

# Photographic Archival Record Main Conduit Water Main, Tammin

January 2021 | 20-619



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the art and science of place

We acknowledge the custodians of this land, the Nyakinyaki Nyoongar and their Elders past, present and emerging. We wish to acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region.

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1	28.01.21	Draft	Carmel Given Alana Jennings	Flavia Kiperman
2	29.01.21	Final	Carmel Given Alana Jennings	Flavia Kiperman

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# Contents

<b>1. Background</b>	<b>1</b>
1.1 Purpose	1
1.2 Study Team	1
1.3 Methodology	1
1.4 Location of the Study Area	1
<b>2. Location Plan</b>	<b>3</b>
<b>3. Base Plans</b>	<b>5</b>
<b>4. Brief Historical Overview</b>	<b>11</b>
4.1 Statement of Significance	11
<b>5. Photographs</b>	<b>13</b>
<b>6. Bibliography</b>	<b>29</b>



# 1. Background

## 1.1 Purpose

The Water Corporation is proposing to upgrade sections of the main conduit water main (Mundaring – Kalgoorlie water pipeline) at Tammin. The upgrades will involve installation of a section of new underground pipe, and subject to the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval, the removal of the existing aboveground pipe.

The Mundaring to Kalgoorlie Pipeline (Golden Pipeline) is part of the Goldfields Water Supply Scheme which is on the National Heritage List (Place ID 106007; Listed 2011). Under the EPBC Act, if a place on the National Heritage List and is being demolished or substantially altered, an archival record of the place must be produced. This Archival Record has been prepared for the Water Corporation by Element Advisory Pty Ltd (**element**) in January 2021. A site visit was undertaken on the 14-15 January 2021 to photograph the study area.

## 1.2 Study Team

This report has been prepared by the following suitably qualified **element** staff members:

Name / Position	Qualifications
Flavia Kiperman, Principal Heritage	B.Sc. (Hons) (Architecture and Urban Planning), M.Sc (Heritage Management), M.Phil, M.ICOMOS
Carmel Given, Senior Consultant Heritage	GradDipInfoLibStds, BA (Cultural Heritage Studies), BA (English)
Alana Jennings, Consultant Heritage	BEnvDes (Environmental Design), M.Arch (Architecture), MHeri(Dist) (Heritage Studies), M.ICOMOS
Emily Greenwood, Assistant Planning	Bachelor of Humanities (Hons) Urban and Regional Planning

## 1.3 Methodology

Archival records fall within one of three categories – detailed, standard or photographic. The Water Corporation required a photographic Archival Record for the study area. This report complies with the minimum requirements as set out in the 'Guide to preparing an Archival Record' issued by Department of Planning, Lands and Heritage, 2019.

A site visit was undertaken on 14-15 January 2021. Detailed photographs were taken of the study area, including using drone photography. Photographs all date from 14-15 January 2021 and are reproduced in this report, accompanied by a base plan to indicate the position from which photographs were taken. All photographs were taken by **element**.

## 1.4 Location of the Study Area

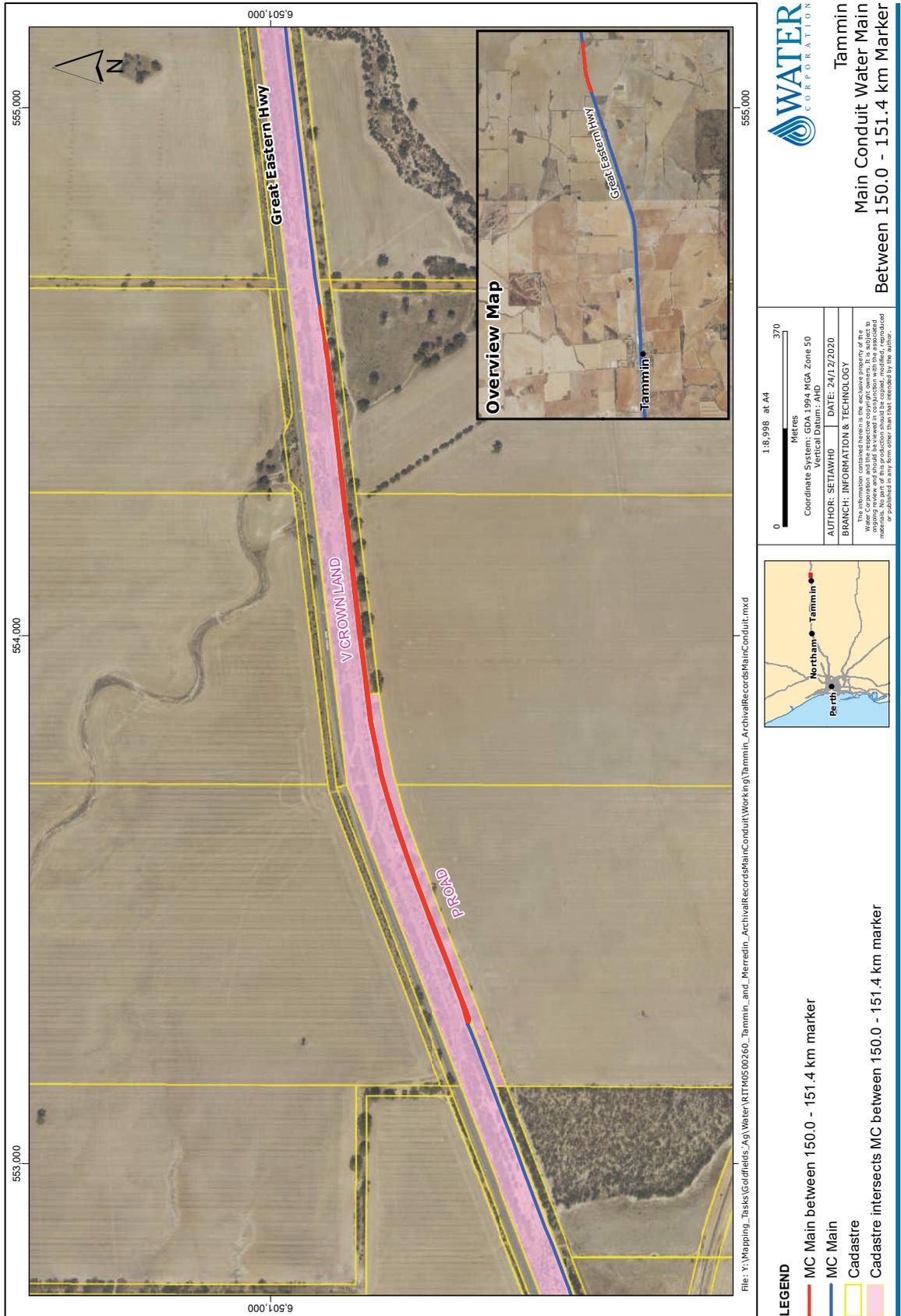
The section of main conduit (MC) to be removed is between 150.0km and 151.4 km markers, approximately 4km east of the town of Tammin, in the Shire of Tammin. The MC runs parallel to the Great Eastern Highway, on the south side of the roadway. The study area consists of two lots:

Description	Land ID	GPS
Unallocated Crown Land	3107492	Lat -31.628984 Long 117.559047
Road	3164812	Lat -31.627623 Long 117.564285

There are no Certificates of Title.  
Refer to *Location Plan*.



# 2. Location Plan

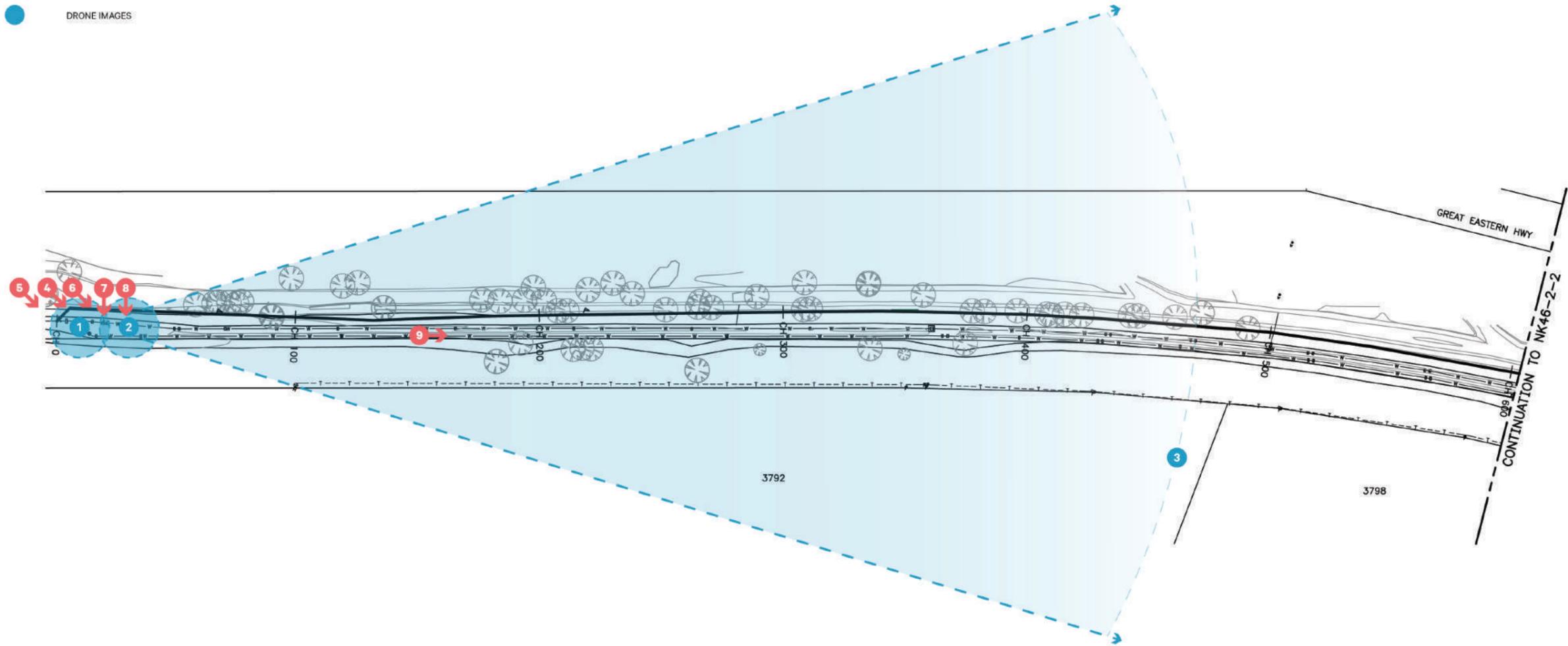




# 3. Base Plans

Note: For further information on plans, please contact Water Corporation.

- NOTES:**
- BASE DRAWINGS PROVIDED BY OTHERS.
  - DO NOT SCALE FROM THIS DRAWING.
-  SURVEYED VEGETATION
  -  EXISTING WATER MAIN
  -  EXISTING BURIED TELSTRA SERVICE  
EXISTING OVERHEAD POWER
  -  PHOTOGRAPHS
  -  DRONE IMAGES



**PLAN**  
1:2000

**Tammin**  
Main Conduit Water Main  
CH 150KM to CH 151.4KM

DRAWING NUMBER: **001**

ISSUED FOR RECORD

Project: Archival Record - Tammin  
 Drawing Title: Main Conduit Water Main CH 150KM TO 151.4KM  
 Date: 20/01/2020  
 Client: Water Corporation  
 Job No: 20-619

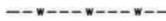
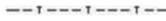
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 Drawn: AJ  
 Checked: FK  
 Revision: A

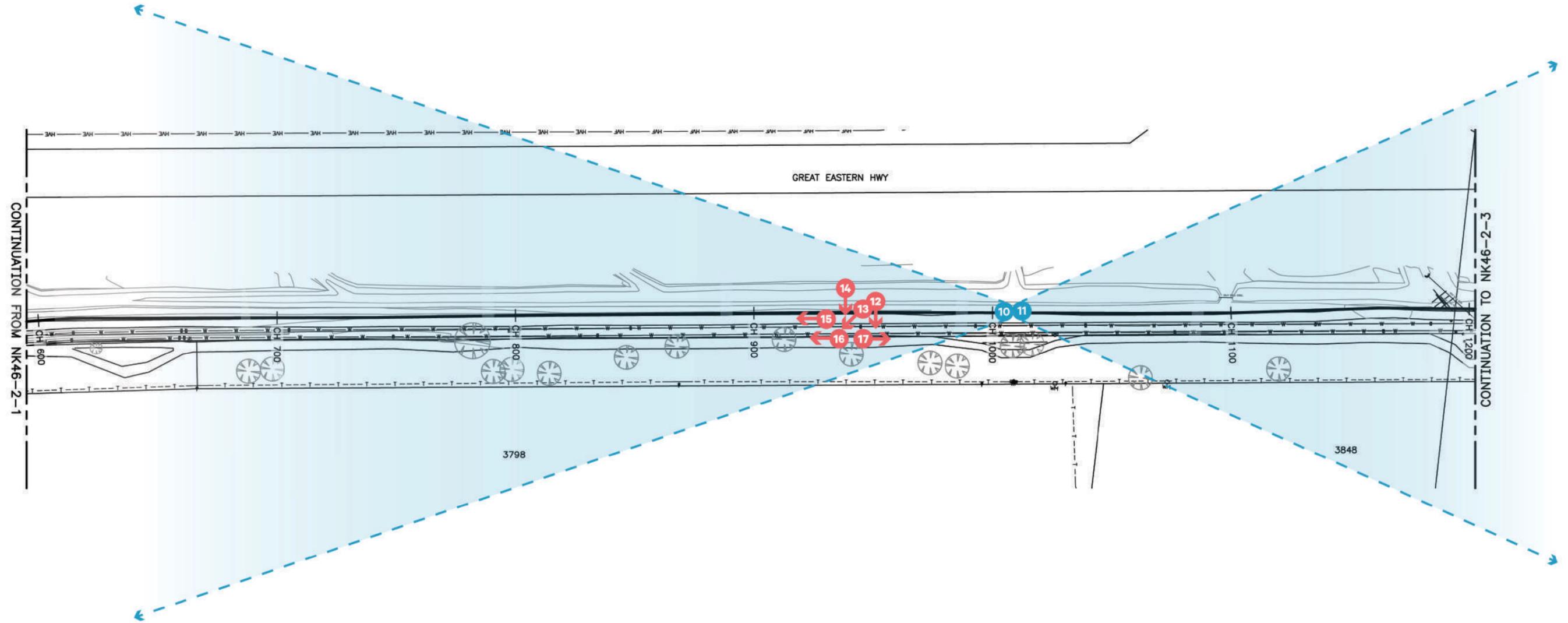
**element.**  
 Level 18, 191 St Georges Terrace, Perth Western Australia 6000,  
 PO Box 7375 Cloisters Square, Perth Western Australia 6850,  
 T. +61 8 9299 8300 | E. info@elementwa.com.au elementwa.com.au



**NOTES:**

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**PLAN**  
1:2000

**Tammin**  
Main Conduit Water Main  
CH 150KM to CH 151.4KM

DRAWING NUMBER: **002**

**ISSUED FOR RECORD**

Project: Archival Record - Tammin  
 Drawing Title: Main Conduit Water Main CH 150KM TO 151.4KM  
 Date: 20/01/2020  
 Client: Water Corporation  
 Job No: 20-619

Drawing No: 002  
 Scale@A3: 1:2000  
 Drawn: AJ  
 Checked: FK  
 Revision: A

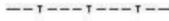


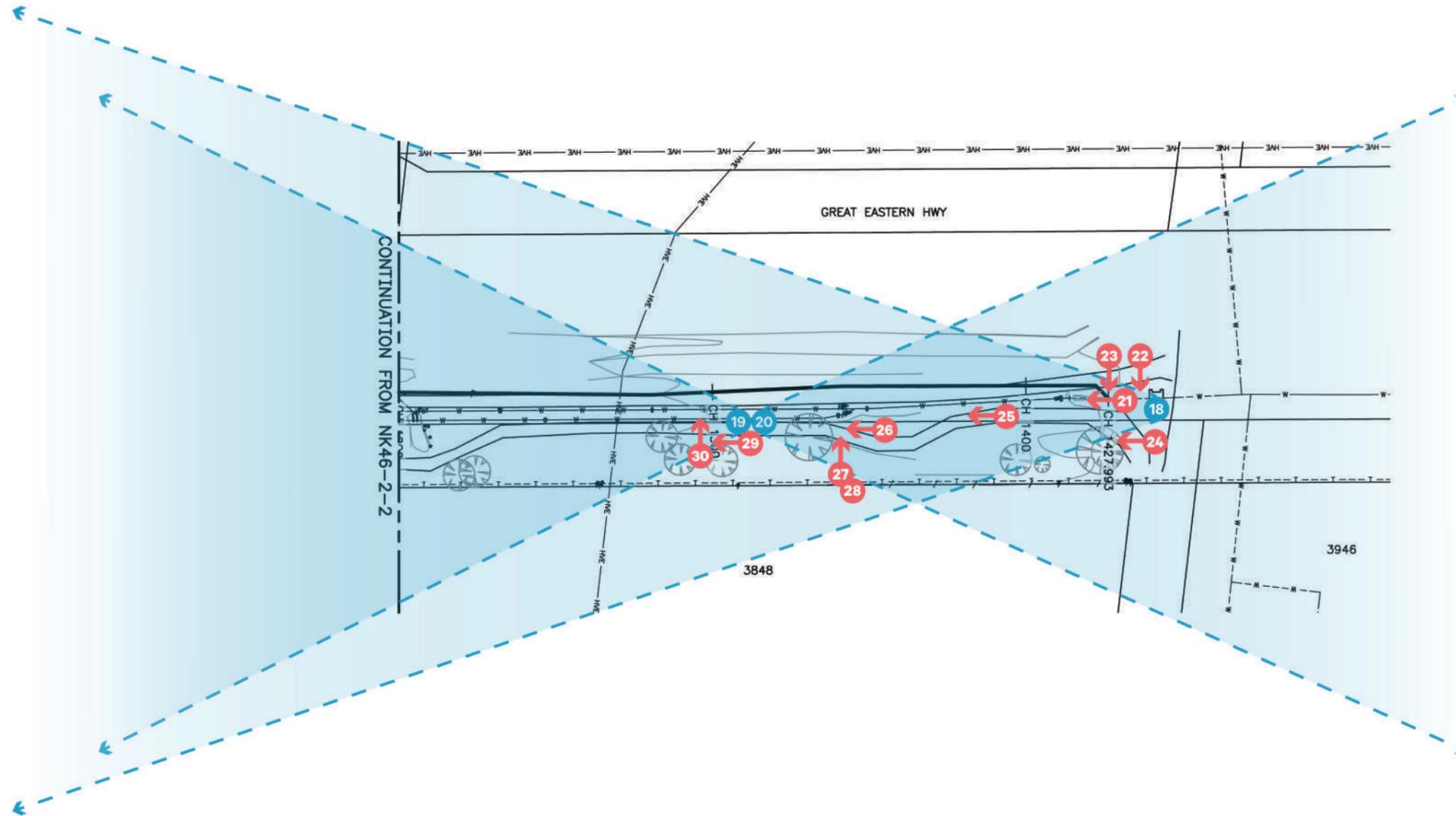
**element.**

Level 18, 191 St Georges Terrace, Perth Western Australia 6000,  
 PO Box 7375 Cloisters Square, Perth Western Australia 6850.  
 T. +61 8 9289 8300 | E. hello@elementwa.com.au elementwa.com.au



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**PLAN**  
1:2000

**Tammin**  
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 CH 150KM to CH 151.4KM

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 Drawing Title: Main Conduit Water Main CH 150KM TO 151.4KM  
 Date: 20/01/2020  
 Client: Water Corporation  
 Job No: 20-619

Drawing No: 003  
 Scale@A3: 1:2000  
 Drawn: AJ  
 Checked: FK  
 Revision: A





## 4. Brief Historical Overview

The MC Tammin (study area) is part of the larger 'Golden Pipeline.' An assessment for the Goldfields Water Supply Scheme, Western Australia, Mundaring to Kalgoorlie, WA, Australia was prepared for National Heritage Listing in 2011. Below is the Statement of Significance. The full document can be found at:

[http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place\\_detail;place\\_id=106007](http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106007)

### 4.1 Statement of Significance

The Goldfields Water Supply Scheme incorporates the remaining elements of the Coolgardie Goldfields Water Supply Scheme, as designed by engineer Charles Yelverton O'Connor (CY O'Connor) and completed in 1903. These elements include the former steam powered pump stations (and associated receiving tanks), reservoirs, regulating tanks and over 560km of pipeline, commonly referred to as the 'main conduit'. It is significant for the economic benefits it brought to Western Australia and to the nation as a whole, for its demonstration of outstanding technological achievement for its time, and for its association with the engineer, CY O'Connor.

The Goldfields Water Supply Scheme was the impetus for agricultural expansion that was of lasting benefit to Western Australia and to Australia as a whole. Water from the pipeline became available just as the production of gold on the eastern goldfields was starting to decline, but its true value resulted from the effect that regular water supplies had in opening up the south-western agricultural area to production. As the value of gold recovered on the goldfields declined between 1905 and the 1960s, the quantity and value of wheat produced increased steadily over the same period. Today the Western Australian wheatfields are the most productive in Australia, accounting for 42% of the nation's wheat crop. Most of the WA wheat crop is produced in the areas serviced by the goldfields pipeline and its extensions, which continues to operate as a water supply scheme.

Both in the size of the project and in the use of new technology the Goldfields Water Supply Scheme was an outstanding technological achievement in the early 20th century. CY O'Connor's original scheme, known as the Coolgardie Goldfields Water Supply Scheme and consisting of the pipeline itself, the reservoirs, and the pumping stations, was regarded internationally as being the largest such engineering undertaking for its time. The amount of steel used in construction was greater than for previous large steel structures elsewhere in the world. The contracts for the supply of steel were the largest pipe contracts, and the most expensive Australian construction contracts, let to that time.

The Goldfields Water Supply Scheme (including the individual components) is of outstanding value to the nation as a representative example of early 20th century engineering in Australia. Principal characteristics of the Goldfields Water Supply Scheme include: Mundaring Weir (Dam) including the dam wall, spillway and two valve houses; Mount Charlotte Reservoir, the former pump station buildings (and receiving tanks); regulating tanks and the pipeline itself. The scheme is recognised by the American Society of Civil Engineers as an International Historic Civil Engineering Landmark.

The pipeline also made use of innovative Australian design in the locking bar pipe invented by Mephan Ferguson.

The refurbishment of the pipeline in 1933 was also a major technical development. Lifting the pipeline out of the ground and re-laying it above ground placed the Goldfields Water Supply Scheme among the world leaders in pipeline technology for the second time in less than 40 years. During this process, the forces in the continuously welded pipeline resulting from expansion and contraction were directed into reinforced concrete anchor blocks built over the pipe to prevent movement and to transfer these forces into the ground. This was the first time anywhere in the world that pipe anchorages of this type had been used to permit such a large diameter pipeline to be laid above ground.

The Goldfields Water Supply Scheme is significant for its association with the work of CY O'Connor, Engineer-in Chief of the Western Australian Public Works Department from 1891 to his death in March 1902. O'Connor was the driving force behind the construction of the Scheme, which provided great economic benefit to Australia. At the completion of the work, the Premier Sir John Forrest praised him as "the great builder of this work ... to bring happiness and comfort to the people of the goldfields for all time".

## 5. Photographs



Figure 1. Birds eye view of pipeline section, beginning of section closest to Tammin townsite above 150km marker



Figure 2. Birds eye view of pipeline section, beginning of section closest to Tammin townsite adjacent to 150km marker



Figure 3. View along pipeline looking east



Figure 4. 150km marker detail at section closest to Tammin townsite



Figure 5. 150km marker pipeline section viewed from the north



Figure 6. View from beginning of section closest to Tammin townsite from the northern side looking east



Figure 7. Beginning of section closest to Tammin townsite. Northern side detail connection

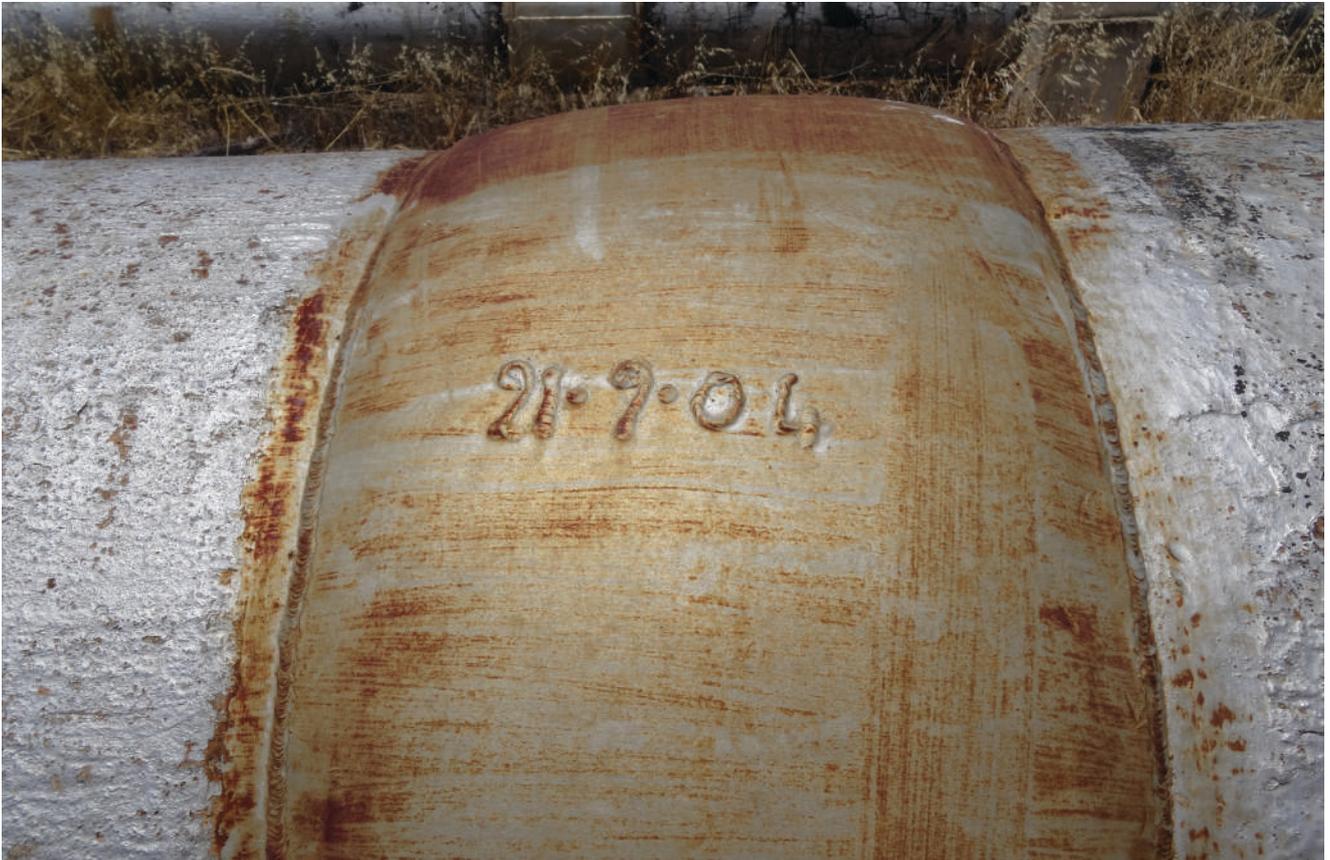


Figure 8. Beginning of section closest to Tammin townsite; welded detail



Figure 9. View from the northern side looking east



Figure 10. View from central point of Tammin pipeline section looking west



Figure 11. View from central point of Tammin pipeline section looking east



Figure 12. Tammin pipeline section 151km marker detail



Figure 13. View along the Tammin pipeline section from the northern edge looking west



Figure 14. Tammin pipeline section typical concrete brace detail



Figure 15. View along the Tammin pipeline section from the northern edge looking west



Figure 16. View along the Tammin pipeline section from the centre of the two pipelines looking west



Figure 17. View along the Tammin pipeline section from the centre of the two pipelines looking east



Figure 18. Aerial view from easternmost end of Tammin section looking west



Figure 19. Aerial view from eastern end of Tammin section looking west



Figure 20. Aerial view from eastern end of Tammin section looking east



Figure 21. View along pipeline from easternmost end of the Tammin section looking west



Figure 22. Detail of double concrete bracing arrangement



Figure 23. Existing connection detail



Figure 24. View along pipeline from southern side at the easternmost end of the Tammin section looking west



Figure 25. View along pipeline from southern side of the Tammin section looking west



Figure 26. View along pipeline from southern side looking west noting connection details



Figure 27. Existing connection details in context



Figure 28. Existing connection details



Figure 29. View along pipeline from southern side looking west



Figure 30. Pipeline material texture and patina detail



## 6. Bibliography

National Heritage List, P106007 Goldfields Water Supply Scheme. 23 June 2011.

[http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place\\_detail;place\\_id=106007](http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106007)

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Level 18, 191 St Georges Tce, Perth WA 6000  
T. (08) 9289 8300 – E. [hello@elementwa.com.au](mailto:hello@elementwa.com.au)  
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