Appendix 10: European Heritage Impact Assessment

WorleyParsons

resources & energy

STATE WATER CORPORATION

Chaffey Dam Augmentation and Safety Upgrade

European Heritage Impact Assessment

301015-02980 - 301015-02980-REP-0013

6 December 2012

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Disclaimer

PROJECT 301015-02980 - CHAFFEY DAM AUGMENTATION AND SAFETY UPGRADE

REV	DESCRIPTION	ORIG	REVIEW	WORLEY-PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
A	1st Draft Issued for Internal Review	C Jones	R Power	N/A	17-Aug-12		N/A
B	2nd Draft Issued for Internal Review	C Jones	R Power	N/A	05-Sep-12		N/A
C	Draft Issue for Client Review	C Jones	R Power	N/A	06-Sep-12		N/A
0	Issued for Use	C Jones	R Power N Cowlishaw	C Thomas	12-Oct-12		
1	Reissued for use	C Jones	R Power N Cowlishaw	C Thomas	07-Nov-12		
2	Reissued for use	C Jones	R Power N Cowlishaw	C Thomas	06-Dec-12		

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APPENDICES

EXECUTIVE SUMMARY

WorleyParsons Services Pty Ltd (WorleyParsons) has been commissioned by State Water Corporation (State Water) to undertake an environmental impact assessment (EIA), including preparation of an Environmental Impact Statement (EIS), for the proposed Chaffey Dam Augmentation and Safety Upgrade Project (proposed development).

Chaffey Dam is the site of the proposed development. It is located approximately 30 kilometres (km) south east of Tamworth on the Peel River within the Tamworth Regional Local Government Area (LGA).

WorleyParsons has also been commissioned to prepare this European Heritage Impact Assessment (HIA) to accompany the EIS for a State Significant Infrastructure application for the proposed development. The HIA has been prepared in accordance with and in response to the Director-General's Requirements (DGRs) issued on 23 January 2012, with regard to ***historic heritage***.

In the preparation of the HIA, the New South Wales (NSW) Heritage Inventory Database was reviewed. There were **no** items listed on the NSW State Heritage Register located either within the site or in the vicinity of the site of the proposed development. State Water has advised that it proposes to reinstate "Chaffey Dam" as a heritage item on its Section 170 Heritage and Conservation Register. Accordingly, the HIA has undertaken an assessment of the impacts, if any, of the proposed development to Chaffey Dam. Details about the process of listing heritage items are contained in Section 4.4.

The proposed development involves the augmentation of existing structures of Chaffey Dam and has been designed to minimise visual impacts to the existing Dam structures and views and vistas from surrounding areas. There are likely to be minor, but temporary impacts to Chaffey Dam during the construction stage. The materials used to raise the dam wall will be the same as those currently present on the wall, where possible. There are likely to be minor impacts to the operation of Chaffey Dam as a result of the upgrade to existing structures and the increase of the reservoir surface area to its new FSL.

The proposed development will reinforce and increase the social and cultural significance of Chaffey Dam, its continued operation, performance and its role in supplying water to the Tamworth region. It is therefore considered that there are no significant impacts to the heritage significance of Chaffey Dam, **Schedule 5 – Environmental Heritage** to *Tamworth Regional Local Environmental Plan 2010* (TRLEP 2010) was also reviewed. There are **no** archaeological sites on **Schedule 5** located either within the site or within the vicinity of the site of the proposed development. Accordingly, **no** archaeological assessment methodology has been prepared as part of the HIA.

There are **five** heritage items listed on **Schedule 5** that are located within the site or within the vicinity of the proposed development. The items are of local heritage significance. They are:

- Bowling Alley Point Cemetery
- Bowling Alley Point School
- Iron Footbridge
- Uniting Church
- Bowling Alley Point Geological Site

One of these items, the Iron Footbridge, is located within the site of the proposed development. The other four items are in the vicinity of the site of the proposed development.

The Iron Footbridge is a reconstruction of two spans of the original four span bridge. The two spans were retrieved from the riverbed after the footbridge was washed away by flood waters in 1984. The location of the other two spans is unknown. In its current location within the existing Bowling Alley Point Recreation Area, the Iron Footbridge would be directly impacted through inundation of the reservoir to the new Full Supply Level (FSL).

To minimise the risk of adverse impacts on the Iron Footbridge it is recommended that the footbridge and associated plaque be carefully dismantled, transported and re-erected at a suitable location beyond the new FSL, but within the vicinity of the present location of the footbridge. Further, it is recommended that in the re-erection, new approach steps to the footbridge be constructed of an appropriate stone or timber material to assist in the interpretation of the footbridge.

The suggested location for the re-erected Iron Footbridge is shown on Figure 9-1. This location would facilitate an appropriate interpretation of its connection, role and function with the Bowling Alley Point settlement. The suggested location would also ensure that the footbridge will be properly maintained by being situated within the re-aligned Bowling Alley Point Recreation Area.

It is recommended that interpretative signage be installed at the new location of the Iron Footbridge. The interpretative signage could document the history of the footbridge, such as its materials, construction methods, original location, the flood event and the role and function it had in serving the former Bowling Alley Point gold mining settlement. The importance of its historical, social, cultural and aesthetic significance to the current and future residents and to visitors could also be documented on the signage.

There are likely to be temporary visual impacts to the Bowling Alley Point School and Uniting Church during the proposed realignment works to River Road, as these construction activities may impede views into and out of both sites. No impacts to the Bowling Alley Point Cemetery and Bowling Alley Point Geological Site are expected as a result of the proposed development.

To minimise temporary visual impacts to the Bowling Alley Point School and to the Uniting Church resulting from the realignment of Rivers Road, it is recommended that the Construction Environmental Management Plan (CEMP) for the proposed development provide for and implement as appropriate,

measures to minimise visual impacts to heritage items such as dust suppression, maintenance of tidy construction areas and the use of hoardings.

In following these recommended steps, it is considered that there will be **no** long term adverse impacts on the heritage significance of Chaffey Dam, the Iron Footbridge, Bowling Alley Point School and Uniting Church. There will be no impacts to the Bowling Alley Point Geological Site and Bowling Alley Point Cemetery during construction or operation.

The proposed development is supported on heritage grounds.

1 INTRODUCTION

1.1 Brief

WorleyParsons Services Pty Ltd (WorleyParsons) has been commissioned by State Water Corporation (State Water) to undertake an environmental impact assessment (EIA), including preparation of an Environmental Impact Statement (EIS), for the proposed Chaffey Dam Augmentation and Safety Upgrade Project (the proposed development). The proposed development is described in Section 6.

Chaffey Dam is the site of the proposed development. It is located approximately 30 kilometres (km) south east of Tamworth on the Peel River within the Tamworth Regional Local Government Area (LGA).

WorleyParsons has also been commissioned to prepare this European Heritage Impact Assessment (HIA) to accompany the EIS for a State Significant Infrastructure application for the proposed development. The HIA has been prepared in accordance with and in response to the Director-General's Requirements (DGRs) issued on 23 January 2012, with regard to ***historic heritage***. This has been interpreted as relating to items that are listed on relevant statutory Inventories, Registers or Schedules. Therefore, the HIA has not considered the impacts of the proposed development to sites that are not listed as heritage items. The basis for this approach is that it was noted that, of the considerable cumulative total of potential heritage items identified in various earlier studies within and surrounding the site, that in the case of the Schedule 5 of the Tamworth Regional Local Environmental Plan 2010 (TRLEP 2010), only five were identified and assessed to be of local heritage significance. It is further noted that Chaffey Dam is proposed to be reinstated to State Water's Section 170 Heritage and Conservation Register. .

1.2 Methodology

In preparing the HIA the following methodology has been used:

- Review of the DGRs - Heritage – impacts to ***historic heritage***
- Review of the relevant Tamworth Heritage Inventory Sheets (updated 2007)
- Review of the New South Wales (NSW) State Heritage Inventory and Schedule 5 Environmental Heritage to the TRLEP 2010 to identify items located either within the site or in the vicinity of the site of the proposed development
- Review of the State Water Section 170 Heritage and Conservation Register
- Review of the Commonwealth Heritage List and National Heritage List under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

- Review of the Register of the National Estate
- Review of relevant State and Local legislative and regulatory provisions and statutory and non-statutory planning controls and guidelines, including the NSW Heritage Manual
- Review of relevant earlier studies, including the:
  - Thematic History of Nundle, Manilla and Barraba Community Based Heritage Study (Tamworth Regional Council 2007)
  - Chaffey Dam Upgrade – Stage 1 Preliminary Archaeological and Heritage Assessment (Navin Officer Heritage Consultants 2008), including previous work by S.A Pearson (1990)
  - Preliminary Environmental Assessment (Molino Stewart 2011)
- Review of supporting documentation relevant to the proposed development
- Meeting and discussions with representatives of the Tamworth Historical Society
- Inspection of the site and the heritage items listed in **Schedule 5** to the TRLEP 2010 that are in the vicinity of the proposed development

1.3 Authorship

The HIA has been prepared by:

- Claire Jones, Environmental Planner, Bachelor of Planning (Honours Class 1), University of NSW, Member PIanning Institute of Australia (MPIA)

The HIA has been reviewed by:

- Robert Power, Principal Heritage and Statutory Planning, Diploma of Law, Sydney University (Solicitor's Admission Board), Member PIanning Institute of Australia (MPIA), Certified Practicing Planner (CPP)

2 BACKGROUND

2.1 Location and Existing Environment

Chaffey Dam, the site of the proposed development, is located approximately 30 km south east of Tamworth on the Peel River within the Tamworth Regional LGA (refer Figure 2-1).

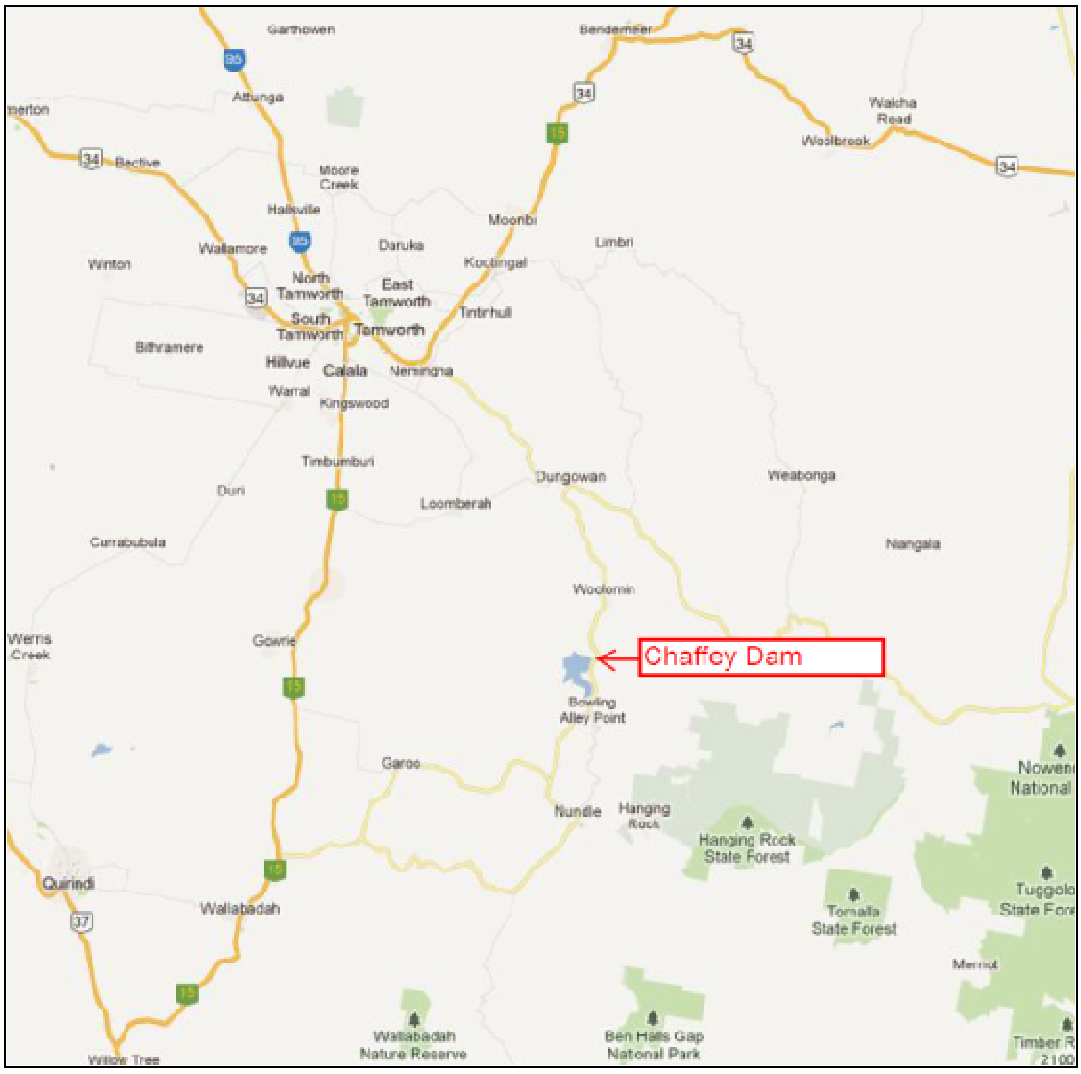


Figure 2-1: Location of Chaffey Dam. (Source: Google Maps 2012)

Chaffey Dam is located within a valley bordered on the north and east by the Moonbi Range, in the south east by the Great Dividing Range and in the south and south west by the Peel Range. The valley extends westwards to Carroll Gap where the Peel River discharges into the Namoi River a few kilometres downstream of Keepit Dam (Navin Officer Heritage Consultants 2008).

The upper catchment is comprised of Tertiary basalt whereas the lower catchment consists mainly of Carbonifierous to Devonian age sedimentary rocks (Navin Officer Heritage Consultants 2008).

Chaffey Dam is characterised on the southern and eastern edges by steep slopes rising to elevations of approximately 1,300 metres (m), which are covered mainly with native grasses and trees, although some areas have been cleared for grazing and timber harvesting. The remainder of the catchment is undulating and has been cleared extensively for grazing on both improved and unimproved pasture (Navin Officer Heritage Consultants 2008).

Land upstream of the Dam was previously used for gold mining, predominately alluvial. During the "gold rush" period virtually the whole of the floodplain and low terraces along the Peel River from Andersons Flat upstream for about nine km, was dug over and sluiced to extract gold (Tamworth Regional Council 2006).

2.1.1 Dam Construction and Opening

The now repealed Chaffey Dam Act was passed in 1974 authorising the construction of a dam across the Peel River 30 km south-east of Tamworth, in order to supply irrigation water for landholders along the Peel and supplement the water supply for Tamworth. A full description of the works authorised under the Act were set out in the "Schedule Description of Works" to that Act. The dam was constructed as a rockfill embankment dam with a clay core. Much of the rock used to construct the dam wall is jasper, a semi-precious stone abundant in the vicinity.

The dam was constructed between 1976 and 1979 and comprises a 54m high earth and rockfill embankment with a crest length of approximately 430m. A morning glory spillway at the dam allows excess water to pass through the dam and to be discharged downstream to the Peel River. The use of the morning glory spillway is uncommon in dams. The circular morning glory spillway has been used on only four dams in Australia. In the morning glory spillway, water flows down a hole into a shaft, which leads to a downstream outlet at the base of the dam wall. Such spillways have been found useful where the steep abutments of the dam make other types of spillway either difficult or unsuitable to use.

On 5 October 1979, Chaffey Dam was officially opened by the then NSW Premier, Neville Wran Member of Parliament, Queen's Counsel. Construction of a 35m wide auxiliary spillway with fuseplug on the left abutment of the dam was completed in February 2011. The auxiliary spillway was officially opened by Tony Windsor and Peter Draper.

The dam structure is owned by State Water. It currently has a storage volume of 62 gigalitres (GL), a reservoir surface area of 542 hectares (ha) and a catchment area of 420 km^2. Each year the reservoir

supplies approximately 9 GL of potable town water to Tamworth and approximately 6.6 GL of irrigation water to downstream landholders (Molino Stewart 2011).

At the time of the site inspection in August 2012, Chaffey Dam was at full capacity. The previous survey undertaken in July 2007 by Navin Officer Heritage Consultants (2008) was at a time when storage levels were significantly lower (approximately 30% of capacity), which exposed some areas that would usually be inundated when dam levels are higher.

2.2 Earlier Heritage Studies

2.2.1 Pearson and Manidis Roberts Consulting 1990

An identification and assessment of the heritage significance of European sites located around the perimeter of the storage area that could be impacted by a rise in Full Supply Level (FSL) was undertaken in 1990 by S.A. Pearson. The main areas or sites of likely historical / environmental importance identified in that assessment were:

- Bowling Alley Point
- Early gold mining sites on the eastern side of the dam
- Dulegal Arboretum

Pearson identified a further eight European sites including the:

- Post office site
- Hall site
- School site
- Footbridge trestle
- Iron Footbridge
- World War 1 monument

Exact locations were not recorded for the sites described in the report.

A separate recreational impact assessment of the enlargement of Chaffey Dam was also undertaken in 1990 by Manidis Roberts Consulting. Both Manidis Roberts Consulting (1990) and Pearson (1990) noted that the iron footbridge had been relocated to the main area of the Bowling Alley Point Recreation Area through 1988 bicentennial funding. Details of the history of this item are provided in Section 5.3.

2.2.2 Tamworth Regional Council 2007

In 2007, Joanna Boileau on behalf of Tamworth Regional Council, completed the "Thematic History of Nundle, Manilla and Barraba Community Based Heritage Study". This Study involved the communities of Barraba, Manilla and Nundle in the identification and assessment of European heritage sites within their respective areas. Appendix 2 of the Study contains a Preliminary List of potential heritage items within the Nundle district that were identified through the Thematic Historical research methodology and process.

Potential items identified by Tamworth Regional Council (2007) within the site or in the vicinity of the site of the proposed development comprise:

- Mining activity, Bowling Alley Point: mine shafts, tunnels, water races
- Iron Footbridge, Chaffey Dam; original location Bowling Alley Point
- Bowling Alley Point School, Bowling Alley Point
- Union Church, Bowling Alley Point
- Bowling Alley Point Cemetery
- Hit or Miss Inn, Bowling Alley Point
- Specimen Inn, Bowling Alley Point
- Jenny Lind Hotel, Bowling Alley Point
- Peel River Hotel, Bowling Alley Point
- Galatea Hotel, Bowling Alley Point
- White Horse Inn, Bowling Alley Point
- Bowling Alley Point Post Office
- Chaffey Dam, Bowling Alley Point
- Mechanics Institute, Bowling Alley Point

2.2.3 Navin Officer Heritage Consultants 2008

In 2008, Navin Officer Heritage Consultants undertook a Preliminary Archaeological and Heritage Assessment in relation to three options considered for the upgrade of Chaffey Dam. The Report noted there were 12 previously recorded European sites and features within the Chaffey Dam area (Figure 2-2), comprising:

- Bowling Alley Point Geological Site
- Bowling Alley Point historic settlement
- Bowling Alley Point Post Office site and petrol station

- Bowling Alley Point Hall site
- Bowling Alley Point School site
- Alluvial and reef mining sites
- Bowling Alley Point footbridge trestle
- An iron footbridge
- A World War 1 monument
- A commemorative plaque
- The Dulegal Arboretum
- Chaffey Dam

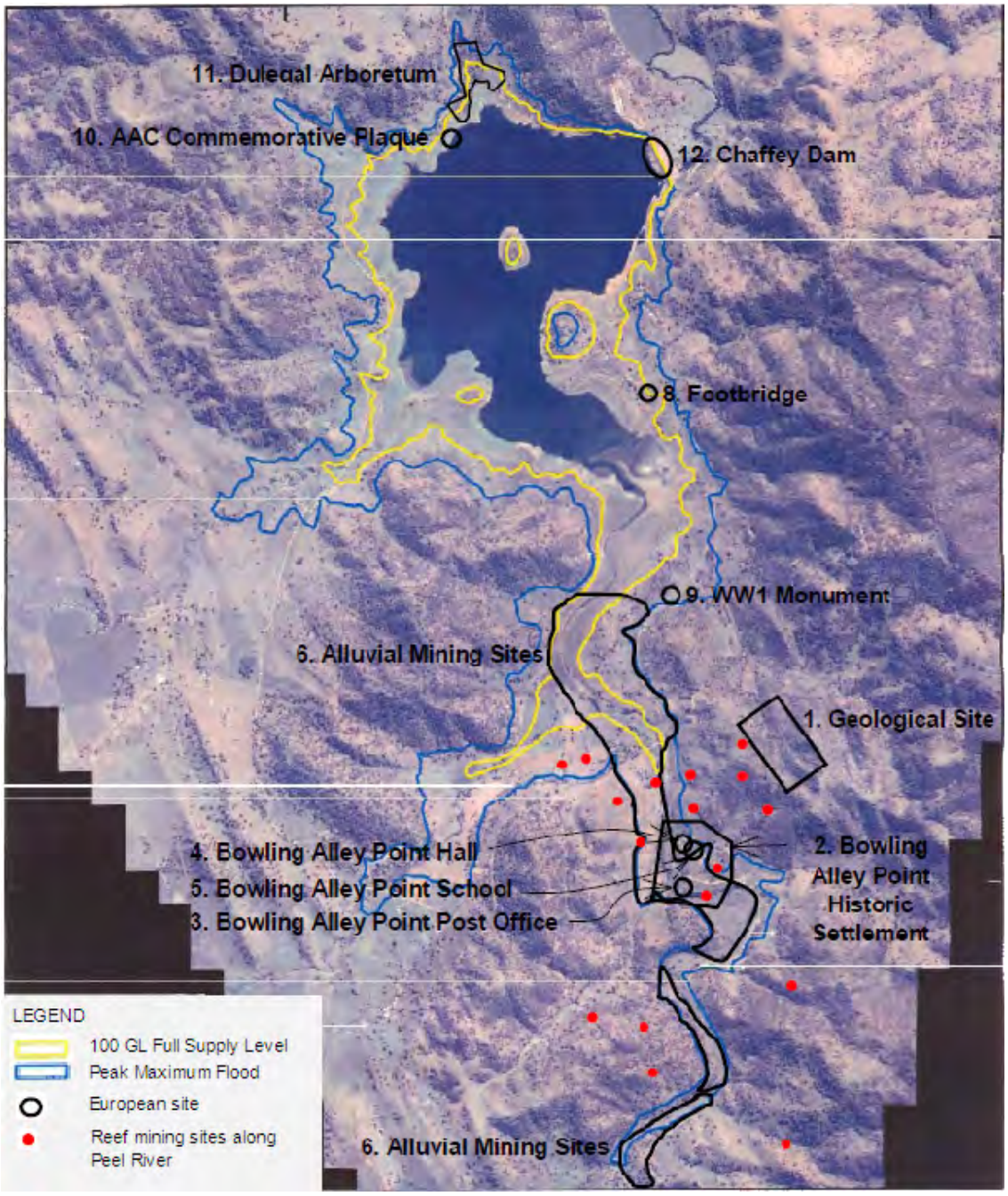


Figure 2-2: Location of previously recorded European sites within or in the vicinity of the proposed development. Sites are indicative only. (Source: Navin Officer Heritage Consultants 2008)

The Report identified an additional 14 previously unrecorded European sites, as shown in Figure 2-3 and summarised below:

- CDHS1 Windmill and well
- CDHS2 Stone wall associated with a mining area
- CDHS3 Remains of 'Rocklight' homestead
- CDHS 4 Remains of 'Rocklight' homestead
- CDHS5 Remains of 'Hillview' homestead
- CDHS6 Remains of 'Hillview' homestead
- CDHS7 Remains of 'Lynhurst' homestead
- CDHS8 Remains of 'Lynhurst' homestead
- CDHS 9 Remains of 'Rocklight' homestead
- CDHS10 Mining race and tailing mounds
- CDHS11 Remains of 'Lodhaver' homestead
- CDHS12 Two commemorative plaques on Bowling Alley Point Bridge
- CDH13 Entranceway to the Bowling Alley Point Cemetery
- CDS14 A house

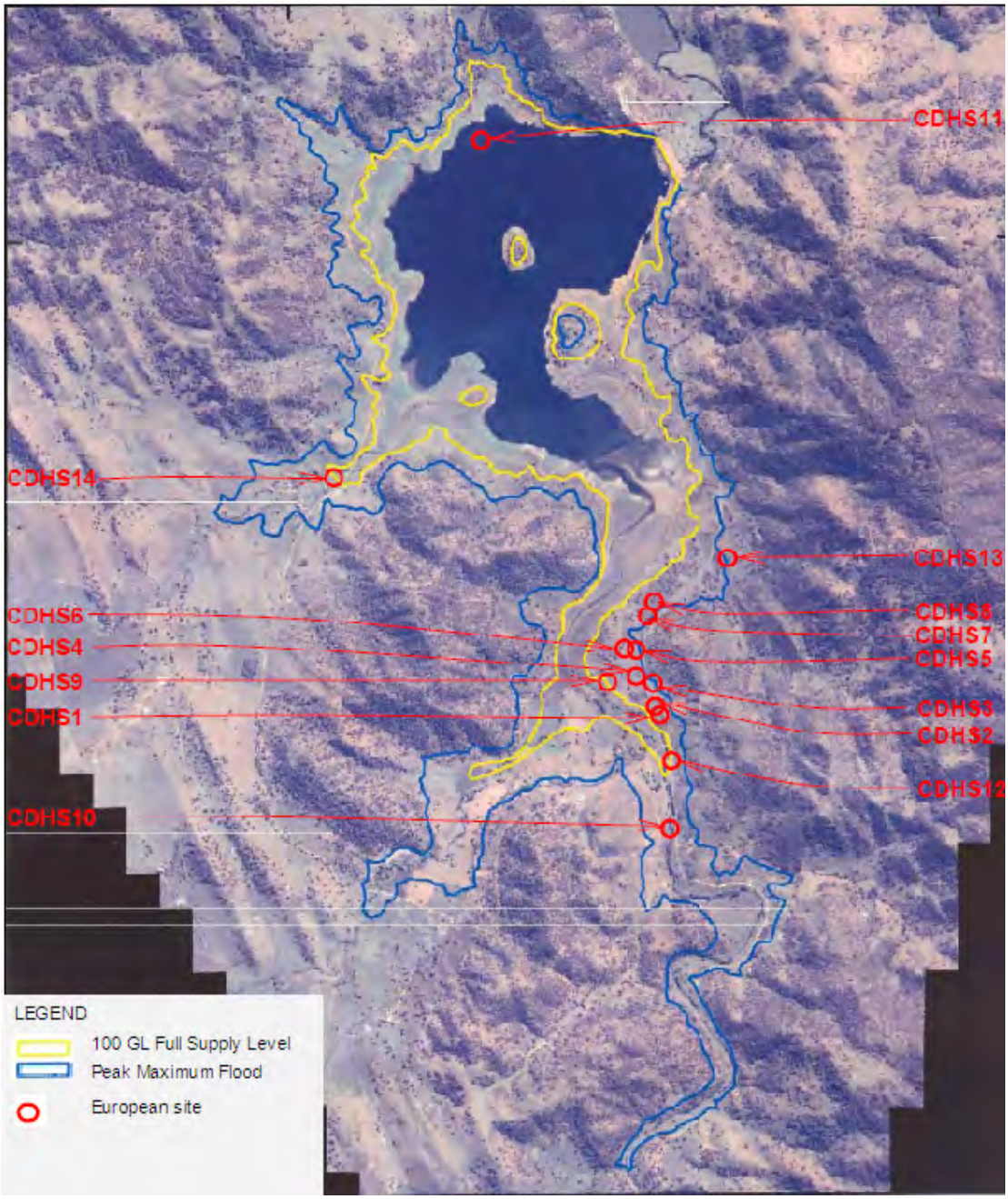


Figure 2-3: Location of further 14 previously unrecorded European heritage sites within the Chaffey Dam area. Sites locations are indicative only. (Source: Navin Officer Heritage Consultants 2008)

Navin Officer Heritage Consultants (2008) concluded that the increase in the FSL arising from the proposed development would impact upon known listed and unlisted European sites. As a result, the following five relevant recommendations were made:

1 *If impact to the iron footbridge is to occur, it should be moved out of the impact area*

2 *If impact to site CDHS12 (two commemorative plaques on the Bowling Alley Point Bridge) is to occur, further assessment is required including a heritage significance assessment*

3 *The Australian Agricultural Company (AAC) commemorative plaque should be moved away from the raised FSL*

4 *If impact to the Dulegal Arboretum is to occur, the extent of this impact should be further investigated*

5 *Site CDHS11 (possible remains of 'Lodhaver' homestead) would be affected by the full supply dam level. Following the comprehensive survey it may be considered that this site is amongst those historic sites identified that require subsurface investigation*

As stated in Section 1.1, the impacts of the proposed development on the above referred to sites that are not listed as heritage items have not been assessed in this HIA. Nonetheless, it is expected that the recommendations of Navin Officer Heritage Consultants (2008), where relevant, will be implemented through delivery of the Project.

The iron footbridge is a listed heritage item and is assessed in Section 8. Relocation of the footbridge and its nearby plaque is recommended in Section 9.

As part of the Project, it is proposed to relocate the two commemorative plaques on the existing Bowling Alley Point Bridge to the new Bowling Alley Point Bridge. Further, to maintain a sense of relative connectivity, the Australian Agricultural Company commemorative plaque will be relocated to higher ground (outside the new FSL), yet within the proximity of its existing location. Impacts to the Dulegal Arboretum are also considered in the Project EIS.

The location of the remains of 'Lodhaver' homestead (CDHS11) is shown in Navin Officer Heritage Consultants (2008) to be within the existing FSL. As such, no additional impacts to this site are anticipated from implementation of the Project.

2.2.4 Tamworth Regional Local Environmental Plan 2010

Since completion of the earlier heritage studies discussed above, Tamworth Regional Council has prepared the TRLEP 2010, which was gazetted on 21 January 2011. According to the Tamworth Regional Council website (accessed 7 November 2012), the Draft TRLEP 2010 involved extensive consultations with planners, government agencies, industry and private stakeholders. In accordance with relevant statutory requirements, the TRLEP 2010 was publically exhibited from 14 July 2009.

Heritage studies commissioned by Tamworth Regional Council identified more than 500 items of local heritage significance throughout the Tamworth Regional LGA. These items are included in Schedule

5 of the TRLEP 2010. Of the items identified in those earlier heritage studies within or near the Project Site, only five were considered to be of local heritage significance and consequently listed on Schedule 5 of the TRLEP 2010 (refer Section 4.4). This has been taken as an authoritative statement of relevant currency in dealing with the DGRs for historic heritage.

2.3 Discussions with Tamworth Historical Society

A meeting and site inspection was undertaken with two representatives of the Tamworth Historical Society on 15 August 2012. The purpose of the meeting was to discuss possible new locations for the Iron Footbridge and potential impacts to other listed European heritage sites that may have been of concern to the Tamworth Historical Society. The discussion extended to include the Dulegal Arboretum and the Australian Agricultural Company plaque (refer to Section 2.2 Earlier Heritage Studies above). The outcomes from the meeting included:

- Recommendations for the relocation of the Iron Footbridge outside the new FSL but within the vicinity of its current location in the Bowling Alley Point Recreation Area
- Provide further interpretation of the Iron Footbridge
- Relocate the Australian Agricultural Company plaque to another suitable location on the western foreshore of Chaffey Dam
- Further investigation of the significance of the Dulegal Arboretum

3 HISTORICAL CONTEXT

The following historical overview extracted from the Preliminary Archaeological and Heritage Assessment, prepared by Navin Officer Heritage Consultants (2008) is considered to be an appropriate brief record of the history of the site and its locality:

In 1818 Surveyor Oxley headed an expedition which explored the Macquarie, Castlereagh, Peel and Hastings Rivers. He named Port Macquarie, at the mouth of the Hastings, and returned down the coast to Sydney. When Oxley passed through the Liverpool Plains areas around the Peel River he declared, 'it would be impossible to find a finer or more luxuriant country ... no place can afford more advantages to the industrious settler'. Shortly after Oxley's exploratory journeys, the first squatters arrived in the area in the 1820s.

In 1834, The Australian Agricultural Company took up 313,298 acres on the western side of the Peel River with 6,000 sheep. Other settlers gradually built up a town, later to become Tamworth, on the eastern side of the river. Tamworth was named after Sir Robert Peel's Electorate of Tamworth in Staffordshire England, and was declared a town in 1850.

Approval for the layout of a village at Nundle was given on October 18, 1852, and the layout was completed by surveyor Gorman in the following January. In the same year the Peel River Land and Mineral Company laid out a township on the western side of the river (Bayley 1988). Nundle was declared a town in 1885.

The village of Dungowan was surveyed in 1860 but the actual town and suburban lands were notified in 1885. The name was changed to Anderson's Flat in 1913. The notification was cancelled in 1914. The discovery of gold at Hanging Rock in 1851 brought more settlers to the area and shortly after gold was discovered at Golden Point, about thirteen kilometres downstream from present day Nundle (Milliss 1980).

Golden Point was renamed Bowling Alley Point by at least 1858 (Milliss 1980). By 1865 the population of the area was around 500 with about 50 businesses in operation. In 1886 it was estimated that since 1852 alluvial gold valued at eight hundred and thirty-five thousand pounds had been extracted (Bayley 1988). Towards the end of 1863 a steam quartz crushing machine was in operation at Bowling Alley Point.

The settlement of Bowling Alley Point grew on the established diggings. In 1863 the wrought-iron Bowling Alley Point Footbridge was erected. The footbridge stood for over 120 years until in 1984 it was swept away by the flooded river. It was restored and relocated in 1987. By 1866 Bowling Alley Point had four hotels. A school was established in 1869, a post office opened in 1858 and a cemetery was dedicated in 1877 (Bayley 1980).

In the early twentieth century Bowling Alley Point had a Literary and Debating Club, the Union Church was built in 1906 and in 1910 the centre of the town had a store, blacksmith, public school, church,

hall and a hotel (Bayley 1980). The present one-roomed weatherboard school opened in 1912 replacing the original 1869 school.

By 1911, alluvial and quartz gold mining in the district had been mined out, although dredges were still in operation until 1918.

The few remaining facilities surviving in Bowling Alley Point were closed down when Chaffey Dam was built in the 1970s. The post office and petrol station closed on 3 June 1976 and all that remains at the site is tree plantings and a concrete slab marking the petrol bowser and underground fuel tanks. The hall was demolished in 1977 although the brick footings are still intact.

The gold rush benefited Tamworth and the surrounding districts even after the gold ran out. Many of the diggers turned their attention to agricultural pursuits, especially after the enactment of the Robertson Land Acts in 1861 (Prentice and Newling 1918). Many of the prospectors selected land in the district and their descendents are still farming in the area today.

A Bill authorising the construction of Chaffey Dam was passed by the NSW government in 1974. Construction commenced in August 1976 and was completed in September 1979. The storage was given the name Chaffey Dam in recognition of the work done in the Tamworth district by the former Members for Tamworth Captain Frank Chaffey and his son W. A. Chaffey (TWRC 1979).

4 IDENTIFICATION AND LOCATION OF HERITAGE ITEMS

The identification and location of heritage items either within the site of the proposed development or in the vicinity of the site of the proposed development were obtained by reviews of the relevant Commonwealth, State and Local Government Statutory Registers, Inventories and Schedules. The outcomes of those reviews are set out below.

4.1 Australian Heritage Database

Chaffey Dam is not identified on the National Heritage List or the Commonwealth Heritage List established under the EPBC Act. It is not on the Register of the National Estate. There are no items in the vicinity of the site of the proposed development that are on the National Heritage List or Commonwealth Heritage List. However, the Bowling Alley Point Geological Site, located within the vicinity of Chaffey Dam, is listed on the Register of the National Estate (refer Appendix 1).

It is noted that the Register of the National Estate was closed in 2007. In any case such listing had no statutory effect on the site as it was not a site owned by the Commonwealth. However, such listing did give some "weight" to any stated "heritage significance" of listed sites or places. All references to the Register of the National Estate were removed from the EPBC Act) on 19 February 2012.

4.2 State Heritage Register

There are **no** heritage items or relics listed on the NSW State Heritage Register or subject to an Interim Heritage Order that are either within the site of the proposed development or in the vicinity of the proposed development.

4.3 State Water Section 170 Heritage and Conservation Register

Under Section 170 of the NSW Heritage Act 1977, it is a statutory requirement that all State Government Agencies must establish and keep a Section 170 Heritage and Conservation Register. State Water has established a Heritage and Conservation Register in accordance with Section 170 of the *Heritage Act 1977*. State Water has advised that it proposes to reinstate the listing of Chaffey Dam on its Section 170 Heritage and Conservation Register. Accordingly, there has been an assessment of the impacts, if any, of the proposed development to Chaffey Dam. There are no other items in the vicinity of Chaffey Dam on its Section 170 Heritage and Conservation Register.

4.4 Tamworth Regional Local Environmental Plan 2010

As stated in Section 2.2, Earlier Heritage Studies, there have been a number of studies of the locality spanning some 20 years to identify and assess European sites that may be of heritage significance. Those studies identified a number of sites. However, it is important to note that in preparing Schedule 5 to the TRLEP 2010, Tamworth Regional Council identified five heritage items of **local heritage**

significance that are located within the site or within the vicinity of the site of the proposed development. One of these items, the Iron Footbridge, is located within the site of the proposed development. The other four sites are within the vicinity of the site of the proposed development. The five items are listed in Table 4-1 and shown on the Heritage Map at Figure 4-1. Refer to Appendix 1 for a copy of the inventory sheets. It is noted that Chaffey Dam is **not** listed on Schedule 5 to the TRLEP 2010.

Table 4-1: Heritage items listed in Schedule 5 to Tamworth Regional Local Environmental Plan 2010 and located within the vicinity of Chaffey Dam.

Item Number	Item Name	Address	Property Description	Significance
I099	Bowling Alley Point Cemetery	Andersons Flat	Lot 7013, DP 96292	Local
I100	Bowling Alley Point School	Bowling Alley Point	Lot 56, DP 755324	Local
I101	Iron Footbridge	Recreation Reserve Chaffey Dam (Bowling Alley Point Recreation Area)	Within DP 755324	Local
I102	Uniting Church	River Road	Lot 41, DP 755324	Local
I103	Bowling Alley Point Geological Site	River Road	Lot 282, DP 755324	Local

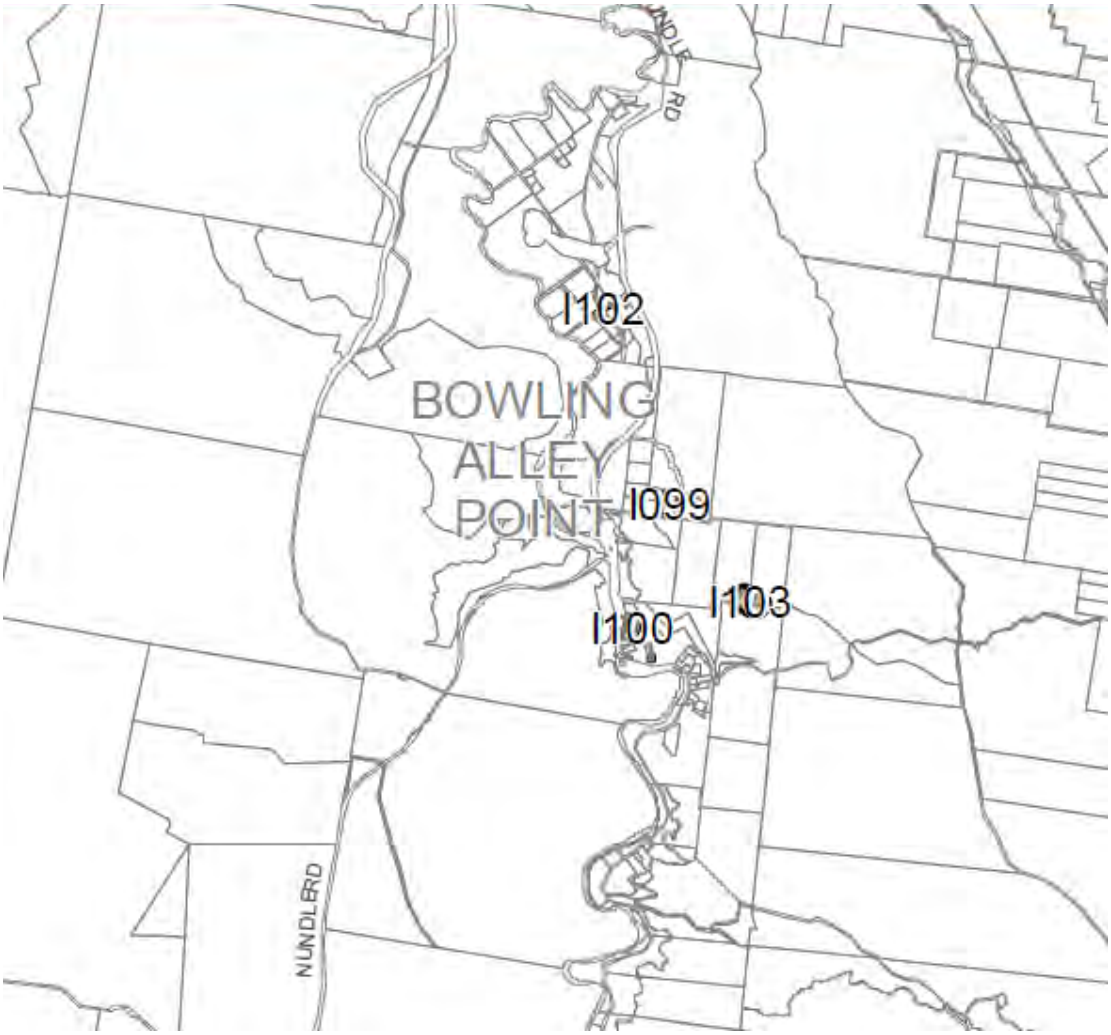


Figure 4-1: Extract of Heritage Map from the Tamworth Regional Local Environment Plan 2010. It is noted item I101 is not identified in this Map. (Source: Tamworth Regional Council 2010)

5 THE HERITAGE ITEMS

This Section describes the five listed heritage items located either within the site or in the vicinity of the site of the proposed development. .

5.1 Bowling Alley Point Cemetery

Bowling Alley Point Cemetery (Figure 5-1), previously known as the Dungowan Parish General Cemetery, was first surveyed as a general cemetery in October 1874. It was officially dedicated as the general cemetery of Dungowan Parish on 15 June 1877 at Andersons Flat.

The cemetery was originally administered by a trust whose members were drawn from representatives of the Anglican, Catholic, Presbyterian, Wesleyan Churches, Jewish and Unsectarian faith traditions (Australian Cemeteries Index 2009). The cemetery plan shows that the area was divided into Anglican, Roman Catholic, Presbyterian, Wesleyan, Jewish, Unsectarian (Chinese) and Independent portions (Australian Cemeteries Index 2009). The cemetery is now administered by the Tamworth Regional Council.

A plaque is located within the Cemetery that lists all known burials at the cemetery, as compiled and inscribed by Australian author Tom McClelland (Australian Cemeteries Index 2009). The earliest original headstone found on the site is dated 1884 (Australian Cemeteries Index 2009).

Figure 5-1: The entrance to Bowling Alley Point Cemetery off Nundle Road.

5.2 Bowling Alley Point School

Bowling Alley Point School was the first school at Bowling Alley Point and comprised a simple single storey weatherboard building. A teacher's residence was also incorporated into the building. The school was opened in March 1869 with an enrolment of 73 pupils.

The first teacher at Bowling Alley Point School was John Goold, who served at the school until 1877. He was assisted by his wife, who was employed by the Council of Education as an assistant teacher from 1869 to 1871. The pupils were taught reading, writing, arithmetic, singing, grammar, geography, scripture, and 'object lessons'.

In 1912 the original school was replaced by a one-room single storey weatherboard building with corrugated iron gable roof and a separate teacher's residence (Figure 5-2). The Bowling Alley Point School was closed in December 1970 and is now occupied as a private residence (Tamworth Regional Council 2008).

Figure 5-2: Bowling Alley Point School.

5.3 Iron Footbridge

In 1863, a four-span wrought iron footbridge was erected across the Peel River at Bowling Alley Point. According to local history, as recorded on the nearby commemorative plaque, six hotel keepers jointly financed the bridge. Construction of the footbridge was in the commercial interests of the hotel keepers, as the majority of miners were working on the Australian Agricultural Company (western) side of the Peel River, where it was forbidden to erect a public house.

It is understood that the footbridge is one of the earliest examples of Bessemer steel construction in the colony, being prefabricated at the steel works in Newcastle and shipped up the Hunter River to Morpeth, then transported by bullock dray over the formidable Crawney Pass (Tamworth Regional Council 2008).

Photographs of the Iron Footbridge at its original location are provided in Figures 5-3 and 5-4. The approximate original location of the footbridge is shown in Figure 5-5.

Figure 5-3: View south-east of the iron footbridge at its original location at Bowling Alley Point, date unknown. (Source: Australia Post 1983)

Figure 5-4: View south-west of the iron footbridge at its original location at Bowling Alley Point in 1977. (Source: Tamworth Regional Council 2007)

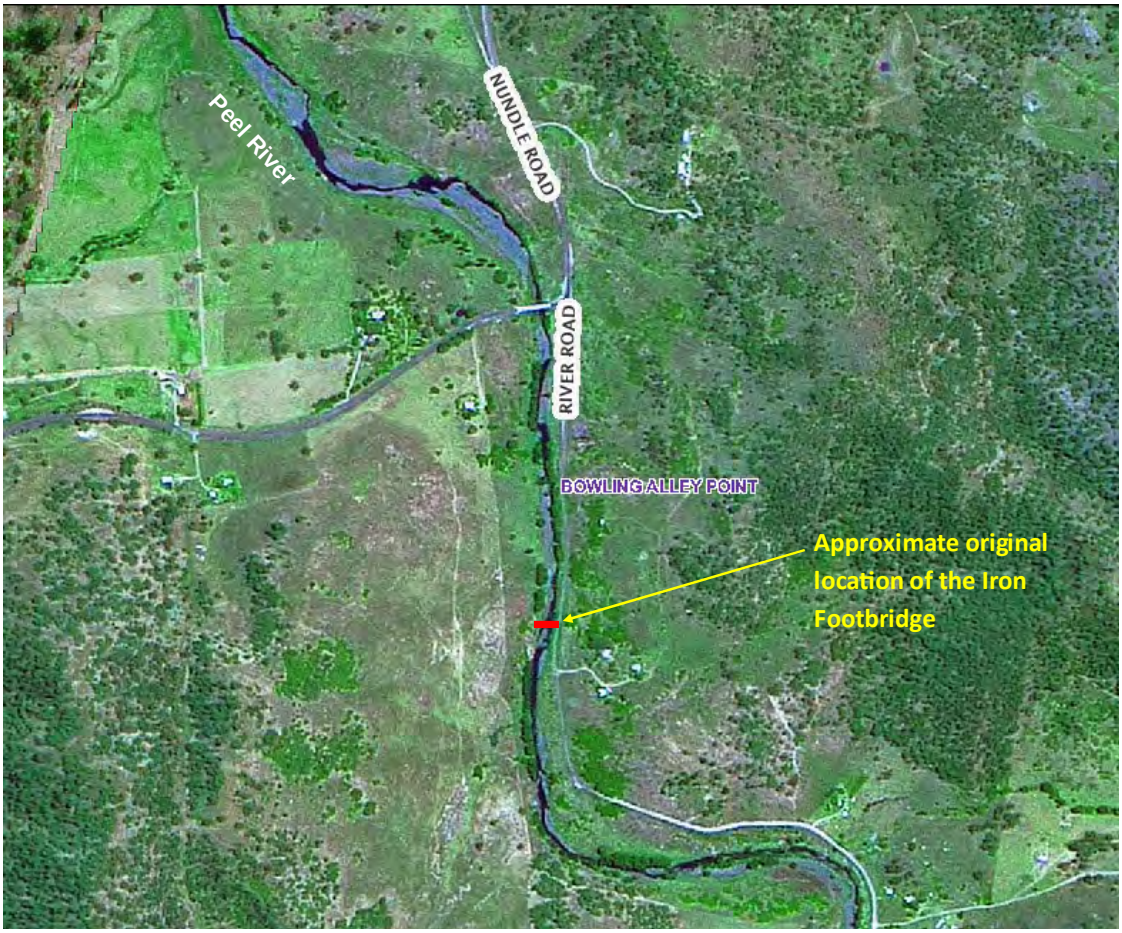


Figure 5-5: Aerial photograph showing approximate location of the original location of the iron footbridge. (Source: Spatial Information Exchange, DPI Lands 2006 Imagery)

In 1958, the then Nundle Shire Council decided that the footbridge was dangerous and called for tenders for its disposal. After numerous calls for its preservation, Nundle Shire Council recognised the historical value of the bridge and in 1963 allocated an estimated £150 to upgrade and repair it. In 1984, the bridge, its abutments and trestles were completely washed away downstream by floodwaters. Two spans of the bridge lay in the bed of the Peel River for three years when the Bicentennial Authority made $30,000 available to retrieve and restore the surviving two spans. In late 1987, the two spans of the footbridge were restored and relocated to the present location on the eastern bank of Chaffey Dam, approximately 4 km north of its original location. The reconstruction was carried out by the Tamworth Historical Society in time for the Bicentennial Celebrations in 1988 (Figure 5-6).

It is understood that no funding has been made available for maintenance of the footbridge. The location of the footbridge within the fenced Bowling Alley Point Recreation Area appears to have assisted in its maintenance to date, as it is currently accessible and useable.

A plaque is located adjacent to the footbridge. It reads as follows:

> *Bowling Alley Point Footbridge constructed about 1863*
>
> *Assembled in Newcastle and transported by bullock dray to the village of Bowling Alley Point and believed to be financed by the publicans of the day. Demolished by flood in 1984. Reconstructed with financial assistance of the New South Wales Bicentennial Council. Opened 16th April 1988.*

Figure 5-6: The partially reconstructed iron footbridge at its current location within the Bowling Alley Point Recreation Area.

5.4 Uniting Church

The Bowling Alley Point Union Church (listed on Schedule 5 of the TRLEP 2010 as the "Uniting Church") was built in Bowling Alley Point in the 1850s at the start of the gold rush (Tamworth Regional Council 2008). The church catered for all denominations and was used by visiting clergy (Tamworth Regional Council 2008). The church served the community until a new brick church was built in 1906 at its present location. The new church was constructed as a single storey red brick building with corrugated iron gable roof (Figure 5-7). The brickwork bond consists of one row of headers to three rows of stretchers. An honour roll was placed on the eastern wall inside the church to commemorate persons who were involved in World War II.

Figure 5-7: The Uniting Church at Bowling Alley Point.

5.5 Bowling Alley Point Geological Site

The Bowling Alley Point Geological Site is an area of approximately 10 ha enclosing the northern slopes of Blackfellows Knob. Early geological reports indicated thick veins of chromite (an ore from which chromium is recovered (Figure 5-8). The site was the first chromite mine in Australia. Only a small quantity of chromite was removed. The material is classed as a Type One chromite characterised by single crystal chromite grains up to 1 cm in diameter.

Abundant chromite ore and the serpentinite with which it is associated, currently remain scattered across the surface of the ground (Department of Sustainability, Environment, Water, Population and Communities 2012).

Figure 5-8: Close up view of the chromite found within the Bowling Alley Geological Site. (Source: Department of Sustainability, Environment, Water, Population and Communities 2012)

5.6 Chaffey Dam

The following is extracted from the inventory sheet prepared in 2005 by State Water for Chaffey Dam:

> *Chaffey Dam Act was passed in 1974 authorising the erection of a dam on the Peel River 43 kilometres south-east of Tamworth, in order to supply irrigation water for landholders along the Peel and supplement the water supply for Tamworth. The dam was a rockfill embankment dam with a clay core. Much of the rock used to construct the dam wall is jasper, a semi-precious stone abundant in the vicinity.*
>
> *The selected contractors commenced work in August 1976. Excavation of the foundation of the main wall was half-complete in June 1977. Cofferdams were well advanced at that stage. A main office was also operational by then.*
>
> *In June 1978, the main cofferdam and the diversion of the Peel River were complete and the river diverted. Chaffey Dam used an unusual "morning glory" spillway. The circular "glory hole" spillway was only used on four dams in Australia. In the "glory hole" spillway, water flows down a hole into a shaft, which leads to a ski jump. Such spillways have been found useful where the steep abutments of the dam make other types of spillway difficult to use.*
>
> *The earth and rock fill embankment was complete in June 1979 and the spillway and its outlets were nearing completion. Water storage commenced in June 1979. The Chaffey Dam was completed in September 1979 (Figure 6-6). On 5 October 1979, it was officially opened by the NSW Premier, Neville Wran.*

The heritage significance of Chaffey Dam is considered to lie in the important role it plays in the provision of a secured and sustained water supply to the Tamworth residential and rural communities. The sustaining of the water supply makes an important contribution to the social and economic wellbeing of those communities, including ensuring employment in the agricultural and other sectors. Further, from an engineering perspective the circular morning glory spillway design is quite rare. It has been used on only four dams in Australia. Finally, it makes a significant contribution to the conservation of an important early gold mining site by encouraging visitation to the Bowling Alley Point heritage sites that are listed in the TRLEP

In February 2011, construction of a 35m wide auxiliary spillway with fuseplug on the left abutment of the dam was completed. This spillway allows extreme flood flows to pass around the dam.

Figure 5-9: View of the Chaffey Dam wall, morning glory spillway (centre) and auxiliary spillway (left)

6 THE PROPOSED DEVELOPMENT

The proposed development comprises the augmentation and safety upgrade of Chaffey Dam. The proposed development will result in an increase in the FSL of 6.5 m and an increase in the permanent storage capacity from 62 GL to 100 GL. Construction works to achieve the required outcomes will include raising the dam wall by 8.4 m, raising the morning glory spillway by 6.5 m and reconfiguration of the auxiliary spillway fuseplug.

Realignment of part of the Tamworth-Nundle Road, Rivers Road and Western Foreshore Road, as well as modification to other surrounding land uses, is also required due to the increased FSL.

Conventional construction methods are anticipated to be used, except for works to the morning glory spillway, which will require some access via water.

The HIA addresses the impacts to historic heritage of the proposed development in accordance with the DGRs issued on 23 January 2012, which state as follows:

- *Impacts to **historic heritage** (including archaeology, heritage items, conservation areas and natural areas), in particular impacts to the Bowling Alley Point site should be assessed. Where impacts to State or locally significant historic heritage items are identified, the assessment shall:*
    - *outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures),*
    - *include a statement of heritage impact for heritage items (including significance assessment),*
    - *demonstrate that an appropriate archaeological assessment methodology, including research design, (where relevant) has been undertaken, including results, and*
    - *take into account the guidelines in the NSW Heritage Manual (1996) and be undertaken by a suitably qualified heritage consultant.*

7 THE LEGISLATIVE AND STATUTORY PLANNING CONTROLS

7.1 Commonwealth Environment Protection Biodiversity Conservation Act 1999

The EPBC Act protects matters of national environmental significance including heritage items that are identified on the World Heritage List and National Heritage List as well as items on the Commonwealth Heritage List. There are no items within the site or within the vicinity of the site of the proposed development that are on the World Heritage List, National Heritage List or Commonwealth Heritage List. However, the Bowling Alley Point Geological Site, located within the vicinity of Chaffey Dam is listed on the Register of the National Estate (refer Appendix 1).

The Register of the National Estate was closed in 2007 and is no longer a statutory list. All references to the Register of the National Estate were removed from the EPBC Act on 19 February 2012.

7.2 Environmental Planning and Assessment Act 1979

The EP&A Act establishes the system of environmental planning and assessment in NSW. The proposed development is State Significant Infrastructure and is assessed under the provisions of Part 5.1 of the EP&A Act.

Part 5.1, Section 115U(2) of the EP&A Act states that a *'State environmental planning policy may declare any development, or any class or description of development, to be State Significant Infrastructure'*. Clause 14(1) of the *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP) provides that, pursuant to section 115U(2) of the EP&A Act, development is State Significant Infrastructure if:

> *(a) the development on the land concerned is, by the operation of a State environmental planning policy, permissible without development consent under Part 4 of the Act, and*
>
> *(b) the development is specified in Schedule 3.*

Schedule 3 of the State and Regional Development SEPP includes *'development for the purpose of water storage… carried out by or on behalf of a public authority that has a capital investment value of more than $30 million'.*

State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) includes provisions for certain developments that are permitted without consent. Such development includes *'development for the purpose of water storage facilities'* carried out by or on behalf of a public authority on land in Zone RU1 Primary Production. Certain associated works are also permitted without consent, as described in Clause 125(5).

The proposed development will be carried out by State Water, a public authority, on land zoned '*RU1 Primary Production*' under the TRLEP 2010. As such, the proposed development falls within the

definition of *'development for the purpose of water storage facilities'* in the Infrastructure SEPP and is permissible without consent under the provisions of Clause 125.

The proposed development satisfies the requirements of Part 5.1 of the EP&A Act and therefore may be classified as State Significant Infrastructure. Section 115Y of the EP&A Act prescribes the environmental assessment requirements for approval of State Significant Infrastructure, including the requirement for DGRs and preparation of an EIS.

State Water is the proponent for the proposed development. In accordance with Section 115(w) of the EP&A Act, the Minister for Planning and Infrastructure is the Determining Authority for the EIS.

7.3 Heritage Act 1977

The *Heritage Act 1977* contains the provisions for listing sites or places on the State Heritage Register. The *Heritage Act 1977* also enables Interim Heritage Orders to be made to protect heritage items or places whilst justification for their entry on the State Heritage Register is investigated. Generally, approval must be obtained from the Heritage Council under Part 4, Section 60 of the *Heritage Act 1977* before work can be carried out on items or places listed on the State Heritage Register or covered by an Interim Heritage Order.

Under the provisions of Section 115ZG (1)(c) of the EP&A Act, *'an approval under Part 4, or an excavation permit under section 139, of the Heritage Act 1977'* is not required for approved State Significant Infrastructure. Division 8 of Part 6 of the *Heritage Act 1977* also does not apply to prevent or interfere with the carrying out of approved State Significant Infrastructure.

Section 170 requires State Government Agencies to establish and keep a Heritage and Conservation Register. Each Government Agency is responsible for ensuring that the items entered on its Heritage and Conservation Register are maintained with due diligence in accordance with the guidelines, Management of Heritage by NSW Government Agencies. This also applies to items listed on the State Heritage Register under the care, control or management of Government Agencies.

There are no sites or places listed on the State Heritage Register covered by an Interim Heritage Order. that are either within the site or within the vicinity of the site of the proposed development.

State Water has advises that it proposes to reinstate the listing of Chaffey Dam on its Section 170 Heritage and Conservation Register. Accordingly, the HIA has undertaken an assessment of the impacts, if any, of the proposed development to Chaffey Dam. There are no other items in the vicinity of Chaffey Dam on State Water's Section 170 Heritage and Conservation Register.

The Heritage Act defines a "relic" as follows:

> *relic means any deposit, artefact, object or material evidence that:*
>
> *(a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
>
> *(b) is of State or local heritage significance.*

No relics have been identified as having or state or local heritage significance either within the site or in the vicinity of the site of the proposed development.

7.4 Tamworth Regional Local Environmental Plan 2010

The TRLEP 2010 is the primary environmental planning instrument controlling development within the Tamworth region.

Under Section 115ZF (2) of the EP&A Act 1979:

> *Part 3 and environmental planning instruments do not apply to or in respect of State significant infrastructure, except that:*
>
> *(a) they apply to the declaration of infrastructure as State significant infrastructure or as critical State significant infrastructure (and to the declaration of development that does not require consent), and*
>
> *(b) they apply in so far as they relate to section 28, and for that purpose a reference in that section to enabling development to be carried out in accordance with an environmental planning instrument or in accordance with a consent granted under this Act is to be construed as a reference to enabling State significant infrastructure to be carried out in accordance with an approval granted under this Part.*

The HIA addresses in Section 8.2, the relevant provisions of Clause 5.10 Heritage Conservation of the TRLEP 2010.

7.5 Development Control Plans

There are no Development Control Plans that are relevant to the proposed development in relation to heritage conservation.

8 THE ASSESMENT

8.1 Summary of the Impacts of the Proposed Development

Table 8-1 summaries the listed or proposed listed heritage items within the site or in the vicinity of the site of the proposed development. It identifies the likely degree of impact as a result of the proposed development during two phases: (1) Construction; and (2) Operation.

Appendix 2 shows the location of the heritage items with regard to the proposed new FSL, new Probable Maximum Flood (PMF) Level and associated road works.

Of the five listed heritage items the Iron Footbridge is the only listed item located within the site of the proposed development. As noted above, State Water proposes to reinstate the listing of Chaffey Dam on its Section 170 Heritage and Conservation Register. Therefore, in anticipation of this action, the impacts, if any, of the proposed development on Chaffey Dam have been assessed.

Chaffey Dam is the subject of the proposed development. The construction stage will involve the raising of the dam wall, morning glory spillway and reconfiguration of the auxiliary spillway fuseplug. These works are likely to have minor but temporary impacts during construction, in terms of views and vistas of the dam from the surrounding areas, including the public lookout and the use of construction sites, including movement of construction vehicles and stockpiling of materials.

The Visual Amenity Assessment contained within the EIS concludes the following in relation to the operational stage of the proposed development:

> *Operation of the Project will result in minor changes to the visual impact of the reservoir. Whilst the proposed new FSL will increase the amount of inundated land and the proposed modification to the height of the dam wall and morning glory spillway will increase the height of the existing structures, the Project is not anticipated to have a significant visual impact on the Chaffey Dam area.*

As stated earlier, the Iron Footbridge is a reconstruction of two of the four spans of the original bridge. The two spans were retrieved from the riverbed after it was washed away by flood waters in 1984 and re-erected in 1988. In its current location within the existing Bowling Alley Point Recreation Area, the Iron Footbridge would be directly impacted through inundation of the reservoir to the new FSL. Therefore, the Iron Footbridge and its associated plaque will need to be relocated.

There are likely to be temporary visual impacts during the realignment works to Rivers Road to the Bowling Alley Point School and Uniting Church.

There are no impacts expected to the Bowling Alley Point Cemetery and Bowling Alley Point Geological Site as a result of the proposed development either during construction or operation. This is due to the location of these heritage items in relation to the boundaries of the FSL of the proposed development.

Table 8-1: Summary of impacts of the proposed development to listed heritage items.

Item Name	Impact - Construction	Degree of Impact - Construction	Impact - Operational	Degree of Impact - Operational
Chaffey Dam (subject to listing)	Raising the dam wall by 8.4 m, raising the morning glory spillway by 6.5 m and reconfiguration of the auxiliary spillway fuseplug.	Minor (temporary visual and construction impacts)	Increase to the FSL of 6.5 m and an increase in the permanent storage capacity from 62 GL to 100 GL.	Minor (upgrades to existing structures and increase to new FSL)
Bowling Alley Point Cemetery	None – outside of impact area.	None	Outside new FSL. Within new PMF Level.	None
Bowling Alley Point School	Temporary visual impact during Rivers Road realignment.	Minor (temporary visual impacts)	Outside new FSL. Within new PMF Level.	None
Iron Footbridge	None – outside of proposed construction areas.	None	Within new FSL if not relocated from current location. Within new PMF.	Significant (without mitigation)
Uniting Church	Temporary visual impact during River Road realignment.	Minor (temporary visual impacts)	Outside new FSL. Within new PMF Level.	None
Bowling Alley Point Geological	None – outside of impact area	None	None – outside of new FSL and PMF.	None

8.2 Tamworth Regional Local Environmental Plan 2010

A full assessment against the relevant provisions of Clause 5.10 Heritage Conservation of the TRLEP 2010 is provided in Table 8-2.

Table 8-2: Relevant TRLEP 2010 clauses.

Clause	Comment
(1) Objectives The objectives of this clause are as follows: (a) to conserve the environmental heritage of the Tamworth Regional Council area, (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views, (c) to conserve archaeological sites, (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.	Objectives (a) and (b) are satisfied because the proposed development will result in an upgrade of Chaffey Dam that will have long term benefits by improving water security for town water and irrigation supplies for the Tamworth Region. The proposed development will also improve dam operation and safety with regard to flood mitigation. Without mitigation, the proposed development would have a significant impact to the Iron Footbridge as a result of the proposed new FSL, which would result in inundation of the footbridge in its current location (refer to Appendix 2). It is noted that the original location of the Iron Footbridge was approximately 4 km north of its present location. It is recommended that the Iron Footbridge be relocated to a suitable location outside the FSL, in the vicinity of its current location, as shown in Figure 9-1. There are likely to be temporary visual impacts during the realignment works to Rivers Road to the Bowling Alley Point School and Uniting Church. Such construction works are likely to temporarily obstruct views into and out of the heritage sites. No impacts to the Bowling Alley Point Cemetery and Bowling Alley Point Geological Site are expected as a result of the proposed development. Except for the impacts on the Iron Footbridge that have been noted and for which mitigation measures have been recommended, it is considered that the proposed development will not adversely impact on any heritage items or heritage conservations areas, provided the proposed development is carried out in accordance with the recommended mitigation measures in Table 9-1. As to Objective (c), there are no listed archaeological sites of local or State heritage significance located either within the site or within the vicinity of the site of the proposed development. Accordingly, no archaeological

Clause	Comment
	assessment methodology has been prepared as part of the HIA. Objective (d) is addressed in a separate Aboriginal Heritage Impact Assessment.
(4) Effect of proposed development on heritage significance The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).	The HIA has assessed the effects of the proposed development in accordance with the relevant legislative and statutory conservation planning controls and the requirements of the NSW Heritage Manual's 'Statement of Heritage Impacts' Guidelines. See comment above about the Iron Footbridge. Except for the Iron Footbridge, the proposed development does not adversely impact on any heritage items. There are no heritage conservations areas either within the site or in the vicinity of the site of the proposed development. The mitigation measures proposed in Table 9-1 are considered to adequately address the conservation of the Iron Bridge. The measures accord with the Principles of the burra charter
(5) Heritage assessment The consent authority may, before granting consent to any development: (a) on land on which a heritage item is located, or (b) on land that is within a heritage conservation area, or (c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.	The HIA has addressed the relevant legislative and statutory conservation planning controls and the requirements of the NSW Heritage Manual's 'Statement of Heritage Impacts' Guidelines. It has had regard to the Principles of the Burra Charter See comment above about the Iron Footbridge. Except for the Iron Footbridge, the proposed development does not adversely impact on any heritage items. There are no heritage conservations areas either within the site or in the vicinity of the site.
(7) Archaeological sites The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than	There are no listed archaeological sites of State or local heritage significance located either within the site of the proposed development or within the vicinity of the proposed development.

Clause	Comment
land listed on the State Heritage Register or to which an interim heritage order under the Heritage Act 1977 applies): (a) notify the Heritage Council of its intention to grant consent, and (b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.	

8.3 Heritage Branch Assessment Guidelines

The proposed development is assessed in Table 8-3 in relation to the relevant questions outlined in the NSW Heritage Manual's 'Statements of Heritage Impact' Guidelines.

Table 8-3: Relevant questions from the Statements of Heritage Impact Guidelines.

Question	Comment
Major Additions • How is the impact of the addition on the heritage significance of the item to be minimised? • Can the additional area be located within an existing structure? If not, why not? • Will the additions tend to visually dominate the heritage item? • Are the additions sited on any known, or potentially significant archaeological deposits? If so, have alternative positions for the additions been considered? • Are the additions sympathetic to the heritage item? In what way (e.g. form, proportions, design)?	The proposed development comprises the augmentation and safety upgrade of the existing Chaffey Dam. The proposed development will result in an increase in the FSL of 6.5 m and an increase in the permanent storage capacity from 62 GL to 100 GL. Construction works to achieve the required outcomes will include raising the dam wall by 8.4 m, raising the morning glory spillway by 6.5 m and reconfiguration of the auxiliary spillway fuseplug. Realignment of some roads and bridges to sections of the Tamworth-Nundle Road, River Road and Western Foreshore Road, as well as modification to other surrounding land uses, is also required due to the increased FSL. The proposed development involves the augmentation of existing structures of the Chaffey Dam and have been designed to minimise visual impacts to the existing Dam structures and views and vistas from surrounding areas. There are likely to be minor, but temporary impacts to Chaffey Dam during the construction stage. The materials used to raise the dam wall will be the same as those currently present on the wall, where possible. There are likely to be minor impacts to the operation of Chaffey

Question	Comment
	Dam as a result of the upgrade to existing structures and the increase of the reservoir area to its new FSL. The proposed development will reinforce and increase the social and cultural significance of Chaffey Dam, its continued operation, performance and its role in supply the Tamworth region. It is therefore considered that there are no significant impacts to the heritage significance of Chaffey Dam, The Iron Footbridge, in its current location within the Bowling Alley Point Recreation Area, will be impacted through inundation by the proposed new FSL. As shown on Figure 9-1. it is proposed to relocate the footbridge to a suitable site outside of the new FSL to ensure an appropriate interpretation of its connection with the Bowling Alley Point settlement can be maintained. There are likely to be temporary visual impacts during the construction stage to the Bowling Alley Point School and Uniting Church due to realignment works to Rivers Road. Except for the Iron Footbridge, the proposed development does not adversely impact on any heritage items or heritage conservations areas. There are no listed archaeological sites of local or State heritage significance located within the site or within the vicinity of the site of the proposed development .
New development adjacent to a heritage item • How is the impact of the new development on the heritage significance of the item or area to be minimised? • Why is the new development required to be adjacent to a heritage item? • How does the curtilage allowed around the heritage item contribute to the retention of its heritage significance? • How does the new development affect views to, and from, the heritage item? What has been done to minimise negative effects? • Is the development sited on any known, or	As stated above, the Iron Footbridge is within the site of the proposed development and the other four items are in the vicinity of the site of the proposed development. The impacts and the their mitigation is also set out above and have been described above and in other sections of the HIA. Reference is made to the recommendation that the Iron Footbridge be relocated to a suitable location beyond the new FSL, but within the vicinity of its present location (refer Figure 9-1). This will ensure an appropriate interpretation of its connection, role and function with the Bowling Alley Point settlement and that it will be properly maintained. It is further recommended that in the re-erection, the approach steps to the footbridge be constructed of an appropriate material.

Question	Comment
potentially significant archaeological deposits? If so, have alternative sites been considered? Why were they rejected? • Is the new development sympathetic to the heritage item? In what way (e.g. form, siting, proportions, design)? • Will the additions visually dominate the heritage item? How has this been minimised? • Will the public, and users of the item, still be able to view and appreciate its significance?	There are likely to be temporary visual impacts during realignment works to Rivers Road to the Bowling Alley Point School and Uniting Church. The impacts will be minor and only for the period of the road works. There are no impacts expected to the Bowling Alley Point Cemetery and Bowling Alley Point Geological Site as a result of the proposed development. There are no listed archaeological sites of local or State heritage significance located within the site or within the vicinity of the site of the proposed development .
New Services • How has the impact of the new services on the heritage significance of the item been minimised? • Are any of the existing services of heritage significance? In what way? Are they affected by the new work? • Has the advice of a conservation consultant (e.g. architect) been sought? Has the consultant's advice been implemented? • Are any known or potential archaeological deposits (underground and under floor) affected by the proposed new services?	As stated above, the proposed development involves an upgrade and augmentation of Chaffey Dam and the re-alignment of some nearby roads and bridges. The proposed development will be undertaken in accordance with detailed engineering plans and reports that will not compromise but rather enhance the significance of the Chaffey Dam through its long term operation that will secure water supplies for the Tamworth region. There are no listed archaeological sites of local or State heritage significance located within the site or within the vicinity of the site of the proposed development.
New landscape works and features • How has the impact of the new work on the heritage significance of the existing landscape been minimised? • Has evidence (archival and physical) of previous landscape work been investigated? Are previous works being reinstated? • Has the advice of a consultant skilled in the conservation of heritage landscapes been sought? If so, have their recommendations been implemented? • Are any known or potential archaeological	The existing landscape is not listed as being of heritage significance under the EPBC Act, *Heritage Act 1977* or TRLEP 2010. The proposed development will create a new FSL for Chaffey Dam, which will see an increase in the area of land permanently inundated, including the current location of the Iron Footbridge within the Bowling Alley Point Recreation Area. The inundation will require the relocation of the Iron Footbridge as stated above. There are no listed archaeological sites of local or State heritage significance located within the site or within the vicinity of the site of the proposed development .

Question	Comment
deposits affected by the landscape works? If so, what alternatives have been considered? • How does the work impact on views to, and from, adjacent heritage items?	

9 PROPOSED MITIGATION MEASURES

The mitigation measures proposed to manage the identified impacts to listed heritage sites are provided in Table 9-1.

Table 9-1: Proposed mitigation measures.

Issue	Mitigation Measure	Phase (construction / operation)
Relocation of the Iron Footbridge	Carefully dismantle, transport and re-erect the footbridge and its associated plaque to a suitable location above the new FSL, but within the vicinity of the present location. Refer Figure 9-1 for a suggested location. It is further recommended that in the re-erection, the approach steps to the footbridge be constructed of an appropriate stone or timber material.	Construction and Operation
Interpretation of the Iron Footbridge	Install interpretative signage at the new location to illustrate the history of the footbridge, such as its materials, construction methods, original location and the role and function it had in serving the former Bowling Alley Point gold mining settlement. The importance of its historical, social, cultural and aesthetic significance to the current and future residents and to visitors should also be documented on the signage.	Operation
Temporary visual impacts to the Bowling Alley Point School and Uniting Church during the Rivers Road realignment works	Road works to be undertaken in accordance with a Construction Environmental Management Plan (CEMP), including measures to minimise visual impacts to heritage items such as dust suppression, maintenance of tidy construction areas and the use of hoardings.	Construction
Unanticipated discovery of items of potential heritage significance	In the event that a previously unidentified item of potential heritage significance (potential item) is uncovered during construction, the following measures will be implemented to avoid disturbance to the potential item, until an appropriate management strategy is implemented: 1. All works must halt in the immediate area of the potential item and any further disturbance to the area of the potential item prevented;	Construction

Issue	Mitigation Measure	Phase (construction / operation)
	2. The discoverer of the potential item will notify machinery operators in the immediate vicinity of the potential item so that work is halted; 3. The discovery of the potential item is to be reported to the site supervisor, the Principal/Project Manager and the project archaeologist; 4. An appropriate strategy for the future management (if warranted) of the potential item will be developed, together with a strategy to return to work as soon as possible.	

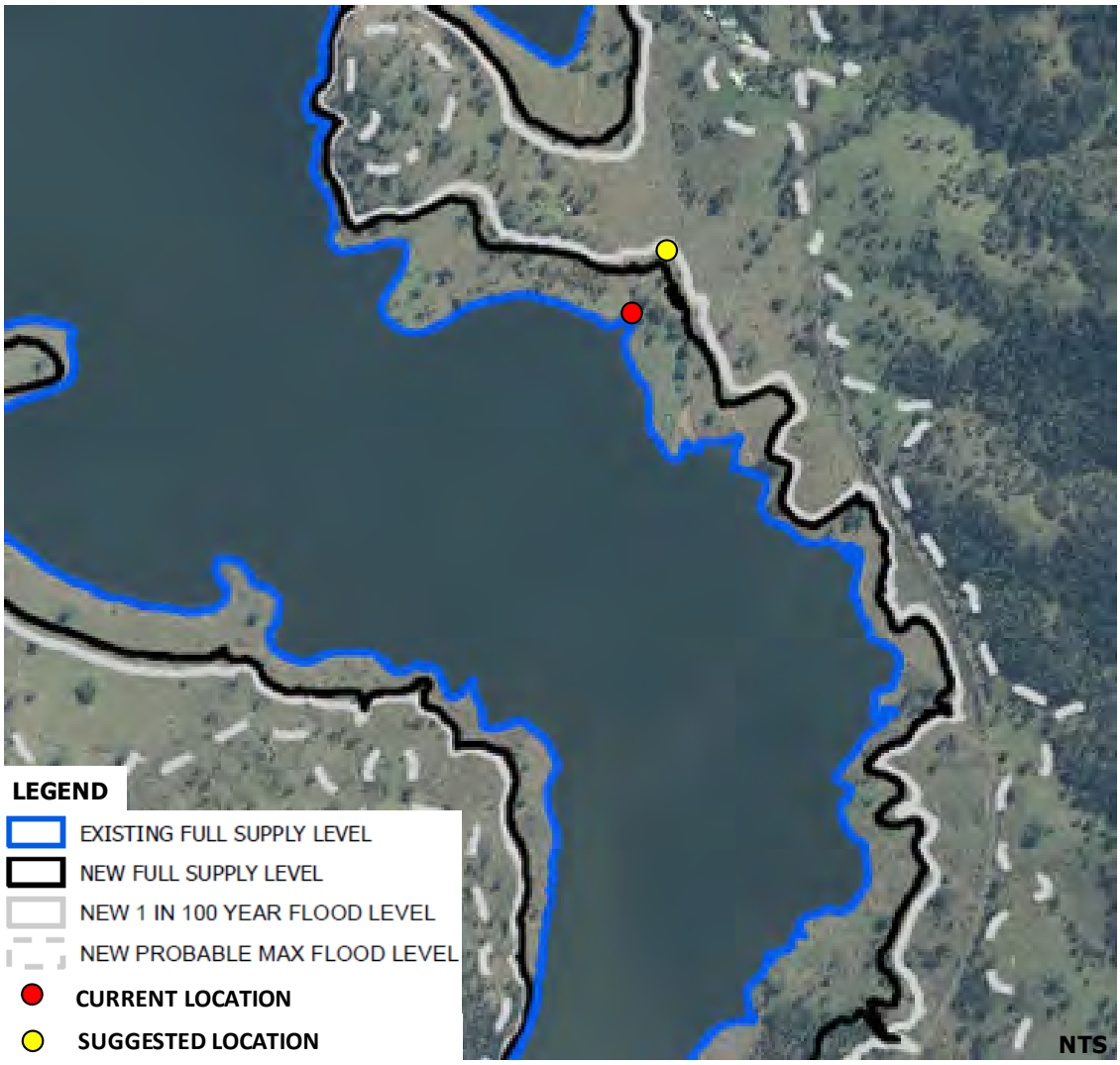


Figure 9-1: Suggested location for the re-erection of the Iron Footbridge.

10 CONCLUSION

This HIA has assessed the proposed development in accordance with and in response to the DGRs issued on 23 January 2012, with regard to impacts to ***historic heritage***.

At the time of preparing the HIA, the NSW Heritage Inventory database was reviewed. There were no items listed on the NSW State Heritage Register located either within the site or in the vicinity of the site of the proposed development. State Water has advised that it proposes to reinstate “Chaffey Dam" as a heritage item on its Section 170 Heritage and Conservation Register. Accordingly, the HIA has undertaken an assessment of the impacts, if any, of the proposed development to Chaffey Dam.

The proposed development involves the augmentation of existing structures of Chaffey Dam and has been designed to minimise visual impacts to the existing Dam structures and views and vistas from surrounding areas. There are likely to be minor, but temporary impacts to Chaffey Dam during the construction stage. The materials used to raise the dam wall will be the same as those currently present on the wall, where possible. There are likely to be minor impacts to the operation of Chaffey Dam as a result of the upgrade to existing structures and the increase of the reservoir area to its new FSL.

The proposed development will reinforce and increase the social and cultural significance of the Chaffey Dam, its continued operation, performance and its role in supplying water to the Tamworth region. It is therefore considered that there are no significant impacts to the heritage significance of Chaffey Dam,

There are **no** archaeological sites on **Schedule 5** on the TRLEP 2010 located either within the site or within the vicinity of the site of the proposed development. Accordingly, **no** archaeological assessment methodology has been prepared as part of the HIA.

There are **five** heritage items listed in **Schedule 5 – Environmental Heritage** to the TRLEP 2010 that are located within the site or within the vicinity of the proposed development. The items are all of local heritage significance and comprise the following:

- Bowling Alley Point Cemetery
- Bowling Alley Point School
- Iron Footbridge
- Uniting Church and
- Bowling Alley Point Geological Site

One of these items, the Iron Footbridge, is located within the site of the proposed development. The existing Iron Footbridge is a reconstruction of components of the original bridge, retrieved from the riverbed after it was washed away by flood waters in 1984. In its current location within the existing

Bowling Alley Point Recreation Area, the Iron Footbridge would be directly impacted through inundation of the reservoir to the new FSL.

Without mitigation, the proposed development would have a significant impact to the Iron Footbridge as a result of the proposed new FSL.

There are likely to be temporary visual impacts to the Bowling Alley Point School and Uniting Church during the proposed realignment works to River Road, as these construction activities may impede views into and out of both sites. No impacts to the Bowling Alley Point Cemetery and Bowling Alley Point Geological Site are expected as a result of the proposed development.

To minimise the risk of adverse impacts on the Iron Footbridge it is recommended that the footbridge and its associated plaque be carefully dismantled, transported and re-erected at a suitable location beyond the new FSL, but within the vicinity of the its present location. The suggested location for the re-erected Iron Footbridge (Figure 9-1) will ensure an appropriate interpretation of its connection, role and function with the Bowling Alley Point settlement. The suggested location will also ensure that the footbridge will be properly maintained by being situated within the re-aligned Bowling Alley Point Recreation Area. It is further recommended that in the re-erection, new approach steps to the footbridge be constructed of an appropriate stone or timber material to assist in the interpretation of the footbridge.

It is recommended that interpretative signage be installed at the new location of the Iron Footbridge. The interpretative signage should document the history of the footbridge, including its construction methods, original location and the role and function it had in serving the former Bowling Alley Point gold mining settlement. The importance of its historical, social, cultural and aesthetic significance to the current and future residents and to visitors should also be documented on the signage.

To minimise temporary visual impacts to the Bowling Alley Point School and Uniting Church resulting from the realignment of Rivers Road, it is recommended that the CEMP for the proposed development consider and implement as relevant, measures to minimise visual impacts to heritage items such as dust suppression, maintenance of tidy construction areas and the use of hoardings.

In following these recommended steps, it is considered that there will be **no** long term adverse impacts on the heritage significance of Chaffey Dam, the Iron Footbridge, Bowling Alley Point School and Uniting Church. There will be no impacts to the Bowling Alley Point Geological Site and Bowling Alley Point Cemetery during construction or operation.

The proposed development is supported on heritage grounds.

11 REFERENCES

Australian Cemeteries Index (2009) Bowling Alley Point General Cemetery. Available online at: http://austcemindex.com/cemetery.php?id=155. Accessed 8 August 2012.

Department of Sustainability, Environment, Water, Population and Communities (2012) Bowling Alley Point Geological Site, Bowling Alley Point, NSW, Australia.

Manidis Roberts Consulting (1990) Chaffey Dam Enlargement Recreational Impact Assessment. Report to Department of Water Resources.

Navin Officer Heritage Consultants (2008) Chaffey Dam Upgrade - Stage 1 Preliminary Archaeological and Heritage Assessment. January 2008.

Pearson, S.A. (c.1990) Proposed Enlargement – Chaffey Dam Historical Survey.

Tamworth Regional Council (2006) Tamworth and Districts Early History Accessed via http://www.tamworth.nsw.gov.au. September 2012.

Tamworth Regional Council (2007) Thematic History of Nundle, Manilla and Barraba Community Based Heritage Study.

Tamworth Regional Council (2008) Tamworth Heritage Inventory.

Appendices

Appendix 1: Inventory Sheets

Tamworth Heritage Inventory

Item Name **Bowling Alley Point Dungowan Parish General Cemetery**

SHI Number **2471675**

Other Names/s

Group Name

Location Bowling Alley Point 2340 Tamworth Regional

Assessed Significance **Local**

Item Type Archaeological-Terrestrial

Group Cemeteries and Burial Sites

Category Cemetery/Graveyard/Burial Ground

Themes

National	State	Local
9. Phases of Life	Birth and Death	Provision of midwifery,

Owner Local Government

Current Use Cemetery

Former Use Cemetery

Years 1877 **Circa** No

Designer

Builder

Physical Condition

Modification Dates

Further Comments

Statement of Significance

Bowling Alley Point Dungowan Parish General Cemetery is important in the course of the natural cycle of life and death, and the cultural traditions surrounding that natural phenomenon. It is important to the local community for social/spiritual and cultural reasons and has the potential to yield information about the life and death of local residents.

Physical Description

Cemetery

Historical Notes

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 12/12/2006 Date Updated:19/06/2007 Data Entry Status: Basic

Tamworth Heritage Inventory

Item Name **Bowling Alley Point Dungowan Parish General Cemetery**

SHI Number **2471675**

Other Names/s

Group Name

Location Bowling Alley Point 2340 Tamworth Regional

Assessed Significance **Local**

Images

Caption Cemetery

Copyright:

Image by: EJE

Date: 14/11/2006

Number: 1

Listings

References

Studies

Assessment Degree Criteria

SHR Criteria f)

N/A

SHR Criteria g)

N/A

Intactness / Integrity

Good

Recommended management

Statutory Instrument

List on a Local Environmental Plan (LEP)

Assessment Criteria

SHR Criteria a) The cemetery is representative of spiritual and cultural practices of the community.

SHR Criteria b) N/A

SHR Criteria c) N/A

SHR Criteria d) N/A

SHR Criteria e) N/A

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 12/12/2006 Date Updated:19/06/2007 Data Entry Status: Basic

Tamworth Heritage Inventory

Item Name **Bowling Alley Point School**

SHI Number **2471674**

Other Names/s

Group Name

Location Bowling Alley Point 2340 Tamworth Regional

Assessed Significance **Local**

Item Type Built

Group Residential buildings (private)

Category House

Themes

National	State	Local
6. Educating	Education	Philanthropy and the e

Owner Private - Individual

Current Use Residence

Former Use School

Years **Circa** No

Designer

Builder

Physical Condition Good condition

Modification Dates Unknown.

Further Comments

Statement of Significance

Bowling Alley Point School is of importance to the local community for obvious social and cultural reasons.

Physical Description

Single-storey, horizontal timber clad building with corrugated iron gable roof.

Historical Notes

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 12/12/2006 Date Updated:19/06/2007 Data Entry Status: Basic

Tamworth Heritage Inventory

Item Name **Bowling Alley Point School**

SHI Number **2471674**

Other Names/s

Group Name

Location Bowling Alley Point 2340 Tamworth Regional

Assessed Significance **Local**

Images

Caption Bowling Alley Point School

Copyright:

Image by: EJE

Date: 14/11/2006

Number: 1

Listings

References

Studies

Assessment Degree Criteria

SHR Criteria f)

N/A

SHR Criteria g)

N/A

Intactness / Integrity

Good

Assessment Criteria

SHR Criteria a) Bowling Alley Point School is of importance to the local community for obvious social and cultural reasons.

SHR Criteria b) N/A

SHR Criteria c) N/A

SHR Criteria d) N/A

SHR Criteria e) N/A

Recommended management

Statutory Instrument

List on a Local Environmental Plan (LEP)

Recommended Management

Consult with owner and/or community

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 12/12/2006 Date Updated:19/06/2007 Data Entry Status: Basic

Tamworth Heritage Inventory

Item Name	**Iron Footbridge**	SHI Number	**2471671**
Other Names/s			
Group Name			
Location	Bowling Alley Point Recreation Reserve Chaffey Dam 2340 Tamworth Regional	Assessed Significance	**Local**

Item Type Built

Group Transport - Land

Category Foot Bridge

Themes

National	State	Local
3. Economy	Transport	Development of road n

Owner Local Government

Current Use Footbridge

Former Use Footbridge

Years 1863 **Circa** No

Designer

Builder

Physical Condition Restored and rebuilt in 1988.

Modification Dates

Further Comments

Statement of Significance

Historically significant as one of the earliest examples of Bessemer steel construction in the colony the bridge was prefabricated at the steel works in Newcastle, shipped up the Hunter River to Morpeth, then transported by bullock dray over the formidable Crawney Pass.

Physical Description

Footbridge of Bessemer steel construction.

Historical Notes

In 1863 a wrought iron footbridge across the Peel River at Bowling Alley Point was erected. According to local history, six hotel keepers jointly financed the bridge. One of the earliest example of Bessemer steel construction in the colony, the bridge was prefabricated at the steel works in Newcastle, shipped up the Hunter River to Morpeth, then transported by bullock dray over the formidable Crawney Pass. In 1958 Nundle Shire Council decided that the footbridge was dangerou: and called for tenders for its disposal. Fortunately after numerous calls for its preservation, Council recognised the historical value of the bridge and in 1963 allocated an estimated 150 pounds to upgrade and repair it. The bridge was completely washed away by floodwaters in 1984. The remains of the bridge lay in the riverbed for three years until the Bicentennial Authority made $30, 000 available to restore it. In late 1987 the bridge was relocated to the eastern bank of Chaffey Dar and rebuilt in time for the Bicentennial Celebrations in 1988.

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 12/12/2006 Date Updated:19/06/2007 Data Entry Status: Basic

Tamworth Heritage Inventory

Item Name Iron Footbridge

SHI Number 2471671

Other Names/s

Group Name

Location Bowling Alley Point Recreation Reserve Chaffey Dam 2340 Tamworth Regional

Assessed Significance **Local**

Images

Caption Iron Footbridge

Copyright:

Image by: EJE

Date: 14/11/2006

Number: 1

Listings

References

Author	Title	Year
Joanna Boileau	Thematic history of Nundle, Manilla and Barraba	2007

Studies

Assessment Degree Criteria

SHR Criteria f)
N/A

SHR Criteria g)
N/A

Intactness / Integrity
N/A

Assessment Criteria

SHR Criteria a) Historically significant as one of the earliest examples of Bessemer steel construction in the colony, the bridge was prefabricated at the steel works in Newcastle, shipped up the Hunter River to Morpeth, then transported by bullock dray over the formidable Crawney Pass

SHR Criteria b) N/A

SHR Criteria c) N/A

SHR Criteria d) N/A

SHR Criteria e) N/A

Recommended management

Statutory Instrument
List on a Local Environmental Plan (LEP)

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 12/12/2006 Date Updated:19/06/2007 Data Entry Status: Basic

Tamworth Heritage Inventory

Item Name	**Bowling Alley Point Union Church**	SHI Number	**2471676**
Other Names/s			
Group Name			
Location	Bowling Alley Point 2340	Tamworth Regional	Assessed Significance **Local**

Item Type Built

Group Religion

Category Church

Themes

National	State	Local
8. Culture	Religion	Establishment of paris

Owner Religious Organisation

Current Use Church

Former Use Church

Years 1906 **Circa** No

Designer

Builder

Physical Condition Good condition

Modification Dates Unknown

Further Comments

Statement of Significance

The building is locally significant in terms of its usage as a church for spiritual, cultural and social reasons and is representative of the importance of churches in rural community's.
Important in the course and nature of local parish development.

Physical Description

Single-storey, red brick church building with corrugated iron gable roof. Brickwork bond is 1row of headers to 3 rows of stretchers.

Historical Notes

A Union Church catering for all denominations and used by visiting clergy was built in Bowling Alley Point in the early days of the gold rushes, and it served the community until the new brick church was built in 1906.

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 12/12/2006 Date Updated:19/06/2007 Data Entry Status: Basic

Tamworth Heritage Inventory

Item Name **Bowling Alley Point Union Church**

SHI Number **2471676**

Other Names/s

Group Name

Location Bowling Alley Point 2340 Tamworth Regional

Assessed Significance **Local**

Images

Caption Union Church

Copyright:

Image by: EJE

Date: 14/11/2006

Number: 1

Listings

References

Author	Title	Year
Joanna Boileau	Thematic history of Nundle, Manilla and Barraba	2007

Studies

Assessment Degree Criteria

SHR Criteria f)
N/A

SHR Criteria g)
N/A

Intactness / Integrity
Good

Assessment Criteria

SHR Criteria a) This church is representative of spiritual and cultural practices of the community.

SHR Criteria b) N/A

SHR Criteria c) N/A

SHR Criteria d) N/A

SHR Criteria e) N/A

Recommended management

Statutory Instrument
List on a Local Environmental Plan (LEP)

Recommended Management
Consult with owner and/or community

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 12/12/2006 Date Updated:19/06/2007 Data Entry Status: Basic

Tamworth Heritage Inventory

Item Name **Bowling Alley Point Geological Site**

SHI Number **2471887**

Other Names/s

Group Name

Location Bowling Alley Point 2340 Tamworth Regional

Assessed Significance

Item Type

Group

Category

Themes

National	State	Local
3. Economy	Mining	(none)

Owner Local Government

Current Use

Former Use

Years **Circa** No

Designer

Builder

Physical Condition Good but modified by small scale mining in the past.

Modification Dates

Further Comments

Statement of Significance

The site is identified as a type locality for Type One texture chromitites, has the potential for furthe research, and is an important site to display outcrop of a rare mineral. It is one of a small number c localities where specimens of chromite ore can be readily observed.
The site is also of importance in the history of mineral exploration and extraction, being the first commercially viable chromite ores in Australia (Criteria A.4, B.1 and C.1).

Physical Description

The area encloses the northern slopes of Blackfellows Knob. Early geological reports indicated thic veins of chromite (an ore from which chromium is recovered) and the site was the first chromite mine in Australia. Only a small quantity of chromite was removed. The material is classed as a Typ One chromite characterised by single crystal chromite grains up to 1cm in diameter. There is still abundant chromite ore and the serpentinite with which it is associated scattered across the surface

Historical Notes

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 16/03/2007 Date Updated:19/06/2007 Data Entry Status: Basic

Tamworth Heritage Inventory

Item Name **Bowling Alley Point Geological Site**

SHI Number **2471887**

Other Names/s

Group Name

Location Bowling Alley Point 2340 Tamworth Regional

Assessed Significance

Images

Listings

Name	Number	Date
Register of the National Estate	16236	30/05/1995

References

Author	Title	Year
Register of the National Estate	Bowling Alley Point Geological Site	1995

Studies

Assessment Degree Criteria

SHR Criteria f)

It is one of a small number of localities where specimens of chromite ore can be readily observed.

SHR Criteria g)

Intactness / Integrity

Assessment Criteria

SHR Criteria a)

SHR Criteria b)

SHR Criteria c)

SHR Criteria d)

SHR Criteria e)

Recommended management

Statutory Instrument

List on a Local Environmental Plan (LEP)

State Heritage Inventory

Date: 2/05/2008 Date First Entered: 16/03/2007 Date Updated:19/06/2007 Data Entry Status: Basic

Place Details

new search edit search

Send Feedback

Bowling Alley Point Geological Site, Bowling Alley Point, NSW, Australia

Photographs	
List	Register of the National Estate (Non-statutory archive)
Class	Natural
Legal Status	Registered (30/05/1995)
Place ID	16236
Place File No	1/02/178/0003

Statement of Significance

The site is identified as a type locality for Type One texture chromitites, has the potential for further research, and is an important site to display outcrop of a rare mineral. It is one of a small number of localities where specimens of chromite ore can be readily observed.
The site is also of importance in the history of mineral exploration and extraction, being the first commercially viable chromite ores in Australia (Criteria A.4, B.1 and C.1).

Official Values Not Available

Description

The area encloses the northern slopes of Blackfellows Knob. Early geological reports indicated thick veins of chromite (an ore from which chromium is recovered) and the site was the first chromite mine in Australia. Only a small quantity of chromite was removed. The material is classed as a Type One chromite characterised by single crystal chromite grains up to 1cm in diameter. There is still abundant chromite ore and the serpentinite with which it is associated scattered across the surface.

History Not Available

Condition and Integrity

Good but modified by small scale mining in the past.

Location

About 10ha, 1.2km north-north-east of Bowling Alley Point, comprising the area enclosed by straight lines joining the following AMG points consecutively: 9135-III-S-'Nundle'-23762612, 23562600, 23822560, 24002570 and the commencement point.

Bibliography

BENSON, W.N., (1914). THE GEOLOGY AND PETROLOGY OF THE GREAT SERPENTINE BELT OF N.S.W. PART II, THE GEOLOGY OF THE NUNDLE DISTRICT. PROC. LINN. SOC. NS.W.,58, 569-96.
BENSON, W.N., (1915). THE GEOLOGY AND PETROLOGY OF THE GREAT SERPENTINE BELT OF NEW SOUTH WALES PART IV. PROC. LINN. SOC. N.S.W.

40, 121-173.
GOLDING, H.G., (1975). RELICT TEXTURES OF CHROMITITE FROM NEW SOUTH WALES. J. GEOL. SOC. AUST. 22 (4), 397-412.
PITTMAN, E.F., (1901). THE MINERAL RESOURCES OF NEW SOUTH WALES. GEOL. SURV. N.S.W., 281-93.

Report Produced Mon Jul 16 16:41:17 2012

Heritage Data Form

ITEM DETAILS						
Name of Item	Chaffey Dam					
Other Name/s Former Name/s						
Item type (if known)	Built					
Item group (if known)	Utilities - Water					
Item category (if known)	Water Supply Reservoir/ Dam					
Area, Group, or Collection Name	Major					
Street number						
Street name	Peel River					
Suburb/town	Tamworth			**Postcode**	2340	
Local Government Area/s	Tamworth City					
Property description	43 kilometres south-east of Tamworth					
Location - Lat/long	**Latitude**	31.20.828	**Longitude**	151.08.300		
Location - AMG (if no street address)	**Zone**		**Easting**		**Northing**	
Owner	State Water					
Current use	Major rural dam					
Former use	Farmland					
Statement of significance	The dam is of local significance for the following reasons: The dam's impact on the local economy The dam's impact on local agriculture. The dam's impact on the natural and cultural landscape The dam's social and recreational uses.					
Level of Significance	High Local					

DESCRIPTION						
Designer	Department of Land and Water Conservation					
Builder/ maker	Department of Public Works and Services					
Physical Description	Wall type: Earth and rock fill with clay core Spillway type: Glory hole or 'morning glory' Storage capacity: 62,000 megalitres Surface area: 5.4 square kilometres Maximum depth: 30 metres Catchment area: 420 square kilometres Main wall height: 54 metres Length of crest: 430 metres Maximum width: 200 metres It is a massive wall built of Jasper, a distinctive brick-red rock and a semi-precious stone A 'morning glory' concrete tower spillway that derives its name from a similarity in shape to the flower, incorporates the outlet control valves, which discharge water into a concrete conduit. Flood spills are also discharged through the conduit. It provides nearly 40,200 megalitres of water annually for irrigation, stock and domestic use. It provides valuable recreation such as swimming, sailing, boating, fishing, bushwalking, picnicking and camping. A public lookout and a field study centre have also been provided.					
Physical condition and Archaeological potential	The dam is in current use and is in an excellent condition.					
Construction years	**Start year**	1976	**Finish year**	1979	**Circa**	
Modifications and dates						
Further comments						

HISTORY	
Historical notes	In 1852, 2 prospectors picked out 5 ounces of gold with their pocket knives and started a gold rush to Bowling Point alley. For a brief span of time, fortune hunters swarmed the country and then departed, leaving in their wake a legacy of permanent settlement in the Peel Valley. Jasper in its purest forms well known to lapidaries is a semiprecious gemstone and perhaps this is the first time in history that that a dam wall has been built of such unique material. The dam's name pays tribute to the work done in the district by the former Parliamentary members for Tamworth, Captain Frank Chaffey and Mr. W.A. Chaffey. Reference: Kevin Jeffcoat, Major Rural Dams in New South Wales, p. 22 and Water Resources Commission, Chaffey Dam (brochure) The Chaffey Dam Act was passed in 1974 authorising the erection of a dam on the Peel River 43 kilometres south-east of Tamworth, in order to supply irrigation water for landholders along the Peel and supplement the water supply for Tamworth. The dam was a rockfill embankment dam with a clay core. Much of the rock used to construct the dam wall is jasper, a semi-precious stone abundant in the vicinity. The selected contractors commenced work in August 1976. Excavation of the foundation of the main wall was half-complete in June 1977. Cofferdams were well advanced at that stage. A main office was also operational by then. In June 1978, the main cofferdam and the diversion of the Peel River were complete and the river diverted. Chaffey Dam used an unusual "morning glory" spillway. The circular "glory hole" spillway was only used on four dams in Australia. In the "glory hole" spillway, water flows down a hole into a shaft, which leads to a ski jump. Such spillways have been found useful where the steep abutments of the dam make other types of spillway difficult to use. The earth and rock fill embankment was complete in June 1979 and the spillway and its outlets were nearing completion. Water storage commenced in June 1979. The Chaffey Dam was completed in September 1979. On 5 October 1979, it was officially opened by the NSW Premier, Neville Wran. Sources: WC & IC, Annual Reports, 1977-80 Reference: Terry Kass, Historian & Heritage Consultant, April 2002, Site Histories of 15 Dams in New South Wales, p.7

THEMES	
National historical theme	3.8.4 Making economic use of inland waterways 3.11.3 Altering the environment 3.11.3 Irrigating Land 3.11.5 Establishing water supplies 4.5 Making settlements to serve rural Australia
State historical theme	5 Agriculture 10 Townships 19 Technology 15 Utilities Accommodation
Local historical theme	Controlling rural water supply Developing irrigation schemes

APPLICATION OF CRITERIA	
Historical significance SHR criteria (a)	The dam is significant at a local level because of its impact of the local economy and agriculture.
Historical association significance SHR criteria (b)	The dam has historical association with the NSW Premier, Neville Wran who opened it in 1979.
Aesthetic significance SHR criteria (c)	The construction of the dam has had a high impact on the aesthetic values on the rural landscape and has developed a new aesthetic, which is highly valued by the local community for recreation purposes.
Social significance SHR criteria (d)	The dam has had a social impact on the city of Tamworth providing employment and resources that have had a positive impact on the local community.The dam provides a recreational resource for the area
Technical/Research significance SHR criteria (e)	The dam is built of a semiprecious gemstone, Jasper.
Rarity SHR criteria (f)	
Representativeness SHR criteria (g)	
Integrity	The dam has a high level of integrity.

HERITAGE LISTINGS	
Heritage listing/s	None

INFORMATION SOURCES

Include conservation and/or management plans and other heritage studies.

Type	Author/ Client	Title	Year	Repository
	Terry Kass/For NSW Department of Public Works	A Thematic History of 15 Dams in New South Wales	2002	Heritage Design ServicesDepartment of Public Works and Services
Written	Terry Kass/For NSW Department of Public Works	Site Histories of 15 Dams in New South Wales	2002	Heritage Design ServicesDepartment of Public Works and Services
Written	Terry Kass/For NSW Department of Public Works	A Design History of Dams in NSW with Emphasis on Embankment Dams	2002	Heritage Design ServicesDepartment of Public Works and Services
Written	Kevin Jeffcoat	Major Rural Dams in New South Wales		State Water, Department of Land and Water Conservation
Written	Water Administration Ministerial Corporation	Consultancy Agreement No 3291, Consultancy for Heritage Assessment – 15 Major Dams	2001	State Water, Department of Land and Water Conservation
Written	Department of Water Resources	Summary of Dam Data	1988	State Water, Department of Land and Water Conservation

RECOMMENDATIONS	
Recommendations	The dam should be included in the Local Government Heritage LEP.

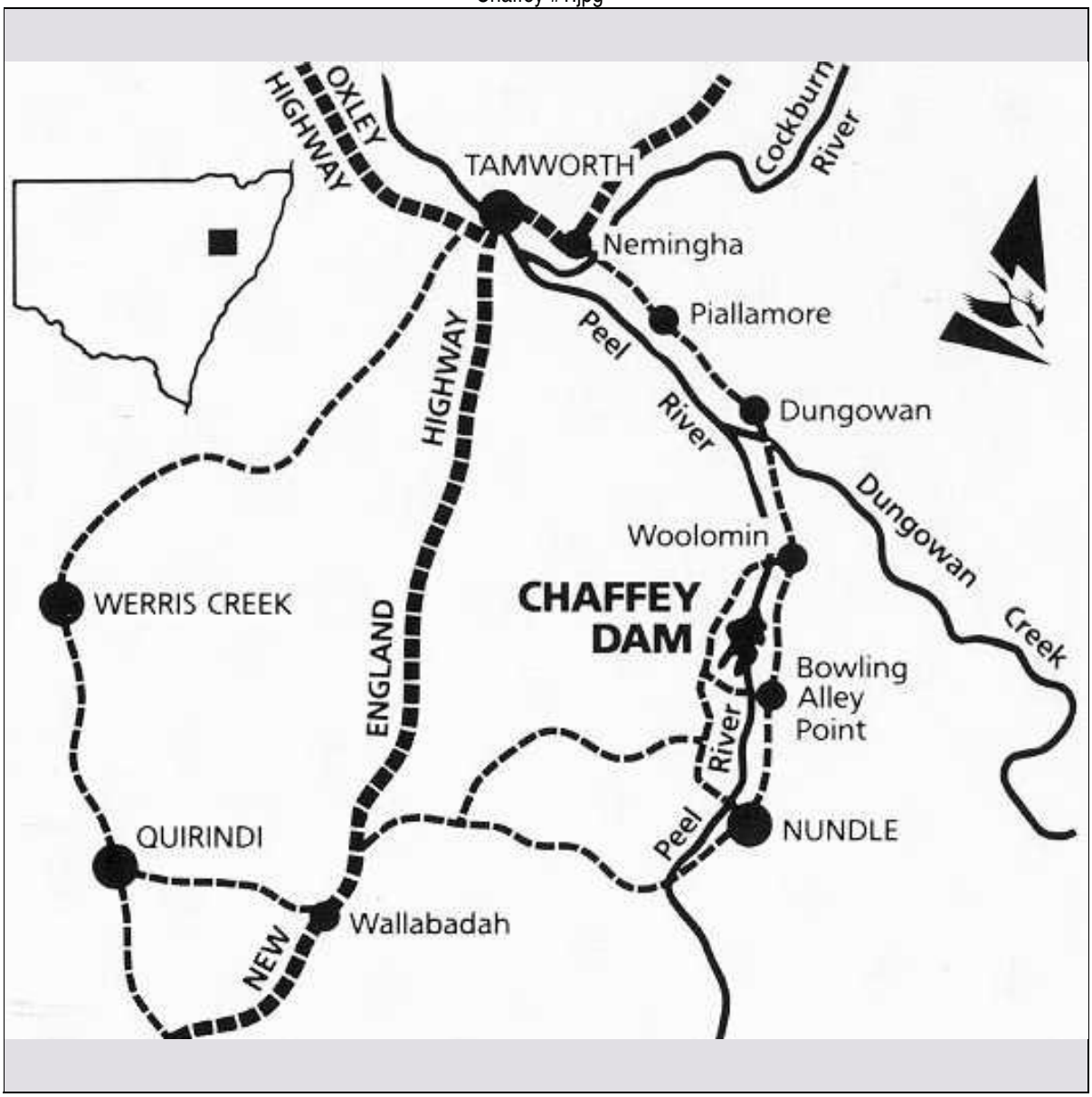
SOURCE OF THIS INFORMATION			
Name of study or report	State Water Section 170 Register 15 Major Rural Dams	**Year of study or report**	2002
Item number in study or report	M05		
Author of study or report	David McBeathHeritage Design Services, NSW Department of Public Works		
Inspected by	David McBeath		
NSW Heritage Manual guidelines used?		yes	
This form completed by	Philip Atkinson	**Date**	1/10/2005

IMAGES					
Image caption	Chaffey Dam Embankment Wall and Spillway				
Image year	2002	**Image by**	David McBeath	**Image copyright holder**	Heritage Design Services, DPWS

Chaffey #3.jpg

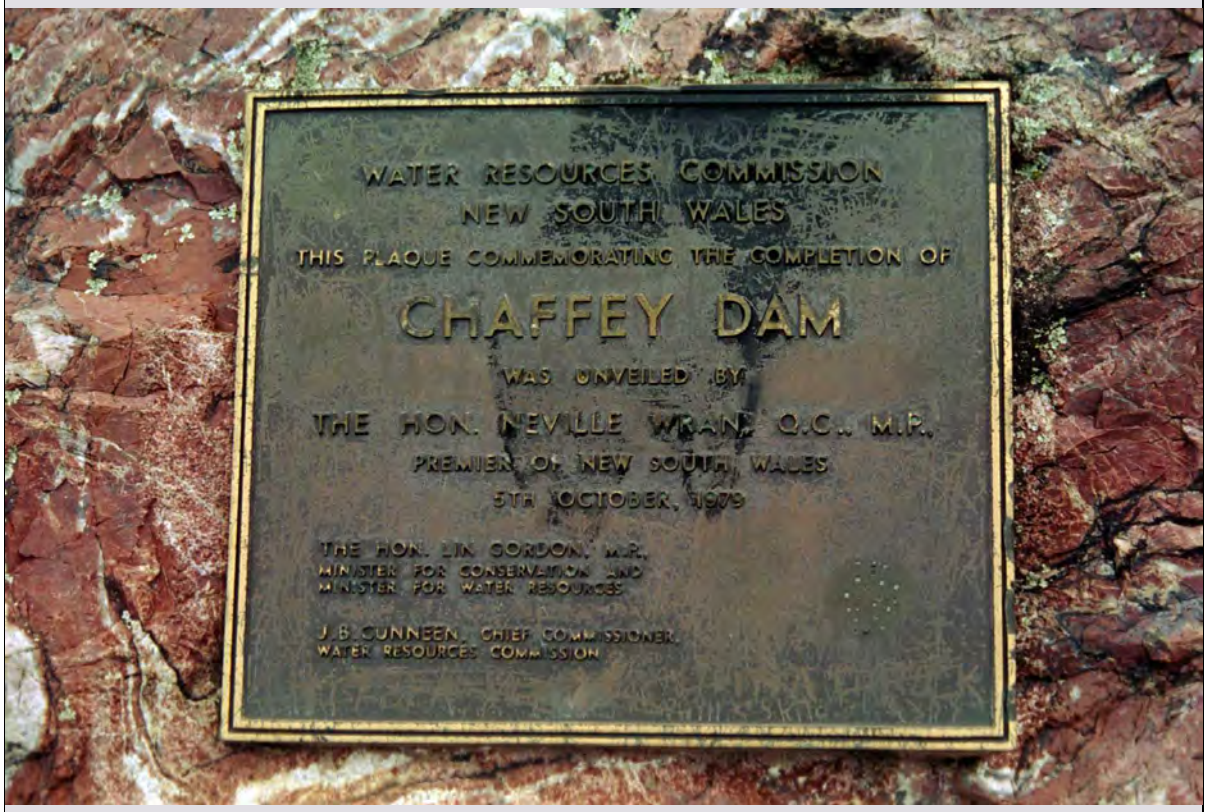
IMAGES					
Image caption	Chaffey Dam Location Map				
Image year		**Image by**	Kevin Jeffcoat in Major Rural Dams in New South Wales	**Image copyright holder**	

Chaffey #1.jpg



IMAGES					
Image caption	Plaque Commemorating the Opening of Chaffey Dam				
Image year	2002	**Image by**	David McBeath	**Image copyright holder**	Heritage Design Services, DPWS

Chaffey #2.jpg



Appendix 2: Location Plan - Heritage Items

322000

324000

6528000

6526000

N

IRON FOOTBRIDGE

BOWLING ALLEY POINT CEMETERY

BOWLING ALLEY POINT GEOLOGICAL SITE

BOWLING ALLEY POINT SCHOOL

UNITING CHURCH

LEGEND

- LISTED HERITAGE ITEM (TAMWORTH REGIONAL LOCAL ENVIRONMENTAL PLAN 2010)
- HERITAGE ITEM LOT (CADASTRE 05.07.2012)
- ROAD REALIGNMENT
- ROAD REALIGNMENT BATTERS
- WORKS AREA
- SW_Road_Works_Area_20120810
- PROPOSED BRIDGE
- EXISTING FULL SUPPLY LEVEL
- NEW FULL SUPPLY LEVEL
- NEW 1 IN 100 YEAR FLOOD LEVEL
- NEW PROBABLE MAX FLOOD LEVEL

AERIAL IMAGERY BY GEOSPECTRUM (TAKEN 29.08.2011). ALTERNATE IMAGERY BY BING

INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION

322000

324000

6528000

6526000

WorleyParsons

resources & energy

State water

N

0 0.25 0.5

Kilometres @ A3

Datum : GDA94
Map Grid of Australia
Zone 56

LOCATION PLAN

CHAFFEY DAM AUGMENTATION AND SAFETY UPGRADE

HISTORIC HERITAGE

DATE : 06 Sep 2012
SCALE : 1:12,000
CUSTOMER : STATE WATER
AUTHOR : RW
REF : 301015-02980-GIS-SKT-002.mxd
REV : A2

Produced By: ryan.wright@worleyparsons.com - Geomatics

Location: ..\301015-02980 CHAFFEY DAM\03Project\Workspace_SKT\301015-02980-GIS-SKT-002