceeding with the environmental assessment in parallel with the design process. This approach is being taken, in part, to facilitate the exchange of relevant information between the design team and the EIA team. This allows the two teams to closely collaborate to respond to project needs. For example, issues identified by the EIA team during this planning process may be able to be addressed by a design modification.

This approach also allows for greater community input and participation in project development and refinement. For example, community input already undertaken has allowed preferred road alignments to be identified. A similar approach is being taken for other project components and results would be presented in the EA (environmental assessment) report.

## 1.3 Community consultation

The Project would affect the local community in a variety of ways. A key aspect of the Project would be to minimise, as far as possible, negative outcomes while enhancing opportunities and positive impacts.

In order to facilitate the flow of information between HWC and the local community, the Tillegra Dam Community Reference Group (CRG) was established in February 2007. Membership of the CRG comprises stakeholder representatives from Dungog Shire Council, the local community and HWC. The CRG is chaired by an independent facilitator.

The CRG has established subcommittees to focus on the following specific issues:

- The relocation of Quart Pot/Munni Cemetery.
- Economic and tourism opportunities associated with construction of the dam.

The CRG meets monthly; to date meetings have examined issues ranging from the planning process, environmental impacts, community benefits and economic impacts. Issue-specific matters have also been raised. These include recreational opportunities for the dam and the relocation of Quart Pot/Munni Cemetery. The CRG has also convened public information sessions covering such aspects as dam safety and road relocations.

In addition, outside of the CRG forum, public information brochures have been made available at the Dungog Visitor Information Centre concerning the preferred road route for the relocation of Salisbury Road and a related public workshop undertaken. A number of general community and stakeholder briefings have also been held.

An open day has been held at Munni House weekly since November 2006 with HWC staff available to answer public enquiries. HWC has also met with individual

landholders as well as holding wider public briefing and information sessions.

Issues raised by the CRG and other stakeholder groups are being taken forward for consideration in the environmental assessment and design process. The Part 3A planning approval process would also require additional community consultation and public exhibition of the EA report.

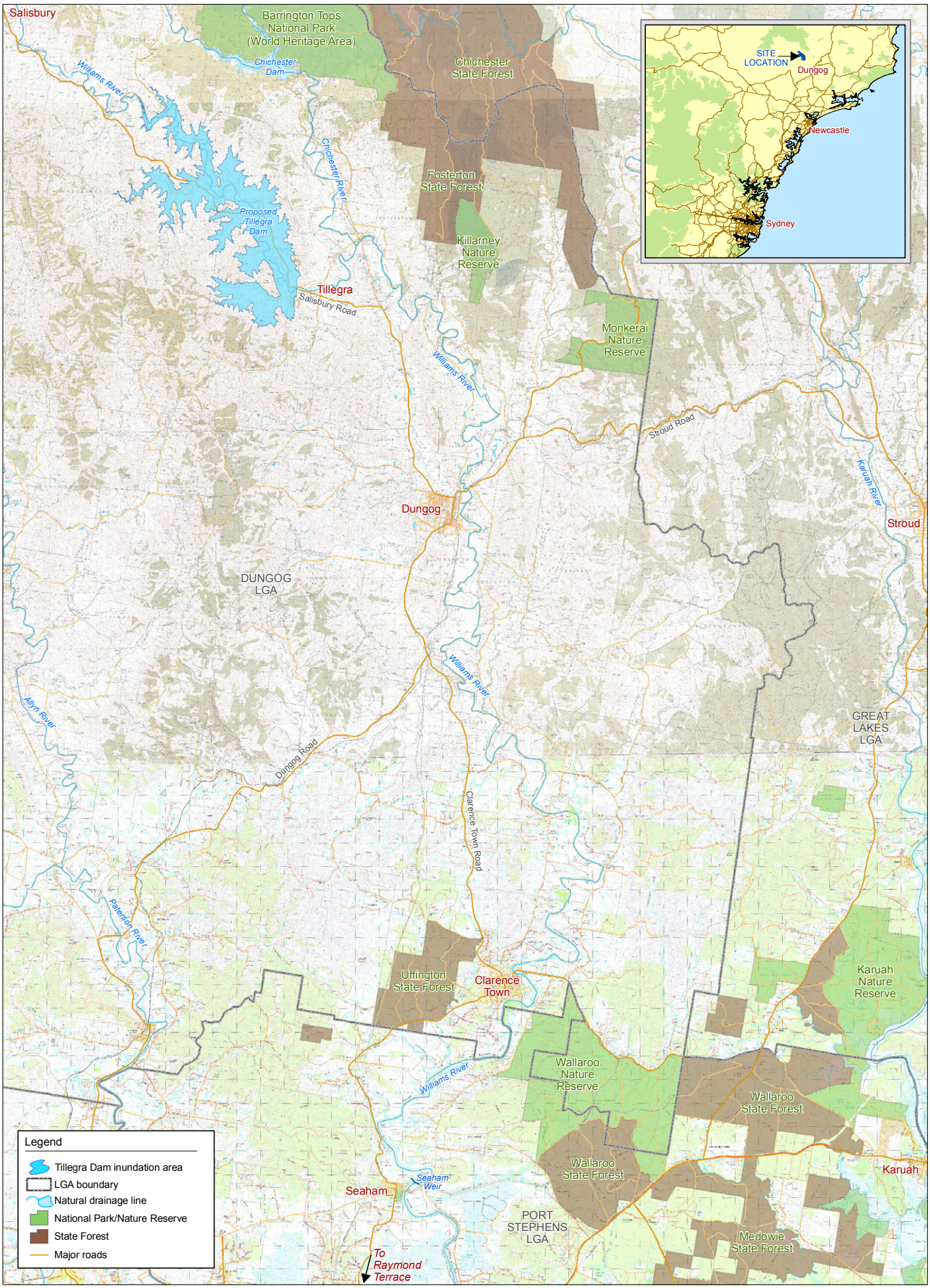
## 1.4 Purpose and structure of this document

This preliminary environmental assessment (PEA) report has been prepared to support a Project Application (PA) to the Director-General of the Department of Planning (DoP) under Section 75E of the EP&A Act. The report:

- Describes the Project.
- Outlines the findings of a preliminary environmental assessment and outlines the environmental management measures proposed to be adopted.
- Identifies the proposed scope of the subsequent environmental assessment for the Project.
- Aims to assist the formulation of environmental assessment requirements by the Director-General under Section 75F(3) of the EP&A Act.

The structure of the remaining sections of this document is as follows:

- Section 2 – Strategic context and need for the Project.
- Section 3 – Description of the Project.
- Section 4 – Planning and assessment process.
- Section 5 – Identification and evaluation of options.
- Section 6 – Existing environment.
- Section 7 – Preliminary environmental assessment.
- Section 8 – Proposed scope of the environmental assessment.
- Section 9 – List of references cited in the PEA report.




**Source:** Base data - HWC & NSW Dept. of Lands 2007

**Figure 1.1**

Regional location map

# 2 Strategic Context and Need for the Project

## 2.1 Strategic context

From a broad State perspective, the NSW State Plan indicates that NSW faces many environmental challenges, notably climate change and drought. It identifies that meeting the State's water needs in the face of drought, climate change and population growth requires a sustained effort to balance supply and demand, increase recycling and improve efficiency of water use. The Tillegra Dam Project would be an integral component in providing a secure and sustainable water supply for the lower Hunter region.

The *State Infrastructure Strategy* (NSW Govt 2006) also notes that Newcastle is NSW's second–largest urban centre and port outside Sydney and contains just under half the Hunter region's population. The Project would contribute significantly to underpinning settlement and development strategies and goals through provision of a secure water supply to minimise risk from prolonged drought periods.

*Lower Hunter Regional Strategy*

The *Lower Hunter Regional Strategy 2006* provides the context for the NSW Government's 25 year land use strategy for the region to 2031. The Strategy plans for the provision of sufficient new urban and employment lands to meet expected strong demands for growth. This is based upon a regional population forecast of 675,000 persons by 2031 and equates to a population increase of 160,000 over the period 2006-31.

The aim of the Strategy is to ensure that the Region develops in a strong and sustainable way. The objectives of the Strategy include:

- Maintenance and improvement of biodiversity.
- Protection of natural and rural resource assets.
- Promoting growth in centres with a greater choice of housing and jobs in the Newcastle CBD and specified major centres.
- Providing for 115,000 new homes to cater for a projected population growth of 160,000 people.

The strategy applies to the local government areas (LGA) of Newcastle, Lake Macquarie, Port Stephens, Maitland and Cessnock. Of particular relevance to the Project, the Strategy recognises the importance of adequate drinking water to meet the demands of the projected population increase in the Lower Hunter region. The Strategy also recognises the value of various wetlands including those of international importance.

The Project is an important infrastructure requirement to support the objectives of the Strategy. The Strategy responds to current levels of growth and recognises that this will continue as the lower Hunter region broadens its economic role in the context of the NSW and national economy. In particular, the Strategy identifies that infrastructure planning will need to take into account the broad planning framework to ensure that future population growth is supported by services and associated infrastructure.

The Strategy notes that the region's water supply is extremely variable with resources depleting and replenishing very quickly depending on weather conditions. A detailed analysis of the regional water resources (HWC 2007b) concluded that notwithstanding the effectiveness of water supply management initiatives implemented to date, there

would still be a need for a new major water supply storage (ie the proposed Tillegra Dam) to adequately secure the water future of the lower Hunter region.

*Draft Central Coast Regional Strategy*

The draft *Central Coast Regional Strategy* is of relevance to the Project given the proximity of the Central Coast region to the Hunter region. The draft Strategy notes that the 2005 *Sydney Metropolitan Strategy* identifies that the Central Coast has the land resources to support a further 100,000 people by 2031, however, ongoing drought conditions and sustainable water supply issues are impacting on the certainty needed to meet this demand. Key water challenges include, amongst others, providing a sustainable long term water supply. The draft Strategy identifies the potential for water demand to be met in part through transfers from the Hunter region. The Project would be a significant component in the capacity to facilitate any such transfers in the future.

*National water resource planning*

The Water Services Association of Australia (WSAA) *Occasional Paper No. 14 Framework for Urban Water Resource Planning* underpins a recent focus shift in water resource planning from the premise of a very low risk of running out of water to the premise that water utilities should manage their water resources so that communities never run out of water. The recent/current drought provides an obvious context for the latter.

The WSAA paper outlines that best practice water resource planning means considering:

- The system supply/demand balance.
- The minimum supply level that a utility needs to continue to supply on an indefinite basis regardless of climate conditions.
- Whether an effective drought management plan is in place.

In considering these different aspects the paper highlighted that the challenges water utilities will face in the future are likely to be different to those of the past. Uncertainties in water usage patterns and climate change will affect resource planning. Communities, including businesses, are also becoming less tolerant of potential limits on supply.

## 2.2 Need and justification

The potential impact of climate change on the lower Hunter region is the subject of a number of research projects now under way though definitive answers regarding the wide range of variables that impact on water storage behaviour are not expected for many years. In 2004 the CSIRO issued a report on the potential effects of climate change on NSW which included the lower Hunter region. The report found that by 2030 rainfall could rise or fall by 10 per cent, annual average potential evaporation could rise by up to 8 per cent, temperature could rise by 0.2-1.6ºC and the frequency and severity of extreme weather could increase (HWC 2007b).

The existing water supply system for the lower Hunter region comprises the following major components (refer Figure 2.1):

- Chichester Dam.
- The CTGM which delivers water from Chichester Dam to the Maitland and Cessnock areas.
- Seaham Weir, Balickera Canal and pumping station (for transfer of water from the Williams River to Grahamstown Dam).

- Grahamstown Dam.
- Tomago and Tomaree groundwater sources.

The performance of the existing system has been assessed in terms of historic streamflows and current demand, and then cumulatively with respect to:

- A population increase of 160,000 persons.
- A 10 per cent reduction in rainfall due to climate change.
- Supply to the Central Coast.

The findings of this analysis are documented in the report *Why Tillegra Now?* prepared by HWC in August 2007[2]. The following conclusions were drawn from the analysis:

- The existing system is extremely volatile; storage levels can rise and fall rapidly (storage volume in the lower Hunter can fall more than twice as fast as storages in the Sydney region).
- While the last 20 years have been relatively wet with little or no restrictions, 10 per cent less rain plus population growth would see the Hunter region in restrictions most of the time and facing the real risk of running out of water.
- The addition of 160,000 people to the lower Hunter region generally does not have a significant impact on storage levels except in the case of severe droughts such as occurred in the 1940s, 1960s and early 1980s.
- Adding the Central Coast makes little difference to whether the system goes in and out of water restrictions.

In summary, while the Hunter region has very good supplies under average conditions, it is very vulnerable to long term droughts. Storages can plummet from 100 per cent full to 40 per cent in 18 months. The rapid depletion of storage volume means that the region would not have the time to implement drought contingency measures to adequately meet the community's needs.

Alternatives to the Project have been investigated including new dams, augmentation of existing dams, desalination, indirect potable reuse, additional water recycling, additional rainwater tanks, and additional demand management initiatives. None of these would provide a cost effective and acceptable degree of water security and sustainability comparable to the Project.

Demand management initiatives will be maintained and will continue to deliver efficiencies into the future. However, when combined with population growth and the supply/demand balance (ie lower reliable yield), these will not be sufficient in themselves to meet water demands during extended drought periods without unacceptable outcomes for the community.

The size of the proposed dam would provide almost three generations of growth potential for the region. Even with the prospect of climate change, Tillegra Dam stands out as the best solution for the lower Hunter region in adding to the diversity of supply options. The large storage volume provides significant lead time, even in a climate change scenario, to allow construction of expensive drought contingency measures, such as new groundwater infrastructure at North Stockton and a climate-independent desalination plant should they be required. Without Tillegra Dam there is a high risk of needing to trigger construction of these contingency measures at an estimated cost of approximately $1 billion. With Tillegra Dam in place this risk becomes very low with the

[2] This report is available on the HWC website: www.hunterwater.com.au

dam providing significant water security for the region.

The dam would inundate an area of approximately 2,100 ha and have the capacity to store 450 GL of water. This additional storage volume would increase the reliable system yield by an additional 52,000 ML per year providing increased security of supply for drought periods and would service population growth and projected demand beyond 2050.

## 2.3 Sustainability

The increasing prominence of the issue of climate change and the now broadly accepted position that human activity has been and continues to be a major contributor to climate change is reflected in societal expectations for major projects. This has been enshrined in NSW legislation since the late 1990s through the environmental planning and management legislation which has adopted the following principles of ecologically sustainable development:

- Lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation if there are threats of serious or irreversible environmental damage (the precautionary principle).
- The present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations (inter-generational equity).
- Conservation of biological diversity and ecological integrity should be a fundamental consideration in project justification.
- Explicit consideration should be made of environmental factors in the valuation of assets and services.

Initiatives to enhance the sustainability of the Project would be examined in detail as part of the environmental assessment. These would include:

- Reafforestation to offset loss of vegetation associated with clearing for construction and through inundation. This would include identification of suitable tree species to provide opportunities to enhance existing regional/local ecological habitat values where practicable.
- Characterisation of existing ecosystem processes in the Williams River downstream of the dam and development of appropriate operating practices for delivery of run-of-river flows to Seaham Weir to minimise ecosystem impacts while still achieving operational objectives. This would also consider downstream water demands such as riparian ecosystems, irrigators and other water users.
- Consideration of socioeconomic opportunities to offset loss of agricultural land through inundation.
- Investigation of practicable and cost-effective opportunities for recovery of resources (eg building materials) from within the inundation area.

Design of the Project would also incorporate sustainability initiatives. For example, the Project includes provision for a hydro power generation plant which, subject to final environmental flow rules, could generate up to 3,000 MW hours of electricity annually (equivalent to the energy demands of 550 households).

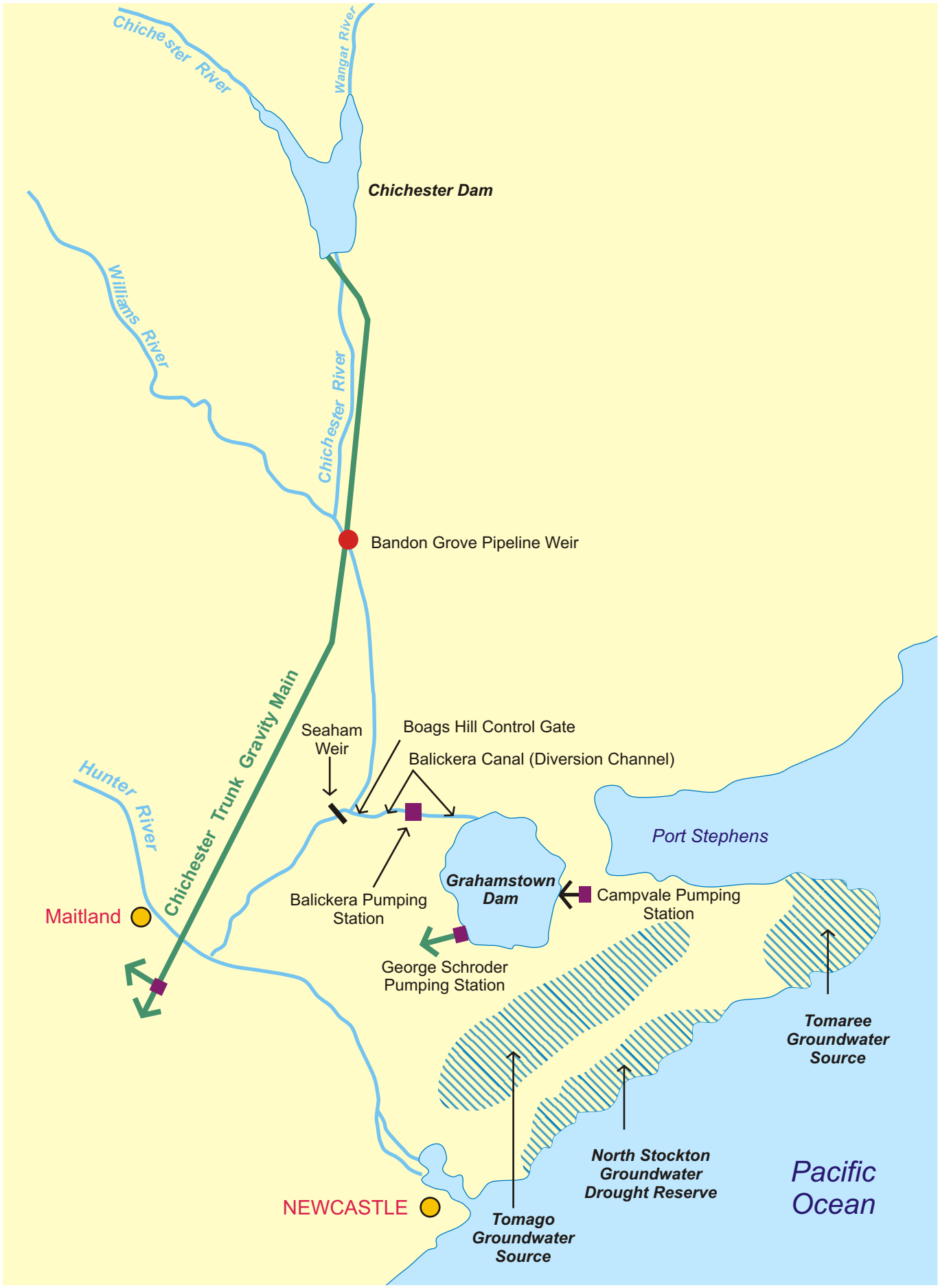



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**Figure 2.1**

**Source**: Hunter Water Corporation

Key elements of existing regional water supply system

# 3 Description of the Project

## 3.1 General

Tillegra was first proposed for a dam during the 1950s due to the large catchment area, good rainfall and low environmental impacts. HWC began purchasing land in the Tillegra area in the early 1980s when all landholders were informed of the proposed dam. In the mid to late 1980s HWC deferred plans for the construction of Tillegra Dam.

The current proposal to build Tillegra Dam has since come about as a result of:

- The need to improve drought security for existing customers in the lower Hunter region.
- Long term climate change implications and the current drought being experienced across the country.
- Significant growth in the Hunter and Central Coast regions predicted by the most recent regional strategies.
- Potential to improve the Hunter's capacity to help the Central Coast by improving the existing links between the two systems.

## 3.2 Principal components of the Project

The Project comprises the following components (refer Figure 3.1):

- Dam wall and spillway construction.
- A multi-level offtake tower.
- A hydro power generation plant.
- A pipeline and pump station connecting Tillegra Dam to the CTGM.
- Relocation and reconstruction of Salisbury Road (including construction of three waterway crossings) and provision of alternative access currently provided from Quart Pot Creek Road.
- Electrical and telecommunication installations (approx 20 km route).
- Relocation/upgrading of other public infrastructure (such as the RFS station).
- Heritage conservation works (including relocation of a cemetery and preservation of a historic house).
- Carbon offsetting initiatives (such as planting of 1.5 million trees).
- Ancillary works as required (such as potential recreational access areas, lookouts and related facilities).

The dam and associated infrastructure are expected to have a capital construction cost of approximately $300 million.

Subject to HWC securing all necessary environmental planning approvals, construction would commence in 2009 with the relocation of Salisbury Road. Construction of the dam would begin in 2010. The upper Williams River catchment receives large, regular flood flows which are expected to allow the dam to begin delivering water by 2013.

## 3.3 Operation of Tillegra Dam

Tillegra Dam is proposed to be used as a drought storage and operated between 90 per cent and 100 per cent outside of drought periods. During droughts, water would be delivered to Grahamstown Dam by controlled releases into the Williams River. The Balickera pump station is being upgraded to be able to transfer up to 1,600 ML/d (current capacity is 1,350 ML/d) from the intake in the Seaham Weir pool to Grahamstown Dam. HWC is required to maintain the weir pool between specified upper and lower limits to prevent impacts on upstream users due to flooding and to ensure fresh water availability in drier periods.

HWC has developed a hydrological model for optimising management of available water resources. Future demand scenarios for 2012 and 2080 have been applied to model the likely flow regime in the river using observed inflows from 1932 to 2007. The model assumes a continued maximum environmental flow release of 14 ML/d from Chichester Dam.

Preliminary results suggest Tillegra Dam should be maintained at around 90 per cent full to facilitate capture of major inflow events with some spilling. During drought, transfers from Tillegra Dam to Grahamstown Dam via the Williams River would average around 500 ML/d.

Model results for the 2012 and 2080 demand scenarios have been compared to the daily flows in the Williams River at Glen Martin. Comparison of the flow duration curves indicate relatively small effects of the dam on overall river flows well downstream. This is due to the proposed release of water supplies during drought periods and by keeping the dam over 90 per cent full for most of the time, as well as tributary inflows below the dam. The result is preliminary in that no environmental flow release was included in the model.

It is likely that the increase in mid-range flows (roughly 50-400 ML/d) due to water supply releases would be more evident at the Tillegra Dam site than further downstream. The level of low flows would be assessed on the basis of providing connectivity for the relatively short distance from the dam to the confluence with the Chichester River when there are no water supply releases or the dam is not spilling. This criterion would also apply to the drought trigger release.

As indicated above, Chichester Dam has a maximum 14 ML/d environmental release. Seaham Weir is operated to maintain water levels in the weir pool to defined criteria. Tillegra Dam releases would be determined taking into account existing system operation rules, environmental requirements of the river and needs of other water users.

## 3.4 Dam safety

Oversight of safety issues associated with major dams in Australia is conducted under the auspices of the Australian National Committee on Large Dams (ANCOLD). ANCOLD's goal is to encourage improvement in the planning, design, construction and operation of large dams in Australia, and to ensure that dam owners have access to world best practice through the skills of Australian professionals.

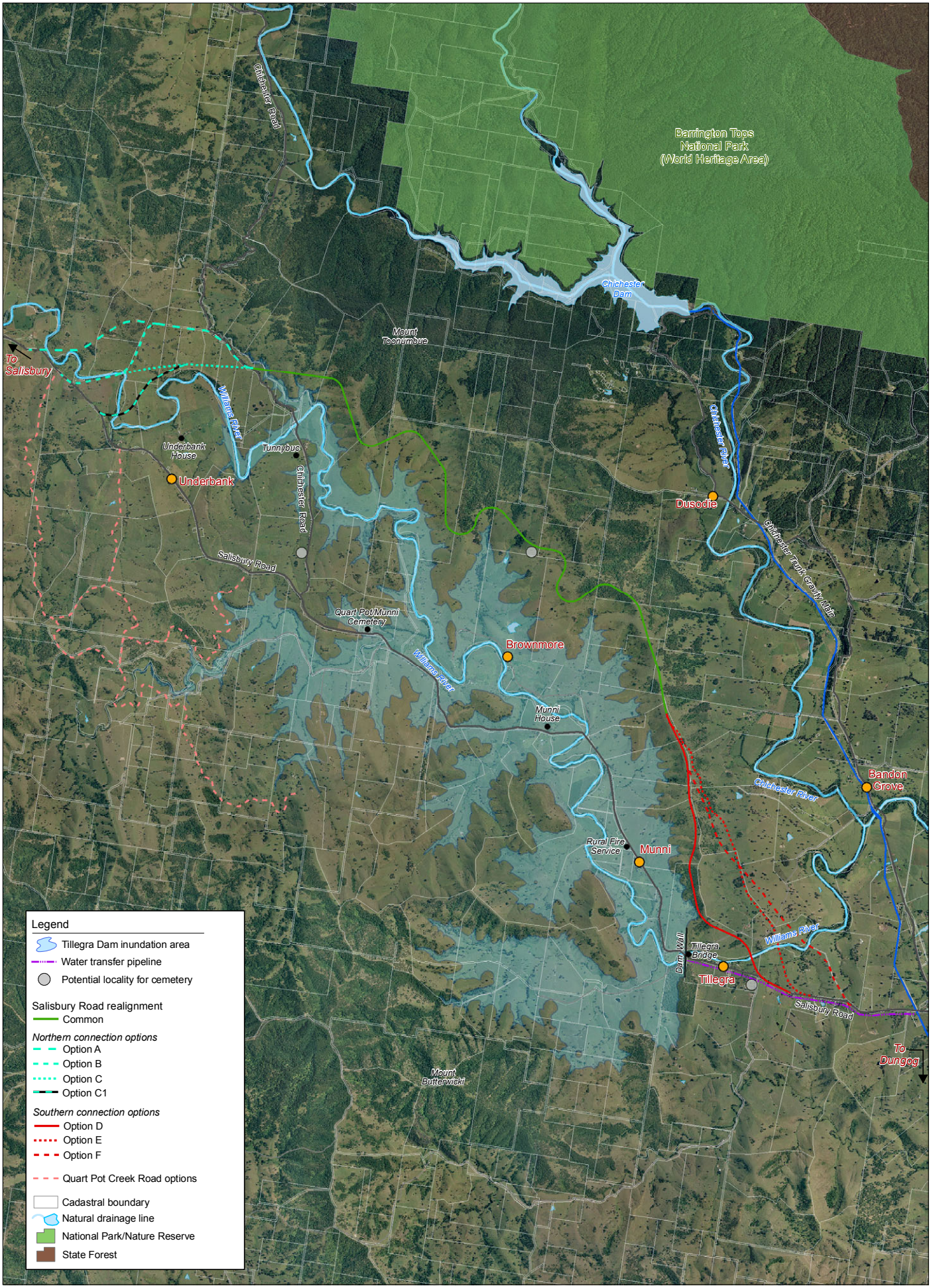
Membership of ANCOLD is drawn from local, State and federal agencies, dam owners and operators, contractors, consultants and academics. The NSW Dams Safety Committee (DSC) is a statutory corporation of the NSW State Government and is a member of ANCOLD. Its main function is to ensure the safety of dams within NSW.

The DSC would have a key review role during concept and detail design, construction, commissioning, filling and operation of Tillegra Dam. The DSC would also look at potential consequences if there was a dam failure. However, this would only be done to determine the risk strategies that may need to be in place. That is, following an understanding of the potential consequences of a failure (assuming no risk management strategies were in place), it would then be designed such that it would not fail.

While the dam would be designed to strict criteria, HWC must still have a Dam Safety Emergency Plan (DSEP) in place. This plan would outline the consequences of failure during different failure scenarios (both 'sunny day' and flood scenarios). It would normally include inundation plans so that the emergency agencies would be able to formulate evacuation plans for potentially affected areas.

The DSC oversight process is rigorous. In general terms, HWC must demonstrate to the DSC that the dam (during both construction and when completed) would not pose an unacceptable risk to persons, infrastructure and the environment downstream. The acceptance criteria for risk-based engineering or operational decisions are generally in line with the ANCOLD *Guidelines on Risk Assessment for Dams*.

In view of this, it is not intended that the environmental assessment consider potential inundation areas affected by dam failure. This is because the Project is designed to avoid such failures. This is much the same in that it is not a normal requirement to assess the impact of a catastrophic failure of other major infrastructure such as tall building in the CBD (eg Sydney Tower) or a railway or motorway tunnel collapsing. However, information on potential inundation areas would be communicated to the community via the DSEP.




**Source:** Base data - HWC & NSW Dept. of Lands 2007
Proposed roads - HWC 2007

**Figure 3.1**

Key components of the Project

# 4 Planning and Assessment Process

## 4.1 NSW statutory requirements

The *Environmental Planning and Assessment Act 1979* (EP&A Act) provides a framework for environmental planning and assessment in NSW. Part 3A of the Act provides an assessment and approval process for major infrastructure projects. This is shown in the flowchart in Figure 4.1.

Part 3A applies to the carrying out of development that is declared by a State Environmental Planning Policy (SEPP) or by an order of the Minister to be a Project to which Part 3A applies.

HWC has sought that the Minister for Planning declare, pursuant to Section 75B of the EP&A Act, the Project as being subject to Part 3A.

HWC intends to lodge an application under Part 3A of the EP&A Act for approval to carry out the Project.

## 4.2 Environmental planning instruments

A number of environmental planning instruments are of actual or potential relevance to the Project and may contain specific provisions which need to be considered in the environmental assessment. These are discussed as follows with preliminary comment provided on their applicability.

### *4.2.1 State environmental planning policies*

The EA Report will consider the applicability or otherwise of the following SEPPS:

- *State Environmental Planning Policy No 4–Development without consent and miscellaneous exempt and complying development.*
- *State Environmental Planning Policy No. 14–Coastal Wetlands.*
- *State Environmental Planning Policy No 15—Rural Landsharing.*
- *State Environmental Planning Policy No. 44–Koala Habitat Protection.*
- *State Environmental Planning Policy No. 52–Farm Dams and Other Works in Land and Water Management Plan Areas.*
- *State Environmental Planning Policy No. 55–Remediation of Land.*
- *State Environmental Planning Policy No. 71–Coastal Protection.*

While these are not expected to have any direct statutory implications for the Project, the aims, objectives and issues for consideration identified in them would be considered in the assessment where applicable.

*Draft State Environmental Planning Policy (Infrastructure) 2006*

The draft *State Environmental Planning Policy (Infrastructure) 2006* (the Infrastructure SEPP) was released for public discussion on 19 October 2006. The draft SEPP is intended to consolidate a consistent approach to the assessment and approvals process for major infrastructure. More specifically, it proposes that all development relating to water supply facilities (which would include dams), including all related components and works, be permissible without consent.

### *4.2.2 Regional environmental plans*

*Williams River Catchment Regional Environmental Plan*

The Project sits within the area covered by the *Williams River Catchment Regional Environmental Plan* (REP). The objectives of the REP are:

- To promote sustainable use of land, water, vegetation and other natural resources within the Williams River catchment.
- To promote the protection and improvement of the environmental quality of the catchment.
- To establish a co-ordinated and consistent approach to the planning and management of the natural and built environment on a catchment-wide basis by linking the environmental planning system and total catchment management policies, programs and activities within the Williams River catchment through an endorsed catchment-wide regional planning strategy.
- To provide for changes to occur in the use of land in a manner which protects the quality of the catchment's water resources.

Clause 6 provides guidelines for public authorities in that the aims and objectives of the REP and the *Williams River Catchment Regional Planning Strategy 1997* must be taken into account when a public authority proposes to carry out development which does not require development consent but has the potential to adversely affect the environmental quality of land, water, vegetation or other natural resources within the Williams River catchment. The requirements of the Strategy would be considered in the environmental assessment of the Project.

*Hunter Regional Environmental Plan 1989*

The *Hunter Regional Environmental Plan 1989* is relevant to the Project as it applies to land in the Dungog LGA. The aims of the REP are:

- To promote the balanced development of the region, the improvement of its urban and rural environments and the orderly and economic development and optimum use of its land and other resources, consistent with conservation of natural and man made features and so as to meet the needs and aspirations of the community.
- To co-ordinate activities related to development in the region so there is optimum social and economic benefit to the community.
- To continue a regional planning process that will serve as a framework for identifying priorities for further investigations to be carried out by the Department and other agencies.

While there is no statutory requirement to address any requirements in the REP, they would nonetheless be considered in the environmental assessment.

The *Hunter Regional Environmental Plan 1989 (Heritage)* does not apply to land affected by the Project as the Dungog LGA is not included in this REP.

*Draft Lower Hunter Regional Conservation Plan (2006)*

This Plan, prepared by the Department of Conservation and Climate Change (DECC), aims to direct and drive conservation efforts in the lower Hunter region. The Plan aims to complement the Government's Planning Strategy by:

- Describing the conservation values of the lower Hunter region.
- Analysing the current status of biodiversity within the region and assessing the

likely impacts of development identified in the *Lower Hunter Regional Strategy.*

- Assessing the biodiversity values of the region at a landscape scale and identifying strategic areas for biodiversity protection, enhancement or restoration.
- Contributing to a practical framework that can secure, maintain and improve biodiversity values as the Hunter grows over the next 25 years.
- Guiding local level planning with respect to biodiversity including the development of local biodiversity conservation strategies and the development of new local environmental plans (LEP) that can merit biodiversity certification.

The draft Plan applies to the Maitland, Cessnock, Lake Macquarie, Port Stephens and Newcastle City LGAs and may have relevance to the Project with respect to environmental flows.

### *4.2.3 Local environmental plans*

The Project and all related components are located in the Dungog LGA. The Dungog LEP 2006 is the principal planning instrument governing land use and development decisions in the Dungog LGA. The Plan defines zones and the permissibility of development within each zone.

The area affected by the Project (which includes the dam and associated structures, inundation area, hydro-power station, transfer pipeline, new Salisbury Road alignment) would comprise land that is predominately zoned Rural 1(a) with some notable exceptions. The exceptions include a section of the dam structure located in the Environment 7(a) zone and parts/sections of ancillary infrastructure also located in the Environment 7(a) zone. A small area zoned Recreation 6(a) located in the upper reaches of the storage may be affected when the storage is at full supply level. The locations of these zones are shown in Figure 4.2.

All related components would be permissible under the Dungog LEP. Furthermore, clause 24 of the LEP exempts development comprising a public utility undertaking from the requirement to obtain development consent.

## 4.3 Other NSW legislation

As the entire Project would be assessed under Part 3A of the EP&A Act, pursuant to Section 75U a number of approvals under other legislation would no longer be required. These are:

- An approval under Section 219 of the *Fisheries Management Act 1994.*
- Approval under Part 4 or a permit under Section 139 of the *Heritage Act 1977.*
- A permit under Section 87 or consent under Section 90 of the *National Parks and Wildlife Act 1974.*
- Authorisation under Section 12 of the *Native Vegetation Act 2003* to clear native vegetation.
- A bush fire safety authority under Section 100B of the *Rural Fires Act 1997.*
- A water use approval under Section 89, a water management work approval under Section 90 or an activity approval under Section 91 of the *Water Management Act 2000.*

Similarly, Division 8 of Part 6 of the *Heritage Act 1977* would not apply to prevent or interfere with the carrying out of an approved project.

In addition, under Section 75V(1) the following authorisations cannot be refused if necessary for the carrying out of an approved project and are substantially consistent with an approval to carry out the Project given under Part 3A:

- An environment protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997.*
- Consent under Section 138 of the *Roads Act 1993.*
- A licence under the *Pipelines Act 1967.*

Additional approvals that may be required under other NSW legislation are identified in Table 4.1.

**Table 4.1 Possible other NSW approvals**

| Provision | Requirement | Required Action | Agency |
|---|---|---|---|
| *Protection of the Environment Operations Act 1997* | | | |
| Section 48 | Environment protection licence for various construction activities | Apply for an environment protection licence prior to construction | DECC |
| *Water Act 1912* | | | |
| Section 10, 11 and 12 of Part 2 | Approval for extraction of water from a river or lake (if required) | Apply for approval if water is required to be sourced through direct extraction from surface waters | DWE |
| *Roads Act 1993* | | | |
| Section 138 | Consent for activities involving modifications to or construction over/under a public road | Concurrence must be sought from road owner (as required) | Local council |
| *Crown Land Act 1989* | | | |
| Section 34A | Ministerial approval to grant a 'relevant interest' over a Crown Reserve if required | Consultation with Department to ensure that appropriate approval is obtained | Dept of Lands |
| *Fisheries Management Act 1994* | | | |
| Section 218 | Provision for the Minster to require the construction of a fish way or bypass | Consult with DPI regarding the feasibility of a fish way or bypass to enable fish to pass through or over the dam, or consider an offset arrangement | DPI |

A scientific investigation permit for fisheries research from the Department of Primary Industries (DPI) under Section 37 of the *Fisheries Management Act 1994* could also be required.

Other NSW legislation that may have relevance to the Project includes:

- *Aboriginal Land Rights Act 1983.*
- *Contaminated Land Management Act 1997.*

- *Native Title (New South Wales) Act 1994.*
- *Occupational Health and Safety Act 2000.*
- *Threatened Species Conservation Act 1995.*
- *Waste Avoidance and Resource Recovery Act 2001.*

The dam would be prescribed under the *Dams Safety Act 1978*. As such, the NSW DSC would be required to review the Project through all stages including concept and detail design, construction, filling, operation and maintenance.

## 4.4 Commonwealth legislation

### *4.4.1 Environment Protection and Biodiversity Conservation Act 1999*

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes a requirement of Commonwealth environmental assessment and approval for:

- Actions that are likely to have a significant impact on matters of national environmental significance (NES matters).
- Actions that are likely to have a significant impact on the environment of Commonwealth land.
- Actions taken on Commonwealth land that are likely to have a significant impact on the environment anywhere.
- Actions by the Commonwealth that are likely to have a significant impact on the environment anywhere.

Current NES matters are:

- World heritage areas.
- National heritage places.
- Wetlands of international importance (Ramsar sites).
- Threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- Nuclear actions.

If the Minister for the Environment and Water Resources determines that an approval is required under the EPBC Act, the proposed action is deemed to be a 'controlled action'. It must then undergo assessment under the EPBC Act and obtain an approval under the EPBC Act prior to being undertaken.

The Commonwealth and NSW governments have signed a bilateral agreement which accredits the assessment regime under Part 3A of the EP&A Act for assessment purposes under the EPBC Act. The bilateral agreement applies to actions that the Minister for the Environment and Water Resources has determined are controlled actions under the EPBC Act in relation to an NES matter with the exception of nuclear actions. It does not have any effect in relation to an action taken in a Commonwealth area or an action by a Commonwealth agency.

The bilateral agreement only provides accreditation of the NSW assessment process. That is, the Commonwealth would still need to issue a separate approval for the Project if it is a controlled action. An approval under the EPBC Act would only be given by the

Commonwealth once approval had been obtained through the NSW process.

Any action that is likely to have a significant impact on NES matters (or on the other matters listed) requires referral to the Minister for the Environment and Water Resources. A search of the EPBC Act protected matters database can provide an initial indication in determining whether a referral may be required.

A preliminary investigation was undertaken of the area adjacent to and affected by physical works associated with the Project (ie including the dam, inundation area, transfer pipeline, realignment of Salisbury Road). The search results are provided in Table 4.2.

**Table 4.2 EPBC Act database search results for the area including and immediately adjacent to the impact area of the Tillegra Dam**

| NES Matter | Search Result |
|---|---|
| World heritage properties | None |
| National heritage places | None |
| Wetlands of international significance (Ramsar sites) | None |
| Commonwealth marine areas | None |
| Threatened ecological communities | 1 (White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland |
| Threatened species | 16 |
| Migratory species | 15 |
| *Other Protected Matters* | |
| Commonwealth lands | None |
| Commonwealth heritage places | None |
| Places on the Register of the National Estate | None |
| Listed marine species | 13 |
| Whales and other cetaceans | None |
| Critical habitats | None |
| Commonwealth reserves | None |
| Nuclear actions | No nuclear actions are proposed nor would be affected by the Project |

The items noted in this table represent a preliminary identification only of NES matters that may be affected by the Project. Further investigation would be undertaken as part of the more detailed environmental assessment to determine what items would be actually impacted and whether the impact would be significant. This would also include consideration of potential impacts beyond the immediate project area.

Only the Commonwealth can give definitive advice on whether a development is a controlled action. The project will be referred to the Commonwealth Department of the Environment and Water Resources (DEW) to determine if it is a controlled action. This will occur after more comprehensive field work has been undertaken to assist the Department in making an informed decision.

Schedule 4 to the EPBC Act outlines the matters to be addressed under the Act. These

generally duplicate the requirements under the EP&A Act. However, the guideline *Commonwealth Environment Protection and Biodiversity Conservation Act 1999–Guide to implementation in NSW* (Dept of Planning 2007) identifies a number of matters which may be additional to those typically considered in the NSW assessment process. These include:

- How the action relates to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action.
- A statement on the source of the information used in the assessment and how recent the information is and how the reliability of the information was tested.
- Identification of affected parties including a statement mentioning any communities that may be affected and describing their views.
- The cost of the mitigation measures.
- A statement identifying any additional approval that is required and the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.
- Details of any proceedings under a Commonwealth or State law for the protection of the environment or the conservation and sustainable use of natural resources against the person proposing to take the action; or the person making the application.
- If the person proposing to take the action is a corporation—details of the corporation's environmental policy and planning framework.
- Advertising in a paper circulating nationally stating that the development is a controlled action as well as the advertising requirements under the EPBC Act.

### *4.4.2 Other Commonwealth legislation*

The following Commonwealth legislation may also have relevance to the Project:

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984.*
- *Protection of Movable Cultural Heritage Act 1986.*

The applicability of these Acts would be clarified in the environmental assessment.

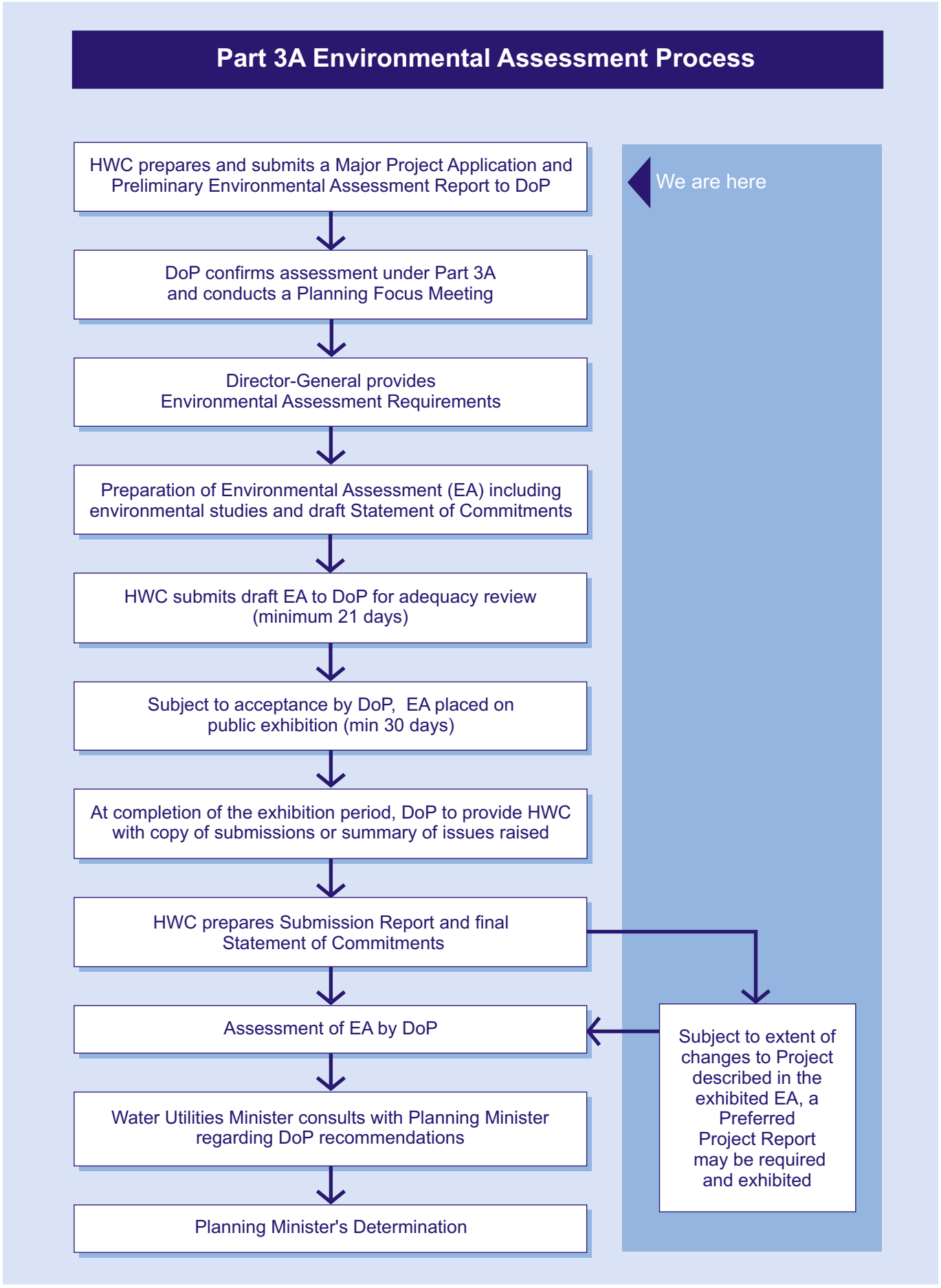
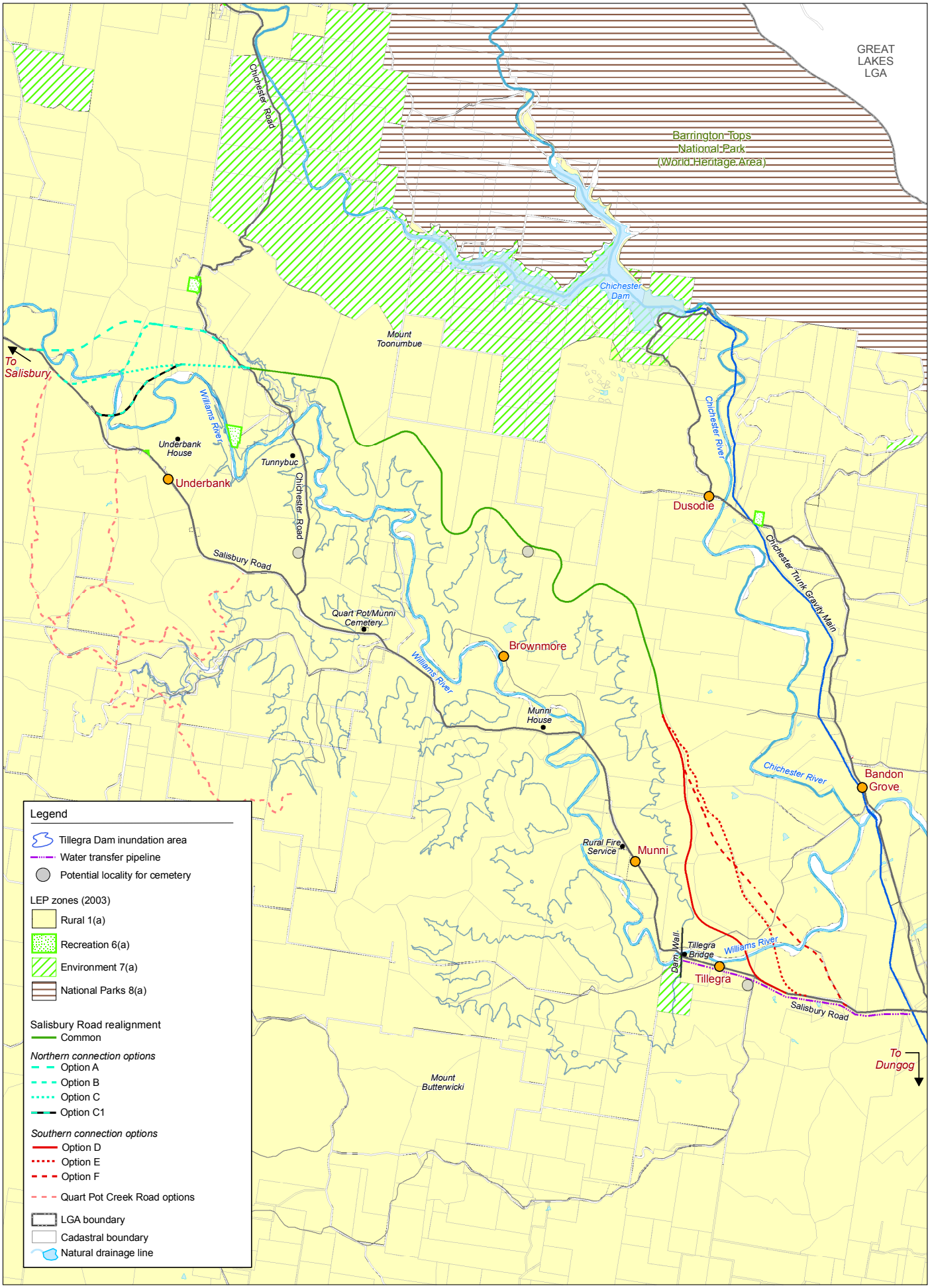



**Figure 4.1**

Part 3A environmental assessment process

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0 1km 2km

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**Source:** Base data - HWC & NSW Dept. of Lands 2007
Zoning - Dungog Shire Council 2007

**Figure 4.2**

Existing Dungog LEP zones