

## 7. Matters relating to the Commonwealth EPBC Act

### 7.1 Background

The 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.

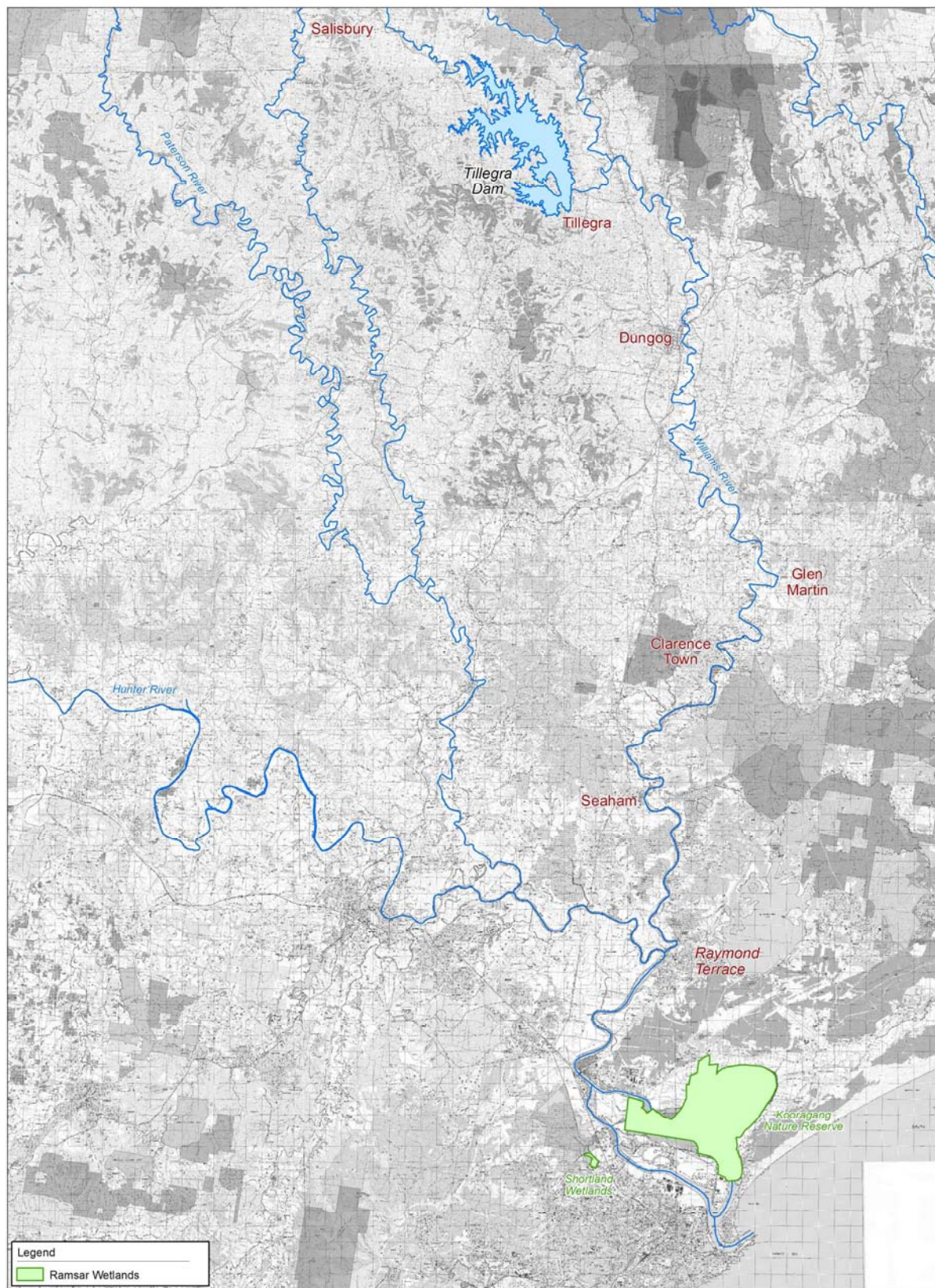
The Project was referred to the Commonwealth Minister for the Environment, Heritage and the Arts for appropriate consideration and was declared to be a controlled action requiring assessment under the bilateral agreement. The controlling provision is Wetlands of International Importance under sections 16 and 17B of the EPBC Act, and as such requires assessment and approval under the EPBC Act.

Supplementary DGRs (refer Appendix 5 to the EA Report) were issued by the Director-General of DoP on 1 May 2009 following consultation between the Department and DEWHA. These requirements directed Hunter Water to address specific issues relating to potential impacts of the Project on the Hunter Estuary Wetlands Ramsar site.

As outlined in the Ramsar wetland study (Appendix 6 to the EA Report), the Hunter Estuary Ramsar Wetlands comprise two discrete areas, the Shortland Wetlands (377780E 6362290N), occupying an area of just over 45 ha (DEWHA 2002), and the Kooragang Nature Reserve (384500E 6365330N) that includes Fullerton Cove, the North Arm of the Hunter River, Stockton Sand Spit and other associated estuarine habitats comprising 2,926 ha. The location of the Hunter Estuary Ramsar Wetlands, and the focus area of the assessment under the EPBC Act, is shown in Figure 7.1.

It is noted that the extent of the Hunter Estuary Ramsar Wetlands does not directly correspond to the Hunter Estuary National Park. While the latter includes Kooragang Nature Reserve, it also comprises other areas apart from the Ramsar wetland site.

Detailed consideration of potential impacts of the Project on the wider estuary has been presented in the preceding section. As indicated, Hunter Water's stated position is that on the basis of the investigation undertaken in response to the supplementary DGRs, and documented in Appendix 6 to the EA Report, together with additional investigations (documented in Section 6.2.1 of this report), it is considered that Tillegga Dam would not have a material impact on the estuary and therefore on the ecosystem function of the Hunter Estuary Ramsar wetlands.




**Figure 7.1 Location of the Hunter Estuary Ramsar Wetlands**



## 7.2 Consideration of issues related to the Hunter Estuary Ramsar Wetlands

Submissions raised several concerns relating to the impacts of Tillegra Dam on the Hunter Estuary Ramsar Wetlands. These issues can be summarised as follows.

- 1 **Freshwater inflows to the wetlands:** submissions suggested that the dam will have major and irreversible impacts on the Hunter Estuary Ramsar Wetlands, particularly the Kooragang Nature Reserve as a result of reduced flows to the wetlands. Many of these submissions related to impacts as a result of a potential reduction to freshwater flows, and can be summarised as follows:
  - a Water requirements: submissions suggested that the EA Report failed to identify water requirements and secure water volumes needed for the protection of the Hunter Estuary Wetlands and that the reduction of flows to the wetlands will have a significant impact. Further information and analysis on the timing, duration and frequency of freshwater flows is required.
  - b Non-specific assessment of impacts: concerns have been raised that the assessment of impacts on the Hunter Estuary Wetland are not site-specific and as such allow for uncertainty in the conclusions drawn in the EA Report. Submissions suggest that ecological character descriptions should be developed for the wetlands and the requirements of the vegetation communities and EEC's determined.
  - c Sea level rise and tidal effect: submissions suggested that the EA Report downplays the importance of freshwater flows to the estuary in comparison to sea level rise and tidal effect
  - d NSW Office of Water (NOW) investigations: submissions have suggested that a decision regarding the dam should be delayed until the NOW investigations into the freshwater requirements of the wetlands have been completed.
  - e Freshwater requirements of vegetation: submissions suggested that no indication of the ground height at which each vegetation community occurs, the regularity of flows needed or the height of the flow needed to maintain their integrity.
  - f Migratory birds: it was suggested that further investigations into the seasonal requirements for migratory birds using the Hunter Estuary is required. Thirty-eight species of migratory birds that utilise the wetlands are subject to agreements with Japan and China.
  - g Decline in Hunter Flows: no consideration has been given to the future likelihood of increased importance of Williams River inflows with declining Upper Hunter catchment rainfall due to climate change. The contribution of Williams River flow has been underestimated.
  - h Green and Gold Bell Frog: The release of freshwater from the dam and Seaham weir should be coordinated to assist in the management of the green and gold bell frog on Kooragang Island.
- 2 **Flow regime:** submissions questioned the assessment of impacts on the Hunter Estuary Ramsar Wetlands as a result of changed flow regimes, including:
  - a Type of flows: it was suggested that the reduction of freshwater inflow is a significant threat to estuarine systems. The EA Report bases the assessment on the amount of flows rather than the changes in types of flows.
  - b Flood flows: submissions suggested that the EA Report fails to recognise the importance of flood flows to the freshwater floodplain wetlands and groundwater dependent ecosystems and these flood events and seasonal impacts are not represented in the modelling work undertaken
  - c Water inputs to the estuary: submissions questioned the assessment of freshwater flows to the estuary and suggested that the Hunter River does not dominate water inputs to the estuary.
- 3 **Reliance on numerical model and desktop studies:** concern was expressed that the assessment of impacts on the Hunter Estuary Wetlands relies on a numerical model with obvious limitations and limited



data sets. It has been suggested that on-ground scientific survey work is required.

- 4 **Modelled sea level rise:** submissions suggested that the modelled sensitivity scenarios for sea level rise do not include a scenario without Tillegra Dam and as such no information is supplied to compare the impact of sea level rise with and without the dam.
- 5 **Water planning framework:** submissions suggested that no consideration has been given to how the NSW Government water planning framework, including the draft Water Sharing Plan will impact the ecological character of the wetlands
- 6 **Consultation with key government agencies:** concern has been raised about the level of consultation regarding the wetlands, specifically consultation with DECCW, NOW and I&I NSW (Fisheries).

### 7.2.1 Freshwater inflows to the wetlands

Submissions suggested that the dam will have major and irreversible impacts on the Hunter Estuary Ramsar Wetlands, particularly the Kooragang Nature Reserve as a result of reduced flows to the wetlands. Many of these submissions related to impacts as a result of a potential reduction to freshwater flows.

The EA provided an analysis of the flows to the wetlands, interpretation of available salinity data and numerical hydrodynamic and dispersion model assessments to demonstrate that the reduction in inflows to the estuary at Seaham weir (due to the construction and operation of Tillegra Dam) and the potential effects on the Ramsar wetlands adjacent to the Hunter River some 35 kilometres downstream of Seaham Weir are negligible. Subsequent to the EA the outcomes of additional modelling using the TUFLOW–FV model (also utilised by NOW) to assess long term variability in salinity has confirmed the findings of the EA that the potential impact of Tillegra Dam on the Ramsar wetlands in the lower estuary will be negligible across the range of flows.

Hunter Water are confident that there will be no measurable effect from the changes in freshwater flows to the estuary, due to the construction and operation of Tillegra Dam, on the Ramsar wetland sites of the lower estuary. Indeed, it would be virtually impossible to devise a practical set of measurements within the Ramsar wetlands that could detect the level of change attributed to Tillegra Dam.

Based on this assessment, the specific issues 1a to 1h listed above are not considered to be relevant to the Tillegra Dam project.

### 7.2.2 Flow regime


Submissions questioned the assessment of impacts on the Hunter Estuary Ramsar Wetlands as a result of changed flow regimes.

The relative magnitudes of the tributary contributions to Hunter River flows at the Ramsar wetlands sites varies between flow events, due to rainfall/runoff variations across the greater Hunter catchment and the magnitude of the particular event. At this location within the estuary, some 30 kilometres downstream of the Williams River inflow at Seaham Weir, the flow past Seaham Weir is significantly attenuated and combined with the flows from the other tributaries.

The contribution of the Williams River inflow to the total Hunter River freshwater flow in the river (estuary) adjacent to the Ramsar wetlands is on average around 3%. The change in distribution of flows following construction and operation of Tillegra Dam would be virtually undetectable at the Ramsar wetlands.

### 7.2.3 Reliance on numerical model and desktop studies

Concern has been raised that the assessment of impacts on the Hunter Estuary Wetlands relies on a numerical model with obvious limitations and limited data sets. It has been suggested that on-ground scientific survey work is required.



The EA Report documents the available data and additional data collection carried out during the EA process. The assessment of impacts of a dam that is yet to be constructed necessarily requires a predictive tool to assess potential change. The models have relied on available data to calibrate model coefficients and verify that the models provide a reasonable representation of reality. This is standard best practice approach for an assessment of a proposed development. Hunter Water believe that there has been a reasonable mix of data collection and modelling to more than justify the level of confidence in the study outcomes. Further on the basis of the initial assessments that highlighted the negligible potential impacts within the Ramsar sites, Hunter Water was of the view that it would be irresponsible to commit funds to complex and expensive field investigations in areas where little return could be justified.

#### **7.2.4 Modelled sea level rise**

Submissions suggested that the modelled sensitivity scenarios for sea level rise do not include a scenario without Tillegra Dam and as such no information is supplied to compare the impact of sea level rise with and without the dam.

As part of the sensitivity analysis undertaken for the ELCOM modelling work 'three climate change (sea level rise) scenarios were included in the investigations to demonstrate relative changes to water level and salinity within the study area as a result of increases to the mean sea level based on projections for the year 2020, 2050 and 2100 outlined by IPCC (2007) (refer Section 4.2, Appendix 6 to the EA Report).

The analysis presented in the preceding sections and within Appendix 6 to the EA Report has shown the potential impacts on the Hunter Estuary Ramsar Wetlands as a result of Tillegra Dam to be negligible. Any change in water level at the Ramsar wetland site is likely to not be measurable and as such no difference would be shown between sea level rise scenarios with and without the dam.

The results of the sea level rise scenarios 'show much greater differences in water level near the study area as a consequence of an increase in the mean ocean tide level'. The results, although not directly comparable to the other sixteen model scenarios demonstrate the impact of sea level rise could potentially be much greater than any change to flow conditions as a consequence of dam construction. The Ramsar site is influenced by tides on a daily basis given its proximity to the ocean. As such the sensitivity scenarios undertaken using ELCOM show that parts of the study area (situated between 10-20 kilometres from the ocean) would be significantly inundated during high tide and its influence would extend some 25-30 kilometres upstream (Appendix 6 to the EA Report).

#### **7.2.5 Water planning framework**


Submissions suggested that no consideration had been given to how the NSW Government water planning framework, including the draft Water Sharing Plan would impact on the ecological character of the wetlands.

The supplementary DGRs issued for the Project (refer Appendix 5 of the EA Report) included a requirement for the environmental assessment to include:

A description of the relevant water planning and allocation frameworks for the Williams River, such as the draft Water Sharing Plan, and in this context a description of the proposed release strategy and assessment of the potential impacts on the ecological character of the Hunter Estuary Wetlands Ramsar site.

Descriptions of the relevant water planning frameworks are presented in Chapter 8 of the EA Report. Due consideration has been given to these frameworks, including the *Hunter Unregulated and Alluvial Water Sources Water Sharing Plan* (HUAWSP) in the development of environmental flows, however, it should be noted that issues relating to the construction and operation of Tillegra Dam are separate to the ongoing development of the water sharing plan for the region. Further discussion of the water sharing plan as it relates to Tillegra Dam is presented in Section 4.4.2.

The proposed flow regime from Tillegra Dam was developed based on an understanding of the relationships between flow components of the Williams River and ecosystem responses. The proposed flow regime aims to maintain the ecological processes of the river by mimicking the key characteristics of the natural flow regime. Discussion of the environmental flow releases at Tillegra Dam is presented in Chapter 10 *Assessment and*



*Management of Impacts on the Williams River* and Working Paper D *Environmental Flows and River Management* of the EA Report. Further discussion of the preferred environmental flow releases at Tillegra Dam is presented in Section 4.4.3.

Consideration of the potential impacts on the Hunter Estuary Wetlands Ramsar site are presented in Appendix 6 to the EA Report and are further discussed in the preceding sections of this chapter.

### **7.2.6 Consultation with key government agencies**

Concern has been raised about the level of consultation regarding the Ramsar wetlands, specifically consultation with DECCW, NOW and NSW I&I (Fisheries).

The analysis presented in the preceding sections and within Appendix 6 of the EA Report has shown the potential impacts on the Hunter Estuary Ramsar Wetlands as a result of Tillegra Dam to be negligible. Based on these results it was therefore determined that consultation with DECCW, NOW and I&I NSW (Fisheries) was not required to address the potential impacts on the Hunter Estuary Ramsar Wetlands.

While no direct consultation was undertaken with these agencies on the EPBC matters, the opportunity was available to provide comment during the adequacy review phase undertaken by DoP in consultation with key stakeholders (refer Section 2). Additional opportunity was available during the exhibition period. Comments were received for several government departments and the issues raised have been addressed within this chapter.

Consultation with key stakeholders, as part of the assessment of the Project under the EP&A Act and EPBC Act, is ongoing and as such this provides the opportunity to raise additional concerns should any further issues be identified.

## **7.3 Summary**

As required by the supplementary DGRs issued following consultation between DoP and DEWHA, Hunter Water was required to consider the potential impacts of Tillegra Dam on the Hunter Estuary Ramsar Wetland site. This was documented comprehensively in Appendix 6 to the EA Report and concluded that Tillegra Dam would not have a material impact on the estuary and therefore on the ecosystem function of the Hunter Estuary Ramsar Wetland site.

Subsequent to the public exhibition of the EA Report and in response to issues raised by various respondents including NSW State Government agencies as well as individuals and community interest groups, further detailed investigation has been undertaken to review the veracity of the hydrodynamic modelling used as the basis for Hunter Water's original position the considered non-significant level of impact on the Ramsar wetland site. This included development of a more complex simulation model. The results generated by this second model confirmed the validity of the results from the original modelling and therefore the conclusions drawn from these results.

Consequently, Hunter Water reaffirms its position that Tillegra Dam would not impact on the Hunter Estuary Ramsar Wetland site and therefore not compromise the Commonwealth's obligations under the *Ramsar Convention on Wetlands of International Importance*.

The Final Statement of Commitments for the Project (refer Section 10 of this report) includes a comprehensive range of impact mitigation and management measures to address identified impacts. This includes undertaking monitoring of a range of hydrological and water quality parameters immediately downstream of Seaham Weir. The data that would be generated from this activity would be used in managing the operation of Tillegra Dam and would also serve to highlight issues of potential concern to the estuary.