



# **Victorian Murray Floodplain Restoration Project**

## **Vinifera Historical Heritage Desktop Assessment**

IS297705 | 0

27 March 2020

**Lower Murray Water**



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 Author: Caroline Seawright  
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Jacobs Group (Australia) Pty Limited  
 ABN 37 001 024 095  
 Floor 11, 452 Flinders Street  
 Melbourne VIC 3000  
 PO Box 312, Flinders Lane  
 Melbourne VIC 8009 Australia  
 T +61 3 8668 3000  
 F +61 3 8668 3001  
 www.jacobs.com

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### Document history and status

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0	27/03/20	Historical heritage desktop assessment to support the Vinifera VMFRP referrals	C. Seawright	R. Overberg	M. Shaw

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## Abbreviations

CHL	Commonwealth Heritage List
EMP	Environmental Management Plan
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
the Heritage Act	<i>Heritage Act 2017</i>
HIA	Heritage Impact Assessment
HO	Heritage Overlay
HV	Heritage Victoria
LGA	Local Government Area
NHL	National Heritage List
NT	National Trust of Australia (Victoria)
the project	Victorian Murray Floodplain Restoration Project
R8	R8 joint venture
RNE	Register of the National Estate
VHI	Victorian Heritage Inventory
VHR	Victorian Heritage Register
VMFRP	Victorian Murray Floodplain Restoration Project
WHL	World Heritage List

## Executive Summary

### Project overview

Jacobs and GHD teamed in December 2018 to form a joint venture (R8 joint venture) to complete the Victorian Murray Floodplain Restoration Project (VMFRP). The aim is to design infrastructure for Lower Murray Water (LMW) including regulators, levees, roads, access tracks and culverts. R8 has been engaged to provide the historical heritage desktop assessment as part of the VMFRP.

The project involves the construction of four new regulators (V1, V2, V3 and V4) to retain and regulate water in the Vinifera part of the Nyah-Vinifera (Regional) Park. The project is located within Nyah-Vinifera (Regional) Park, within the Swan Hill Local Government Area (LGA).

Construction activities will occur within the project area identified in Figure 1.1 to Figure 1.3. Construction activities would include:

- establishment of construction sites, set down areas and access routes
- construction / installation of new structures.

Construction vehicles/machinery will include trucks, excavators.

Construction would involve the use of vehicles and machinery such as trucks, excavators and access equipment.

### Desktop review

There is one historical heritage place that intersects with the project area (Section 1.1, Figure 2.8) and the inundation area (Section 1.1, Figure 2.9), which is listed on the Swan Hill Planning Scheme Heritage Overlay (HO), which is the registered heritage boundary of Takasuka Levee Bank (HO186 / NT B6238). However, examination of the *Rural City of Swan Hill Heritage Study Stage II* in combination with a review of the modern aerial imagery review has confirmed that the registered heritage boundaries do not encompass the entire length of the levee bank. This cannot be confirmed without a site inspection.

There is moderate to high potential for previously unidentified historical heritage to be present within the project area, due to the remains of the Takasuka Levee Bank extending outside its heritage boundary, and from the background history and review of previous historical heritage assessments. Outside of the Takasuka Levee Bank, site types most likely to be identified in the project area would be places associated with early agricultural or pastoral activities and water management infrastructure.

### Impact assessment

The heritage boundary of the Takasuka Levee Bank (HO186 / NT B6238) appears to intersect with the construction footprint within the project area along Forest / Takasuka Road. However, the entire remnant levee bank is 'several kilometres' long, only paralleling Forest / Takasuka Road within the Nyah-Vinifera (Regional) Park for approximately 500 metres (m). As the full extent of the heritage levee bank was not mapped and its entire location is presently unknown, the levee bank may intersect project area works outside of the registered HO boundary.

As such, the proposed Forest Track Banks works (Section 3.1.1.2) will impact upon the historic significance of the heritage place. Depending on the location of the unmapped sections of the Takasuka Levee Bank, other works may also impact upon this heritage place. Additionally, both known and unmapped sections of levee bank have the potential to be impacted by erosion from inundation (Section 3.1.1).

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## **Approvals, mitigation measures and recommendations**

If the scope of works changes to include other features of the heritage places detailed in Table 1, further heritage assessment would be required, and this assessment will need to be updated.

Table 1: Statutory requirements, mitigation measures and recommendations for heritage places within the project area

Place	Statutory requirements	Recommendations	Mitigation measures
Entire project area	Discovery of archaeological sites - under Section 127 of the <i>Heritage Act 2017</i> , If an archaeological site is discovered during construction or excavation on any land, the person in charge of the construction or excavation must as soon as practicable report the discovery to Heritage Victoria (HV).	<p>Due to the possibility for historic archaeology to be impacted, as identified in this desktop assessment (Section 3.2.1), it is recommended that a Heritage Impact Assessment (HIA) be undertaken for the project. The HIA should include:</p> <ul style="list-style-type: none"> <li>▪ Field survey to identify further historical archaeological sites and any unidentified historical heritage places</li> <li>▪ Assessment of impacts on all historical heritage sites</li> <li>▪ Detailed identification of mitigation measures and approval requirements</li> <li>▪ A Heritage Impact Statement.</li> </ul> <p>All historical archaeological places are protected under the <i>Heritage Act 2017</i>, whether they are registered or not. Further historical research to ascertain the likely presence of any historical archaeological places or material within the project area is recommended to reduce the risk of delays to the project. Such delays would include the stoppage of works to avoid damage or destruction of historical archaeological sites and materials while the appropriate approvals are sought. This would enable R8 to proactively consider the nomination of historical heritage archaeological deposits ahead of the works, which would provide R8 with more certainty in relation to timeframes and statutory obligations. The completion of the HIA for the project would mitigate these issues.</p>	<p>General mitigation measures to be implemented across the project area:</p> <ul style="list-style-type: none"> <li>▪ Historical heritage awareness training should be completed as part of the site induction for all personnel and/or contractors prior to the commencement of construction works to ensure:                             <ul style="list-style-type: none"> <li>- an understanding of where all heritage places are located within the project area</li> <li>- an understanding of the potential heritage places that may be impacted during the project</li> <li>- the procedures required to be undertaken in the event of discovery of historical heritage material, features or deposits, or the discovery of human remains</li> </ul> </li> <li>▪ If an archaeological site is discovered during construction or excavation, the person in charge of the construction or excavation must as soon as practicable report the discovery to HV</li> </ul> <p>A copy of this report should be kept onsite and on file with the project records. All contractors and/or project staff should be made aware of the heritage status of the heritage places in the project area prior to works taking place.</p>
Takasuka Levee Bank (HO186 / NT B6238)	A planning permit would be required for ground-disturbing works in relation to Takasuka Levee Bank (HO186 / NT B6238).	<p>The Takasuka Levee Bank (HO186 / NT B6238) will be impacted by project works and possibly by inundation impacts as well. As such, it is important to take the <i>Rural City of Swan Hill Heritage Study Stage II</i> recommendations into consideration for the project:</p> <p><i>The levee bank should be retained intact, without further penetrations or excavation. Any future roadways proposed through the forest should be laid out sympathetically in relation to the position of the levee bank. For example, roadways should ideally run parallel to the levee bank, and should not cross it, as</i></p>	<p>As there is potential for the fabric and significance of the Takasuka Levee Bank (HO186 / NT B6238) to be directly impacted by Forest Track Banks, and potentially other works on the unmapped section of the levee bank, the following mitigation measures must be implemented to avoid any adverse impacts where possible to the heritage values of the site.</p> <p>Avoidance of the historic levee should be undertaken, if possible:</p> <ul style="list-style-type: none"> <li>▪ Prior to any works, including any vegetation clearance, site establishment or construction works in the area, protective barrier fencing will be erected between the levee bank and the</li> </ul>



Place	Statutory requirements	Recommendations	Mitigation measures
		<p><i>they currently do in some instances</i> (Allom Lovell and Associates 2001c).</p> <p>Additionally, as the levee bank extends outside the registered heritage boundary of Takasuka Levee Bank (HO186 / NT B6238), it is recommended that consultation with the Swan Hill Council be undertaken to correct the spatial data related to this heritage place.</p>	<p>works area, to fence it and thereby avoid inadvertent impact; the fencing would be installed for the duration of works for the project and removed following completion</p> <ul style="list-style-type: none"> <li>▪ R8 and/or contractors must not drive or park vehicles on sections of the historic levee bank not to be impacted by works. This must be done by implementing appropriate 'no entry' signage on the protective fencing; additionally, any parking areas, and all access ways to and from the parking area, must be located outside the aforementioned protective fencing.</li> </ul> <p>Should impact to the historic levee be unavoidable:</p> <ul style="list-style-type: none"> <li>▪ Prior to the start of works, an archival photographic recording of the sections of the historic levee bank to be impacted should be carried out, in accordance with the guidelines, <i>Photographic Recording for Heritage Places and Objects</i> (Heritage Victoria 2006)</li> <li>▪ Works are to be undertaken in such a way as to minimise direct contact by construction vehicles or machinery with the historical levee bank. Prior to any works, including any vegetation clearance, site establishment or construction works in the area, where the historic levee bank will not be impacted, protective barrier fencing will be erected between the remaining portion of the levee bank outside the works area, to fence it and thereby avoid inadvertent impact; the fencing would be installed for the duration of works for the project and removed following completion</li> <li>▪ R8 and/or contractors must not drive or park vehicles on sections of the historic levee bank not to be impacted by works. This must be done by implementing appropriate 'no entry' signage on the protective fencing; additionally, any parking areas, and all access ways to and from the parking area, must be located outside the aforementioned protective fencing.</li> </ul> <p>As there is potential for the fabric and significance of the Takasuka Levee Bank (HO186 / NT B6238) to be indirectly impacted by erosion from inundation, the following mitigation measures must be</p>

Place	Statutory requirements	Recommendations	Mitigation measures
			<p>implemented to avoid any adverse impacts where possible to the heritage values of the site:</p> <ul style="list-style-type: none"> <li>▪ It is recommended that advice be sought from a qualified hydrologist to determine the impact erosion would have on the historic levee, and any implementation measures that could be implemented to avoid erosion of the historic levee bank</li> <li>▪ Should there be impact, the historic levee bank should be subject to a site inspection by a suitably qualified archaeologist prior to the start of works, and an archival photographic recording of the sections of the historic levee bank to be impacted should be carried out in accordance with the guidelines, <i>Photographic Recording for Heritage Places and Objects</i> (Heritage Victoria 2006).</li> </ul>

## Important note about your report

The purpose of R8's engagement under the Victorian Murray Floodplain Rehabilitation Project (VMFRP) is to design infrastructure for Lower Murray Water (LMW) including regulators, levees, roads, access tracks and culverts. The designs are required to be suitable for construction pricing to inform business case prioritisation. The purpose of this infrastructure is to allow floodplains to be watered at the hydraulic design levels nominated by LMW. R8 is also engaged to provide Regulatory Approvals and Cultural Heritage Services. The purpose of these services is for LMW to lodge the necessary approvals documents for the project with the relevant approvals authorities.

The sole purpose of this report and the associated services performed by R8 is to complete an Interim Heritage Report for LMW in accordance with the scope of services agreed between R8 and LMW.

R8 has prepared this report in accordance with the usual care and skill expected of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. However, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by R8 for use of any part of this report in any other context. This report has been prepared on behalf of, and for the exclusive use of LMW, and is subject to, and issued in accordance with, the provisions of the agreement between R8 and LMW. R8 accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

# 1. Introduction

## 1.1 Project location

The project is located within the Nyah-Vinifera (Regional) Park, within the Swan Hill Local Government Area (LGA).

The area of investigation (Figure 1.1-Figure 1.3) comprises the development footprint, as well as a substantial buffer around the development footprint and access tracks, which is found within the Nyah-Vinifera (Regional) Park between Forest Road in the east and Thwaites Road in the west, and the Murray River in the north and the southernmost extents of the park in the south.

The inundation area (Figure 1.1-Figure 1.3) comprises the majority of the Vinifera State Forest, except a small section to the north of Thwaites Road in the north and northeast, and some land between River Road and Forest / Takasuka Road near the Murray Valley Highway in the southwest. This will comprise an inundation of approximately 350 hectares.

## 1.2 Purpose of assessment

Jacobs and GHD teamed in December 2018 to form a joint venture (R8 joint venture) to complete the Victorian Murray Floodplain Restoration Project (VMFRP). The aim is to design infrastructure for Lower Murray Water (LMW) including regulators, levees, roads, access tracks and culverts. R8 has been engaged to provide the historical heritage desktop assessment as part of the VMFRP.

The purpose of this desktop cultural heritage due diligence assessment is to:

- Identify registered historic heritage places potentially impacted by construction works or managed inundation
- Identify likelihood of unregistered historic heritage being encountered in construction areas
- Describe likely approval requirements
- Describe further investigations and/or recommended management measures.

## 1.3 Desktop assessment

This desktop assessment involved the following activities:

- Register searches
- Review of previous heritage reports and local heritage studies, site cards and other site information (including a review and update of the existing historical archaeology due diligence assessment previously prepared for the project by Jo Bell Heritage Services (Edwards and Bell 2014))
- Background historical research including historical maps and plans
- Synthesis of background information to identify known heritage places both in the area of investigation and within the inundation areas, and areas with potential for previously unidentified heritage places
- Summary of potential impacts and mitigation measures
- Identifying further heritage investigation required to meet legislative requirements and to minimise project risk
- Identifying approvals requirements under the *Heritage Act 2017*, local planning schemes, and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

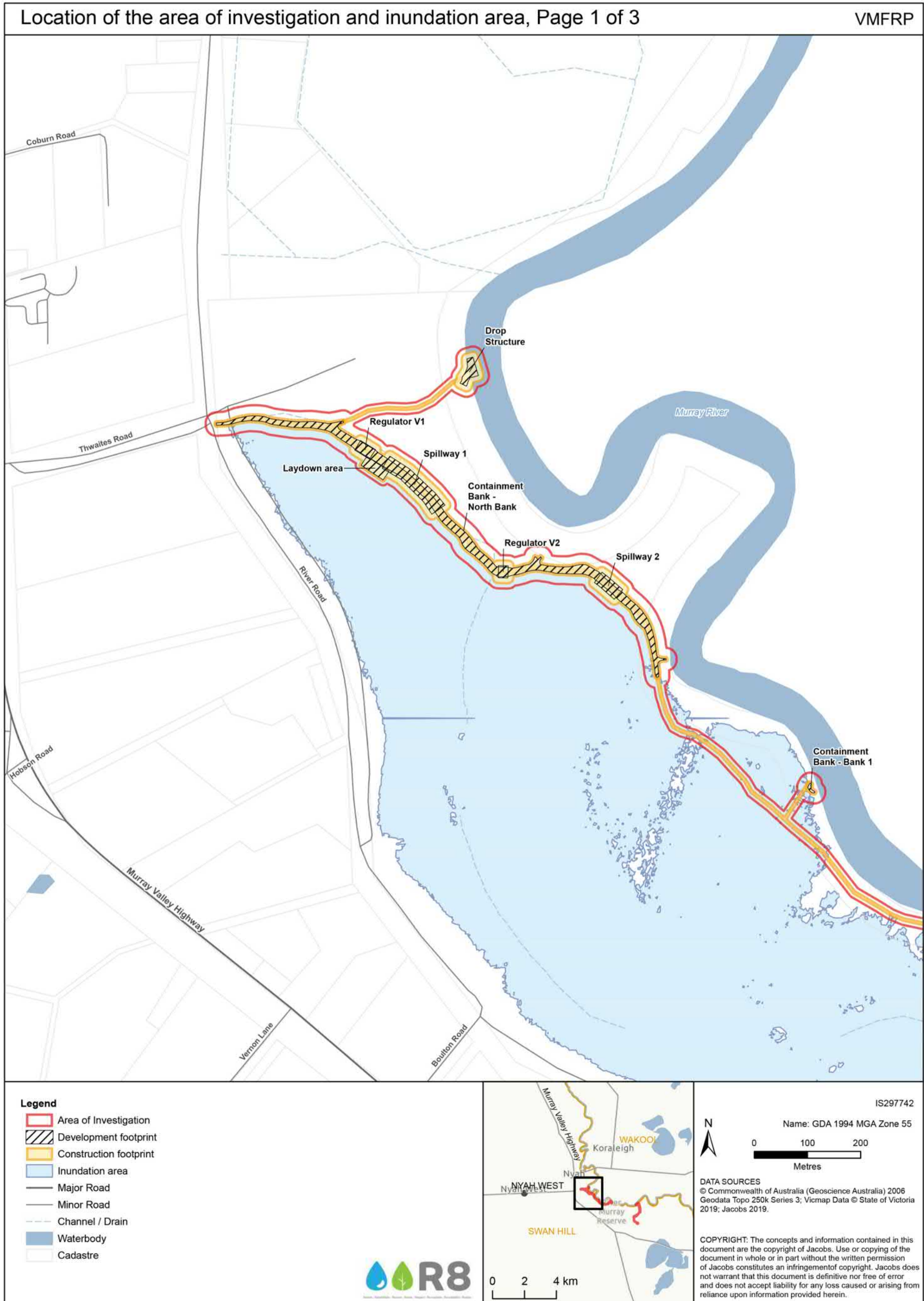
## 1.4 Authorship

This report was prepared by Caroline Seawright (Project Archaeologist, R8). Mapping was prepared by Nicole Kiely (Senior Consultant – Spatial and Information Services, R8). A technical review was undertaken by Rose Overberg (Principal Heritage Consultant, R8).

## 1.5 Assumptions and limitations

The constraints are as follows:

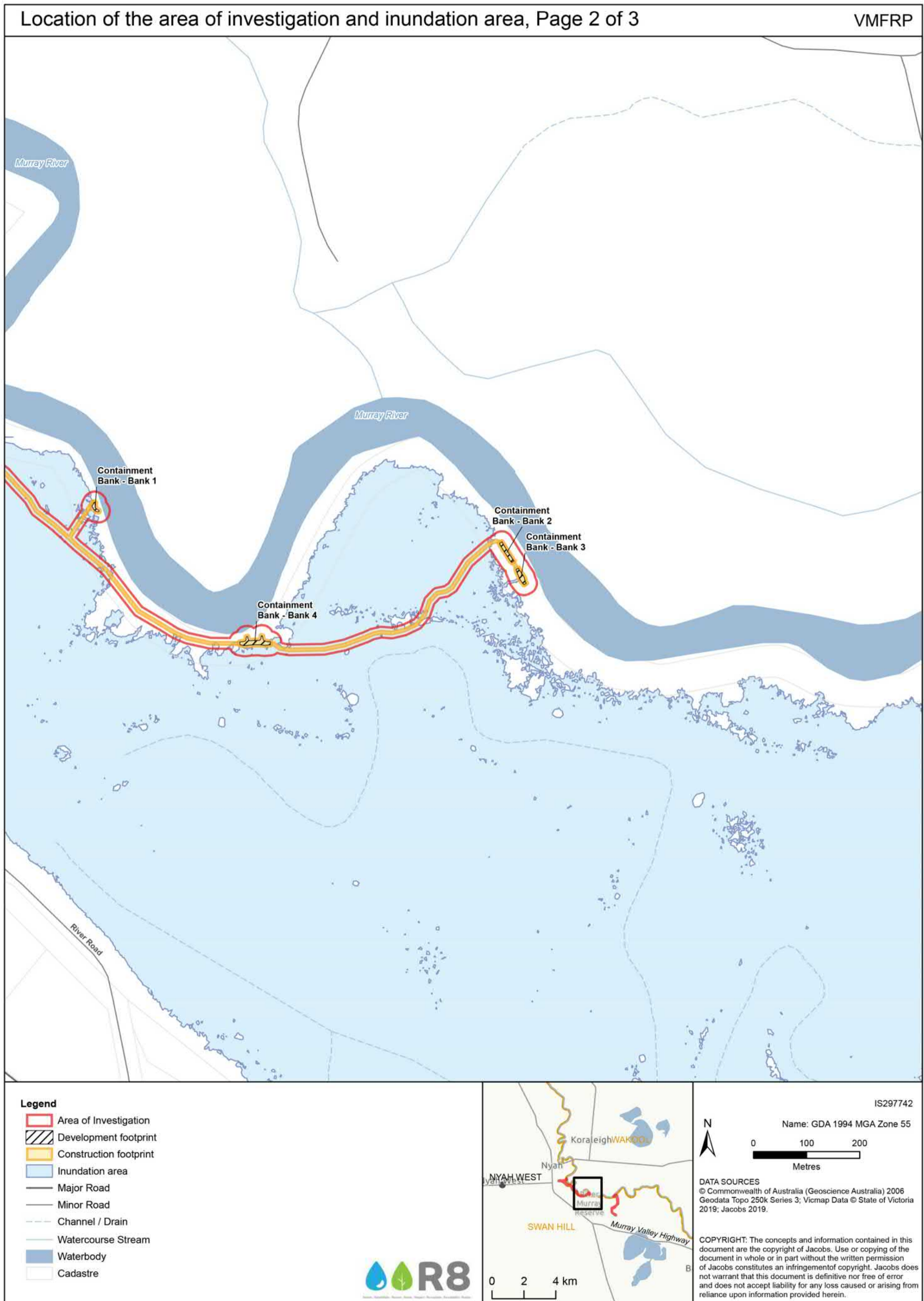
- The assessment was undertaken using the assessment area provided on 9 December 2019 by Dane Balodis (Senior Spatial Analyst, R8)
- No field investigation was undertaken
- The register searches were undertaken on 14 January 2020 and any findings within this report are based on those search results. As such, this report is accurate as to the date of that generation.



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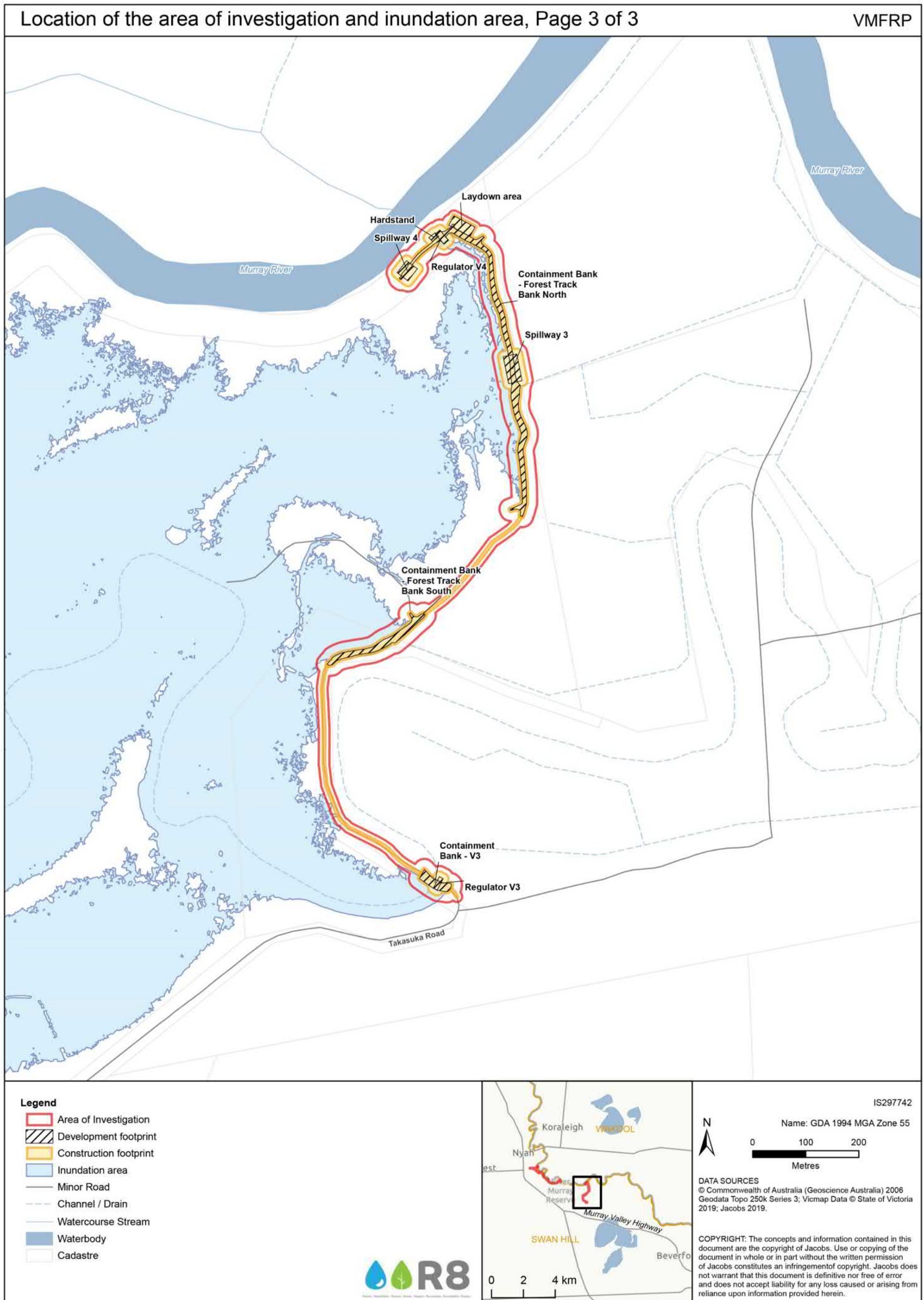
Figure 1.1: Location of the area of investigation and inundation area (1 of 3)





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Figure 1.2: Location of the area of investigation and inundation area (2 of 3)



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Figure 1.3: Location of the area of investigation and inundation area (3 of 3)



## 2. Desktop review

### 2.1 Heritage context

#### 2.1.1 Register searches

The following heritage registers were searched on 14 January 2020 by Caroline Seawright (Project Archaeologist, R8) to determine whether any known historical heritage places were present within or in proximity to the area of investigation and to the inundation area:

- Victorian Heritage Register (VHR)
- Victorian Heritage Inventory (VHI)
- Swan Hill Planning Scheme Heritage Overlay (HO)
- Commonwealth Heritage List (CHL)
- National Heritage List (NHL)
- World Heritage List (WHL)
- Register of the National Estate (RNE)
- National Trust of Australia (Victoria) (NT).

There is one historical heritage place within proximity to the area of investigation (Table 2.1, Figure 2.8), the Takasuka Levee Bank (HO186 / NT B6238), which is listed on the HO and the NT register, and intersects with the current area of investigation along Forest / Takasuka Road, Vinifera.

Table 2.1: Historical heritage places within proximity to the area of investigation

Heritage database	Register number	Name	Address	Description	Distance from project
HO	HO186	Takasuka Levee Bank	Vinifera Forest, Murray Valley Highway, Vinifera	Levee bank	Intersecting
NT	B6238		Vinifera		

Takasuka Levee Bank (HO186 / NT B6238) is also situated within proximity to the inundation area (Table 2.2, Figure 2.9).

Table 2.2: Historical heritage places within proximity to the inundation area

Heritage database	Register number	Name	Address	Description	Distance from project
HO	HO186	Takasuka Levee Bank	Vinifera Forest, Murray Valley Highway, Vinifera	Levee bank	Intersecting
NT	B6238		Vinifera		

#### 2.1.2 Previous historical heritage assessments

There have been three historical heritage investigations undertaken in proximity to the area of investigation, including the existing historical archaeology due diligence assessment previously prepared for the project by Jo Bell Heritage Services (Table 2.3).

Table 2.3: Summary of the existing historical archaeology due diligence assessment by Jo Bell Heritage Services

Author	Summary
Edwards and Bell (2014)	<p>Jo Bell Heritage Services undertook an historic due diligence assessment on behalf of the Mallee Catchment Management Authority (CMA) as part of the Sustainable Diversion Limits Project. The report was prepared for the proposed regulator site, track raising and embankments situated on the Nyah-Vinifera floodplain, within the Nyah-Vinifera Park northeast of Vinifera. Since then, the area of investigation has changed, and the areas assessed in the report only intersect with small sections of the current area of investigation. As such, the entire current area of investigation has not been assessed.</p> <p>During the desktop assessment, the report noted that only one previous heritage assessment of the Nyah-Vinifera Park, which comprised the Stage II investigations for water management options for the Mallee CMA (Ecological Associates Pty Ltd 2007). As such, the assessment area has not previously been systematically assessed for historic heritage or historic archaeological sites.</p> <p>A register search identified one historical heritage place located within 100 m of the assessment area, comprising the Former Church (HO201) at Wood Wood. Other nearby sites within the assessment area comprised Takasuka Levee Bank (HO186) at Vinifera (approximately 110 m from the assessment area), and Former Ferry Crossing (VHI H7527-0002) at Nyah (1.2 km from the assessment area). No predictive model for archaeological potential was included in the report.</p> <p>The site inspection comprised an investigation of 100 m radius around each of the proposed structures, which comprised the assessment area. No historic archaeological sites or areas of archaeological potential were identified during the site inspection at Nyah or Vinifera. The report noted that this may be due to the narrow scope of the investigation, which did not include access tracks to the structures except where they coincided with proposed track raising. As no historic features or areas of potential were identified, no significance assessments or detailed management recommendations were made.</p>

Other studies within proximity to the area of investigation and inundation area are summarised in Section 3.1.1.

Table 2.4: Summary of relevant historical heritage assessments

Author	Summary
Allom Lovell and Associates (2001a; 2001b; 2001c; 2001d)	<p>Allom Lovell and Associates completed a Stage II heritage study for the Rural City of Swan Hill in 2001, based on Stage I project which commenced in 1998, which included the establishment of potential sites of heritage significance, with 204 places were identified across the entire municipality. For each of these sites, the Stage II heritage study undertook further investigation, including a reassessment of each site to establish their cultural significance. After further research, Stage II compiled a list of 223 heritage places: six were recommended for inclusion on the VHR, the RNE, and the Swan Hill HO; 73 were recommended for the RNE, and the Swan Hill HO; 128 were recommended for the Swan Hill HO; and 16 places were ungraded due to demolition or insufficient levels of significance.</p> <p>Within Vinifera, one heritage place was identified. This heritage place comprised the Takasuka Levee Bank (HO186), which was recommended for both the RNE and the HO. This site intersects with the current area of investigation along Forest / Takasuka Road, Vinifera.</p> <p>Takasuka Levee Bank (HO186) was built by Japanese immigrant Jo Takasuka, who arrived in Melbourne with his wife and two children in 1905. He planned to establish a rice import/export business. In 1908, he leased 35 acres of land at Nyah, owned by SV Watson, and another 65 acres at Piangil, owned by E O'Reilly. His business was operated from two premises, one in Queen Street, Melbourne, and the other in Richmond. In 1908, he was granted a permit for 200 acres of flood-prone land between Tyntynder Homestead and Vinifera Forest. There, he finally managed to successfully cultivate rice in Victoria after establishing a levee bank across Gunbower Creek within the floodplain; however, despite the levee, his crop was continually washed out by floodwaters for several years afterwards. His most successful crop was produced in 1914, after a drought reduced flooding to the region. Takasuka continued to cultivate rice until he abandoned the project in 1927 due to a lack of finance. A memorial cairn was unveiled at the site of Takasuka's rice farm by the Consul-General of Japan, Yasunori Kikuchi, and Shire President, Margaret Schintler, along with members of the Takasuka family, on 18 October 1991.</p> <p>The remnant portion of the levee bank appears to extend through the Vinifera State Forest for several kilometres; the start of the bank is marked by the concrete cairn and an interpretive signboard. The levee bank itself is approximately 1.5 m high, and runs parallel to the forest roadway for approximately 500 m. It was assessed as having considerable historic significance as it provides evidence of the first attempt to cultivate rice in Australia. At a local level, it is historically significant due to its associated with farming activity during the pivotal period of Closer Settlement in the</p>

Author	Summary
	<p>early twentieth century, and demonstrates a typical attempt to make the low-lying riverside land viable for agricultural development. Its curtilage is described as one where a 'nominal curtilage should be maintained of ten metres to each side of the levee bank, in order to preserve its setting and views'.</p>
<p>Ecological Associates Pty Ltd (2007)</p>	<p>Ecological Associates Pty Ltd was engaged by the Malee CMA to undertake Stage II investigations of water management options for the Murray River from Robinvale to Wallpolla Island. One section of the assessment area intersected with the current area of investigation within the Nyah-Vinifera Park at Vinifera.</p> <p>The background history of the assessment area stated that no historical archaeological investigations have been undertaken in the study region. No previously registered sites were identified within the proposed works locations. While two historical heritage assessments had been undertaken of proposed development projects, one at Robinvale and the other at Swan Hill, no historical sites were identified during these assessments. Neither of these two assessments were undertaken within the current area of investigation.</p> <p>A site inspection was undertaken across the assessment area to identify historical heritage places, focussing on the priority options sites none of which was in the northern wetland at Vinifera.</p> <p>The site inspection within the Vinifera State Forest aim to inspect obtrusive historical structures, surface sites, and potential subsurface archaeological sites. No historical heritage places or areas of historical archaeological potential were identified during the site inspection, likely due to ground surface visibility being limited to 10-15 per cent across the works locations. As the site inspection was limited to works areas, which mapping indicates was to be located in the northwest portion of the forest near the current area of investigation. While the mapping is not clear enough to determine the exact locations investigated, it is clear that the fieldwork could not have covered the entire current area of investigation.</p>

## 2.2 Historical context

### 2.2.1 Historical background

The area of investigation is situated within the former Tyntynder squatters run which encompassed the present townships of Wood Wood, Nyah, Nyah West, and Vinifera, which in itself, was a subdivision of the larger Swan Hill run. The Swan Hill run was gazetted in 1848, and was owned by Andrew Beveridge from 1845 until its subdivision in 1866. The Tyntynder portion of the run remained under the control of Beveridge until December of 1866, when it was transferred to pastoralist William John Turner Clarke. The land then passed through several hands until 1884, when it was recorded as being owned by George Holloway and George Seward (Spreadborough and Anderson 1983). The Tyntynder Homestead is situated at Beverford, approximately 3.6 km to the southeast of the area of investigation.

During the late 1880s, the closest inhabited village to the Vinifera area was the 'Taverner Community Village Settlement', which was re-named Tyntynder in 1893, and, shortly thereafter, known as Nyah. The expansion of settlers from Nyah into the Vinifera area followed (Department of Lands and Survey 1880s; 1884; Monument Australia 2014; Victorian Places 2015a). Mapping of the Tatchera area, dating to the 1880s, shows that the area to the north and northeast of the Murray Valley Highway and Woorinen-Vinifera Road (which then comprised the only major roadway) was not settled, except in a small allotment of land that intersects with the western end of the activity area, and is today situated along part of Forest / Takasuka Road; this small allotment originally encompassed part of an anabranch of the Murray River (Department of Lands and Survey 1880s). The present-day township of Vinifera was first settled as a village under the name of Tyntynder West in the early 1900s, with its post office opening on 1 February 1907 (Premier Postal Auctions 2005).

Jō Takasuka (高須賀ジョー), was a Japanese politician and businessman who set up an import business, Takasuka, Dight and Company on Queen Street in Melbourne and in Richmond. Takasuka and his wife, Ichiko, and children arrived in Melbourne in 1905. By 1906, they moved to Nyah, where he farmed rice on 14 hectares of land rented from a local farmer; he soon entered negotiations with the Victorian government to acquire land subject to annual flooding, on which to cultivate rice. He was eventually granted permissive occupancy of an 81 hectare allotment in 1908, and moved his family to a four-roomed house of Murray pine on his land. Over the next 20 years, Takasuka took up a sustained attempt to grow rice in Victoria. He built and rebuilt a levee bank during this 20 year period, as each subsequent Murray River flood would damage the bank, which was located at the west end of his allotment where it meets the current Vinifera State Park. The Takasuka Levee Bank, which was

approximately 2 km long in 1910, is one of the first attempts of water division in the area. Between 1911 and 1912, Takasuka was able to sow and harvest 25 different varieties of rice at Nyah and Vinifera. However, after abandoning rice cultivation in 1927, he and his family moved to Nyah. In 1934, they moved to Bendigo and grew tomatoes, before he returned to Japan for his mother's funeral in 1939. Takasuka died in Japan in early 1940. A memorial cairn was built for him near the levee bank, and the roadway leading to the levee bank was named in his honour. The levee bank forms part of Forest / Takasuka Road (Edwards and Bell 2014, p. 21; Kubota 2016; Lewis 2018; Parks Victoria 2014; Sissons 1990).

In 1909, the State Rivers and Water Supply Commission installed a pumping station at Nyah Bend, to provide water for fruit production within the region, as part of the beginning the Nyah Irrigation District (Victorian Places 2015a; 2015b). The population of Vinifera expanded as settler-soldiers returned to Australia after World War I as part of the Soldier-Settlement Scheme in 1919 (Edwards and Bell 2014, p. 21; Victorian Places 2015b). Tatchera mapping dating to 1920 shows that the township of Nyah expanded towards the present Vinifera area, as allotments stretched southeast as they followed the Murray Valley Highway; otherwise, the activity area predominantly remained unsettled, other than the small allotment of land already at the east end of the activity area (Department of Lands and Survey 1920). The post office was renamed as Vinifera on 1 November 1922 (Premier Postal Auctions 2005). This was followed by the opening of a school there in 1924, and a public hall and store a shortly thereafter. Despite the lack of amenities, Vinifera was, and still is, considered to be a reliable location for viticulture as it is a relatively frost free region due to its elevation above the Murray River (Victorian Places 2015b).

As part of the Nyah-Vinifera (Regional) Park, the area of investigation is likely to have been impacted by pastoralism, commercial logging activities, drainage construction, and, to a lesser extent, from tourism (Cusak 2000).

### 2.2.2 Historical maps and aerial imagery review

In 1851, the assistant surveyor's map of the Murray River between Piangil to Swan Hill shows that the present-day Vinifera State Forest as comprising swamps, reeds, flooded ground, swampy grounds, flooded reed beds, flooded gum trees, and a lagoon, with a waterway north of the roadway marked as 'Gunboar', and a paddock fence located between the Murray River in the north and flooded grounds in the south, under an area named 'Dic Dic' (Figure 2.1). Another fence was located along the Murray River to the east of this area, again between the Murray River and a waterway; the presence of these fences suggests that at least part of the Murray River frontage was likely used for grazing at the time, despite the only land claim in the area being Andrew Beveridge's Tyntynder run to the east (northwest of the present-day town of Beverford).

The Tyntynder West parish map from 1972 shows that land to the southeast of Vinifera was predominantly large rural allotments to the east of the Vinifera State Forest, with several small allotments situated to the north of the Murray Valley Highway. The Vinifera State Forest is noted as a 'reserved forest', and is situated between the small allotments and the Murray River. The reserved forest follows the same alignment of the Vinifera State Forest section of the Nyah-Vinifera Park. The area of investigation is situated within this reserved forest (Figure 2.2). Jo Takasuka's large allotment, allotment 47, is shown as being immediately east of the current area of investigation along the present-day Forest / Takasuka Road. This appears to comprise the 200 acre allotment of flood-prone land between Tyntynder Homestead and Nyah-Vinifera (Regional) Park Forest that he had been granted in 1908.

Prior to 1920, no allotments within the present-day Vinifera State Forest were allocated within the floodplain area, likely due to the frequent inundation of the land (Figure 2.3). Aerial imagery dating to 1945 shows that tree cover within the Vinifera forest was relatively light, with the watercourses through the forest clearly visible. There are no obvious fence lines visible within the area, and no obvious structures. There is farmland visible to the east of the area of investigation (Figure 2.4).

However, by 1953, allotments 45, 46 and 47, which were not visible in the 1945 aerial imagery, are delineated on the Tatchera county map to within the eastern end of the present-day Vinifera State Forest, with a roadway leading between the Murray Valley Highway and allotment 45; Takasuka was the original owner of allotment 47



(Figure 2.5). Besides allotments 45 and 46, there does not appear to be any further growth within the Vinifera State Forest during the mid- to late-1900s, suggesting that settlement in the Vinifera region reached its limit in by the 1950s, likely due to the land along the Murray River being flood-prone.

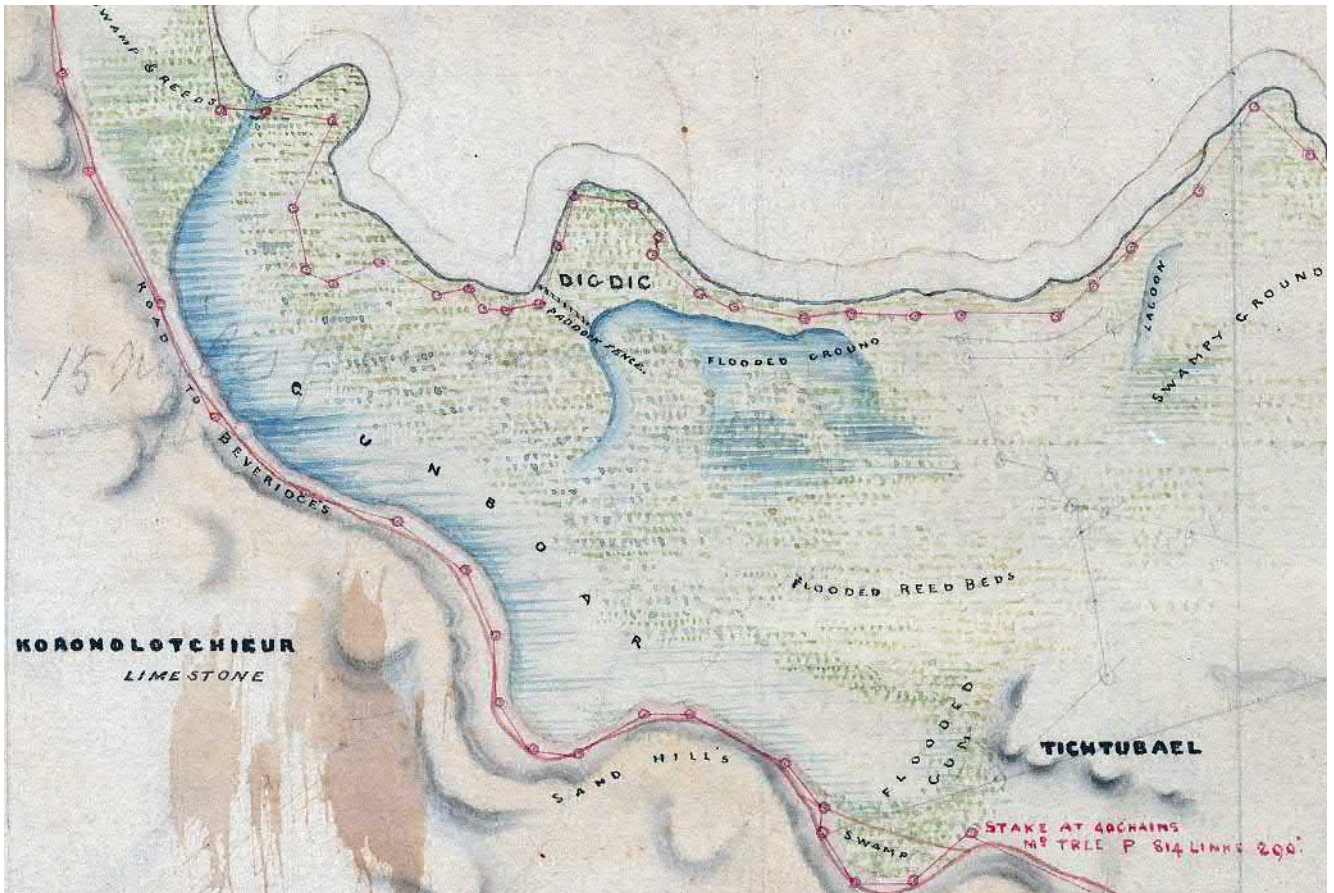


Figure 2.1: Surveyor's map of the Murray River southeast of Nyah (Prichard 1851)

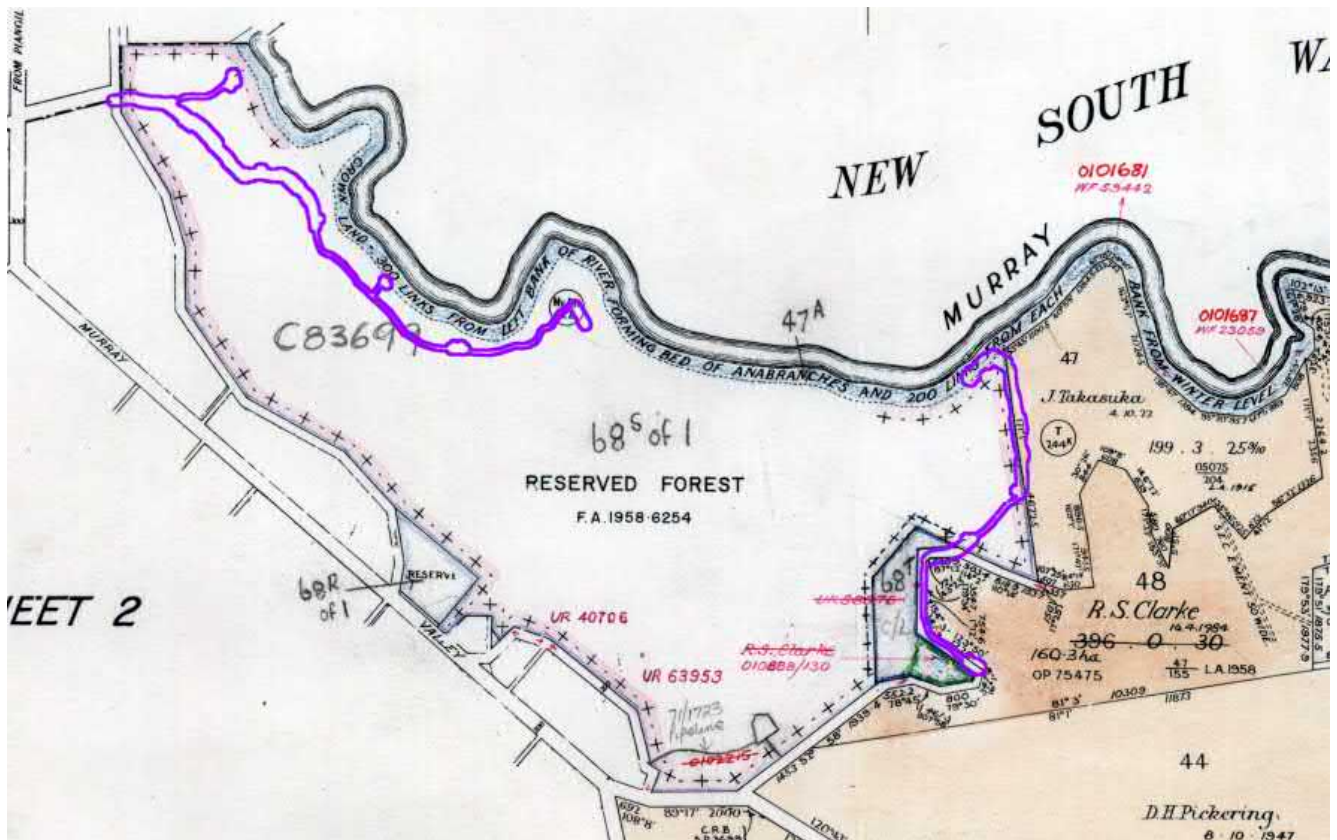


Figure 2.2: Tyntynder West Parish Map with the approximate location of area of investigation outlined in purple; the Murray River appears to have changed course since this map was created (Department of Crown Lands and Survey 1972)

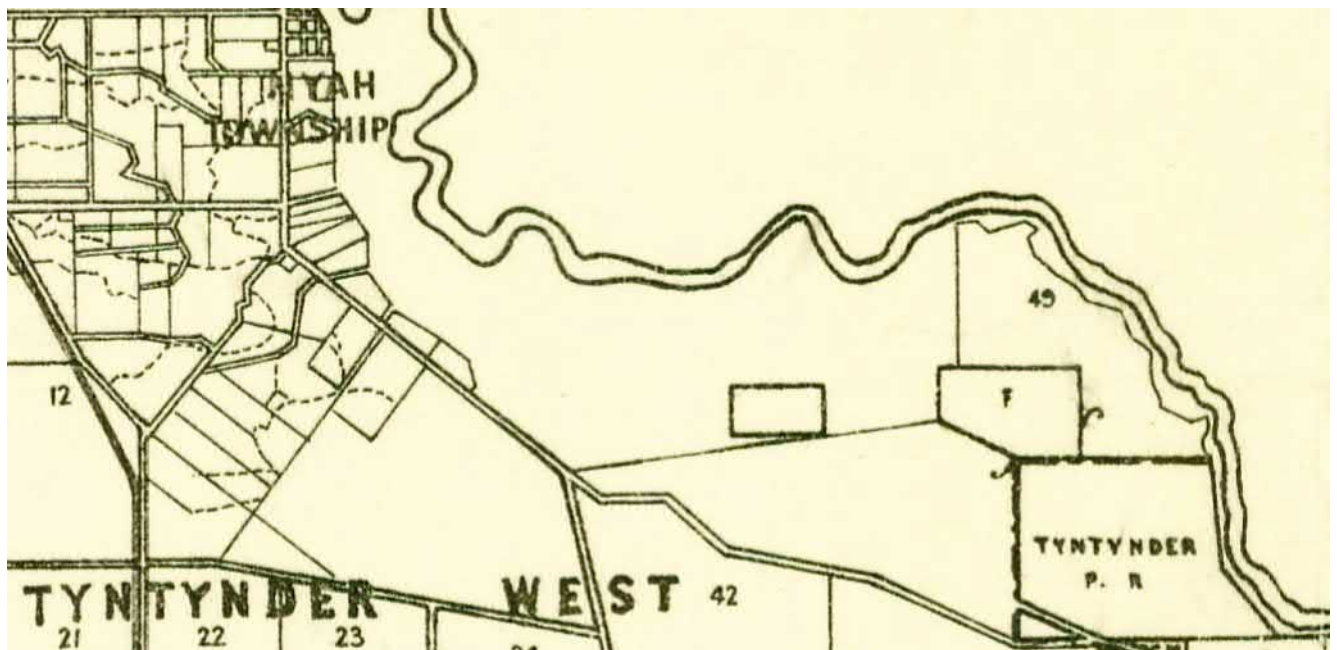


Figure 2.3: Tatchera county map showing allotments within the vicinity of the present-day Vinifera State Forest (Department of Lands and Survey 1920)



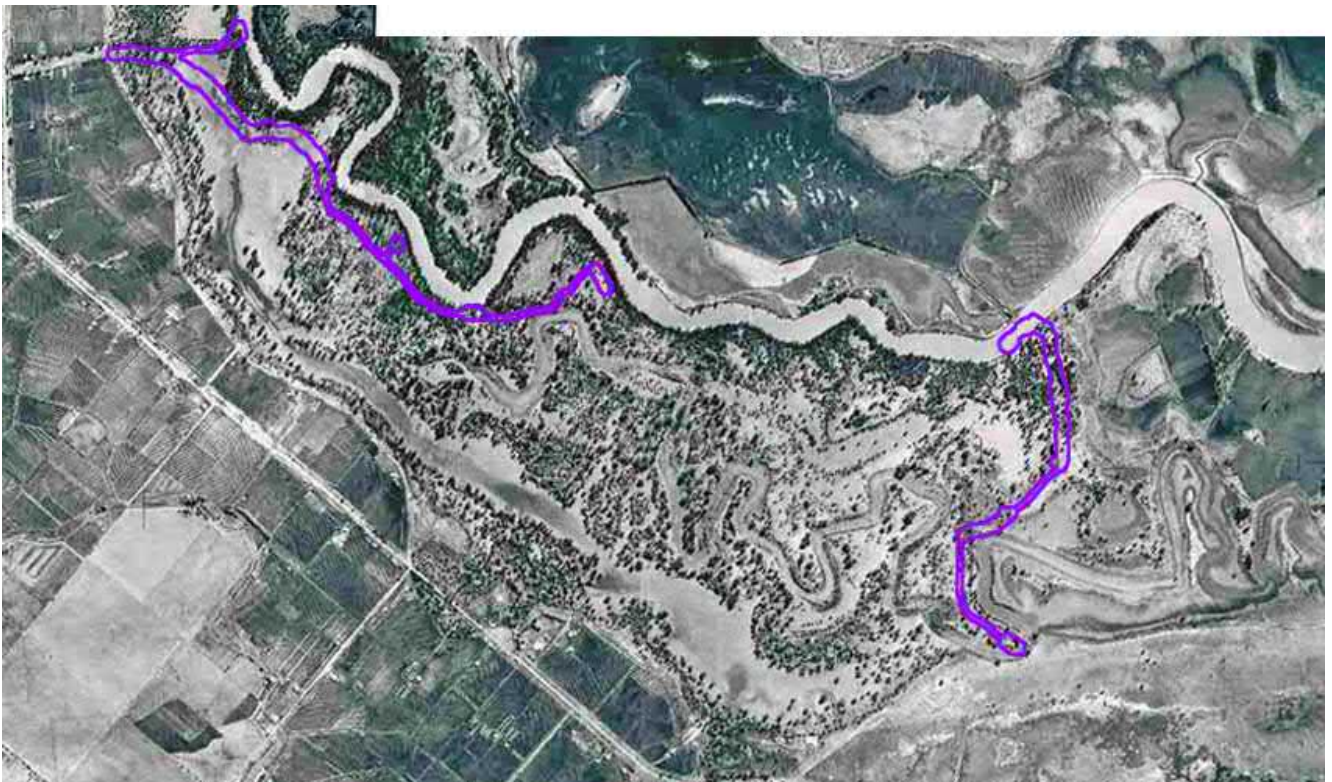


Figure 2.4: 1945 aerial imagery of the area of investigation, outlined in purple (Department of Environment 1945a; 1945b)

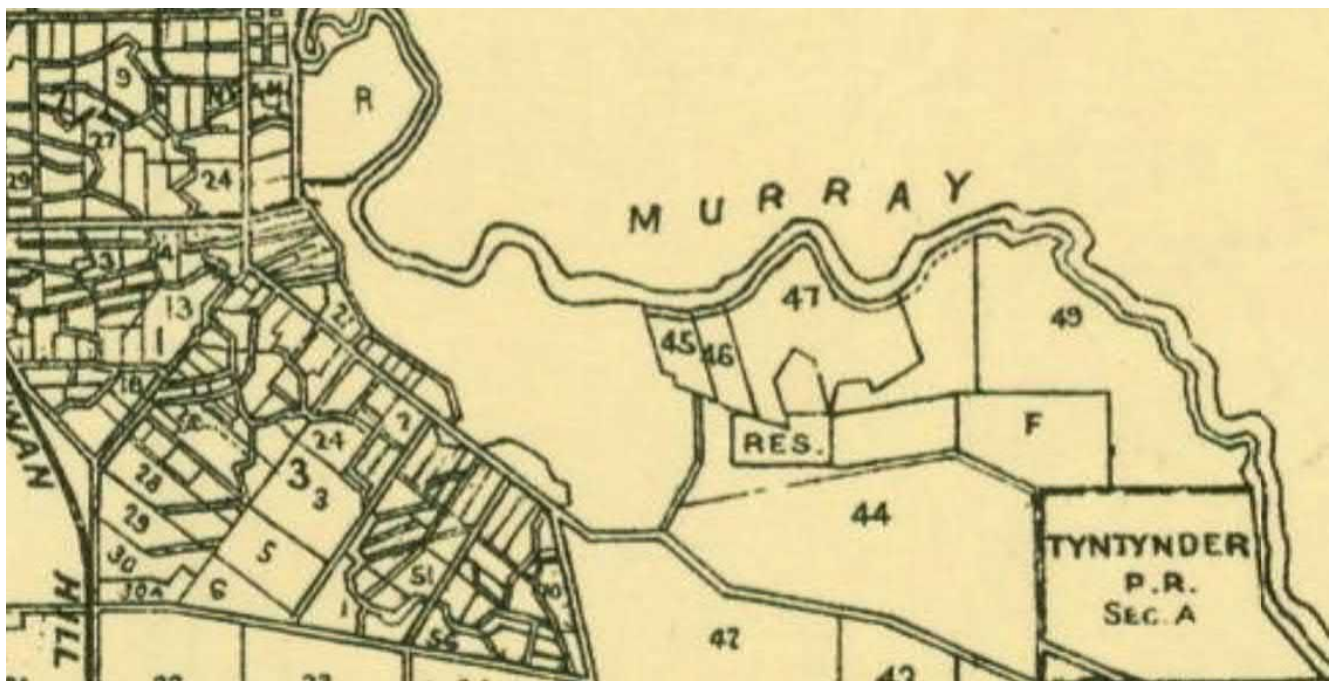


Figure 2.5: Tatchera county map showing allotments within the vicinity of the present-day Vinifera State Forest (Department of Lands and Survey 1953)





Figure 2.6: 1972 aerial imagery of the area of investigation, outlined in purple (Department of Environment 1972)

Aerial imagery dating to 1972 shows that the Vinifera State Forest is covered in dense foliage, with little evidence of allotments 45, 46 and the western portion of 47 visible (Figure 2.6). The forest now aligns with the area of investigation in the east, and some pathways are visible through the forest along different portions of the area of investigation routes. No settlement is visible within the present-day boundary of the forest.

Today, modern aerial imagery shows that Vinifera still comprises a dispersed rural locality adjacent to the Murray River. The area of investigation intersects with the Murray Valley Highway, River Road, and several smaller roadways and access tracks, the Vinifera State Forest, an anabranch of the Murray River, and the Murray River itself. Much of the area of investigation is not visible in aerial imagery, due to heavy tree cover, but there do not appear to be any obvious historical heritage places visible. While Takasuka Levee Bank (HO186 / NT B6238) is situated adjacent to Forest / Takasuka Road, it is difficult to detect from aerial imagery due to the heavy tree cover. There is farmland immediately east of the area of investigation along Forest / Takasuka Road.

The heritage boundary of the Takasuka Levee Bank (HO186 / NT B6238) appears to comprise a tree-covered area and access path, within allotment 68T~1\PP3676 and the Forest / Takasuka Road reserve, and a small section of the adjacent farmland within allotment 48\PP3676. The *Rural City of Swan Hill Heritage Study Stage II: Volume 2, Part II - Heritage Place Datasheets: S-Z* (Allom Lovell and Associates 2001c) provides an image of the levee bank dating to 2000 (Figure 2.7). In this heritage study, it describes the start of the levee bank as running 'parallel to the forest roadway for approximately 500 metres', with the remnant portion extending 'for several kilometres' through the Vinifera State Forest (Allom Lovell and Associates 2001c, pp. 502-503); but the HO boundary is a 45 m by 370 m rectangular outline, and therefore does not encompass the entire levee bank. As modern aerial imagery cannot confirm the location of this levee bank within the HO186 boundary, the location of the levee bank will need to be ground-truthed to determine where the heritage place intersects with the area of investigation.





Figure 2.7: Takasuka Levee Bank (HO186 / NT B6238), located within the Vinifera State Forest, Forest / Takasuka Road reserve, and part of the immediately adjacent farmland (Allom Lovell and Associates 2001c, p. 501)

### 2.3 Predictive statement

Following a search of the above registers, review of the previous literature and analysis of relevant reports, the following predictive statements can be made in relation to the area of investigation and the inundation area:

- Remains of the Takasuka Levee Bank are likely to be identified within the area of investigation both within, and outside, the registered heritage boundary
- The most likely site type in the area of investigation would be places associated with early agricultural or pastoral activities and water management practices
- There is moderate to high potential for previously unidentified historical heritage to be present within the area of investigation, due to the possibility of remnant fences at the eastern end of the large section of area of investigation as per the 1851 survey map, and possible pastoral or rural heritage associated with the prior allotments shown at the eastern end of area of investigation.

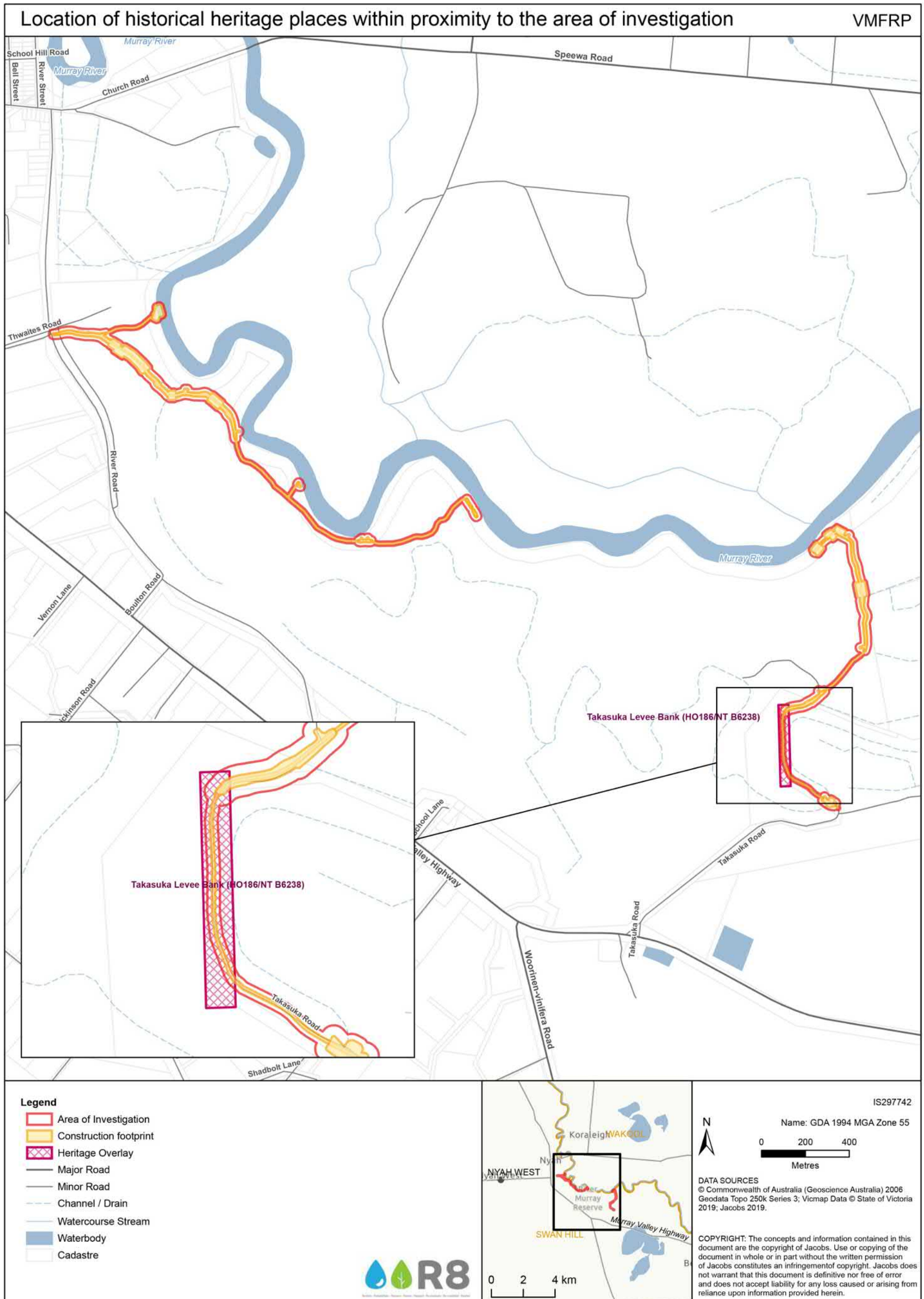
### 2.4 Summary of desktop findings

There is one historical heritage place that intersects with the area of investigation, which is listed on the HO: the registered heritage boundary of Takasuka Levee Bank (HO186 / NT B6238). This heritage place also intersects with the inundation area.

Examination of the *Rural City of Swan Hill Heritage Study Stage II* in combination with a review of the modern aerial imagery review has confirmed that the registered heritage boundary does not encompass the entire length of the levee bank, this must be confirmed with a site inspection.

There is moderate to high potential for previously unidentified historical heritage to be present within the area of investigation and the inundation area, due to the remains of the Takasuka Levee Bank extending outside its heritage boundary, and from the background history and previous historical heritage assessments. Outside of the Takasuka Levee Bank, site types most likely to be identified in the area of investigation and the inundation area would be places associated with early agricultural or pastoral activities and water management practices.

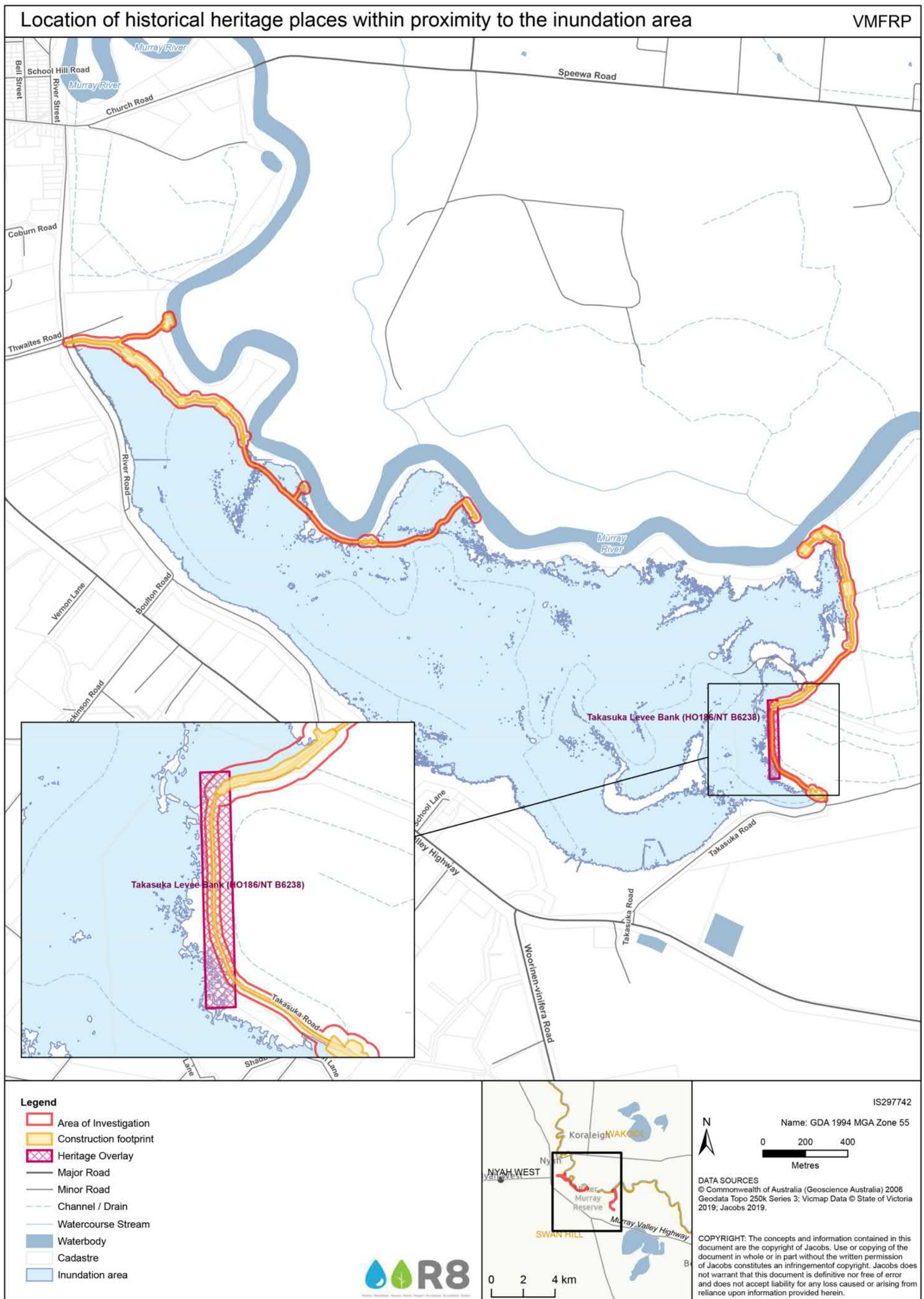




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Figure 2.8: Location of historical heritage places within proximity to the area of investigation





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Figure 2.9: Location of historical heritage places within proximity to the inundation area

### 3. Impact assessment

#### 3.1 Proposed works

##### 3.1.1 Main works

The project involves the construction of four new regulators (V1, V2, V3 and V4) to retain and regulate water in the Vinifera part of the Nyah-Vinifera (Regional) Park.

The main components include:

- Two regulators located at the northern end of the proposed system (downstream), referred to as regulators V1 and V2 (main regulators). Regulator V2 would be located on Vinifera Creek and is the primary structure for regulating flows in and out of the floodplain. Regulator V1 would be located about 330 m north-west of regulator V2, and will pass flows through the broad depression leading to the Murray River.
- A regulator at the upstream end of the forest (referred to as regulator V3) to pass local drainage flows, pass overland flows in large events and prevent backflow onto private land during a managed event.
- A regulator at the upstream end of the system (referred to as regulator V4) to prevent backflow into the Murray River when retaining water in the forest and allow inflows from the Murray River.
- A containment bank labelled Main Bank at the northern end of the forest, designed to contain water, including two overflow sills.
- Drop structure, located at the confluence of the Murray River and the outflow path from regulator V2. This would consist of:
  - Rock erosion protection within the basin, gabion cut off beam/weir at the upstream end and rock mattress in the outlet cutting and extending to the edge of the Murray River
  - A second gabion cut off beam at the location where the channel steepens as it re-enters the river rock mattresses down the river bank into the water.
- Two banks at the upstream end of Vinifera Park located between regulators V3 to V4 to separate the inundated area from private land, referred to as Forest Track Bank North and Forest Track Bank South.
- Seven sites comprising minor works, block banks and overflow sills between the Murray River and the forest to secure local low points in the natural levee system and contain the water within the floodplain.

A summary of the design specifications for each of the regulators is presented in Table 3.1.

Table 3.1: Summary of regulator design specifications

Regulator	Open/Close or regulate flow	Proposed design	Proposed gates
V1	Regulate	10 No. 1800W x 1500H Box culverts	Split leaf and single leaf gates
V2	Regulate	4 No. 1800W x 1800H Box culverts	Split leaf gate
V3	Open/Close	1 No. DN1200 RC Pipe culvert	Penstock
V4	Open/Close	1 No. 1800W x 1800H Box culvert	Penstock

The following design philosophy has been applied:

- The structures are designed to allow natural flows to pass unhindered, to and from the floodplain when the structures are not in use (fully open).
- The regulating structures will be designed to provide fish passage when not in use (fully open).

The design relies on natural levees along the Murray River, supplemented by targeted infrastructure to impound water at the Design Water Level. Permanent pump infrastructure is not included in the design however, the

proposed works include a hard stand areas and erosion control at regulator V4 to enable the set-up of temporary pump infrastructure when required.

Temporary pump infrastructure will include a diesel-powered trailer-mounted rig with a suction pipe extending into the Murray River. While the frequency and duration of pumping will depend on actual inundation events and the method to achieve environmental watering targets, it is expected that pumping may be needed approximately one year in 10 years, it is estimated that pumping may be needed approximately one year in 10 years, over a period of several weeks, but could occur for up to 2-3 months.

### 3.1.1.1 Fish passage

The project provides a combination of approaches for provision of fish passage, including passage directly through regulator bays, across overflow sills, and across the bank and natural ground when submerged.

The main regulators (V1, V2) are located on the main downstream flow path and would provide the primary fish passage when the regulators are fully open. Combination gates with overshot functionality would be used at V2 to provide downstream fish passage over the gate crest.

Upstream fish passage is not required at regulator V3 as the private land is isolated from inundation under most conditions. In the event of a large flood inundating the upstream property, the structures would allow some downstream fish passage as the area drained. The gate would be operated in either the fully open or fully closed position to prevent mortality to fish larvae. At higher Murray River levels fish passage would occur by overland flow paths that bypass the structure.

Regulator V3 and V4 structures will be operated either in fully open or fully closed position. When water is released with the regulator gate in fully open position, fish have passage through the regulator both in managed release and natural flood scenarios.

### 3.1.1.2 Containment banks/access tracks

The Main Bank (northern bank) and the Forest Track Banks would provide operator access to the regulators and would be built on the alignment of existing access tracks. Once the containment banks have been constructed, the tracks would be reinstated on top of the bank with a gravel surface. A few short lengths of non-trafficable bank would be required at tie in locations where the bank needs to match the natural river bank.

Some of these tracks would need to be upgraded as part of the project, the extent of which would be confirmed following outcomes from geotechnical investigations, complex cultural heritage assessment (as part of the Cultural Heritage Management Plan for this project) and ground truthing. Design and construction of the final access tracks would need to comply with the mitigation measures.

## 3.1.2 Key construction activities

Construction activities would occur within the area identified in Figure 1.1-Figure 1.3. Construction activities would include:

- establishment of construction sites, set down areas and access routes
- construction / installation of new structures.
- Construction would involve use of vehicles and machinery such as trucks, excavators, and access equipment.

Importation of construction materials, including regulators and imported soils. Imported soils would comply with Parks Victoria consent under Section 27 of the *National Parks Act 1975*.

An Environmental Management Plan (EMP) would be prepared for the works and would detail the measures to avoid and minimise impacts during construction. Once construction of regulators, stop banks and all associated works are complete, all waste and spoil will be removed from the sites and disposed of as required by the EMP.

## **3.2 Potential impacts**

### **3.2.1 Takasuka Levee Bank (HO186 / NT B6238)**

#### **3.2.1.1 Proposed works**

The heritage boundary of the Takasuka Levee Bank (HO186 / NT B6238) appears to intersect with the construction footprint within the area of investigation along Forest / Takasuka Road. However, the entire remnant levee bank is 'several kilometres' long, only paralleling Forest / Takasuka Road within the Nyah-Vinifera (Regional) Forest for approximately 500 m. As the full extent of the heritage levee bank was not mapped and its entire location is presently unknown, the levee bank may intersect area of investigation works outside of the registered HO boundary.

As such, the proposed Forest Track Banks works (Section 3.1.1.2) will impact upon the historic significance of the heritage place. Depending on the location of the unmapped sections of the Takasuka Levee Bank, other works may also impact upon this heritage place.

#### **3.2.1.2 Inundation area**

As both the heritage boundary of the Takasuka Levee Bank (HO186 / NT B6238) intersects with the inundation area, and as the currently unmapped remnant levee bank is known to be several kilometres long portions of the levee bank are also likely to intersect with the inundation area outside the HO boundary.

As such, both known and unmapped sections of levee bank will be impacted by erosion from the inundation which is further detailed in Section 3.1.1 (Figure 2.9).



## 4. Approval requirements

The approvals requirements for the heritage place assessed within the area of investigation is provided in Table 4.1.

If the scope of works changes to include other features of the heritage places detailed in Table 4.1, further heritage assessment would be required, and this assessment will need to be updated.

Table 4.1: Statutory requirements for heritage places within the area of investigation

Heritage place	Statutory requirements
Entire area of investigation	Discovery of archaeological sites - under Section 127 of the <i>Heritage Act 2017</i> , If an archaeological site is discovered during construction or excavation on any land, the person in charge of the construction or excavation must as soon as practicable report the discovery to HV.
Takasuka Levee Bank (HO186 / NT B6238)	A planning permit would be required for ground-disturbing works in relation to Takasuka Levee Bank (HO186 / NT B6238).



## 5. Historical heritage recommendations

### 5.1 Overall recommendations and project risk

Due to the possibility for historic archaeology to be impacted, it is recommended that a Heritage Impact Assessment (HIA) be undertaken for the project. This should include:

- Field survey to identify further historical archaeological sites and any unidentified historical heritage places
- Assessment of impacts on all historical heritage sites
- Detailed identification of mitigation measures and approval requirements
- A Heritage Impact Statement.

All historical archaeological places are protected under the *Heritage Act 2017*, whether they are registered or not. Further historical research to ascertain the likely presence of any historical archaeological places or material within the area of investigation is recommended to reduce the risk of delays to the project. Such delays would include the stoppage of works to avoid damage or destruction of historical archaeological sites and materials while the appropriate approvals are sought. This would enable R8 to proactively consider the nomination of historical heritage archaeological deposits ahead of the works, which would provide R8 with more certainty in relation to timeframes and statutory obligations. The completion of the HIA for the project would mitigate these issues.

### 5.2 Site-specific recommendations

The Takasuka Levee Bank (HO186 / NT B6238) will be impacted by project works and possibly by inundation impacts as well. As such, it is important to take the *Rural City of Swan Hill Heritage Study Stage II* recommendations into consideration for the project:

*The levee bank should be retained intact, without further penetrations or excavation. Any future roadways proposed through the forest should be laid out sympathetically in relation to the position of the levee bank. For example, roadways should ideally run parallel to the levee bank, and should not cross it, as they currently do in some instances (Allom Lovell and Associates 2001c).*

Additionally, as the levee bank extends outside the registered heritage boundary of Takasuka Levee Bank (HO186 / NT B6238), it is recommended that consultation with the Swan Hill Council be undertaken to correct the spatial data related to this heritage place.

## 6. Mitigation measures

The following high level mitigation measures may apply to the project, as outlined in Table 6.1. These can be confirmed during a HIA.

Table 6.1: Proposed project activities and specific management measures for the heritage places within the area of investigation

Proposed activities	Heritage place	Mitigation measures
General activities	Entire area of investigation	<p>General mitigation measures to be implemented across the area of investigation:</p> <ul style="list-style-type: none"> <li>▪ Historical heritage awareness training should be completed as part of the site induction for all personnel and/or contractors prior to the commencement of construction works to ensure:                             <ul style="list-style-type: none"> <li>- an understanding of where all heritage places are located within the area of investigation</li> <li>- an understanding of the potential heritage places that may be impacted during the project</li> <li>- the procedures required to be undertaken in the event of discovery of historical heritage material, features or deposits, or the discovery of human remains</li> </ul> </li> <li>▪ If an archaeological site is discovered during construction or excavation, the person in charge of the construction or excavation must as soon as practicable report the discovery to HV</li> <li>▪ A copy of this report should be kept onsite and on file with the project records. All contractors and/or project staff should be made aware of the heritage status of the heritage places in the area of investigation prior to works taking place.</li> </ul>
Forest Track Banks	Takasuka Levee Bank (HO186 / NT B6238)	<p>As there is potential for the fabric and significance of the Takasuka Levee Bank (HO186 / NT B6238) to be directly impacted by Forest Track Banks, and potentially other works on the unmapped section of the levee bank, the following mitigation measures must be implemented to avoid any adverse impacts where possible to the heritage values of the site.</p> <p>Avoidance of the historic levee should be undertaken, if possible:</p> <ul style="list-style-type: none"> <li>▪ Prior to any works, including any vegetation clearance, site establishment or construction works in the area, protective barrier fencing will be erected between the levee bank and the works area, to fence it and thereby avoid inadvertent impact; the fencing would be installed for the duration of works for the project and removed following completion</li> <li>▪ R8 and/or contractors must not drive or park vehicles on sections of the historic levee bank not to be impacted by works. This must be done by implementing appropriate 'no entry' signage on the protective fencing; additionally, any parking areas, and all access ways to and from the parking area, must be located outside the aforementioned protective fencing.</li> </ul> <p>Should impact to the historic levee be unavoidable:</p> <ul style="list-style-type: none"> <li>▪ Prior to the start of works, an archival photographic recording of the sections of the historic levee bank to be impacted should be carried out, in accordance with the guidelines, <i>Photographic Recording for Heritage Places and Objects</i> (Heritage Victoria 2006)</li> <li>▪ Works are to be undertaken in such a way as to minimise direct contact by construction vehicles or machinery with the historical levee bank. Prior to any works, including any vegetation clearance, site establishment or construction works in the area, where the historic levee bank will not be impacted, protective barrier fencing will be erected between the remaining portion of the levee bank outside the works area, to fence it and thereby avoid inadvertent impact; the fencing would be installed for the duration of works for the project and removed following completion</li> </ul>

Proposed activities	Heritage place	Mitigation measures
		<ul style="list-style-type: none"> <li>▪ R8 and/or contractors must not drive or park vehicles on sections of the historic levee bank not to be impacted by works. This must be done by implementing appropriate 'no entry' signage on the protective fencing; additionally, any parking areas, and all access ways to and from the parking area, must be located outside the aforementioned protective fencing.</li> </ul>
Inundation area	Takasuka Levee Bank (HO186 / NT B6238)	<p>As there is potential for the fabric and significance of the Takasuka Levee Bank (HO186 / NT B6238) to be indirectly impacted by erosion from inundation, the following mitigation measures must be implemented to avoid any adverse impacts where possible to the heritage values of the site:</p> <ul style="list-style-type: none"> <li>▪ It is recommended that advice be sought from a qualified hydrologist to determine the impact erosion would have on the historic levee, and any implementation measures that could be implemented to avoid erosion of the historic levee bank</li> <li>▪ Should there be impact, the historic levee bank should be subject to a site inspection by a suitably qualified archaeologist prior to the start of works, and an archival photographic recording of the sections of the historic levee bank to be impacted should be carried out in accordance with the guidelines, <i>Photographic Recording for Heritage Places and Objects</i> (Heritage Victoria 2006).</li> </ul>

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