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FIGURES

23. NON INDIGENOUS CULTURAL HERITAGE

This section addresses Section 3.11 of the ToR and describes the non-indigenous cultural heritage and history of the Project area, as well as potential impacts and mitigation measures. A technical report providing more detailed descriptions was produced by Converge (2008) and is included as Appendix 23-A.

23.1. Description of non-indigenous cultural heritage values

23.1.1. Regulatory framework

23.1.1.1. Commonwealth legislation

The *EPBC Act 1999* (EPBC Act) is the key national heritage legislation, and is administered by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPC). The EPBC Act provides a number of statutory and legislative controls for heritage places. In particular, the National Heritage List and the Commonwealth Heritage List apply to places of national heritage value and to those owned or managed by the Commonwealth.

The *Australian Heritage Council Act 2003* (AHC Act) provides for the establishment of the Australian Heritage Council, which is the principal advisory group to the Australian Government on heritage issues. The AHC Act provides for registration of places considered of national significance on the National and Commonwealth Heritage Lists, the administration of Register of the National Estate (RNE) and the Australian Heritage Places Inventory (AHPI). The Minister for the Sustainability, Environment, Water, Population and Communities is required to consider the RNE when making some decisions under the EPBC Act.

23.1.1.2. State legislation

The aim of the *Queensland Heritage Act 1992* (QH Act) is to conserve Queensland's historic heritage. The Act provides for the establishment of the Queensland Heritage Council and the Queensland Heritage Register, which lists places of cultural heritage significance to Queensland, and regulates development of registered places. A place may also be entered in the register if it satisfies one or more of the assessment criteria under Section 35 (1) of this Act.

Under the provisions of the QH Act, any development of a place listed on the Queensland Heritage Register must be done in accordance with the QH Act.

Development to a registered place, unless it is emergency work or is covered by a General Exemption, requires approval by the Department of Environment and Resource Management (DERM). Approval may be obtained by lodging an application for an exemption certificate or lodging a development application. All applications for works to places of state significance will be assessed through Integrated Development Assessment System (IDAS). The sites within the Project area which are listed on the Queensland Heritage Register are subject to these provisions.

The QH Act enables work that has no impact on the cultural heritage significance of a registered place to be approved and undertaken under an exemption certificate. The work will not require further approval from the DERM within the IDAS once an exemption certificate has been issued. There are a great number of development activities that may be covered by exemption certificates.

Under the QH Act, these activities are grouped into six categories:

- maintenance work;
- minor repair work;
- other minor work;
- development genuinely required for liturgical purposes;
- development permitted under a heritage agreement; and
- development that would have no impact on the cultural heritage significance of the place.

For work to have no impact on the cultural heritage significance of a place it must not destroy or otherwise damage what is valued about that place. This work may be of a larger scale or scope than minor works because of:

- where it is (e.g. not involving important fabric or an important part of the site); or
- the way it is detailed; or
- it may also be of a temporary nature.

The sites within the Project area which are listed on the Queensland Heritage Register are subject to these provisions.

An amendment to the QH Act in April 2008 applies to how archaeological items and places of local heritage significance are dealt with under the QH Act:

- under section 60 places may be considered to be 'archaeological places' if not registered as a State heritage place and are considered to have 'potential to contain an archaeological artefact that is an important source of information about Queensland's history' (s. 60 (b)). Archaeological places can be entered onto the register if they meet those criteria;
- section 89 requires a person to advise the Chief Executive Officer of the Environmental Protection Agency of an archaeological artefact that is an important source of information about an aspect of Queensland's history. This advice must be given as soon as practicable after the person discovers the item; and
- section 90 stipulates that it is an offence to interfere with an archaeological artefact once notice has been given of the artefact to the Chief Executive Officer.

Any sites within the study area which are assessed as archaeological places are subject to these provisions.

23.1.1.3. Local government legislation

Section 113 of the QH Act also requires local government authorities (LGA) to keep a *local heritage register* of places of cultural heritage significance in the area.

Section 121 of the QH Act provides for the integration of State and local government assessment and approval processes for development on a local heritage place through the Integrated Development Assessment System (IDAS) under the *Sustainable Planning Act 2009* (SP Act) which replaced the *Integrated Planning Act 1997*.

The sites within the Project area which are listed on any of the LGA Heritage Schedules are subject to these provisions.

At the time of Converge's assessment neither Banana Shire Council (BSC) nor Western Downs Regional Council (WDRC) maintained a statutory list of historic heritage places. However, the development of a local register is identified as a target outcome in the *Draft Banana Shire Council Environmental Management Plan* (BSC, 2010). Prior to amalgamation, the only items of cultural heritage listed in the former shire councils' planning schemes were cemeteries and burial sites.

23.1.2. Methodology

An assessment of the non-indigenous cultural heritage values of the Project Area was undertaken by Converge (2008). A detailed description of all stages of the methodology is included in the technical report included as Appendix 23-A.

This assessment involved two phases; Phase One being a desktop assessment and Phase Two being consultation and field surveys.

The Phase One assessment undertaken by Converge covered the dam and surrounds and two alternative pipeline routes. The final pipeline alignment is included within the 5km buffer of the Option 2 pipeline route assessed by Converge. The Phase One assessment included:

- research of the contextual history (Section 23.1.3) of the broader region, surrounding and including the Project Area, in order to recognise key themes and historical cultural heritage values;
- register searches within a 5 km buffer zone around the direct impact area (dam and surrounds, and pipeline); and
- review of aerial photography, in view of the fact that registration of historical heritage sites in rural areas is sparse.

The Phase Two assessment involved:

- consultation with landowners at the stations of Malara, Jarwood, Bundulla, Moorang and The Glebe;
- visual assessment (field survey) to 'ground-truth' the areas identified of historical interest during the Phase One assessment;
- an assessment of significance:
  - for all historic structures or places, using criteria included in the QH Act; and
  - highlighting any local issues for historic heritage with recommendations being made; and
- development of mitigation measures and management strategies.

Due to access issues, the field survey undertaken by Converge did not include the section of the final pipeline route, marked on Figure 23-2, where the alignment heads cross-country between Wandoan and Chinchilla. As the possibility exists that unknown sites may be present in this area, a cultural heritage survey of this section of the pipeline route will be undertaken during the detailed design phase. If any places or sites of cultural heritage significance are encountered, significance assessments and management plans will be developed in accordance with relevant legislation.

23.1.2.1. Register Searches

Searches were made of all statutory and non-statutory heritage registers and databases:

- World Heritage List;
- Australian Heritage Places Inventory;
- National Heritage List;
- Commonwealth Heritage List;
- (former) Register of the National Estate;
- The Queensland Heritage Register;
- Local Heritage Registers; and
- Register of the National Trust of Australia (Qld).

With the exception of Dalby, each of the former councils in the Study Area maintained a heritage register in their respective Planning Schemes prior to amalgamation. The only items listed in the heritage registers of the former councils were cemeteries and burial sites.

23.1.2.2. Consultation

Consultation was undertaken with landowners at the stations of Malara, Jarwood, Bundulla, Moorang and The Glebe. Further information on this consultation can be found in Appendix 23-A.

Consultation has been undertaken with the Juandah Heritage Society as part of the Project. No other historical societies have been identified associated with the Project Area or local community.

The Juandah Heritage Society owns 5 ha of land adjacent to the pipeline route (east of Wandoan). The society is currently preserving and interpreting the former Juandah Homestead. The site is not listed on any heritage registers but the site provides information on the history of the Wandoan area. Representatives of the society have consented to land access for project investigations, however have identified potential cultural issues to be considered.

SunWater has met with DERM to discuss proposed mitigation measures and activities related to the Glebe Homestead and the Taroom Aboriginal Reserve (also known as the Taroom Aboriginal Settlement). This consultation is detailed further in Section 23.1.4 and 23.2.2.

SunWater met with DERM and a representative from the Queensland Heritage Council to discuss the EIS and impacted sites. The process for the development of the archaeological management plans and approach to recommendations and management of the sites was discussed. It was agreed that once site specific studies have been completed, the reports including management recommendations will be put forward to the council for their consideration.

23.1.2.3. Determining cultural heritage significance

The assessment contained in this report was prepared in accordance with the principles of the Burra Charter (ICOMOS Australia 1999) and the QH Act (including subsequent amendments). The study area comprises a large area of land and

while it was not possible to prepare a statement of significance for the entire area, each site or precinct identified during the various phases of the Project has been assessed for its level of heritage significance so that appropriate impact assessment can be completed for the Project.

The following assessment criteria used for this report are outlined below:

- Criterion a - The place is important in demonstrating the evolution or pattern of Queensland's history;
- Criterion b - The place demonstrates rare, uncommon or endangered aspects of Queensland's cultural heritage;
- Criterion c - The place has potential to yield information that will contribute to an understanding of Queensland's history;
- Criterion d - The place is important in demonstrating the principal characteristics of a particular class of cultural places;
- Criterion e - The place is important because of its aesthetic significance;
- Criterion f - The place is important in demonstrating a high degree of creative or technical achievement at a particular period;
- Criterion g - The place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and/or
- Criterion h – The place has a special association with the life or work of a particular person, group or organisation of importance in Queensland's history.

23.1.2.4. Determining archaeological significance

Archaeological significance is defined under the QH Act as 'a place which has the potential to contain an archaeological artefact that is an important source of information about Queensland's history'. Archaeological assessments consider a site's potential to provide information about the past. Generally, the following framework is used when assessing archaeological significance as part of Criterion c (research significance):

- can the site contribute information about Queensland history that no other sources can (e.g. documentary source, photo or oral recollection);
- can the site contribute information about Queensland history that no other archaeological site can (i.e. how rare is the site's information); and
- can the site contribute to contemporary research questions about Queensland history?

23.1.2.5. Sites of historic interest

Several sites identified during the field survey were categorised as sites of historic interest (HI). It was determined that these sites did not contain enough value to warrant further investigation. These sites, nonetheless, were considered important enough to describe because they provided an insight into the settlement and land use of the region and therefore assisted discussions relating to the historic value of the landscape and the potential for further sites of cultural heritage value to exist within the study area.

23.1.3. Contextual history

The following historical discussion is sourced from the report prepared by Converge, attached in Appendix 23-A. This summary is not intended to be a complete history of the present study area (dam and surrounds, and associated pipeline). It is intended to provide a contextual background for the identification and assessment of historical cultural heritage sites, places and features relevant to the planning and construction of the proposed Nathan Dam.

The proposed storage area and pipeline route covers a large area and some of the themes identified in this contextual history are more relevant for particular areas rather than the entire study area. As such, discussion of particular themes is concentrated for some areas and given only a brief mention in others. In particular, the history of pastoral activities is much more important for the proposed storage area, as this will take in a number of large pastoral properties. The majority of the pipeline route, however, follows road and rail corridors, and thus is more affected by the introduction of transport infrastructure and the development of towns that sprang up alongside this infrastructure.

23.1.3.1. Exploration

As with most inland districts of Australia, the members of an exploration party were the first non-indigenous travellers to traverse the landscape of both the Darling Downs and the Dawson River. Exploration was an important colonial activity, both to establish the basic geography of the Australian continent and to identify basic natural advantages such as watercourses, arable land and grazing country. The routes taken by the early expeditions often followed Aboriginal pathways and consequently confirmed these paths as the first transport corridors for the horses, carts, drays and livestock of the first European 'settlers'. The two explorers relevant in the study area are Allan Cunningham, the first European to discover the Darling Downs and Ludwig Leichhardt, who was the first European to enter the region around the Dawson River.

Allan Cunningham was an explorer and naturalist who first arrived in Australia in 1816. He explored much of the area around Sydney and to the north as far as the Hunter River. In 1827, Cunningham undertook an expedition north of the Hunter River and discovered the Darling Downs. Cunningham described the landscape in glowing terms: 'The downs…permanently watered, present flats, which furnish an almost inexhaustible range of cattle pasture at all seasons of the year'. Beyond the flat country, wrote Cunningham, 'rise downs of a rich black, and dry soil, and very ample surface; and as they must furnish an abundance of grass, and are conveniently watered…they constitute a valuable and sound sheep pasture' (Quoted in French 1994: 28).

Ludwig Leichhardt, on the other hand, was determined to discover a route between the Darling Downs and Port Essington (Darwin). He and his party set out from Jimbour Station in 1844 and passed through much of the land covered by the study area and by November that year, shortly after his 31st birthday, Leichhardt encountered a stream which he named the Dawson River. It seems likely that Leichhardt had in fact encountered Roche Creek, a tributary of Juandah Creek, near the modern property 'Wongalea'. After several days following the watercourses, observing natural features and vegetation, the party skirted the site of the modern township of Taroom between November 12 and 14 and encountered the true watercourse of the Dawson River on the 13th (Bahnisch and Stiller, 2003: 30).

A day earlier, Leichhardt and Gilbert climbed a hill just north of the modern township of Taroom that provided a clear view of the surrounding district. Gilbert's description was the first recorded account of the Dawson Valley. He wrote: 'One of the most beautifully picturesque and extensive scenes met our anxious gaze… the high ranges rose up and

formed a beautiful background to the most pleasing natural picture we have seen' (cited in Fox, 1959: 14). The published accounts of the expedition contain significant descriptions of the local landscape, vegetation and fauna. The Lynd, Gilbert and Murphy Ranges were also named at this time, as well as Palm Tree Creek, Robinson Creek and the Expedition Ranges.

23.1.3.2. The beginnings of pastoralism

Pastoralism was the first significant European activity in those lands traversed by explorers. The first major location of pastoral activities was the Darling Downs. It was thirteen years before the squatters made their way to the Downs after Cunningham's discovery, principally because of the difficulties of communication with scattered settlements and transportation of wool for export. The beginning of the pastoral industry in the region began in 1840 with the arrival of the Leslie brothers: Patrick, Walter and George, who took up a large swathe of land. This area was split up amongst the brothers and became the first stations in the district. By 1848 there were 49 pastoral stations on the Darling Downs (Matthews 1988: 6-7). Some of these covered up to 100,000 acres and the most well-known stations were Jondaryan and Jimbour.

The first encroachment of pastoralism in the Taroom and Wandoan districts followed closely on the heels of Leichhardt and his party. The tributaries around the Dawson River offered reliable water for the first generation of squatters keen to run their sheep flocks. Consequently the first pastoral properties were taken up alongside lagoons and larger creeks, as license holders or applicants brought in flocks of sheep overland and pastured them in large unfenced paddocks.

Taroom Station (the name was believed to identify a local lime tree) was leased by William Turner as early as 1845 (Fox, 1959: 21) and then Richard Watson from around 1848, followed by the 55-year old widower William Yaldwyn in the mid-1850s. Taroom Station developed quickly as a major property, especially after Yaldwyn took his seat as a member of the Queensland Legislative Council in 1860. At around this time, to avoid confusion with the growing township of the same name, Taroom Station became known as 'Carrabah' (Randell 1980). Over this period a substantial number of pastoral runs were established in the district including a vast 23,000 acre run of prime grazing land named 'Juandah' (in which the township of Wandoan was eventually established). Juandah Station took in over 700 square miles and, like Taroom Station/Carrabah, was a major centre of the Central Queensland pastoral economy. Thus a bustling pastoral district, dotted with homesteads, shepherd's huts, holding paddocks and crisscrossed by dray tracks was established less than two decades after Leichhardt and his party had passed through.

23.1.3.3. Frontier conflict

Pastoral expansion into the Dawson inevitably incited conflict between the European intruders and the Indigenous owners of the land. Valuable water holes and watercourses were essential to the success of grazing, but European incursion diminished local game and deprived local Aboriginal communities of access to food resources and sacred or ceremonial sites. On the other hand, the squatters' livestock provided an alternative and apparently plentiful food source, and so Aboriginal raids on sheep pens became commonplace, occasionally accompanied by attacks on the shepherds and outstations themselves. Squatters had little tolerance for such attacks on their property and employees, and consequently, as elsewhere, a state of intermittent conflict occasionally sliding into open warfare developed on the Dawson frontier (Reynolds, 1987: 42).

By 1848 the tribes of the Burnett, Auburn, Condamine, Dawson and Maranoa river districts were in open warfare with settlers. Accordingly, the NSW colonial government sent a detachment of Native Mounted Police (NMP) under Captain Frederick Walker to set up depots at various locations across the Leichhardt Pastoral District. Their official task was to maintain law and order, but in practice the punitive patrols and raids of the NMP brought death and devastation to traditional Indigenous communities on the Dawson. Campsites were attacked and violently 'dispersed' by NMP patrols and miscreants and the innocent were alike punished for any trouble, real or perceived (Reynolds 1987: 18; Rowley 1970: 157-168).

The NMP's presence at frontier districts like the Dawson River in the 1850s was partially in response to, and partly a cause of, a brutal cycle of retribution and further violence. An infamous attack on the Queensland colonial frontier was that at Hornet Bank station to the west of the present study area in late 1857. A party of armed warriors of the Jiman attacked the homestead early in the morning of October 27th and killed eleven Europeans: Mrs Fraser and her four daughters, three of her sons, a tutor and two shepherds. These events set the pattern for bloodshed and intermittent violence on the Dawson that was often quite arbitrary and continued for some years.

It is not possible to estimate the true extent of Aboriginal deaths as the result of the 'vigilante' raids and subsequent sporadic violence, but in later years eyewitnesses reported 'enough [human] bones at Carrabah to fill a dray.' (Fox 1959: 45-6). One local story, for example, reports that a raid on Juandah station by local Indigenous people following the Hornet Bank massacre led to a pitched battle and the deaths of approximately 150 Aborigines. These were buried on a ridge west of the homestead.

23.1.3.4. Pastoral developments: 1860s-1920s

By the mid-1860s most of the land suited to pastoral grazing on the Darling Downs and the Dawson River had been occupied. However, a run of droughts was topped by serious financial depression, and a number of debt-ridden properties were foreclosed and came into the hands of the banks.

The great lease-holding pastoralists on superior holdings also found their privileges threatened by free selection as a result of the Survey Law, which was passed in 1861. This law allowed anyone who could afford £1 per acre to select up to 320 acres of Crown land wherever they liked. Squatters responded to this by registering 'dummy runs' in the names of accomplices (Bull 1960: 5). A further blow to some squatters came with the Lands Act of 1868, under which the government took half the acreage of stations in the settled districts, and cut the resumed portions into farming blocks. This heralded the transformation from a purely grazing economy across Southern and Central Queensland to one of mixed grazing and farming combined with closer settlement, a move which was to receive its greatest momentum around the beginning of the twentieth century (Bull 1960: 5). Nevertheless many of the holdings remained vast by modern standards.

Meanwhile, by the mid -1870s a significant change had occurred as most pastoralists on the Dawson no longer ran sheep. The majority of the large stations in the Taroom District joined the shift to cattle that was typical of Central Queensland pastoralism at this time (Fox: 1959: 52). A basic reason for the shift to cattle underlined the environmental impacts of European-style pastoralism: the initial flocks of sheep had eaten out the native grasses without allowing time for them to seed, and spear grass had gradually taken over making the land unsuitable for sheep. This combined with drought, fires and threats from dingoes, helped encourage the shift from sheep to cattle (Johansen 2004: 17; Cutler 1977: 1-1).

The success of the pastoral industry in the district was contingent on rain, pests and disease. On Juandah, for example, some 80,000 sheep died in drought conditions, prompting the owners to sell their remaining sheep, convert to cattle, and then sell the lease to the Beechworth storekeeper John Moore in 1883-84 (Rechner 2005: 12-13). Moore in turn suffered losses during the great Federation drought that finally broke on the last day of 1902. By that time, Moore had reputedly lost 20,000 head of cattle and he himself died shortly afterwards (Woodside 1997: 20-1). Prickly pear then took hold at Juandah, and the cost of clearing it from the 285,400 acres of the total holding was estimated at £524,800. Cattle tick was also a significant problem. Throughout the district and region as a whole, stock losses were so great that it took until the end of World War I for cattle numbers to recover (Johansen: 2004, 18).

With better economic conditions and improved management and agricultural techniques, cattle numbers continued to increase during the 1920s. By the middle of that decade Central Queensland had more beef cattle than any other part of northern Australia (Johansen 2004: 19).

23.1.3.5. Townships

A number of settlements and townships are present in the study area, particularly along the proposed pipeline routes. A number of small townships located along the Warrego Highway, and several settlements located along the Leichhardt Highway between Miles and Wandoan, are treated separately as they were established principally as rail sidings in the early twentieth century.

Dalby

The township of Dalby was surveyed in 1854, five years before the separation of Queensland from New South Wales. The first land sales took place three years later in 1857 (Matthews 1988: 11). Dalby developed as a key settlement in the Darling Downs region and, as a result, the colonial government developed a plan for a rail line connecting Dalby with Toowoomba in 1864; the line was completed in 1867 (the rail line is considered in more detail below). The town was largely defined by the pastoral activities that occurred around it in the latter half of the nineteenth century; attempts were made at diversifying the local economy, but these generally failed 'because of the walling-in of the town by big holdings' (Matthews 1988: 33).

This situation gradually began to change toward the end of the nineteenth century and into the beginning of the twentieth. Much of this change was driven by the various land acts that continued to break up the larger pastoral holdings in an effort to encourage closer settlement and agricultural pursuits. Much of the pastoral land was turned over to dairy cattle and agriculture (particularly wheat) and these activities steadily came to dominate the fortunes of the town in the twentieth century (Matthews 1988: 40).

Chinchilla

The township of Chinchilla was surveyed in 1877. This was only one year before the rail line was constructed to Chinchilla, indicating the significance of rail to the establishment of the town (Hando 1994: 10). One of the principal reasons for the selection of the town at its present site was the availability of water from the Charley's Creek, which was important for the running of the steam engines that drove the trains in this period (Barron 1978: 6). The rail line remained important to the fortunes of the town; according to one history: 'Chinchilla, because of its geographical position, has always been a depot. It has carried train crews, station and shunting staff' (Barron 1978: 8).

Like the other settlements examined in this history, the push for closer settlement by successive Queensland governments helped increase the population of Chinchilla. The township experienced rapid growth in the early twentieth century and the land, once occupied primarily by sheep or beef cattle, was increasingly turned to other industries such as dairying and agriculture. The timber industry also had a large impact on the town. Sawmills were established to take advantage of the rich sources of hardwood in the area, much of which was milled for rail extensions and rail maintenance. The demand for milled wood led to the creation of a government-owned mill at Barakula (north of the township), which was opened in 1912. Logging and the associated sawmilling industry played an important role in the economic activity of Chinchilla through much of the twentieth century (Barron 1978: 39).

One notable event in the history of the town was the destruction from fire of most of the buildings on Chinchilla Street, directly across from the rail station, in 1922.

Wandoan

The push towards closer settlement in the Dawson River district at the end of the nineteenth century resulted in survey and planning of the town settlement in the vicinity of the existing pastoral centre at Juandah in 1902. The first settlers began arriving soon after, though the first sale of town land did not occur until mid-1913 (Fox 1959: 124). Thirty-five town allotments were purchased on June 7 that year (Woodside 1997: 53).

A branch railway line was planned to Wandoan in the early 1900s and it reached Juandah in 1914. It proved a great stimulus to development in the town, with shops, hotels, post office, police station and Lands Office appearing in its wake. The official name change from Juandah to Wandoan occurred in 1927, primarily to recognise the township's distinct identity apart from the old pastoral station on which land it was situated.

Settlements also sprung up along the new branch line, such as Guluguba, Giligulgul and Gurulmundi. These settlements developed around rail sidings and varied in size, but all were relatively small. Services provided in the settlements included post offices, butchers and general stores. The establishment of schools provides an indication of the growth of the settlements along the line in this period: Guluguba was opened in 1917 and Gurulmundi in 1928. The majority of the settlers at Gurulmundi relied for their livelihood on a local timber mill. The school closed in 1965.

Taroom

Taroom was the original major township in the district close to the proposed storage area of the Nathan Dam. It began as a junction of bush tracks that were in use by the time the Leichhardt Pastoral District was proclaimed in 1854. One road roughly followed Leichhardt's path over the Great Divide to Juandah Creek, while another passed through Cockatoo Creek and over the Auburn Range to Burnett's Inn (Gayndah) a route now approximately followed by the Cracow Road. Wool was carted along another track from Roma via Taroom to Banana Station, Rannes and from there to Rockhampton. A mail route, meanwhile, was opened between Condamine and Taroom in 1853. The township also served as a transport junction and as a staging post between Roma and Rockhampton.

The township therefore came into being as 'a direct and natural response to the need of the local dispersed farming [i.e. pastoral] population for a small servicing centre – with simple commercial, transport and communication functions' (Dick 1960: 9). It had a post office by 1856 (one of the earliest settlements in Queensland to do so, after Brisbane, Ipswich, Roma and Condamine) and, by 1858, had been declared as a place for Petty Sessions as part of a large Police District

embracing Leichhardt and Port Curtis. A rudimentary courthouse, lockup and adjacent hut for the constable were erected, and local pastoralists such as W.H. Yaldwyn, J. Scott, H.C Gregory, E.M. Royds, C. Royds and G.P. Serecold served as magistrates (Fox 1959: 35).

The town was surveyed by Clarendon Stuart in 1860, and sale of the first town allotments held on 25 June the following year. The population of Taroom at this time was 44 males and 19 females (Hardy 198?). Only four 'suburban' allotments were sold at that time, but the local mood remained positive. By 1864 the population had grown to some 188 men and 68 women. A number of Chinese men had also been employed as shepherds and remained in the district engaged in other occupations. The telegraph line was in operation at the end of 1865, after which Taroom served as the major 'repeating office' for the region as the telegraph services spread further north. Thereafter the township consolidated as the hub of a generally busy and prosperous pastoral district.

Taroom Aboriginal Reserve (now listed as the Taroom Aboriginal Settlement)

During the era of closer settlement, the Taroom district was also the scene for an early experiment in the Queensland Government's Aboriginal policy. Under the *Aboriginals Protection and Restriction of the Sale of Opium Act 1897*, persons of Aboriginal descent considered vulnerable or otherwise incapable of independent means could be removed by officials to a reserve, mission or government settlement. The policy was based on the ideas of Archibald Meston, as summarized by L'Oste-Brown and Godwin 1995: 4-5.

"In 1897 he concluded that the 'wild tribes' who had had little contact with Europeans, should be allowed to continue in their traditional lifestyle. Tribes who had been affected by the European presence, including those affected by the policy of 'dispersal' [typical of the era of frontier conflict], on the other hand, needed government assistance and protection. Therefore he recommended that Aborigines should be isolated from this harmful contact and placed into a series of reserves. In particular, he stated that these reserves should provide a residence for those Aborigines who had succumbed to drink, opium, vagrancy, prostitution or other forms of anti-social behaviour. Meston hoped that through this segregation, Aborigines might be restored to his idea of their pristine, traditional state." (L'Oste-Brown and Godwin 1995: 4-5).

The Taroom Aboriginal Reserve and Government Settlement was established at a site of some 1509 acres, later occupied by the property 'Bundulla' on the Dawson River, some nine miles east of Taroom in 1910. 'By the end of 1911 about 200 Aboriginals were apparently living on the Reserve. Initially they came from the camp on Bonners Knob and from camps along the Dawson and Palm Tree Creek [and] some were removed from their camps on stations.' (Rechner 2005: 226). By the time the settlement reached its peak population in the mid 1920s, its residents had been incarcerated there from as far afield as Cooktown, Windorah, Mitchell, Roma and Rolleston. Conditions were very basic on the settlement; rations were meagre and dormitory comforts were minimal. Some residents worked as stockmen, station hands and domestic servants on neighbouring properties but others had few opportunities for employment or social interaction.

Forde suggests that the settlement had an extremely high death rate by disease, pneumonia and 'senile decay', citing figures that suggest that between 1912 and 1923 some 447 Aborigines were removed to the Taroom settlement, but that the population in 1925 was only 265 despite further additions by removal from elsewhere (Forde 1990: 16). The influenza epidemic of 1919, for example, killed some 32 residents of the settlement including the European superintendent.

After further land was added to the reserve, it occupied some 6,650 acres of pastoral land, thickly infested with prickly pear, but was intended to be self supporting. Wheat and other crops were grown along the Dawson frontage, along with a citrus orchard, melons and vegetables. With the proposal for the Dawson Valley Irrigation Area (see below) gathering steam in the mid-1920s, the settlement was re-located to Woorabinda in Central Queensland in 1927.

23.1.3.6. Challenges to closer settlement

Three major impediments to closer settlement in the study area in the first decades of the twentieth century were the difficulties faced by the district's relative isolation and lack of transport infrastructure, the limited and unreliable supply of water beyond the regular rivers and streams, and the presence of biological pests such as the prickly pear. The last of these was solved dramatically in the late 1920s, but the other difficulties have remained persistent and have decisively shaped the pattern of local land use.

Transport Infrastructure

Overcoming isolation and remoteness by serviceable transport routes was another enduring challenge. Postal and then coach services – and the rudimentary roads (more properly tracks in most cases) that carried them – were the first systematic attempts at transport infrastructure in the region. Post offices were established at Dalby in 1854 and Warra by 1856 (French 1990: 103). Cobb & Co, the most well-known of the coach services in the nineteenth century, began services in the Darling Downs in the 1860s. Coaches remained important throughout the nineteenth century and even the early twentieth century wherever trains were absent (and before the advent of the motor car). For example, four-horse coaches provided the main connection between Taroom and Miles via Juandah in the early decades of the twentieth century.

Rail

In the nineteenth century rail was the most significant infrastructure in Queensland. Rail construction, however, began in a modest fashion in the early 1860s, with a line constructed between Ipswich and Bigge's Camp (later Grandchester); the line opened in 1865. Soon after the rail was extended further inland, reaching Dalby in 1868.

In 1875 the Western Railway Act was passed allowing for the extension of the line from Dalby to Roma. The rail reached Chinchilla and Miles in 1878, the furthermost settlements along the line located in the study area.

It was not until the early twentieth century that a rail extension was considered to Taroom. Three separate routes were proposed: Miles-Juandah-Taroom (in 1906), Chinchilla-Juandah-Taroom (1908) and Springsure-Rolleston-Taroom (1911-1913). Extensive surveys were carried out, and construction on the Miles-Juandah branch line commenced in 1910. The section Miles-Giligulgul opened in December 1913, and the remaining section to Juandah was completed and opened to traffic a year later, on December 16, 1914 (Kerr, in Woodside 1997: 50).

The planned extension of the remaining 40 miles to Taroom was never implemented, to the obvious detriment of the latter centre.

Road

While Juandah/Wandoan received the enormous benefit of a permanent railway, road transport remained dominant in the vicinity of Taroom. Many stretches of the major arterial roads connecting Taroom to other regional centres were unsealed and, like the major road to Wandoan, were 'very rough in dry weather and untrafficable following heavy rain' (Dick 1960: 7). Work to seal this road commenced in 1947, but as late as the early 1960s the southern approach to Taroom was gravel only, while the road to the north along the route of the Leichhardt Highway was not sealed at all. The main street of Taroom itself was not sealed until 1958 (1960: 16-17).

At Wandoan, by contrast, major effort at road-building had begun in 1928-29 with the employment of gangs to build the road to the proposed dam site at Nathan Gorge (Woodside 1997: 76). In 1924 the Nathan Gorge Road from the railhead at Wandoan was commenced, and 'up to 300 men were employed and the work was in progress for six years.' ('Roads and Shire Works', Wandoan District P & C 1961).

Irrigation schemes

In the late 1880s the Government surveyors, Henderson, McKinnon and Rigby, undertook surveys of Queensland's river systems, and the Dawson River won high praise for its fertile black soils of excellent quality.

A number of irrigation projects were suggested, but progress was slow, hindered by the 1890s depression and infrastructure challenges. In the meantime, agricultural selectors deprived of regular water during poor seasons were required to excavate their own small dams, which proved of little value. Most could only hope for a bold, government-sponsored irrigation scheme that might unlock the productive potential of their land holdings.

Construction of a large storage dam across the Nathan Gorge on the Dawson River to provide water for an ambitious Dawson Valley Irrigation Scheme was first suggested as early as 1921, when soil tests and diamond drill boring were carried out by government hydraulic engineer Charles Deshon. Given the variability of local rainfall and the suitable geology, the construction of large water storages utilizing the Dawson River and its tributaries was considered a highly advantageous proposal.

In 1926 Sir Matthew Nathan visited Nathan Gorge as the government commenced planning for a dam there. A reserve of some 669 acres 'for Official and Departmental Purposes' was gazetted around the gorge itself to prepare for the construction effort (Department of Natural Resources and Water: 1927). A great deal of optimistic promotion was generated in support of the scheme and the region's agricultural potential. In the event, however, this was beset by various difficulties and was eventually postponed in favour of smaller weirs built at Theodore (in timber, 1925 and rebuilt 1929) and Orange Creek (1932). A network of irrigation channels was also installed.

Later still, the Glebe Weir was built in 1971, and another weir at Gyranda in 1987.

Battling the prickly pear

In contrast to the fitful development of the various irrigation schemes, in the late 1920s Queensland scientists achieved a dramatic victory over the prickly pear, a catastrophic biological pest. Prior to that time, the progress of farming selections and agricultural efforts in general had been largely retarded by the proliferation of the prickly pear, which it was believed had spread into the district after its first appearance in Scone, NSW in the late 1830s where it had been used as an

ornamental garden plant (Woodside 1997: 71). Its uncontrollable spread and profusion had reached catastrophic levels by the first decade of the twentieth century, prompting the formation of the Commonwealth Prickly Pear Board in 1920 and major efforts at eradication by the Biological Section of the Queensland Lands Department.

Initial efforts at investigation and control proved fruitless. Indeed, the decades up to the mid-1930s saw declining population numbers in centres such as Taroom and Wandoan, largely because of the infestation of the partially cleared brigalow scrubs by the prickly pear cactus as well as wider economic challenges (Dick 1960: 11).

Relief came in spectacular fashion when the larvae of the cactoblastis moth were released around 1926. In many farming districts the clearing of the prickly pear was considered nearly miraculous and by 1935 'the prickly pear in most areas of the State was under control, and lands that had been ravaged and rendered useless by the pear [were] rejuvenated.' (Woodside 1997: 73-4).

23.1.3.7. Developments since World War II

The proposed dam at Nathan Gorge had a deleterious effect on closer settlement and development in Taroom. An article in the Courier Mail in 1958 highlighted the effect of the proposed dam on the township of Taroom: 'Progress has passed by this important cattle town of 600 people…which seems doomed to extinction. The boom years have come and gone to leave the old brigalow belt town on the banks of the Dawson River a centre of ancient and deteriorating buildings' (quoted in Rechner 2003: 174). The dam proposal re-emerged in 1963, 1979 and again in 1995. Though development has not ceased altogether in Taroom, and the somewhat dire predictions made in the 1950s have not eventuated, the effect of the proposed dam remains significant.

The diminished fortunes of Taroom in the second half of the twentieth century can be contrasted with those of Wandoan. A quickening pace of settlement and agricultural development was experienced around Wandoan in the aftermath of the Second World War. A circular was issued by the Queensland Department of Public Lands in September 1950 advertising a scheme for 'the settlement of eligible and suitable discharged members of the [armed] forces on lands…in the Wandoan-Taroom district. The industry proposed is mixed farming and dairying, and…the aim is 120 farms in the first stage of the scheme. The lands to be made available are largely virgin brigalow scrub, but there are areas of ringbarked country capable of early production.' (cited in Wandoan District P & C, 1961).

Some 32 resumptions from local leasehold properties were made, and by 1952 some 31 blocks of the proposed 120 farms were occupied by ex-servicemen and their families, averaging around 1200-1300 acres each. These were spread across the local parishes of Wandoan, Jerrard, Juandah, Langhorne and Juliet around Bungabah Creek, and a large number (some 16 selections) in Rochedale Parish ('Wandoan Closer Settlement' date: 4).

The later Wandoan Group Settlement Scheme ballots of March, June and December 1954 introduced another wave of settlers to the district. These blocks were preferentially offered to 'honourably discharged servicemen'.

After 1954 the links with the broader 'War Service Land Settlement Scheme' were reduced, although the Queensland government continued to favour veterans as the emphasis shifted to a 'Group Lands' scheme ('Wandoan Closer Settlement', Wandoan District P & C 1961). The settlement schemes thus introduced around 70 new selectors into the district after the three ballots held in 1954. In all, some 107,000 acres around Wandoan were allotted to these new arrivals that year. In the early years, most of the selections around Wandoan were turned over to dairying, although

some blocks pastured sheep. Milk and cream was sent to the local butter factory at Miles. Pig raising was pursued as a complement on many farms in the Wandoan district, and the railways provided the means of transport to the Darling Downs Bacon Association in Toowoomba. Elsewhere, dairying, pig-raising, grain growing and sheep were all attempted, but over time most concentrated on cattle and grain. The 'soldier settlers' and selectors under the group settlement schemes who arrived in the early 1950s generated a local population boom and engendered widespread optimism in the district.

By the early 1960s, in fact, Wandoan's increasing connection to the south was to the detriment of its traditional relationship with the administrative centre at Taroom. 'This trend has accompanied closer rural settlement,' the geographer R.S. Dick commented in 1960, the improvement of roads to the south, and the greater growth of services in Miles and Wandoan compared with Taroom. Additionally, the growth of dairying in the Wandoan area has increasingly worked to the advantage of Miles as the sole butter factory is located there. The majority of dairy farmers do their banking in this town and many have accounts with the factory co-operative store. The significance of the cream run in facilitating the ordering and prompt delivery of many goods from Miles [is another factor]. (Dick 1960: 23).

The rail connection between Wandoan and Miles would also have helped in this regard. Coal exploration in the Wandoan district from the 1970s onward has also helped ensure the vitality of the township.

23.1.4. Dam and surrounds

An in-depth contextual history for the dam and surrounds is included in Section 23.1.3.

Through register searches, three sites were identified within 5 km of the water storage area (Table 23-1). However, only the Glebe Homestead is located within the Project Area. The Glebe Homestead, which is listed on the Queensland Heritage Register, is still a functioning homestead site and has been continuously occupied since 1901. The Glebe property is currently owned by DERM and the homestead requires considerable maintenance work.

No sites were identified on Commonwealth registers or that of the National Trust. No historic mining sites were identified within a 5km buffer of the water storage area.

Table 23-1 Sites within dam and surrounds study area identified through heritage register searches

Place Name	Commonwealth Heritage List	Register of the National Estate	QLD Heritage Register	Local Government Registers	National Trust QLD
The Glebe Homestead	-	-	✓	-	-
Leichhardt Tree	-	-	✓	-	-
Taroom Cemetery	-	-	-	✓	-
Taroom Aboriginal Reserve	-	-	✓	-	-

Note: Taroom Cemetery was included on the register of the former Taroom Shire Council.

During the field survey, a further 10 sites of historical / archaeological significance (HAS) were identified as being of historic cultural heritage value. In addition, two sites of historic interest (HI) were identified. All sites identified either through register searches or by a visual survey are listed in Table 23-2 and identified on Figure 23-1. The Place ID for these historical sites is relevant to this project only. A full description of the 15 sites is supplied in Appendix 23-A.

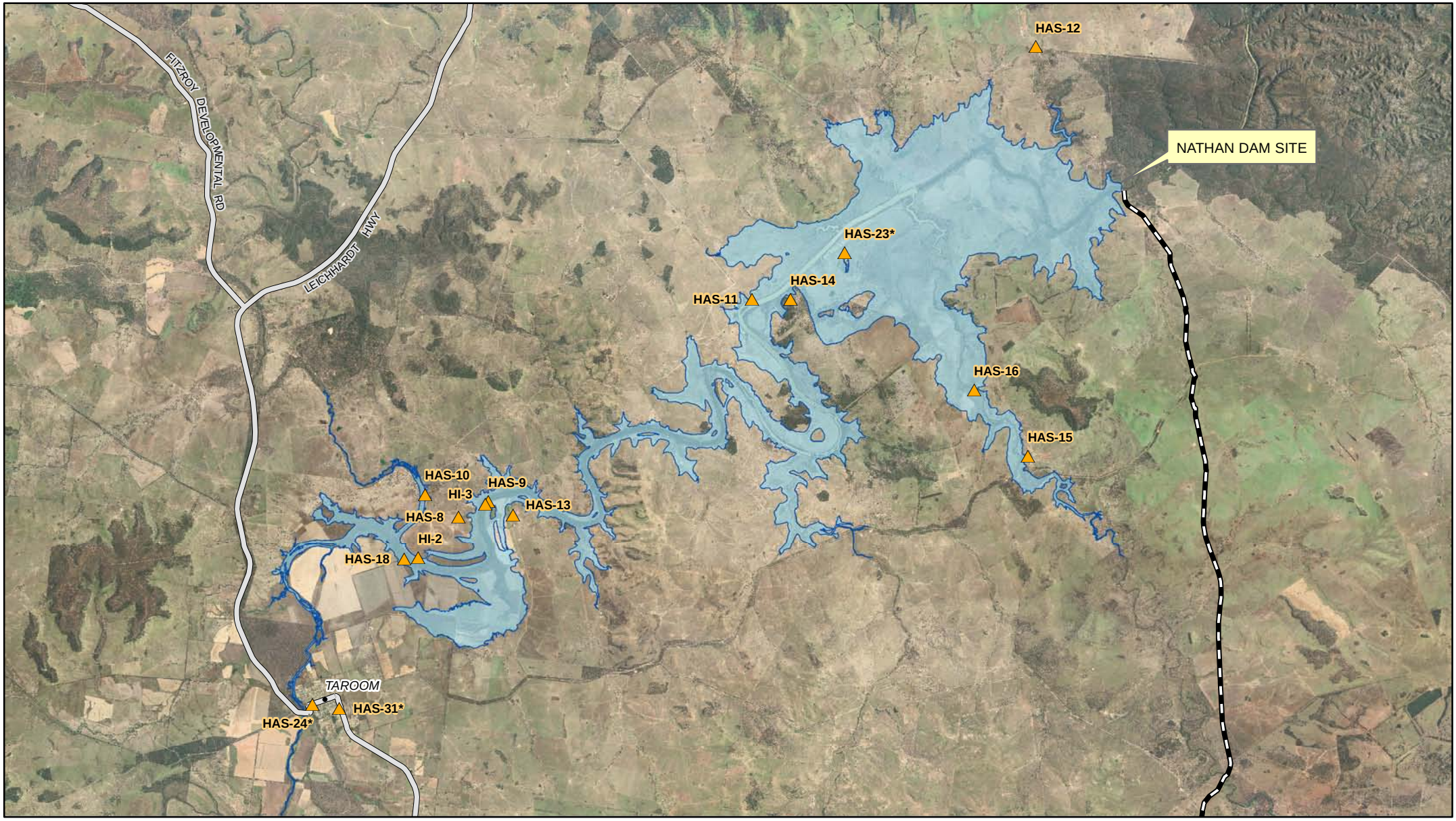
A significance assessment was undertaken, for all the identified HAS sites identified within the dam and surrounds, in accordance with the Burra Charter and QH Act. The outcomes of the significance assessment are included in Table 23-2. A full description of the significance assessment is included in Appendix 23-A.

The Taroom Aboriginal Reserve was one of the sites identified as having historical significance during the field survey. Through a separate process, the site has recently been listed by the Queensland Heritage Council (QHC) on the Queensland Heritage Register (QHR) as the Taroom Aboriginal Settlement.

Table 23-2 Sites identified in the dam and surrounds study area

Place ID	Site Name	Site Components	Level of Significance@
HAS-8	Malara Homestead	Homestead, slab garage, tennis court, wool press, shearing shed, sheep dip, shearer's quarters, yards, site of bowling green	State
HAS-9	Corduroy Crossing	Wood and stones	Local
HAS-10	Barkla Camp	Fence posts	Local
HAS-11	Binghi Slab Hut	Slab hut, yards	Local
HAS-12	Spring Creek Homestead	Homestead, graves, site of old homestead, site of old school, generator shed	State
HAS-13*	Taroom Aboriginal Reserve	Reserve site, windmill, lower cemetery, hill top cemetery, bore	State^
HAS-14	Inscribed Rock (The Glebe)		Local
HAS-15	Baxter's Hut	Slab hut, saw mill	Local
HAS-16	Inscribed Rock (Beaumont)		Local
HAS-18	Site of Barkla's Bridge	Remains of wooden bridge	Local^
HAS-23*	The Glebe Homestead	Homestead, bark insulated shed, site of old homestead, shearer's quarters, sheep dip, site of wool shed, re-used telegraph line electric fence, saw mill, laundry	State
HAS-24*	Leichhardt Tree, Taroom		State
HAS-31*	Taroom Cemetery		Local
HI-2	Old Road and Telegraph Alignment		N/A#
HI-3	Stone Crossing		N/A#

Note: * denotes site identified through register searches. ^ denotes a site as an Archaeological Place. All other sites are Heritage Sites. # No significance assessment was undertaken for sites of historical interest. @ As determined by Converge (Appendix 23-A).



LEGEND

- Town
- Identified Historic Sites
- Pipeline Route
- State Controlled Roads
- Full Supply Level (183.5m AHD)

Projection: GDA94 Zone 56

Figure 23-1

0 1 2 4
Kilometres

N

Scale 1:200,000 (at A4)

SKM SunWater Making Water Work

NATHAN DAM AND PIPELINES EIS

Location of identified historic sites in the dam and surrounds study area (5km buffer)

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23.1.5. Pipeline

An in-depth contextual history for the pipeline is included in Section 23.1.3.

Through register searches, 14 sites were identified within 5 km of the pipeline alignment (Table 23-3). No sites were identified on Commonwealth registers. No historic mining sites were identified from the register searches, within a 5 km buffer of the water storage area. However, the pipeline alignment passes in close proximity to the historic Warra Mine site.

Table 23-3 Sites within 5 km of the pipeline identified through heritage register searches

Place Name	C'wealth Heritage List	Register of the National Estate	QLD Heritage Register	Local Government Registers	National Trust QLD
Chinchilla 'Digger' Statue	-	-	✓	-	-
Cactoblastis Memorial Hall	-	-	✓	✓	✓
Dalby War Memorial and Gates	-	-	✓	✓	✓
St John's Anglican Church	-	-	✓	✓	-
Former Dalby Town Council Chambers and Offices	-	-	✓	✓	-
Dalby Swimming Pool Complex	-	-	✓	✓	✓
Wandoan Cemetery	-	-	-	✓	
Downfall Creek Cemetery	-	-	-	✓	-
Brigalow - Canaga Creek Road Cemetery	-	-	-	✓	-
Chinchilla Cemetery	-	-	-	✓	-
Cemetery Road, Chinchilla	-	-	-	✓	-
Baking Board Cemetery	-	-	-	✓	-
Macalister Cemetery	-	-	-	✓	-
Warra Cemetery	-	-	-	✓	-

Note: The cemeteries were listed on the registers of the former shires prior to amalgamation.

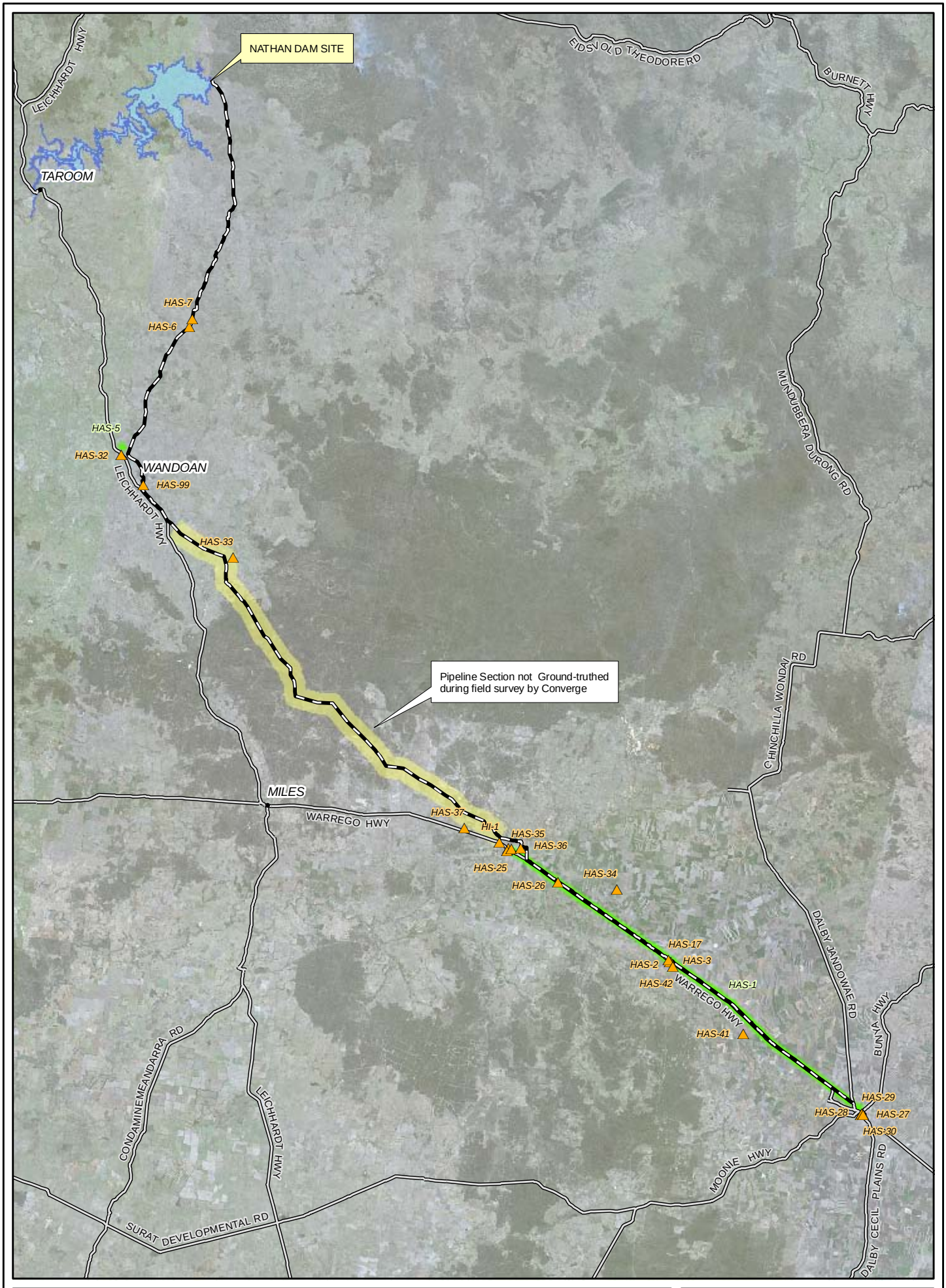
During the field survey, a further eight sites of historical/ archaeological significance (HAS) were identified as being of historic cultural heritage value. In addition, one site of historic interest (HI) was identified. All sites identified either through register searches or by a visual survey are listed in Table 23-4 and identified on Figure 23-2. The Place ID for these historical sites is relevant to this project only. A full description of these 24 sites is supplied in Appendix 23-A.

A significance assessment was undertaken, for all the identified HAS sites identified within 5 km of the pipeline, in accordance with the Burra Charter and QH Act. The outcomes of the significance assessment are included in Table 23-4. A full description of the significance assessment is included in Appendix 23-A.

Table 23-4 Sites identified within 5 km of pipeline alignment

Place ID	Site Name	Site Components	Level of Significance[@]
HAS-1	Railway Corridor	Dalby Station male toilet block, Warra Subway, Chinchilla Station and roadside store, Chinchilla Rail Workers' Quarters, Charley's Creek Bridge, Rocky Creek Bridge, railway settlements such as Dalwogan, Kowguran, Gurimundi, Giligulgul and Guluguba	Local
HAS-99	Juandah Heritage Site	The Juandah Historical Society is preserving and interpreting the former Juandah Homestead.	#
HAS-2	Warra Heritage Precinct	Memorial to Warra Mine, Relocated Haystack School, Relocated Holmbush Windmill, Relocated Warra Station, Relocated Hitching Post from Warra Post Office, Site of Webb & Co. Filling Station, Memorial to Warra Bakery, Warra Queensland Country Women's Association building, Warra Hotel, Warra Memorial Hotel, Church	Local
HAS-3	Leichhardt Camp (Warra)	Reconstruction of camp fire and camp components	State
HAS-4	Chinchilla Heritage Precinct	Shopfronts on Warrego Highway, rail and bridge infrastructure (noted in HAS-1)	Local
HAS-5	Telegraph Alignment (Nathan Road)	Telegraph posts, some with ceramic insulators still attached	Local
HAS-6	Survey Tree (Nathan Road)	Inscribed with government broad arrow survey mark and 'MR17'	Local
HAS-7	Survey Tree (Nathan Road)	Inscribed with government broad arrow survey mark and 'MR18'	Local
HAS-17	Warra Mine		State
HAS-25*	Chinchilla 'Digger' Statue	War memorial, fence	State
HAS-26*	Cactoblastis Memorial Hall	Memorial hall	State
HAS-27*	Dalby War Memorial and Gates	War memorial, masonry posts and gates	State
HAS-28*	St John's Anglican Church	Church building and grounds	State
HAS-29*	Former Dalby Town Council Chambers and Offices	Single storey rendered brick building	State
HAS-30*	Dalby Swimming Pool Complex	Single storey timber building and pool	Local
HAS-32*	Wandoan Cemetery	Gravestones	Local
HAS-33*	Downfall Creek Cemetery	Gravestones	Local
HAS-34*	Brigalow - Canaga Creek Road Cemetery	Gravestones	Local
HAS-35*	Chinchilla Cemetery	Gravestones	Local
HAS-36*	Cemetery Road, Chinchilla	Gravestones	Local
HAS-37*	Baking Board Cemetery	Gravestones	Local
HAS-41*	Macalister Cemetery	Gravestones	Local
HAS-42*	Warra Cemetery	Gravestones	Local
HI-1	Site of Old Road Bridge	Remains of timber supports	N/A[#]

Note: * denotes site identified through register searches. All other sites are Heritage Sites. # No significance assessment was undertaken for sites of historical interest. @ Determined by Converge (Appendix 23-A). # Note: The Juandah Heritage Site was not identified during the heritage surveys and the significance assessment for this site has not yet been completed.



LEGEND

- Town
- Historic Sites within 5km of Pipeline
- Linear Historic Site
- Pipeline Route
- State Controlled Roads
- Full Supply Level (183.5m AHD)
- Pipeline Section Not Ground-truthed

Projection: GDA94 Zone 56

Figure 23-2

0 5 10 20
Kilometres

N

Scale 1:900,000 (at A4)

SKM SunWater Making Water Work

NATHAN DAM AND PIPELINES EIS

Location of identified historic sites within 5km of pipeline alignment

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23.1.6. Associated infrastructure

Associated infrastructure being assessed as part of the Project is described in detail in Chapter 2 and includes:

- upgrade, realignment and construction of roads;
- clay borrow areas; and
- recreation facilities.

The associated infrastructure described above lies within the 5 km study areas used for the register searches for the dam and surrounds, and pipeline areas and are reported in Section 23.1.4 and Section 23.1.5, respectively.

23.2. Potential Impacts and Mitigation Measures

An assessment of the potential for the Project to impact on sites identified as having heritage significance of at least a local level has been undertaken. Impact can take the following forms:

- direct impact: where a heritage site, place or precinct will be affected, resulting in modification or damage to, or complete loss of that site or place. (In addition, the resumption of curtilage associated with the access and function of a heritage site or place is considered a direct impact.); or
- indirect impact: adverse or indirect positive impact where a heritage site or place has its amenity, usefulness, context, and/or function changed.

The significance of impact can be beneficial, adverse or negligible. The criteria adopted for the assessment of the significance of Project impacts is presented in Table 23-5.

Table 23-5 Criteria for impact assessment

Significance of Impact	Criteria
High	Impact is a major problem. These impacts area likely to be important considerations at the National, or State level. If adverse, they are potential concerns to the Project, depending upon the relative importance attached to the issue during the decision making process. Mitigation measures and detailed design work are unlikely to remove all of the impacts upon the affected communities or interests. Residual impacts would predominate.
Moderate	Impact is moderate. While important at a State, regional, or local scale, these are not likely to be key decision making issues. They represent issues where impact would be experienced but mitigation measures and detailed design works may ameliorate/enhance some of the consequences upon affected communities or interests. Some residual impacts would still arise. Nevertheless, the cumulative impacts of such issues may lead to an increase in the overall impacts upon a particular area or on a particular resource and hence may become key decision making issues.
Low	Impact recognisable but acceptable. Only local impacts would be included in this category and are unlikely to be of importance in the decision making process. Nevertheless, they are of relevance in enhancing the subsequent design of the Project and in the consideration of mitigation or compensation measures.
None	Minimal change. No impacts or those which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

23.2.1. General mitigation measures

The Non-Indigenous cultural heritage sites identified in this Chapter have been assessed for significance through consultation with the local community and through the statutory protection afforded by recognition of cultural heritage values by the QHR and Australian Heritage Places Inventory (AHPI). This section summarises the general principles used to develop strategies to manage identified areas which may be impacted by the Project, along with general mitigation measures for potential impact on unknown sites within the study area.

Recommendation 1 – Avoid cultural heritage

The best form of cultural heritage management is avoiding any impact on sites and places of heritage significance. The design of the Project, particularly the pipeline alignment, has and will take into account each of the identified heritage sites and places and, where possible, avoid impact. Sites of State significance in particular should be retained.

Recommendation 2 – State significant sites

State significant sites are protected by the QH Act and should be avoided in all cases. All staff will be educated as to where these sites are and what they consist of so that full avoidance of these sites is maintained.

Where works need to be conducted in these areas they will be governed by Part 6 of the QH Act and a qualified heritage consultant will be engaged to advise on mitigation measures. During the detailed design phase, a project specific Archaeological Management Plan will be developed which considers available options for the Project to mitigate impacts on cultural heritage significance during all phases of the Project. Consultation with DERM on a project specific Archaeological Management Plan has commenced.

If a component of the place is to be unavoidably affected by the Project then an Archival Recording of these elements will be undertaken. An Archival Recording of a site consists of a brief history, photographic recording, measured drawings, physical analysis and significance assessment. The *New South Wales Heritage Office How to Prepare Archival Records of Heritage Items* represents current best practice guidelines for an Archival Recording.

Recommendation 3 – Notification of archaeological places

State significant archaeological places require special consideration under the provisions of the QH Act, as they represent a heritage asset that has potential to contain an archaeological artefact that is an important source of information about Queensland's history. Most importantly, notification to the Chief Executive of the DERM confirming the location of these sites, is required by the Project under the provisions of Section 89-91 of the QH Act. Additionally, protection of these sites must be ensured by the Project and staff made aware of this obligation (as per Recommendation 11).

Recommendation 4 – Locally significant sites

Local sites of heritage significance are important to the local community because they reflect themes, events or people that played an important role in the history of the area. Sites associated with historical figures may retain further significance if descendants still live in or close to the area. These sites should be avoided following Recommendation 1.

If avoidance is unachievable, any development on or around the site may require a project specific Archaeological Management Plan or heritage brief, in consultation with local government. Depending on the level of significance, a site might also require an Archival Recording.

Recommendation 5 – Places of Historic Interest

Places of historical interest provide indicators of historical activity occurring within an area and generally groundtruth the results of contextual histories. Places of historical interest do not warrant listing on a local, State or national heritage register and as such, no heritage management is required for these sites and they are not required to be retained or managed. Nonetheless, Recommendation 1 (avoidance) should be followed wherever possible.

Recommendation 6 – Protection of heritage in Project ownership

Places in this report that are located on land owned by the Project, be they of State, local or potential heritage significance, will be protected and managed by SunWater in line with the Burra Charter, which represents best practice heritage management principles. SunWater will educate its staff and contractors on where and what items listed in this chapters are located on project-owned land. The recommendations noted above continue to apply in the case of Project-owned land.

During purchase of new land for the purpose of the Project, a heritage assessment should be carried out as part of the Due Diligence process, to ensure that any heritage obligations are known from the outset.

Recommendation 7 – Further assessment

Due to access issues, the field survey undertaken by Converge did not include the section of the final pipeline route, marked on Figure 23-2, where the alignment heads cross-country between Wandoan and Chinchilla.

As a possibility exists that unknown sites may be present in the area, a cultural heritage survey of this section of the pipeline route will be undertaken during the detailed design phase. If any places or sites of cultural heritage significance are encountered, significance assessments and management plans will be developed in accordance with relevant legislation.

This recommendation also covers the need for further assessment if any details of the dam and pipeline are altered in any way.

Recommendation 8 – Unexpected Finds

Though it is possible places of historic cultural heritage may yet be unexpectedly discovered in the dam area and surrounds, the most likely area in which unexpected finds may occur is along the pipeline. The pipeline corridor has a high potential for impacting on historic cultural heritage, particularly in the vicinity of small townships that historically dotted the road and rail networks in the region, old road alignments and survey trees.

These sites may constitute heritage places or archaeological places. In both cases further assessment is required. However, special provisions apply to archaeological places and these must be considered in light of the archaeological provisions of the QH Act discussed in Section 23.1.1.2.

Unexpected cultural heritage material or sites will be managed using the measures set out below.

STOP WORK	immediately
ESTABLISH	a buffer zone of 20 metres around the site
CONTACT	a qualified heritage professional and/or archaeologist as soon as possible
NOTIFY	the heritage professional/archaeologist should notify: the Site Manager/SunWater; In the case of an archaeological discovery, DERM should also be notified
ASSESS	the heritage professional/archaeologist should assess the significance of the resource and, depending on the nature of the find, recommend a course of action, such as: protect and avoid; investigate, record and remove; or excavate, record and preserve
RECOMMENCE	work once DERM has approved the course of action.

Recommendation 9 – Archaeologist 'On-Call'

A heritage professional and/or historic archaeologist will be appointed during construction phases of the Project, so that a call-out can be made as soon as potential archaeological material is noted.

Recommendation 10 – Community Consultation

SunWater will seek to engage with the local community at all times with regards to their cultural heritage, especially should the Project design alter. SunWater will educate its staff as to why certain items or sites are important to the local community and why they are not to be disturbed or damaged. It will also seek to actively involve the community at all times when matters of historic cultural heritage are involved.

Recommendation 11 – Training Guidelines

Diligence will be practiced during works conducted within the Project area, particularly during any clearing or development phases associated with initial preparation of the Project area. This will include specifically instructing crews of their obligations to look for cultural heritage material, including site training and Workplace Health and Safety meetings.

Training will inform the workers what archaeological material and cultural heritage sites may look like and give them clear instructions on what to do if they find any cultural heritage sites. It will also outline why items or sites are important to the local community. Project employees and contractors will be encouraged to take an active part in helping to protect the historic cultural heritage sites of the area they will be working in, to better foster a cooperative and mutually respectful relationship between SunWater and the local community and landholders.

Recommendation 12 – Management of Cumulative Impact

Cumulative impact can occur around the proposed development site. For example, while a particular project might impact a specific area (in the case of a pipeline), there may be a cumulative impact through associated works (site buildings, heavy vehicle access etc).

There is not expected to be any cumulative impact in relation to the dam and surrounds. However, heritage sites along the pipeline route may be at risk of impact from other pipeline and gas projects proposed for the local area. Further information on these projects can be found in Section 27.2.3.1. Therefore all known sites identified along any of the proposed pipeline corridors, or sites not yet identified (see Recommendation 8) are likely to be subject to some form of cumulative impact.

The pipeline design has and will consider cumulative impacts on heritage sites and take appropriate measures wherever possible to avoid impacts. Site specific recommendations detailed in the following sections will be implemented to ensure that potential cumulative impact to these sites is managed appropriately.

Recommendation 13 – Regular Monitoring

During construction, the Project will undertake a bi-annual survey of any heritage sites and places identified on project-owned land, or on land directly affected by current operations, to ensure that the general recommendations outlined above and those for individual heritage items are being followed and having a positive effect. Any damage to items will be catalogued and actions taken to ensure that the process that caused the damage is not repeated and that training material for staff can be updated with current information.

Recommendation 14 – Variation of Project Design

Further cultural heritage assessment will be undertaken if there is any variation to the Project design particularly in the vicinity of heritage sites.

23.2.2. Dam and surrounds

An assessment of the potential for the Project to impact on heritage sites within the dam and surrounds was undertaken. Table 23-6 presents the potential level of impact for HAS sites identified within the dam and surrounds. Where a potential impact is identified, mitigation measures are proposed within the table.

No HAS sites are located within the dam construction footprint.

The Project will have a direct impact on two sites of State significance within the water storage area – the Glebe Homestead and the Taroom Aboriginal Reserve, which has recently been listed as the Taroom Aboriginal Settlement.

For the Glebe Homestead, a site-specific Archaeological Management Plan will be developed by an appropriately qualified cultural heritage consultant (which will include an historical archaeologist) during the detailed design phase. Should this be a recommendation of the Management Plan, SunWater will relocate the Glebe Homestead to a suitable nearby location outside of the water storage area, and undertake a full archival recording of the site prior to removal.

Parts of the Taroom Aboriginal Reserve site are within the water storage area. SunWater met with DERM in February 2011 to discuss the potential listing of the site and the Project implications. SunWater will engage an appropriately qualified cultural heritage consultant (which will include an historical archaeologist) to carry out a study that will identify Project impacts and appropriate mitigation measures in accordance with the requirements of the *Queensland Heritage Act 1992*. A site-specific Archaeological Management Plan will be prepared based on the results of this work for implementation prior to project construction.

Five sites of local significance will be directly impacted by the water storage area. A full archival recording is proposed for the Binghi Slab Hut while a basic level of photographic recording prior to clearing and inundation is proposed for the remaining four sites.

The remnants of Baxter's Hut are located within 30m of the Full Supply Level (FSL). No specific mitigation measures are proposed for this site.

Table 23-6 Impacts and mitigations - dam and surrounds

Site ID	Site Name	Significance	Type of Impact	Level of Impact	Impact	Mitigation
HAS-8	Malara Homestead	State	Indirect	Moderate	Malara Homestead is located near the water storage but above the 1 in 100 AEP flood event. The inundation is unlikely to impact any of the site components identified in this report, although the viability of the property may be impacted. It is not expected that community access to this site will be impacted by the Project.	If it is necessary to conduct works within 20 m of the site, measures such as protective fencing and staff awareness training will be undertaken. While it is not anticipated that construction will occur sufficiently close to impact access to the site, should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site.
HAS-9	Corduroy Crossing	Local	Direct	High	The Corduroy Crossing is located within the water storage area and will not remain accessible	A basic level of photographic recording will be conducted that captures the nature of the item and its context within the cultural environment and within the study area prior to clearing of vegetation and filling of the dam commencing.
HAS-10	Barkla Camp	Local	Direct	High	The Barkla Camp is located within the water storage area and will not remain accessible.	A basic level of photographic recording will be conducted that captures the nature of the item and its context within the cultural environment and within the study area prior to clearing of vegetation and filling of the dam commencing.
HAS-11	Binghi Slab Hut	Local	Direct	High	The Binghi Slab Hut is located within the water storage area and it is not expected that it will remain accessible.	A full Archival Recording will be carried out for the Hut. This recording will be conducted by a suitably qualified professional and follow the New South Wales Heritage Office guidelines for an Archival Recording. Although relocation is not generally prescribed from a heritage perspective, the hut might warrant relocation away from the water storage area, but preferably remaining on the property.

Site ID	Site Name	Significance	Type of Impact	Level of Impact	Impact	Mitigation
HAS-12	Spring Creek Homestead	State	Indirect	Low	Spring Creek Homestead is located 2.3 km from the water storage area and is unlikely to impacted upon by the Project.	If it is necessary to conduct works within 20 m of the site, measures such as protective fencing and staff awareness training will be undertaken. While it is not anticipated that construction will occur sufficiently close to impact access to the site, should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site. This site has archaeological potential. If any alterations to the Project details occur that directly impact the site, any works on the site will be monitored by a qualified archaeologist. An Archival Recording may also be necessary, depending on the nature of works proposed.
HAS-13	Taroom Aboriginal Reserve	State	Direct	High	Part of the Taroom Aboriginal Reserve area will be subject to inundation by the dam. The windmill and bore close to Slippery Hole waterhole will be inundated, as will some agricultural land that would have been used by the Reserve inhabitants. A small section of the lower cemetery may be within the water storage area. Parts of the site will no longer remain accessible. However, it is not expected that access to the rest of the site will be impacted during construction or operation.	The site has only recently been registered as a State Heritage Place and was not registered at the time of drafting the overall Conservation Management Plan (**Appendix 23-A**). An Archaeological Management Plan will be prepared and implemented during the detailed design phase. Preliminary discussions regarding the development of this plan have been held with DERM. If it is necessary to conduct works within 20 m of any part of the site, measures such as temporary protective fencing and staff awareness training will be undertaken. While it is not anticipated that construction will occur sufficiently close to impact access to the site, should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site. Archaeological Management Plan Consultation with the landowners is ongoing. Consultation

Site ID	Site Name	Significance	Type of Impact	Level of Impact	Impact	Mitigation
						with the relevant Aboriginal communities will also be required. This is discussed in **Chapter 22**.
HAS-14	Inscribed Rock (The Glebe)	Local	None	None	Due to its elevated position, the Inscribed Rock is unlikely to be impacted by the Project.	N/A
HAS-15	Baxter's Hut	Local	Indirect	Low	Baxter's Hut is located within 30m of the water storage area.	If it is necessary to conduct works within 20 m of the site, measures such as temporary protective fencing and staff awareness training will be undertaken. While it is not anticipated that construction will occur sufficiently close to impact access to the site, should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site.
HAS-16	Inscribed Rock (Beaumont*)	Local	Direct	High	The Inscribed Rock is located within the water storage area and will not remain accessible.	A basic level of photographic recording will be conducted that captures the nature of the item and its context within the cultural environment and within the study area prior to clearing of vegetation and filling of the dam commencing.
HAS-18	Site of Barkla's Bridge	Local	Direct	High	The site of Barkla's Bridge is likely to be made inaccessible by the inundation along the Dawson River, and any surviving archaeological evidence is likely to be eroded away.	A basic level of photographic recording will be conducted that captures the nature of the item and its context within the cultural environment and within the study area prior to clearing of vegetation and filling of the dam commencing.

Site ID	Site Name	Significance	Type of Impact	Level of Impact	Impact	Mitigation
HAS-23	The Glebe Homestead	State	Direct	High	The Glebe Homestead and associated structures are located within the water storage area. The Glebe Homestead is still a functioning homestead site and has been continuously occupied since 1901. The property is currently owned by DERM and the homestead requires some maintenance work.	A project-specific Archaeological Management Plan will be prepared by suitably qualified professionals during the detailed design phase. This plan will consider options for the Project to mitigate specific impacts on items of cultural heritage significance and include liaison with, and approval of, relevant stakeholders, particularly the local community. Preliminary discussions regarding the development of this plan have been held with DERM. If recommended in the Archaeological Management Plan, the Glebe Homestead, outbuildings and contents of the home and outbuildings that have cultural heritage value will be moved to a suitable location that provides an opportunity for continued use and access. A full Archival Recording will be carried out for the Glebe Homestead site, which includes all associated structures. This recording will be conducted by a suitably qualified heritage professional and follow the New South Wales Heritage Office guidelines for an Archival Recording.
HAS-24	Leichhardt Tree, Taroom	State	None	None	The Leichhardt Tree is sited within the urban area of Taroom and will not be impacted by the Project.	N/A
HAS-31	Taroom Cemetery	Local	None	None	Taroom Cemetery is sited within the urban area of Taroom and will not be impacted by the Project	N/A

Note: The owners of Moorang have identified that the inscribed rock previously identified is actually located on the adjoining Beaumont property.

23.2.3. Pipeline

An assessment of the potential for the Project to impact on heritage sites within a 5 km buffer of the pipeline was undertaken. The pipeline route has been selected to avoid non-indigenous cultural heritage wherever possible.

A 30 m wide easement will be required for construction of the pipeline which will primarily be buried. Within this easement, there is the potential for high, direct impact on non-indigenous cultural heritage due to construction activities if any heritage sites are present. The Juandah Heritage Site is the only site identified within the pipeline easement. No other HAS sites have been identified within the pipeline construction easement.

The pipeline alignment runs parallel to the railway corridor (HAS-1) for a section between Chinchilla and Dalby marked on Figure 23-2. However, the pipeline does not cross the railway and the pipeline easement is not located within the railway corridor.

Above-ground pipeline infrastructure outside this easement is limited to four pump stations and associated balancing storages. No HAS sites will be impacted by this above-ground pipeline infrastructure.

Sites within the immediate vicinity of the pipeline corridor may be indirectly impacted by heavy traffic accessing the pipeline construction works or if the pipeline needs to deviate during construction works. Table 23-7 presents the potential level of impact for HAS sites identified within a 1 km buffer of the pipeline to cover mitigation measures should the pipeline alignment be refined during detailed design. Where a potential impact is identified, mitigation measures are proposed. These mitigation measures include delineation of buffer zones and fencing where works are required in close proximity to HAS sites. Interruption of access to HAS sites along the pipeline during construction will be temporary, generally lasting only days or weeks. Any impacts on community access to HAS sites, caused by protective fencing, will be minimised by minimising the construction period where possible.

Table 23-7 lists sites from North to South along the pipeline, running from the dam to Dalby. Note that the type and level of impact described in Table 23-7 may differ from that presented in Appendix 23-A as the pipeline alignment has been refined through the EIS process to minimise impacts including impacts on non-indigenous cultural heritage.

Table 23-7 Impacts and mitigations - pipeline

Site ID	Site Name	Significance	Type of Impact	Level of Impact	Impact	Mitigation
HAS-6	Survey Tree (Nathan Road)	Local	Direct	Moderate	The Survey Tree is located within 10m of the pipeline easement along Nathan Road, and may be directly impacted by the Project.	If it is necessary to conduct works within 20 m of the site, measures such as protective fencing and staff awareness training should be undertaken. Should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site. If works must be carried out that directly affect the survey tree, then a basic level of photographic recording should be conducted that captures the nature of the item and its context within the cultural environment and within the study area prior to works commencing.
HAS-7	Survey Tree (Nathan Road)	Local	Direct	Moderate	The Survey Tree is located within 10m of the pipeline easement along Nathan Road, and may be directly impacted by the Project.	If it is necessary to conduct works within 20 m of the site, measures such as protective fencing and staff awareness training should be undertaken. Should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site. If works must be carried out that directly affect the survey tree, then a basic level of photographic recording should be conducted that captures the nature of the item and its context within the cultural environment and within the study area prior to works commencing.

Site ID	Site Name	Significance	Type of Impact	Level of Impact	Impact	Mitigation
HAS-1	Railway Corridor	Local	Direct	Moderate	The Railway Corridor is sited within close proximity to the pipeline easement between Chinchilla and Dalby. Features most at risk are the railway crossings and fence lines. It is at particular risk of cumulative impact as it is a linear feature which may be impacted by different projects at different locations.	If any works associated with the pipeline construction are likely to impact on sites within the railway corridor (such as buildings, fences and bridges), a project-specific Archaeological Management Plan should be prepared by suitably qualified professionals. This plan should consider options for the Project to mitigate specific impacts on items of cultural heritage significance within the corridor, include liaison with, and approval of, relevant stakeholders, including Queensland Rail and minimise impacts on community access.
HAS-99	Juandah Heritage Site	#	Direct	Low	The Juandah Heritage Site is located immediately adjacent to the pipeline route. It is expected that the pipeline will be buried through this section and a permanent easement of less than 1% of the lot area will be required.	This site was not identified as a HAS site through the original survey and a significance assessment has not been undertaken for the site. An onsite survey and significance assessment will be undertaken during the detailed design phase. If warranted a site-specific Archaeological Management Plan will be prepared by suitably qualified professionals for this site, in consultation with the Juandah Historical Society. This plan should consider options for the Project to mitigate specific impacts on items of cultural heritage significance. include liaison with, and approval of, relevant stakeholders, particularly the local community, and minimise impacts on community access. If it is necessary to conduct works within 20 m of buildings or structures, measures such as protective fencing and staff awareness training should be undertaken.
HAS-36	Cemetery Road, Chinchilla	Local	Indirect	Low	Cemetery Road Cemetery, Chinchilla is sited within the vicinity of the pipeline.	A buffer zone should be implemented. Under the local Planning Scheme, a minimum 50 m separation distance must be maintained between the cemetery and any works. Any temporary interruption of access to the site

Site ID	Site Name	Significance	Type of Impact	Level of Impact	Impact	Mitigation
						should be minimised.
HAS-26	Cactoblastis Memorial Hall	State	Indirect	Moderate	The Cactoblastis Memorial Hall is located in Boonarga and is approximately 150 m from the pipeline easement.	A buffer zone should be implemented. Under the local Planning Scheme, a minimum 50 m separation distance must be maintained between the hall and any works. Any temporary interruption of access to the site should be minimised. If it is necessary to conduct works within 20 m of the site, measures such as protective fencing and staff awareness training should be undertaken.
HAS-17	Warra Mine	State	Direct	Low	Warra Mine may be directly impacted by the pipeline due to its proximity to the railway; however, little physical evidence of the mine remains above ground.	All surface remains of the former mine are no longer extant. However, particular concern may need to be given to the site if any works are undertaken on or near it, due to the possibility of underground mine shafts in the vicinity. Further advice from mining specialists may need to be sought in this regard. Any temporary interruption of access to the site should be minimised.
HAS-3	Leichhardt Camp (Warra)	State	Indirect	Low	The Leichhardt Camp (Warra) is sited on the outskirts of Warra and is approximately 200m from the pipeline.	If it is necessary to conduct works within 20 m of a site located within the precinct, measures such as protective fencing and staff awareness training should be undertaken. Should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site. Archaeological Management Plan

Site ID	Site Name	Significance	Type of Impact	Level of Impact	Impact	Mitigation
HAS-2	Warra Heritage Precinct	Local	Indirect	Low	The Warra Heritage Precinct is sited within the urban area of Warra and is approximately 200m from the pipeline.	Impact on the subway close to the railway should be avoided. If it is necessary to conduct works within 20 m of sites within the precinct, measures such as protective fencing and staff awareness training should be undertaken. Should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site. If any works associated with the pipeline construction are likely to impact on in situ sites within the Warra Heritage Precinct (such as buildings and the 1912 subway), a project-specific Archaeological Management Plan should be prepared by suitably qualified professionals. This plan should consider options for the Project to mitigate specific impacts on items and of cultural heritage significance and include liaison with, and approval of, relevant stakeholders, particularly the local community.
HAS-42	Warra Cemetery	Local	Indirect	Low	Warra Cemetery is sited approximately 700 m from the pipeline easement.	A buffer zone should be implemented. Under the local Planning Scheme, a minimum 50 m separation distance must be maintained between the cemetery and any works. Any temporary interruption of access to the site should be minimised.

Note: The Juandah Heritage Site was not identified during the heritage surveys and the significance assessment for this site has not yet been completed.

23.2.4. Associated infrastructure

There are no known potential impacts on non-indigenous cultural heritage for associated infrastructure that have not been covered within the previous sections.

No HAS sites are located within close proximity of the clay borrow areas.

The dam access road passes within 200 m of the Spring Creek Homestead (HAS 12). Avoidance of sites of State significance should be an immediate priority of the Project. This will be considered during detailed design of the dam access road. If it is necessary to conduct works within 20 m of the site, measures such as protective fencing and staff awareness training will be undertaken. Should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site. This site has archaeological potential. If any alterations to the Project details occur that directly impact the site, any works on the site will be monitored by a qualified archaeologist. Depending on the nature of these works, an archival recording may be necessary.

The re-alignment of Cracow Road and bridge over Cockatoo Creek passes within 500 m of Baxters Hut (HAS 15). Avoidance of sites of Local significance should be an immediate priority of the Project. This will be considered during detailed design of the re-alignment of Cracow Road. If it is necessary to conduct works within 20 m of the site, measures such as protective fencing and staff awareness training should be undertaken. . Should the need arise to protectively fence the area during construction works, the period of time that the area is fenced will be minimised to minimise any impact on community access to the site.

23.3. Impact assessment and residual risks

The methodology used for risk assessment and management is discussed in Section 1.8.

This chapter has assessed risks and impacts for specific sites of heritage significance. This section includes an assessment of any other general risks relevant to non-indigenous cultural heritage and summarises the mitigation measures to minimise those risks.

The risk assessment is of the Project as described in Section 2, in which SunWater has already incorporated a range of risk reduction and mitigation measures. Table 23-8 identifies the results of the risk assessment including the unmitigated project risks and the residual risks from the Project following the implementation of recommended mitigation measures.

Based on the impact risk assessment, impacts to non-indigenous cultural heritage are limited though some further assessment and documentation is recommended. In summary:

- site-specific archaeological management plans are required for the Glebe Homestead and the Taroom Aboriginal Reserve;
- a full archival recording is required for the Glebe Homestead and Binghi Slab Hut;

- a basic level of photographic recording is required for four sites within the water storage area;
- a cultural heritage survey of the section of the pipeline route not previously surveyed will be undertaken during the detailed design phase;
- a significance assessment will be undertaken for the Juandah Heritage Site; and
- if any historic human remains are uncovered, contact will be made with the Cultural Heritage Branch of DERM.

Table 23-8 Risk assessment results

Hazards	Factors	Impacts	Project Description Controls & Standard Industry Practice	Risk with Controls			Additional Mitigation Measures	Mitigation Effectiveness	Residual Risk		
				C	L	Current Risk			C	L	Mitigated Risk
Gradual loss of buildings not inundated but with no on-going use	On-going management of acquired properties will minimise risks.	Current owners are concerned that remaining buildings will deteriorate or be vandalised.	Acquisition strategy is to acquire only the portion of land required for the Project unless the remaining property does not constitute a viable living area. This means that non-inundated buildings and land can continue to be used.	Minor	Unlikely	Low			Minor	Unlikely	Low
Loss of historically interesting tools and other items	Current owners may remove and retain unfixed chattels, which would preserve heritage.	Loss of items and information of cultural heritage value		Minor	Likely	Medium	If interesting items remain, consider consultation with local Historical Societies and/or Museums with regard to selection and donation of such items.	Significantly	Minor	Unlikely	Low

23.3.1. Cumulative risk

The Project has the potential to change the character of the region and incrementally impact on the collection of heritage sites within the study area. By operating to best-practice cultural heritage standards of avoiding heritage sites wherever possible, this impact should be minimised. Nonetheless, there are several sites which are particularly vulnerable to cumulative impact by multiple projects:

- HAS-1 Railway Corridor; and

  The railway line, which presently comprises a relatively intact group of elements including the railway alignment, sections of sleepers, sidings, spur lines, culverts, drainage features, loading facilities, fencing and associated soldier settlements, is particularly vulnerable to cumulative impact. The integrity of this corridor could be rapidly eroded by the cumulative impact of developments removing select elements or features of the line. As the significance of this railway line is vested in its integrity as a group of features and its ability to demonstrate a large range of features associated with a railway, its value could be compromised.

- HAS-6; HAS-7 (Survey Trees)

  Like the railway line, these survey trees are susceptible to cumulative impact of multiple projects which may remove select elements, thus compromising the integrity and value of the sites. Further discussion of cumulative impacts of other projects is provided in Chapter 27.

23.4. Summary

This study assessed sites of non-indigenous cultural heritage significance within a 5 km buffer of both the dam and surrounds and pipeline areas. The study located 35 sites of historical/archaeological significance (HAS), of which 17 were previously known through heritage registers. These sites included a broad cross-section of site types across all areas of the Project and all require further analysis and management if they are to be impacted. These sites are important because each reflects key heritage themes within the study area, including pastoralism, exploration, mining and infrastructure development.

Some sites also have unique associations with properties and individuals within the study area, such as the inscribed rocks (HAS-14, 16). The sites located during the study, except for those described as historical interest (HI), warranted further assessment for significance and impact. The cultural heritage values attributed to these sites were influenced by historical research, land holder consultation and *Queensland Heritage Act 1992* guidelines. No sites identified during the study were of national heritage significance. Twelve were found to be of State significance and the remaining 23 met local significance criteria. Three sites were identified as containing archaeological potential.

This EIS chapter offers management strategies for all these sites in accordance with DERM guidelines. For sites being inundated, there will be no future use or access. It has been recommended that photography and records of these sites be undertaken. For any sites not inundated, the current longterm use and access will notbe impacted. Interruption of access to HAS sites due to nearby construction works will be minimised by minimising the construction period where possible.

Three HI sites were located during the study. These are not considered significant enough to warrant further significance or impact assessment, however if possible, they should be retained.

The Glebe Homestead is listed on the Queensland Heritage Register and will be directly impacted by the Project as it lies within the water storage area. The homestead will be the subject of an Archaeological Management Plan and will be relocated as part of the Project, if this is a recommendation of the plan.

The Taroom Aboriginal Reserve was recently listed as a heritage place on the Queensland Heritage Register and parts of the reserve will be impacted by inundation by the dam. Management of the areas impacted by inundation will be covered under indigenous cultural heritage management plans and wide community consultation on CHMP management strategies will be undertaken. An Archaeological Management Plan will be developed and implemented.

The results outlined above demonstrate a broad dispersal of sites throughout the study area. Further field survey of the pipeline alignment will be undertaken during the detailed design phase. Several site types were identified in the field survey that can be predicted to be located across more of the study area as the Project commences. These include survey trees, telegraph alignments, old road alignments and railway sidings.