

# BRIDGES ASSET MANAGEMENT PLAN 2020-2030



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Mr Dale Stewart — Chief Executive Officer, Shire of Narrogin; and Mrs Wendy Russell — Executive Support Officer, Shire of Narrogin.

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## **Preamble**

### Shire of Narrogin Bridges Asset Management Plan 2020-2030

The Shire of Narrogin has a network of seven (7) bridges on road reserves to assist in promoting connectivity across the Shire for heavy vehicles, vehicles, cyclists and pedestrians. Like other infrastructure asset classes, for which the Shire has responsibility, it is critical that these assets are managed appropriately and responsibly. This asset management plan is intended to assist the Shire as it works towards more sustainable provision and management of its assets.

### The seven (7) bridges include:

- Whinbin Rock Road (3125) over Arthur River;
- Tarwonga Road Bridge (South) (4551) over Wangelling Gully;
- Tarwonga Road Bridge (North) (3122) over Torbling Brook;
- Manaring Road Bridge (3128A) over Williams River;
- Havelock Street Bridge (3142) within the Narrogin Townsite;
- Pedestrian Railway Bridge (9250) connecting the Eastern side of Town with the Railway Station and CBD, over Pioneer Drive; and
- Pedestrian Doney Street Bridge (4629) allowing access from Doney Street through Gnarojin Park to Pioneer Drive, over Narrogin Brook.

### Introduction

- This Plan forms part of a suite of asset management plans (10 Year Road, Footpath and Plant Replacement etc.) that identify the requirements of the life cycle of an asset and form a guide for long term financial planning to preserve these assets in an acceptable condition for use.
- It has been developed to provide a strategic and practical framework for the management, protection and care of the Shire's bridges.
- A list of the Shire's bridge structures considered in this Plan is provided, demonstrating the recommended amounts of funding annually to preserve the asset.
- A number of bridge structures within the Shire are the responsibility of other authorities, and therefore not included in this Plan. Examples include bridges on Main Roads WA (MRWA) arterial roads, railway bridges and culverts under railway lines.
- Minor bridge structures on parks and reserves are excluded from this plan and will be considered in the costings of the Parks and Gardens Asset Management Plan soon to be drafted.
- Development and adoption of this Plan meets a number of Council objectives as well
  as the requirements of State and Federal Governments to allow the Shire to be eligible
  for grant funding when demonstrating a maintenance schedule over a ten year period.

- Implementation of this Plan is in line with the Shire's Strategic Community Plan 2017-2027:
  - o 1.3 An effective well maintained transport network.
  - 1.3.1 Maintain and improve road network in line with resource capacity.
  - o 3.4 A well maintained built environment.
  - 3.4.1 Improve and maintain built environment.

### **Asset Knowledge**

- The Shire is responsible for the management of seven (7) separate bridge structures on Shire road reserves worth approximately \$1,911,721 (current replacement cost February 2020) (valuation by Griffin Valuations 2019).
- In 2019/20, the Shire budgeted \$58,652 on bridge maintenance. This equates to an average of \$8,323.14 per structure. In the same year, \$31,040 was spent on renewal. It is envisaged with this Bridge Asset Management Plan, that between the years 2020 and 2030, the Shire's average spend to maintain its bridge assets will be \$40,782.00.
- Data regarding the Shire's bridge structures is stored within the W Drive.
- Annual formal inspections of all Shire managed bridges are carried out and formally recorded by trained personnel. All identified works and scheduled maintenance i.e. visual check, tightening of nuts and bolts, cleaning of scuppers, pruning of vegetation and the renewal of signage and barriers are undertaken by the Shire's works crew or suitably qualified contractors.
- Five (5) yearly preventative maintenance is carried out by an experienced contractor, due to these works being more specialised and requiring specific tools. These tasks include fungal treatment, termite inspections and treatment, bolt shimming, pile repairs, corbel repairs, pile banding and jacking.
- L2 inspections are formal inspections conducted by Main Roads WA engineers every five years for timber bridges and 7 years for steel bridges and are provided to the Shire for action or budgeting purposes.
- This Ten Year Program, has been developed to recognise the use and requirements
  of each structure and is expected to be used in future years to facilitate prioritisation of
  the Shire's renewal, upgrade, inspection and maintenance programs.

### **Current Asset Performance**

- Over the past four (4) years, a condition audit (Level 2 Inspection) has been undertaken in accordance with the requirements described in the Main Roads WA Road Structures Inspection Manual on six (6) of the Shire's Bridges. The one remaining bridge being the Doney Street pedestrian bridge has not had an L2 inspections conducted on it since 2003, at which time it had major refurbishment and became non trafficable. It is worth mentioning that refurbishment works are scheduled to be conducted on the Railway pedestrian bridge in the 2019/20 financial year.
- Both bridges on Tarwonga Road and the Manaring Road Bridge were considered to be in good condition.
- Whinbin Rock Road Bridge was found to be in a fair condition.

- Havelock Street Bridge had no conditioning data recorded.
- In addition to the Level 2 Inspection, the Shire inspects all bridges on a 12 monthly cycle in accordance with MRWA recommendations and guidelines L1 inspections. This annual inspection routine, demonstrates that the Shire has a formal maintenance program in place which in turn, allows the Shire to be eligible for MRWA grant funding for bridge preservation.
- A review of maintenance history, since 2016, suggests that less than 20 issues per bridge are identified each year. The majority of issues are identified by annual and L2 inspections. Often, the items identified result in no action because the defect does not meet documented intervention levels or the defect reported is a known issue that is already being addressed by staff. Any items identified for action are scheduled for repair unless urgent, whereby immediate action is taken for the safety of the bridge users.
- The performance of the Shire's reactive bridge maintenance has been to a good standard however reactive maintenance required is minimal due to the Shire's annual L1 inspection routine and MRWA L2 bi-annual inspection routine.

### **Understanding Community Expectations & Demand**

- The Shire's bridge assets have been constructed to support the Shire's road and path network, whilst ensuring stormwater runoff is not obstructed. Community expectations and demand for bridges therefore arise from demand for improvements in water management or the connectivity of the Shire's roads and/or pathways.
- Stakeholders include: local residents and businesses, farmers, transport industry, people passing through the Shire, the Shire's Insurers and other authorities including neighbouring Shire's, MRWA, Western Power, Water Corporation and other utilities.
- The Shire currently investigates community expectations and demand in a number of ways:
  - Informal interactions between Shire officers and the community as part of normal daily activities.
  - o Review of community requests.
  - o Community consultation undertaken during the development of strategic documents.
  - o Road traffic counters to inform on usage volume and type.
- It is recognised that further strategic service planning work is required to better understand current and future community needs.
- Recommended improvement actions:
  - Consider demand forecasting and levels of service in all future Transport and Traffic and Integrated Water Management service planning work, eg the Secondary Freight Route initiative.

### **Asset Lifecycle Management**

- A coordinated approach to the management of all phases of the service and asset lifecycles is considered necessary to sustainably meet community needs and preserve the asset for its intended purpose.
- Transport services and general traffic make use of the Shire's bridges.
- These services were established long ago and will continue into the foreseeable future to service the Town and Region.
- This Plan focuses on analysing the Shire's approach to asset lifecycle management and the required funding to do so to preserve the asset for its intended use.
- The Plan also demonstrates:
  - Maintenance and renewal cost estimates into designs to enable improved estimation of lifecycle costs associated with new works.
  - The use of routine inspection strategies by trained and qualified inspectors to identify the assets maintenance and renewal requirements and allow for costing for the management of the assets life cycle.

### **Financial Sustainability**

- Financial sustainability requires a balance between the delivery of new assets and the maintenance, renewal or disposal of existing assets.
- Funding allocations at each stage of the asset lifecycle impact the standard to which the assets perform.
- Funding will also be dependent on the Shire's annual budget process. Bridges form an important part of a rural community for connectivity and it is recommended that funding the preservation of these assets is given high priority by Council.
- This plan will be factored into the Shire's Long Term Financial Plan (LTFP) which identifies the Shires long term financial strategy to maintain the organisations assets in a sustainable financial manner.

### **Grant Funding**

Following a load assessment analysis carried out by MRWA during a L2 inspection, bridge structures that are deficient will require Emergency Repairs to restore the load carrying capacity of the bridge and/or a load posting.

Given the significance of the structure on the road network a Local Government may consider it appropriate to adopt the load limit for the bridge. If this option is preferred, Main Roads will arrange for the installation of the load limit signage. If a load limit is not acceptable then Emergency Repairs are required and these works will need to be funded by the Local Government. If the Local Government can demonstrate that they have an ongoing programme of Preventative Maintenance for their bridge structures then the Local Government is eligible for a funding contribution of 2/3 Main Roads and 1/3 Local Government, subject to a number of conditions.

Preventative Maintenance is the responsibility of the Local Governments to fund and undertake. The WA Local Government Grants Commission (WALGGC) provides a contribution towards these activities. This money is included in the Local Government's Road Preservation Grant. The funds are calculated on bridge deck area and \$m² rate depending on the type of structure.

The Commonwealth provides Financial Assistance Grant funding (FAGS) to the WALGGC in the form of Untied Funds for Local Roads. Of these funds (excluding Roads to Recovery funding), 7% is set aside for Special Projects and two thirds of the 7% is provided for Specific Works on Local Government bridges and one third for Remote Aboriginal Access Roads. The State provides a one third matching contribution from the Agreement for every two thirds provided by the Commonwealth.

In special circumstances funds are also provided for bridgeworks that are either totally funded through MRWA Programs or contributions arranged with Local Government.

MRWA's contribution for bridgeworks funded from the WALGGC is limited to a maximum of one third of the estimated total cost of the work and is only available after the Local Government's two third share is expended.

WALGGC prompts all Local Governments to submit project applications on an annual basis. Funds are allocated by the WALGGC based on recommendations provided by the Bridge Committee. The Bridge Committee comprises representatives from Main Roads WA, WALGGC and WALGA. The Committee receives recommendations from Main Roads WA on the priorities of projects under consideration. Delivery of projects is generally managed by Main Roads WA but Local Governments have the option to manage the projects themselves.

Special Project funds are only allocated for Specific Works on bridges which are defined as planned proactive work items normally scheduled at least two years in advance to maintain the integrity of bridge structural components. Funds may also be allocated for bridge reconstruction where the existing bridge has reached the end of its economic life. Funding only covers like for like replacement costs. The Special Project funds do not cover routine or preventative maintenance or new bridge construction where there is no existing bridge.

In order to be eligible for Special Project funds a Local Government must be able to show that annual visual inspections have been performed in accordance with the Level 1 Bridge Inspection Framework and also that adequate routine and preventative maintenance have been undertaken to prevent undue deterioration.

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# **Bridge Asset Management Plan Financial Summaries**

Municipal Expenditure	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	Average
Operating	\$ 34,883.00	\$ 46,733.00	\$ 55,733.00	\$ 41,293.00	\$ 50,904.00	\$ 31,064.00	\$ 34,714.00	\$ 34,014.00	\$ 41,014.00	\$ 37,474.00	\$ 40,782.60
Net Capital Expenditure	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Transfer to / (From) Bridge Reserve	\$ 14,035.00	\$ 1,549.00	\$ (7,451.00)	\$ 1,989.00	\$ (10,122.00)	\$ 9,718.00	\$ 6,068.00	\$ 6,768.00	\$ (232.00)	\$ 3,308.00	
Net Municipal Expenditure	\$ 48,918.00	\$ 48,282.00	\$ 48,282.00	\$ 43,282.00	\$ 40,782.00	\$ 40,782.00	\$ 40,782.00	\$ 40,782.00	\$ 40,782.00	\$ 40,782.00	\$ 43,345.60
Reserve Fund Balance	\$ 14,035.00	\$ 15,584.00	\$ 8,133.00	\$ 10,122.00	\$ -	\$ 9,718.00	\$ 15,786.00	\$ 22,554.00	\$ 22,322.00	\$ 25,630.00	



### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$1,400.00
Labour Overhead	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$1,680.00
Plant Cost	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$1,750.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$4,900.00
Contractors ( 5 Year Preventative Mtc )			\$8,150.00					\$8,150.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$14,000.00
Insurance	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$3,003.00

**Total Operating Expenditure** 

\$34,883.00

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	0	0	0	0	0	0	0	0
Revenue	0	0	0	0	0	0	0	0

Total Capital Expenditure

0

Transfer to / from Bridge Reserve

\$14,035.00

Total Cost To Muni 2020/21

\$48,918.00

### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$1,400.00
Labour Overhead	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$1,680.00
Plant Cost	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$1,750.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$4,900.00
Contractors ( 5 Year Preventative Mtc )				\$9,000.00		\$11,000.00		\$20,000.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$14,000.00
Insurance	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$3,003.00

Total Operating Expenditure

\$46,733.00

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	\$15,001.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$15,001.00
Revenue	-\$15,001.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-\$15,001.00

Total Capital Expenditure

<u>o</u>

Transfer to / from Bridge Reserve

\$1,549.00

Total Cost To Muni 2021/22

\$48,282.00

### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00	\$200.00	\$200.00		\$200.00	\$200.00		\$1,400.00
Labour Overhead	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$1,680.00
Plant Cost	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$1,750.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$4,900.00
Contractors ( 5 Year Preventative Mtc )					\$11,000.00		\$18,000.00	\$29,000.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$14,000.00
Insurance	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$3,003.00

Total Operating Expenditure

\$55,733.00

0

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	0	0	0	0	0	0	0	0
Revenue	0	0	0	0	0	0	0	0

Total Capital Expenditure

Transfer to / from Bridge Reserve -\$7,451.00

Total Cost To Muni 2022/23 \$48,282.00

### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$1,400.00
Labour Overhead	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$240.00	\$1,680.00
Plant Cost	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$1,750.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$700.00	\$4,900.00
Contractors ( 5 Year Preventative Mtc )	\$14,560.00							\$14,560.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$14,000.00
Insurance	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$429.00	\$3,003.00

Total Operating Expenditure

\$41,293.00

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	\$0.00	\$0.00	\$0.00	\$270,000.00	\$0.00	\$0.00	\$0.00	\$270,000.00
Revenue	\$0.00	\$0.00	\$0.00	-\$270,000.00	\$0.00	\$0.00	\$0.00	-\$270,000.00

Manaring Road Bridge 3128A Converted To Culvert

**Total Capital Expenditure** 

0

Transfer to / from Bridge Reserve

\$1,989.00

Total Cost To Muni 2023/24

\$43,282.00

### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00	\$200.00	\$200.00		\$200.00	\$200.00	\$200.00	\$1,200.00
Labour Overhead	\$240.00	\$240.00	\$240.00		\$240.00	\$240.00	\$240.00	\$1,440.00
Plant Cost	\$250.00	\$250.00	\$250.00		\$250.00	\$250.00	\$250.00	\$1,500.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00		\$700.00	\$700.00	\$700.00	\$4,200.00
Contractors ( 5 Year Preventative Mtc )		\$27,990.00						\$27,990.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00		\$2,000.00	\$2,000.00	\$2,000.00	\$12,000.00
Insurance	\$429.00	\$429.00	\$429.00		\$429.00	\$429.00	\$429.00	\$2,574.00

Total Operating Expenditure

\$50,904.00

0

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	0	0	0	0	0	0	0	0
Revenue	0	0	0	0	0	0	0	0

Total Capital Expenditure

Transfer to / from Bridge Reserve -\$10,122.00

Total Cost To Muni 2024/25 \$40,782.00

### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00	\$200.00	\$200.00		\$200.00	\$200.00	\$200.00	\$1,200.00
Labour Overhead	\$240.00	\$240.00	\$240.00		\$240.00	\$240.00	\$240.00	\$1,440.00
Plant Cost	\$250.00	\$250.00	\$250.00		\$250.00	\$250.00	\$250.00	\$1,500.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00		\$700.00	\$700.00	\$700.00	\$4,200.00
Contractors ( 5 Year Preventative Mtc )			\$8,150.00					\$8,150.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00		\$2,000.00	\$2,000.00	\$2,000.00	\$12,000.00
Insurance	\$429.00	\$429.00	\$429.00		\$429.00	\$429.00	\$429.00	\$2,574.00

Total Operating Expenditure

\$31,064.00

0

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	0	0	0	0	0	0	0	0
Revenue	0	0	0	0	0	0	0	0

Total Capital Expenditure

Transfer to / from Bridge Reserve \$9,718.00

Total Cost To Muni 2025/26 \$40,782.00

### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00	\$200.00	\$200.00		\$200.00	\$200.00	\$200.00	\$1,200.00
Labour Overhead	\$240.00	\$240.00	\$240.00		\$240.00	\$240.00	\$240.00	\$1,440.00
Plant Cost	\$250.00	\$250.00	\$250.00		\$250.00	\$250.00	\$250.00	\$1,500.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00		\$700.00	\$700.00	\$700.00	\$4,200.00
Contractors ( 5 Year Preventative Mtc )						\$11,800.00		\$11,800.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00		\$2,000.00	\$2,000.00	\$2,000.00	\$12,000.00
Insurance	\$429.00	\$429.00	\$429.00		\$429.00	\$429.00	\$429.00	\$2,574.00

**Total Operating Expenditure** 

\$34,714.00

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125			Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	0	0	0	0	0	0	0	0
Revenue	0	0	0	0	0	0	0	0

Total Capital Expenditure

\$6,068.00

0

Transfer to / from Bridge Reserve

Total Cost To Muni 2026/27

\$40,782.00

### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00		\$200.00		\$200.00	\$200.00		\$1,200.00
Labour Overhead	\$240.00	\$240.00	\$240.00		\$240.00	\$240.00	\$240.00	\$1,440.00
Plant Cost	\$250.00	\$250.00	\$250.00		\$250.00	\$250.00	\$250.00	\$1,500.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00		\$700.00	\$700.00	\$700.00	\$4,200.00
Contractors ( 5 Year Preventative Mtc )					\$11,100.00			\$11,100.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00		\$2,000.00	\$2,000.00	\$2,000.00	\$12,000.00
Insurance	\$429.00	\$429.00	\$429.00		\$429.00	\$429.00	\$429.00	\$2,574.00

Total Operating Expenditure

\$34,014.00

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125			Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	0	0	0	0	0	0	0	0
Revenue	0	0	0	0	0	0	0	0

Total Capital Expenditure

0

Transfer to / from Bridge Reserve

\$6,768.00

Total Cost To Muni 2027/28

\$40,782.00

### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00		\$200.00		\$200.00			\$1,200.00
Labour Overhead	\$240.00	\$240.00	\$240.00		\$240.00	\$240.00	\$240.00	\$1,440.00
Plant Cost	\$250.00	\$250.00	\$250.00		\$250.00	\$250.00	\$250.00	\$1,500.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00		\$700.00	\$700.00	\$700.00	\$4,200.00
Contractors ( 5 Year Preventative Mtc )							\$18,100.00	\$18,100.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00		\$2,000.00	\$2,000.00	\$2,000.00	\$12,000.00
Insurance	\$429.00	\$429.00	\$429.00		\$429.00	\$429.00	\$429.00	\$2,574.00

Total Operating Expenditure

\$41,014.00

0

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	0	0	0	0	0	0	0	0
Revenue	0	0	0	0	0	0	0	0

Total Capital Expenditure

Transfer to / from Bridge Reserve -\$232.00

Total Cost To Muni 2028/29 <u>\$40,782.00</u>

### **OPERATING EXPENDITURE**

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Labour	\$200.00	\$200.00	\$200.00		\$200.00	\$200.00	\$200.00	\$1,200.00
Labour Overhead	\$240.00	\$240.00	\$240.00		\$240.00	\$240.00	\$240.00	\$1,440.00
Plant Cost	\$250.00	\$250.00	\$250.00		\$250.00	\$250.00	\$250.00	\$1,500.00
Materials ( Specific Repairs )	\$700.00	\$700.00	\$700.00		\$700.00	\$700.00	\$700.00	\$4,200.00
Contractors ( 5 Year Preventative Mtc )	\$14,560.00							\$14,560.00
Contractors ( Termites )	\$2,000.00	\$2,000.00	\$2,000.00		\$2,000.00	\$2,000.00	\$2,000.00	\$12,000.00
Insurance	\$429.00	\$429.00	\$429.00		\$429.00	\$429.00	\$429.00	\$2,574.00

**Total Operating Expenditure** 

\$37,474.00

0

### CAPITAL EXPENDITURE/REVENUE

ТҮРЕ	Whinbin Rock Rd 3125	Tarwonga Rd 4551	Tarwonga Rd 3122	Manaring Rd 3128A	Havelock St 3142	Doney st Footbridge 4629	Main Footbridge 9250	Total
Expenditure	0	0	0	0	0	0	0	0
Revenue	0	0	0	0	0	0	0	0

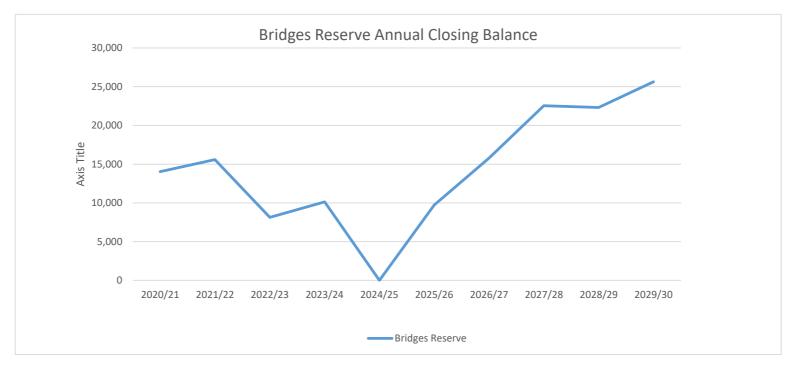
Total Capital Expenditure

Transfer to / from Bridge Reserve \$3,308.00

Total Cost To Muni 2029/30 \$40,782.00

# **Bridges Reserve**

<u></u>	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Opening Balance	0	14,035	15,584	8,133	10,122	0	9,718	15,786	22,554	22,322
Operating	(34,883)	(46,733)	(55,733)	(41,293)	(50,904)	(31,064)	(34,714)	(34,014)	(41,014)	(37,474)
Net Capital Expenditure	0	0	0	0	0	0	0	0	0	0
Transfer to / (From) Bridge Reserve	48,918	48,282	48,282	43,282	40,782	40,782	40,782	40,782	40,782	40,782
Closing Balance	14,035	15,584	8,133	10,122	0	9,718	15,786	22,554	22,322	25,630



# Main Roads WA Report: LGA Roles and Responsibilities 2020 by Anthony Humphreys

### **Bridge Roles and Responsibilities:**

### **Bridge Owners**

- Local Government Authority:
  - Bridge on the local road network.
- o Main Roads:
  - Typically bridges on Highways and main roads.
  - With the exception of a few:
    - Significant bridges on local roads and
    - Bridges over rail lines on local roads.
- Department of Parks and Wildlife (formally Department of Environment and Conservation):
  - Typically on forestry and logging roads.
- o Private:
  - Bridge on private land, records kept for future enquires over ownership.
- o Water Corporation:
  - Bridges on local roads over drainage channels.
- o Harvey Water:
  - Bridges on local roads over irrigation channels (applicable in the South West Region)
- Public Transport Authority:
  - Railway bridges over a road.

### **Detail and Annual Visual Inspections**

Level 2 or Detail inspections are undertaken by Main Roads to determine the load carrying capacity of bridges that can be accessed by the General Public. The frequencies of these inspections are every 5 years for Timber bridges and 7 years for Steel or Concrete bridges. From this report the following is determined:

- Load capacity of the structure
- o Preventative Maintenance activities required to preserve bridge.
- Specific Work activities to maintain the load carrying capacity of the structure.

A copy of this report is issued to the Local Government.

Main Roads recommends that Local Government undertake Level 1 or Annual Visual Inspections of their bridges to identify any problems that may occur in between the detailed inspection cycle and their responsibility under nonfeasance. If the Local Government has any concerns over any issues please contact me and I will inspect and or arrange a future detailed inspection. For details on how to undertake inspections and associated forms refer to the "Useful Information" section.

### **Emergency Repairs and Load Posting**

Following the load assessment analysis, structures that are deficient will require Emergency Repairs to restore the load carrying capacity of the bridge and/or a load posting.

Given the significance of the structure on the road network a Local Government may consider it appropriate to adopt the load limit for the bridge. If this option is preferred, Main Roads will arrange for the installation of the load limit signage.

If a load limit is not acceptable then Emergency Repairs are required and these works will need to be funded by the Local Government. If the Local Government can demonstrate that they have an ongoing programme of Preventative Maintenance for their structures then the Local Government is eligible for a funding contribution of 2/3 Main Roads and 1/3 Local Government, subject to a number of conditions, see page 22 of the link below:

https://www.mainroads.wa.gov.au/Documents/State Road Funds to Local Government Procedures.RCN-D13^23169676.PDF

- 1. The Local Government will provide Main Roads with evidence that it has undertaken preventative maintenance on the **affected** bridge.
- 2. Main Roads and the Local Government are to agree on the scope of works required.
- 3. The Local Government will provide Main Roads with an agreed cost estimate for undertaking the repairs.
- 4. Main Roads will authorise the repair work prior to commencement
- 5. The Local Government will complete the repairs and invoice Main Roads for the 2/3 of the agreed estimated cost.
- 6. Main Roads will confirm that the standard of repair work is acceptable prior to arranging payment from the Emergency Bridge Fund.

### **Preventative Maintenance**

Preventative Maintenance is the responsibility of the Local Governments to fund and undertake.

The WA Local Government Grants Commission (WALGGC) provides a contribution towards these activities (refer attached policy). This money is included in the Local Government's Road Preservation Grant. The funds are calculated on bridge deck area and \$m2 rate depending on type of structure.

Preventative maintenance includes the following activities:

- Routine Maintenance:
  - o Activities required to preserve the structure.
  - The frequency of this type of maintenance is typically annual and includes:
    - cleaning of scuppers, drainage, expansion joints
    - vegetation and debris clearing
    - termite inspection and treatment
    - guardrail maintenance
    - signage etc.
- Periodic Maintenance
  - o Rate \$100/m2
  - o Activities required to preserve the structure.
  - o The frequency of this type of maintenance is 5 yearly and includes:
    - fungicide treatment to stingers, piles, sill beams etc
    - timber end grain sealing
    - fastener maintenance
- Specific Works minor
  - o Activities required to preserve the structure.
  - o Rate \$3000 to \$5000 per bridge
  - o The frequency of this type of maintenance is undertaken as required and includes:
    - repair splits in piles and stringers including bolting and banding
    - abutment sheeting repairs
    - shimming and packing of stringers and halfcaps etc

For details of the "Timber Bridge Preventative Maintenance Standards" refer to the "Useful Information" section.

Note: Plastic Plug Colours

Colour	Grey	Red	Blue	Yellow	Green	White	Pink
		2015	2016	2017	2018	2019	2020
Year	2021	2022	2023	2024	2025	2026	2027
	2028	2029	2030	2031	2032	2033	2034

A key reason for implementation of this system was for the safety of bridge inspectors – hot liquids on skin don't mix.

Another benefit is it easy to see when the bridge was last treated.

MAIN ROADS Western Australia LGA Roles and Responsibilities 2020 - AJH

Page 3 Current As of 2 October 2019 Costs for LGA's to consider when developing their 5 year Preventative Maintenance schedule, detail break down:

	Rate per m2 deck area	Annualised rate per m2 deck area
Routine Maintenance, undertaken annually	\$5 in rural areas \$15 urban areas	\$5 in rural areas \$15 urban areas
Routine Maintenance - termite treatment (timber) undertaken every two years	\$12	\$6
Periodic Maintenance, undertaken on a 5 year cycle (timber)	\$130	\$26
Minor Specific Repairs, undertaken with Periodic Maintenance	\$25	\$5
Periodic Maintenance, undertaken on a 5 year cycle (concrete) There is not Periodic Maintenance that is done on a cyclic basis for concrete bridges, the works are more Routine Maintenance and Minor Specific Repairs.	<del>\$10</del>	<del>\$2</del>
Reconstruction, bridge replacement	\$6000 to \$10,000 \$14,000 further from Perth 7hrs+	N/A
Concrete Overlays	\$2500-simple overlays \$3500 substantial substructure repairs as well.	N/A

### Insurance

Insurance is prudent.

MAIN ROADS Western Australia LGA Roles and Responsibilities 2020 - AJH Page 4 Current As of 2 October 2019

### **Specific Works**

Specific Works are repairs to maintain the carrying capacity of the structure and are either complex and/or expensive. These are typically once-off repairs.

Specific Works activities can be funded and undertake by the Local Government. However, if the Local Government is prepared to wait for Main Roads to arrange funding, projects can be funded:

- 1. On an as-needs basis higher priority projects gets funding first.
- 2. If the Local Government can demonstrate that Preventative Maintenance is being undertaken on its bridges. (a condition for WALGGC funding)

Funding Sources for Specific Works are:

- o Bridge Maintenance Programme (Special Projects):
  - o The funding split is 1/3 Main Roads and 2/3 Grants Commission.
  - o Refer attached policy.
    - Grants Commission funding is typically like for like, so if a structure is to be widened then the Local Government will need to find additional funds to widen the structure prior to the works proceeding.
- Local Government funds
- o Regional Road Group
- o Roads to Recovery
- o Black Spot.

### **Issues for Consideration**

- o Preventative Maintenance 5 year plan.
- o Timing of works on your road network tie in with bridge works.
- Bridges with 1 to 3 spans look to replace with culvert or concrete overlay check for value for money; undertake waterways assessments to determine suitability of a culvert replacement
- Bridges with a headroom of less than 1.20m look at replacing with a culvert.. These bridges are causing an Occupational Health and Safety Issue with the Bridge Inspectors and Bridge Contractors.
- Bridges of 8+ spans look to preserve and maintain, as the cost of replacement is very high.

### **Useful information:**

The Main Roads website contains a number of useful documents:

Web Site: www.mainroads.wa.gov.au

→Building Roads

→Standards & Technical
→Structures Engineering

- → Asset Management
  - Structures Location Map Books
  - Structure Definitions
  - Inventory Forms
  - Inspection Guidelines
    - Level 1 Bridge & Culvert Inspection documents and forms.
    - o Level 2 Culvert Inspection document and from
  - Asset Management Plan
  - Attachment of Services to Existing Structures
  - Miscellaneous Asset Management Documents
    - Termite Inspection Plate (see attached)
    - o Periodic Maintenance Plate (see attached)
    - Bridge Number Tag (see attached)
    - Vegetation Clearance Envelope (see attached)
    - Timber Bridge Preventative Maintenance Standards

### → Main Roads Drawings

→ Standard Contact Drawings

- Culverts Box
- Culverts Pipe
- Guardrail

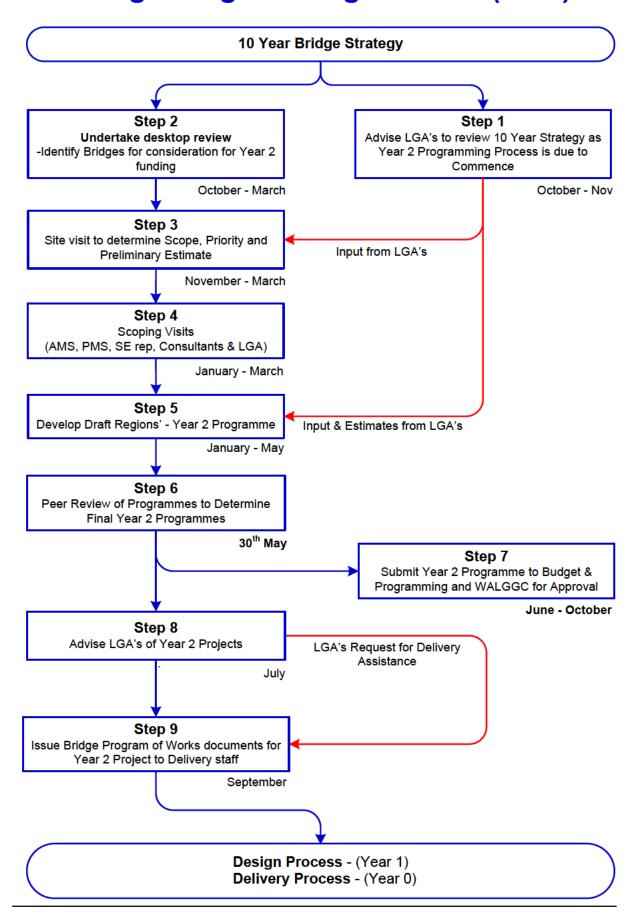
### **Contact Details**

Anthony Humphreys Asset Manager Structures

Ph: 9892 0534 Mobile: 0408955908

Email: anthony.humphreys@mainroads.wa.gov.au

# **Bridge Programming Process (LGA)**



### **WA Local Government Grants Commission**

### POLICY FOR ALLOCATION OF SPECIAL PROJECT FUNDS FOR BRIDGES

Under the current principles, 93% of the Federal road funds are allocated to local governments in accordance with road asset preservation needs. The remaining 7% is allocated as Special Projects, two thirds for bridges and one third for roads serving remote Indigenous communities.

The cost of preventive maintenance and annual routine maintenance of bridges is taken into account in calculating road asset preservation needs. The current rates are \$24.60 per square metre for timber bridges and \$12.30 per square metre for steel and concrete bridges. The cost of specific maintenance, refurbishment and replacement of bridges is not taken into account because funds are specifically provided for these works through the Special Project funds.

The Commission's policy for allocating the Special Project funds for bridges recognises that there are a large number of Local Government bridges in poor condition, and that the preservation of these bridges must be given priority in allocating the Special Project funds.

The Commission's policy on Special Project funds for bridges restricts funding to only preservation type projects, recognising that some of these projects may involve some upgrading, and preservation includes replacement when the existing bridge has reached the end of its economic life.

Bridges must meet the following definition to be eligible for Special Projects funds:

A bridge is defined as:

A structure with a clear opening in any span of greater than 3 metres measured between the faces of piers and or abutments.

A structure with a clear span of less than 3 metres where the deck is supported on timber stringers. This provision is in recognition of the higher maintenance costs and management requirements of timber structures.

A footpath attached to a road bridge or a footbridge over a road is eligible for Special Project funds. A free-standing footbridge over a river is not eligible.

The Commission will not allocate funds for the construction of a new bridge where there is no existing bridge, or where an existing bridge has not reached the end of its economic life.

The Commission considers recommendations of the Bridge Committee in allocating the Special Project funds. The Committee is made up of representatives of Main Roads WA, the Western Australian Local Government Association and the WA Local Government Grants Commission.

The Bridge Committee makes its recommendations after considering technical advice and priority ratings from Main Roads WA. These ratings take into account bridge condition data and issues such as safety considerations which are identified through liaison with local governments.

The Bridge Committee will not support grants for the repair or replacement of a bridge if the bridge has not been given the degree of routine and preventive maintenance necessary to prevent undue deterioration. For timber bridges, owners are referred to the Main Roads WA document "Timber Bridge Maintenance and Refurbishment – Preventive Maintenance Standards".

MAIN ROADS Western Australia LGA Roles and Responsibilities 2020 - AJH Page 8 Current As of 2 October 2019

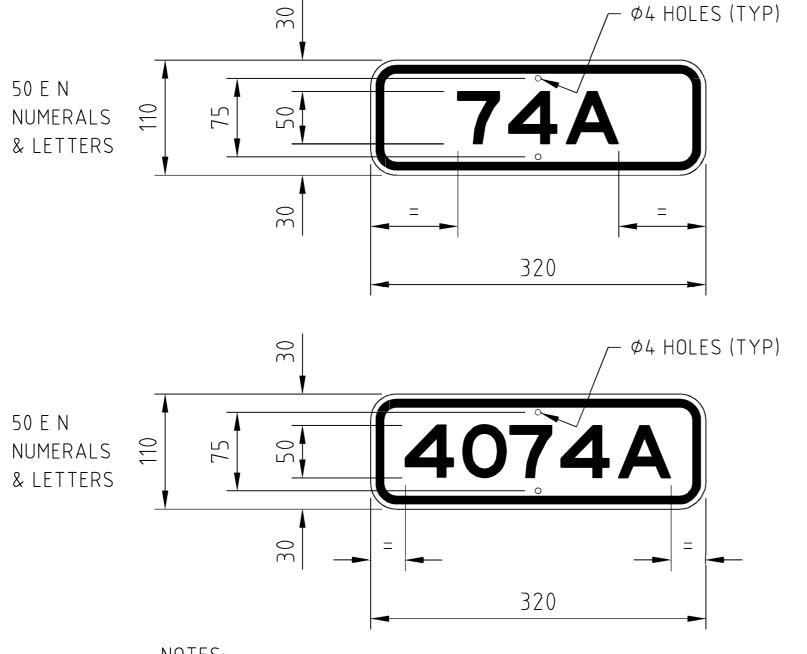
### **Commission Policy**

That Special Project funds be allocated to only preservation type projects. These include:

- 1. Specific maintenance and refurbishment aimed at preserving the bridge.
- 2. Replacement of an existing bridge where it has reached the end of its economic life.
  - Where a bridge is replaced with a new bridge, the new structure must be of a similar geometric standard to the existing bridge; e.g. a single lane bridge is replaced with a single lane bridge. Replacement may include minor upgrading and widening [up to one metre] to meet current design and safety standards.
  - □ Where widening greater than one metre is required to meet current design standards or to satisfy local government policies, the additional cost of the widening will be met by the local government.
  - □ A bridge that has reached the end of its economic life may be replaced with a culvert or a floodway where engineering investigations show that this is the best solution.
- 3. In special circumstances, and where the existing bridge has not reached the end of its economic life, the Commission may agree to the Special Project funds allocated for the preservation of the existing bridge being put towards the construction of a new bridge of a higher standard than the existing structure. This provision would apply where a local government is able to access the additional funds needed for the new bridge from other sources.

3 August 2015

\clives\bridges\policy\policy amended 2015.docx

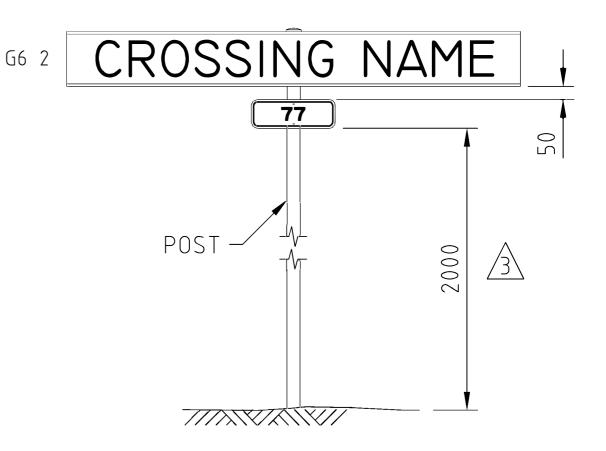


# NOTES:

1. SIGN DIMENSIONS (IN mm):

BORDFR 8 + 5 SI7F 320 x 110 CORNER RADIUS 25 SIGN PANEL AREA = 0.03466 m

- 2. COLOURS: BLACK LEGEND ON WHITE RETROREFLECTIVE BACKGROUND
- 3. RETROREFLECTIVE CLASS OF MATERIAL: CLASS 1
- 4. GRAFFITI PROTECTION: NOT REQUIRED
- 5. ALL SIGN MATERIALS AND MANUFACTURE TO BE IN ACCORDANCE WITH MAIN ROADS SPECIFICATION 601.
- 6. SIGN HOLES: DRILL Ø4 HOLES TOP & BOTTOM CENTRALLY ON PANEL
- 7. THERE ARE TO BE NO ZERO'S (0) BEFORE BRIDGE NUMBER.

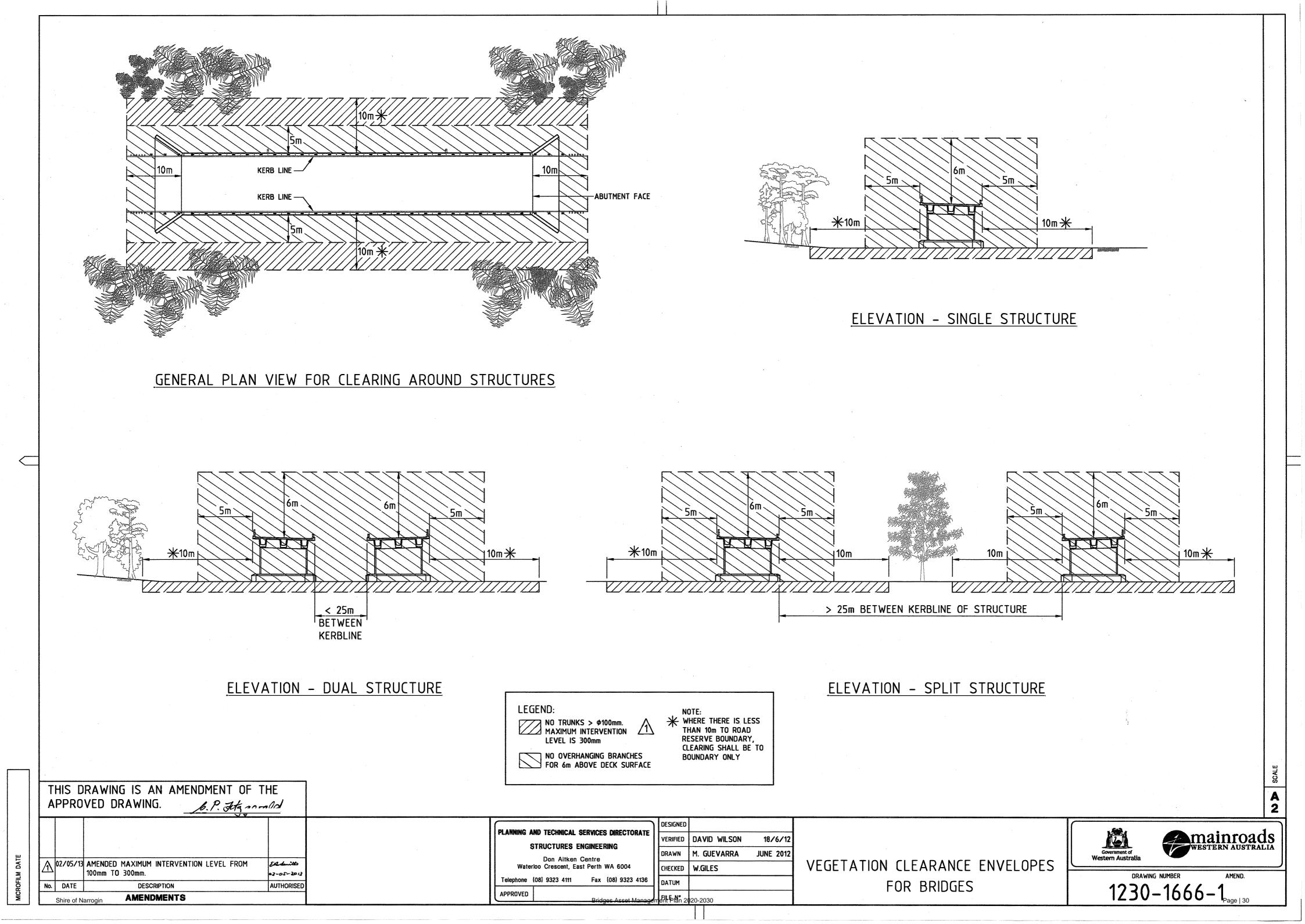


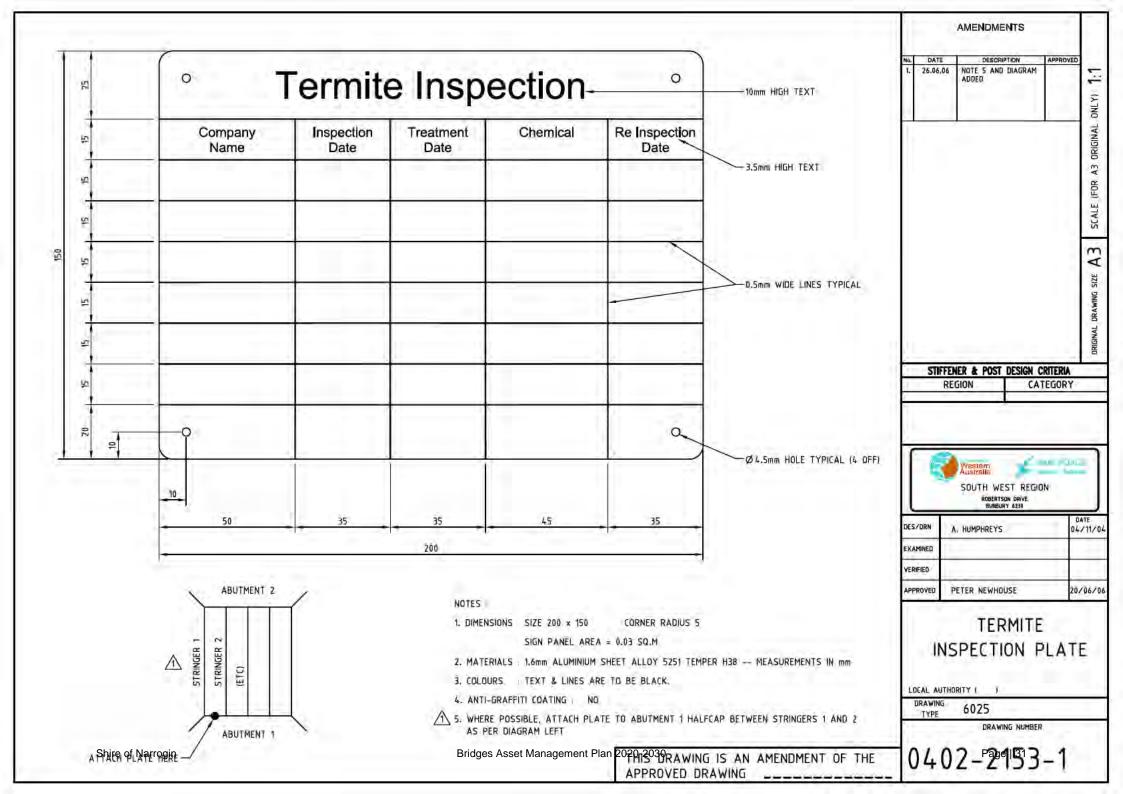
# BRIDGE NUMBER TAG ARRANGEMENT

(TO BE PLACED AT BOTH BRIDGE ABUTMENTS)

3	12/12/12	ADDED BRIDGE TAG HEIGHT DIMENSION.	T.S.	
2	29/10/12	CHANGED RETROREFLECTIVE CLASS TO 1 & ADDED CROSSING NAME SIGN TYPE.	T.S.	
1	24/4/12	ADDED HOLE DIMENSION.	T.S.	
M	MRWA - STRUCTURES ENGINEERING			

BRIDGE NUMBER DRAWING NUMBER 1230-0487-3





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# Main Roads WA Report: Development of a Network Level Bridge Criticality and Risk Assessment Model by Neil Telfer

# Development of a Network Level Bridge Criticality and Risk Assessment Model

Neil Telfer, July 2018

### 1. Background

Main Roads are developing an Asset Management System (AMS) aligned with the ISO55000 Series of standards. As part of the system development Main Roads have produced an Asset Management Policy (D17#1030856) with the following principles included:

- Apply a risk-based whole of lifecycle approach in the acquisition, operation, maintenance and disposal of our assets.
- Prioritise our investments based on appropriate consideration of customer outcomes, cost and risk.

To assist in delivering on these principles, a Network Level Criticality and Risk Assessment for Bridges is required.

### 2. Scope

### 2.1. Stage 1

A Network Level Criticality and Risk Assessment for Bridges should be a 'low definition' assessment based on explicit Bridge Data held in corporate asset data systems and is Stage 1 in progressing on to developing further Multi Criteria Assessment for the prioritisation of Maintenance and Capital projects.

### 2.2. Stakeholder Review

Review feedback and acceptance of the Criticality and Risk model by the Regional Stakeholders.

### 2.3. Stage 2

Stage 2 will use Criticality and Risk Assessment ratings from Stage 1 with additional criteria used in existing manual MS Excel based MCA tools as per the Bridge Management Manual, to produce automated prioritisation for Maintenance and Capital (renewal and improvement) Programs.

### 2.4. Stakeholder Review

Review feedback and acceptance of the Maintenance and Capital MCA model by the Regional Stakeholders.

### 2.5. Interim Implementation

The scope of Stage 1 and Stage 2 is therefore to identify <u>existing</u> explicit data sources from corporate data systems that can be used to perform a 'low definition' Risk Assessment that broadly conforms to Main Roads (and Transport Portfolio) Risk Management Process.

The scope includes the production of a 'proof of concept' data model constructed using Microsoft Power BI. Power BI reports are used to display the Criticality and Risk Assessment criteria ratings/scores. The Power BI Dashboard shall be connected to the BMS SQL Server and run on a scheduled refresh.

### 2.6. Final Implementation

On approval of the concept, the assessment will be embedded into the Bridge Management System (BMS) where the full Risk Management process will be made available for Asset

Managers to transparently apply and record risk treatment and mitigation measures in accordance with the risk treatment hierarchy and Main Roads Risk Management Process. This will allow transparent reporting and communication of the management of bridge risks at a local regional and state level.

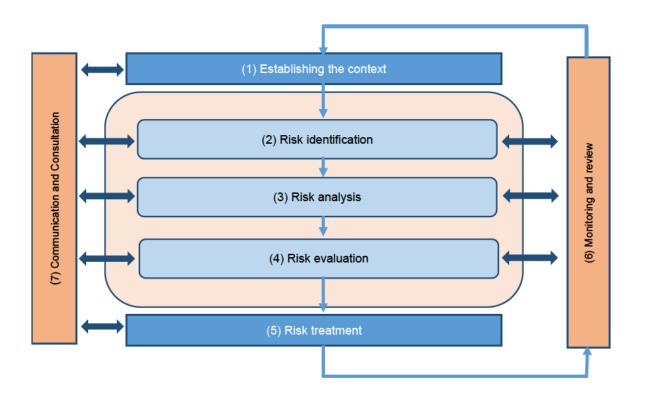
The final implementation is identified and funding is available in the Bridge Management System Business Case Phase 2 Development Business case at D17#462340.

# 3. Purpose

A 'low definition' assessment is one that uses broadly available explicit data on network demand and bridge configuration, performance and condition. A risk assessment framework can be developed using accepted bridge inspection, condition and performance data as an evaluation of likelihood of risk and using network demand and use as a measure of the consequence of any bridge related hazard occurring. The 'low definition' risk assessment should identify the 'critical bridges' on Main Roads network for further 'higher definition' risk assessment and management. The 'low definition' risk assessment is intended to focus attention and effort rather than be a comprehensive Risk Assessment.

'Explicit Data' refers to Main Roads corporate data with processes used in the control of that data are often subject to management and audit under our Integrated Management System (IMS) making it reliable and well managed. Main Roads has a wealth of Asset inventory, condition, demand and performance data most of which is held in IRIS. Further corporate data is held in Systems such as Oracle Finance, BEARS, and Bridge Management System (BMS) etc. Using 'explicit data' removes the subjective nature of risk assessment, improves repeatability and allows the Network Level Risk Assessment for Bridges to be systemised and embedded into the corporate BMS. Flow on tools such as Risk Management Measures and Multi Criteria Analysis (MCA) can be developed to assist in prioritisation for Route Planning and Investment Planning.

Main Roads and the WA Transport Portfolio base their Rosk Assessment Processes on ISO31000. The Risk Process is shown below.



# 4. Context of Bridge Criticality

Bridge Criticality is a measure of how important the bridge is in maintaining a high performing road network. Closures or restrictions to these bridges would have considerable **Consequence** on the performance of the Network.

# 5. Context of Bridge Related Risks

For a Network Level Risk Assessment for Bridges it is important to set the context for the Risk Assessment. The context for this low definition assessment is;

"The potential for Bridge related issues to effect Main Roads ability to provide a <u>safe, reliable</u> and <u>sustainable</u> road based transport system."

Under this context the criteria identified for risk assessment are those which may impact upon;

- Safety:
  - o Age
  - o Bridge Type
  - Inspection status
  - o Condition
  - o Barrier containment
- Reliability:
  - o Level of service
    - strength,
    - width.
  - o Currency of Load Rating
  - Vertical Clearance
- Sustainability:
  - o Planned Past and Future Maintenance
  - Asset Consumption Ratio

Under this context, it is important to understand that a bridge with a resulting Network Level High Risk rating does not mean the bridge is at risk of failure or collapse. Rather that the bridge is a Critical Asset to the delivery of Main Roads services and warrants a high standard of management due to its potential (risk) to adversely affect service delivery and customer satisfaction.

# 6. Measures of Bridge Criticality (consequence) to Network Operation

# 6.1. Commonwealth Class

Main Roads has varying responsibility for management of all bridges including on Local Authority Roads and bridges belonging to other Government Departments and Government Trading Enterprises (GTE), such as DBCA and Water Corporation.

6.1 Commonwealth Class	Commonwealth Class Score	
National Highway	5	
State Road	4	
Local Road	3	

# 6.2. Functional Class

The consequence to service delivery of any bridge risk materialising is broadly related to the number of customers who could be affected. While vehicle count data is not available for each and every bridge on the network, the functional class is dependent on the volume and type of traffic using the bridge. The functional class of the road being carried and, if applicable, the road being crossed are important for the bridge risk assessment.

The Functional Class of the road being supported is available in IRIS and BMS.

6.2 Functional Class	Functional Class Score
1 Inter Capital City Highway	5
2 Rural Highway	4
3 Main Road	3
4 Rural Local Road	2
5 Rural Special Purpose Road	1
6 Urban Highway	5
7 Significant Urban Local Road	4
8 Urban Local Road	3
9 Urban Special Purpose Road	1

# 6.3. Link Subcategory

As with Functional Class above, the Link Subcategory of the road being carried and any road being crossed is important for the risk assessment.

The Link Subcategory of the road being supported is available in IRIS.

	Link Subcategory
6.3 Link Subcategory	Score
MI	5
MFF	5
AW+	4
AW	4
BW+	3
BW	3
CW	2
DW	1

# 6.4. Crossing Type

The type of obstacle crossed is relevant to the possible consequences of a lack of containment or structural failure in terms of number of people affected. A structural failure, bridge strike or barrier penetration affecting train or road travel below a bridge would carry a higher consequence than an incident over water or a dry river bed when considering the risk context of network operation and service delivery across the transport portfolio. The risk to road and rail user safety would be greater due to vehicle penetration of a barrier over road/rail or structural failure than over water or a dry river bed as the latter would most likely involve fewer vehicles.

The Crossing Type is captured in the IRIS Bridge Inventory and in BMS.

6.4 Crossing Type	Crossing Type Score
Over Road and Rail	5
Over Rail	5
Over Road and Water	4
Over Road	4
Over Water	3
Under Road	3
Ramp	3
Pedestrian Underpass	2
Stock Underpass	1
(blank)	1

# 6.5. Primary Function

The primary function data set for a bridge is the purpose of the structure. Structures carrying a road over other roads, rail or water are more critical in terms of maintaining reliable transport that pedestrian bridges or stock underpasses etc.

	Primary Function
6.5 Primary Function	Score
Road and Rail Bridge	5
Road Tunnel	5
Road Bridge	4
Rail Bridge	4
Rail Tunnel	4
Over Road	3
Pedestrian Bridge	2
(blank)	1

# 6.6. Deck Area

Bridge Deck Area can be an indication of the consequence of any bridge related risk occurring as it is generally accepted that the larger a structure, the more complex and time consuming any intervention to reinstate service would be.

The Deck Area is captured in the IRIS Bridge Inventory and in BMS.

6.6 Deck Area	Deck Area Score
>2000m <sup>2</sup>	5
1000m² to 2000m²	4
500m <sup>2</sup> to 1000m <sup>2</sup>	3
200m² to 500m²	2
<200m <sup>2</sup>	1
	1

# 6.7. Current Replacement Cost

The Current Replacement Cost (CRC) is the cost to replace a damaged or destroyed asset. While the context of the Criticality Assessment is impact on network service delivery, the replacement cost of an asset is useful explicit data relating to financial consequence. As with bridge size, the replacement cost could also be an indicator of the financial cost of repair or rehabilitation and the duration it is out of service after a bridge risk has occurred.

Subsequent 'higher definition' risk assessment or MCA can refine the financial consequence through calculation of Road User Cost (RUC) or Net Present Value (NPV) assessment of investment options.

The CRC is maintained in the Oracle Asset Register which is managed to AASB requirements.

6.7 Current Replacement Cost	Current Replacement Cost Score
Current Replacement Cost >\$10M	5
Current Replacement Cost \$5M to \$10M	4
Current Replacement Cost \$1M to \$5M	3
Current Replacement Cost \$500,000 to \$1M	2
Current Replacement Cost < \$0.5M	1

# 7. Measures of Bridge Characteristics Indicating Likelihood of Risk to Network Operation

The following criteria contribute the 'likelihood' of bridge configuration or condition to the risk assessment process.

# 7.1. Age

The likelihood of an issue occurring with a bridge can be linked to age due to deterioration over time and the potential for design standards to be superseded.

Main Roads maintains good bridge age data within IRIS and BMS.

7.1 Age	Age Score
Over 80 Years Old	5
60-80 Years Old	4
40 to 60 Years old	3
10 to 40 Years Old	2
Less than 10 Years Old	1
Not Known	3

# 7.2. Bridge Type

The Bridge Type can be used as a measure of criticality when the rate of deterioration, design approach, durability and robustness of the structure are considered.

7.2 Bridge Type	Bridge Type Score	
Timber		5
Timber Hybrid		5
Steel/Concrete Composite		4
Steel		4
Prestressed Concrete		4
Reinforced Concrete		З
Tunnel		3
Sign Gantry		2
Culvert		1

# **7**.3. Inspection Status

Bridge inspection is a risk management measure used to ensure that bridge condition is in line with design durability standards and is on track to realise its expected useful life. Bridges that have not, or cannot be inspected in line with Main Roads scheduled inspection regime may present an increased likelihood of an (unknown) issue affecting network performance.

Main Roads records inspection cycles within IRIS. A BMS Inspection Planning and Management module is also under development.

7.3 Inspection Status	Inspection Status Score	
Structure never Inspected		5
Full Detailed Inspection >24mths overdue		4
Full Detailed Inspection 12-24mths overdue		3
Full Detailed Inspection 0-12mths overdue		2
Full Detailed Inspection Current (All		
Elements)		1

# 7.4. Condition

Bridges in poor condition would generally be expected to present a greater likelihood of having an issue that would affect network performance.

Main Roads also records Condition State (CS) information for bridges at individual component level. This is available for most components of timber bridges and all components of non-timber bridges.

Where the CS of a bridge component is poor a Work Item (WI) is assigned during the inspection process. WI's are created as part of the inspection process to alert Asset Managers to work that may be required. WI's are given a priority rating and Asset Managers can review these WI and elect to down grade priority, delete the Work Item or escalate the Work Item to a Work Stage and include in a planned maintenance or capital project in the Program Management module of BMS.

The condition criteria considers the severity of the defect and the importance of the component group to structural stability. The scores are based on a matrix of CS and Component Group.

7.4 Condition	Any	Component in	Condition St	ate
Component Group	CS4	CS3	CS2	CS1
CG1	5	5	3	1
CG2	4	3	2	1
CG3	3	2	1	1
Bridge/Other	2	1	1	1

Asset Managers are encouraged to practice good housekeeping with regard to WI's in BMS to ensure the Risk Assessment is accurate.

# 7.5. Containment

Bridge Barriers provide containment of errant vehicles both on the approaches to the bridge and while on the bridge itself. Main Roads bridge inventory captures the barrier types on approaches and on the bridge, it also collects the length of barrier off the bridge. \*\*Refer Section 17 of SE Design Manual\*\*

7.5 Barrier Containment	BC Score
None	5
W Beam	4
Thriebeam	3
RHS Rails	2
Tric-Bloc Concrete Barrier	1
Other Concrete Profiles	1
Reinforced Concrete Barrier (Type F)	1
Constant Slope Concrete Barrier	1
(blank)	4

# 7.6. Strength and Load Management

Main Roads maintains Investigatory Criteria (IC) and Key Performance Measures on Bridge Strength using the Actual and Required Rating Indexes (ARI/RRI). Data on Load Posting and Propping of understrength bridges is also available. These are held in IRIS and BMS.

7.6 Strength and Load Management	Score
Load Posted	5
Propped	5
Fails Strength IC – ARI <rri< td=""><td>5</td></rri<>	5
Pass Strength IC – ARI=>RRI	1

# 7.7. Load Rating Status

Bridges are Load Rated to assess their capability to carry heavy or permit loads on an as needs basis. Older load ratings can be performed to older codes or older vehicle configurations. The older the load rating the more likely codes or usage requirements have been superseded and should be revisited.

7.7 Load Rating Status	Score
Structure never Load Rated	5
Load Rating >120 mths old	4
Load Rating 60 to 120 mths old	3
Load Rating 24 to 60 mths old	2
Load Rating <24 mths old	1
Not Known	4

### 7.8. Width

Main Roads maintains Investigatory Criteria (IC) and Key Performance Measures on Bridge width. This is held in IRIS.

7.5 Bridge Width	Score
Fails Width IC	5
Bridge Width between kerbs <5.0m	4
Meets Width IC	1

# 7.9. Vertical Clearance

Clearance is Maximum and Minimum Headroom are collected as part of the as constructed and bridge inspection processes.

Where bridges have reduced or close clearances over road, HVS maintains a list of bridges which have limiting clearance for selected routes based on specific headroom over lanes. This data is held at:

https://www.mainroads.wa.gov.au/Documents/Bridge%20Heights%20For%20MRWA%20Website%20-%20CURRENT%20-%20July%202018.RCN-D18%5E23581592.PDF

Headroom clearances for bridges over roads relates the likelihood of bridge strikes by vehicles and the restriction to reliable and unimpeded movement of vehicles.

7.9 Vertical Clearance	5.7 Vertical Clearance Score
Low Height managed by HVS	5
No Clearance Issues	1

# \*\*NOTE: Vertical Clearance is currently excluded from the Model.\*\*

# 7.10. Sustainability of Investment

Sustainability of investment is also included here as it is intended that the results of the financial risk assessment will flow on to and guide whether recurrent or capital investment MCA Tools should be used. This measure takes the ratio of Planned Maintenance and Net Book Value to test the logic of expending a large amount of money maintaining a low value asset.

7.10 Sustainability of Investment	Sustainability Score
Planned maintenance >100% of Net Book Value	5
Planned maintenance 75-100% of Net Book Value	4
Planned maintenance 50-75% of Net Book Value	3
Planned maintenance <50% of Net Book Value	2
No Planned maintenance	1

# 7.10.1. Planned Maintenance – Past and Future

The BMS records all planned past maintenance for each bridge since the BMS inception, up to and occasional greater than 5 years ago. BMS also captured future maintenance over a 10 Year Plan. Past and future expenditure provides an indication of the likelihood of growing unsustainable maintenance expenditure.

# 7.10.2. Net Book Value

Net Book Value can be sourced from the Oracle Asset Register which is managed and audited against Australian Accounting Standards Board (AASB) requirements. The Net Book Value for each bridge is an indicator of the likelihood of an investment of recurrent expenditure achieving sustained economic benefit.

# 7.11. Asset Consumption Ratio

The Asset Consumption Ratio (ACR) is the Net Book Value divided by the Current Replacement Cost of the asset. A low ACR indicates that the asset is coming close to being fully consumed financially and has low remaining value and theoretically, low remaining life.

7.11 Asset Consumption Ratio	Asset Consumption Ratio Score
Asset Consumption Ratio < 0.2	5
Asset Consumption Ratio 0.2 to 0.4	4
Asset Consumption Ratio 0.4 to 0.6	3
Asset Consumption Ratio 0.6 to 0.8	2
Asset Consumption Ratio 0.8 to 1	1
No Constructed Date	3

# 7.12. Deferred Maintenance

Consistent deferral of Maintenance can result in a greater likelihood of defects becoming more serious with an increase in condition state and escalating cost. The longer maintenance has been deferred the greater the likelihood of a risk eventuating.

7.12			
Deferred		Deferred Needs	
Needs	7.12 Deferred Needs	Score	
	Previously identified Needs have		
Deferred	been deferred		5
	Identified Needs have not been		
Not Deferred	deferred		4

# 7.13. Work Item Density

The number of Specific Work Items and their location on the structure, expressed in terms of their Component Group, shows the quantum of maintenance work is necessary on the structure. Along with 7.4 Condition, this is an indicator of how likely the bridge requires maintenance.

7.13 Work Item Density	Number of Specific Work Items							
Component								
Group	>10	5-10	3-5	<3	0			
CG1	5	4	3	2	1			
CG2	4	3	2	2	1			
CG3	3	2	2	1	1			
Bridge/Other	2	1	1	1	1			

# 7.14. Potential Future Measures of Criticality and Risk

The measures below could potentially be added to the model in the future.

# 7.14.1. Key Freight Routes

The movement of Freight by Road is an important service delivery for Main Roads. A consequence criteria for Key Freight Routes is included in the low definition binary (yes/no) criteria for risk scoring.

# 7.14.2. Vertical Clearance over Rail

The Public Transport Authority (PTA) publishes clearance envelops for structures over rail. The headroom measurement captured in IRIS can be used to assess the risk related to close clearances over rail. As the height of rail vehicles is easier to manage than the height of road vehicles, the risk scores will be lower than that for clearances over road.

# 7.14.3. Low Headroom for Inspection Safety

Minimum headroom when 1.2m or less can relate the likelihood of incomplete bridge inspections due to health and safety issues of performing inspections. Currently a risk based process for identifying bridges that are too low to inspect is being developed, this will allow the majority of bridges with minimum headroom of 1.2m or less to be inspected as required. The scoring of this risk will therefore be less onerous than other criteria but will be included in assessing risk.

# 7.14.4. Horizontal Clearance

At present data on horizontal clearances for assessing the risk of bridge supports within clear zones, or weak bridge supports susceptible to failure on being struck resulting in bridge collapse is not available. Risk to network service for horizontal clearances is therefore not included in the assessment until explicit bridge inventory data is available.

# 7.14.5. Planned Capital Works

The BMS records planned capital works over a 10 Year Plan. Where a bridge has a low Net Book Value and No future Capital Works are planned there is a risk to diminishing capital value of structures and therefore the Agencies Asset Valuation. There is also a risk of building future financial shock from an accumulating backlog of bridge renewals.

# 7.14.6. Barrier End Treatment and Length off Bridge.

The length of barrier and barrier end treatment type is captured in IRIS and refreshed using As constructed drawings and during Level 2 bridge inspections. The length of barrier and end treatment types are important in providing both safe, crashworthy end terminals and run-off containment for the hazard being crossed.

# 7.14.7. Fire Risk

Fire risk assessment is currently under development and will be linked to the Office of Bushfire Risk Management (OBRM) Bushfire Risk Management System (BRiMS). At present Main Roads does not keep asset data on bushfire risk for bridges so an additional bridge inventory field will need to be included in IRIS for fire risk once the process of evaluating the risk using BRiMS is completed.

# 8. Criticality Scoring

The calculation of the final Criticality Score is by simple averaging as shown for a variety of scores against each criteria in the table below and provides a Criticality Score between 1 and 5.

	Network			Bridge		Finance	
6.1	6.2		6.4	6.5		6.7 Current	
Commonwealth	Functional	6.3 Link	Crossing	Primary	6.6 Deck	Replacement	Bridge Criticality
Class	Class	Subcategory	Туре	Function	Area	Cost	(Ave.)
3	1	1	1	1	1	1	1.29
3	1	1	1	1	1	5	1.86
3	1	1	5	5	5	5	3.57
5	5	5	5	5	5	5	5.00
3	1	1	5	5	5	1	3.00
5	5	5	1	1	1	1	2.71
5	5	5	5	5	5	1	4.43
4	4	5	1	1	3	5	3.29
4	4	5	1	1	1	5	3.00
4	4	5	1	2	2	5	3.29

# 9. Risk Ratings

Risk Ratings are derived from the Risk Likelihood Score multiplied by the Criticality Score (Consequence)

Safety									
7.1 Ag	e	×	Bridge Criticality Score	- 4		X /25			
7.2 Br	idge Type	×	Bridge Criticality Score			X /25			
7.3 In:	spection Status	×	Bridge Criticality Score			X /25			
7.4 Co	ndition		Bridge Criticality Score			X /25			
7.5 Ba	rrier Containment	×	Bridge Criticality Score	=		X /25			
					AVE		=	XX/25	Safety Risk Score
Reliability									
	rength and Load gement	×	Bridge Criticality Score	4		X /25			
7.7 Lo	ad Rating Status	×	Bridge Criticality Score	=		X /25			
7.8 W	idth	x	Bridge Criticality Score	-		X /25			
7940	etical Classance		Bridge Criticality Score			V:/35			
					MAX		=	XX/25	5 Reliability Risk Score
Sustainability	-								
	lanned Maintenance and Future)	×	Bridge Criticality Score	=		X /25			
7.11 A	sset Consumption Ratio	x	Bridge Criticality Score	=		X /25			
					MAX		=	XX/25	Sustainability Risk Score
									Safety Risk Score Reliability Risk Score Sustainability Risk Score
						Total	Risk S	core =	MAX(Safety, Reliability, Susta

# 10. Capital Investment Multi Criteria Analysis (Capital MCA)

The Capital Investment MCA uses the following Risk Scores to determine a Priority Score and Risk Rating for bridges and indicates where LoS or Investigatory Criteria (IC) are not met.

Deterior	ation							
	7.1 Age	х	Bridge Criticality Score	=	X /25			
	7.4 Condition	x	Bridge Criticality Score	=	X /25			
					V /o=			
	7.13 Work Item Density	Х	Bridge Criticality Score	=	X /25			
					AVE /3	=	XX Deterioration MCA	Scoro
					AVE /5	<u>-</u>	AA Deterioration Wica	Score
Lovelof	Service (LoS)							
Level OI	Service (LOS)							
	7.6 Strength and Load Management		Bridge Criticality Score	=	X /25			
	7.0 Strength and Load Management	Х	Bridge Criticality Score	_	A / 23			
	7.8 Bridge Width	х	Bridge Criticality Score	=	X /25			
	7.0 Bridge Width		Bridge enticulty score		N/25			
					MAX	=	XX/25 LoS MCA Score	
Cost (Su	stainability of Investment)	· ·						
0000 (00.	,							
	7.10 Sustainability of Investment	х	Bridge Criticality Score	=	X /25			
	, , , , , , , , , , , , , , , , , , , ,		.,		, ,			
	7.11 Asset Consumption Ratio	х	Bridge Criticality Score	=	X /25			
					AVE	=	XX/25 Cost MCA Score	
							Deterioration MCA	Score
							LoS MCA Score	
							Cost MCA Score	
					Capital N	/ICA Score =	MAX(Deterioration,LoS,Cost)	

# 11. Maintenance Investment Multi Criteria Analysis (Maintenance MCA)

Maintenance MCA									
7.4 Condition	X	Bridge Criticality Score	=	Х	/25				
7.12 Deferred Maintenance	х	Bridge Criticality Score	=	X	/25				
7.13 Work Item Density	X	Bridge Criticality Score	=	Х	/25				
				AVE		=	XX/25	Maintena	nce MCA Score

# 12. Bridge Inspection Prioritisation Multi Criteria Analysis (Inspection MCA)

The Bridge Inspection MCA determines a Risk Rating for all bridges.

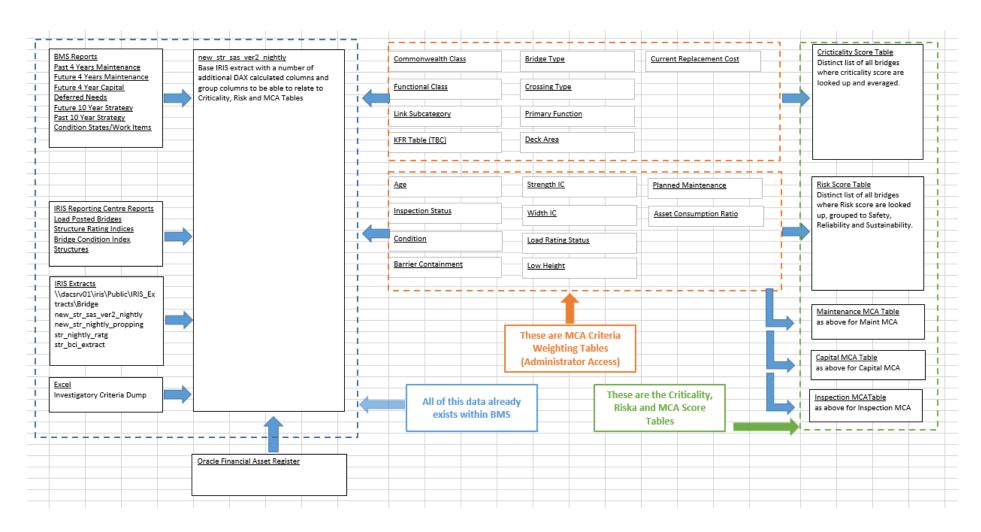
ge Inspection Backlog	MCA							
7.1 Age		Х	Bridge Criticality Score	=	X /25			
7.3 Inspection	Status	х	Bridge Criticality Score	=	X /25			
7.4 Condition		х	Bridge Criticality Score	=	X /25			
7.13 Work Iter	n Density	х	Bridge Criticality Score	=	X /25			
7.6 Strength a	nd Load Management	x	Bridge Criticality Score	=	X /25			
						=	MAX Inspection	n Backlog Risk S

# 13. Bridge Improvement MCA

The Bridge Improvement MCA determines a risk rating based on whether the bridge meets Level of Service criteria and is relatively new and in good condition.

vel of S	Service (LoS)							
	7.6 Strength and Load Management	=	X /5					
	7.8 Bridge Width	=	X /5					
			MAX	=	XX/2	5 LoS MCA Score		
eterior	ation							
	7.1 Age	=	X /5					
	7.4 Condition	=	X /5					
	7.13 Work Item Density	=	X /5					
			AVE	=	X	C Deterioration MCA Score		
			Imp	rovement MCA	Score = (M	AX LoS / AVE Deterioration	) * Bridge C	riticality Score

# 14. Power BI Model Diagram



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# 15. Regional Review of Risk Assessment Process

A process is required that allows the Regional Asset Manager Structures (AMS) to apply in depth regional knowledge and of the network and bridge Levels of Service (LoS).

This is an essential part of the process as the 'low definition' explicit data based process can only derive Risk Ratings from corporately supported data. A Regional Review process allows the knowledge and capability of experienced staff to improve the system generated Risk Assessment.

It is also important to include a review facility to ensure that the Regional AMS revised risk ratings are reasonable and based on sound justification. A central review of revised risk ratings is required by the Structures Asset Strategy Manager (SASM) in Network Management Branch.

Further, the Regional AMS are best placed to identify the appropriate risk treatment measures for identified risks using the hierarchy of control measures. Once risk ratings are reviewed and agreed, mitigation measures are applied and the Residual Risk calculated and agreed.

# 16. Risk Treatment, Residual Risk Evaluation and Risk Communication.

It is then essential that the actions to mitigate risk be they a build or non-build solution, are communicated, reviewed and endorsed at the appropriate level within the Agency.

Build solutions for risk mitigation result in the generation of Maintenance, Improvement and Renewal and Refurbishment Programs. These are collated in Network Management Branch and in liaison with Budget and Programming and Investment Planning, programs are submitted through AMSC, IPSC and MRIC.

Non-build solutions such as load posting, warning signage, temporary propping, bridge monitoring etc. are lower in the risk control hierarchy and require communication and regular review of effectiveness. Where these measures are in place and the Residual risk is still High or Very High, these will be reviewed and the AMSC will receive regular updates with the highest Residual Risk bridges being reported on to CorpEx.

The Flow chart below shows the process and activities associated with Regional Review and Risk Communication.

# Consequence and Likelihood Criteria established • Risk and MCA Context Established Risk Identification System Generated scores based on Data AMS Review System Criteria Scores •MOAM Audit via BMS Workflow notification Agreed Criteria Scores Risk Analysis Risk Register Created • Risk Rating assigned **Risk Evaluation** AMS Treatment Activity • Build - PM Module Stage •Non-build - Issues Register Entry Residual Risk Score Created Revisit Risk Treatment Risk register Updated Treatment if Risk Control 'Inadequate' 'Improvement • Risk Acceptance Criteria based on Residual Risk Required' • Risk Control Rating Assessed Risk Review Rsik Register Updated and Monitoring Report on Risk Profile and Review Status Communicate & Consult

Step	(1) Establish the Context	BMS Structures Criticality, Risk and Prioritisation Process						
Overview	This step is the planning phase of the risk assessment. The 'Relevant Officer' should ensure the subject of the risk assessment is defined and	The context of the Risk Assessment is the identification and prioritization of bridge asset management activities during the operational phase. This includes prioritization of maintenance, improvement, renewal and refurbishment and						
	placed into context and the format of the risk assessment and level of effort should be defined.	planning of delivery of bridge inspection backlog.						
Expected Outcome	The objectives, scope and parameters of the risk assessment are documented.	Identify Critical Assets (Highest Consequence to network operations) Identify Bridge Risk against key categories;  Safety Reliability Sustainability Use selected risk scores and ratings to prioritise and plan; Bridge Maintenance works Bridge Capital works						
Procedure	1. There are different ways in which the risk assessment can be carried out — workshops, team meetings, interviews, surveys or a desktop exercise. Consider which one of these options would be most appropriate in the circumstances to adopt.  2. Identify the participants for the risk assessment. Ideally the participants in the risk assessment have competencies that will allow for effective risk identification and assessment.  3. Define objectives of the risk assessment — purpose and use of the results.  4. Define the focus of the risk assessment — This step seeks to answer the question — what are we assessing the risks of — an initiative, a process, a contract, a supplier etc.  5. Determine the resources required to perform the risk assessment — people, time and information.  6. Identify any internal relationships and their impact on the risk assessment related to another project, product, strategy or initiative at main Roads. If so, what is the impact of it on the risk assessment?  7. It is important to understand the organisation and the external environment and determine their impact on the risk assessment. The table below outlines some of the internal and external factors to consider.  External  Business, social, regulatory, cultural, competitive, financial and political environments. The Organisation's strengths, weaknesses, opportunities and threats  External stakeholders and their perceptions  Key business drivers  The culture Internal stakeholders organisational structure Capabilities in terms of resources.  Goals, objectives and strategies to achieve them  8. Document the process to the extent required.	7. As per table opposite  8. This document demonstrates alignment with the risk process.						
facilit Alter servi 2. Use t	wing the guidance in this document will assist you in tating a risk assessment or a risk workshop.  natively, the CUA for Financial services provides risk ces including risk workshop facilitation.  his step to set the context and scene for the risk sment.							

Step		BIVIS STRUCTURES CRITICALITY, KISK AND PRIORITISATION PROCESS					
Overview	(2) Risk Identification  Risk identification involves describing the source and causes of a risk. Risk may originate from all areas of the business e.g. business units, projects, sites, support services and corporate.  During this step, all risks that may impact on the achievement of the objectives should be identified. Identified risks should be:  Relevant to the subject matter;  Appropriate, given the context; and  Useful for decision-making purposes.  For example: the risk of a natural disaster may be possible, but not relevant, appropriate or useful when assessing the risk of introducing a new product.	Risk Source is the ownership and responsibility for safe, reliable and sustainable asset management of bridge structures to facilitate road based transport systems.  Factors affecting Bridge Risk (Consequence and Likelihood) are Identified and detailed in D18#932044. A sample are listed below;  Bridge Age Bridge Condition Bridge Value History of expenditure Strength Width					
Expected Outcome	<ol> <li>Documentation of risks.</li> <li>Progress towards completion of a Risk Register – see Appendix 2 for a template.</li> </ol>	<ol> <li>D18#932044 – Development of a Network Level Bridge Criticality and Ris Assessment Framework</li> <li>Criticality (Consequence) Criteria</li> <li>Risk Likelihood Criteria</li> <li>Proof of concept Risk Register set up in Power BI - <a href="https://app.powerbi.com/groups/me/dashboards/27a815e1-27f5-415b-b686-88469159f3e4">https://app.powerbi.com/groups/me/dashboards/27a815e1-27f5-415b-b686-88469159f3e4</a></li> <li>Final Bridge Risk Register will be Managed and Stored within the corpora Bridge Management System (BMS)</li> </ol>					
Procedure	<ol> <li>Identify the objectives of the project, initiative, process (subject of the risk assessment). There are different ways of identifying the risks – judgements based on experience and records, checklists, flow charts, brainstorming, scenario analysis, system analysis and so on.</li> <li>Consider holistically what events may impact on the ability to achieve these objectives. Consider the events across a range of categories including:         <ul> <li>Customer and Market</li> <li>Finance and</li> <li>Procurement</li> <li>Fraud and Corruption</li> <li>Innovation, Quality and Improvement</li> <li>People</li> <li>Reputation</li> <li>Safety</li> <li>Success and Sustainability</li> <li>Strategy and Planning</li> <li>Service Delivery</li> <li>Environmental</li> </ul> </li> <li>Review the key risk areas to determine potential sources of risk, relevant to the objectives.</li> <li>Document the outcomes in the Risk Register.</li> </ol>	<ol> <li>The objective is to apply the principles of risk management to identify an prioritise bridge asset management activities. System and Data analysis i used to undertake initial risk analysis with risk evaluation carried out by regional AMS who have more detailed understanding of the network and bridge needs than can be captured in bridge data systems.</li> <li>The following categories are considered based on the data available from asset management systems;         <ul> <li>Customer and Market</li> <li>Finance (Asset Valuation Register)</li> <li>Reputation</li> <li>Safety</li> <li>Success and Sustainability</li> <li>Strategy and Planning</li> </ul> </li> <li>As per D18#932044</li> <li>As above</li> </ol>					
object event 2. Wher the po 3. Consu	can be a positive or negative impact on the tive - consider holistically positive or negative to that can influence the objectives. The possible conduct some preliminary research on otential risks. This will help better inform the alt relevant stakeholders to gain a better restanding and perspective on potential risks						
Step Overview	(3) Risk Analysis  Risk analysis involves determining the causes, consequences, likelihood and impact of each identified risk. This allows each risk to be allocated a risk rating, which influences treatment planning decisions.  The results of the risk analysis inform resource allocation so that risks of the highest potential	BMS Structures Criticality, Risk and Prioritisation Process  As per D18#932044 scores of 1 to 5 are allocated to the risk consequence and likelihood criteria. The bridge data records in IRIS, BMS and the Asset Valuation register are used to determine the initial risk score.  The results of the analysis ensure that the Regional AMS are Evaluating the higher priority bridge risks and planning accordingly.					

	It is essential that the Transport Portfolio Risk Reference table is provided in Appendix 1 are used to determine the risk ratings.						
Expected	Risk rating allocated for each risk.	Proof of concept Risk Register set up in Power BI -					
outcome	2. Further completion of the Risk Register.	https://app.powerbi.com/groups/me/dashboards/27a815e1-27f5- 415b-b686-88469159f3e4					
Procedure	<ol> <li>Identify possible causes of the risk.         Also consider the underlying factors that impact the risk and likely treatment options.</li> <li>Identify the possible consequence of the risk.</li> <li>Identify existing controls including processes, devices or practices that act to minimise or enhance the risks.</li> <li>Determine the potential consequences of the risk occurring.</li> <li>Determine the likelihood of the risk occurring.</li> <li>Combine the impact and likelihood ratings to establish the overall risk rating.</li> <li>You have the option of applying a Residual Risk Rating or an Inherent Risk Rating.</li> <li>Document the results in the Risk Register.</li> </ol>	1. As per D18#932044 2. " " " 3. " " " 4. " " " 5. " " " 6. " " " 7. Residual Risk ratings are not calculated at this step 8. As per Power BI PoC dashboard					
TIP:	Register.						
1. Ofte	n this step is completed in conjunction with Step 2 – Identification.						
Step	(4) Risk Evaluation	BMS Structures Criticality, Risk and Prioritisation Process					
Overview	The purpose of risk evaluation is to assist in making decisions, based on the outcomes of the risk analysis, about which risks need treatment and to inform prioritisation decisions regarding the implementation of treatment plans.	Initial risk analysis and evaluation is performed by the data model as described in D18#932044. During the risk evaluation phase the Regional Asset Manager refines the risk evaluation and records justification in the corporate Records Manager system for any changes to the initial risk evaluation. The regional AMS can accept the 'System Risk Evaluation' or modify based on demonstrated regional information aligned to the defined likelihood and consequence criteria.					
Expected Outcome	Plot levels of risk on the risks matrix and determine risks that need treatment and priority regarding implementation of treatment.      Further completion of the relevant Risk Register	<ol> <li>The risk evaluation process progresses from Initial data based evaluation, to refined Regional AMS Evaluation, Central review and approval of AMS evaluation to Agreed Risk Evaluation.</li> <li>The progression is captured and recorded within the BMS to form an audit trail of the risk process to this point.</li> </ol>					
Procedure	1. Plot the identified risks on the heat map in the Risk Register to determine its level of priority (very high, high, moderate or low).  2. Determine which risks can be satisfactorily managed through existing controls or processes and where additional treatment or improvements to existing controls will be required to be made to manage the risk exposure.	<ol> <li>Risk Scores are used to determine the risk ratings as per Portfolio Risk reference tables.</li> <li>AMS will consider existing controls or any acceptable reductions in asset Level of Service in performing his evaluation of Risks through modification of consequence and likelihood scores.</li> </ol>					
picto 2. Plott	ing the risks on the heat map provides a good rial representation of the risks. ing the risks in this manner assists in effective sion making.	All bridge assets are presented in a table sorted by risk score so that risk profile can be considered and treatment activities (build and non-build) can be					
Step	(5) Risk Treatment	BMS Structures Criticality, Risk and Prioritisation Process					
Overview	Risk treatment involves selecting one or more options to manage the risk. The optimal treatment is not necessarily the one that reduces the risk to its lowest possible level, but the one which allows Main Roads to achieve its objectives, whilst remaining within the agreed risk appetite/parameters.	In selecting risk treatment for bridge assets, treatments/controls using ALARP principles can be selected from;  • Existing, non-build' AM procedures such as propping, load posting					

Expected		hierarchy. The PM module will also capture some non-build treatments such as inspections and load ratings.				
Outcome	Primary treatment options are identified and documented.     Update the Risk Register.	Treatment options will be linked to PM module options and stages or Issues Register with associated justification documentation.     The BMS Risk register will be updated with Residual Risk Scores added to demonstrate risks are being planned for and managed. Effectiveness of treatments reviewed bi-annually.				
Procedure	<ol> <li>Determine if the identified risk is to be avoided, accepted, transferred or mitigated. Refer to Appendix 1 for the Risk Acceptance Criteria and guidance.</li> <li>The Risk Treatment Options are listed in Appendix 3</li> <li>A risk treatment plan must be created for risks that are rated as High or Very High - what is the proposed actions, who is the accountable person and timelines.</li> <li>The risk treatment plan can be a business plan action or a project plan action.</li> <li>If there are existing business/project actions that mitigate the identified risks, note them in the Risk Register.</li> <li>Monitor and review the effectiveness of the treatment plan on a regular basis and document the review.</li> </ol>	<ol> <li>Assessment made by AMS based on ALARP principles and Risk Acceptance Criteria</li> <li>Treatment options are broadly categorized into build and non-build options. Build options are defined by Bridgeworks Work Items</li> <li>The BMS Risk Register forms the Risk Treatment Plan with accountabilities established and communicated based on the Risk Acceptance Criteria.</li> <li>The BMS PM Module and Issues Register for the treatment plans and are linked to Investment Planning through the AMSC and MRIC committees.</li> <li>Existing business processes for asset management will be taken into consideration in the risk evaluation and risk treatment phases with justification documentation link for transparency and auditability.</li> <li>Monitoring and Review as per Step 6 below based on a reporting tool in BMS.</li> </ol>				
treat discre existin in the	re is an existing business or project actions that will the identified risk/s, there is no need to develop a ete treatment action plan. It is essential that the ing business or project action is properly referenced e Risk Register and monitored and reviewed on a ar basis.	Links to Asset Management Program (BMS PM Module) and BMS     Issues Register capture treatment plans.				
Step Overview	(6) Monitoring, Reporting and Reviewing Ongoing monitoring, reporting and reviewing is an integral part of risk management.	BMS Structures Criticality, Risk and Prioritisation Process				
Expected Outcome	Develop governance system around monitoring, reporting and reviewing risks, controls and treatment plans.	<ol> <li>Governance system as per risk acceptance criteria and review frequency twice per year or as required.</li> <li>Assessment of Risk Treatments/Controls and review of risk as necessary.</li> <li>Risk Acceptance as per Portfolio Risk Tables.</li> <li>Review triggers; System Data Change, LoS Change, Demand/Use change.</li> </ol>				
Notes	Risks, controls and the effectiveness of treatment measures need to be monitored, reviewed and reported on to ensure changing circumstances do not alter risk treatment priorities.	Review and Monitoring carried out through dedicated page/table in BMS. R and Monitoring also to include any Risk Process improvements via SAMF to Branch BMS Project Sponsor/ SE Branch BMS Project Manager.  Reporting and Communication at regional level by printed report from BMS Network Manager and Regional Manager on frequency decided by Regional reporting requirements.				
	Where possible consider embed the monitoring, reporting, reviewing requirements in existing processes.  Review and Monitor Ensure there is regular reviewing and monitoring of the identified risks, controls and treatment plans. When reviewed, document the review and note if any changes were made. It is recommended that a review be conducted at least twice a year or more depending on the risk profile.  Report Clear risk reporting and escalation guidelines are an important component to ensure that management have proper oversight over business activities. Ensure the identified risks are reported in a timely manner to senior managers and the Corporate Executive. Where possible, provide a report on the aggregated risk data.	Reporting and Communication at regional level by printed report from BMS to Network Manager and Regional Manager on frequency decided by Regional				

	If an Issue occurs, the Risk Register will need to be reviewed and appropriately updated. The flow chart below outlines the process to follow in such instances.	
Step	(7) Communication and Consultation	BMS Structures Criticality, Risk and Prioritisation Process
Overview	Communication and consultation with relevant stakeholders at every process step is essential. It assists in ensuring that those accountable for implementing risk management process and stakeholders understand the basis on which decisions are made and the reasons why particular actions are required.  It also provides the opportunity for stakeholders to share their ideas and assist in making effective decisions.	
Expected Outcome	Ongoing communication and consultation with the relevant internal and external stakeholders throughout the process.	<ol> <li>Communication and consultation locally in region by AMS.</li> <li>Centralised reporting by NM Branch through AMSC, MRIC, Treasury and CorpEx using Power BI Dashboard for statewide risk management for Bridges.</li> </ol>
Notes	Relevant people from each Branch or Directorate should be identified, consulted and where appropriate and involved in the risk process.  Most people have different perceptions of risk based on their experiences, values, and assumptions. Where possible, a consultative approach should be used in the risk assessment process. Utilising those with different areas of expertise provides greater assurance that all relevant risks have been identified and will lead to greater commitment in implementing risk treatment action plans.	

# Main Roads WA Bridge Criticality and Risk Assessment

Structure No.	Structure Type Code	вма	Owner	LGA	Road Name	Road No.	Crossing Name	SLK	Critical			Residual Combined Risk Rating		No Deferred Maintenance	Level 2 Inspection not Overdue
3125	TMBR	Wheatbelt	Local Authority	Narrogin	Whimbin Rock Rd	4180205	Arthur River	6.10	No	2.50	High	High	No	Yes	Yes
4551	TMBR	Wheatbelt	Local Authority	Narrogin	Tarwonga Rd	4180204	Wangelling Gully	22.78	No	2.67	Medium	Medium	No	Yes	Yes
3122	TMBR	Wheatbelt	Local Authority	Narrogin	Tarwonga Rd	4180204	Torbling Brook	2.82	No	2.50	Medium	Medium	No	Yes	Yes
3128A	TMBR	Wheatbelt	Local Authority	Narrogin	Manaring Rd	4180211	W Iliams River	3.58	No	2.50	High	High	No	Yes	Yes
3142	TMBR	Wheatbelt	Local Authority	Narrogin	Havelock St	4180025	Narrogin Brook	0.61	No	2.83	High	Low	No	Yes	Yes
9250	STBR	Wheatbelt	Local Authority	Narrogin	Northam Cranbrook	M031	Northam - Cranbrook Hwy And Rail	167.89	No	3.00	Medium	Medium	No	Yes	Yes

# Main Roads WA Bridge Risk Assessment - February 2020

Structure No.	ВМА	Road Name	Road No.	SLK	Crossing Name	Road Classification	Owner	Structure Type Code	Safety Risk Score	Reliability Risk Score	Sustainability Risk Score	Combined Risk Score	Capital MCA Risk Score	Maintenance MCA Risk Score	Inspection MCA Risk Score	Improvement MCA Risk Score	Evaluated	Treated / Risk Accepted	Control
3125	Wheatbelt	Whimbin Rock Rd	4180205	6.10	Arthur River	Local Road	Local Authority	TMBR	9.00	12.50	6.25	12 50	12.50	9.17	2.50	3.75	Complete.	Untreated	
4551	Wheatbelt	Tarwonga Rd	4180204	22.78	Wangelling Gully	Local Road	Local Authority	TMBR	8.54	801	6.68	8 54	8.90	9.79	2.67	2.67	Complete.	Untreated	
3122	Wheatbelt	Tarwonga Rd	4180204	2.82	Torbling Brook	Local Road	Local Authority	TMBR	8.00	7.50	7.50	8 00	7.50	5.00	2.50	3.22	Complete.	Untreated	
3128A	Wheatbelt	Manaring Rd	4180211	3.58	Wi liams River	Local Road	Local Authority	TMBR	8.50	12.50	3.75	12 50	12.50	8.33	2.50	4.17	Complete.	Untreated	
3142	Wheatbelt	Havelock St	4180025	0.61	Narrogin Brook	Local Road	Local Authority	TMBR	10.75	14.15	8.49	14 15	14.15	5.66	8.49	6.07	Review is completed by AMS and requires SASM input.	Treated/Risk Accepted	Adequate
9250	Wheatbelt	Northam Cranbrook	M031	167.89	Northam - Cranbrook Hwy And Rail	State Road	Local Authority	STBR	8.25	9 00	9.00	9 00	9.00	7.00	9.00	4.50	Complete.	Untreated	

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# Bridge 3125 Whinbin Rock Road over Arthur River L2 Inspection



File:

04/4053

To:

**Engineer Bridge Loading** Subject: Bridge Number: 3125

- 1. Having recently completed an assessment of routine and specific maintenance work required on this bridge, I am of the opinion that the condition of certain structural components has deteriorated to such an extent that the load carrying capacity of the bridge may have been affected.
- 2. In accordance with the requirements of the procedure for Heavy Loads Assessment, Document number 3912/01-7, this bridge is referred for a detailed structural assessment of the bridge in its present condition.

Mark Billings

Senior Structural Engineer AECOM

18 March 2019

Span 3 Stringer 3

MAIN ROADS Western Australia 2011 T BCM 3125 - Minute to EBL(4)



Enquiries: Our Ref: Your Ref: Gavin Johnston on 9323 4431

04/4053





ABN: 50 860 676 021

# ASSET MANAGER STRUCTURES WHEATBELT REGION

Structure No.: 3125

Over: Arthur River

On: Whimbin Rock Rd (4180205)

SLK: 6.14

LGA: Shire of Narrogin

- Please find enclosed a copy of the Detailed Inspection Report for the above Local Authority structure.
- Attached is a schedule of maintenance items that are required to be undertaken in order to maintain structural integrity and extend the life of the Structure.
- The maintenance items have been entered into IRIS for programming purposes.
- 4. Preliminary examination has indicated that the load carrying capacity of this Structure may have been affected by the deterioration of structural components as listed in the attached report. We are in the process of determining its current load capacity and will advise you accordingly when our assessment is completed.

Reviewed By:

Mark Billings

SENIOR STRUCTURAL ENGINEER AECOM

Mark Bilts

Enc

Issued By:

Gavin Johnston

BRIDGE CONDITION MANAGER

22/3/19

# **WORK ITEMS - TIMBER BRIDGES BRIDGE No: 3125**

NO	ITEM DESCRIPTION	WORK REQD	PRIORITY CODE	COMMENTS
) GENE	RAL MAINTENANCE			
G005	Bridge Durability Survey (L3)			
G009	Bridge - Load Rating	Y	0	Span 3 Stringer 3, abutment 1 side.
G010	Bridge - Monitor Defect	V TI	1 0000	
) DDEV	ENTATIVE MAINTENANCE			
P101	Bridge Seal Timber			
P102	Bridge Maintain Fastener			
P103	Bridge - Fungicide Treatment			
C) ROUT	NE MAINTENANCE			and the state of t
	Bearing - Maintain	_		
	Bridge Remove Graffiti	-		
	Bridge - Repair Scour (Minor)	17	-	
ii riin baaraan oo	Bridge - Eradicate Termites	Y	1	to dominate the state of the st
	Bridge Clear Debris and Vegetation  Deck Joint Maintain			
	Deck Surface Maintain	Y	1	Con at Annuacolud A I BUS and accusation
	The state of the s	1	- 1	Gap at Approached A l RHS-req correction
	Drainage - Maintain  Expansion Joint - Maintain			
	Fence - Remove	1		
	Fence - Remove Fence - Repair (Control of Access)	_		701000000000000000000000000000000000000
	Guardrail Maintain/Repair			
	Kerb - Repair (Minor) - Non Structural		-	
	Lighting - Maintain	1		
	Sign - Maintain	Y	1	Width Marker replace & realign
	Sign - Manitain			Width Marker replace & realign
SPECI	FIC MAINTENANCE			
	I IO MAINTENANCE			
_	Dridge Donlage Fortener (1 5m			
S315	Bridge - Replace Fastener < 1.5m			
S315 S350	Bridge Repair Scour (Major)			
S315 S350 S366	Bridge Repair Scour (Major) Bridge - Access - Improve			
S315 S350 S366 S413	Bridge Repair Scour (Major) Bridge - Access - Improve Deck Repair			
S315 S350 S366 S413 S437	Bridge Repair Scour (Major) Bridge - Access - Improve Deck Repair Decking - Repair (Timber)			
S315 S350 S366 S413 S437 S449	Bridge Repair Scour (Major) Bridge - Access - Improve Deck Repair Decking - Repair (Timber) Drainage - Repair			
\$315 \$350 \$366 \$413 \$437 \$449 \$455	Bridge Repair Scour (Major) Bridge - Access - Improve Deck Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair			
S315 S350 S366 S413 S437 S449 S455 S461	Bridge Repair Scour (Major) Bridge - Access - Improve Deck Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair			
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\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510	Bridge Repair Scour (Major) Bridge - Access - Improve Deck Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim			
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\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564	Bridge Repair Scour (Major) Bridge - Access - Improve Deck Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel Bolt Corbel - Repair Corbel - Repair Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Repair Pier - Repair Pier - Repair Pile - Band Pile - Repair Sheeting Repair Waler - Repair Joist Repair	Y	2 2	Abutment 2 pile 10 A1 face, wing caps RHS & LHS. A2 face, wing walls & caps LHS

# PRIORITY CODE

- 0 -Critical Safety Deficiency : EMERGENCY action required (Immediate or within 6 months) 1 Very High Priority (Within 3 years)
- 2 Medium Priority (Within 4 years)
- 3 Low Priority (Within 5 years-assess again at next Detailed Inspection)

### MRWA Ref: 04/4053

### DETAILED TIMBER BRIDGE INSPECTION SUMMARY

Bridge No: 3125 Region: WHEATBELT REGION

River Name: Arthur River SLK: 6.14
Road: Whimbin Rock Rd Road No: 4180205

LGA: Shire of Narrogin

### 1.0 General

Bridge no. 3125 located on Whimbin Rock Rd in the Shire of Narrogin is a three spans bridge crossing the Arthur River. The structure requires maintenance and generally appears to be in fair condition.

### 2.0 Preventative Maintenance

Preventative maintenance to be undertaken on a 5 year periodic basis.

### 3.0 Routine Maintenance

Undertake termite inspection and treatment as required in accordance with specification 850.93.09.

Correct road surface on bridge deck and approaches as outlined in report.

Replace signs and lights as outlined in report.

# Specific Maintenance

# 4.0 Substructure

4.1 Undertake pile repairs as outlined in report in accordance with specification 850.31.

(Abutment 2 pile 10)

Undertake timber abutment repairs as outlined in report.

(A1 face, wing caps RHS & LHS. A2 face, wing walls & caps LHS)

# 4.2 Superstructure

Shim corbels as outlined in report

(Pier 2 corbel 6 A1)

Bolt and or seal stringers as outlined in report in accordance with specification 850.29/850.30

(span 3 Str 7)

Undertake stringer repairs as outlined in report.

(span 3 Str 3)

Shim stringers as outlined in report

(span 2 Str 3 A2, span 3 Str 1 A2 end, Str 6 A2)

# 5.0 BCI

39.9

# 6.0 Load Rating

Span 3 stringer 3, abutment 1 side requires load rating.

Mark Billings Senior Structural Engineer AECOM

March 6 2018

MAIN ROADS Western Australia
2011 T BCM 3125 - Summary(3)

# DETAILED VISUAL (LEVEL 2) TIMBER BRIDGE INSPECTION REPORT BRIDGE CONDITION INDEX (BCI)



# **Bridge Number**

3125

In conjunction with the Detailed Level 2 Bridge Inspection Report (as dated below), a Bridge Condition Index (BCI) has been calculated for this Bridge. The BCI assigns a numerical value to a bridge that is indicative of its condition and provides a relative condition in comparison with other timber bridges (BCI calculation is only applicable for timber bridges). The BCI rating system is a tool to provide a systematic approach for the determination of bridge condition by bridge inspection alone.

The process for determining the BCI is outlined in the Timber Bridge Condition Index User Guide. The BCI is primarily calculated utilising Condition States which are assigned based on the Level 2 Bridge Inspection Report (see attached).

A summary of the condition states and the calculated BCI for this bridge is provided below.

Condition States from Detailed Inspection Report conducted on

17-01-2018

		Condit	ion State -	Distribution	(%)			
LOCATION	Weighting	CS1	CS2	CS3	CS4	Ave	BCI	
Condition State Weighting		1	3	9	11	AGR	H. C.	
Stringers	11	58.4	40.0	0.0	1.6			
Pier Piles	11	57.0	43.0	0.0	0.0	25.5		
Abutment Piles	11	60.5	28.3	11.2	0.0	25.5	20.0	
Halfcaps	11	0.0	100.0	0.0	0.0			
Corbels	6	0.0	100.0	0.0	0.0	20.4	39.9	
Timber Decking	6	0.0	90.0	0.0	10.0	20.4		
Wing Piles	3	65.0	23.0	12.0	0.0			
Abutment Sheeting	3	0.0	36.3	60.0	3.7	14.0		

Descriptor	BCI Range				
Very Good	0-19				
Good	20 - 39				
Fair	40 - 55				
Poor	56 - 100				
Severe	101+				

BCI Descriptor Range (Refer Table 5.1 Doc No. 6706/02/2232)

Comments:

Prepared by:

P Olsen & A Buenaventura

Date:

23/02/2018

MAIN ROADS Western Australia

Timber Bridge Condition Index Doc No. 6706/02/2232

**BCI Summary Form** 



# TIMBER BRIDGE DETAILED INSPECTION REPORT

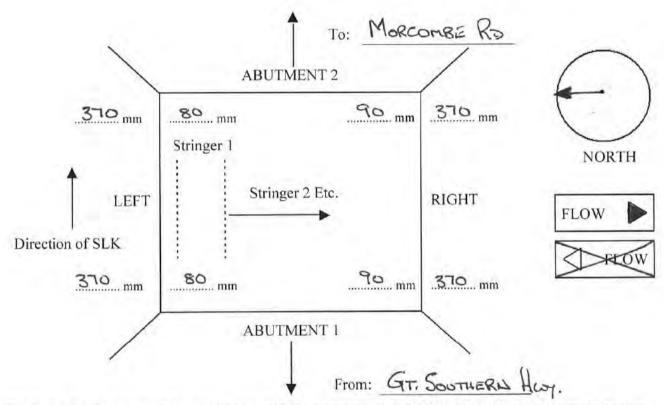


GENERAL INFORMATION - SHEET 1		Bridge No.:	3125
Region:	Wheatbelt	Latitude (S):	-33.08132
		Longitude (E):	117.30610
Road Name:	Whimbin Rock Rd	Road No.:	4180205
Local Government:	Narrogin	Owner:	Local Authority
Crossing Name:	Arthur River	SLK:	6.11
Number of Lanes:	2	Length (m):	18.67
Total Width (m): Inc. Footpath	7.80 Max. Head Room (m): 2.10	Min. Head Room	n (m): 1.60
No. of Spans:	Width between Kerbs (m): 7.20	Concrete Overlay (Y/N): Y (120mm)	

Piers are numbered along the bridge in ascending order from ABUTMENT 1 to ABUTMENT 2. Piles are numbered across the bridge in ascending order from LEFT to RIGHT. Stringers are numbered across the bridge in ascending order from LEFT to RIGHT.

Inside and outside kerb depths noted in corners of sketch.

LHS N Exposed Deck Ends (RCO only):



This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Timber Bridge Detailed Inspection Guidelines.

Inspected by: 5. Marie b. Ebreze

Checked by: POLSEN A ALKHALAL

Drilled by:



# SITE CONDITIONS Bridge No: 3125



DRIVE THROUGH	Visible Line of Sight from Abut. 1:   Km	
	Visible Line of Sight from Abut. 1: K-	
TRAFFIC CONTROL	Abut. 1 end:	
(Describe if different to the generic TMP)	Abut. 2 end:	
PARKING POSITION	>3 m X Position: AB 2 L.HS 112 PASEOCCE	
	1.2 to 3 m Position:	
	0 to 1.2 m Position:	
ACCESS TO ABUTMENTS	Abutment 1:  LHS:	
(Describe access conditions at each wing)	RHS: OK FROM PARKING AREA	
	Abutment 2: LHS:	
	RHS:	
	Vegetation: Low GROWTH	
ACCESS TO PIERS	LHS:	
(Describe access conditions along each	RHS:	
side of the structure)		
	Vegetation:	
POTENTIAL HAZARDS	Railing/Posts:	
	Bolts: LOW HANGING SCUPPERS	
	Services:	
	Asbestos:	
	Other:	
FENCES	Timber Location:	
	Wire/Mesh: Location:	
4002	Electrified: Location:	
	Barbed Wire: Location:	
WATER	Other (Specify): Location:  Depth (m): /-2 =	
WALK	Flow Rate: Stock	
	Algae: No (Access may be restricted by toxic algae)	
	Tide: No	
POWERLINES	Location: SPAN 17, 3. Side of bridge: L.H.S	
	Horizontal distance from edge of deck (m):	
,	Estimated vertical height above deck (m): 5 _	
	Softmand vertical designs above deex (in).	

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Signature

Date

17-1-18





GUARDRAIL INFORMATI	ON			Bri	idge No	o.: <u>312</u>	5	_	
	A	pproach	1	C	n Bridg	e	A	pproach	2
Barrier Type	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS
None									
RHS Rails No. of Rails (on bridge):									
Thriebeam									
W Beam	X		Х	Х		X	Х		X
Tric-Bloc Concrete Barrier									
Reinforced Concrete Barrier (Type F)									
Constant Slope Concrete Barrier									
Other Concrete Profiles									
Post Type									
None									
Concrete									
Timber									
			37	\		3.7	17		37
Steel Type: PFC [Types: C-Section (C), I Section (I), R	X HS (R), Squa	nre Hollow	X Section SI	X HS (S), Ti	ıbular (T),	X Steel PFC	X (PFC), St	eel Channe	X I (Ch)]
[Types: C-Section (C), I Section (I), R Off bridge:	HS (R), Squa	are Hollow	Section SI		ıbular (T),		(PFC), St	eel Channe	I (Ch)]
[Types: C-Section (C), I Section (I), R  Off bridge:  Number of Posts off Bridge	HS (R), Squa	nre Hollow S	Section SI		abular (T),		(PFC), St	eel Channe	l (Ch)]
[Types: C-Section (C), I Section (I), R	HS (R), Squa	are Hollow S	Section SI		abular (T),		(PFC), St	eel Channe	l (Ch)]
[Types: C-Section (C), I Section (I), R  Off bridge:  Number of Posts off Bridge	6 11.9	pproach	Section SI  4  8	HS (S), To	ubular (T), i	Steel PFC	(PFC), St	eel Channe	6 11.9
[Types: C-Section (C), I Section (I), R  Off bridge:  Number of Posts off Bridge  Length of Barrier off Bridge (m)	6 11.9		Section SI  4  8	HS (S), To		Steel PFC	(PFC), St		6 11.9
[Types: C-Section (C), I Section (I), R  Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Visibility Barrier	6 11.9	pproach	4 8	HS (S), To	)n Bridg	Steel PFC	(PFC), St	pproach	6 11.9
[Types: C-Section (C), I Section (I), R  Off bridge:  Number of Posts off Bridge  Length of Barrier off Bridge (m)  Visibility Barrier  Timber No. of Rails (on bridge):	6 11.9	pproach	4 8	HS (S), To	)n Bridg	Steel PFC	(PFC), St	pproach	6 11.9
[Types: C-Section (C), I Section (I), R  Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Visibility Barrier	6 11.9	pproach	4 8	HS (S), To	)n Bridg	Steel PFC	(PFC), St	pproach	6 11.9
[Types: C-Section (C), I Section (I), R  Off bridge:  Number of Posts off Bridge  Length of Barrier off Bridge (m)  Visibility Barrier  Timber No. of Rails (on bridge):  Steel Pipe(s) No. of Pipes (on bridge):	6 11.9	pproach	4 8	HS (S), To	)n Bridg	Steel PFC	(PFC), St	pproach	6 11.9
[Types: C-Section (C), I Section (I), R  Off bridge:  Number of Posts off Bridge  Length of Barrier off Bridge (m)  Visibility Barrier  Timber No. of Rails (on bridge):  Steel Pipe(s) No. of Pipes (on bridge):  Guide Posts  Balustrade	6 11.9	pproach	4 8	HS (S), To	)n Bridg	Steel PFC	(PFC), St	pproach	6 11.9
[Types: C-Section (C), I Section (I), R  Off bridge:  Number of Posts off Bridge  Length of Barrier off Bridge (m)  Visibility Barrier  Timber No. of Rails (on bridge):  Steel Pipe(s) No. of Pipes (on bridge):  Guide Posts  Balustrade  Top Rails	6 11.9	pproach	4 8	HS (S), To	)n Bridg	Steel PFC	(PFC), St	pproach	6 11.9
[Types: C-Section (C), I Section (I), R  Off bridge:  Number of Posts off Bridge  Length of Barrier off Bridge (m)  Visibility Barrier  Timber No. of Rails (on bridge):  Steel Pipe(s) No. of Pipes (on bridge):  Guide Posts  Balustrade	6 11.9	pproach	4 8	HS (S), To	)n Bridg	Steel PFC	(PFC), St	pproach	6 11.9
[Types: C-Section (C), I Section (I), R  Off bridge:  Number of Posts off Bridge  Length of Barrier off Bridge (m)  Visibility Barrier  Timber No. of Rails (on bridge):  Steel Pipe(s) No. of Pipes (on bridge):  Guide Posts  Balustrade  Top Rails  Steel Pipe	6 11.9	pproach	4 8	HS (S), To	)n Bridg	Steel PFC	(PFC), St	pproach	6 11.9

End Terminals	A	pproach	1	On B	ridge	A	pproach	2
Approved End Terminal Types:	LHS	Median	RHS			LHS	Median	RHS
WAMELT								
SKT-350								
ET-2000								
X Tension								
TAU II Crash Cushion								
Other:								
Other End Terminal Types:								
None								
Turn-down								
Bullnose	Х		X	6.4		X		Х
Fishtail								
Other								
Structural problem found? (Y/N)	N	If y	es, comn	ent below.				

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ROUTINE I	NFORMATI	ION		Bridge	e No.: 3125	
SCUPPERS LOCAT			X RHS X	Box Through De	PVC pipe 🔀	Hole in deck Through Kerb
	(R208)	0 K				
FLASHING TYPI	E & CONDITION	None 🗌		PVC pipe 🔀		PGI 🗌
BOLT TIGHTEN	(R208) ING REQUIRED (P102)	Ye	es 🗌	No [	X	
TERMITES	(R204)	Activ	7723	Not Active	T	
PREVENTATIVE	E FUNGICIDE (P103)	Treate	d 🔀	Not Treated	J BWE	P40G5
ATTACHED FEN WATERWAY OF		01				
ROAD SURFACE & KERBING CONDITION	ON BRIDGE			- Good.	<b>&gt;</b>	
(R207)	APPROACHES	Road Surface: BAR A Kerbing: SWOR-	T AI Rtis	- R505 (		
VEGETATION	(R205)	Requires Clearing:		Abut 1	RHS 🗌	Abut 2
STREAM BED C (General comments an location, depth & exte undermining and silt l	CONDITION  and details of  ant of scour,	٥٨				
SERVICES		Туре	Size (mm)	Location		
(Type, Size & Loc	cation)	Horry				
BRIDGE CONDI	ITION	Low	Priority fo	or Engineering Asse	ssment gh 🔲	Urgent [
Comments:						





GENERAL INFORMA	ATION - SHEET	2	Brid	lge No.: 3125	
Bridge Status	Built/In Use X		Not Used		
Date Built 01/06/1966	Skew (	angle)	Ske	wed Width (m)	
Widening Left Hand s Date	A TALL THE PARTY OF THE PARTY O	n)	Right Hand s		(m)
Surface Type	Unsurfaced Rubberised Seal	X Bitumer Tiles	n Seal	Asphalt Steel Plate	
Pavement Type	Unpaved	Gravel		Material Unk	known X
Footpath Left	Left Kerb (m) 0.1	19 Path (m	)	Right Kerb (i	m)
Footpath Right	Left Kerb (m)	Path (m	)	Right Kerb (1	m) 0.19
Median	Left Kerb (m)	Median	(m)	Right Kerb (	m)
Bridge Function 1	Road Bridge	X Rail Brid	dge	Pedestrian B	Bridge
Bridge Function 2	Over Water Over Road & Rail Stock Underpass		ad & Water an Underpass	Over Rail Over Rail &	Water
SIGNAGE					
Load Limits	Abutment 1 End	Toni			Tonne
Width Markers	Abutment 1 LHS	2 RHS4 2	Abutment	2 LHS 2 RH	S# 2
	Is position of Width	Markers a true	indication of the	bridge width? (Y/N	N N
Other Signs		*	- REPLACE +	REPUGIT	
No Overtaking or Passing	Abutment 1		0.00	itment 2 LHS	RHS
No Overtaking on Bridge	Abutment 1	The Wall Comment of the	Chicago Carrier Chicago	itment 2 LHS	RHS
One Lane Bridge	Abutment 1			itment 2 LHS	RHS
Low Clearancen		- A T		itment 2 LHS	RHS
Narrow Bridge Sign	Abutment 1			itment 2 LHS	RHS
Give Way	Abutment 1	LHS R	HS Abt	itment 2 LHS	KIIS
Crossing Sign:					
	Abutment 1	LHS R		itment 2 LHS	RHS
Other	Abutment 1	LHS R	HS Abu	itment 2 LHS	RHS
Signaga Candition Lagard	Good	1 Poor	3	Not Required	

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None (missing)

Fair





Bridge No.: 3125

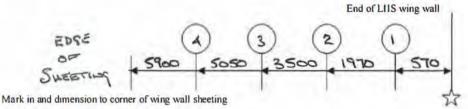
# ELEMENT SPACING SHEET 1

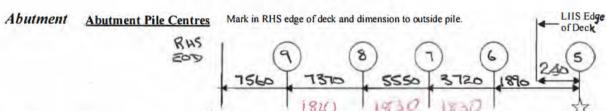
#### Abutment 1

All measurements (cumulative) are taken from the reference point as indicated by the star

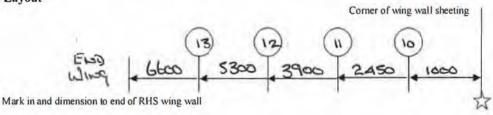


#### LHS Wing Wall Layout



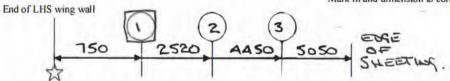


#### **RHS Wing Wall Layout**



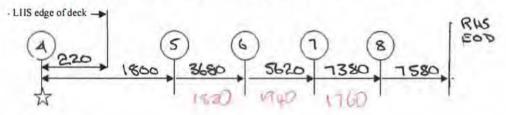
#### Abutment 2

LHS Wing Wall Layout All measurements (cumulative) are taken from the reference point as indicated by the star Mark in and dimension to corner of wing wall sheeting

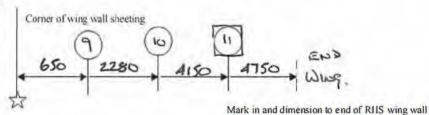


Abutment

Abutment Pile Centres Mark in RIIS edge of deck and dimension to outside pile.



**RHS Wing Wall Layout** 



Timber Bridge Detailed Inspection Guidelines Doc 6706-02 2231 Issue 21/02/2014





# **ELEMENT SPACING SHEET 2**

Bridge No.: 3125

All measurements (cumulative) are taken from the reference point as indicated by the star Pier Pile Centres Mark in RHS edge of deck and dimension last pile to RHS edge of deck. PIER No. . - LHS edge of deck

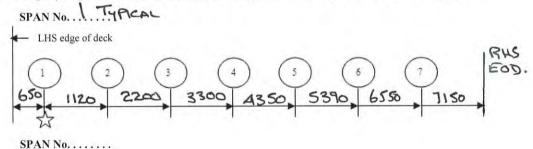
TYPICAL

PIER No..... - LHS edge of deck

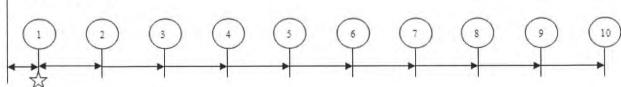
PIER No..... LHS edge of deck

Typical Stringer Spacing Mark in RHS edge of deck and dimension last stringer to RHS edge of deck.

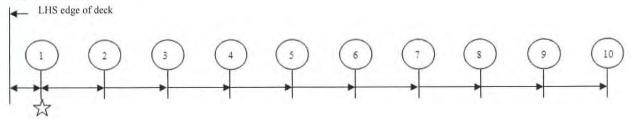
Note: Stringer spacings must be measured in every span with additional stringers. Use additional sheets as required.



- LHS edge of deck



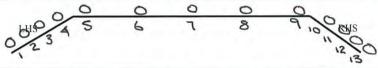
SPAN No. . . . . . . .







**ABUTMENT: 1** 



Bridge No: 3125

		Tim	ber Dril (mm)	ling	Ext	ent of Ro (m)	ot	Sp	lits	Bl	aze Markir	ngs	Bea	fcaps tring im)				
Pile No.	Dia. (mm)	Solid	Rot	Pipe	Drill Location from top H/C	Above	Below	Location	Requires Band	Marking (ft/m)	Height Top H/C to Blaze (m)	Height Blaze to GL (m)	A1	A2	Pile Dia. (mm) below H/C (5m+)	Mat. Type	Tied Back	Cond. State
1	330	105	60		0.5			-		-	0.7	-	,	-	-	JAR		2
2	310	100		55	1.0			=		-	1.3	-	1	-	-	JAR		1
3	350	105		70	1.3			=		-	1.8	-	1	-	-	JAR		2
4	360	130	50		1.9			1		-	2.3		1	-	-	JAR		2
5	390	195								-	1.6	-	1	140	_	JAR		2
6	320	160								-	1.7	-	,	150	-	JAR		2
7	350	135		40	1.2			-		-	1.7	-	-	130	-	JAR		2
8	360	180						-		-	1.7	-	-	100	-	JAR		2
9	460	230								-	1.6	-	1	145	-	JAR		2
10	380	190									1.8	-	-	1	-	JAR		2
11	430	215						-		-	1.1	-	-	1	-	JAR		2
12	410	SEE	No	TES	0.6	750	0.6	-		-	0.8	-	-	-	í	JAR		3
13	370	SPE	Do	es	O.A	데	0.3			-	0.3	~	-	-	-	JAR		7
14																		
15																		

Saturated Piles:						
LHS Halfcaps	Size V 33	a H 150 Ler	ngth <b>8630</b> 1	No. of	Gap between H/Caps	-
Top of H/Caps to underside	of Deck 380	Back of Half	caps to Sheeting [	230	H/Cap Material	JAR
RHS Halfcaps	Size V	H Ler	ngth 1	No. of	Gap between H/Caps	
Top of H/Caps to underside	of Deck	Back of Half	caps to Sheeting [	1	H/Cap Material	
Are theré more than 2 sets o	of halfcaps or sill be	ams (YES/NO)	(If yes	record details	on comments sheet)	
Comments: FIRST	Discurry Pu	ANK A- ST	2 2 15 W	POOR CO	NOTTON.	
Awy RESULTS VA						WED - Tlour
REPORT,		•				
	BAND NO	P PEG				
Pile No. 12 60/	Pile No.	13 50/5	Pile No. 12	(2013 F	Pile No. 13 (	(2013 DIR)
R.H.S (1)	L.H.S R.H				.H.S R.H.S	L.H.S 200/s
F= Solc		F= 10 - 1-		F= 13.0/c	G = 450	= 6010





Bridge No: 3125

# **ABUTMENT 1 and WING WALL SHEETING**

RHS 1						50/5	LHS	
3							Resa	10
4 5							Kerm	IN
6				Aois				
7			-	4015	KEPHIR			
9					1		_	
10 11								
12								
LICETING - ADIT	MENT LHS 16	ip sols	Ris-	Sai S.	Rot from	Pile	To Pile	
			ST S		Rot from	Pile 6	To Pile	7
Centreline 8	VU/S 627 40	7	27 2	prip	Rot from	0	To Pile	(
HS		DOLWO			Kot Irom	riie	Torne	
HEETING Materia	d Type	J						
HEETING Materia	d Size (mm)	Vertical	220	Depth	70			
		Condition	on I (	Condition 2	Condition 3	Condition 4		
		32,000,000	7577					
	% Condition State	4		Q.L	10	-		
BUTMENT I WI	ING WALLS (in		nd line, pil	les and failed	sheeting)	5		
EUTMENT I WI	ING WALLS (in	dicate grou	nd line, pil	les and failed	sheeting)	5		
BUTMENT I WI	ING WALLS (in	dicate grou	nd line, pil	1 2 3 4 5 6 7 8 9 10 11	sheeting)	5		
	ING WALLS (in	HS HS	nd line, pil	1 2 3 4 5 6 7 8 9 10 11 12	sheeting)		ON	
	ING WALLS (in	HS HS	nd line, pil	1 2 3 4 5 6 7 8 9 10 11 12	sheeting)		ON	
/INGCAP / SPIKIN	NG WALLS (in	HS TION		1 2 3 4 5 6 7 8 9 10 11 12 WINGO	Sheeting) LHS CAP / SPIKING R	AIL CONDITIO		
INGCAP / SPIKINGCAP / SPIKINGCA	NG RAIL CONDIT	HS TION		1 2 3 4 5 6 7 8 9 10 11 12 WINGO	CAP / SPIKING R.	AIL CONDITIONS RE	on Arren	mal
INGCAP / SPIKINGCAP / SPIKINGCA	NG WALLS (in	HS TION		1 2 3 4 5 6 7 8 9 10 11 12 WINGO	Sheeting) LHS CAP / SPIKING R	AIL CONDITIONS RE		
INGCAP / SPIKINGCAP / SPIKINGCA	NG RAIL CONDIT	HS TION		1 2 3 4 5 6 7 8 9 10 11 12 WINGO	CAP / SPIKING R.	AIL CONDITIONS RE	est free	
INGCAP/SPIK	NG RAIL CONDIT	HS HS TON		les and failed  1 2 3 4 5 6 7 8 9 10 11 12 WINGO	CAP / SPIKING R.	AIL CONDITIONS RE		
INGCAP / SPIKINGCAP / SPIKINGCA	NG RAIL CONDIT	HS HS TON	75 60 S	1 2 3 4 5 6 7 8 9 10 11 12 WINGO	CAP / SPIKING R.	AIL CONDITION ROLL ROLL ROLL ROLL ROLL ROLL ROLL RO	est free	ma
INGCAP / SPIKINGCAP / SPIKINGCAP / SPIKINGCAP	NG RAIL CONDIT	TION REST PORT	75 60 S	1 2 3 4 5 6 7 8 9 10 11 12 WINGO	CAP / SPIKING R.  Rot from	AIL CONDITION ROLL ROLL ROLL ROLL ROLL ROLL ROLL RO	To Pile	





			Tim	ber Dri (mm)	lling	Ext	ent of Ro (m)	ot .	Sp	lits	ВІ	aze Markij	ngs	Bea	caps ring m)			
Pile No.	Circ. (mm)	Dia. (mm)	Solid	Rot	Pipe	Drill Location from top	Below	Above	Location	Requires Band	Marking (fl/m)	Height Top II/C to Blaze (m)	Height Blaze to GL (m)	Al	A2	Pile Circ. (mm) below 11/C (5m+)	Mat. Type	Cond
1	1220	390	195								-	2.8		110	140	-	JAR	2
2	1260	1	200						1		-	24	-		90	-	JAR	2
3	1160	310	185			JEE 1			-		-	2.3	-	100		-	JAR	2
4	1320	A20	210						-		-	2.3	-	150	150	-	JAR	- 7
5											4-1		1		(6.)			
6																		
7					177													
8																		
9																		
0																		_
tal 1	Number	of Cort	els:	7			Typic	al Corbe	el He	ight	(mm):	LIIS 3	30	RF	IS 3	330_		
rhe	No:				7	1	2 3	4		5	6	7 8	9	10	1	1 12	13	14
	al Type						AR JA		R	AR	1	AR	1					
	es Bolti			A1/A2	End	-/-	-	/-/	-	-/	-/-	-/	//	/	1	//	1	1
-	tion Stat			AI/A2			1		1	7	1/1		//	/	1	//	1	
						0				-	100						13	
nwo	ork Con	dition:	141	50	MUM	Rus	57					_	ligh	tenin	g Req	uired:	100	
aler	S	Si	ze V	/	-	,	ч Н		-									
acin	ia.	Si	ze V		-	<u> </u>	н		-									
				_														
tura	ted Pile	s:						-				-	-1		-	·		
IS	Talfcap	5		Size	V	330	OLI H	Ler	ngth	13	80 N	lo. of	2 Ga	betv	veen I	I/Caps	150	
o q	f I I/Cap	s to und	erside o	of Deck	-	ool								11/0	Cap M	laterial	JAC	2
					-			1						1				
4S I	lalfcap	S		Size	V		4	Lei	ngth			lo. of	Ga	betv	veen I	I/Caps		
po	f I I/Cap	s to und	erside o	of Deck										11/0	Cap M	laterial		
				1.10.		ll beams	ALCCA	ю Г	1.		110	record det	alla su sa		ata ala			
		192 Mari							No						HS SH	eet)		
omn	nents:	PILE	3	AR	15	14 30x	AS	H F	(	S	PART	- BRA	CLET	-				
		-10-	-		,									-				
_										_					_		_	
			Bar	a.	NOT	20	7											
-				_			_		_									
					DW X	ra. w			1	n.u	vice			Dil	. NI			
ile N	-	_			Pile N					Pile l				Pil	e No.:	-	-	
		A2				A2	_				A	.2				A2		
		1	50.7		5	/											1	
LIIS			RHS		LHS	(	)	RHS		LH	S (	)	RIIS	L	HS _	(	) F	HS
		Al				AI										AI		



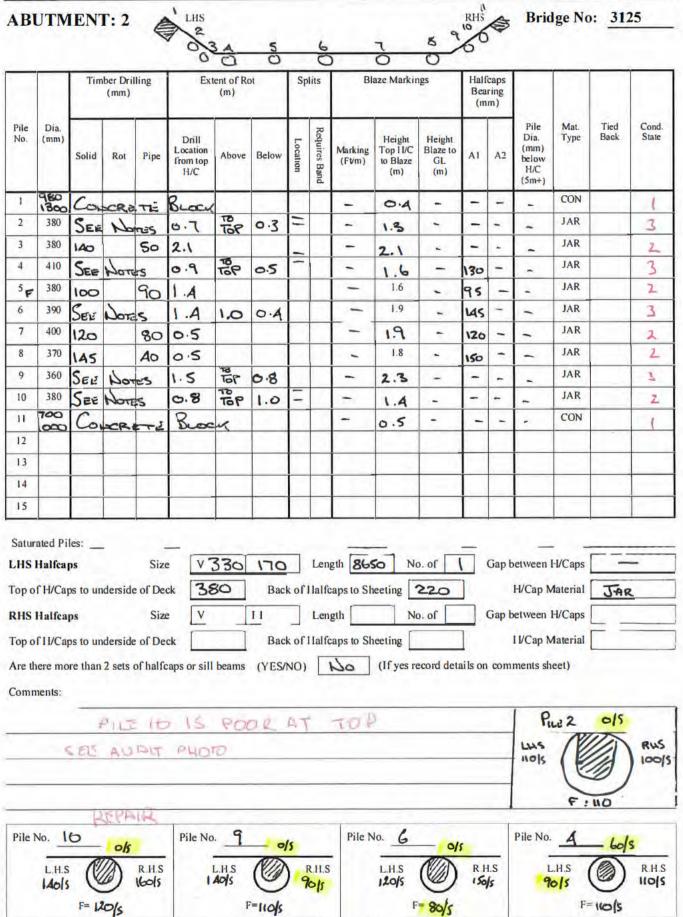


			Tim	ber Dril (mm)	ling	Ext	ent of Ro (m)	ot	Sp	lits	BI	aze Mark	ngs	Bea	fcaps aring nm)			
Pile No.	Circ. (mm)	Dia. (mm)	Solid	Rot	Pipe	Drill Location from top H/C	Below	Above	Location	Requires Band	Marking (ft/m)	Height Top H/C to Blaze (m)	Height Blaze to GL (m)	Al	A2	Pile Circ. (mm) below H/C (5m+)	Mat. Type	Conc
1	1190	380	150	40		1.3			-		-	2.2	-	95	80	-	JAR	2
2	1190		190		JLC.						-	2.0	-	105	110		JAR	2
3	1260	400	200								-	2.0	-	110	125	1 9	JAR	1
4	1350	430	215					- 1	7		~	2.1	-	us	120	0.70	JAR	2
5																		
6								2	-				-	1				
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Pile 1	No.:	_			Pile N	No.:	_			Pile !	No.:			Pi	le No.	:		
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								DUC			C	1	nue		1110	1	1	RHS
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		AI				A						AI				AI		

Shire of Narrogin











# **ABUTMENT 2 and WING WALL SHEETING**

BUTMENT 2 SHEET	ING (indicate grou	and line, piles a	and failed sheet	ing			
LHS 1			and funed sheet	ing) 10 SHT	5	RHS	
2						SHEET	5
3 4						100 1	
5			40/5		AOIS	come	
7					7	RHS	
9						SHEET	6
10 11						U/5 B	SHI
12						F145	1
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ntreline 64 Aols	R=5- 60/.	Social		Rot from Pile		To Pile	
is 6th Ac	ols Rest	60 Socia		Rot from Pile		To Pile	
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EETING Material Size		al 220	Depth	70			
DETINO Materiar Size							
21.00	_	ndition ! C	ondition 2		ondition 4		
% Co	ndition State		60	40			
uļs	LHS	8 Swis	es and failed sh	eeting)	4th	mits Dr	ana
uls	LHS	8 Suns	7 Sw 1 2 3 4 5 40 5 40 5 40 5 8 9	RHS		mics Dr	qua
ols	LHS	8 Suns	1 2 3 4 5 AOI: 8 9 10 11	RHS			qua
	LHS	8 Suns	1 2 3 4 5 Aol: 6 Aol: 8 9 10 11 12	RHS Xk	A		and a
	LHS	8 Suns	1 2 3 4 5 Aol: 6 Aol: 8 9 10 11 12	RHS	A		qna
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NGCAP/SPIKING RA	LHS XXX	8 Suns	1 2 3 4 5 Aol: 6 Aol: 8 9 10 11 12	RHS Xk	CONDITION	, cus-	ana/
NGCAP/SPIKING RA	LHS XXX	8 Suns	1 2 3 4 5 Aol: 6 Aol: 8 9 10 11 12	RHS  Xk  S  S  P / SPIKING RAIL C	CONDITION	, cus-	qna <sup>4</sup>
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			EET				Sp	an No	: 1		_		Bri	dge N	o: <u>31</u>	25
	Stringer N	0.	1 1	2	3	4	5	6	7	8	9	10	111	12	13	14
,	Material T		JAR	JAR	JAR	JAR	JAR	JAR	JAR	U		10	1	12	15	
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	7	Solid (B)	140	140	100	380			110							
	Drill Vertical	Rot		To												
A	Verd	Pipe	170	TGP	140				240							
butn	ical	Rot Solid (T)	70	_	140				30					+		
neni	Drill Horiz.		200	190					150							
Abutment 1 End	1	Right	170	160					150					-		
nd		Bolt Rqd Bolt Rqd	_			_		-						++	++	
	Propped	Boit Requ														
	Condition S	State	2	7	2	1	1	1	2							
	H Diame	eter (mm)	460	530	460	500	540	530	400				1	1	_	-
		ement (mm)	450	510	410	530	550	530	440		NoT	E .	1			
	D	Solid (B)	450	480	A10	480	280	480	260		DRIL	- 15				
	iii	Rot					100		120		RESU			EN T		
	Drill Vertical	Pipe Rot					100		120		080	~7 .	-	1000	RER	SEC.
Mic		Solid (T)					100		60							
Mid Span	Drill Horiz.	Left														
an	lv	Right Bolt Rqd														
	Split H															
	Propped															
	Condition S	State	-	1	1		2	_1_	2	_						4
	H Diame	eter (mm)	510	600	510	540	550	600	460				1			
	V Measure	ement (mm)		370	370	370	370	370	370							
	Dri	Solid (B)	370	370	370	370	110	370	130							-
	II V	Rot Pipe					240		140						-	
Abu	Drill Vertical	Rot														
Abutme		Solid (T)					20		100				_			
ent 2	Drill Horiz	Left Right					190							+		
nt 2 End	v V	1	1	-		-	1.0	=	10.33							
Ь		Bolt Rqd	91	-				-J-1	-1-4							
	Propped Condition S	State					2	-	2							
								7.	-	1		C !!	. [	,	I D	10/
	Cond. of	Spiking P	lank	Not Ap	plicabl	e 🗸	Size		_			Condi		-	R -	
	Cond. of	Decking (	Solid/R	ot)		90	RIC	<b>)</b> %	4	Co	nd. of I	Deck E	nds	5 -	R -	%
	Decking S	Size (mm)			,	V 120			x H 2	30	1	Deckin	ng Tim	ber Typ	e JAR	
	Span Len	gth from (	Centreli	ne Supp	orts (n	1) 5.75	CI		n Lengtl			Satura	ted stri	ngers:		
	Deck Cor			Conditio		Condition	and the Control	ndition 3		ition 4			i de la company	_		
	Percentag					90				0	Spir	al Gra	in Strii	ngers:		
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							80	it n	or a	面						
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MAIN ROADS Western Australia

Timber Bridge Detailed Inspection Guidelines Doc 6706-02-2231 - Issue 21/02/2014





	DETA	IL SH	EET				Sp	an No	: 2				Brid	ge No	312	5
	[C <sub>1</sub> :	Table 1		1 2	2	1 1		6	7 1	0	0	10	11	12	12	14
	Stringer N		JAR	JAR	JAR	JAR	5 JAR	JAR	7 JAR	8	9	10	11	12	13	14
	Material T	ype.	JAK	JAK	JAK	JAK	JAK	JAK	JAK							
	H Diame	eter (mm)	540	490	480	560	550	570	500							
		ement (mm)	370	370	370	370	370	370	370							
		Solid (B)		370		370	100	370	120							
	l <u>i</u>	Rot	0.0	~ -	60		50									
+	√ <sub>e</sub>	Pipe							110							
bu	Drill Vertical	Rot					2.77		Y.							
B		Solid (T)			190		220		140							
ent	Drill Horiz	Left														3
Abutment 1 End	1.	Right														
nd	Split H	Bolt Rqd Bolt Rqd		_	-	$\vdash$		•	-	-					_	
	Propped	Boit Kqu														
	Condition S	State	1	11	2	1	7	1	1							
		eter (mm)	440	480	460	480	550	520	450							
	V Measure	ement (mm)	450	450	420	570	520	520	500	1						
	Dr	Solid (B)	230	450	100	480	220	170	480							
	Ħ	Rot			1 4			1.4.								
	Drill Vertical	Pipe	70		140		70	140								
3	ical	Rot Solid (T)	150	-	180		190	170				-		-		
Mid Span	Drill Horiz	Left	130		100		110	110								
Spa		Right							7 1							
=	V V				-											
	Split H	Bolt Rqd														
	Propped							1								
	Condition S	State	1	1	1	1	1	2	1							
	H Diame	eter (mm)	420	420	440	450	520	480	450			_				
		ement (mm)	370	370	370	370	370	370	370							
		Solid (B)	180	150	180	370	220	100	140							
	Drill Vertical	Rot	100			3.0										
~	Ve	Pipe		100	80		50	120	140					VE I		
bu	rtic	Rot			7.1											
Abutmen		Solid (T)	90	120	110		100	150	90							
ent 2	Drill Horiz		-									-				
2 E	IV	Right Bolt Rqd	<u> </u>		/	1		1	./							
End	Colit	I Bolt Rqd	++-			~	V									
	Propped	I Doit requ														1
	Condition !	State	2	7	7	1	2	2	2		1					
	Cond of	Spiking Pl	lonk	Not Ap	nlicahl	• 🗖	Size	V		7		Conditi	on S	_	R _	%
					_				1 201	_						
	Cond. of	Decking (	Solid/R	ot)		90	Ric	> %	)	Coi	nd. of I	Deck Er	ids S	~	R -	%
	Decking !	Size (mm)	i e		1	V 120			xH 2	130		Deckin	g Timbe	er Type	JAR	
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	Percentage Comment		- 1	11	0,	90				0	Spir	ui Gidi	n ounig			
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			11100			-										





	DETA	IL SH	EET				Sp	an No	: 3			I	Brid	ge No	312	5
	Stringer N	lo:		2	3	4	5	6	7	8	9	10	11	12	13	14
	Material 7		JAR	JAR	JAR	JAR	JAR	JAR	JAR							
		eter (mm)	400 370	510 370	500 370	470 370	470 370	540 370	460 370							
		Solid (B)	370				370									
	Drill Vertical	Rot	3.0	3,0				-								
	Ver	Pipe			100	60							_			
	tica:	Rot			170	110				-			-		-	
	Drill Horiz	Solid (T)			110	110			1				-			
		Right												1-1		
Abutment I End	C. III	T			-				- 1							
-	Split I-	Bolt Rqd		_					1			71/19				
	Propped				V							900				
_	Condition	State	1	1	2	2		7	1							
	A STATE OF THE PARTY OF THE PAR	eter (mm)	380	490	500	480	460	580	470					-		
= 1	V Measur	ement (mm)	460	540	520	500	510	570	510					7		
7	Dr	Solid (B)	Abo	A80	170	480	480	480	480			2				
	Drill Vertica	Rot			120	-						-	-			
	(ert)	Pipe Rot			120											
2	ical	Solid (T)			190											
0	Drill Horiz													T		
Mid Span		Right				15,11							_			
		Bolt Rqd	1						7				-			-
	1	Bolt Rqd	ļ <u> </u>								24/6					-
	Propped Condition	Cinto		1	2	T	1	Y					-			
	Condition	State							-							
	H Diam	eter (mm)	530	590	580	560	600	610	520							
	V Measur	ement (mm)	380	380	380	380	380	380	380					1		
	Dri	Solid (B)	380	130	0	380	30	300	360							-
	Drill Vertical	Rot Pipe		130	340											
A	erti	Rot		130	320											
	Cal	Solid (T)		120	40											
	Drill Horiz				80											
		Right				7.							_			
		Bolt Rqd		-	= /	/	~	-	-				1			
	ISplit				-/	1							_			
	Split	Bolt Rqd	-		V								_			
	Propped			7	11	1	T	1	1					1		
	Propped Condition	State	1	12	4		0:	1				Complete	0	1	D	70/
	Propped Condition		lank	Not Ap	pplicabl		Size		_			Condition		-	R _	
	Propped Condition	State					Size		_	Co		Condition Deck Ends		- 1	R _	
126-1	Propped Condition Cond. of Cond. of	State Spiking P	Solid/R			e / S 90		5 9			nd. of I		S	- ] er Type	R _	
	Propped Condition Cond. of Cond. of Decking	State Spiking P Decking ( Size (mm)	Solid/R	ot)	L	S 90 V 120	Rto	5 9	х Н 2	30	nd. of I	Deck Ends Decking 1	Simbo		R _	9%
ent 7 End	Propped Condition Cond. of Cond. of Decking Span Ler	State Spiking P Decking ( Size (mm)	Solid/R Centreli	ne Sup	ports (n	S 90 V 120 n) 5.67	R	ear Spa	x H 2	<b>3∂</b> th [4.82	nd. of I	Deck Ends	Simbo		R _	
ent 2 End	Propped Condition Cond. of Cond. of Decking Span Ler	State Spiking P Decking ( Size (mm) gth from ( ndition Sta	Solid/R Centreli	ot)	ports (n	S 90 V 120	R	5 9	x H 2	30	nd. of I	Deck Ends Decking 1	Simbo	gers:	R _	
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ent 7 End	Propped Condition Cond. of Cond. of Decking Span Ler Deck Co Percentag Commen	State Spiking P Decking ( Size (mm) geth from ( andition State) ts:	Solid/R Centreli	ne Sup	ports (n	S 90 V 120 n) 5.67 Condition	R (C	lear Spa	x H 2 In Length Con	30 th [4.82 dition 4	Spin	Deck Ends Decking 1 Saturated ral Grain S	S Timbo string	gers:	R —	
ent 7 End	Propped Condition Cond. of Cond. of Decking Span Ler Deck Co Percentag Commen	State Spiking P Decking ( Size (mm) gth from ( andition State)	Solid/R Centreli ate	ot) ine Sup Condition	ports (non 1 To 1)	S 90 V 120 n) 5.67 Condition	R (C	ear Spandition 3	x H 2 in Length Con Con As Te	30 th [4.82 dition 4	Spin	Deck Ends Decking T Saturated ral Grain S	S Fimbo string	gers:	R - JAR	9%

STR 7 A1 END HAS 90 PIPE IN Timber Bridge Detailed Inspection Guidelines
Doc 6706-02-2231- Issue 21/02/2014

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# Bridge 4551 Tarwonga Road over Wangelling Gully L2 Inspection





Enquiries: Our Ref:

Gavin Johnston on 9323 4431

04/7524

Our Ref: 04/75
Your Ref:



ABN: 50 860 676 021

# ASSET MANAGER STRUCTURES WHEATBELT REGION

Structure No.:

4551

Over:

Wangelling Gully

On:

Tarwonga Rd (4190004)

SLK:

22.78

LGA:

Shire of Narrogin

- Please find enclosed a copy of the Detailed Inspection Report for the above Local Authority structure
- Attached is a schedule of maintenance items that are required to be undertaken in order to maintain structural integrity and extend the life of the Structure.
- 3. The maintenance items have been entered into IRIS for programming purposes.

Reviewed by:

Mark Billings

SENIOR STRUCTURAL ENGINEER AECOM

Issued by:

Gavin Johnston

BRIDGE CONDITION MANAGER

Don Aitken Centre, Waterloo Crescent, East Perth or PO Box 6202 EAST PERTH Western Australia 6892 Telephone: (08) 9323 4111 Facsimile: (08) 9323 4136 TTY: (08) 9428 2230 Email: dac@mainroads.wa.gov.au Website: www.mainroads.wa.gov.au

MRWA Ref: 04/7524

#### DETAILED TIMBER BRIDGE INSPECTION SUMMARY

Bridge No: 4551 Region: WHEATBELT REGION

River Name: Wangelling Gully SLK: 22.78
Road: Tarwonga Rd Road No: 4190004

LGA: Shire of Narrogin

#### 1.0 General

Bridge no.4551 located on Tarwonga Rd in the Shire of Narrogin is a four span bridge crossing Wangelling Gully. Generally this bridge is in good condition and requires routine and specific maintenance.

#### 2.0 Preventative Maintenance

Preventative maintenance to be undertaken on a 5 year periodic basis. Areas of concern have been identified below, Carry out fastener maintenance in accordance with specification 850.35.

#### 3.0 Routine Maintenance

Vegetation and Debris clearing shall be undertaken as outlined in report in accordance with specification 850.93.08. Correct road surface on bridge deck and approaches as outlined in report.

Replace signs and lights as outlined in report.

#### 4.0 Specific Maintenance

#### 4.1 Substructure

Pack halfcaps as outlined in report.

(Pier 3: Pile 1)

Halfcap repair and replacement as outlined in report in accordance with specification 850.32

(Tighten Pier 1 halfcap and repair racking over of halfcap in Pier 1 and 3)

Band and or seal timber pile splits as detailed in the report in accordance with Document No. 6706-02-2226, Preventive Maintenance Standards.

(Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8)

Undertake timber abutment repairs as outlined in report.

(Large gaps and wingcap in poor condition on Abut 1 RHS wingwall/; Wingcaps on Abut 2 require reattachment)

Undertake pile repairs as outlined in report in accordance with specification 850.31.

(Abut 2 Pile 9 leaning forward)

#### 4.2 Superstructure

Bolt and or seal corbels as outlined in report in accordance with specification 850.30 and Document No. 6706-02 2226, Preventive Maintenance Standards.

(Halfmoon washer of Pier I Corbel 6 A2 end not making contact)

Shim corbels as outlined in report

(Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2)

KNRaha

Shim stringers as outlined in report

(Span 1: Stringer 1 A2, Stringer 6 A2; Span 4: Stringer 7 A1, Stringer 4 A2)

#### 5.0 BCI

25.9

#### 6.0 Load Rating

Not required.

Bruna Rocha Engineer Bridges

March 8 2019

### WORK ITEMS - TIMBER BRIDGES BRIDGE No: 4551

ITEM	ITEM DESCRIPTION	WORK	PRIORITY	COMMENTS
NO		REQD	CODE	
(A) 05M5	DAL MADITENANOE			
	RAL MAINTENANCE		i .	
G005	Bridge - Durability Survey (L3)			
G009	Bridge - Load Rating			Abut 2 haltcap split between Pile 7 and 8; Settlement of Pier I
G010	Bridge - Monitor Defect	Y	1	Pile 2; Sagging of Pier 3 A2 Halfcap
(B) PREV	ENTATIVE MAINTENANCE			
P101	Bridge - Seal Timber			
P102	Bridge - Maintain Fastener	Y	1	Pier I
P103	Bridge - Fungicide Treatment			
(C) POLITI	NE MAINTENANCE			
(0) (0011	Bearing - Maintain			
	Bridge - Remove Graffiti			
	Bridge - Repair Scour (Minor)	Y	ı	Pier 3 Pile 4: bottom of potted pile exposed; Abut 2
	Bridge - Eradicate Termites			
	Bridge - Clear Debris and Vegetation	Y	1	Trees and scrubs around bridge and debris built up on Pier 2 and
*****	Deck Joint - Maintain			
				Minor cracking and depression on both abutments and hole at
	Deck Surface - Maintain	Y	1	Abut 1 RHS
	Drainage - Maintain			
	Expansion Joint - Maintain			
	Fence - Remove			
	Fence - Repair (Control of Access)			
	Guardrail Maintain/Repair			
	Kerb - Repair (Minor) - Non Structural			
	Lighting - Maintain			2011 PMC - 141 - 2110
	Lighting - Maintain	v	1	Width markers at Abut 1 RHS and Abut 2 LHS are in poor
		Y	1	Width markers at Abut 1 RHS and Abut 2 LHS are in poor condition
(0) 0050	Lighting - Maintain Sign - Maintain	Y	1	-
	Lighting - Maintain Sign - Maintain FIC MAINTENANCE	Y	1	-
S315	Lighting - Maintain Sign - Maintain FIC MAINTENANCE Bridge - Replace Fastener <1.5m	Y	1	-
S315 S350	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)	Y	1	-
S315 S350 S366	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve	Y	1	-
\$315 \$350 \$366 \$413	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair	Y	1	-
S315 S350 S366 S413 S437	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)	Y	1	-
S315 S350 S366 S413 S437 S449	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair	Y	1	-
S315 S350 S366 S413 S437 S449 S455	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair	Y	1	-
S315 S350 S366 S413 S437 S449 S455 S461	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair	Y	1	-
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct	Y	1	-
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)	Y	1	-
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair	Y		-
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim			condition
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt	Y	2	-
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Repair	Y	2	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Repair  Corbel - Shim			condition
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Repair  Corbel - Shim  Footpath Railing - Repair	Y	2	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Shim  Footpath Railing - Repair  Footpath Railing - Repair	Y	2	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Shim  Footpath Railing - Repair  Footpath Railing - Repair	Y	2	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Bolt  Corbel - Shim  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack	Y	2	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact  Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Shim  Footpath Railing - Repair  Footpath Railing - Repair	Y	2 2	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact  Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Corbel - Bolt  Corbel - Bolt  Corbel - Repair  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair	Y	2 2	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact  Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Corbel - Bolt  Corbel - Bolt  Corbel - Repair  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair	Y Y Y	2 2	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact  Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Bolt  Corbel - Shim  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair	Y	2 2 2 2	Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8  Abut 2 Pile 9
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$549 \$558	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Repair  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Bolt  Corbel - Shim  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair	Y Y Y	2 2 2 2 2	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact  Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$525 \$528 \$537 \$540 \$549 \$558	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Bolt  Corbel - Repair  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair  Pier - Repair	Y Y Y	2 2 2 2 2	Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8  Abut 2 Pile 9
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$549 \$558	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Repair  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Bolt  Corbel - Shim  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair	Y Y Y Y Y	2 2 2 2 3	Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8  Abut 2 Pile 9  Large gaps and wingcap in poor condition on Abut 1 RHS
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$549 \$558 \$561 \$564	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Bolt  Corbel - Repair  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair  Pier - Repair  Sheeting - Repair	Y Y Y Y Y	2 2 2 2 3	Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8  Abut 2 Pile 9  Large gaps and wingcap in poor condition on Abut 1 RHS
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Repair  Corbel - Repair  Footpath Railing - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair  Pier - Repair  Sheeting - Repair  Sheeting - Repair  Tie Back - Repair	Y Y Y Y Y	2 2 2 2 3	Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8  Abut 2 Pile 9  Large gaps and wingcap in poor condition on Abut 1 RHS
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Bolt  Corbel - Repair  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair  Pier - Repair  Sheeting - Repair  Tie Back - Repair  Tie Back - Repair  Bearer - Repair	Y Y Y Y Y	2 2 2 2 3	Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8  Abut 2 Pile 9  Large gaps and wingcap in poor condition on Abut 1 RHS
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Bolt  Corbel - Repair  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair  Pier - Repair  Sheeting - Repair  Tie Back - Repair  Bearer - Repair  Bearer - Repair	Y Y Y Y Y	2 2 2 2 3	Halfmoon washer of Pier 1 Corbel 6 A2 not making contact  Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8  Abut 2 Pile 9  Large gaps and wingcap in poor condition on Abut 1 RHS wingwall/ Wingcaps on Abut 2 require reattachment
\$315 \$350 \$366 \$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$540 \$540 \$540 \$540 \$540 \$550 \$540 \$550	Lighting - Maintain  Sign - Maintain  FIC MAINTENANCE  Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)  Bridge - Access - Improve  Deck - Repair  Decking - Repair (Timber)  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Bolt  Corbel - Repair  Fullcap - Repair  Halfcap - Repair  Halfcap - Repair  Halfcap - Pack  Halfcap - Repair  Pier - Repair  Pier - Repair  Sheeting - Repair  Tie Back - Repair  Bearer - Repair  Joist - Repair  Stringer - Bolting	Y Y Y Y Y	2 2 2 2 3	Pier 1: Corbel 3 A1, Corbel 2 A2; Pier 3: Corbel 3 A2  Pier 3: Pile 1  Tightening: Pier 1 / Racking: Pier 1 and 3  Abut 1: Piles 4, 5, 10; Pier 1: Piles 2, 4; Pier 2: all piles, 2 bands on Pile 1; Pier 3: Pile 3; Abut 2: Piles 3, 8  Abut 2 Pile 9  Large gaps and wingcap in poor condition on Abut 1 RHS

## PRIORITY CODE

- 0 -Critical Safety Deficiency : EMERGENCY action required (Immediate or within 6 months)
- 1 Very High Priority (Within 3 years)
- 2 Medium Priority (Within 4 years)
- 3 Low Priority (Within 5 years-assess again at next Detailed Inspection)

# DETAILED VISUAL (LEVEL 2) TIMBER BRIDGE INSPECTION REPORT BRIDGE CONDITION INDEX (BCI)





# **Bridge Number**

4551

In conjunction with the Detailed Level 2 Bridge Inspection Report (as dated below), a Bridge Condition Index (BCI) has been calculated for this Bridge. The BCI assigns a numerical value to a bridge that is indicative of its condition and provides a relative condition in comparison with other timber bridges (BCI calculation is only applicable for timber bridges). The BCI rating system is a tool to provide a systematic approach for the determination of bridge condition by bridge inspection alone.

The process for determining the BCI is outlined in the Timber Bridge Condition Index User Guide. The BCI is primarily calculated utilising Condition States which are assigned based on the Level 2 Bridge Inspection Report (see attached).

A summary of the condition states and the calculated BCI for this bridge is provided below.

Condition States from Detailed Inspection Report conducted on

16-01-2019

		Condit	ion State - I	Distribution	(%)		
LOCATION	Weighting	CS1	CS2	CS3	CS4	Ave	BCI
Condition State Weighting		1	3	9	11	AGR	
Stringers	11	89.4	9.4	1.2	0.0		
Pier Piles	11	50.1	49.9	0.0	0.0	22.5	
Abutment Piles	11	55.3	44.7	0.0	0.0	22.5	
Halfcaps	11	0.0	100.0	0.0	0.0		25.0
Corbels	6	0.0	100.0	0.0	0.0	15.0	<u>25.9</u>
Timber Decking	6	90.0	0.0	0.0	10.0	15.0	
Wing Piles	3	58.0	34.4	7.6	0.0	8.4	
Abutment Sheeting	3	0.0	96.3	0.0	3.8	0.4	

Descriptor	BCI Range
Very Good	0 - 19
Good	20 - 39
Fair	40 - 55
Poor	56 - 100
Severe	101 +

BCI Descriptor Range (Refer Table 5.1 Doc No. 6706/02/2232)

Comments:

Prepared by:

Bruna Rocha

Date:

24/01/2019





CON ACO					
GENERAL INI	ORMAT	ION - SHEET	1	Bridge No.:	4551
Region:	Wheatbelt			Latitude (S):	-33.14436
				Longitude (E):	117.05573
Road Name:	Tarwonga R	ld		Road No.:	4180204
Local Government:	Narrogin			Owner:	Local Authority
Crossing Name:	Wangelling	Gully		SLK:	22.78
Number of Lanes:	2			Length (m):	24.6 m
Total Width (m):	7.77	Max. Head Ro	oom (m): 4.60	Min. Head Room	n (m): 2.50
No. of Spans:	4 7	Width between Ker	bs (m): 7.17	Concrete Overl	lay (Y/N): Y (130mm)
Piles are numbered alor Stringers are numbered	ss the bridge i	n ascending order fro	om LEFT to RIGHT.		
Inside and outside kerb Exposed Deck Ends (R	•		HS Y		
340		ABUTME		250 mm	NORTH
Direction of SLK	:	Stringer	2 Etc. → 85	RIGHT	FLOW FLOW
<i>35</i> 0	mm 90	mm	mm	250 mm	
/		ABUTMI	ENT 1		
		<b>↓</b>	From: High	bury Rd W	est
This bridge has been Bridge Detailed Insp			e requirements of the	e Main Roads Wes	stern Australia Timber
Inspected by: 1.0	A.R.L.M	.O.N	Checked b	y: B. Rocha	/M. Billing
Date: 15	119-16		Dat	e: 6/02/20	29
Drilled by: 1.0	ink, D, 1	Jorth			<del></del>



# SITE CONDITIONS Bridge No: 4551



DRIVE THROUGH	Visible Line of Sight from Abut. 1: 100 m
	Visible Line of Sight from Abut. 1: 100 m
TRAFFIC CONTROL	Abut. 1 end:
(Describe if different to the generic TMP)	Abut. 2 end: SAs per T.M.
PARKING ROCITION	> 3 m Position:
PARKING POSITION	> 3 m Position:
	1.2 to 3 m Position: On bridge behind truck T.M.
	0 to 1.2 m Position:
ACCESS TO ABUTMENTS	Abutment 1:
	LHS:
(Describe access conditions at each wing)	Steep banks OV
	RHS: Abutment 2:
	LHS:
	RHS: Steep banks OK
	Vegetation: Trees, scrub rea cleaning
ACCESS TO PIERS	Vegetation: Trees, scrub rea cleaning  LHS:  Piers 2,3 in mud + water
	} liers 2,8 in mud + water
(Describe access conditions along each side of the structure)	RHS: /
sine of the structure)	Vegetation: 6V
POTENTIAL HAZARDS	Railing/Pests:
	Bolts:
	Services:
	Sel vices.
	Asbestos:
FENCES	Other: Steep banks
FENCES	Timber Location;
Į.	Wire/Mesh: Location:
	None
THE CONTRACT OF THE CONTRACT O	Electrified: Location:
	Barbed Wire: Location:
	Other (Specify): Location:
WATER	Depth (m): 0.3 m
	Flow Rate: Slow
	Algae: Yes
	(Access may be restricted by toxic algae)
	Tide:
	2000
POWERLINES	Location: Pier 2 + 3
IOWERLINES	Side of bridge:
	Horizontal distance from edge of deck (m):
	Estimated vertical height above deck (m):
Sizuatura //	Timber Bridge Detailed Inspection Guidelines Date
Signature (/	Timber Bridge Detailed Inspection Guidelines Date





# TADDDAIL INFORMATION

GUARDRAIL INFORMATIO	N				Br	idge No	.: 455	1	
	A	proach	1	О	n Bridg	ge	A	pproach	2
Barrier Type	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS
None									
RHS Rails No. of Rails (on bridge):									
Thriebeam									
W Beam	Х		X	Х		х	X		Х
Tric-Bloc Concrete Barrier									
Reinforced Concrete Barrier (Type F)									
Constant Slope Concrete Barrier				·					
Other Concrete Profiles									
Post Type	<u> </u>			-					
None									
Concrete									
Timber									
Steel Type: Parallel Flange Channel (PFC)	Х		X	X		X	Х		X
[Types: C-Section (C), I Section (I), RHS	(R), Squa	re Hollow	Section Si	HS (S), Tu	bular (T),	Steel PFC	(PFC), St	eel Channe	l (Ch)]
Off bridge:									
Number of Posts off Bridge	7		4		Ter   E		4		7
Length of Barrier off Bridge (m)	12.7		6.8				6.8		12.7
24.igii at aantii an artigi (ss/				07660100201000					
	A	pproach	1	O	n Bridg	ge	$\mathbf{A}_{\mathbf{I}}$	pproach	2
Visibility Barrier	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS
Timber No. of Rails (on bridge):									
Steel Pipe(s) No. of Pipes (on bridge):									
Guide Posts									• • • • • • • • • • • • • • • • • • • •
Balustrade									
Top Rails					***************************************				
Steel Pipe					1				
Steel RHS/Channel	x		X	х		X	X		X
Steel C Section									
Timber									
· · · · · · · · · · · · · · · · · · ·	L			I		L	•		
End Terminals	A	pproach	ı 1	C	n Brid	ge	$\mathbf{A}_1$	pproach	1 2
Approved End Terminal Types:	LHS	Median	RHS				LHS	Median	RHS
WAMELT									
SKT-350	,								
ET-2000									
X Tension									
TAU II Crash Cushion									
Other:									n
Other End Terminal Types:									
None									
Turn-down									
Bullnose	X		Х				X		X
Fishtail									
Other						19			
Structural problem found? (Y/N)	N	If y	es, comn	nent belov	w,				





Through Deck   Through Ke   Spoon drowns   Al + Al Lins + Lins    FLASHING TYPE & CONDITION   None   PVC pipe   PG     (8208)  BOLT TIGHTENING REQUIRED   Yes   Not Active   PG     TERMITES   Requires   Return   Not Active   Return    ATTACHED FENCES & OTHER WATERWAY OBSTRUCTIONS    (8210)  ROAD   ON BRIDGE   Road Surface: Concrete   OL    APPROACHES   Road Surface: Bituren seel minor crooking and depression    (R207)  VEGETATION   Requires Clearing : LHS   Abut 1   RHS   Abut 1   A	SCHIPPEDS LOC	TION TVDE 9.	None LHS	RHS X	Pov DVC -:	Hole in deck
FLASHING TYPE & CONDITION  FLASHING TYPE & CONDITION  FROM  FLASHING TYPE & CONDITION  FROM  FLASHING TYPE & CONDITION  FROM		ATION, TYPE &	None LHS	KH2		
FLASHING TYPE & CONDITION    Roads	CONDITION			21 00		I nrough Kerb
R208    BOLT TIGHTENING REQUIRED   Yes		(R208)	Spoon drains	5 AI + AC	LHS + KHS	
BOLT TIGHTENING REQUIRED (P102)  TERMITES  Active Not Active Preventative Funcional Presentative Funcional Presentation Funcion Funcional Presentation Funcion Funcional Presentation Funcion F	FLASHING TY	PE & CONDITION	None		PVC pipe 🔀	PGI 🗌
BOLT TIGHTENING REQUIRED (P102)  TERMITES  Active Not Active Preventative Funcional Presentative Funcional Presentation Funcion Funcional Presentation Funcion Funcional Presentation Funcion F		(8208)				
TERMITES  (R204)  PREVENTATIVE FUNGICIDE (P103)  ATTACHED FENCES & OTHER WATERWAY OBSTRUCTIONS  ROAD  ROAD SURFACE & KERBING CONDITION  APPROACHES  APPROACHES  APPROACHES  Requires Clearing: LHS Abut 1 RHS Abut 1  Trees, scrub  Requires Clearing: LHS Abut 1 RHS Abut 1  Requires Clearing: LHS Abut 1 RHS Abut 1  Requires Clearing: LHS Abut 1 RHS Abut 1  Requires Clearing: LHS Abut 1  Requires Clearing: LHS Abut 1  Requires Clearing: LHS Abut 1  Reproached a caten of scour, underwining and still build up.)  (R203)  SERVICES  (Type, Size & Location)  Priority for Engineering Assessment	BOLT TIGHTE			(es 🗍	No 🔀	
PREVENTATIVE FUNGICIDE  (P103) ATTACHED FENCES & OTHER WATERWAY OBSTRUCTIONS  (R210)  ROAD SURFACE & KERBING CONDITION  APPROACHES  Road Surface: Concrete, OV  Kerbing: Concrete, OV  APPROACHES  Road Surface: Bitumen seel minor exacting and decises  Kerbing: Concrete - OV  Requires Clearing: LHS Abut 1 RHS Abut  Trees, scrub  STREAM BED CONDITION  (R205)  STREAM BED CONDITION  (R205)  SERVICES (Type, Size & Location)  Priority for Engineering Assessment						
APPROACHES  ROAD SURFACE & KERBING CONDITION  APPROACHES  ROAD SURFACE  & KERBING CONDITION  APPROACHES  ROAD SURFACE  & KERBING CONDITION  APPROACHES  ROAD SURFACE  APPROACHES  APPROACHES  ROAD SURFACE  APPROACHES	TERMITES	(R204)		ive 🗌	Not Active	
WATERWAY OBSTRUCTIONS  (R210)  ROAD SURFACE & KERBING CONDITION  APPROACHES  Road Surface:  Kerbing: Concrete, OK  APPROACHES  Road Surface:  Biturien sect in not creating and decress and serving conditions and decress are provided by the sect of	PREVENTATIV			ted 🔀	Not Treated	
ROAD SURFACE & KERBING CONDITION  APPROACHES  Road Surface:  Concrete, OK  Kerbing: Concrete, OK  Road Surface:  Road Surface: Road Surfac			None			
SURFACE & KERBING CONDITION  APPROACHES  Road Surface: Bituren seal minor creating and depres  Al + Al , Small hole Al lets see photo 34  Kerbing: Concrete - Ok  VEGETATION  Requires Clearing: LHS Abut I RHS Abut I  Trees, scrub REMOVE  STREAM BED CONDITION  (General comments and details of location, depth & extent of scour, undermining and silt build up.)  (R203)  SERVICES  (Type, Size & Location)  Priority for Engineering Assessment		(R210)				
Rerbing: Concrete, OK  APPROACHES  Road Surface: Bituren seet minor crading and degrees At + AL, Small hole, At 1 145 see of 36  Kerbing: Concrete - OK  VEGETATION  Requires Clearing: LHS Abut 1 RHS Abut 1 RHS Abut 1 RHS Cabut 1 RHS C	SURFACE	ON BRIDGE	The Control of the Co	ov		
Kerbing: Concrete - OV  VEGETATION  Requires Clearing: LHS Abut 1 RHS Abut 1			Kerbing: Concre	ele, ok		
Requires Clearing: LHS Abut 1 RHS	(R20)		A1 + 142 , 5	mall hole A	minor cracking of	and depression
STREAM BED CONDITION (General comments and details of location, depth & extent of scour, undermining and silt build up.)  SERVICES (Type, Size & Location)  BRIDGE CONDITION  Debris build up pier 2 * 3 R * S  RMS  Location  Type Size (mm) Location  Priority for Engineering Assessment	VEGETATION		Requires Clearing:	LHS 🔀	Abut 1 🔀 RHS	Abut 2
Coation   Comments and details by   Coation		(R205)	374.43	, Rem	OVE	
SERVICES (Type, Size & Location)  None  BRIDGE CONDITION  Type Size (mm) Location  Priority for Engineering Assessment	(General comments of location, depth & ex	and details of tent of scour, build up.)		dup pier	2+3 RHS	
BRIDGE CONDITION Priority for Engineering Assessment	SERVICES		Туре	Size (mm)	Location	
	(Type, Size & Lo	cation)	None			
Low Medium High Urgent				Priority for	Engineering Assessment	
Comments:	BRIDGE COND	DITION	Low 🔀	Medium [		Urgent [





GENERAL INFORMA	ATION - SHEET	2	Bridge	No.: 4551
Bridge Status	Built/In Use X	į.	Not Used	
Date Built 01/06/1973	Skew (	angle)	Skewee	d Width (m)
Widening Left Hand s Date		0.40	Right Hand side	
Surface Type	Unsurfaced Rubberised Seal	X Bitumen S Tiles	eal	Asphalt Steel Plate
Pavement Type	Unpaved	Gravel		Material Unknown X
Footpath Left	Left Kerb (m) 0.3	0 Path (m)		Right Kerb (m)
Footpath Right	Left Kerb (m)	Path (m)		Right Kerb (m) 0.30
Median	Left Kerb (m)	Median (m		Right Kerb (m)
Bridge Function 1	Road Bridge	X Rail Bridge		Pedestrian Bridge
Bridge Function 2	Over Water Over Road & Rail Stock Underpass	X Over Road Over Road Pedestrian	& Water	Over Rail Over Rail & Water
SIGNAGE				
Load Limits	Abutment 1 End	Tonne	Abutment 2 End	Tonne
Width Markers		L RHS 3	Abutment 2 I	LHS 3 RHS 2
Other Signs				
No Overtaking or Passing	Abutment 1	LHS RHS		nt 2 LHS RHS
No Overtaking on Bridge	Abutment 1	LHS RHS		
One Lane Bridge	Abutment 1	LHS RHS		100 100 100 100 100 100 100 100 100 100
Low Clearancem	Abutment 1 Abutment 1	LHS RHS	-	
Narrow Bridge Sign Give Way	Abutment 1	LHS RHS		
Crossing Sign:	Abutineur, I			
Other	Abutment 1	LHS RHS		nt 2 LHS RHS
	_ Abutment 1	LHS RHS		nt 2 LHS RHS
Signage Condition Legend	Good Fair	1		Required





LHS Edge

# ELEMENT SPACING SHEET 1

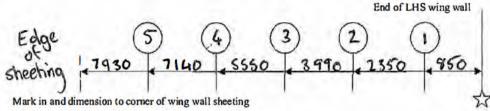
Bridge No.: 4551

#### Abutment 1

All measurements (cumulative) are taken from the reference point as indicated by the star



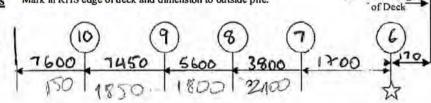
#### LHS Wing Wall Layout



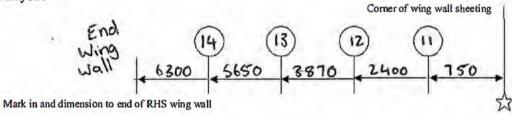
Abutment

Abutment Pile Centres

RHS = 00 Mark in RHS edge of deck and dimension to outside pile.



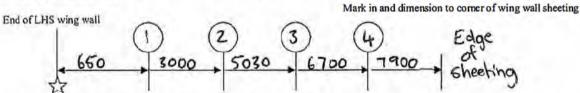
**RHS Wing Wall Layout** 



#### Abutment 2

LHS Wing Wall Layout All measurements (cumulative) are taken from the reference point as indicated by the star

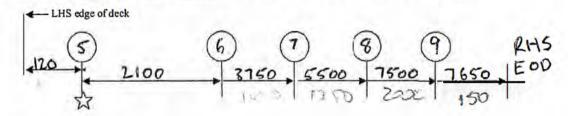




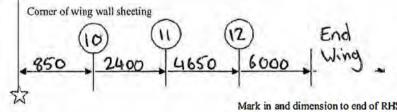
Abutment

**Abutment Pile Centres** 

Mark in RHS edge of deck and dimension to outside pile.



RHS Wing Wall Layout



Mark in and dimension to end of RHS wing wall

MAIN ROADS Western Australia

Timber Bridge Detailed Inspection Guidelines Doc 6706-02-2231 - Issue 21/02/2014

Form 6



Pier Pile Centres

# TIMBER BRIDGE DETAILED INSPECTION REPORT



# **ELEMENT SPACING SHEET 2**

Bridge No.: 4551

All measurements (cumulative) are taken from the reference point as indicated by the star

PIER No.... LHS edge of deck

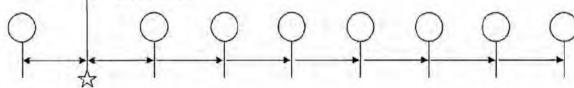
Typical

2 3 4 RHS

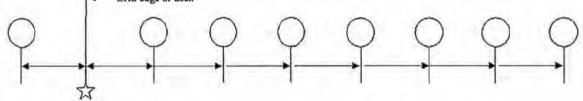
500 2690 4850 6760 7770

Mark in RHS edge of deck and dimension last pile to RHS edge of deck.

PIER No..... LHS edge of deck



PIER No. . . . LHS edge of deck



<u>Typical Stringer Spacing</u> Mark in RHS edge of deck and dimension last stringer to RHS edge of deck.

Note: Stringer spacings must be measured in every span with additional stringers. Use additional sheets as required.

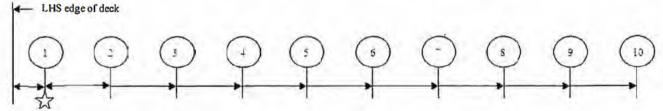
SPAN No. . 1. . Typical

LHS edge of deck

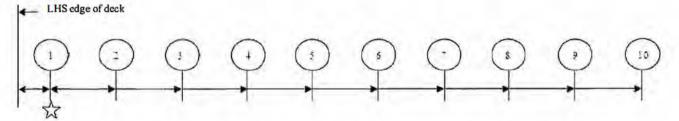
1 2 3 4 5 6 PHS

630 1040 2170 3240 4370 5490 6620 7140 EOD

SPAN No. . . . . . . .



SPAN No.....



Timber Bridge Detailed Inspection Guidelines Doc 6706-02-2231 - Issue 21/02/2014

Form 7



Fillet

# TIMBER BRIDGE DETAILED INSPECTION REPORT



ABI	UTN	1EN	Г: 1	Q.C	1500	6	- 0	,		<u>0</u>	9	10 11	QR IZ IS	F 6 SH	Brid	dge No	o: <u>45</u>	51
		Tin	iber Dril (mm)	ling	Ext	ent of Ro (m)	ot	Sp	lits	Bla	aze Markin	igs	Bea	fcaps aring am)				
Pile No.	Dia. (mm)	Solid	Rot	Pipe	Drill Location from top H/C	Above	Below	Location	Requires Band	Marking (ft/m)	Height Top H/C to Blaze (m)	Height Blaze to GL (m)	Al	A2	Pile Dia. (mm) below H/C (5m+)	Mat. Type	Tied Back	Cond State
1	400	See	notes		.4	Top	.5			-	. 2	-	1	-	-	JAR		3
2	400	200				104		-		-	1.2	-	-	-	-	JAR		2
3	470	235	1-4-4					-			2.2	-	-	~	-	JAR		2
4	360	180						5	<b>V</b>	~	3.0	•	-	-	-	JAR		2
5	380	190						7	~	-	3.6	-	-	-	-	JAR		2
6	410	205									3.1	4	-	120	-	JAR		2
7	360	180						=			3.0	-	-	170	-	JAR		2
8	420	210						Ξ		4	3.0	_	-	170	-	JAR	- 1,	2
9	350	125		50	1.5					-	3.0	-	-	140	-	JAR		2
10	400	200						~	/	-	3.1	-	-	130	-	JAR		_
11	390	195	Test.							-	3.6		-	-	-	JAR		2
12	370	185						-		-	2.6	-	-	-	-	JAR		2
13	400	200								-	1.8	-	-	-	-	JAR		2
14	450		notes		. 3	1000	-5			-	. 3	٠.	-	-	-	JAR		3
15		1				154												
COP OF	Halfca	ps to un	derside	Size	k 37	0	Н	k of I	Halfc Leng		eeting No	250 250		I Gap be	I/Cap Metween	H/Caps Material H/Caps	SF	- IR
Are th		re than		of halfc	aps or sill		(YESA	NO)	1	-	(If yes re	ecord deta		comn	nents sh		non	2
סט	nd								) '						-			

R.H.S 100 5

R.H.S

F=

L.H.S

F= 120 5

L.H.S

1006

R.H.S 160 5

F= 120 5

F=

R.H.S

L.H.S





# ARITMENT 1 and WING WALL SHEETING

RHS	1									LHS	
	3										
	4										
	5										
	7 8										
	9										
	10										
	15 gL			mett	Treet		•	1	11110		
										T D'	
ETING -	ABUTMENT LH	s s	olid - k	pottom	sheet	poor co	bnd	om Pile		To Pile	_
eline	Solid						Rot fr	om Pile	-	To Pile	
	Solid						Rot fr	om Pile		To Pile	
ETING N	Material Type		J								
	Material Size (mm		Vertical	220		epth [	80				
ST HVO I	viateriai Size (iiiiii	,	Vertical	220		epin	80				
			Condit	ion I	Condition	1 2	Condition 3	Cond	ition 4		
	% Condition	n State			95			5			
								-			
MENT	1 WING WAL	LS (ind		und line,	$\frac{1}{2}$	failed sl	neeting)	IS			
MENT	1 WING WAL			und line,	1 2 3 4 5 6 7 8 9 9	failed sh		IS S			
	1 WING WAL			und line,	1 2 3 4 5 6 7 8 9 10 11		TI LI	IS .			_
CLAIS		RH		ind line,	1 2 3 4 5 6 7 8 9 10 11 12 13	Fil.	LI		Unition		\
CLASS GCAP / S	SPIKING RAIL C	RH		ind line,	1 2 3 4 5 6 7 8 9 10 11 12 12 12	SU. WINGCA	LI GANS AP / SPIKING	RAIL CON			
CLASS GCAP / S		RH		and line,	1 2 3 4 5 6 7 8 9 10 11 12 12 12	SU. WINGCA	LI	RAIL CON	NDITION	ng	_
CLAVS GCAP / S	SPIKING RAIL C	RH		and line,	1 2 3 4 5 6 7 8 9 10 11 12 12 12	SU. WINGCA	LI GANS AP / SPIKING	RAIL CON		ing	\
CLAVS GCAP / S	SPIKING RAIL C	RH		and line,	1 2 3 4 5 6 7 8 9 10 11 12 12 12	SU. WINGCA	LI GANS AP / SPIKING	RAIL CON		ing	_
CLAVS GCAP / S	SPIKING RAIL C	RH		and line,	1 2 3 4 5 6 7 8 9 10 11 12 12 12	SU. WINGCA	LI GANS AP / SPIKING	RAIL CON		ine)	
CLAPS GCAP / S C CO	SPIKING RAIL Condition	RH ONDITIO	on Athing		1 2 3 4 5 6 7 8 9 10 11 12	SU WINGCA Vinar	GAVS AP/SPIKING Weather	RAIL CON		To Pile	
CLAPS GCAP / S C CO	SPIKING RAIL CONDITION	ONDITION S P	on withing	Sheet	1 2 3 4 5 6 7 8 9 10 11 12 12 15	Silver Vinar	CANS AP / SPIKING Weather	RAIL CON		To Pile	
CLAYS GCAP / S C CO	SPIKING RAIL CONDITION  WING WALLS  Solid -	ONDITION S P	Solida m she	Sheet	1 2 3 4 5 6 7 8 9 10 11 12	Silver Vinar	CANS AP / SPIKING Weather	RAIL CON		)	
CTASS GCAP / S C CO ETING	SPIKING RAIL CONDITION	ONDITION 50	on withing	Sheet	1 2 3 4 5 6 7 8 9 10 11 12 12 15	Silver Vinar	CANS AP / SPIKING Weather	RAIL CON		To Pile	





			Tim	(mm)	lling	Ext	(m)	ot	Sp	lits	Bl	aze Markir	igs	Bea	fcaps ring im)			
Pile No.	Circ. (mm)	Dia. (mm)	Solid	Rot	Pipe	Drill Location from top H/C	Below	Above	Location	Requires Band	Marking (ft/m)	Height Top H/C to Blaze (m)	Height Blaze to GL (m)	Al	A2	Pile Circ. (mm) below H/C (5m+)	Mat. Type	Cond. State
1	1130	360	180						Ξ		-	3.3	-	100	170	-	JAR	2
2	1260	400	180		10	2.8			A	<b>V</b>	-	3-2	-	170	100	-	JAR	2
3	1100	350	175						1		-	3.0	-		170	-	JAR	2
4	1320	420	210					- 1	2	V	-	2.8	-	140	150	-	JAR	2
5			111															
6		100	(				1					1	1-1-1					
7																		
8																		
9																		
10			_						_					_				
otal N	Number	of Cort	els:	7			Typic	al Corbe	el He	ight	(mm):	LHS 3	20	RH	IS 3	320		
Corbel	No:					1	2 3	3 4		5	6	7 8	9	10	1	1 12	13	14
<b>Materi</b>	al Type	:				JAR J	AR JA	R JA	RJ	AR	JAR J	AR						
	es Bolti			A1/A2	End	7-5		-/	-	/	-/-	//		/	1	/	/	1
ondi	ion Stat	te:		A 1/A2	End	2/2 3	23	53	7	/	2/2	2/		/				1/
	ork Cond				- Pu		СН		_	-	7	_	Tigh	ntening	g Req	uired:	Ye	es .
Valers Bracin	g	Si Si	ze V		- h	,	к н		-				Tigh	ntening	g Requ	uired:	Ye	ES .
Walers Bracin Satura		Si Si	ze V		- \(\bullet \)	,		Ler	ngth	7:	]	lo. of				uired:	ye is	
Valers Bracin Batura LHS I	g ted Piles Halfcaps	Si Si s:	ze V ze V	Size		340	к Н	Ler	ngth	7:	] ] 300 N	lo. of		p betw	veen F		is	0
Valers Bracin Batura LHS H	g ted Piles	Si Si s: s s to und	ze V ze V	Size		340 1 120	к Н		ngth	73		lo. of	2 Gaj	p betw	veen F Cap M	I/Caps [	is	
Walers Bracin Batura LHS H Top of	g ted Piles Halfcaps 'H/Caps	Si Si s: s s to und	ze V ze V erside (	Size Size	v v	340 1 120	H 170			1:			2 Gaj	p betw H/C	veen F Cap M	I/Caps [	is	0
Walers Bracin Batural LHS H Top of RHS I	g ted Piles Halfcaps H/Caps Halfcap	Si Si s: s s to und s	ze V ze V erside c	Size Size Size Of Deck	v v	3i <sub>1</sub> 0 1	к н Н 170	Ler			N		Cap Gap	p betw H/C	veen F Cap M veen F Cap M	I/Caps [ aterial [ I/Caps [ aterial [	is Si	O AR
Walers Bracin Batura LHS H Top of RHS I Top of	g Halfcap: H/Caps Halfcap Halfcap	Si Si s: s s to und s	ze V ze V erside c	Size Size Size Of Deck	v v	3i <sub>1</sub> 0 1	H 170	Ler	ngth	0	(If yes r	lo. of	Gap Gap ails on co	p betw H/C p betw H/C	veen F Cap M veen F Cap M	I/Caps [ laterial [ laterial [ laterial [	Si Sinonito orinos	O AR
Walers Bracin Satura LHS H Top of RHS I	g Halfcap: H/Caps Halfcap Halfcap	Si Si s: s s to und s s to und e than 2	ze V ze V erside c	Size of Deck	v v	3i <sub>1</sub> 0 1	к н Н 170	Ler	ngth	0	(If yes r	lo, of	Gap Gap ails on co	p betw H/C p betw H/C	veen F Cap M veen F Cap M	A/Caps [ aterial [ A/Caps [ aterial [ aterial [	Si Sinonito orinos	O AR
Walers Bracin Satura LHS I Top of RHS I Top of	g Halfcap: H/Caps Halfcap Halfcap	Si Si s: s s to und s s to und e than 2	ze V ze V erside c erside c	Size of Deck Size of Deck fhalfca	v v	340 1 120 1 11 beams	H 170	Ler	ngth	0	(If yes r	record det	Gap Gap ails on co	H/Commer	veen F Cap M veen F Cap M	I/Caps [ laterial [ laterial [ laterial [	Si Sinonito orinos	O AR
Walers Bracin Batura LHS H Top of RHS I Top of	g Halfcap: H/Caps Halfcap Halfcap	Si Si s: s s to und s s to und e than 2	ze V ze V erside c erside c	Size of Deck Size of Deck fhalfca	v v v v ps or si	340 1 120 1 11 beams	H 170	Ler	ngth	0	(If yes r	record det	Gay ails on co	p betw H/C p betw H/C	veen F Cap M Cap M Cap M	I/Caps [ laterial [ laterial [ laterial [ laterial ]	SI SI	O AR
Valers Bracin Batural LHS H Cop of RHS I Cop of	g Halfcap: H/Caps Halfcap Halfcap	Si Si s: s s to und s s to und e than 2	ze V ze V erside c erside c	Size of Deck Size of Deck fhalfca	v v v v ps or si	340 1 120 1 11 beams	H 170 H (YES/N RE	Ler	PA Ex	CKI	(If yes r	record det SEE SFROM	Gay ails on co	p betw H/C p betw H/C	Cap M Cap M Cap M Cap M Cap M	I/Caps [ I/Caps [ I/Caps [ I/Caps [ I/Caps ] I/Caps [ I/Caps ] I/Caps [ I/Caps ] I/Caps [ I/Caps ] I/Caps [ I/Caps   I/C	IS SI SETT OF PIONE PAIK CHA	O AR
Valers Bracin Batural LHS H Cop of RHS I Cop of	g Halfcap: H/Caps Halfcap Halfcap	Si Si s: s s to und s s to und e than 2	ze V ze V erside c erside c	Size of Deck Size of Deck fhalfca	v v v v ps or si	340 1 120 1 11 beams	H 170	Ler	PA Ex	CKI	(If yes r	record det	Gay ails on co	p betw H/C p betw H/C	Cap M Cap M Cap M Cap M Cap M	I/Caps [ laterial [ laterial [ laterial [ laterial ]	IS SI SETT OF PIONE PAIK CHA	O AR
Walers Bracin Batura LHS H Top of RHS I Top of	g Halfcap: H/Caps Halfcap Halfcap	Si Si s: s s to und s s to und e than 2	ze V ze V erside c erside c	Size Size of Deck Size of Deck Thalfca	V V V V V V V V V V V V V V V V V V V	340   1 120   1 11 beams   A1	H 170 H (YES/N RE	Ler Q A2	PA Ex	O CKI	(If yes r	record det	Gay ails on co	p betw H/C p betw H/C	Cap M	A/Caps [ laterial [ l/Caps [ laterial [ laterial ] late	IS SI	O AR
Walers Bracin Satural LHS H Top of RHS I Top of Are the	g  ted Piles  Halfcaps  H/Caps  Halfcap  H/Caps  ere more ents:	Si Si s: s s to und s s to und e than 2	ze V ze V erside c erside c	Size Size of Deck Size of Deck Thalfca	v v v v v v v v v v v v v v v v v v v	340 1 120 1 11 beams 1 14 MA	H 170 H (YES/N RE	Ler Q A2	Par A	cxi H/o Bo	(If yes r	record det	Ganalis on co	p betw H/C p betw H/C ommer	Cap M	I/Caps [ I/Caps [ I/Caps [ I/Caps ] I/Caps [ I/Caps ] I/Caps [ I/Caps ] I/Caps [ I/Caps ] I/Caps [ I/Caps   I/C	IS SI	o AR
Walers Bracin Satural LHS H Top of RHS I Top of Are the	g  Halfcape Halfcape Halfcape HACape Halfcape H/Cape Halfcape H/Cape HACape HAC	Si S	ze V ze V erside c erside c	Size Size of Deck Size of Deck Thalfca	V V V S S S S S S S S S S S S S S S S S	340 1 120 1 11 beams A1 HA	H 170 H (YES/N RE) COMM	Ler Q A2	Par A	O CKI	(If yes r	record det  SEE  FROM  NAIF	Ganalis on co	p betw H/C p betw H/C ommer	Cap M	A/Caps [ I/Caps [ I/Caps [ I/Caps [ I/Caps ] I/C	SI SI	O PR
Walers Bracin Satura LHS I Top of RHS I Top of	g  Halfcape Halfcape Halfcape HACape Halfcape H/Cape Halfcape H/Cape HACape HAC	Si Si s: s s to und s s to und e than 2	ze V ze V erside c erside c	Size Size of Deck Size of Deck Thalfca	v v v v v v v v v v v v v v v v v v v	340 1 120 1 11 beams 1 14 MA	H 170 H (YES/N RE) COMM	Ler Q A2	Par A	cxi H/o Bo	(If yes r	record det	Ganalis on co	p betw H/C p betw H/C ommer	Cap M	I/Caps [ I/Caps [ I/Caps [ I/Caps ] I/Caps [ I/Caps ] I/Caps [ I/Caps ] I/Caps [ I/Caps ] I/Caps [ I/Caps   I/C	SI SI	O PR
Valers Bracin Batural LHS I Op of Op of Are the	g  ted Piles  Halfcaps  H/Caps  Halfcap  TH/Caps  TH/Caps  TH/Caps  TH/Caps  TH/Caps	Si S	ze V ze V erside c erside c	Size Size of Deck Size of Deck Thalfca	v v v v v v v v v v v v v v v v v v v	340 1 120 1 11 beams 1 14 1 14 1 19 10 1 10 1: A2	H 170 H (YES/N RE COMM	Ler Q A2	Par A	cxi H/o Bo	(If yes r	record det  SEE  FROM  NAI  LAI  LAI  LAI  LAI  LAI  LAI  LAI	Ganalis on co	p betw H/C p betw H/C pmmer	Cap M	A/Caps [ I/Caps [ I/Caps [ I/Caps [ I/Caps ] I/C	SING SETT OF PINK	O AR





Pile No.	Circ. (mm)	Dia. (mm)	Timber Drilling (mm)			Ext	(m)	ot	Sp	lits	В	Bea	Halfcaps Bearing (mm)					
			Solid	Rot	Pipe	Drill Location from top H/C	Below	Above	Location	Requires Band	Marking (fl/m)	Height Top H/C to Blaze (m)	Height Blaze to GL (m)	Al	A2	Pile Circ. (mm) below H/C (5m+)	Mat. Type	Cond State
1	1130	360	130		50	2.3			3	V	-	4.2	-	140	140	-	JAR	2
2	1225	390	195		TH				=	V	-	4.2	-		150	-	JAR	2
3	1160	370	185						3	~	-	4.2	-	170	100	-	JAR	2
4	1160	370	155		30	2.8			7	V	-	4.2	-	120	130	-	JAR	2
5																		
6																		
7																		
9																		
10																		
							-	10.1										
tal 1	Number	of Cort	els:	7	_		Typic	al Corbe	el He	ight	(mm):	LHS 3	20	RF	IS _	320		
orbel	No:					1	2 3	4		5	6	7 8	9	10	1	1 12	13	14
ateri	al Type					JAR J	AR JA	R JA	R J	AR	JAR J	AR						
equi	es Bolti	ng:		A1/A2	End	7-5		- 5	- ;	/	/	/-/		/	1		/	1
ondi	ion Stat	e:	-	A1/A2	End	223	23	2 2	23	2	3/2/	2/		/	1	/	/	/
onwa	ork Cond	dition	ΛΛ	inni	R	ct							Tigh	tenin	g Req	uired: [	N	_
					- 100		- 51	_			7	_	6.		B read	L.	14	0
alers	3	Si	ze V		-	,	Н		-									
racin	g	Si	ze V		-	,	H											
atura	ted Piles																	
	lalfcaps			Size	V	340 I	1 170	Ler	ngth	7:	300 N	o. of	Gar	n betv	veen F	I/Caps	15	O.
	H/Caps		erside o		_		,0		-B	- 1	300		9.1	4 1		aterial		
			craide o			20			4.				7			-	31	14
	Halfcap			Size	V		I .	Lei	ngth	_		o. of	Gaj			I/Caps		
op of	H/Caps	to und	erside o	f Deck										H/C	Cap M	aterial		
re th	ere more	than 2	sets of	halfca	ps or si	ll beams	(YES/N	10)	No	2	(If yes I	ecord deta	ails on co	mme	nts she	eet)		
amm	ents:							_		-	10776							14
		Una	able	to	llak	pile	4 a	rar	OUY	br	level	larg	e am	200	nt	of s	debr	15
P	er o	2 (	Lock		7 1	Mr		aic	. %		1 0	ota	75)	,				
		-					1	11			17		· /					
								1.0										
												-						
														_				
Pile N	lo.:-				Pile N	0.:	_		F	Pile N	lo.:	_		Pil	e No.:		_	
	67	A2		1		A2					A	2				A2		
		_																
LHS			RHS		LHS	(	) F	RHS		LHS	(	R	HS	L	HS	_(	R	HS _
		A1				41										1		
		Δ 1				Δ1					A					Δ1		





Pile No.			Tim	ber Drilling (mm)		Extent of Rot (m)			Sp	olits	Blaze Markings			Halfcaps Bearing (mm)				
	Circ. (mm)	Dia. (mm)	Solid	Rot	Pipe	Drill Location from top H/C	Below	Above	Location	Requires Band	Marking (ft/m)	Height Top H/C to Blaze (m)	Height Blaze to GL (m)	Al	A2	Pile Circ. (mm) below H/C (5m+)	Mat. Type	Cond. State
1	1130	360	180						=		-	3.2	-	110	150	Ţ	JAR	2
2	1290		205							,	~	3.3	-	100	130	1	JAR	2
3	1290		7.05					- 1	/	V	-	3.2	-	160		-	JAR	2
4	210	UC	Pot	ecl		11mm					_	2-9	-	170	170	-	STE	1
6																		
7																		
8									-									
9																		
10															1 9			
equi ondi on w /aler racir atura HS 1	ng Halfcape f H/Caps Halfcape	ng: e: Si Si Si s s to und	ze V ze V erside c	Size of Deck	End V	340 F	H 170	Ler	ngth N	0	322 300 N	io. of	<b>Z</b> Ga	H/C p betw H/C	veen H Cap M veen H	I/Caps [ aterial [ I/Caps [ aterial [	15 5F	
	nantar	15	nn	3	AG	IN	A	147	0	R	55Th	560	VF	10	= 9	+	3.	
	hens.	SF	+Cot	N	A	H/C	and it	Rom		Pr		3 70	R-H			-		
re th	m	SF H/C	R	ACK		1	and t	Rom	2	+1/	c s	BIO		n G	N	Pic	EI	+2 (
Soil	m	SE H/C pot 3 A	tom 2 r	of	pot	- O	Her PO	sed d	lue d'	+1/	c 5	PAG		NÉ	1	05	٨	+21 1e1
Are the	TH e 4	SF H/C pot 3 A.	tom 2 r	of	pot	Mud IR O	Medet,	sed d	Le d'	+1/	sce Pier	acy 3 H	BÉT	pho	1	33	٨	





LHS **ABUTMENT: 2** Bridge No: 4551 34 Timber Drilling Extent of Rot Blaze Markings Halfcaps Splits (mm) Bearing (m) (mm) Pile Dia. Pile Mat. Tied Cond. Requires No. (mm) Drill Dia. Type Back State Height Height Location Marking Top H/C (mm) Location Blaze to A2 Solid Rot Pipe Above Below AI from top to Blaze GL below (Ft/m) Band H/C (m) (m) (5m+)400 JAR . 3 140 60 3 2 350 B JAR 8 5 1:6 3 350 JAR 2 2.8 175 4 360 JAR 2 -3.1 80 5 2.5 STE 1 110 210 UC Patred 6 400 JAR 140 2 2.6 200 7 360 JAR 2 3-0 180 8 420 JAR -2 210 2.8 120 Fillet 9 JAR 370 2.7 2 00 10 360 JAR 2.7 -180 701 Fillet 11 400 JAR .5 \_ 3 1.4 1.6 12 370 JAR . 2 7 13 14 15 Saturated Piles: 170 LHS Halfcaps Size V 340 Length 8250 No. of Gap between H/Caps 370 Top of H/Caps to underside of Deck Back of Halfcaps to Sheeting 290 H/Cap Material JAR. RHS Halfcaps Size V H Length No. of Gap between H/Caps Top of H/Caps to underside of Deck Back of Halfcaps to Sheeting H/Cap Material Are there more than 2 sets of halfcaps or sill beams (YES/NO) (If yes record details on comments sheet) Comments: Pile No. 12 Pile No. Pile No. Pile No. 10 R.H.S L.H.S L.H.S R.H.S R.H.S L.H.S 1505 150ks 180/5 F= 110/1 F=





#### ABUTMENT 2 and WING WALL SHEETING Bridge No: 4551 ABUTMENT 2 SHEETING (indicate ground line, piles and failed sheeting) LHS RHS 2 3 4 5 6 ALLOX 13 14 Rot from Pile To Pile Some SHEETING - ABUTMENT LHS Rot from Pile To Pile Centreline 11+12 01 Rot from Pile To Pile RHS SHEETING Material Type J SHEETING Material Size (mm) Vertical 220 Depth 80 Condition 1 Condition 2 Condition 3 Condition 4 % Condition State 95 ABUTMENT 2 WING WALLS (indicate ground line, piles and failed sheeting) LHS RHS 2 3 4 5 6 7 8 9 10 11 12 WINGCAP / SPIKING RAIL CONDITION WINGCAP / SPIKING RAIL CONDITION Rot from Pile To Pile Source SHEETING - WING WALLS LHS Rot from Pile To Pile RHS SHEETING Material Type

80

Condition 3

Depth

Condition 2

SHEETING Material Size (mm)

% Condition State

Vertical

Condition 1

220

Form 17

Condition 4





								an No	-	Bridge No: 4551								
	Stringer No:		1	2	3	4	5	6	7	8	9	10	11	12	13	14		
	Material T		JAR	JAR	JAR	JAR	JAR	JAR	JAR									
	H Diame	eter (mm)	410	560	530	550	540	400	420									
	V Measure	ment (mm)	370	370	370	370	370	370	370									
	Dri	Solid (B)	130	370	370	370	370	160	370						-			
	Drill Vertical	Rot Pipe	80					70										
Ah	ertic	Rot											E 1					
T T		Solid (T)	160	2000				140										
1	Drill Horiz.	Right																
Abutment 1 End	v V	Bolt Rqd	~	-	-	/	-		-									
2	Split H	Bolt Rqd						a) E		111					F   50	let h		
	Propped	N	2	Λ	1	1	1	0	Á				25.1					
	Condition S	state	00	7	1	1	1	2	1									
		eter (mm)	420	540	530	460	600	400	460									
	V Measurement (mm)		470	480	500	460	500	420	500									
	Dri.	Solid (B) Rot	470	480	480	460	480	120	190									
	II V	Pipe						220	90									
_	Drill Vertical	Rot			11-63													
Mid		Solid (T)						80	200					bee				
Mid Span	Drill Horiz. Left Right							190										
5	v V	Bolt Rqd						1,10										
1	_	Bolt Rqd	V					H	/									
	Propped Condition State			1	1	1	1	2	2									
	Condition State		1	1	1	- 1	1	2	oc.									
		eter (mm)	470	500	550	400	610	390	480			100				1		
		ment (mm)	400	400	400	400	400	400	400									
	Dril	Solid (B) Rot	400	400	900	400	400	400	400									
+	Drili Rot Pipe Rot Rot										1		1					
Abu	rtical	Rot																
me	Drill Horiz	Solid (T)						4	4						-			
utment 2 End	Dim nonz	Right																
En	Split V	Bolt Rqd	V		-					14/12				M	Lin			
_	E	Bolt Rqd							V	TAPE								
	Propped Condition :	State	A	1	1	1	4	1	1		+							
			laule	1000			Size	V		7		Conditi	on S	_	R -	9%		
		Spiking P		33.000	plicabl				-									
	Cond. of	Decking (	Solid/R	ot)	_	90	R	0 %		Co			nds S		R 10	%		
	Decking !	Size (mm)	)			V 127			x H 2	20		Deckin	g Timbe	er Type	JAR			
	Span Len	gth from (	Centreli	ne Sup	ports (n	1) 5.78	Cl	ear Spa	n Lengt	h 4.87		Saturat	ed string	gers:				
	Deck Cor Percentag	ndition Sta	ate	Conditio	m I (	Condition	2 Co	ndition 3		10	Spir	al Grai	n String	ers: 7				
	Commen		P 1	RE	2 /	PACKI	NG	SE	+ 1	HONO	-Al	out	2 -	-Pho	わま	5		
		()1	-															
	Stron	ger.	6 A	but	- 2	rea	0	res	Po	ick	me	_	Pho	to 1	4			





	DETA	IIL SH	EET				Sp	an No	: 2		2-		Bi	ridge	e No	: 455	1
	Stringer N	Jo.	1	2	3	4	5	6	7	8	9	10	1 1		12	13	1
	Material		JAR	JAR	JAR	JAR	JAR	JAR	JAR	U	-	10	+	+	12	15	-
	2.3.0.7.1.1.0.0	71-											-	_			_
	H Diam	eter (mm)	600	500	550	440	550	430	570								
	V Measur	ement (mm)	400	400	400	400	400	400	400								
	D <sub>1</sub>	Solid (B)	400	400	400	400	400	400	400		1						
	Drill Vertical	Rot				7 - 7	The F	1									
	\Q_1	Pipe				2							-	-115			
	tica	Rot					-						-	-			
	Drill Horiz	Solid (T)		-								-	+	+	_		-
	Dhii Horiz	Left Right	-	-								-	+	-		-	
	- Is	Bolt Rqd	-	-	-		-	-	Y				1	+			
	Colit	Bolt Rqd		-	-		-					-	+	-	+		$\vdash$
	Propped	1 Bolt Rea										-	1	+	-		
	Condition	State	1	1	Λ	1	1	4	1				1	-		-	1
	Condition	State	1		4		1	-da	1								
	H Diam	eter (mm)	480	550	530	490	500	460	540				T	T		- 1	
		ement (mm)	440	460	480	500	450	450	480							- 1	
	D	Solid (B)	290	460	290	480	450	450	480								
	TI II	Rot	FOP					1	1		12.2						
	Drill Vertical	Pipe	1	1.27	100			12.5							1		
,	rtic	Rot				1 1		1							_1		
-		Solid (T)	0		90						Let !				(		
Mid Chan	Drill Horiz	-	180		10												
		Right	200										-	-	-		
	Split	Bolt Rqd											1	+	+-		_
	T I	H Bolt Rqd	V										-	+	1		-
	Propped	Ctoto	3	1	2	A	1	1	1					-			
-	Condition	State	0	1	d	1	4	1	1					-	-		
	H Diam	eter (mm)	410	600	500	530	460	500	470				T	T			
		ement (mm)	400	400	400	400	400	400	400								
11	D	Solid (B)	400	400	400	400	400	400	400								
	Drill Vertical	Rot		18			-	100									
	Vc	Pipe															
	Tic	Rot															
		Solid (T)															
-	Drill Horiz																
-	-	Right	-										-	-			
	I Split	Bolt Rqd	~		7								+	+	+	Marie I	-
		H Bolt Rqd		1111-								-		+	4		
	Propped Condition	Ctata	A	1	4	Λ	1	A	A			-	-	-	-		-
-			7	-	1 1	1	31		1	_			-	_			_
	Cond. of	Spiking P	lank	Not Ar	plicabl	e /	Size	V	-			Condit	ion	S a	-	R -	
	Cond of	Decking (	Solid/R	ot)	[ 5	90	R 11	2 %		Cor	nd of I	Deck E	nds [	S	n	R 10	
		1, 100		/		10	1				2 - 1		-	_			
	Decking	Size (mm)				V 127			x H 2	20		Deckin	ig I in	nber	Type	JAR	
	Span Ler	gth from (	Centreli	ne Supp	ports (m	6.13	C1	ear Spa	n Lengt	h 4.70		Saturat	ed str	inger	s:		
		ndition Sta		Conditio		Condition	2 Co	ndition 3	Cond	lition 4							
	Percentag			90						0	Spin	ral Grai	in Stri	inger	s:		
						_		_			- P			0-1	_		
	Commen	ts: N	) B	TI	· Vi	7011	NRE	D									
			The state of the s		-	~~~		-									_
	-	-															
	-	-															





	DELL	AIL SH	EE I				Sp	an No		_			Dila	gervo	: 455	
	Stringer N	lo:	1	2	3	4	5	6	7	8	9	10	-11	12	13	14
	Material 7		JAR	JAR	JAR	JAR	JAR	JAR	JAR			10		-12	12	_
		71														_
	H Diam	eter (mm)	460	420	540	430	470	560	480							
	V Measure	ement (mm)	400	400	400	400	400	400	400							
	ם	Solid (B)	400	400	400	400	400	400	400		200					
	1 1 1	Rot	-		1				1 3			9				
	Ver	Pipe			1											
	Drill Vertical	Rot														
	Drill Horiz	Solid (T)		-										-		-
Abutment I End	Dim nonz	Right														
7	V	1	/		_	-	-	-	-							
2	Split F		V					-								
	Propped															
	Condition :	State	1	1	1	1	1	1	4			10.4				
		eter (mm)	470	500	570	420	520	580	520	1			LT E			
		ement (mm)	500	400	480	460	510	470	490							
	Dri	Solid (B)	980	400	480	460	400	470	480							
	1	Rot Pipe														
	Drill Vertical	Rot														
3	cal	Solid (T)					1						-			
0	Drill Horiz	Left				K. T.			1 1				-			
Mid Span		Right		1		1 5		- 2								
•	Split V	Bolt Rqd	TOTAL	P I	11 [15]	1 1 2 5		/				(0.2)	TIL X		111	$+\mathbb{I}_{e}$
	P	Bolt Rqd	0.00	H					3150			1599			(H)	
	Propped					-		-								
_	Condition	State	1	1	4	4	4	4	1							
	H Diam	eter (mm)	540	560	630	470	510	550	560							
	V Measure	ement (mm)	400	400	400	400	400	400	400							
1	Di	Solid (B)	400	400	400	400	400	400	400				1	- 4		
	当	Rot	15.50	100 20	1000	1301	12.0		12.0			Tell.		J. J.		
	Ver	Pipe														
A .														-		
Abut	tica	Rot														
Abutme	Drill Vertical	Solid (T)										41				
Abutment 7	Drill Horiz	Solid (T) Left														
Abutment 7 Fr	Drill Horiz	Solid (T) Left Right	-		-		-	1								
Abutment 2 End	Drill Horiz	Solid (T) Left		-	-	-	-	11	-							
Abutment 7 End	Drill Horiz  Split   V   F   Propped	Solid (T) Left Right Bolt Rqd Bolt Rqd		-	-	-	-	11	-							
Abutment 7 Fnd	Drill Horiz	Solid (T) Left Right Bolt Rqd Bolt Rqd		1	-	1	-	-	-							
Abutment 7 Fnd	Split V Propped Condition	Solid (T) Left Right Bolt Rqd Bolt Rqd State	1	Not An	- A	1	- A	- - - V	1	1		Condition	on S	-	R =	9
Abutment 7 End	Split V Fropped Condition Cond. of	Solid (T) Left Right Bolt Rqd Bolt Rqd State Spiking P.	1 lank	/ 10	- A pplicable	1 221	4 Size		4			Condition			-	
Abutment 7 End	Split V Fropped Condition Cond. of	Solid (T) Left Right Bolt Rqd Bolt Rqd Bolt Rqd State Spiking P. Decking (	lank Solid/R	/ 10	S	90	- Size		4	Cor		Condition Deck En		- 90	R 10	
Abutment 7 Fnd	Split V Fropped Condition Cond. of	Solid (T) Left Right Bolt Rqd Bolt Rqd State Spiking P.	lank Solid/R	/ 10	S	1 221		0 %	- - x H 2		nd. of I		ds S	90	R 10	
Abutment 7 End	Split V Propped Condition Cond. of Cond. of Decking	Solid (T) Left Right Bolt Rqd Bolt Rqd State Spiking P. Decking ( Size (mm)	lank Solid/R	lot)	5	7 127	R	0 %	x H 2	20	nd. of I	Deck En	ds S	90 er Type	R 10	99
Abutment 7 Fnd	Split V Propped Condition Cond. of Cond. of Span Len	Solid (T) Left Right Bolt Rqd Bolt Rqd Bolt Rqd State Spiking P Decking ( Size (mm) gth from (	lank Solid/R	kot) ine Supp	oorts (m	6 90 / 127 1) 6.00	R \	o %	x H 2	<b>20</b> h 4.58	nd. of I	eck En	ds S	90 er Type	R 10	
Abutment 7 End	Split V Propped Condition Cond. of Cond. of Span Len	Solid (T) Left Right Bolt Rqd Bolt Rqd State Spiking P. Decking ( Size (mm) gth from ( dition State)	lank Solid/R	lot)	oorts (m	7 127	R \	0 %	x H 2	20	nd. of I	Deck En	ds S g Timbe	90 er Type gers:	R 10	
Abutment 7 Find	Split VE Propped Condition of Cond. of Cond. of Decking Span Len Deck Cond.	Solid (T) Left Right Bolt Rqd Bolt Rqd Bolt Rqd State Spiking P Decking ( Size (mm) gth from ( addition Stage:	lank Solid/R Centreliate	ine Supp Conditio	oorts (m	6 90 / 127 1) 6.00	R \	ear Spa	x H 2 n Length Cond	20 h 4.58 ition 4	nd. of I	Deck En Decking Saturate al Grain	ds S g Timbe	90 er Type gers: ers:	R 10	- ·
Abutment 7 Fnd	Split V Propped Condition Cond. of Cond. of Decking Span Len Deck Con Percentage	Solid (T) Left Right Bolt Rqd Bolt Rqd Bolt Rqd State Spiking P Decking ( Size (mm) gth from ( addition Stage:	lank Solid/R	ine Supp Conditio	oorts (m	6 90 / 127 1) 6.00	R \	ear Spa	x H 2	20 h 4.58 ition 4	nd. of I	Deck En Decking Saturate	ds S g Timbe	90 er Type gers: ers:	R 10 JAR	
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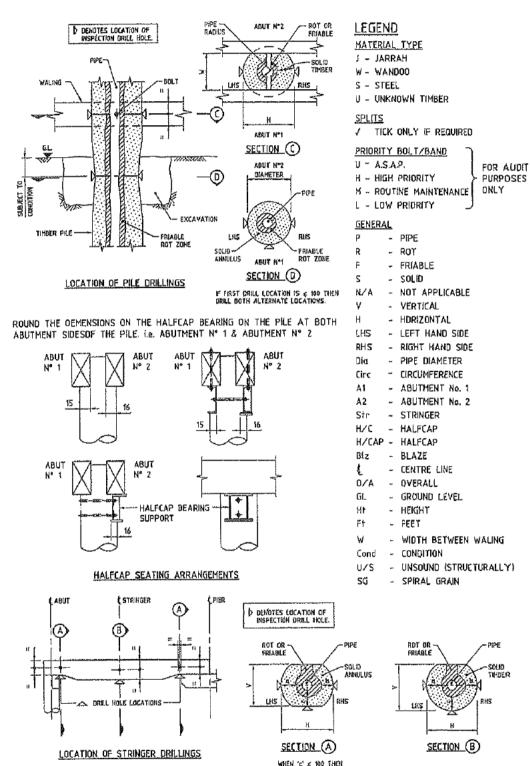




	DETA	ALL SH	EET				Sp	an No	: 4				Bric	lge No	: 455	1
	Stringer N	Jo.	1 1	2	3	1 4	5	6	7	8	9	10	11	12	13	14
	Material		JAR	JAR	JAR	JAR	JAR	JAR	JAR						1	
	H Diam	otor (mm)	550	520	600	150	520	480	560							
		eter (mm) ement (mm)	550 400	530	600 400	450	520 400	400	400							
		Solid (B)	400		_			400		_				100		
	Drill Vertical	Rot														
4	Vert	Pipe Rot			-											
	ical	Solid (T)														
Abutment 1 End	Drill Horiz	Left												-		
-	1.	Right					-	1								
1		Bolt Rqd H Bolt Rqd	-					V								
	Propped	1   Don requ														
	Condition	State	1	1	4	1	1	1	1		Total I	150				
	H Diam	eter (mm)	500	480	520	530	530	510	500	7						
		ement (mm)	500	490	510	450	440	530	470							
	Dı	Solid (B)	240	480	480	450	440	480	470					11 63		)
	Drill Vertical	Rot	80													
	/erti	Pipe Rot	80											-		
		Solid (T)	160						1			10.00				
Mid Coon	Drill Horiz								11					Ji e e i		
9	- 1	Right  / Bolt Rqd	-													
	Split	Bolt Rqd Bolt Rqd							1							
	Propped								7							
	Condition	State	2	1	1	1	1	1	1							
	H Diam	eter (mm)	500	460	500	630	510	540	480							
		ement (mm)	370	370	370	370	370	370	370						5-1	
	Dr	Solid (B)	370	240	370	370	140	370	370							
	Drill Vertical	Rot Pipe		20			30	-						-		
Ah	ert.	Rot		20			10									
	To be a second of the second o	Solid (T)		110			200		Y							
Abutment 2 End	Drill Hori:								2					1		
2 1	1	Right V Bolt Rqd	-					1	-	- 1 -						
-	Split	H Bolt Rqd						V								
	Propped															
_	Condition	State	1	12	1	1	2	1	1							
	Cond. of	Spiking P	lank	Not Ap	plicabl	e 🗸	Size	V	-			Conditi	on S	-	R _	
	Cond. of	Decking (	Solid/R	ot)	1	90	R	0 %	o .	Co	nd. of I	Deck Er	nds S	90	R 10	
	Decking	Size (mm)	)		15	V 127			x H 7	20		Deckin	g Timb	er Type	JAR	
		ngth from		ne Suni					in Lengt		]	Saturate				
	7.7	ndition Sta		Conditio		Condition		ndition 3		dition 4		Julian	ou sirii		-	-
	Percenta		ate	90		22.41		27, 4700	-	0	Spir	ral Grai	n String	gers:		
	Commer	its: TR	SHO	QĒ.	PRO.	P 0	NOE	2 5	te 7	AZ	EN!	p	SEE	PHS	00	
	Striv	nger	7	Ab	t	Λ	80		ckin	va (	Pr	ofor	2	16		
	Stra	nover	4	A	ANG	-2	no	2 10	ack	indo	(V	no	to 3	11		
	RNI	TON	WE'S	DN	1,20	EN	1 00	71		2	1	1 -0	10	,		
	TOL	12	NI	WEE	MIN	til		4								







NOTE: All dimensions are of solid timber excluding sap wood and any surface not on piles and stringers
/SE Cocuments/Management System Managl/Dwgs/timber\_repair.dwg

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# Bridge 3122 Tarwonga Road over Torbling Brook L2 Inspection





Enquiries: Our Ref: Your Ref: Gavin Johnston on 9323 4431

04/4055



ABN: 50 860 676 021

# ASSET MANAGER STRUCTURES WHEATBELT REGION

Structure No.: 3122

Over: Torbling Brook

On: Tarwonga Rd (4190004)

SLK: 2.82

LGA: Shire of Narrogin

- Please find enclosed a copy of the Detailed Inspection Report for the above Local Authority structure.
- Attached is a schedule of maintenance items that are required to be undertaken in order to maintain structural integrity and extend the life of the Structure.
- The maintenance items have been entered into IRIS for programming purposes.

Reviewed By:

Mark Billings

SENIOR STRUCTURAL ENGINEER AECON

19/3/2017

Enc

Issued By: Cost

Gavin Johnston

BRIDGE CONDITION MANAGER

22/3/19

# **WORK ITEMS - TIMBER BRIDGES BRIDGE No: 3122**

NIO	ITEM DESCRIPTION	WORK REQD	PRIORITY	COMMENTS
NO	L	KEQD	CODE	
) GENE	RAL MAINTENANCE			
G005	Bridge Durability Survey (L3)			1000
G009	Bridge - Load Rating			
G010	Bridge - Monitor Defect	1		
	ENTATIVE MAINTENANCE			Committee of the second
P101	Bridge - Seal Timber			3.4-13-503-2-4100000000000000000000000000000000000
P102	Bridge - Maintain Fastener			
P103	Bridge - Fungicide Treatment	1		
ROUT	INE MAINTENANCE			
) KOOT	Bearing - Maintain			
	Bridge - Remove Graffiti			West of the second seco
	Bridge - Repair Scour (Minor)			- watermarker
	Bridge - Eradicate Termites			
	Bridge - Clear Debris and Vegetation	-	0	vi - La Cinara remuniturent
	Deck Joint - Maintain			
	Deck Surface - Maintain	-		
***************************************	Drainage - Maintain	Y	1	spoon drains al & a2 LHS
<del></del>	Expansion Joint - Maintain	1	1	spoon drams at & az LHS
	Fence - Remove			
	Fence - Repair (Control of Access)			
	Guardrail Maintain/Repair		1	
	Kerb - Repair (Minor) - Non Structural	Y	1	a2 LHS
	Lighting - Maintain	1		az LIIS
	Sign - Maintain			
S315 S350	Bridge - Replace Fastener <1.5m  Bridge - Repair Scour (Major)			
		1		
	Bridge - Access - Improve			
S366				
S413	Deck - Repair			
S413 S437	Deck - Repair Decking - Repair (Timber)			
S413 S437 S449	Deck - Repair Decking - Repair (Timber) Drainage - Repair			
S413 S437 S449 S455	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair			
S413 S437 S449 S455 S461	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair			
S413 S437 S449 S455 S461 S501	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct			
\$413 \$437 \$449 \$455 \$461 \$501 \$504	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber)			
S413 S437 S449 S455 S461 S501 S504 S507	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair	V	2	Diar 1 knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt	Y	2	Pier 1, knot hole
S413 S437 S449 S455 S461 S501 S504 S507 S573 S522 S525	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair	Y	2	Pier 1, knot hole
S413 S437 S449 S455 S461 S501 S504 S507 S573 S522 S525 S528	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Shim	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Repair Corbel - Repair Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Repair Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pile - Band Pile - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$582	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Bolt Corbel - Repair Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair Waler - Replace	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$582 \$607	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Bolt Corbel - Repair Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pier - Repair Sheeting - Repair Sheeting - Repair Waler - Replace Bearer - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$582 \$607 \$643	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pie - Band Pile - Repair Sheeting - Repair Waler - Replace Bearer - Repair Joist - Repair	Y	2	Pier 1, knot hole
\$413 \$437 \$449 \$455 \$461 \$501 \$504 \$507 \$573 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$582 \$607	Deck - Repair Decking - Repair (Timber) Drainage - Repair Expansion Joint - Repair Footpath - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Sillbeam - Repair Corbel - Bolt Corbel - Bolt Corbel - Repair Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pier - Repair Sheeting - Repair Sheeting - Repair Waler - Replace Bearer - Repair	Y	2	Pier 1, knot hole

### PRIORITY CODE

- 0 -Critical Safety Deficiency: EMERGENCY action required (Immediate or within 6 months)
- 1 Very High Priority (Within 3 years)

2 - Medium Priority (Within 4 years)
3 - Low Priority (Within 5 years-assess again at next Detailed Inspection)
Shire of Narrogin Bridges Asset Management Plan 2020-2030

### MRWA Ref: 04/4055

### DETAILED TIMBER BRIDGE INSPECTION SUMMARY

Bridge No: River Name: 3122

Torbling Brook

Region: WHY SLK: 2.82

Road No:

4190004

WHEATBELT REGION

Road: Tarwonga Rd LGA: Shire of Narrogin

### 1.0 General

Bridge no. 3122 located on Tarwonga Rd in the Shire of Narrogin is a two span bridge crossing Torbling Brook. The structure requires maintenance but generally appears to be in good condition.

### 2.0 Preventative Maintenance

Preventative maintenance to be undertaken on a 5 year periodic basis.

### 3.0 Routine Maintenance

Undertake deck drainage maintenance as outlined in report in accordance with specification 850.93.07. (spoon drains a1 & a2 LHS)
Undertake minor kerb repairs as outlined in report.
(a2 LHS)

### 4.0 Specific Maintenance

### 4.1 Substructure

Undertake sillbeam repair as outlined in report. (Pier 1)

### 4.2 Superstructure

Not required.

### 5.0 BCI

38.6

### 6.0 Load Rating

Not required.

Paul Olsen Engineering Associate Bridges

March 18 2019

# **Bridge Condition Index (BCI)**

Date 21/08/2017

**Bridge Number** 

3122

LOCATION	Weighting	CS1	CS2	CS3	CS4	ICR	AGR	Ave AGR	BCI
Condition State Weighting		1	3	9	11				
Stringers	11	30.0	58.4	11.6	0.0	3.1	34.1		
Pier Piles	11	0.0	100.0	0.0	0.0	3.0	33.0	32.2	
Abutment Piles	11	0.0	100.0	0.0	0.0	3.0	33.0	32.2	
Halfcaps	11	20.0	80.0	0.0	0.0	2.6	28.6		206
Corbels	6	0.0	100.0	0.0	0.0	3.0	18.0	20.4	<u>38.6</u>
Timber Decking	6	0.00	90.00	0.00	10.00	3.8	22.8	20.4	
Wing Piles	3	0.0	100.0	0.0	0.0	3.0	9.0	6.0	
Abutment Sheeting	3	100.00	0.00	0.00	0.00	1.0	3.0	0.0	

Condition States are from a Detailed Inspection Report conducted on

17/08/2017

Table 5.1: BCI Descriptor Range

Descriptor	BCI Range		
Very Good	0 - 19		
Good	20 – 39	<b>A</b>	
Fair	40 – 55	10-11-0	700000000
Poor	56 - 100	better	worse
Severe	101 +		Mar. e

BDO,

Please update in IRIS to indicate BCI values.

Bridge Condition Manager Date: 22/3/19

Calculation of BCI is based on the Timber Bridge Condition Index (BCI) User Guide

Comments:

Structure has concrete abutments and pier



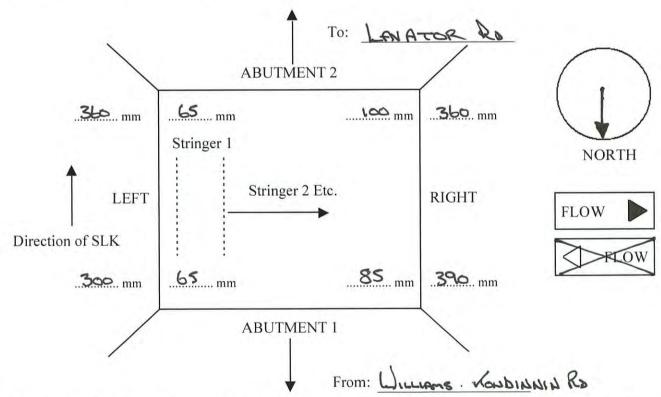


GENERAL IN	FORM.	ATION - SHEET 1	Bridge No.:	3122
Region:	Wheatb	elt	Latitude (S):	-32.98702
			Longitude (E):	117.11055
Road Name:	Tarwon	ga Rd	Road No.:	4180204
Local Government:	Narrogi	n	Owner:	Local Authority
Crossing Name:	Torblin	g Brook	SLK:	2.82
Number of Lanes:	2		Length (m):	10.30
Total Width (m): Inc. Footpath	7.92	Max. Head Room (m): 1.70	Min. Head Roor	n (m): 1.20
No. of Spans:	2	Width between Kerbs (m): 7.38	Concrete Over	lay (Y/N): Y (130mm)

Piers are numbered along the bridge in ascending order from ABUTMENT 1 to ABUTMENT 2. Piles are numbered across the bridge in ascending order from LEFT to RIGHT. Stringers are numbered across the bridge in ascending order from LEFT to RIGHT.

Inside and outside kerb depths noted in corners of sketch.

Exposed Deck Ends (RCO only): LHS RHS N



This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Timber Bridge Detailed Inspection Guidelines.

Inspected by:

Checked by:

Date: 4-10-17

Drilled by:



# SITE CONDITIONS Bridge No: 3122



DRIVE THROUGH	Visible Line of Sight from Abut. 1: 800 -
	Visible Line of Sight from Abut. 1: 200 m
TRAFFIC CONTROL	Abut. 1 end:
(Describe if different to the generic TMP)	Negrae Abut. 2 end:
PARKING POSITION	>3 m Z Position:
	1.2 to 3 m   ] Position: AB 2 LHS BEHWO GUARD RAIL
ACCESS TO ABUTMENTS	0 to 1.2 m Position:
ACCESS TO ABOTMENTS	A butment 1:
(Describe access conditions at each wing)	OK FROM PARKING AREA
	RHS:
	Abutment 2:
	LHS:
	RHS:
	Vegetation:
ACCESS TO PIERS	LHS:
	As Assus
(Describe access conditions along each side of the structure)	RHS:
side of the structure)	Vegetation:
POTENTIAL HAZARDS	Railing/Posts:
A	CATER CONTRACTOR CONTR
	Bolts:
	Services:
	AMERICAN SERVICE SERVI
	As bestos:
	Other:
FENCES	Timber Location:
	Madelian control point 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
None	Wire/Mesh: Location:
Horoza	Electrified: Location:
	The control of the co
10.0	Barbed Wire: Location:
WATER	Other (Specify): Location:
WATER	Depth (m): O:3
	Flow Rate: Share and the state of the state
	Algae:
	(Access may be restricted by toxic algae)
	Tide: No
	24 Supportion with processing and the state of the state
DOWERT THE	Location: SRAW 1 & Z
POWERLINES	Side of bridge:
Nous	Horizontal distance from edge-of deck (in):
NONE	
	Estimated vertical height above deck (m):

Signature MAIN ROADS Western Australia

Date 17-8-17 Timber Bridge Detailed Inspection Guidelines
Doc 6706-02-2231 - Issue 21/02/2014
Bridges Asset Management Plan 2020-2030

Form 30





# TIARDRAII INFORMATION

GUARDRAIL INFORMATIO		Br	idge No	o.: <u>312</u>	2	_			
	Aj	proach	1	C	n Bridg	ge	$A_{l}$	pproach	2
Barrier Type	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS
None									
RHS Rails No. of Rails (on bridge):									
Thriebeam									
W Beam	X		Х	X		X	X		X
Tric-Bloc Concrete Barrier									
Reinforced Conerete Barrier (Type F)									
Constant Slope Concrete Barrier									
Other Concrete Profiles							ļ.,,		
Post Type									
Steel Type: PFC	Х		X	Х		X	Х		X
None									
Concrete									
Timber									
[Types: C-Section (C), I Section (I), RHS	(R), Squa	re Hollow	Section S	HS (S), Ti	ıbular (T),	Steel PFC	(PFC), St	eel Channe	1 (Ch)]
Off bridge:									
Number of Posts off Bridge	7		3				3	<u> </u>	6
Length of Barrier off Bridge (m)	13.6		7.4	-			7.4		13.6
	L	LI					a	I	
	A	pproach	1	(	n Brid	ge	A	pproach	2
Visibility Barrier	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS
Timber No. of Rails (on bridge):	LATO	Wicoluii	1015	LA 10	Median	7415	2110	TYTOWILL	
Steel Pipe(s) No. of Pipes (on bridge):									
Guide Posts				+	-				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Balustrade									
	L	Ji		1		L,		<u></u>	
Top Rails		1		1	1	T	ĭ		
Steel Pipe	-								
Steel RHS/Channel									
Steel C Section Timber						<u> </u>			
Imber					<u> </u>	<u> </u>	1		
End Terminals	A	pproach	1		On Brid	ge	A	pproach	1 2
Approved End Terminal Types:	LHS	Median	RHS				LHS	Median	RHS
WAMELT									
SKT-350									
ET-2000									
X Tension				_					
TAU II Crash Cushion									
	<b></b>								
Other:		1							
			L						
Other: Other End Terminal Types: None									
Other End Terminal Types:									
Other End Terminal Types: None	X		X				X		X
Other End Terminal Types: None Turn-down	X		X				X		X
Other End Terminal Types:  None Turn-down Bullnose	X		X				X		X

Shire of Narrogin





FATERN AUSTRA		DETAILED	INST ECTION RE	TOKI I	
ROUTINE	INFORMAT	ION		Bridge No.:	3122
SCUPPERS LOCA CONDITION	(R208)	None X LHS Nor RED'S SPEON DR	AL LHS +	Box PVC p Through Deck  A Corners F	Through Kerb
FLASHING TYP.	E & CONDITION (R208)	None <b>K</b>	Р	VC pipe	PGI 🗌
BOLT TIGHTEN	ING REQUIRED (P102)		Yes 🗌	No 🗷	
TERMITES	(R204)		ctive .	Not Active 🔀	
PREVENTATIVI	E FUNGICIDE (P103)	Tre	eated X	Not Treated	BLUB PLUGS
ATTACHED FEN WATERWAY OI		DEBRUS	BIULDUP - P	HER SIDE OF	BRIDGE HAUF
ROAD SURFACE & KERBING CONDITION	ON BRIDGE	Road Surface:	omes on R		
(R207)	APPROACHES	Kerbing: 50	is aliqued a	ETE- MIDOR CE	No.
VEGETATION	(R205)			Abut I R	HS Abut 2
STREAM BED C (General comments an location, depth & external undermining and silt in	nd details of ent of scour,	01			
SERVICES (Type, Size & Loc	cation)	Type	Size (mm)	Location	
BRIDGE COND	ITION	Low X	Priority for E	Engineering Assessment High	Urgent [
Comments:		-			





GENERAL INFORMA	ATION - SHEET	2		Bridge No.	3122	
Bridge Status	Built/In Use X		N	ot Used		
Date Built 1936	Skew (a	angle)_		Skewed W	idth (m)_	
Widening Left Hand s Date 12/0		)		ght Hand side X te 12/08/1988	Width	(m)
Surface Type	Unsurfaced Rubberised Seal		tumen Seal les		halt el Plate	
Pavement Type	Unpaved	Gı	ravel	Ma	terial Unk	nown
Footpath Left	Left Kerb (m) 0.2	0 Pa	ith (m)	Rig	ght Kerb (n	n)
	Left Kerb (m)	Pa	th (m)	Rig	ht Kerb (n	n) 0.20
Median	Left Kerb (m)		edian (m)	1 777		n)
Bridge Function 1	Road Bridge	X Ra	il Bridge	Pe	destrian B	ridge
Bridge Function 2	Over Water Over Road & Rail Stock Underpass	Ov	er Road er Road & V destrian Und	Water O	ver Rail ver Rail &	Water
SIGNAGE						
Load Limits	Abutment 1 End		Tonne Ab	utment 2 End		Гоппе
Width Markers	Abutment 1 LHS	2 RI		Abutment 2 LHS		
Width Markers	Is position of Width M					
Other Signs	is position of width	viai keis a	true maicat	ion of the bridge w	(1711)	
No Overtaking or Passing	Abutment 1	LHS	RHS	Abutment 2	LHS	RHS
No Overtaking on Bridge	Abutment 1	LHS	RHS	Abutment 2	LHS	RHS
One Lane Bridge	Abutment 1	LHS	RHS	Abutment 2	LHS	RHS
Low Clearancem	Abutment 1	LHS	RHS	Abutment 2	LHS	RHS
Narrow Bridge Sign	Abutment 1	LHS	RHS	Abutment 2	LHS	RHS
Give Way	Abutment 1	LHS	RHS	Abutment 2	LHS	RHS
Crossing Sign:			(Y)			
	Abutment 1	LHS	RHS	Abutment 2	LHS	RHS
Other	_ Abutment 1	LHS	RHS	Abutment 2	LHS	RHS
Signage Condition Legend	Good Fair		Poor None (missing	3 Not Req	uired	





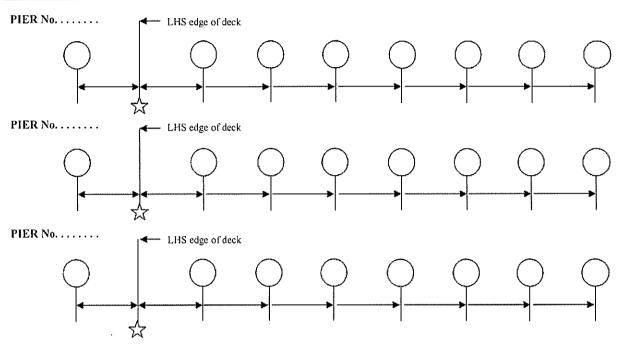
## **ELEMENT SPACING SHEET 2**

Bridge No.: 3122

All measurements (cumulative) are taken from the reference point as indicated by the star

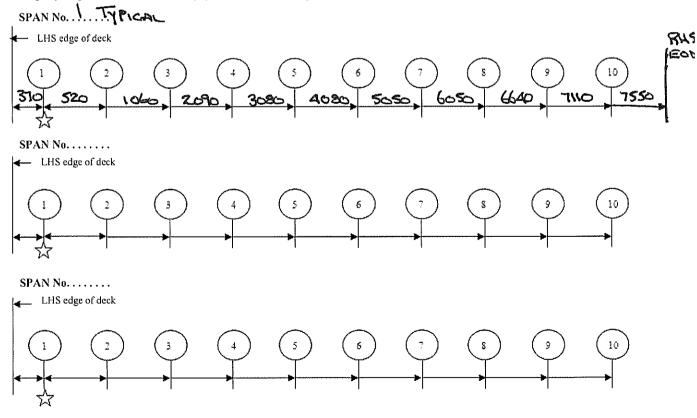
Pier Pile Centres

Mark in RHS edge of deck and dimension last pile to RHS edge of deck.



Typical Stringer Spacing Mark in RHS edge of deck and dimension last stringer to RHS edge of deck.

Note: Stringer spacings must be measured in every span with additional stringers. Use additional sheets as required

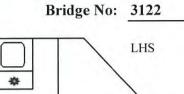


RUS





# **SILL BEAM ABUTMENT 1**



Mark in extent of Abrasion or other Damage

RHS								LH
	*	*	*	*	*	*	*	
						- 600	Drill Location	•

Sill Beam	Dimens. (mm)	Mat. Type	Drilling (mm)			SIL	L BEAN	A COND	ITION B	ELOW S	TRINGE	ER NUM	BER			Condition State
				1	2	3	4	5	6	7	8	9	10	11	12	
1	Н		Solid (Front)	Cons	RETE	100	150	210	130	150	OTI	Con	RETE			1
	350 V	WAN	Rot/ Pipe			90	50	50	80	70	80					1/1
	300		Solid (Rear)			160	150	90	140	130	100					1
2	Н		Solid (Front)													
	V		Rot/ Pipe													
			Solid (Rear)													
3	Н		Solid (Front)													
	V	-	Rot/ Pipe			-										
			Solid (Rear)													
4	Н		Solid (Front)													
	V		Rot/ Pipe													
			Solid (Rear)													
5	Н		Solid (Front)													
	V		Rot/ Pipe													
			Solid (Rear)													
6	Н		Solid (Front)	. 1												
	V		Rot/ Pipe													
			Solid (Rear)													

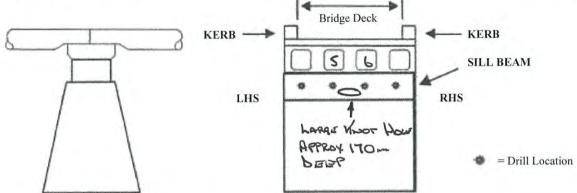
Sheeting: LHS:		Saturated Sill beams:	
CENTRE LINE:	PLY BOARD WITH COLC BELLING.	=	
RHS:		=	
Comments: Large	E SPUT AT R.H. END OF SILL	BEAM - MWOR C	RACUS IN
CONCRETE -	oL.		
ANY RESOLTS	VASTLY DIFFERING FROM OUD REF	BRT ARE DOUBLE CL	TOUT. CENTER
		Manualla de	( ,,,,,











Sill Beam	Dimens. (mm)	Mat. Type	Drilling (mm)			SILL	BEAM (	CONDI	TION BI	ELOW	STRING	GER NU	MBER			Condition State
				.1	2	3	4	5	6	7	8	9	10	11	12	ĺ
1	H 260	0	Solid (Front)	Cox	CREE	110	140	110	120	180	210	Cone	RETE			
	350	42	Rot/ Pipe			120	80	130	70	70	90					1/2
	300	342200	Solid (Rear)			120			160							
2	Н		Solid (Front)													
			Rot/ Pipe													
	V		Solid (Rear)													
3	Н		Solid (Front)													
			Rot/ Pipe													
	V		Solid (Rear)											Ш		
4	Н		Solid (Front)													
			Rot/ Pipe													
	V		Solid (Rear)													

Total Number of Corbels 10 Typical Corbel Height (mm): LHS 350 RHS 350 Corbel No: 2 3 4 5 9 10 11 12 Material Type: J 5 W W J W W J W Requires Bolting: A1/A2 End Condition State: A1/A2 End Saturated Sill Beams: Ironwork Condition:

CORBELS 1, 2, 9 & 10 ARE SQUARE SAWN

SILL BEAR HAS A WOOT HOLE BETWEEN STR SAL AB I SIDE LARGE HOLE

MINOR CRACKS IN CONCRETE A- 4: OX

HOLE LOCATION IS BETWEEN CORBELS





# CORBEL SHEET

Bridge No.: 3122

This report sheet is only used when a corbel has a visible defect.

CORBEL LOCATION:

PIER NO.:

CORBEL NO.: 8

Material Type:

WANDOO

H	Diameter	(mm)	450
V	Measurer	ment (mm)	340
		Solid (B)	110
		Rot	
	rill ertical	Pipe	160
*	crucar	Rot	
		Solid (T)	To
Drill	rill	Left	130
H	oriz.	Right	150
v	ertical	Large	
D H V S <sub>1</sub>	plit	Minor	
Н	oriz.	Large	
S	plit	Minor	
St	ar	Large	
S	pliting	Minor	
R	QS	V.Split	
	olting	H.Split	
P	ropped		1

	H Diameter	(mm)	Aso
	V Measurer	ment (mm)	340
		Solid (B)	110
	1000	Rot	
	Drill Vertical	Pipe	120
	Vertical	Rot	
Abutment 2 End		Solid (T)	110
	Drill Horiz.	Left	150
		Right	150
		Large	
	Split	Minor	
	Horiz.	Large	
	Split	Minor	
	Star	Large	
	Spliting	Minor	
	RQS	V.Split	
	Bolting	H.Split	
	Propped		

_			
Sata	urated	COTH	0
Jali	ш акси	COLU	CI.

Pipe length from A1 Side

1560

Pipe length from A2 Side

1560

COMMENTS:

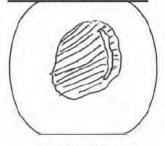
SEE MOTOS

# 13

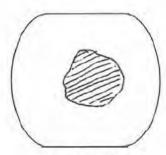
No CHANGE

7-8-5

DIAGRAM OF CONDITION - Indicate location of bolts



ABUTMENT 1 END (Refer photos for details)



ABUTMENT 2 END (Refer photos for details)



# TIMBER BRIDGE



### DETAILED INSPECTION REPORT Bridge No: 3122 SILL BEAM ABUTMENT 2 RHS LHS Mark in extent of \* \* \* \* Abrasion or other Damage a = Drill Location Condition SILL BEAM CONDITION BELOW STRINGER NUMBER Sill Dimens. Mat. Drilling State Beam (mm) Type (mm) 2 4 10 11 12 Н Solid 80 140 190 130 CONCRETE 100 (Front) 380 WAN Rot/ 150 140 180 180 150 ٧ Pipe Solid 110 1.60 150 60 100 100 300 (Rear) Solid Н 2 (Front) Rot/ Pipe Solid (Rear) Solid H 3 (Front) ٧ Pipe Solid (Rear) Solid H (Front) Rot/ Pipe Solid (Rear) Solid 5 (Front) Rot/ Pipe Solid (Rear) Solid Н 6 (Front) V Pipe Solid (Rear) Saturated Sill beams: Sheeting: LHS: CENTRE LINE: RHS: Comments:





	DETA	IL SH	EET				Sp	an No	: 1		_		Brid	lge No	: 31	22
	[C4:: N			1.1	1 3	1	5	6	7	8	7 0 1	7 10	11	12	13	14
	Stringer N Material T		JAR	JAR	WAN	4 WAN	WAN	6 WAN	LAN	WAN	JAR	JAR	11	12	13	14
	Material	урс.	JAK	JAK	WAIN	WAIN	WAIN	WAIN	batter	WZH	JAIR	Jille				
	H Diame	eter (mm)	350	480	340	470	350	370	410	330	430	410				T
	V Measure	ment (mm)	350	350	350	350	350	350	350	350	350	350				
	D	Solid (B)	ITO	350	100	350	110	120	150	180	350	480				
	Drill Vertical	Rot					To		To							
Α.	√e <	Pipe	90		200		TOP	60	758	120		70				
Abutment 1 End	rtic	Rot														
Ē		Solid (T)	90		50		-	170	-	50		100				-
ent	Drill Horiz.	Left			80		160		150						_	1
1 1	1,,	Right			90		130		80							-
nd	Split V	1														++
	H	Bolt Rqd														+
	Propped Condition S	State	2	1	3		3	1.	2.	2		2				+
	Condition	raic	1-		-3		-		5	See .		-				1
	H Diame	eter (mm)	360	530	380	390	420	350	430	320	400	420				T
	V Measure	ement (mm)	440	500	370	430	410	360	410	440	430	400		Note	?	
	D	Solid (B)	440	480	130	430	ALD	360	150	150	220	400		DRILL	150	May
	Drill Vertical	Rot			Const									480	- he	weck.
	Vei	Pipe			170				240	100	40			Kesu		GIVE
-	rtica	Rot			-				0-	10	1 Sunt			TO 4	80	Since
bil		Solid (T)			70				20	190	170			To	500	(= PO
Mid Span	Drill Horiz				90				150							+
an	- Iv	Right			100				130	-	-			1 1		+
		Bolt Rqd Bolt Rqd									$\vdash$					1
	Propped	Boit Kqu														
	Condition S	State	1		2	-1	1	1	1		2	1				
	Condition	, and		1					1	-						
	H Diame	eter (mm)	550	580	420	370	470	340	430	340	340	400				
	V Measure	ement (mm)	350	350	350	350	350	350	350	350	350	320				
	D	Solid (B)	350	130	100	210	130	180	90	130	100	140				
	Drill Vertical	Rot									5	-				
A	Vei	Pipe		120	100	50	110	60	230	110	70	90				
Abutm	tica	Rot			6	-		11	-	10.	100	0				-
		Solid (T)		100		90	110	110	30	190	180	90				+
ent 2 End	Drill Horiz				110				150						-	-
2 E	- Ix	Right	1		110	1	1		160	-	-					+
nd	Split	Bolt Rqd Bolt Rqd	1			1				+	1					+
	Propped	Don Rqu	+													
	Condition :	State	A	3	2	2	2	1	2	1_	2	7_				
										-		0 1111	[ C		D	- 0
	Cond. of	Spiking P	lank	Not Ap	plicabl	e	Size	e V	-			Conditi	on S	-	R -	•
	Cond. of	Decking (	Solid/R	ot)		5 90	R	0 %	ó	Co	nd. of I	Deck En	ds S	-	R .	- 0
	Dooking	Size (mm)			_	V 120			x H 2	200	1	Deckin	Timb	er Type	JAR	
															07111	
	Span Len	gth from (	Centreli	ne Supp	ports (n	1) 4.40	C	lear Spa	in Leng	th 3.50		Saturate	ed strin	gers:		
	Deck Cor	ndition Sta	ate	Conditio	n 1 (	Condition	2 C	ondition 3	Con	dition 4						
	Percentag					90				0	Spin	ral Grain	n String	gers:		
	Commen		-	. 1		1										
	Commen	JTI	RT1	s W	LULO	ON	OT :	JARR	AH							
	e .									2 1						
	JTR 5	MINSPA	D URU	ued	OTTM	1 5 Ju	ocro.	NTR	1, 46	LHL	30					
	STR :	1 42	EN	n	HK	110	R	TC	IN	201	2 (	IR		1	5K	MB
				-							-			1		MB
	STR C	= MIC	SP	AAI	HAC	100	PI	DE 1	N.	2010	- 0	113		V	NC	1.10

MAIN ROADS Western Australia

Timber Bridge Detailed Inspection Guidelines Doc 6706-02-2231 - Issue 21/02/2014

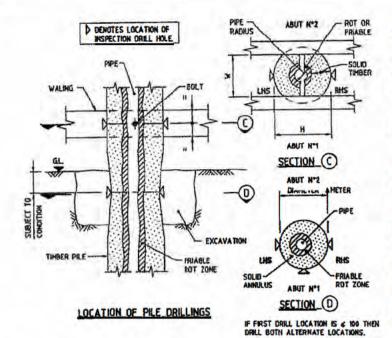




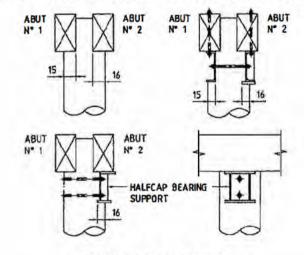
			_	1 -	1				-		4 -	-			_	
	Stringer N	0:	11	2	13	4	5	6	7	81	195	10	11	12	13	14
	Material T		JAR	JAR	WAN	WAN	WAN	WAN	WAN	WAN	JAR	JAR		N. C.		
														11		
	H Diame		430	500	360	420	480	410	460	280	530	320				_
		ment (mm)	350	350	350	350	350	350	350	350	350	350				-
	Dri	Solid (B)	350	140	60	140	120	100	100	160	130	350	-			-
	= \	Rot Pipe		50	250	130	70	110	110	80	40					-
4	7.5	Rot		30	230	130	10	1,0	,.0	0	-10	341				1
Abutment 1 End	cal	Solid (T)		160	AD	80	160	140	140	110	180					
	Drill Horiz.			100	90											
7		Right			MO							1.2.21				
-)		Bolt Rqd					11									
-	H	Bolt Rqd		10 2												
	Propped	Q 1-4 7 4			-		740							1	-	-
_	Condition S	tate	1	1	3	2	2	7	7	1	2			1		
	H Diame	ter (mm)	430	490	390	480	400	410	390	300	510	320		1		T
		ment (mm)	480	490	420	450	390	420	380	380	460	330				
		Solid (B)		480	140	120	210	420	180	140	280	330				
	Drill Vertical	Rot		1972												
	Ver	Pipe			220	250	60		60	200	90			10= 7		
	πics	Rot			-	00			1.40		0.		1			-
Mid Span	Drill Horiz	Solid (T)			90	190	120		140	90	90					-
S	Dille Tioniz.	Left Right			110	240				30				1		+
Ĭ	Tv	Bolt Rqd				~~0				2	1					1
	Split	Bolt Rqd									1157	52.01				
	Propped			17 1												
	Condition S	State			2	2	1	1	7	5	2	1	15.4			
								150	200	200	150	120		_	-	_
		ment (mm)	410 350	510 350	390 350	520 350	390 350	450 350	390 350	360 350	460 360	420 350	-	-	+	+
-		Solid (B)	350		90	330	120	70	130	50		350		-	+	+
	Drill Vertical	Rot	220	,	70	2	160	10	150	20	150	330				1
	14	Pipe		130	180	110	60	210	מדו	240	130					
A	ertic	Rot						7.								11
Abutment 2 End	cal	Solid (T)		90	80	160	OFI	70	50	60	80					
en	Drill Horiz.				90	260		140	150	130						
2		Right			180	120	-	160	110	70				-	1	1
1	Split V							-			-			++	+	+++
	H	Bolt Rqd				-		-			1				+	+
	Propped Condition S	tate	1	- 1	-	-	7	D	2.	1	-	1		+	-	+
_				-	20.00		61		L	1			Les.		I n	1.
	Cond. of	Spiking P	lank	Not Ap	plicabl	e 🗸	Size	e V	-			Conditi	on S	-	R -	
	Cond. of l	Decking (	Solid/R	ot)	5	90	RI	0 %	,	Co	nd. of I	Deck Er	ds S	-	R -	
	Decking S	Siza (mm)			1	V 120			x H 2	10	1	Deckin	a Timi	ber Typ	e JAR	
															1111111	
	Span Len	gth from (	Centreli					ear Spa				Saturate	ed stri	ngers:		
	Deck Con Percentag		ite	Conditio	nl C	Condition Q D	2 Ca	ondition 3	_	dition 4	Spir	al Grai	n Strir	igers:		
	Comment	s:	-0			1- 1			0				MA	-	40	
	P. LOUISIAN D.	5	RI	OA	IEN	10 t	14s	100	KOT	1/1	20	(2	DIR		ON	M
				80-20												







ROUND THE DEMENSIONS ON THE HALFCAP BEARING ON THE PILE AT BOTH ABUTMENT SIDESOF THE PILE. i.e. ABUTMENT Nº 1 & ABUTMENT Nº 2



### HALFCAP SEATING ARRANGEMENTS

## LEGEND MATERIAL TYPE

J - JARRAH

W - WANDOO

S - STEEL

U - UNKNOWN TIMBER

/ TICK ONLY IF REQUIRED

# PRIORITY BOLT/BAND U - A.S.A.P.

H - HIGH PRIORITY M - ROUTINE MAINTENANCE L - LOW PRIORITY

FOR AUDIT **PURPOSES** ONLY

### GENERAL

PIPE D ROT R

F FRIABLE

S SOLID

N/A NOT APPLICABLE ٧

VERTICAL

H HORIZONTAL

LEFT HAND SIDE LHS RHS RIGHT HAND SIDE

Dia PIPE DIAMETER

Circ CIRCUMFERENCE

A1 ABUTMENT No. 1

ABUTMENT No. 2 A2

- STRINGER Str

H/C HALFCAP

H/CAP - HALFCAP

Biz BLAZE

t CENTRE LINE

0/A OVERALL

GL GROUND LEVEL

Ht HEIGHT

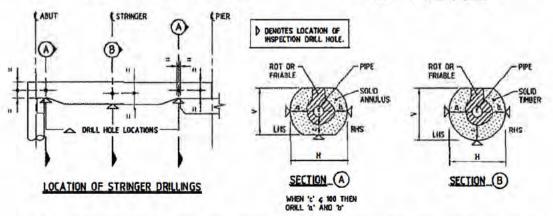
Ft FEET

WIDTH BETWEEN WALING

Cond CONDITION

U/S UNSOUND (STRUCTURALLY)

SG SPIRAL GRAIN



NOTE: All dimensions are of solid timber excluding sap wood and any surface rot on piles and stringers /SE Documents/Management System Manual/Owgs/timber\_repair.dwg Page intentionally left blank

# Bridge 3128A Manaring Road over Williams River L2 Inspection



File: 04/4051

To: Engineer Bridge Loading
Subject: Bridge Number: 3128A

- 1 Having recently completed an assessment of routine and specific maintenance work required on this bridge, I am of the opinion that the condition of certain structural components has deteriorated to such an extent that the load carrying capacity of the bridge may have been affected.
- 2 In accordance with the requirements of the procedure for Heavy Loads Assessment, Document number 3912/01-7, this bridge is referred for a detailed structural assessment of the bridge in its present condition.

Mark Billings

SENIOR STRUCTURAL ENGINEER AECOM

24 April 2019 Abulment 2 Bedlog Pier ( Halfrey Splice

MAIN ROADS Western Australia 2011 T BCM 3128A.xlsm - Minute to EBL(4)



Enquiries Our Ref: Your Ref: Gavin Johnston on 9323 4431 04/4051



ABN: 50 860 676 021

# ASSET MANAGER STRUCTURES WHEATBELT REGION

Structure No.:

3128A

Over:

Williams River

On:

Manaring Rd (4190011)

SLK:

3.58

LGA:

Shire of Narrogin

- Please find enclosed a copy of the Detailed Inspection Report for the above Local Authority structure.
- Attached is a schedule of maintenance items that are required to be undertaken in order to maintain structural integrity and extend the life of the Structure.
- 3. The maintenance items have been entered into IRIS for programming purposes.
- 4. Preliminary examination has indicated that the load carrying capacity of this Structure may have been affected by the deterioration of structural components as listed in the attached report. We are in the process of determining its current load capacity and will advise you accordingly when our assessment is completed.

Reviewed By:

Mark Billings

SENIOR STRUCTURAL ENGINEER ALCOM

Mark Billy

Enc

Issued By: CPX

Gavin Johnston

BRIDGE CONDITION MANAGER

2414119

### WORK ITEMS - TIMBER BRIDGES BRIDGE No: 3128A

ITEM	ITEM DESCRIPTION			COMMENTS
NO		REQD	CODE	
	RAL MAINTENANCE			
G005	Bridge - Durability Survey (L3)			
G009	Bridge - Load Rating	у	1	Abutment 2 Pile 2 and bedlog, Pier 1
				Halfcap splice cracks.
G010	Bridge - Monitor Defect			
	TAITATO TO ASSISTENIANOE			
	ENTATIVE MAINTENANCE	1 37	,	
P101	Bridge - Seal Timber	Y	1	
P102	Bridge - Maintain Fastener			
P103	Bridge - Fungicide Treatment	Y	<u> </u>	
av Bout	INC MAINTENANCE			
J) ROUT	INE MAINTENANCE	1		
	Bearing - Maintain	_		
	Bridge - Remove Graffiti			
	Bridge - Repair Scour (Minor)	<del>- , -</del>		
	Bridge - Eradicate Termites	Y	1	
	Bridge - Clear Debris and Vegetation			
	Deck Joint - Maintain	Y		
	Deck Surface - Maintain	Y	1	clear gravel build up at kerbs
	Drainage - Maintain			
	Expansion Joint - Maintain	Y		1 0 2 I IIC
	Fence - Remove	Y	1	span 1 & 2 LHS
	Fence - Repair (Control of Access)			
	Guardrail Maintain/Repair			
	Kerb - Repair (Minor) - Non Structural			
	Lighting - Maintain Sign - Maintain			
O) SPECI	FIC MAINTENANCE			<u> </u>
S315	Bridge - Replace Fastener <1.5m			
S350	Bridge - Repair Scour (Major)			
S366	Bridge - Access - Improve			
S413	Deck - Repair			
S437	Decking - Repair (Timber)			
S449	Drainage - Repair			
S455	Expansion Joint - Repair			
S461	Footpath - Repair			
S501	Abutment - Reconstruct			
S504	Abutment - Repair (Non timber)			
S507	Bedlog - Repair	Y	1	abutment 2 face & LHS wingwall
S510	Bedlog - Shim			
S522	Corbel - Bolt			
S525	Corbel - Repair			
S525 S528	Corbel - Repair Corbel - Shim			
S525 S528 S537	Corbel - Repair Corbel - Shim Footpath Railing - Repair			
S525 S528 S537 S540	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair			
\$525 \$528 \$537 \$540 \$543	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing			
\$525 \$528 \$537 \$540 \$543 \$546	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack			
\$525 \$528 \$537 \$540 \$543 \$546 \$549	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair	Y	1	Pier 1 Abutment 2 halfcap splice cracki
\$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair	Y	1	Pier 1 Abutment 2 halfcap splice cracki
\$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pile - Band	Y	I	Pier 1 Abutment 2 halfcap splice cracki
\$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pile - Band Pile - Repair	Y	1	Pier 1 Abutment 2 halfcap splice cracki
\$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair	Y	1	Pier 1 Abutment 2 halfcap splice cracki
\$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$582	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair Waler - Replace	Y	1	Pier 1 Abutment 2 halfcap splice cracki
\$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$582 \$607	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair Waler - Replace Bearer - Repair	Y	1	Pier 1 Abutment 2 halfcap splice cracki
\$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$582 \$607 \$643	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair Waler - Replace Bearer - Repair Joist - Repair	Y	1	Pier 1 Abutment 2 halfcap splice cracking
\$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$582 \$607 \$643 \$655	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair Waler - Replace Bearer - Repair Joist - Repair Stringer - Bolting	Y	1	Pier 1 Abutment 2 halfcap splice cracking
\$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$582 \$607 \$643	Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair Waler - Replace Bearer - Repair Joist - Repair	Y	1	Pier 1 Abutment 2 halfcap splice cracking span 1 str 1 a1, strs 1,2 & 6 a2

### PRIORITY CODE

- 0 -Critical Safety Deficiency: EMERGENCY action required (Immediate or within 6 months)
- 1 Very High Priority (Within 3 years)
- 2 Medium Priority (Within 4 years)
- 3 Low Priority (Within 5 years-assess again at next Detailed Inspection)

### MRWA Ref: 04/4051

### DETAILED TIMBER BRIDGE INSPECTION SUMMARY

Bridge No: 3128A Region: WHEATBELT REGION

River Name: Williams River SLK: 3.58
Road: Manaring Rd Road No: 4190011

LGA: Shire of Narrogin

### 1.0 General

Bridge no. 3128A located on Manaring Rd in the Shire of Narrogin is a two span bridge crossing the Williams River. The structure requires maintenance in particular the bedlogs at abutment 2 are in poor condition. The pier 1 a2 halfcap is cracking in the vicinity of the splice but there is no change from the previous DIR.

### 2.0 Preventative Maintenance

Preventative maintenance to be undertaken on a 5 year periodic basis. Areas of concern have been identified below. Sealing of timber elements in accordance with Document No. 6706-02-2226, Preventive Maintenance Standards. Fungicide treatment of all timber elements in accordance with Document No. 6706-02-2226, Preventive Maintenance Standards.

### 3.0 Routine Maintenance

Undertake termite inspection and treatment as required in accordance with specification 850.93.09. Remove fences attached to bridge as outlined in report.

Correct road surface on bridge deck and approaches as outlined in report.

### 4.0 Specific Maintenance

### 4.1 Substructure

Not required.

### 4.2 Superstructure

Undertake bedlog repairs as outlined in report. (abutment 2 face & LHS wingwall)
Shim stringers as outlined in report (span 1 str 1 a1, strs 1,2 & 6 a2)

### 5.0 BCI

28.2

### 6.0 Load Rating

Load rate Abutment 2 Pile 2 for overall stability (in existing condition) and Pier 1 Abutment 2 halfcap splice.

Mark Billings
SENIOR STRUCTURAL ENGINEER AECOM

March 21 2019

Mark Bil

# DETAILED VISUAL (LEVEL 2) TIMBER BRIDGE INSPECTION REPORT BRIDGE CONDITION INDEX (BCI)



# Bridge Number 3128A

In conjunction with the Detailed Level 2 Bridge Inspection Report (as dated below), a Bridge Condition Index (BCI) has been calculated for this Bridge. The BCI assigns a numerical value to a bridge that is indicative of its condition and provides a relative condition in comparison with other timber bridges (BCI calculation is only applicable for timber bridges). The BCI rating system is a tool to provide a systematic approach for the determination of bridge condition by bridge inspection alone.

The process for determining the BCI is outlined in the Timber Bridge Condition Index User Guide. The BCI is primarily calculated utilising Condition States which are assigned based on the Level 2 Bridge Inspection Report (see attached).

A summary of the condition states and the calculated BCI for this bridge is provided below.

Condition States from Detailed Inspection Report conducted on

28-07-2018

		Condit	ion State - I	Distribution	(%)			
LOCATION	Weighting	CS1	CS2	CS3	CS4	Ave	BCI	
Condition State Weighting		1	3	9	11	AGR		
Stringers	11	90.5	9.5	0.0	0.0	- 1		
Pier Piles	11	76.9	23.1	0.0	0.0	24.2		
Abutment Piles	11	83.1	15.0	1.9	0.0	21.3		
Halfcaps	11	0.0	89.6	10.4	0.0		202	
Corbels	6	0.0	100.0	0.0	0.0	20.4	28.2	
Timber Decking	6	0.0	90.0	0.0	10.0	20.4		
Wing Piles	3	82.9	17.1	0.0	0.0	C E		
Abutment Sheeting 3		0.0	100.0	0.0	0.0	6.5		

Descriptor	BCI Range
Very Good	0 - 19
Good	20 - 39
Fair	40 - 55
Poor	56 - 100
Poor Severe	101 #

BCI Descriptor Range (Refer Table 5.1 Doc No. 6706/02/2232)

Comments:

Prepared by:

P Olsen

Date:

09/08/2018



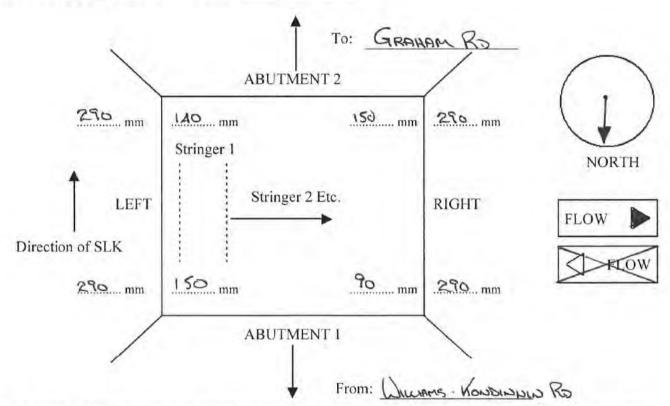


GENERAL INI	FORMATION - SHEET 1	Bridge No.:	3128A
Region:	Wheatbelt	Latitude (S):	-33.01824
		Longitude (E):	117.05446
Road Name:	Manaring Rd	Road No.:	4180211
Local Government:	Narrogin	Owner:	Local Authority
Crossing Name:	Williams River	SLK:	3,58
Number of Lanes:	2 ★3.5	Length (m):	12.60
Total Width (m): Inc Footpath	7.15 Max. Head Room (m):	Min. Head Roon	n (m): 1.40
No. of Spans:	Width between Kerbs (m): 6.85	Concrete Over	lay (Y/N): N

Piers are numbered along the bridge in ascending order from ABUTMENT 1 to ABUTMENT 2. Piles are numbered across the bridge in ascending order from LEFT to RIGHT. Stringers are numbered across the bridge in ascending order from LEFT to RIGHT.

Inside and outside kerb depths noted in corners of sketch.

Exposed Deck Ends (RCO only): LHS RHS



This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Timber Bridge Detailed Inspection Guidelines.

Inspected by: S. Marie D. Enver

Checked by: PASSIN DNGAMGA

Date: 17-1-18 25/7/18

Date: 3-10-18

Drilled by: DAUD ENKER



# SITE CONDITIONS Bridge No: 3128A



Visible Line of Sight from Abut. I: \_\text{IOO} —  TRAFFIC CONTROL  Abut. I end:  (Describe if different to the generic TMP)  Abut. 2 end:  Abut. 3 in	DRIVE THROUGH	Visible Line of Sight from Abut. 1: \OO
Abut. 2 end:   Abut. 3 m		Visible Line of Sight from Abut. 1:
Abut. 2 end:   Abut	TRAFFIC CONTROL	1
1.2 to 3 in	(Describe if different to the generic TMP)	
O to 1.2 m	PARKING POSITION	>3 m Position: ABIRUS
ACCESS TO ABUTMENTS  Abutment 1:  LHS:  LHS:  Abutment 2:  LHS:  RHS:  Abutment 2:  LHS:  RHS:  Vegetation: ALGH GRASS  ACCESS TO PIERS  (Describe access conditions along each side of the structure)  Vegetation:  POTENTIAL HAZARDS  Railing/Posts:  FRICE ON LMS  Bolts: GRANGE BANS  ASPESTOS:  ASPESTOS:  Other:  FENCES  Timber Location:  Wire/Mesh: N. Location:  Barbed Wire: Location:  Other (Specify): Location:		1.2 to 3 m Position:
(Describe access conditions at each wing)  RHS: Abutinent 2: LHS:  RHS: Abutinent 2: LHS:  RHS: Vegetation: HIGH GRASS  ACCESS TO PIERS  LHS: AS AROULE  (Describe access conditions along each side of the structure)  POTENTIAL HAZARDS  Railing/Posts:  FEACE ON LMS Bolis: GRANGE BANS  Services: HGH GRASS  FEACE ON LMS  GRANGE BANS  ASBESSOS:  Other:  FENCES  Timber Location:  Wire/Mesh: Location:  Barbed Wire: Location:  Other (Specify): Location:		0 to 1.2 m Position:
RHS: Abutment 2: LHS.  RHS: Vegetation: HIGH GRASS  ACCESS TO PIERS  (Describe access conditions along each side of the structure)  POTENTIAL HAZARDS  RRIS: Services:  GRANGE  Services:  AS ABOUT  RIS:  Vegetation:  POTENTIAL HAZARDS  Railing/Posts:  FEACE ON LMS  Bolts:  GRANGE  BANS  ARTER  Services:  MGH GRASS  LIS:  Location:  Wire/Mesh: K Location:  Barbed Wire: Location:  Other (Specify): Location:	ACCESS TO ABUTMENTS	
RHS: Abutment 2: LHS.  RHS: Vegetation: HIGH GRASS  ACCESS TO PIERS  LHS:  AS ABOULE  (Describe access conditions along each side of the structure)  Vegetation:  POTENTIAL HAZARDS  Railing/Posts:  FENCE ON LMS  Bolts: GRANGE BANS  NATER  Services: HGH GRASS  Asbestos:  Other:  Timber Location:  Wire/Mesh: M Location:  Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:		
LHS.  RHS:  Vegetation: ALGU GRASS  ACCESS TO PIERS  LHS:  (Describe access conditions along each side of the structure)  Vegetation:  POTENTIAL HAZARDS  Railing/Posts:  FEACE ON LNS  Bolts: GRANGE BANG  ASPESS  Services: MGU GRASS  ASPESS  FEACE ON LNS  Bolts: GRANGE BANG  WITER  Services: MGU GRASS  LING  Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:	(Describe access conditions at each wing)	IRHS:
RHS: Vegetation: HIGH GRASS  ACCESS TO PIERS  LHS: AS ABOULE  (Describe access conditions along each stde of the structure)  Vegetation:  POTENTIAL HAZARDS  Railing/Posts:  FENCE ON LMS  Bolts: GRANGE BANAS  Services: HGH GRASS  Asbestos:  Other:  FENCES  Timber Location:  Wire/Mesh: M. Location:  Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:		Abutment 2: (RILS FAIR - GRAVER BANCS.
Vegetation: HIGH GRASS     ACCESS TO PIERS   LHS:   AS ABOULE     (Describe access conditions along each side of the structure)   Vegetation:     POTENTIAL HAZARDS   Railing/Posts:   FEICE ON LMS     Bolts:   GRANDE BANCS     CHATTER     Services:   MGM GRASS     Asbestos:     Other:     FENCES   Timber   Location:     Wire/Mesh:   M Location:     Electrified:   Location:     Barbed Wire:   Location:     Other (Specify):   Location:     Locati		DETICL.  The second control of the second co
ACCESS TO PIERS  (Describe access conditions along each side of the structure)  POTENTIAL HAZARDS  Railing/Posts:  FENCE ON LWS  Bolts: GRANGE BANG  Asbestos:  Other:  FENCES  Timber Location:  Wire/Mesh: Location:  Electrified: Location:  Other (Specify): Location:		ACCUMATION OF THE PROPERTY OF
(Describe access conditions along each stide of the structure)  POTENTIAL HAZARDS  Railing/Posts:  FENCE ON LAS  Bolts:  GRANGE BANG  ASTER  Services:    Qu GRAS		
(Describe access conditions along each side of the structure)  Vegetation:  POTENTIAL HAZARDS  Railing/Posts:  FERCE ON LAS  Bolis: GRANGE BASS  APTER  Services: MCH GRAS  Asbestos:  Other:  FENCES  Timber Location:  Wire/Mesh: Location:  Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:	ACCESS TO PIERS	
Vegetation:   POTENTIAL HAZARDS   Railing/Posts:	(Describe access conditions along each	
POTENTIAL HAZARDS  Railing/Posts:  FERCE ON LAS  Bolts:  GRANGE BALLS  Services:  ASBESTOS:  Other:  Timber Location:  Wire/Mesh: Location:  Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:	_	
FENCES ON LAWS  Bolts: GRANGE BALLS  Services: HQN GRASS  Asbestos:  Other:  Timber Location:  Wire/Mesh: Location: A- L.H.S. Way Walls ABLEZ - Remove Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:		
Asbestos:  Other:  Timber Location:  Wire/Mesh: Location:  Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:	POTENTIAL HAZARDS	Railing/Posts:
Asbestos:  Other:  Timber Location:  Wire/Mesh: Location:  Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:		Bolts: GRANGE BANG
Asbestos:  Other:  FENCES  Timber Location:  Wire/Mesh: \[ \] Location:  Electrified: \[ \] Location:  Other \[ \] Location:  Other \[ \] Location:  Location:		Services:
Other:  FENCES  Timber Location:  Wire/Mesh: Location: A= LM.S. Was ABLEZ. Remo		STIMES. HCH GRAS
FENCES  Timber Location:  Wire/Mesh: \( \text{Location:} \) Location:  Electrified: \( \text{Location:} \) Location:  Barbed Wire: \( \text{Location:} \) Location:  Other (Specify): \( \text{Location:} \)		Asbestos:
Wire/Mesh: \( \begin{align*} \lambda \coation: \ A \chi \lambda \chi \lambda \chi \lambda \chi \lambda \chi \lambda \chi \lambda \chi \chi \chi \chi \chi \chi \chi \chi		Other:
Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:	FENCES	Timber Location:
Electrified: Location:  Barbed Wire: Location:  Other (Specify): Location:		Wire/Mash: T Location: 0 1 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Barbed Wire: Location: Other (Specify): Location:		
Other (Specify): Location:		Electrified: Location:
		Specific Control of the Control of t
IWALER   Depth (m): 1.X.	WATER	Other (Specify): Location:  Depth (m): 1.8-
Flow Rate: MED		
Algae: $\lambda$ 0		Algae: 1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
(Access may be restricted by toxie algae)		COMPUTE TO THE CONTROL OF THE CONTRO
Tide: 0.00		Tide: Lo
Location: 5 PRW 1 & 2		Location: 5Pas 1 & 2
POWERLINES Side of bridge:	POWERLINES	
Horizontal distance from edge of deck (m):	1	Horizontal distance from edge of deck (m):
NONS	HOHZ	
Estimated vertical height above deck (m):		Estimated vertical height above deck (m):

MAIN ROADS Western Australia

Signature

Date 17 -1 - 13





# GUARDRAIL INFORMATION

GUARDRAIL INFORMATION					Bridge No.: 3128A					
	Approach 1 On Bridge				ge	Approach 2				
Barrier Type	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS	
None										
RHS Rails No. of Rails (on bridge):										
Thriebeam	***************************************				***************************************					
W Beam	Х		Х	Х		Х	Х		Х	
Tric-Bloc Concrete Barrier									******************************	
Reinforced Concrete Barrier (Type F)										
Constant Slope Concrete Barrier										
Other Concrete Profiles										
Post Type										
Steel Type:			:				1			
None			:						*************	
Concrete										
Timber	X		Х	Х		Х	Х		X	
[Types: C-Section (C), I Section (I), RHS	L	re Hollow		<u> </u>	ıbular (T).	1	l	teel Channe		
Off bridge:	, ), - 1 ···	/ .		(-7: -0		,	/, 2		V 194	
Number of Posts off Bridge	4		2				2		4	
Length of Barrier off Bridge (m)	7.8		3.9				3.8		7.55	
Length of Barrier of Bridge (iii)	7,0		3.9				3.0		7.23	
	Approach 1			On Bridge		Approach 2				
Visibility Barrier	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS	
Timber No. of Rails (on bridge):	2					1010				
Steel Pipe(s) No. of Pipes (on bridge):							-			
Guide Posts										
Balustrade										
· ·	L			L		L	l	.1		
Top Rails		1		T			T	1		
Steel Pipe				1			<b></b>			
Steel RHS/Channel		:								
Steel C Section										
Timber		<u> </u>							··········	
End Terminals	Δ	pproach	. 1	On Bridge			Δ	pproach	. 2.	
Approved End Terminal Types:	LHS	Median	RHS		71. Dile,	, °	LHS	Median	RHS	
WAMELT	DIIO	Wicdian	KHIS				1,110	Wicdian	KHI	
SKT-350										
ET-2000										
X Tension				-						
TAU II Crash Cushion										
Other:										
	<u> </u>									
Other End Terminal Types:	Г		T							
None										
Turn-down										
: D. 11	1 37	ı						1	X	
Bullnose	X	-			V/2014/064/064					
Fishtail	X		Х				Х			
				nent belo			Х			





ROUTINE	INFORMATI	ION		Bridge N	Bridge No.: 3128A				
SCUPPERS LOCA CONDITION	ATION, TYPE &	None LHS		Box PV Through Deck	T	Hole in deck			
	(R208)		LEAR	er plamagh	TT MCC V	CHOST			
FLASHING TYI	PE & CONDITION	None 🗌		PVC pipe		GI 📉			
	(R208)				0	<b>K</b>			
BOLT TIGHTEN	NING REQUIRED		Yes	No 🔀					
	(P102)								
TERMITES	(R204)		tive 🔀	Not Active \( \bigcup \)	TREI				
PREVENTATIV	E FUNGICIDE	Trea	ated 🔀	Not Treated	FAOED	BUTE PLY			
ATTACHED FE	(P103) NCES & OTHER			OUTSIDE ST		Pusts			
	DBSTRUCTIONS			- REMOVE.					
	(R210)								
ROAD SURFACE & KERBING CONDITION	ON BRIDGE		RAVEL -	OX EATU & SPLIT	- FAIR,				
		SPLIT AL END CHS.							
(R207	APPROACHES		3PAUEL ONE	-01					
VEGETATION	(R205)	Requires Clearing: LHS Abut 1 RHS Abut 2 Abut 2 Abut 2							
STREAM BED (General comments of location, depth & extundermining and silt	CONDITION  and details of tent of scour,	Possible	Scouring	TURE SPAN 1					
SERVICES		Туре	Size (mm)	Location					
(Type, Size & Lo	ocation)	NONE							
BRIDGE COND	DITION	Priority for Engineering Assessment  Low 1 Medium Medium High Urgent							
Comments	0 -6	Low		. /		Urgent			
Comments:	2 1	HS WIN	G 850	LOG 4/5		*			





## GENERAL INFORMATION - SHEET 2 Bridge No.: 3128A Bridge Status Not Used

Di luge Status	Bullion Oge 1	1101 0300
Date Built 03/05/1979	Skew (angle)	Skewed Width (m)
<b>Widening</b> Left Hand s  Date		Right Hand side Width (m) Date
Surface Type	Unsurfaced X Bit Rubberised Seal Tile	umen Seal Asphalt es Steel Plate
Pavement Type	Unpaved Gra	avel X Material Unknown
Footpath Left	Left Kerb (m)0.15 Pat	h (m) Right Kerb (m)
Footpath Right	Left Kerb (m) Pat	h (m) Right Kerb (m)0.15
Median	Left Kerb (m) Me	dian (m) Right Kerb (m)
Bridge Function 1	Road Bridge X Rail	Bridge Pedestrian Bridge
Bridge Function 2	Over Road & Rail Ove	or Road Over Rail or Road & Water Over Rail & Water estrian Underpass
SIGNAGE		
Load Limits	Abutment 1 End	Tonne Abutment 2 End Tonne
Width Markers	Abutment 1 LHS 1 RH	S \ Abutment 2 LHS \ RHS \
		true indication of the bridge width? (Y/N)
Other Signs	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
No Overtaking or Passing	Abutment 1 LHS	RHS Abutment 2 LHS RHS
No Overtaking on Bridge	Abutment 1 LHS	RHS Abutment 2 LHS RHS
One Lane Bridge	Abutment 1 LHS	RHS Abutment 2 LHS RHS
Low Clearancem	Abutment 1 LHS	RHS Abutment 2 LHS RHS
Narrow Bridge Sign	Abutment 1 LHS	RHS Abutment 2 LHS RHS
Give Way	Abutment 1 LHS	RHS Abutment 2 LHS RHS
Crossing Sigu:		
Other	Abutment 1 LHS	RHS Abutment 2 LHS RHS
	_ Abutment 1 LHS _	RHS Abutment 2 LHS RHS
Signage Condition Legend	⊢	lone (missing) 4 Not Required

MAIN ROADS Western Australia

Timber Bridge Detailed Inspection Guidelines Doc 6706-02-2231 - Issue 21/02/2014 Form 2





#### ELEMENT SPACING SHEET 1

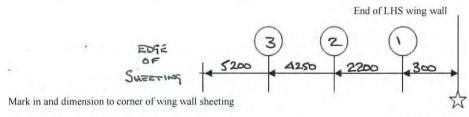
#### Bridge No.: 3128A

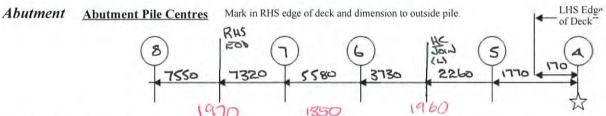
#### **Abutment 1**

All measurements (cumulative) are taken from the reference point as indicated by the star

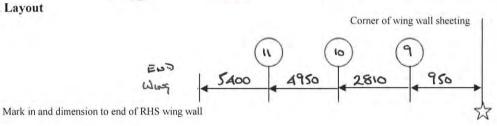


#### LHS Wing Wall Layout



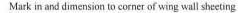


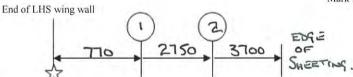
#### **RHS Wing Wall Layout**



#### Abutment 2

LHS Wing Wall Layout All measurements (cumulative) are taken from the reference point as indicated by the star

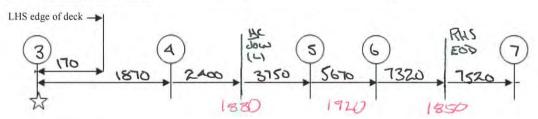




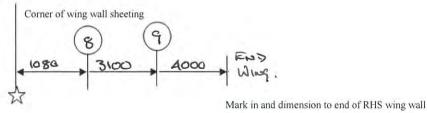
#### Abutment

**Abutment Pile Centres** 

Mark in RHS edge of deck and dimension to outside pile.



#### **RHS Wing Wall Layout**



MAIN ROADS Western Australia

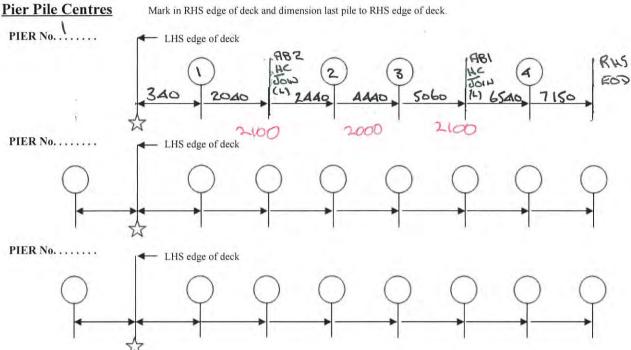




#### **ELEMENT SPACING SHEET 2**

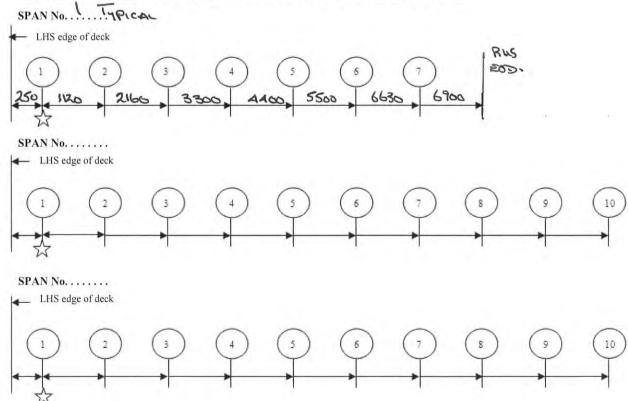
Bridge No.: 3128A

All measurements (cumulative) are taken from the reference point as indicated by the star



Typical Stringer Spacing Mark in RHS edge of deck and dimension last stringer to RHS edge of deck.

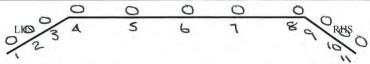
Note: Stringer spacings must be measured in every span with additional stringers. Use additional sheets as required.







**ABUTMENT: 1** 



Bridge No: 3128A

		Tin	iber Dri (mm)	lling	Ext	ent of Ro (m)	ot	Sp	lits	Bl	aze Markir	ngs	Bea	fcaps tring nm)	i.			
Pile No.	Dia. (mm)	Solid	Rot	Pipe	Drill Location from top H/C	Above	Below	Location	Requires Band	Marking (ft/m)	Height Top H/C to Blaze (m)	Height Blaze to GL (m)	Al	A2	Pile Dia. (mm) below H/C (5m+)	Mat. Type	Tied Back	Cond. State
1	400	140		60	0.4					-	0.2	-	1	-	-	JAR		2
<sup>2</sup> =	380	150	AO		1.2			,		14	0.6	0.6	-	-		JAR		2
3	370	185								12	1.7	0.3	-	1	-	JAR		2
4	380	190								14	0.8	0.6	1	90	7	JAR		2
5 F	410	205								12	I	0.5	4	170	1	JAR		2
6 F	360	180								12	0.8	0.6	1	170	1	JAR		2
7 F	320	160								12	0.7	0.7	-	150	1	JAR		2
8	380	190								11	0.7	0.7	-	55	-	JAR		2
9	390	195								11	1.4	0.6	-	-	1	JAR		2
10	370	105		80	1-1			1		12	7.0	0.5	1	-	-	JAR		Z
11	400	170	30		0.2					1	0.5	-	-	,	+	JAR		2
12																		
13																		
14																		
15									-									

Suturated Files.							
LHS Halfcaps	Size	V340 H V	Length	8160 No. of	\ Gap	between H/Caps	-
Top of H/Caps to under	side of Deck	<b>380</b> B	ack of Halfcaps to	o Sheeting 350	>	H/Cap Material	JAR
RHS Halfcaps	Size	V H	Length	No. of	Gap	between H/Caps	
Top of H/Caps to under	side of Deck	В	ack of Halfcaps to	o Sheeting		H/Cap Material	
Are there more than 2 s	ets of halfcaps o	r sill beams (YE	S/NO) <b>N</b> o	(If yes record	l details on con	nments sheet)	
Comments:	DUES H	L READIN	4 1000	RATED AT	800110	K mil	(236% 74
	TOWN COM		· cons	1111-0	110000	o opici	[250]0.19
AL HC SA	LICE NO	Silves of	- DISTRES	Š			
Pile No.	Pil	e No	Pi	ile No.		Pile No.	
R.H.S	L.H.S	R.H.S	L.H.S	R.H.S	L.H.S	R.H.S	L.H.S
F=		F=		F=		F=	





Bridge No: 3128A

#### **ABUTMENT 1 and WING WALL SHEETING**

ABUTMENT 1 SHEETING (indicate ground line, piles and	failed sheeting) G C
RHS I	LHS
2 3	
4 5	
6	
7	
9	
I 1	
12	
SHEETING - ABUTMENT LHS Source	Rot from Pile To Pile
Centreline Solut	Rot from Pile To Pile
rhs Solid	Rot from Pile To Pile
SHEETING Material Type	
SHEETING Material Size (mm) Vertical 220	Depth 70
Condition 1 Condi	tion 2 Condition 3 Condition 4
% Condition State	
ABUTMENT 1 WING WALLS (indicate ground line, piles ar	8 2H3
RHS 1	LHS
3 4	
5	
6 7	
8 9	
10	
11 12	
WINGCAP / SPIKING RAIL CONDITION	WINGCAP / SPIKING RAIL CONDITION
M .)	
MIDOR WEATER & SPLITS: OV	MINOR WEATH & SPLES OV
SHEETING - WING WALLS LHS Sacs	Rot from Pile To Pile
rhs <u>Solg</u>	Rot from Pile To Pile
SHEETING Material Type	
SHEETING Material Size (mm) Vertical 220	
	Depth 70
Condition 1 Cond	Depth 70 ition 2 Condition 3 Condition 4

Shire of Narrogin





	IER :	110.	1		_											ige No		28A
			Tim	nber Dril (mm)	lling	Ext	ent of Ro (m)	ot	Sp	lits	Bl	aze Markii	ngs	Bea	fcaps tring nm)			
Pile No.	Circ. (mm)	Dia. (mm)	Solid	Rot	Pipe	Drill Location from top H/C	Below	Above	Location	Requires Band	Marking (ft/m)	Height Top H/C to Blaze (m)	Height Blaze to GL (m)	A1	A2	Pile Circ. (mm) below H/C (5m+)	No JAR MANS	Cond State
1	1180	370	155	30		08				11	-	0.9	-	110	100	1,21	JAR	2
2	1240	390									-	0.9	-		130		JAR	2
3	1100	350	175								-	0.9	-	120	120	~		1
4	1250	400	200			1			1		-	9.0	-	140	130	-	JAR	2
5																		
7																		
8																		
9																		
10																		
otal ?	Number	of Cork	ale:	7			Typic	al Corbe	1 LIa	ight	(mm):	LHS 3	AO	RF	ic s	340		
		or core	-	/	-				1110								1	1
Corbel							2 3			5	6	7 8	9	10	1	1 12	13	14
	al Type			A1/A2	Dad	JAR JA	AR JA	R JAI	,	AR	JAR J	AR	/					-
	es Bolti ion Stat			A1/A2		2/2	1	12	1		2/1		/					
						0	2/	2		2	/ _ /	1						
ronwo	ork Con	dition:	11	EDI	me	Rus					_	_	Tigh	tenin	g Req	uired:	No	_
Valers	3	Si	ze V	7	-	>	Н		-									
Bracin	g	Si	ze V	,	-	>	Н		-		1							
atura	ted Piles	s:																
	lalfcap:	_		Size	N/	22.0	1	Lon	gth	72	BOO N	lo. of	2 Gap	a hota	uaan L	I/Caps	100	
						1	671 F	Len	gui	12	NOC IN	0.01	C Gap			_		
op of	H/Caps	s to und	erside o	of Deck		110								H/C	Cap M	aterial	JAR	
HS I	Ialfcap	s		Size	V	I	H	Len	gth		N	lo. of	Gap	p betv	veen I	I/Caps		
op of	H/Caps	s to und	erside o	of Deck										H/C	Сар М	laterial		
re th	ere mor	e than 2	sets of	halfcar	ns or si	II beams	(YES/N	(0)	No		(If ves r	ecord det	ails on co	mmei	nts she	eet)		
Comm		-		_														
Jonnin	citis.	24	80	TILE	st	ARE S	DEAT	5	0	N	Time	BER 1	ひらかい	وم	,5	EAT	ES	00
Co	NCR	ET	E F	-007	TNX													
1B	2 4	C-				SPLIT	< £	Mix	28	S	G -	NO C	HANKS	FA	nu	PRE	llas	DU
onc	RETH		00		KA	Α.					_	=== 1	2					
A	i t	16 5	FLIC	CE H	AS	CRAC						AUDI		HOT		1	ALE	)K
Pile N	lo.:				Pile N	0.:			I	Pile N	No.:			Pile	e No.:			
	-	1.6					_		1					4.00				
		A2				A2					A	.2				A2		
LHS		A2	RHS		LHS		_	RHS		LHS			RHS	L	HS	A2		HS

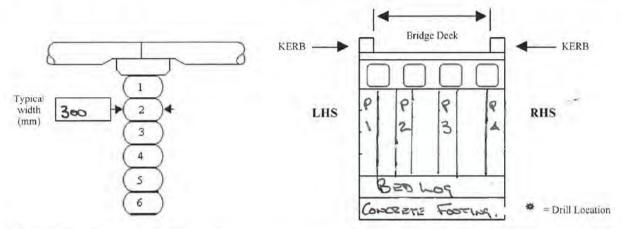




#### BEDLOG PIERS



Bridge No: 3128A



Bedlog No.	Vert (mm)	Mat. Type	Drilling (mm)				BE	LOW	STRIN	GER N	NUMBI	ΞR				Bolt Reqd.	Cond State
	1			1	2	3	4	5	6	7	8	9	10	11	12		
			Solid (Front)	140	300	300	120					1					
1	300	JAR	Rot/Pipe	80			120										1
	0		Solid (Rear)	80			60										
			Solid (Front)						-								
2			Rot/Pipe											-	-	1	K r
			Solid (Rear)													1	

Вес		LE	IS (mn	1)		CEN	TRE I	INE (r	nm)		RHS (	mm)	
Bedlog No.	Face	Solid	Rot	Pipe	Bolt reqd.	Solid	Rot	Pipe	Bolt reqd.	Solid	Rot	Pipe	Bolt reqd.
	Front							- ~~			-		
3	Rear												
1	Front				/		-						-
4	Rear												
244	Front						-						
5	Rear						3-3-3	V = AV					
	Front									4-4-1			
6	Rear			4.5									
14	Front												
7	Rear												

Total Number of Corbels: Typical Corbel Height (mm): LHS RHS Corbel No: 2 5 7 8 10 12 3 4 6 11 Material Type: JAR JAR JAR JAR JAR JAR JAR Requires Bolting: A1/A2 End Condition State: A1/A2 End

Ironwork Condition: Saturated bedlogs:

Comments: STUB PILES ARE SEATED ON TIMBER BEDLOG SEATED ON

5



**ABUTMENT: 2** 

LHS

#### TIMBER BRIDGE DETAILED INSPECTION REPORT



Bridge No: 3128A

Timber Drilling Extent of Rot Splits Blaze Markings Halfcaps (mm) Bearing (m) (mm) Pile Mat Tied Cond Pile Dia Requires Back No (mm) Drill Height Height Dia. Type State (mm) Location Marking Top H/C Blaze to A2 Solid Pipe Above Below A1 Rot below to Blaze GL. from top (Ft/m) Band H/C H/C (m) (m) (5m+)JAR 1 320 2 SEE NOTES 0.8 2 JAR SER 2.0 \_ 2 0.6 2.2 0.2 290 360 3 1.5 JAR \_ 180 115 290 330 1.5 JAR 4 1.5 105 120 \_ 60 1 5 1.5 JAR 50 1.3 0 2 155 125 300 1.5 JAR 6 200 3 SEE NOTES 160 1.3 0.5 0.2 7 1.5 JAR 50 1.A 2 130 140 JAR 8 2.0 1 50 2.2 290 300 JAR 9 SEE HOTES 9.0 120 0.7 10 11 12 13 14 15 Saturated Piles: Length 8450 Size V 320 No. of Gap between H/Caps LHS Halfcaps 170 Back of Halfcaps to Sheeting 230 JAR Top of H/Caps to underside of Deck 380 H/Cap Material **RHS Halfcaps** H Length No. of Gap between H/Caps Top of H/Caps to underside of Deck Back of Halfcaps to Sheeting H/Cap Material Are there more than 2 sets of halfcaps or sill beams (YES/NO) No (If yes record details on comments sheet) ALL PILES ARE STUB PILES SEATED ON TIMBER BESLOS, SEATES Comments: HE SPLICE NO SIGNS OF DISTRES D.I.R. - BURIED IN LONG 2 Pile No. Pile No. Pile No. Pile No. 70 40/5 R.H.S R.H.S R.H.S L.H.S R.H.S L.H.S L.H.S L.H.S 100/5 17015 130/5 130/5 130/5 F= 100/s



300

Typical width (mm)

#### TIMBER BRIDGE DETAILED INSPECTION REPORT

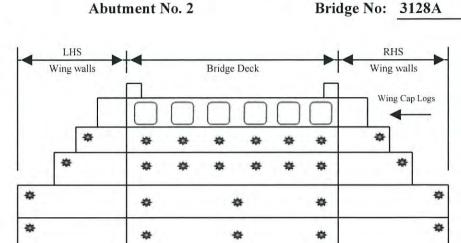


#### BEDLOG ABUTMENTS

3

View from RHS

Abutment No. 2



= Drill Location

Bedlog	Vert. (mm)	Mat. Type	Drilling (mm)				В	ELOW	PIL	E N	NUMB	ER				Condition State
				1	2	3	4	5	6	7	8	9	10	11	12	
			Solid (Front)	U/S	6/3	80	120	110	100	100	300	300				2/2/4
1	300	JAR	Rot/Pipe			BACK	BACK	BACK	BACK	BACK	4					4-17
			Solid (Rear)			-	1-	-	-	-						

Bec			LHS	V		C	ENTR	E LIN	E		RH	IS	A.E.
Bedlog No.	Face	Solid	Rot	Pipe	Bolt reqd.	Solid	Rot	Pipe	Bolt reqd.	Solid	Rot	Pipe	Bolt reqd.
2	Front												
3	Rear								4			0.00	
4	Front												
4	Rear												
-	Front						J						
5	Rear												
	Front												
6	Rear												
7	Front												
1	Rear												
0	Front												
8	Rear												

Bedlog - Wing	Walls: L	HS:				Saturated Bed	ogs:		
	R	HS:							
Sheeting:	L	HS:					-		
C	ENTRE LI	NE:							
	R	HS:							
Comments:	BE	0 606	FROM	L.H.S	70	ABUT	FACE	15	(11.70)

SEE PHOTOS. ACTIVE TERMITES BELOW PILEZ

MAIN ROADS Western Australia

Timber Bridge Detailed Inspection Guidelines Doc 6706-02-2231 - Issue 21/02/2014

Form 12





#### ABUTMENT 2 and WING WALL SHEETING

ABUTME	ENT 2 and	d WIN	G WAL	L SHE	ETI	<b>VG</b>			Bridge	No: 312	28A
ABUTMEN' LHS	T 2 SHEETI	NG (indic	ate ground	l line, piles	s and fa	iled she	eting)	9 Sn-	τς	RHS	
	2 3 4				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
	5 6										
	7 8										
	9 10 11										
	12				******************************						
SHEETING -	ABUTMENT	LHS	<u>5043</u>					t from Pile		To Pile	
Centreline			2000					t from Pile	<u> </u>	To Pile	
RHS			Solva				Ro	t from Pile	•	To Pile	
SHEETING N			<b>5</b>		_		E	7			
SHEETING N	Material Size (r	nm)	Vertical	220		Depth	70				
			Condi	tion 1	Conditi	on 2	Conditio	n 3 C	ondition 4		
	% Cond	lition State			100						
BUTMENT	2 WING W	ALLS (inc LF		ind line, p. 7 Skrs	] 1	d failed s	theeting)	RHS			
		_		······································	2 3						
		/			4 5						
					6 7						
		-			8 9						•
					10						$\geq$
					11 12						
WINGCAP / :	SPIKING RAI	L CONDIT	ION			WINGC	CAP / SPIK	ING RAIL	CONDITION	1	
Missor	WEAT	n æ	Spung	· - 이 ·		Muz	محد ل	JEAKU	a Spu-	5.01	•
	<del></del>				_						
SHEETING	- WING WAL	LS LHS	SOLID		-		R	ot from Pil	e	To Pile	
RHS _		_	Solve				R	ot from Pil	e	To Pile	
SHEETING	Material Type		ア				_				
SHEETING	Material Size (	mm)	Vertical	220		Depth	70				
			Cond	ition 1	Condit	ion 2	Conditi	on 3	Condition 4		
	% Con	dition State			lm	<u>,                                     </u>					



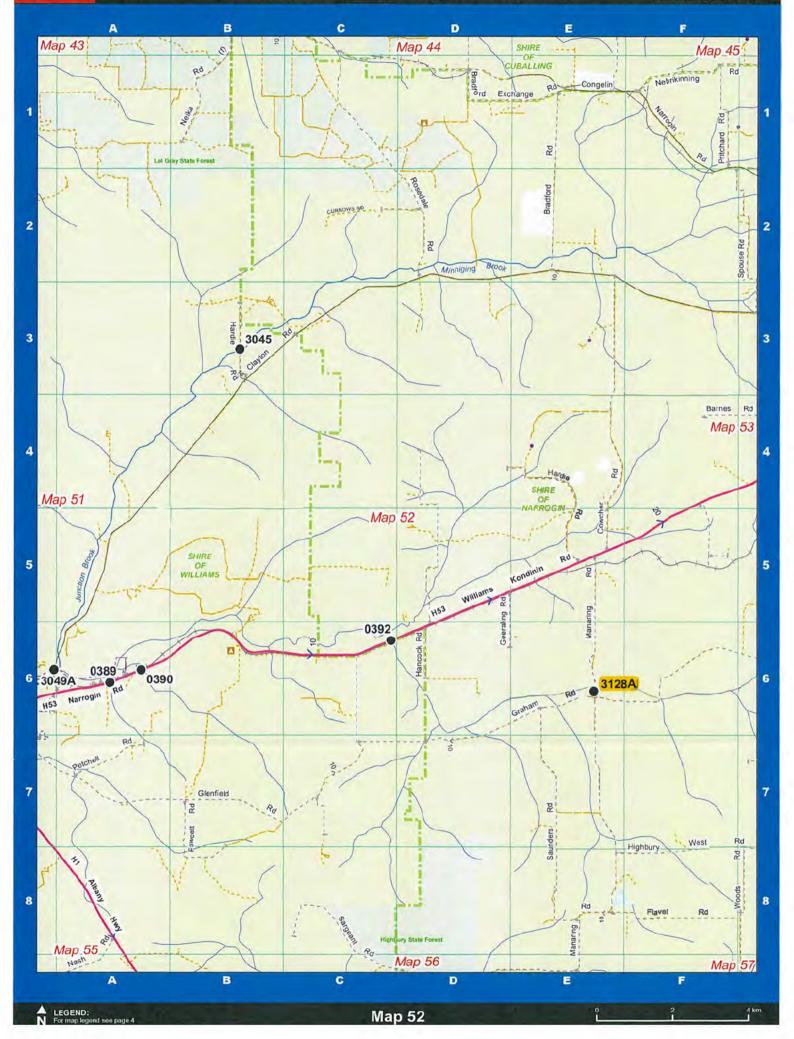


Stringer No:		DETA	IL SH	EET				Sp	an No	): 1		-		Brid	ge No:	312	8A
H Dameter (mm)   \$40   450   660   440   \$80   380											8	9	10	-11	12	13	14
V Measurement (mm)   380   3		Material	Type:	JAR	JAR	JAR	JAR	JAR	JAR	JAR							
Solid (B)   380			of the last of the														
Rot   Pipe   Rot   Solid (T)   Driff Horiz Left   Right   Rot   Solid (T)   Rot Rad   Propped   Rot	-				_												
Drill Horiz   Left   Right   Roll Rod   Proped   Condition State		rill		30-	30-	00	500	50-	300	30					1		
Drill Horiz   Left   Right   Rol Rod   Proped   Condition State   Rot   Rot   Rod   Rod   Rod   Rod   Rot   Rod   Rot		Ver							W.			- 11					
Drill Horiz   Left   Right   Bolt Rad   Proped   Condition State   Drill Horiz (mm)   480   430   610   450   550   490   460   VMeasurement (mm)   440   450   510   470   450   460   470   New 15 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Tica					1										
It   Bolt Rad   Proped   Cordition State		0.0							1								
H   Bolt Rad   Propped   Cordition State   H   Diameter (mm)   480   430   610   450   550   490   460   470   4		Dini Honz	the state of the s	-													
H   Bolt Rad   Proped   Cerdinon State   H   Diameter (mm)   480   430   610   450   550   490   460   470	7	V V			/	1							0116				
H Diameter (mm)														Led w.	501		1 1
H Diameter (mm)					15	The second			7	-							
V Measurement (mm)   440   450   510   470   450   460   470   Nerte :		Condition :	State	1		L		1									
V Measurement (mm)   440   450   510   470   450   460   470   Nerte :		U Diam	etar (mm)	1 490	T 420	I 610	1 450	550	1 400	1 460					1		
Solid (B)   440   450   430   410   450   440   470   480   470   480		_										Non	57	100	7		
Rot			100											NOW	480	-1-	-
Drill Horiz   Left   Right   Right   Rot   Rot   Rot   Right   Rot   Rot   Right   Rot   Rot   Rot   Right   Rot   Rot   Right   Rot   Right   Rot   Right		nii			430	700		470	400	110		RESU	UTS C	NES	Ta 48	D-C	مادماد
Drill Horiz   Left   Right   Right   Rot   Rot   Rot   Right   Rot   Rot   Right   Rot   Rot   Right   Rot   Rot   Right   Rot   Right   Rot   Right		√e Ve							V		11,50	TIC	יטר (	REPO	R-		
Drill Horiz   Left   Right   Split   V   Boht Rad   Propped   Condition State	,	rtica					1		11 11								
Not   Split   W   Bolt Rqd   H   B						-									1		
Not   Split   W   Bolt Rqd   H   B	0	Dini Horiz				-											
H   Bolt Rqd   Propped   Condition State		Ty.															
H Diameter (mm)		Split	Bolt Rqd					5 S E 2					TING.				- 1
H Diameter (mm)		Propped									f. = 1					THE	
V   Measurement (mm)   380	_	Condition	State			1	1			1							
Solid (B) 380 380 380 380 380 380 380 380 380 380		H Diam	eter (mm)	430	540	530							1				
Rot Solid (T) Drill Horiz Left Right Split V Bolt Rad V H Bolt Rad Propped Condition State  Cond. of Spiking Plank Not Applicable Size V Cond. of Decking (Solid/Rot) Span Length from Centreline Supports (m) Span Length from Centreline Support		V Measur	-														II.
Drill Horz Left Right  Split V Bolt Rqd Propped Condition State  Cond. of Spiking Plank Not Applicable Size V — Condition S — R —  Cond. of Decking (Solid/Rot)  Decking Size (mm)  Span Length from Centreline Supports (m) 5.80  Deck Condition State  Condition State  Condition State  Condition 1 Condition 2 Condition 4  Percentage:  Comments:  Sax 2 3 Laux S. S. S. STALA 2 Packing * 2+6 Packing Plank		Dr		380	380	380	380	380	380	120							
Drill Horiz Left Right  Split   V   Bolt Rqd   V   Propped   Condition State   V   Cond. of Spiking Plank   Not Applicable   Size V   Cond. of Decking (Solid/Rot)   S   Q   R   Q   Cond. of Deck Ends   S   Q   R   Q   Cond. of Decking Timber Type   JAR    Span Length from Centreline Supports (m)   5.80   Clear Span Length   5.00   Saturated stringers:  Deck Condition State   Condition 1   Condition 2   Condition 3   Condition 4    Percentage:   Q   Spiral Grain Stringers:   G   Comments:   S   Q   S   S   Clear Span Length   S   Clear Span Span   S   Condition   S   C		=								80			-				
Drill Horiz Left Right  Split V Bolt Rqd Propped Condition State  Cond. of Spiking Plank Not Applicable Size V — Condition S — R —  Cond. of Decking (Solid/Rot)  Decking Size (mm)  Span Length from Centreline Supports (m) 5.80  Deck Condition State  Condition State  Condition State  Condition 1 Condition 2 Condition 4  Percentage:  Comments:  Sex 2.3 Lage S. S. S. S. A. A. Packing * 2+6 Pack	^	'erti		1		1	1									-	
Propped Condition State  Cond. of Spiking Plank Not Applicable Size V — Condition S — R — Cond. of Decking (Solid/Rot) S 90 R 10 % Cond. of Deck Ends S 90 R 10  Decking Size (mm) V 120 x H 220 Decking Timber Type JAR  Span Length from Centreline Supports (m) 5.80 Clear Span Length 5.00 Saturated stringers:  Deck Condition State Percentage: 90 Spiral Grain Stringers: 6  Comments: Sex 2.3 Have S. S. S. S. A. 2 Packing + 2+6 Fack		cal	07.0				H			180							
Propped Condition State  Cond. of Spiking Plank Not Applicable Size V — Condition S — R — Cond. of Decking (Solid/Rot) S 90 R 10 % Cond. of Deck Ends S 90 R 10  Decking Size (mm) V 120 x H 220 Decking Timber Type JAR  Span Length from Centreline Supports (m) 5.80 Clear Span Length 5.00 Saturated stringers:  Deck Condition State Percentage: 90 Spiral Grain Stringers: 6  Comments: Sex 2.3 Have S. S. S. S. A. 2 Packing + 2+6 Fack		Drill Horiz												11-11	1, -1		
Propped Condition State  Cond. of Spiking Plank Not Applicable Size V — Condition S — R — Cond. of Decking (Solid/Rot) S 90 R 10 % Cond. of Deck Ends S 90 R 10  Decking Size (mm) V 120 x H 220 Decking Timber Type JAR  Span Length from Centreline Supports (m) 5.80 Clear Span Length 5.00 Saturated stringers:  Deck Condition State Percentage: 90 Spiral Grain Stringers: 6  Comments: Sex 2.3 Have S. S. S. S. A. 2 Packing + 2+6 Fack	5	1.7	Right	,													
Propped Condition State  Cond. of Spiking Plank Not Applicable Size V — Condition S — R — Cond. of Decking (Solid/Rot) S 90 R 10 % Cond. of Deck Ends S 90 R 10  Decking Size (mm) V 120 x H 220 Decking Timber Type JAR  Span Length from Centreline Supports (m) 5.80 Clear Span Length 5.00 Saturated stringers:  Deck Condition State Percentage: 90 Spiral Grain Stringers: 6  Comments: Sex 2.3 Have S. S. S. S. A. 2 Packing + 2+6 Fack	7	Split		1	1	1		1	1								
Cond. of Spiking Plank Not Applicable Size V — Condition S — R — Cond. of Decking (Solid/Rot) S 90 R 10 % Cond. of Deck Ends S 90 R 10 Decking Size (mm) V 120 x H 220 Decking Timber Type JAR Span Length from Centreline Supports (m) 5.80 Clear Span Length 5.00 Saturated stringers:  Deck Condition State Percentage: 90 Spiral Grain Stringers: 6  Comments: Sex 2.3 Have S. S. S. S. C. A. 2 Packing & 2+6 Fack	- 7	1	I Bolt Rqd							( ) 4.19					DIT.		
Cond. of Spiking Plank Not Applicable Size V — Condition S — R — Cond. of Decking (Solid/Rot) S 90 R 10 % Cond. of Deck Ends S 90 R 10 Decking Size (mm) V 120 x H 220 Decking Timber Type JAR Span Length from Centreline Supports (m) 5.80 Clear Span Length 5.00 Saturated stringers:  Deck Condition State Percentage: 90 Spiral Grain Stringers: 6  Comments: Sex 2.3 Have S. S. S. S. C. A. 2 Packing + 2+6 Fack		- 11	Cinto			1	1	1	7	2							-
Cond. of Decking (Solid/Rot)  S 90 R 10 %  Cond. of Deck Ends S 90 R 10  Decking Size (mm)  V 120 x H 220 Decking Timber Type JAR  Span Length from Centreline Supports (m) 5.80 Clear Span Length 5.00 Saturated stringers:  Deck Condition State Condition 1 Condition 2 Condition 3 Condition 4  Percentage:  Comments: Sex 2.3 Have S.G. STA 1 A 2 Packing 4 2+6 Fack	_			laule	Mat A	audinahl		Cima	N/				Canditi	an [8		D	
Decking Size (mm)  V 120  x H 220  Decking Timber Type JAR  Span Length from Centreline Supports (m) 5.80  Clear Span Length 5.00  Saturated stringers:  Deck Condition State Percentage:  Comments:  Sex 2 3 Have 5.6. STA 1 A 2 Packing Timber Type JAR  Spiral Grain Stringers:  Comments: 4  Condition 1  Condition 2  Condition 3  Condition 4  Spiral Grain Stringers: 6										572	10						
Span Length from Centreline Supports (m) 5.80 Clear Span Length 5.00 Saturated stringers:  Deck Condition State Percentage:  Comments: Sex 2.3 Have S.G. STR 1 A 2 Packing + 2+6 Pack		Cond. of	Decking (	Solid/R	lot)	1	90	R (	5 %	)	Co	nd. of D	eck Er	ids S	90	R 10	
Span Length from Centreline Supports (m) 5.80 Clear Span Length 5.00 Saturated stringers:  Deck Condition State Percentage: 90 Spiral Grain Stringers: 6  Comments: Sex 2.3 Have 5.9. STA 1 A 2 Packing + 2+6 Fack		Decking	Size (mm)				V 120			x H 22	20	1	Deckin	g Timbe	er Type	JAR	
Deck Condition State Percentage:  Comments:  Sex 2,3 Have S. G. STR 1 A 2 Packing + 2+6 Pack		Span Len	oth from (	Centreli	ine Sup	ports (n	1) 5.80	= cı					Saturate	ed string	pers:		
Comments: Strik 2,3 Have S. G. STRIA2 packing + 2+6 PACK		Deck Con	ndition Sta					-			The second second				-		_
0 . 0 . 0				25 7	3 1	Hans	5,6	55	2.1	A 2	Oca			2+1	h PI	ack	
		SEL	ABL	REC	24					116	Lu	L. 10.1	9	6	0		
Bods out 250		UIA.	, , , ,	1254	20		1										



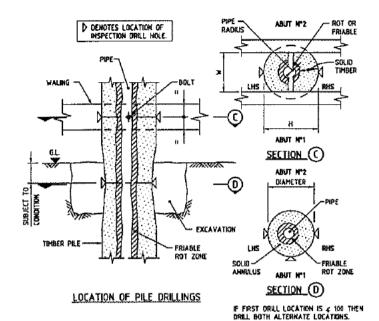


	DETA	IL SH	EET				Sp	an No	o: <u>2</u>			Brid	lge No:	3128A		
	Stringer N Material T		JAR	2 JAR	JAR	JAR	5 JAR	6 JAR	7 JAR	8	9	10	11	12	13	14
		eter (mm) ement (mm)	450 380	570 380	490 380	530 380	480 380	560 380	540 380							
Abutment 1 End	Drill Vertical Drill Horiz	Right	380	3%	380	380	380	380	380							
End		Bolt Rqd Bolt Rqd State	1	1		1			)							
		eter (mm)	520	430	560	470	510	470	480							
		Solid (B) Rot	520 <b>A8</b> 0	180	500 <b>A8</b> 0	400 <b>A∞</b>	450 <b>ASO</b>	560 <b>A8</b> O	480 <b>2A</b> 0 <b>6</b> 0							
Mid Span	Drill Vertical Drill Horiz	Pipe Rot Solid (T) Left Right		220					(80							
п	Propped	Bolt Rqd Bolt Rqd														
	Condition S		1	7_	(	150	1		2							
		eter (mm) ement (mm)	560 380	470 380	560 380	450 380	560 380	500 380	450 380							
Abı	Drill Vertical	Solid (B) Rot Pipe Rot	380	380	380	130	380	380	380							
Abutment 2 E	Drill Horiz	Right				150										
End	Split H Propped Condition S	Bolt Rqd	)			2	1	1	1							
	Cond. of Cond. of Decking S	Spiking Please (mm) Size (mm) gth from Condition States:	Solid/R Centreli		ports (m	e / S 90 V 120		9/	x H 2	20	nd. of [	Deckin Saturat	nds S	90 I	R CO	%

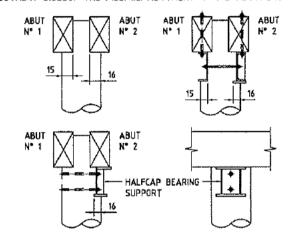








ROUND THE DEMENSIONS ON THE HALFCAP BEARING ON THE PILE AT BOTH ABUTMENT SIDESOF THE PILE, i.e. ABUTMENT N° 1 & ABUTMENT N° 2



#### HALFCAP SEATING ARRANGEMENTS

#### LEGEND

#### MATERIAL TYPE

J - JARRAH

W~ WANDOO

S - STEEL

U - UNKNOWN TIMBER

#### SPLITS

/ TICK ONLY IF REQUIRED



#### GENERAL

P - PIPE
R - ROT
F - FRIABLE
S - SOLID

N/A - NOT APPLICABLE

V - VERTICAL
H - HORIZONTAL
LHS - LEFT HAND SIDE
RHS - RIGHT HAND SIDE
Dia - PIPE DIAMETER

Circ " CIRCUMFERENCE
A1 - ABUTMENT No. 1
A2 - ABUTMENT No. 2

A2 - ABUTMENT No. 2
Str - STRINGER
H/C - HALFCAP
H/CAP - HALFCAP

Btz - BLAZE £ - CENTRE LINE O/A - OVERALL GL - GROUND LEVEL

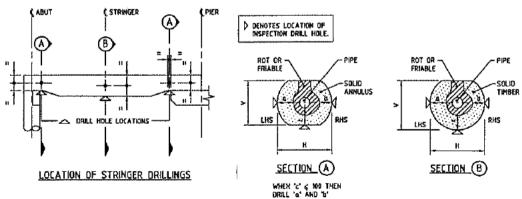
Ht - HEIGHT Ft - FEET

W - WIOTH BETWEEN WALING

Cond - CONDITION

U/S - UNSOUND (STRUCTURALLY)

SG - SPIRAL GRAIN



NOTE: All dimensions are of solid timber excluding sap wood and any surface rot on piles and stringers

/SE Documents/Management System Manual/Dwgs/timber\_repair.dwg

# Bridge 3142 Havelock Street over Narrogin Brook L2 Inspection





Enquiries: Our Ref: Your Ref: Gavin Johnston on 9323 4431 04/4087



ABN: 50 860 676 021

### ASSET MANAGER STRUCTURES WHEATBELT REGION

Structure No.: 3142

Over: Narrogin Brook

On: Havelock St (4180025)

SLK: 0.61

LGA: Town of Narrogin

- Please find enclosed a copy of the detailed inspection report for the above Local Authority structure.
- 2. Attached is a schedule of maintenance items that are required to be undertaken in order to maintain structural integrity and extend the life of the Structure.
- 3. The maintenance items have been entered into IRIS for programming purposes.
- This report details all components inspected. Some components have not been inspected due to inaccessibility.

Gavin Johnston

BRIDGE CONDITION MANAGER

2 CBCM/A) Far G-J. 8/6/15

Enc

Don Aitken Centre, Waterloo Crescent, East Perth or PO Box 6202 EAST PERTH Western Australia 6892
Telephone: (08) 9323 4111 Facsimile: (08) 9323 4136 TTY: (08) 9428 2230
Email: dac@mainroads.wa.gov.au Website: www.mainroads.wa.gov.au

#### WORK ITEMS - TIMBER BRIDGES BRIDGE No: 3142

ITEM	ITEM DESCRIPTION			COMMENTS
NO	1	REQD	CODE	
	RAL MAINTENANCE			
G005	Bridge - Durability Survey (L3)			
G009	Bridge - Load Rating			
G010	Bridge - Monitor Defect			
	ENTATIVE MAINTENANCE			
P101	Bridge - Seal Timber			
P102	Bridge - Maintain Fastener			
P103	Bridge - Fungicide Treatment	Y	1	sillbeams
	NE MAINTENANCE			
R201	Bearing - Maintain			
R202	Bridge - Remove Graffiti			
R203	Bridge - Repair Scour (Minor)			
R204	Bridge - Eradicate Termites			
R205	Bridge - Clear Debris and Vegetation			
R206	Deck Joint - Maintain			
R207	Deck Surface - Maintain			
R208	Drainage - Maintain			
R209	Expansion Joint - Maintain			
R210	Fence - Remove			
R211	Fence - Repair (Control of Access)			
R212	Guardrail Maintain/Repair	_		
R213	Kerb - Repair (Minor) - Non Structural			
R214	Lighting - Maintain			
R215	Sign - Maintain			
(D) CDEOU	CIO MAINTENANOE			
<u> </u>	FIC MAINTENANCE			
S315	Bridge - Replace Fastener <1.5m			
S350 S366	Bridge - Repair Scour (Major)			1.00
3 100				
	Bridge - Access - Improve	Y	2	spans 1 & 2
S413	Deck - Repair	Y	2	spans 1 & 2
S413 S449	Deck - Repair Drainage - Repair	Y	2	spans 1 & 2
S413 S449 S455	Deck - Repair Drainage - Repair Expansion Joint - Repair	Y	2	spans 1 & 2
S413 S449 S455 S461	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair	Y	2	spans 1 & 2
S413 S449 S455 S461 S473	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair	Y	2	spans 1 & 2
S413 S449 S455 S461 S473 S501	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct	Y	2	spans 1 & 2
S413 S449 S455 S461 S473 S501 S504	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber)	Y	2	spans 1 & 2
S413 S449 S455 S461 S473 S501 S504 S507	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair	Y	2	spans 1 & 2
S413 S449 S455 S461 S473 S501 S504 S507	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim	Y	2	spans 1 & 2
S413 S449 S455 S461 S473 S501 S504 S507 S510 S522	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt	Y	2	spans 1 & 2
S413 S449 S455 S461 S473 S501 S504 S507 S510 S522 S525	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair	Y	2	spans 1 & 2
S413 S449 S455 S461 S473 S501 S504 S507 S510 S522 S525 S528	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Shim	Y	2	spans 1 & 2
S413 S449 S455 S461 S473 S501 S504 S507 S510 S522 S525 S528 S537	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair	Y	2	spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair	Y	2	spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing	Y	2	spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing	Y	2	spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair	Y	2	spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing	Y	2	spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Repair Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair	Y	2	spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair	Y	2	spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Shim Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pier - Repair Pile - Band Pile - Repair	Y		spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Repair Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair	Y		spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$588	Deck - Repair Drainage - Repair Expansion Joint - Repair Footpath - Repair Kerb - Repair Abutment - Reconstruct Abutment - Repair (Non timber) Bedlog - Repair Bedlog - Shim Corbel - Bolt Corbel - Repair Corbel - Repair Footpath Railing - Repair Fullcap - Repair Halfcap - Improve Bearing Halfcap - Pack Halfcap - Repair Pier - Repair Pier - Repair Pile - Band Pile - Repair Sheeting - Repair Wingwall - Repair	Y		spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$588 \$607	Deck - Repair  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Kerb - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Repair  Corbel - Repair  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair  Pier - Repair  Pile - Band  Pile - Repair  Sheeting - Repair  Wingwall - Repair  Bearer - Repair	Y		spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$588 \$607 \$643	Deck - Repair  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Kerb - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Repair  Corbel - Repair  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair  Pier - Repair  Pile - Band  Pile - Repair  Sheeting - Repair  Wingwall - Repair  Bearer - Repair  Joist - Repair  Stringer - Bolting  Stringer - Repair	Y		spans 1 & 2
\$413 \$449 \$455 \$461 \$473 \$501 \$504 \$507 \$510 \$522 \$525 \$528 \$537 \$540 \$543 \$546 \$549 \$558 \$561 \$564 \$570 \$588 \$607 \$643 \$655	Deck - Repair  Drainage - Repair  Expansion Joint - Repair  Footpath - Repair  Kerb - Repair  Abutment - Reconstruct  Abutment - Repair (Non timber)  Bedlog - Repair  Bedlog - Shim  Corbel - Bolt  Corbel - Repair  Corbel - Repair  Footpath Railing - Repair  Fullcap - Repair  Halfcap - Improve Bearing  Halfcap - Pack  Halfcap - Repair  Pier - Repair  Pier - Repair  Pile - Band  Pile - Repair  Sheeting - Repair  Wingwall - Repair  Bearer - Repair  Joist - Repair  Stringer - Bolting	Y		spans 1 & 2

#### PRIORITY CODE

- $\boldsymbol{\theta}$  -Critical Safety Deficiency : EMERGENCY action required (Immediate or within 6 months)
- 1 Very High Priority (Within 3 years)
- 2 Medium Priority (Within 4 years)
- 3 Low Priority (Within 5 years-assess again at next Detailed Inspection)

#### MRWA Ref: '04/4087

#### DETAILED TIMBER BRIDGE INSPECTION SUMMARY

Bridge No: 3142 Region: WHEATBELT REGION

River Name: Narrogin Brook SLK: 0.61
Road: Havelock St Road No: 4180025

LGA: Town of Narrogin

#### 1.0 General

Bridge no. 3142 located on Havelock St in the Shire of Narrogin is a two span bridge crossing Narrogin Brook. The structure requires maintenance in particular the waterway continues silt up and this has resulted in only minimal drilling results being available, excavation is required to improve headroom.

#### 2.0 Preventative Maintenance

Preventative maintenance to be undertaken on a 5 year periodic basis. Areas of concern have been identified below. Fungicide treatment of all timber elements in accordance with Specification 850 is required.

#### 3.0 Routine Maintenance

Not required.

#### 4.0 Specific Maintenance

#### 4.1 Substructure

Undertake works to improve access for elements not inspected. (span 1 & 2)

#### 4.2 Superstructure

Not required.

#### 5.0 BCI

Not Available.

#### 6.0 Load Rating

Not required.

Paul Olsen Engineering Associate

M

February 10 2015



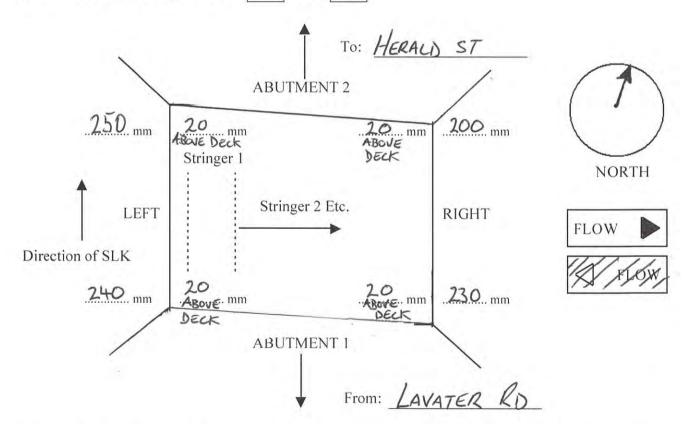


GENERAL IN	FORMA	ATION - SHEET 1	Bridge No.:	3142
Region:	Wheatbe	elt	Latitude (S):	-32.943295
			Longitude (E):	117.185440
Road Name:	Haveloc	k St	Road No:	4180025
Local Government:	Narrogir	n (T)	Owner:	Local Authority
Crossing Name:	Narrogir	n Brook	SLK:	0.61
Number of Lanes:	2	_	Length (m):	16.35
Total Width (m): Inc. or Excl. Footpath	6.82	Max. Head Room (m): 1.20	Min. Head Roon	n (m): 0.80
No. of Spans:	2	Width between Kerbs (m): 6.82	Concrete O	verlay (Y/🐃): Y

Piers are numbered along the bridge in ascending order from ABUTMENT 1 to ABUTMENT 2. Piles are numbered across the bridge in ascending order from LEFT to RIGHT. Stringers are numbered across the bridge in ascending order from LEFT to RIGHT.

Inside and outside kerb depths noted in corners of sketch.

Exposed Deck Ends (RCO only): LHS RHS



This Bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Inspection Manual for Western Australian Bridges and Culverts.

Inspected by:

S. MAILE P. FISH

Checked by:

POLSON K MEPHIE

Date:

25-11-14

Date:

ate: 4-2-/5



#### SITE CONDITIONS



Structure No.: 3142

PRIVE THROUGH	Visible Line of Sight from Abut. 1: 30 m
	Visible Line of Sight from Abut. 2: 200 -
	Traffic Sign Positioning Abut. 1 and:
	In me SHOULD ER
	Traffic Sign Positioning Abut. 2 end:
PARKING POSITION	>3m N Position: Ag 2 L.N.S.
Maximum distance from edge of lane/road to car)	1.2 to 3 m Position:
ACCESS TO ABUTMENTS	0 to 1.2 m Position:
Describe access conditions	LHS: how HEAD Room.
at each wing)	RHS: \$
	Abutment 2: (
	LHS:
	RHS: " Vegetetion: THICK GROSTH ON RHS! HIGH GRASS ON L.H.S.
ACCESS TO PIERS	Vegetetion: THICK GROWTH ON RHS. HIGH GRASS ON L.M.S. LHS:
Describe access conditions	RHS: AS ABOUT
along each side of the structure)	Vegetation:
PIER HEADROOM	Minimum (m): _
	Maximum (m):
POTENTIAL HAZARDS	Railing/Posts:
	Bolts:
	Services:
	Other:
FENCES	Timber: Location:
	Wire/Mesh: Location:
ALX	Electrified: Location:
NOME	Barbed Wire: Location:
	Other (Specify): Location:
WATER	Depth (m): O · 1 ···
	Flow Rate: Same
	Algae: Algae:
	{Access may be restricted by toxic algae}
0.1	Tide: No.
	Location: Span \
POWERLINES	Side of bridge: L.U.S
	Horizontal distance from edge of deck (m): 3
	Estimated vertical height above deck (m):
6	25-11-14_





Bridge No.: 3142

#### **GUARDRAIL INFORMATION**

OCIMEDICAL IN COLUMNICAL COLUMNIC									·····
	A	pproach	1	C	n Bridg	e	$\mathbf{A}_{\parallel}$	pproach	2
Barrier Type	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS
None									
RHS Rails No. of Rails (on bridge):									
Thriebeam									
W Beam	X	-	Х	Х		Х	Х		Х
Tric-Bloc Concrete Barrier			<u> </u>						
Reinforced Concrete Barrier (Type F)									
Constant Slope Concrete Barrier									
Other Concrete Profiles									
Post Type			***************************************						
None									
Concrete	************								
Timber	Х		Х	X		X	Х		X
Steel Type:		-				***************************************			***************************************
[Types: C Section (C), I Section (I), RHS	(R), Squa	re Hollow	Section S	HS (S), Tı	ıbular (T), S	Steel PFC	(PFC), St	eel Channe	l (Ch)]
Off bridge:									
Number of Posts off Bridge	2	1	3				3		2
Length of Barrier off Bridge (m)	4.6		5.2				5.2		4,5
Design of Damer on Dringe (m)	1							.1	L
1	A	pproach	1		On Bridg	ţе	A	pproacl	1 2
Visibility Barrier	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS
Timber No. of Rails (on bridge):					<b>†</b>				
Steel Pipe(s) No. of Pipes (on bridge):									
Guide Posts				-					
Balustrade			·						
Top Rails	·	.1	L		_l		1		I
Steel Pipe				T	1			7	
Steel RHS/Channel		1		+	<del>                                     </del>			1	
Steel C Section (C)	Х	+	Х	X		X	X		X
Timber				^			^		
Timbel	<u> </u>			1	<u> </u>		<u></u>	<u> </u>	<u> </u>
End Terminals	A	pproacl	1 1		On Bridg	ge	A	pproacl	1 2
Standard End Terminal Types:	LHS	Median	RHS				LHS	Median	RHS
WAMELT	<u></u>								
SKT-350									
ET-2000									
X-350									-
Crash Cushion									
Transitions to another barrier system									
Non Standard End Terminal Types:			*	CO.					*****
None		1							
Turn-down		-						1	
Bullnose	X								X
Fishtail			Х				X		<u> </u>
Other									
Structural problem found? (%/N)	N	Ify	es, comi	nent belo	w.		•		<del></del>
• • • • • • • • • • • • • • • • • • • •	1.4								





ROUTINE I	NFORMATIC	ON		Bridge No.: 3142						
SCUPPERS LOC. & CONDITION		None X LHS	RHS	Box PVC pipe Hole in deck  Through Deck Through Kerb						
EL ACUINO TVIN	(18619)	- F-1								
FLASHING TYPI CONDITION	E &	None	PVC pipe	PGI						
BOLT TIGHTEN REQUIRED	ING (R654)	Yes		No X						
TERMITES	(R656)	Active	& Found	Not Active X						
PREVENTATIVE FUNGICIDE	(R657)	Treated	SILL BEA	Not Treated X						
ATTACHED FEN WATERWAY OB		٥.٨,								
ROAD	,,,,,,	Pood Surface:								
SURFACE & KERBING CONDITION	ON BRIDGE	Consinor.	TOMEN ON	R.co. ox.						
(R643)	APPROACHES	Road Surface:	mei - M.	NOR CAPELLS AT ABI APP OV						
VEGETATION		Requires Clearing	ELHS THO	Abut 1 RHS Abut 2 R.A.S.						
	(18563)									
	ondition  and details of location, cour. undermining and									
SERVICES	(Way)	Type	Size (mm)	Location						
(Type, Size & Local	tion)	Type	Size (mm)	Location						
BRIDGE CONDI	TION	Priority for Engineering Assessment  Low X Medium High Urgent								
Comments:										





GENERAL INFORM	ATION - SHE	ET 2	Bridge N	No.: 3142
Bridge Status	Built/In Use	X	Not Used	
Date Built 01/09/1935	Skev	v (angle)29	Skewed	Width (m) <u>7800</u>
Widening Left Hand	side Width		Right Hand side [ Date	Width (m)
Surface Type	Unsurfaced Rubberised Seal	Bitumen Se Tiles		Asphalt (iteel Plate
Pavement Type	Unpaved	<b>X</b> Gravel		Material Unknown
Footpath Left Footpath Right Median	Left Kerb (m) Left Kerb (m) Left Kerb (m)	- Path (m)		Right Kerb (m) Right Kerb (m) Right Kerb (m)
Horizontal Clearance Lef	't (m)	Horizont	al Clearance Ri	ght (m)
Bridge Function 1	Road Bridge	X Rail Bridge		Pedestrian Bridge
Bridge Function 2	Over Water Over Road & Rail Stock Underpass	X Over Road Over Road & Pedestrian U		Over Rail Over Rail & Water
Concrete Overlay at Kerl	Face	Permanent For	rmwork X	Off Form Edge
SIGNAGE				
Load Limits	Abutment 1 End	14 Tonne	Abutment 2 End	14 Tonne
Width Markers	Abutment 1 L	HS   RHS	Abutment 2 LI	HS RHS L
Other Signs No Overtaking or Passing No Overtaking on Bridge One Lane Bridge Low Clearance	Abutment Abutment Abutment	1 LHS - RHS 1 LHS - RHS 1 LHS - RHS	Abutmen Abutmen Abutmen Abutmen Abutmen Abutmen Abutmen Abutmen	TO LORANCE  12 LHS RHS  12 LHS RHS  12 LHS RHS  12 LHS RHS  12 LHS RHS
Give Way	Abutment		Abutmen	
Crossing Sign:				
Other	Abutment Abutment		Abutment	
Signage Condition Legend	Good Fair	Poor None (miss	sing) 3	



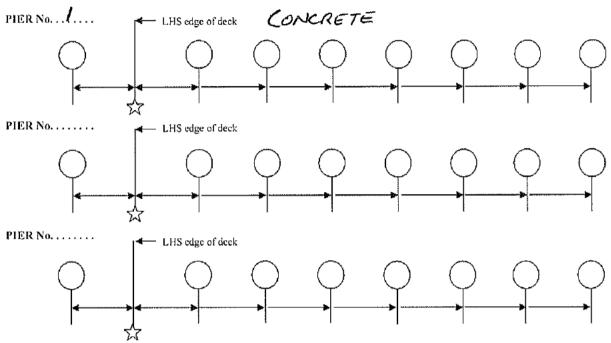


#### **ELEMENT SPACING SHEET 2**

Bridge No.: 3142

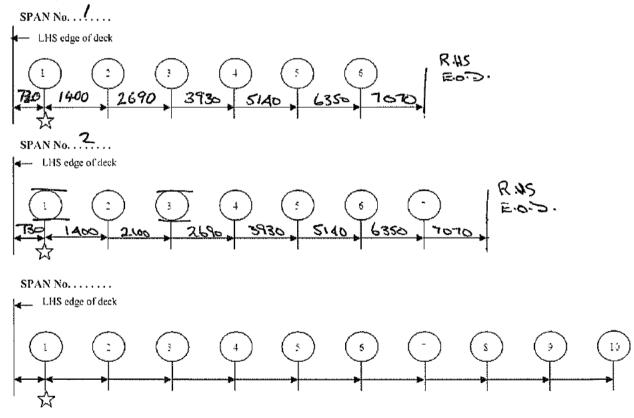
All measurements (cumulative) are taken from the reference point as indicated by the star 💢

<u>Pier Pile Centres</u> Mark in RHS edge of deck and dimension last pile to RHS edge of deck



Typical Stringer Spacing Mark in RHS edge of deck and dimension last stringer to RHS edge of deck

Note: Stringer spacings must be measured in every span with additional stringers. Use additional sheets as required.





### TIMBER BRIDGE



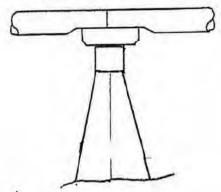
#### DETAILED INSPECTION REPORT Bridge No: 3142 SILL BEAM ABUTMENT 1 LHS RHS Mark in extent of \* Abrasion or other Damage = Drill Location Drilling SILL BEAM CONDITION BELOW STRINGER NUMBER Condition Sill Dimens. Mat. State Beam (mm) Type (mm) 9 10 11 12 H Solid 130 100 (Front) 400 IAR Rot/ 80 150 Pipe Solid (Rear) 130 150 190 290 Solid Н 360 (Front) 360 IAR Rot/ Pipe Solid 280 (Rear) Solid H 3 (Front) ٧ Pipe Solid (Rear) Solid H (Front) Rot/ Pipe Solid Solid H 5 (Front) Rot/ Pipe Solid (Rear) Solid 6 (Front) Rov Pipe Solid (Rear) Saturated Sill beams: Sheeting: LHS: -CENTRE LINE: 210 RHS: STONE PITCH & COMEST, MINOR CROSS AT L.H. CORNER, - OK

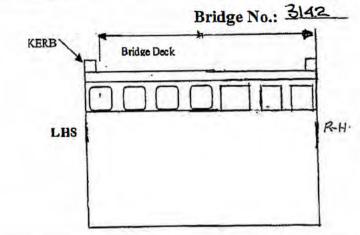
how HEADROOM - TYPICAL TOUT





## SILL BEAM PIER





Pier No.

Sill Beam	Dimens. (mm)	Mat. Type	Drilling (mm)			SIL	L BEAN	COND	ITION E	ELOW ST	RINGE	RNUM	BER			Condition State
				1	2	3	4	5	6	7	8	9	10	II.	12	2
1	H 420	J	Solid (Front)	420	*	*	*	*	*	420						
	V	٦	Rot/ Pipe	100												
	290		Solid (Rear)								7 -4					
2	Н		Solid (Front)													
	v		Rot/ Pipe										*			
			Solid (Rear)													
3	H		Solid (Front)												Щ	
	v		Rot/ Pipe													
			Solid (Rear)													
4	Н		Solid (Front)													
	V		Rot/ Pipe													
			Solid (Rear)													
5	Н		Solid (Front)													
	v		Rot/ Pipe			1.										
			Solid (Rear)				,									

Total Number of Corbels:	1_		1	Гуріса	Corbe	l Heigh	nt (mm)	: -	LHS	290		RHS	290
Corbel No:		1	2	3	4	5	6	7	8	9	10	11	12
Material Type:		3	3	2	2	2	2	2					
Requires Bolting:	A1/A2 End		ACC	18	52	₹5.	/	/	/	/	/	/	/
Condition State:	A1/A2 End	/	/	/	/	/	/	/	/	/	/		/
ronwork Condition:					Satu	rated b	edlogs:						
Comments: Masse Co	אכעל וען	-	2-		<u>-</u>	-0.	1	2		1			

Beducy is in 3 Sections.

MAIN ROADS Western Australia
Timber Bridge Detailed Inspection Forms

Management of Bridge Inspections Doc 3912/01/03 Issue 20/10/2009





A 5	6	PELOW S			Location BER	11	12	Condition
		7	8	9	10	n	12	State
20 - 5								
								1
								+
								-
								1
	-							1
								Ì
	1							1
						Saturated Sill beams:		





	13.55	IL SH	TVAV.				- 20							lge No:		
	Stringer N	lo:	1	2	3	4	5	6	7	8	9	10	11	12	13	U
	Material 7	Гуре:	JAR	JAR	JAR	JAR	JAR	JAR								
	H Diame	eter (mm)	1410	510	360	520	450	460								
	V Measure	ement (mm)	360	360	360	360	360	360								
	Dr	Solid (B)	110	180	160	*	*	220								
	Drill Vertical	Rot	210	110	70			80								-
	erti	Pine Rot	210	110	10			-								
	<u>ca</u>	Solid (T)	30	70	130			60								
	Drill	Left	180													
	Horiz.	Right	210										-			-
	Split H	-					-	-				-		+		-
	Propped	1 Don Kuu														
	Condition S	State	2	2	2			2					-			
	1000	NAME OF THE OWNER.		1 42									-	1 1		_
		eter (mm)	440	440	460	430	450	490								
_		ement (mm)	460	450	390	440	480	480	-		270			400		-
	Drill Vertical	Solid (B)	460	×	*	*	*	2000			Suc 1			480-	012	
	√e	Pipe						To		1 1 1 1 1 1 1 1	OST	200			4	•
	rtica	Rot						TOP								
	Drill	Solid (T)						_				-	-			-
	Drill Horiz,	Left Right						100	-						-	-
	Iv							-								
	Split H															
	Propped															_
	Condition S	State					-	2					_			_
	H Diame	eter (mm)	430	410	480	440	600	440								
	V Measure	ement (mm)	360	360	360	360	360	360								
	D	Solid (B)	360	X	*	*	*	120								
	Drill Veri	Rot						То						+		H
	crti.	Pine Rot						TOP								
	ical	Solid (T)						_								
	Drill	Left						100								
	Horiz.	Right	-	-	-	-	-	130	1			-	-	1	1	-
Abutment 2 End	Split V		-											1		-
		1 som mud														
í	Propped			1		-	1	3		THE PERSON						1





	DETA	AIL SH	EET				Sp	an No	: 2	Bridge N					: 3142	
	Stringer 1	No:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Material	Туре:	STE	JAR	STE	JAR	JAR	JAR	JAR					-3		
	H Diam	eter (mm)	190	390	190	500	400	610	400							
	V Measur	ement (mm)	460	360	450	360	360	360	360							
	Drill Vertical	Solid (B)	UB	*	18	*	×	*	130							
-	Ven	Pipe							130				-			
butn	ical	Rot Solid (T)							100							
Abutment I End	Drill	l.eft														
-	Horiz.	Right  Bolt Rad										-T				
=	I Split	Bolt Rad												_		
	Propped										1					
_	Condition	State							1							
	H Diam	eter (mm)	190	430	190	400	420	440	440							
		rement (mm)	460	450	450	450	430	520	500							
	Dr	Solid (B)	OB	*	OB	*	*	*	160							1
	Drill Vertica	Rot							76							
	erti	Pipe Rot							TOP							
1	<u>a</u>	Solid (T)							_					1 1	S 1	
Mid Span	Drill	Left							110							
211	Horiz.	Right	-	-			-		170		-	-		-		
	ISDIII F	Bolt Rad Bolt Rad					++									
	Propped	1   DOIL ING														
	Condition	State			1				7							
	H Diam	neter (mm)	190	460	190	370	450	470	510	V						
	V Measur	rement (mm)	460	340	450	310	370	370	370							
	Dril	Solid (B) Rot	UB	*	UB	*	*	*	140							
	Drill Vertical	Pipe						1	To							
Abu	rtic	Rot				-			TEP							
me		Solid (T)				-			100							_
nt 2	Drill Horiz.	Left Right		1					210							
utment 2 End	0.15	V Bolt Rad		11111									1011			
2	Split	Bolt Rad														
	Propped	0			1	1			2							
_	Condition	State	1 1	-	1-1-	-	1	_	-	_			-			7
	Cond. of	Spiking P	lank	Not A	pplicabl	e	Size	· V	120		(	Conditi	on S	90	R to	
	Cond. of	Decking (	Solid/R	ot)	13	S 76	R	30 9	6	Co	nd of D	eck En	ds S	-	R -	
	Decking	Size (mm)	)		1	/ 120			xH 2	25	1	Decking	Timbe	r Type	JAR	
		gth from Ce		Support	ts (m)	7.43			an Length	_	-		ed string			
	5,111 251					ondition		Condi		-	Conditio			ondition 4		
	Deck Co	ndition Sta	ate Perc	entage:				11/	2	1				50	1	
	Commen	ts: R			4. 2	1 110	_ C_	- 2	+ S-	6-	211	< (	2 .	200 U		
	2111	To R.W								0 0	11.4	.3,	DOG D	0	367	
	K-MIJ	14.11 01	.5	- C	nor t	- KOM	HBOT	r-Ac	Œ.	_					_	
AIN	ROADS W	estern Austra	alia						Bridge Insp							
		tailed Inspec		IS					Issue 20/1							Form





LEGEND

MATERIAL TYPE J - JARRAH

U - UNKNOWN TIMBER

PRIORITY BOLT/BAND

H - HIGH PRIORITY

M - ROUTINE MAINTENANCE L - LOW PRIORITY

PIPE

ROT

FRIABLE

NOT APPLICABLE VERTICAL HORIZONTAL

LEFT HAND SDE

RIGHT HAND SIDE

PIPE DIAMETER

CIRCUMFERENCE

ABUTMENT No. 1

ABUTMENT No. 2

STRINGER

HALFCAP

BLAZE

CENTRE LINE

GROUND LEVEL

WIDTH BETWEEN WALING

- UNSOUND (STRUCTURALLY)

OVERALL

HEIGHT

CONDITION

ROT OF

SPIRAL GRAIN

FEET

H/CAP - HALFCAP

SOLID

TICK ONLY IF REQUIRED

FOR AUDIT

**PURPOSES** ONLY

W - WANDOO

U - A.S.A.P.

GENERAL

P

R

S

N/A

LHS RHS

Dia

Circ

A1

A2

Str

H/C

Blz

0/A

GL

Ht

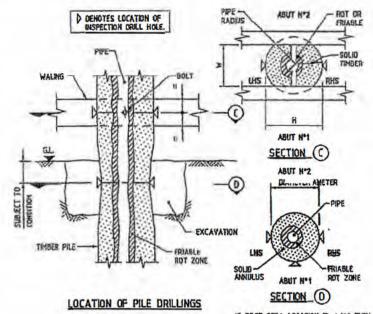
Ft

W Cond

U/S

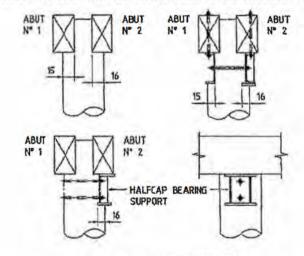
SG

S - STEEL

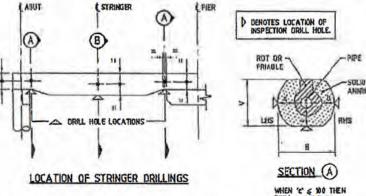


IF PARST DRILL LOCATION IS & 100 THEM DRILL BOTH ALTERNATE LOCATIONS.

ROUND THE DEMENSIONS ON THE HALFCAP BEARING ON THE PILE AT BOTH ABUTMENT SIDESOF THE PILE. i.e. ABUTMENT Nº 1 & ABUTMENT Nº 2



#### HALFCAP SEATING ARRANGEMENTS



SECTION (B)

NOTE: All dimensions are of solid fimber excluding sap wood and any surface rot on piles and stringers /SE Dacuments/Management System Manual/Dwgs/timber\_repair.dwg

MAIN ROADS Western Australia Timber Bridge Detailed Inspection Forms Management of Bridge Inspections Doc 3912/01/03 Issue 12/04/2007 SOLID .

RHS





#### PHOTOGRAPHIC RECORD

Bridge No.: 3142

Photo	Camera	
No.	No.	Caption
1		BROGE NO
2		Offer View From AR!
3		L.H.S VIEW FROM ARI
4		R. HS View FROM AB!
5		LOAD LIMIT SQN 14T.
6		ABILLA. WWG WALL
7		ABIR. H. Wins WALL
8		AB 2 L.H. Wing WAL
9		AB 2 R.M. Wwa WALL
10		ABY FACE FROM R.U.S.
11		STR LAGOUT IN SPAIN I FROM R. H.S.
12		PIER I LAYOUT FROM R.U.S.
13		AB 2 FACIE FROM R.H.S.
14		Missor CRACK AT AR I ARROSCH L.H.S.
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

MAIN ROADS Western Australia Timber Bridge Detailed Inspection Forms Management of Bridge Inspections Doc 3912/01/03 Issue 20/10/2009 Foπn 28

# Bridge Pioneer Drive Pedestrian Bridge L2 Inspection







Enquiries: Gavin Johnston on 08 9323 4431 ABN: 50 860 676 021

Our Ref: 04/8279

Your Ref:

## ASSET MANAGER STRUCTURES WHEATBELT SOUTH REGION

BRIDGE No.: 9250

OVER: Northam - Cranbrook Hwy And Rail

AT SLK: 167.89

ON: Northam Cranbrook

ROAD No.: M031

LGA: Narrogin (T)

- Please find enclosed the detailed inspection report for the above structure.
- Attached is a schedule of work items that are required to be undertaken in order to maintain structural integrity and extend the life of the structure.
- 3. The work items have been entered into BMS for programming purposes.

Gavin Johnston

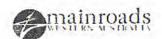
BRIDGE CONDITION MANAGER

15/10/w13

Enc.

Don Aitken Centre, Waterloo Crescent, East Perth or PO Box 6202 EAST PERTH Western Australia 6892
Telephone: (08) 9323 4111 Facsimile: (08) 9323 4136 TTY: (08) 9428 2230
Email: dac@mainroads.wa.gov.au Website: www.mainroads.wa.gov.au





#### WORK ITEMS - SUMMARY **CONCRETE & STEEL BRIDGES**

BRIDGE No. 9250

(A) GENERAL SUPPORTING ACTIVITIES

BMS Item No.	ITEM DESCRIPTION	WORK REQD	PRIORITY CODE	COMMENTS
G005	Bridge - Durability Survey (L3)			
G009	Bridge - Load Rating			
G010	Bridge - Monitor Defect	TELEVISION OF THE PARTY OF THE		

(B) PREVENTATIVE MAINTENANCE

BMS Item No.	ITEM DESCRIPTION	WORK REQD	PRIORITY CODE	COMMENTS
P102	Bridge - Maintain Fastener			

BMS Item No.	ITEM DESCRIPTION	WORK REQD	PRIORITY	COMMENTS
R201	Bearing - Maintain	Y	2	Treat corrosion and replace nut to the bolts along the bearing plates to abutment 2.
R202	Bridge - Remove Graffiti			
R203	Bridge - Repair Scour (Minor)		7,0140	
R205	Bridge Clear Debris and Vegetation			
R207	Deck Surface - Maintain	Y	1	Repair cracking, rotting and trip hazards to the surfacing. Reapply anti-slip coating.
R208	Drainage - Maintain			
R209	Expansion Joint - Maintain			
R210	Fence - Remove			
R212	Guardrail - Maintain / Repair	Y	1	Pier protection barriers are of inadequate length and require extending
R213	Kerb - Repair (Minor) - Non Structural			
R214	Lighting - Maintain			
R215	Sign - Maintain			

(D) SPECIFIC WORKS

BMS Item No.	ITEM DESCRIPTION	WORK REQD	PRIORITY	COMMENTS
S504	Abutment - Repair (Non-Timber)			
S401	Approach Slab - Install			
S407	Approach Slab - Repair			
S601	Beam - Repair			
S607	Bearer - Repair	Y	1	Repair timber bearers
S619	Bearing - Repair			/ [
S513	Bracing - Replace			
S350	Bridge - Repair Scour (Major)			
S308	Bridge - Widen Embankment			
S324	Bridge - Control Corrosion	Y	2	Treat corrosion to the railings, holding down bolts, columns, bracing, beams, tie-beams and cross-beams.
S516	Capbeam - Repair			
S519	Column - Repair			
S413	Deck - Repair			
S431	Deck Joint - Repair			
S531	Diaphragm - Repair			
S455	Expansion Joint - Repair			
S534	Footing - Repair			
S461	Footpath - Repair	9		
S537	Footpath Railing - Repair			
S467	Guardrail - Install			
S473	Kerb - Repair			
S555	Mechanically Stabilised Earth Wall - Repair			
S558	Pier - Repair			
S564	Pile - Repair			
S567	Pile Cap - Repair			
S385	Services - Repair			
S479	Slab - Repair			
S585	Wing Wall - Extend			
S588	Wing Wall - Repair			

#### PRIORITY CODE

1 High Priority

2 - Medium Priority

3 - Low Priority (monitor)

#### INDICATIVE TIMEFRAME

Within 3 years Within 4-6 years

Assess again at next Detailed (Level 2) Inspection (7 years for non-timber bridges)

Note: Add additional standard work items to the above lists as required.

Refer to Detailed Visual Bridge Inspection Guidelines for Concrete & Steel Bridges for full listing.

MAIN ROADS Western Australia Concrete Steel Detailed Visual Inspection Report (Level 2) - Work Items - Summary Issue Date 29/02/2012

#### DETAILED CONCRETE AND STEEL BRIDGE INSPECTION SUMMARY

Bridge No.:

9250

Region:

Wheatbelt South Region

Crossing Name:

Northam - Cranbrook Hwy And Rail

SLK:

167.89

Road:

Northam Cranbrook

Road No.:

M031

LGA:

Narrogin (T)

#### 1.0 GENERAL

This is a steel I-beam structure with timber decking, although the bridge is a mix of both timber and steel elements. In 2000 the footbridge was modified due to construction of the Northam-Cranbrook Highway, date of original construction is unknown. Generally the bridge is considered to be in a reasonable condition.

#### 2.0 SUBSTRUCTURE

#### 2.1 Abutments

Minor surface corrosion is common throughout abutment 1. The bolts to the bearing plates within abutment 2 are also badly corroded.

#### 2.2 Piers

Surface corrosion is common throughout piers 1 and 5 - 9. The holding down bolts to pier 7 are badly corroded and the nuts have sheared off. Shrinkage cracking to the exposed sections of the footings to piers 2 - 4 was also noted.

#### 3.0 SUPERSTRUCTURE

Surface corrosion is common to the beams, tie-beams and bracing of spans 1 and 6 - 9. Within span 7 there are some cross-beams which are also suffering minor surface corrosion. The timber bearers within spans 2 and 5 -7 are also splitting through the centre.

#### 4.0 RECOMMENDATIONS

- 1. Treat corrosion and replace nut to the bolts along the bearing plates to abutment 2.
- 2. Repair cracking, rotting and trip hazards to the surfacing. Reapply anti-slip coating.
- 3. Pier protection barriers are of inadequate length and require extending.
- 4. Repair timber bearers.
- Treat corrosion to the railings, holding down bolts, columns, bracing, beams, tie-beams and cross-5. beams.
- 6. Change to a hybrid structure.

STRUCTURES INSPECTOR

8th February 2013

MAIN ROADS Western Australia





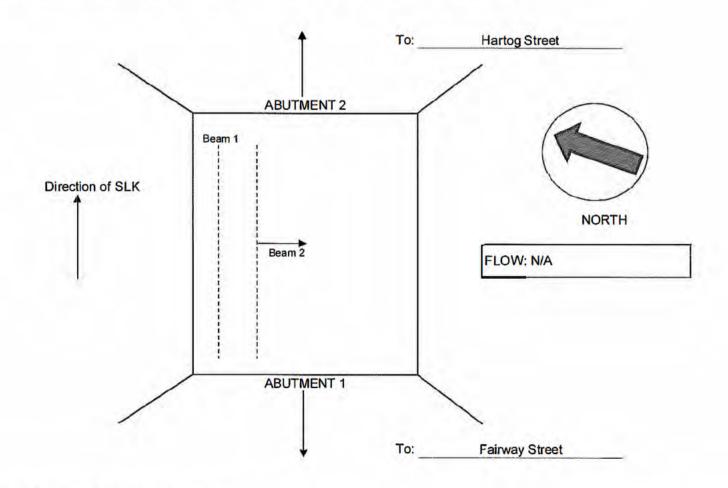
Bridge Number:	9250	mayona'		4	Date:	08-February-2013
Structure Type:	Steel			GPS Location	Lat.:	-32.93528
Superstructure:	I-Beam				Long.:	117,18011
Responsibility Area:	Wheatbelt	South Region		Road	Number:	M031
Road Name:	Northam C	ranbrook			Owner:	Local Authority
Local Govt.:	Narrogin (	r)			SLK:	167.89
Crossing Name:	Northam -	Cranbrook Hwy And Rail			Skew:	0 degrees
Total Width (m):	2.12	Max. H/Room (m):	6.40	Min. H/I	Room (m):	0.59
No. Spans:	10	Width Between Kerbs (m):	2.12	L	ength (m):	85.53

Abutments are numbered in the direction of increasing SLK.

Piers are numbered along the bridge in ascending order from Abutment 1 to Abutment 2.

Piles and Columns are numbered across the bridge in ascending order from left to right when facing the direction of increasing SLK.

Beams are numbered across the bridge in ascending order from left to right when facing the direction of increasing SLK.



Mark in widening and footpath locations.

This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Bridge Guidelines for Level 2 inspections of concrete and steel bridges.

Inspected by:	J Hesketh	Checked by:
Date:	08-February-2013	Date:

MAIN ROADS Western Australia Concrete Steel Detailed Visual Inspection Report (Level 2) Cover Sheet



#### SITE CONDITIONS



	Bridge No.: 9250								
DRIVE THROUGH	Visible Line of Sight from Abut. 1: >200m								
	Visible Line of Sight from Abut. 2: >200m								
TRAFFIC CONTROL	Abut. 1 end: 1m								
(Describe if different to the generic TMP)	Abut. 2 end: 1m								
PARKING POSITION	> 3 m X Position: Fairway Street								
	1.2 to 3 m Position:								
AGGEOGRAPHICATOR	0 to 1.2 m Position:								
ACCESS TO ABUTMENTS	LHS: From Ground level								
(Describe access conditions									
at each wing)	RHS: From Ground level Abutment 2:								
	LHS: From Ground level								
	RHS: From Ground level								
ACCESS TO PIERS	Vegetation: Ok  LHS: From Ground level								
ACCESS TO PIERS	LID. Floir Ground level								
(Describe access conditions along each side of the	RHS: From Ground level								
structure)	Vegetation: Ok								
PIER HEADROOM	Minimum (m): 0.6								
	Maximum (m): 6.4								
POTENTIAL HAZARDS	Railing/Posts:								
	Bolts:								
	Services: Street lighting								
	Other:								
FENCES	Timber: Location:								
	Wire/Mesh: Location:								
	None								
	Electrified: Location:								
	Barbed Wire: Location:								
	Other (Specify): Location:								
WATER	Depth (m): None								
	Flow Rate:								
	Algae:								
	{Access may be restricted by toxic algae}								
	Tide:								
	Location:								
POWERLINES	Side of bridge: None								
100 March 100 Ma									
	Horizontal distance from edge of deck (m):								
	Estimated vertical height above deck (m):								

J Hesketh

Signature

8th February 2013

Date

MAIN ROADS Western Australia

Concrete Steel Detailed Visual Inspection Report (Level 2) - Site Conditions
Issue Date 29/02/2012
Bridges Asset Management Plan 2020-2030

Shire of Narrogin



#### DETAILED BRIDGE INSPECTION REPORT

#### **Guardrail Information**

	1
main	iroads
WESTERN	AUSTRALIA

Bridge No.: 9250

Ris Rails No. of Rails (on bridge):  Tric-Bloc Concrete Barrier Reinforced Concrete Barrier Other Concrete Profiles  Post Type None Concrete Timber Steel Type: Types: Costion (C), 1 Section (I), RIS (R), Square Hollow Section SIS(S), Tubular (T), Steel PFC (PFC), Steel Channel (Ch)) Off bridge: Number of Post off Bridge Length of Barrier off Bridge (m)  Approach 1 On Bridge Approach 2  LHS Median RHS LHS Median RHS LHS Median RHS Steel Pipe Steel RHS/Channel Steel Pipe Steel RHS/Channel Steel Pipe Steel RHS/Channel Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system None None Turn-down Bullnose Fishtail		A	pproacl	n 1	(	On Brid	ge	A	proach	2
None Concrete Barrier Reinforced Concrete Barrier Reinforced Concrete Barrier Constant Slope Concrete Barrier Other Concrete Profiles  Post Type None Concrete Timber Steel Type: Types: C Section (C). I Section (I). RHS (R). Square Hollow Section SHS (S). Tubular (T). Steel PFC (PFC). Steel Channel (Ch) Off bridge: Number of Posts off Bridge Length of Barrier Timber No of Rails (on bridge): Guide Posts Ballustrade  Top Rails Steel Pipe (Steel Pipe Steel No. of Pipes (on bridge): Guide Posts Ballustrade  Top Rails Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	Barrier Type	LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS
RHS Rails No. of Rails (on bridge): Thricheam Thric-Bloc Concrete Barrier Reinforced Concrete Barrier Constant Slope Concrete Barrier Other Concrete Profiles  Post Type None Concrete Timber Steel Type: Types: C Section (C) I Section (I), RHS (R), Square Hollow Section SHS(S), Tubular (T), Steel PFC (PFC), Steel Channel (Ch)) Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Approach 1 On Bridge Approach 2  Utsibility Barrier Timber No of Rails (on bridge): Guide Posts Balustrade  Top Rails Steel Pipe Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: None Tern-down Bullnose Fishaill Other										
Tric-Bloc Concrete Barrier  Tric-Bloc Concrete Barrier  Tric-Bloc Concrete Barrier  Constant Slope Concrete Barrier  Other Concrete Profiles  Post Type  None  Concrete  Timber  Steel Type:  Timber  No of Rails (on bridge):  Steel Plipe  Steel RIS/Channel  Steel C Section (C)  Timber  End Terminals  Standard End Terminal Types:  None  Approach 1 On Bridge Approach 2  LHS Median RHS LHS Median RHS LHS Median RHS  LHS Median RHS LHS Median RHS  Top Rails  Steel C Section (C)  Timber  End Terminals  Standard End Terminal Types:  None  None No					<b></b>		-	1000		
Reinforced Concrete Barrier (Type F) Constant Slope Concrete Barrier Other Concrete Profiles  Post Type None Concrete Timber Types: Csection (C), I Section (I), RHS (R), Square Hollow Section SHS (S), Tubular (T), Steel PFC (PFC), Steel Channel (Ch)] Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Approach 1 On Bridge Approach 2 LHS Median RHS LHS Median RHS LHS Median RHS Steel Pines No. of Pines (on bridge): Guide Posts Balustrade  Top Rails Steel Pines Steel RHS/Channel Steel C Section (C) Timber  End Terminals  Standard End Terminal Types: WAMELT SKT-350 ET-2000 XX-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	20 1 CH 2 CH 2 CH 2 CH 2 CH 3 CH 2 CH 2 CH 2									
Constant Slope Concrete Barrier Other Concrete Profiles  Post Type None Concrete Timber Steel Type: Types: Csection (C), I Section (I), RIIS (R), Square Hollow Section SIIS (S), Tubular (T), Steel PFC (PFC), Steel Channel (Chi) Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Approach 1 On Bridge Approach 2  LHS Median RHS LHS Median RHS LHS Median RHS Steel Pipe Steel RHS/Channel Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 Era-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishatil Other	Tric-Bloc Concrete Barrier									
Other Concrete Profiles  Post Type None Concrete Timber Steel Type: Types: Section (C), I Section (I), RIIS (R), Square Hollow Section SIIS (S), Tubular (T), Steel PFC (PFC), Steel Channel (Chi) Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Approach 1 On Bridge Approach 2 LHS Median RHS LHS Median RHS LHS Median RHS Steel Pine (S) No. of Pines (on bridge): Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishatil Other	Reinforced Concrete Barrier (Type F)									
Post Type None Concrete Timber Steel Type: Crype: C Section (C), I Section (I), RHS (R), Square Hollow Section SHS (S), Tubular (T), Steel PFC (PFC), Steel Channel (Ch)) Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Approach 1 On Bridge Approach 2 LHS Median RHS LHS Median RHS LHS Median RHS Steel Pine(s) No. of Pines (on bridge): Steel Pine(s) No. of Pines (on bridge): Steel RHS/Channel Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  None Standard End Terminal Types: None Turn-down Bullnose Fishatil Other	Constant Slope Concrete Barrier									-
None Concrete Timber Steel Type: Compess Coetion (C), I Section (I), RHS (R), Square Hollow Section SHS (S), Tubular (T), Steel PFC (PFC), Steel Channel (Ch)) Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Visibility Barrier Timber No of Rails (on bridge): Steel Pipe(s) No. of Pipes (on bridge): Steel Pipe(s) Balustrade  Top Rails Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Steel C Section (C) Timber  End Terminals Standard End Terminal Types: None Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishstail Other	Other Concrete Profiles									
Concrete Timber Steel Type: Crype: Crype: Section (C), I Section (I), R1IS (R), Square Hollow Section S1IS (S), Tubular (T), Steel PFC (PFC), Steel Channel (Ch)) Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Approach 1 On Bridge Approach 2 LHS Median RHS LHS Median RHS LHS Median RHS Steel Pipe Steel Pipe Steel RHS/Channel Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: None Standard End Terminal Types: None Non Standard End Terminal Types: None Sullnose Fishstail Other	Post Type									
Timber Steel Type: Trypes: C Section (C), I Section (I), RHS (R), Square Hollow Section SHS (S), Tubular (T), Steel PFC (PFC), Steel Channel (Ch))  Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Approach 1 On Bridge Approach 2  LHS Median RHS LHS Median RHS LHS Median RHS LHS Median RHS  Steel Pipe Sheel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishistail Other	None									
Steel Type:  Types: C Section (C), I Section (I), RIIS (R), Square Hollow Section SIIS (S), Tubular (T), Steel PFC (PFC), Steel Channel (Ch)]  Off bridge:  Number of Posts off Bridge Length of Barrier off Bridge (m)  Approach 1 On Bridge Approach 2  LHS Median RHS LHS Median RHS LHS Median RHS  Steel Pine(s) No. of Pines (on bridge):  Guide Posts Balustrade  Top Rails  Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals  Standard End Terminal Types:  WAMELT  SKT-350  Er-2000  X-350  Crash Cushion  Transitions to another barrier system  Non Standard End Terminal Types: None  Pinn-down  Bullnose Fishtail  Other	Concrete	1 × 1								
Types: C Section (C), I Section (I), RHS (R), Square Hollow Section SHS(S), Tubular (T), Steel PFC (PFC), Steel Channel (Ch))   Off bridge:   Number of Posts off Bridge	Timber	W EE								-
Off bridge: Number of Posts off Bridge Length of Barrier off Bridge (m)  Visibility Barrier Timber No of Rails (on bridge): Steel Pipe(s) No. of Pipes (on bridge): Guide Posts Balustrade  Top Rails Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Bullnose Fishtail Other	Steel Type:		No.							
Number of Posts off Bridge Length of Barrier off Bridge (m)    Approach 1	하는 경기에 가는 바다 그리고 아내는 하는 경상에 가는 사람들이 되었다.	w Section S	SHS (S), Tui	oular (T)	), Steel I	PFC (PFC),	Steel Ch	annel (Ch	1)]	
Length of Barrier off Bridge (m)    Approach 1			1							
Visibility Barrier Timber No of Rails (on bridge): Steel Pipe(s) No. of Pipes (on bridge): Balustrade  Top Rails Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 CTash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other										
Visibility Barrier  Timber No of Rails (on bridge): Steel Pipe(s) No. of Pipes (on bridge): Guide Posts Balustrade  Top Rails Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 Er-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other				1		)- D-:4		1 .		2
Timber No of Rails (on bridge): Steel Pipe(s) No. of Pipes (on bridge): Guide Posts Balustrade    X	VI-D-UI-DI				-	1	1	-		1
Steel Pipe (s) No. of Pipes (on bridge): Guide Posts Balustrade    X		LHS	Median	RHS	LHS	Median	RHS	LHS	Median	RHS
Guide Posts Balustrade  X X X X X X X X X X X X X X X X X X X						-				-
Balustrade								_		
Top Rails Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other			-		l v		V	V		V
Steel Pipe Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	Balustrade		1		X		X	Λ		Λ
Steel RHS/Channel Steel C Section (C) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	Top Rails									
Steel C Section (C ) Timber  End Terminals Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	Steel Pipe	(P=						X		X
End Terminals  Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	Steel RHS/Channel									
End Terminals  Standard End Terminal Types: WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail On Bridge Approach 2  LHS Median RHS LHS Median RHS LHS Median RHS  Modian RHS  M	Steel C Section (C)									
Standard End Terminal Types:  WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	Timber									
Standard End Terminal Types:  WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	End Terminals	A	pproac	h 1	(	On Brid	ge	A	proach	2
WAMELT SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other		-								
SKT-350 ET-2000 X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other				5 = 1						
X-350 Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	SKT-350									
Crash Cushion Transitions to another barrier system  Non Standard End Terminal Types: None Turn-down Bullnose Fishtail Other	ET-2000									
Transitions to another barrier system  Non Standard End Terminal Types:  None  Turn-down  Bullnose  Fishtail  Other	X-350						777			
Non Standard End Terminal Types:  None Turn-down Bullnose Fishtail Other	Crash Cushion						1.0			
None Turn-down Bullnose Fishtail Other	Transitions to another barrier system						- A 1			
Turn-down Bullnose Fishtail Other	Non Standard End Terminal Types:									
Bullnose Fishtail Other	- And the American and American State of the									
Fishtail Other	Turn-down	1	0-							
Other		0 -				100				
Other	Fishtail									
	Other									
AND THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PARTY OF THE P										





Bridge Number: 9250 Group: BRIDGE Group Number: N/A

General Items	Comments  Full description including details of: * Location of defect/condition/item * Description of defects including type, magnitude and extent	Sketch Number	Photograph Number	Work Required	Work Item Number	Work Description	Priority
Vegetation	Good condition			N			
Drainage	Good condition			N			
Pier Protection Barrier	The pier protection barriers are in good condition, however they are of inadequate length to effectively protect the pier from impact damage.		28 - 30	Υ	R212	Guardrail - Maintain/Repair	1
Scour	None			N			
Signs and Lights	Street lighting along the footbridge			N			
Fences	None			N			
Services on Bridge (types, size, location)	Street lighting along the footbridge		Technique de decima de la companya d	N			

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Bridge Number:	9250	Group: <u>APPROACH</u>	Group Number: 2
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Component Number Component Material Modification Status			Comments  Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph Number	Work Required	Work Item Number	Work Description	Priority		
Footpath Railing	LHS	Steel	Existing	Linear m	Minor corrosion is common along the toprail of the railing		42, 45	Y	S324	Bridge - Control Corrosion	2
Footpath Railing	RHS	Steel	Existing	Linear m	Minor corrosion is common along the toprail of the railing		43, 45	Y	S537	Bridge - Control Corrosion	2
Footway	1	Asphalt	Existing	m^2	Cracking to the surfacing and slight trip hazard between the approach and the footbridge		44, 46	Υ	R207	Deck Surface - Maintain	1
						<u> </u>					
	:	***************************************									
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	<u> </u>										
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Bridge Number: 9250 Group: DECK Group Number: N/A

	lumber	faterial	. Material	Status			centage onent in Si			1(%)	Comments	Sketch Number	Number	pe	Number		
Component Type	Component Number	Component Material	Modification	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent		Photograph I	Work Required	Work Item No	Work Description	Priority	
Footpath Railing	LHS	Steel	Existing	Linear m						Good condition		2, 48	N				
Footpath Railing	RHS	Steel	Existing	Linear m						Good condition		3, 48,	N				
Footway	1	Jarrah	Existing	m^2						Anti-slip coating has warn away, a couple of the timbers have started rot and potentially act as a trip hazard.		4, 49, 50	Y	R207	Deck Surface - Maintain	1	
									-								





Bridge Number: 9250 Group: ABUTMENT Group Number: 1

	Number	laterial	Status		4.0000000000000000000000000000000000000	centage onent in St	自由一定部的"1000年",一定是1		(%)	Comments	er	Number	Pi	Number	
Component Type	Component N	Component M	Modification &	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph N	Work Required	Work Item Nu	Work Description
Pile/Column	1-4	Steel	Existing	Linear m		100				Minor corrosion to the columns and the holding down bolts		26	Υ	S324	Bridge - Control Corrosion
Bracing	1-28	Steel	Existing	Each		100				Minor corrosion to the bracing		25	Y	S324	Bridge - Control Corrosion
Footing	1-2	Concrete	Existing	m^2	100				75	Good Condition, however the majority of the footings are buried		25	N		
										l e, 'structural' means that the bearing is a rocker, elas ion State columns shall be greyed out in the inspecti					<u> </u>
		•			1				1						





Bridge Number: 9250 Group: ABUTMENT Group Number: 2

	lumber	Number Material	Status			onent in	of Inspe Each Co ate		(%)	Comments	)er	Number	pe	Number		
Component Type	Component N	Component N	Modification :	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Numb	Photograph f	Work Required	Work Item Nu	Work Description	Priority
Wing Wall	LHS	Concrete	Existing	m^2	100					Good condition		39	N	į		
Wing Wall	RHS	Concrete	Existing	m^2	100					Good condition		40	N			
Wall	1	Concrete	Existing	m^2	100					Good condition		5	N			
Bearing Unit	1-2	Rubber	Existing	Each						Bolts to the steel plates are corroded		55	Υ	R201	Bearing - Maintain	1
Footing	1	Concrete	Existing	m^2	100				-	Good condition			N			_
	<u> </u>								-							
									-							+
										.l .e, 'structural' means that the bearing is a rocker, elas ition State columns shall be greyed out in the inspecti 					1	<del></del>





Bridge Number: _	9250	Group:	PIER	Group Number:	1
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	Number	Material	Status			onent in	of Inspec Each Co ate		(%)	Comments	er	Number	Pi	Number		
Component Type	Component N	ComponentM	Modification 5	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph N	Work Required	Work Item Nu	Work Description	Priority
Bracing	1-7	Steel	Existing	Each		100				Minor corrosion common throughout the bracing		21	Υ	S324	Bridge - Control Corrosion	1 2
Column	1-2	Steel	Existing	Linear m		100				Minor corrosion common throughout both columns		21	Υ	S324	Bridge - Control Corrosion	1 2
Footing	1-2	Concrete	Existing	m^2	100				75	Good Condition, however the majority of the footings are buried		21				
	{Be									nce, 'structural' means that the bearing is a rocker, endition State columns shall be greyed out in the inspe						
	<del>-</del> :				' '											

MAIN ROADS Western Australia
Concrete Steel Detailed Visual Visual Inspection Report (Level 2) - Pier (1)
Issue Date 29/02/2012
Shire of Narrogin





Bridge Number: 9250	Group: PIER	Group Number: 2	
mber erral	Percentage of Inspected Component in Each Condition	Comments Jaque Jaque	

Unit ing Each		100	2	3	4	edsuj	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Numl	Photograph	Work Required	Work Item N	Work Description	ority
ing Each	Each	100			-	1					1989 (P 1989)		å
						į .	Good condition	ĺ	19	N			
ing Linear n	Linear m	100					Good condition		19	N			
ing <b>m^2</b>	m^2	100				50	Hairline shrinkage cracking to the exposed concrete. Footing is partially buried		27	N			
ing m^2	m^2					100	Buried			N			
	e assigne	e assigned Condition	e assigned Condition State	e assigned Condition States when	e assigned Condition States when structure	e assigned Condition States when structural. In thi	e assigned Condition States when structural. In this insta	e assigned Condition States when structural. In this instance, 'structural' means that the bearing is a rock	e assigned Condition States when structural. In this instance, 'structural' means that the bearing is a rocker, elasto	e assigned Condition States when structural. In this instance, 'structural' means that the bearing is a rocker, elastomeric	e assigned Condition States when structural. In this instance, 'structural' means that the bearing is a rocker, elastomeric or pot		e assigned Condition States when structural. In this instance, 'structural' means that the bearing is a rocker, elastomeric or pot bearing.





250 Group:	PII	IER (	Group Number: _	3	
	250 Group:	250 Group: P	250 Group: PIER 0	250 Group: PIER Group Number:	250 Group: PIER Group Number: 3

	lumber	faterial	Status			onent in	of Inspe Each Co ate		(%)	Comments	)er	Vumber	pa	Number		
Component Type	Component A	Component N	Modification .	Unit	1	2	3	4	lnspe	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Numb	Photograph I	Work Require	Work Item No	Work Description	Priority
Bracing	1-7	Steel	Existing	Each	100					Good condition		17	N			
Column	1-2	Steel	Existing	Linear m	100					Good condition		17	N			
Footing	1	Concrete	Existing	m^2	80	20			50	Shrinkage cracking to the exposed concrete. Footing is partially buried		31	N			
Footing	2	Concrete	Existing	m^2					100	Buried			N			
																_



Bracing Column Footing

Footing

2

Concrete

Existing

m^2

#### **DETAILED VISUAL (LEVEL 2) BRIDGE INSPECTION REPORT**



Bridge N	umber: _	9250			G	roup:		PIER		Group Number:	4					
	Vumber	Material	Status			onent in	of Inspe Each Co ate	ndition	d (%)		ber	Number	pa	Ja Quilling of		
Component Type	Component I	Component I	Modification	Unit	1	2	3	4	dsuj	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Num	Photograph	Regu	Work item N	Work Description	Priority
cìng	1-7	Steel	Existing	Each	100					Good condition		15	N			
umn	1-2	Steel	Existing	Linear m	100					Good condition		15	N			
oting	1	Concrete	Existing	m^2	80	20				Shrinkage cracking to the exposed concrete. Footing is partially buried		35	N			

(Bearing Units shall only be assigned Condition States when structural. In this instance, 'structural' means that the bearing is a rocker, elastomeric or pot bearing. Mortar pad or thin rubber bearings shall be inspected with comments but the Condition State columns shall be greyed out in the inspection report template.)

Bridges Asset Management Plan 2020-2030

100

Buried

Ν





Bridge Nu	ımber:	9250			G	iroup:	·	PIER		Group Number:		5				
	Number	Material	Status			centage onent in St			(%)	Comments	Je.	Number	þe	Number		
Component Type	Component N	Component N	Modification 3	Unit	1	2	3	4	Inspe	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Numb	Photograph N	Work Required	Work Item Nu	Work Description	Priority
Bracing	1-7	Steel	Existing	Each		100				Minor corrosion common throughout the bracing		53	Y	S324	Bridge - Control Corrosion	2
Column	1-2	Steel	Existing	Linear m		100				Minor corrosion common throughout both columns		53	Υ	S324	Bridge - Control Corrosion	2
Footing	1	Concrete	Existing	m^2	100				75	Good Condition, however the majority of the footings are buried		53	N			
									<u> </u>							-
								1	1		l		·			

{Bearing Units shall only be assigned Condition States when structural. In this instance, 'structural' means that the bearing is a rocker, elastomeric or pot bearing.

Mortar pad or thin rubber bearings shall be inspected with comments but the Condition State columns shall be greyed out in the inspection report template.}



Column

Footing

Bridge Number:

1-2

1

9250

Steel

Concrete

#### DETAILED VISUAL (LEVEL 2) BRIDGE INSPECTION REPORT

PIER

Group:

100

100

Linear m

m^2

Existing

Existing



Bridge - Control Corrosion 2

	umber	Taterial	Status		Percentage of Inspe Component in Each Co State		(%)	Comments	er	<i>lumber</i>	pi	mber		
Component Type	Component N	Component N	Modification	Unit	1 2 3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Numb	Photograph N	Work Require	Work Item Nu	Work Description	Priority
Bracing	1-7	Steel	Existing	Each	100	A CONTRACTOR OF THE CONTRACTOR		Minor corrosion common throughout the bracing		51	Υ	\$324	Bridge - Control Corrosion	2

75

{Bearing Units shall only be assigned Condition States when structural. In this instance, 'structural' means that the bearing is a rocker, elastomeric or pot bearing.

Mortar pad or thin rubber bearings shall be inspected with comments but the Condition State columns shall be greyed out in the inspection report template.}

footings are buried

Minor corrosion common throughout both columns

Good Condition, however the majority of the

Group Number:

51

51

Ν

S324



Footing

#### DETAILED VISUAL (LEVEL 2) BRIDGE INSPECTION REPORT



Bridge Νι	ımber: _	9250	-		Grou	o:	PIER		_ Group Number:		7				
	lumber	Material	Status		Percenta Component	ge of Insp In Each C State		(%)	Comments	ier	Vumber	pa	ımber		
Component Type	Component N	Component N	Modification .	Unit	1 2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Numb	Photograph I	Work Require	Work Item Nur	Work Description	Priority
Bracing	1-7	Steel	Existing	Each	90	)	10		Minor corrosion common throughout the bracing. Holding down bolts badly corroding and sheared off.		36	Y	S324	Bridge - Control Corrosion	2
Column	1-2	Steel	Existing	Linear m	10	0			Minor corrosion common throughout both columns		11	Υ	S324	Bridge - Control Corrosion	2

Good Condition, however the majority of the

footings are buried

11

(Bearing Units shall only be assigned Condition States when structural. In this instance, 'structural' means that the bearing is a rocker, elastomeric or pot bearing.

Mortar pad or thin rubber bearings shall be inspected with comments but the Condition State columns shall be greyed out in the inspection report template.}

m^2

Existing

100

1

Concrete





faterial	Status		onent in	Each Con		(%)	Comments	)er	Vumber	þe	ımber		
Component N	Unit Unit	1	2	3	4	Nof Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Numb	Photograph I	Work Require	Work Item Nu	Work Description	Priority
Steel Ex	isting Each		100				Minor corrosion common throughout the bracing		g	Υ	S324	Bridge - Control Corrosion	2
Steel Ex	isting Linear m		100				Minor corrosion common throughout both columns		9	Υ	S324	Bridge - Control Corrosion	2
oncrete Ex	isting m^2	100				75	Good Condition, however the majority of the footings are buried		9	N			
		_										***************************************	-
	Steel Extended Extend	Steel Existing Each  Steel Existing Linear m  concrete Existing m^2	Steel Existing Each  Steel Existing Linear m  Concrete Existing m^2 100	Steel Existing Each 100  Steel Existing Linear m 100  Conponent in State	Component in Each Cornstate  Unit  Unit  Unit  Example 1 2 3  Steel Existing Each 100  Steel Existing Linear m 100  Concrete Existing m^2 100	Steel Existing Each 100  Steel Existing Linear m 100  Concrete Existing m^2 100	Steel Existing Each 100  Steel Existing Inear m 100  Component in Each Condition State  We parabolic to the property of the pr	Component in Each Condition State   State	Component in Each Condition State  Unit  1 2 3 4 5 5 Full description including details of:  Location of defect/condition/item  Description of defects including type, magnitude and extent  Minor corrosion common throughout the bracing  Steel Existing Linear m 100 Minor corrosion common throughout both columns  concrete Existing m^2 100 75 Good Condition, however the majority of the footings are buried	Component in Each Condition State  Unit  1 2 3 4  Full description including details of: Location of defect/condition/item Description of defects including type, magnitude and extent  Minor corrosion common throughout the bracing  Steel Existing Linear m 100  Minor corrosion common throughout both columns  Oncrete Existing m^2 100  75 Good Condition, however the majority of the footings are buried  75 Good Condition, however the majority of the footings are buried	The state of the s	Component in Each Condition   State   Unit   1   2   3   4   2   3   3   4   2   3   3   4   3   3   3   3   3   3   3	Component in Each Condition State   State





Bridge N	umber:	9250			G	roup:		PIER		Group Number:		9				
	Number	Material	Status		\$39000 GGGGGGGGGGA	centage onent in St	and the second section is a second		(%)	Comments	)er	Vumber	þe	Number		
Component Type	Component A	Component A	Modification	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph I	Work Required	Work Item Nu	Work Description	Priority
3racing	1-4	Steel	Existing	Each		100				Minor corrosion common throughout the bracing		7	Υ	S324	Bridge - Control Corrosion	2
Column	1-2	Steel	Existing	Linear m		100			-	Minor corrosion common throughout both columns		7	Υ	S324	Bridge - Control Corrosion	2
Footing	1	Concrete	Existing	m^2	100				50	Good Condition, however the majority of the footings are buried		7	N			
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		·			L		<u> </u>	<u> </u>	<u>,L</u>		ļ	<u></u>	L	L		
	{E									nce, 'structural' means that the bearing is a rocker, endition State columns shall be greyed out in the inspe						





Bridge Number:	9250	Group:	SPAN	<del>.</del>	Group Number:1
Span Length (m):	(CL to CL)	Span Length (m):	7.402	(Clear Span)	

Component Type	nt Number	nt Material	on Status	Unit		onent in	of Inspec Each Col ate		Not icted (%)		Number	oh Number	uired	ı Number	Work Description	
	Component	Сотропе	Modification		1	2	3	4	adsuj I	* Location of defect/condition/item * Description of defects including type, magnitude and extent	Sketch Nu	Photograph	Work Required	Work Item		Priority
Beam	1-2	Steel	Existing	Linear m		100				Minor corrosion common along the beams		22	Y	S324	Bridge - Control Corrosion	2
Bearers	1-2	Jarrah	Existing	Each	100					Good condition		22	N			
Bracing	1-4	Steel	Existing	Each		100				Minor corrosion common along the bracing		22	Y	S324	Bridge - Control Corrosion	. 2
Tie Beam	1-5	Steel	Existing	Linear m		100				Minor corrosion common along the tie-beams		22	Y	S324	Bridge - Control Corrosion	2
Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition		22	N			
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Bridge Number:92	250	Group: SPAN	Group Number: 2
Span Length (m):	(CL to CL)	Span Length (m): 11.184	(Clear Span)

Component Type    Component Type		Number	faterial	Status			centage onent in St			(%)	Comments	ler.	Number	þ	Number		
Beam1-2SteelExistingLinear m100Good condition20 NBearers1-2JarrahExistingEach50 50Splitting through the centre of the timber bearers20 Y S607 Bearer - RepairBracing1-5SteelExistingEach100Good condition20 NTie Beam1-6SteelExistingLinear m100Good condition20 N	Component Type	omponent			Unit	1	2	3	4	inspe	Location of defect/condition/item     Description of defects including type,	Sketch Number	aph	Work Required	Item	Work Description	Priority
Bracing         1-5         Steel         Existing         Each         100         Good condition         20         N           Tie Beam         1-6         Steel         Existing         Linear m         100         Good condition         20         N	Beam	1-2	Steel	Existing	Linear m	100					Good condition			N			
Tie Beam 1-6 Steel Existing Linear m 100 Good condition 20 N	Bearers	1-2	Jarrah	Existing	Each	50	50				Splitting through the centre of the timber bearers		20	Y	S607	Bearer - Repair	1
Tie Beam 1-6 Steel Existing Linear m 100 Good condition 20 N	Bracing	1-5	Steel	Existing	Each	100					Good condition		20	N			
Spiking Beam 1-2 Jarrah Existing Each 100 Good condition 20 N		1-6	Steel	Existing	Linear m	100					Good condition		20	Ν			
	Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition	_	20	N			
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Bridge Number:	9250	Group:SPAN	Group Number:3
Span Length (m):	(CL to CL)	Span Length (m):11.002 (Clear Span)	

	Number	iaterial	Status			onent in	of Inspe Each Co ate		(%)	Comments	er	Number	p	Number		
Component Type	Component N	Component M	Modification S	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph N	Work Required	Work Item Nu	Work Description	Priority
Beam	1-2	Steel	Existing	Linear m	80	20		-		Minor corrosion to the beams		18	Υ	S324	Bridge - Control Corrosion	2
Bearers	1-2	Jarrah	Existing	Each	100					Good condition		18	N			
Bracing	1-5	Steel	Existing	Each	100				***************************************	Good condition		18	N			
Tie Beam	1-6	Steel	Existing	Linear m	100					Good condition		18	N			
Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition		18	N			-
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Bridge Number: _	9250	Group: SPAN	Group Number:	4
Span Length (m):	(CL to CL)	Span Length (m):11.029	(Clear Span)	

	lumber	faterial	Status			centage onent in St			(%)	Comments	ler.	Number	þi	Number	
Component Type	Component N	Component M	Modification (	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph N	Work Required	Work Item Nu	Work Description
Beam	1-2	Steel	Existing	Linear m	100					Good condition		16	N		
Bearers	1-2	Jarrah	Existing	Each	100					Good condition		16	N		
Bracing	1-5	Steel	Existing	Each	100					Good condition	ļ	16	N		
Tie Beam	1-6	Steel	Existing	Linear m	100					Good condition	ļ	16	N		
Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition		16	N		
	<u> </u>														





Bridge Number:	9250	Group:	SPAN		Group Number: 5	
Span Length (m):	(CL to CL)	Span Length (m):	9.827	(Clear Span)		

	Number	Material	Status			centage onent in St			(%)	Comments	ler .	Jumber	pı	ımber	
Component Type	Component N	Component N	Modification	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph Number	Work Required	Work Item Number	Work Description
Beam	1-2	Steel	Existing	Linear m	100					Good condition		14	N		
Bearers	1-2	Jarrah	Existing	Each		100				Splitting through the centre of the timber bearers		14	Υ	S607	Bearer - Repair
Bracing	1-5	Steel	Existing	Each		100				Minor corrosion common along the bracing		14	Y	S324	Bridge - Control Corrosion
Tie Beam	1-5	Steel	Existing	Linear m		100				Minor corrosion common along the tie-beams		14	Y	S324	Bridge - Control Corrosion
Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition		14	Ν		
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Bridge Number: _	9250	Group: SPAN	Group Number:6
Span Length (m):	(CL to CL)	Span Length (m): 3.719 (Clear Span)	

	Number	Material	Status			centage onent in i Sta	Each Co		8	Comments	er	Number	þ	Number		
Component Type	Component N	Component N	Modification 5	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph A	Work Required	Work Item Nu	Work Description	Priority
Beam	1-2	Steel	Existing	Linear m		100				Minor corrosion common along the beams		52	Y	S324	Bridge - Control Corrosion	2
Bearers	1-2	Jarrah	Existing	Each			100			Splitting through the centre of the timber bearers		52	Y	S607	Bearer - Repair	1
Bracing	1-2	Steel	Existing	Each		100				Minor corrosion common along the bracing		52	Υ	S324	Bridge - Control Corrosion	2
Tie Beam	1-3	Steel	Existing	Linear m		100				Minor corrosion common along the tie-beams		52	Υ	S324	Bridge - Control Corrosion	2
Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition		52	N			
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Bridge Number: _	9250	Group: SPAN	Group Number:7
Span Length (m):	(CL to CL)	Span Length (m): 5.873 (Clear Span)	

	Number	Material	Status			centage onent in St			(%)	Comments	er	Number	pi	mber		
Component Type	Component N	Component M	Modification S	Unit	1	2	3	4	Not	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph N	Work Required	Work Item Number	Work Description	Priority
Beam	1-2	Steel	Existing	Linear m		100				Minor corrosion common along the beams		12	Υ	S324	Bridge - Control Corrosion	2
Bearers	1-2	Jarrah	Existing	Each	50		50			Splitting through the centre of the timber bearers		12	Y	S607	Bearer - Repair	1
Bracing	1-5	Steel	Existing	Each		100				Minor corrosion common along the bracing		12	Y	S324	Bridge - Control Corrosion	2
Tie Beam	1-4	Steel	Existing	Linear m		100				Minor corrosion common along the tie-beams		12	Υ	S324	Bridge - Control Corrosion	2
Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition		12	N			
Cross Beam	1-4	Steel	Existing	Linear m		100				Minor corrosion common along the cross-beams		54	Y	S324	Bridge - Control Corrosion	2
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									<b></b>		_					<del> </del>





Bridge Number: 9	250	Group: SPAN	Group Number:8
Span Length (m):	(CL to CL)	Span Length (m): 13.538 (Clear Span)	

	Number	Material	Status			onent in	of Inspec Each Col ate		(%)	Comments	197	Number	pe	ımber	
Component Type	Component N	Component M	Modification 5	Unit	1	2	3	4	Not Inspected	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph N	Work Required	Work Item Number	Work Description
Beam	1-2	Steel	Existing	Linear m		100				Water staining and minor corrosion common along the beams		10	Υ	S324	Bridge - Control Corrosion
Bearers	1-2	Jarrah	Existing	Each	100					Good condition		10	N		
Bracing	1-7	Steel	Existing	Each		100				Water staining and minor corrosion comπon along the bracing		10	Y	S324	Bridge - Control Corrosion
Tie Beam	1-8	Steel	Existing	Linear m		100				Water staining and minor corrosion common along the tie-beams		10	Υ	S324	Bridge - Control Corrosion
Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition		10	N		
				-					-			<u> </u>			
	:											1			





Bridge Number:	9250	Group:	SPAN	Group Number: _	9
Span Length (m):	(CL to CL)	Span Length (m): 12.	193 (Clear Span)		

	Number	Material	Status			centage onent in St			(%)	Comments	er	Number	þ	mber		
Component Type	Component N	Component M	Modification S	Unit	1	2	3	4	odsuj	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Number	Photograph A	Work Required	Work Item Number	Work Description	Priority
Beam	1-2	Steel	Existing	Linearm		100				Water staining and minor corrosion common along the beams		8	Υ	S324	Bridge - Control Corrosion	Ī
Bearers	1-2	Jarrah	Existing	Each	100					Good condition		8	N			
Bracing	1-5	Steel	Existing	Each		100	,			Water staining and minor corrosion common along the bracing		8	Υ	S324	Bridge - Control Corrosion	2
Tie Beam	1-6	Steel	Existing	Linear m		100				Water staining and minor corrosion common along the tie-beams		8	Υ	S324	Bridge - Control Corrosion	2
Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition	***************************************	8	N			
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Bridge Number: _	9250	Group: SPAN	Group Number: 10
Span Length (m):	(CL to CL)	Span Length (m): 5.837 (Clear Span)	

	Number	Material	Status		Percentage of Inspected Component in Each Condition State				(%)	Comments		Number	Pe	Number	
Component Type	Component N	Component M	Modification :	Unit	1	2	3	4	)dsuj	Full description including details of:  * Location of defect/condition/item  * Description of defects including type, magnitude and extent	Sketch Numb	Photograph I	Work Required	Work Item Nu	Work Description
Beam	1-2	Steel	Existing	Linear m	100					Water staining to the face of the beams		6	N		
Bearer	1-2	Jarrah	Existing	Each	100					Moisture has caused the paintwork to flake off along the top of the bearers		6	N		
Bracing	1-3	Jarrah	Existing	Each	100				***************************************	Good condition		6	N		
Tie Beam	1-4	Jarrah	Existing	Linear m	100					Good condition		6	N		
Spiking Beam	1-2	Jarrah	Existing	Each	100					Good condition		6	N		
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Bridge Number: 9250

Crossing: No

Northam - Cranbrook Hwy And Rail

LGA:

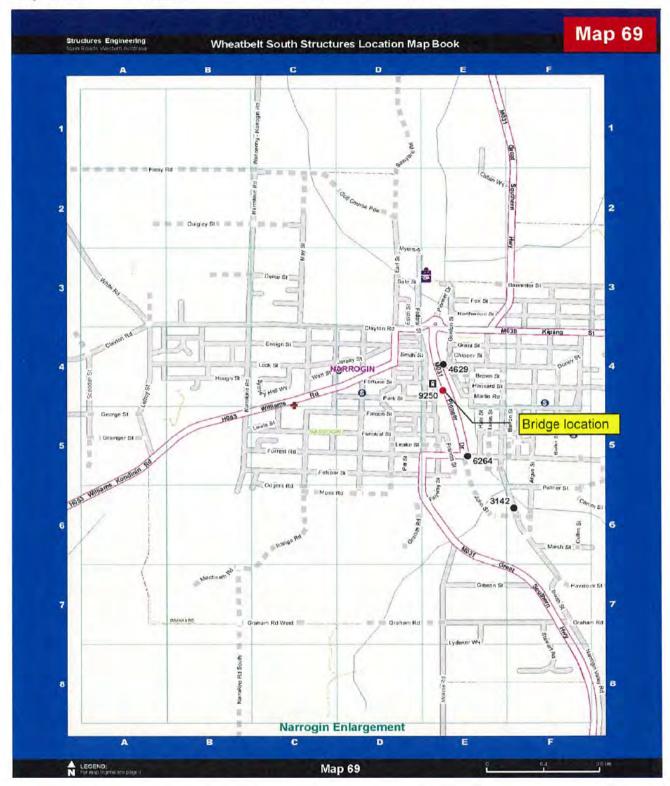
Narrogin (T)

Road Name: Northam Cranbrook

Inspector:

J Hesketh

SLK: 167.89







Bridge No.: 9250 LGA: Narrogin (T) Date: 08/02/2013

Road Name: Northam Cranbrook SLK: 167.89

Crossing: Northam – Cranbrook Hwy & Rail Inspector: J Hesketh



Photo No. 1: Bridge identifier



Photo No. 2: LHS





Bridge No.: 9250 LGA: Narrogin (T) Date: 08/02/2013

Road Name: Northam Cranbrook SLK: 167.89

Crossing: Northam - Cranbrook Hwy & Rail Inspector: J Hesketh



Photo No. 3: RHS



Photo No. 4: Deck





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 5: Pilaster 2



Photo No. 6: Span 10





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 7: Pier 9



Photo No. 8: Span 9





Date:

08/02/2013

Bridge No.: 9250 LGA: Narrogin (T)

Road Name: Northam Cranbrook SLK: 167.89

Crossing: Northam - Cranbrook Hwy & Rail Inspector: J Hesketh



Photo No. 9: Pier 8



Photo No. 10: Span 8





Date:

Bridge No.:

9250

LGA:

Narrogin (T)

08/02/2013

Road Name:

3000

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 11: Pier 7



Photo No. 12: Span 7





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 13: Bracing to Pier 5 and 6



Photo No. 14: Span 5





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 15: Pier 4



Photo No. 16: Span 4





Date:

08/02/2013

Bridge No.:

9250

LGA:

Narrogin (T)

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 17: Pier 3



Photo No. 18: Span 3





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 19: Pier 2



Photo No. 20: Span 2





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

3230

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 21: Pier 1



Photo No. 22: Span 1





Date:

08/02/2013

Bridge No.: Road Name: 9250

LGA:

Narrogin (T)

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 23: LHS Elevation



Photo No. 24: RHS Elevation





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 25: Pilaster 1



Photo No. 26: Rusting to all Pilaster 1 bolts - minor surfacing rust to steel





Date:

08/02/2013

Bridge No.:

9250

LGA:

Narrogin (T)

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 27: cracking to surface concrete - Pier 2



Photo No. 28: Inadequate pier protection - Pier 2





Bridge No.: 9250 LGA: Narrogin (T) Date: 08/02/2013

Road Name: Northam Cranbrook SLK: 167.89

Crossing: Northam - Cranbrook Hwy & Rail Inspector: J Hesketh



Photo No. 29: Inadequate pier protection - Pier 3



Photo No. 30: Inadequate pier protection - Pier 4





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

0200

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 31: cracking to concrete surfacing Pier 3



Photo No. 32: Timber bearing split





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 33: Minor surface corrosion common throughout



Photo No. 34: Carriageway surfacing





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 35: cracking to concrete 4



Photo No. 36: Bolts Pier 7 badly corroded - sheared off





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 37: Typical surface corrosion to Piers



Photo No. 38: Minor surface corrosion to beams - typical





Bridge No.: 9250 LGA: Narrogin (T) Date: 08/02/2013

Road Name: Northam Cranbrook SLK: 167.89

Crossing: Northam - Cranbrook Hwy & Rail Inspector: J Hesketh



Photo No. 39: Pilaster 2 LHS



Photo No. 40: Pilaster 2 RHS





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 41: A2 end view



Photo No. 42: A2 LHS





Date:

08/02/2013

Bridge No.: Road Name: 9250

LGA:

Narrogin (T)

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Northam Cranbrook

Inspector:



Photo No. 43: A2 RHS



Photo No. 44: Surfacing A2 cracked





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 45: Rusting to approach 2 rails



Photo No. 46: Minor trip hazard A2 end





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:

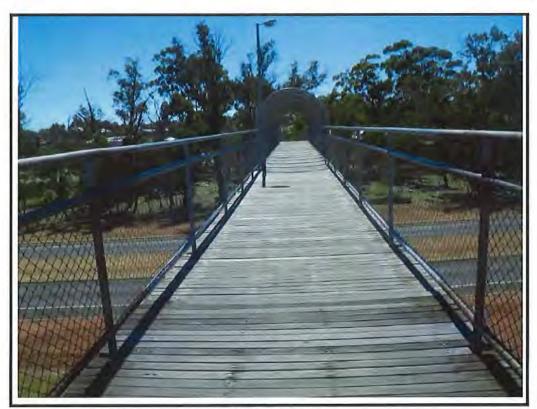


Photo No. 47: A1 view



Photo No. 48: Cage on bridge





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 49: Rotten timber to deck - Span 2



Photo No. 50: Anti-slip surfacing come of the ramp section of deck





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 51: Pier 6



Photo No. 52: Span 6





Bridge No.: 9250 LGA: Narrogin (T) Date: 08/02/2013

Road Name: Northam Cranbrook SLK: 167.89

Crossing: Northam - Cranbrook Hwy & Rail Inspector: J Hesketh



Photo No. 53: Pier 5



Photo No. 54: Surface corrosion to Pier 5 and 6 bracing





Bridge No.:

9250

LGA:

Narrogin (T)

Date:

08/02/2013

Road Name:

Northam Cranbrook

SLK:

167.89

Crossing:

Northam - Cranbrook Hwy & Rail

Inspector:



Photo No. 55: Corroded bolts to Pilaster 2

# Bridge 3142 Doney Street Pedestrian Bridge L2 Inspection





## MRWA 51-4629-15

## DETAILED TIMBER BRIDGE INSPECTION SUMMARY

Bridge No 4629 Wheatbelt South Region:

River Name: Narrogin Brook SLK: 0.03

Road: **Doney Street** Road No: 0004

LGA: Narrogin

#### 1. General

The bridge is very old and is used only by pedestrians.

#### 2. Substructure

#### 2.1 Abutments

Both abutments have failed sheeting that requires replacement.

#### 2.2 **Fullcaps**

Fullcap ends at both piers are in poor condition. In many places fullcaps are tilted. Abutment 2 fullcap at its joint is drilling poorly.

#### Corbels 2.3

Pier 2 corbel 1 LHS end is rotted. In many places corbels are tilted.

#### Superstructure 3.

Stringer 5 in span 1 has failed. There is a large hole in road surface above the stringer. Decking in many places is in poor condition.

## 5. Recommendations

Close the bridge for all traffic.

A BRIDGE

Signature.

**BRIDGE INSPECTIONS** 

24 April 2001

Shire of Narrogin

## ROUTINE MAINTENANCE SUMMARY REPORT OF BRIDGE NO:

4629

Narrogin Wheatbelt South 24 April 2001  Ty report should be read in contion was carried out on this bridge the scuppers and install flashing all the bolts in the bridge and the structure for active termited that it is to pile them, tighten the bolts, minor reserve the width marker boards and the debris and farmers fences in the structure for active termited that it is to pile them.	dge and the following remorm ie:  Y for YES, are ings as required. d replace the rusty ones. s. s, stringers and ends of a epairs and paint the guard	0.03  d field inspection report.  narks may be applicable.  nd N for NO.  all exposed timber.  drail on the bridge.	
24 April 2001  Ty report should be read in contion was carried out on this bridge the scuppers and install flashing all the bolts in the bridge and the structure for active termited that it is to pile them, tighten the bolts, minor reserve the width marker boards and the width marker boards and the width marker boards and the structure for active termited that it is to pile them, tighten the bolts, minor reserve the width marker boards and the structure for active termited that it is the structure for active te	njunction with the attached dge and the following remorm ie:  Y for YES, are ings as required.  d replace the rusty ones.  s, stringers and ends of a epairs and paint the guard	d field inspection report.  narks may be applicable.  nd N for NO.  all exposed timber.  drail on the bridge.	N N N
y report should be read in contion was carried out on this bridge the scuppers and install flashing all the bolts in the bridge and the structure for active termited that it is to pile them, tighten the bolts, minor reserve the width marker boards and the width marker boards and the structure for active termited that it is to pile them, tighten the bolts, minor reserve the width marker boards and the structure for active termited that it is the structure for active t	dge and the following remorm ie:  Y for YES, are ings as required. d replace the rusty ones. s. s, stringers and ends of a epairs and paint the guard	narks may be applicable.  Ind N for NO.  All exposed timber.  Idrail on the bridge.	N N N
the scuppers and install flashing all the bolts in the bridge and the structure for active termited attained timber treatment to pile attent, tighten the bolts, minor reserve the width marker boards and the structure for active termited attained to pile attention to the bolts, with the bolts, and the width marker boards and the bolts attention to the bolts, with the bolts, with the bolts, and the bolts are the width marker boards and the bolts are the width marker boards and the bolts are the bolts.	dge and the following remorm ie:  Y for YES, are ings as required. d replace the rusty ones. s. s, stringers and ends of a epairs and paint the guard	narks may be applicable.  Ind N for NO.  All exposed timber.  Idrail on the bridge.	N N N
the scuppers and install flashing all the bolts in the bridge and the structure for active termited attative timber treatment to pile attent, tighten the bolts, minor reserve the width marker boards and	orm ie: Y for YES, and ings as required.  In replace the rusty ones.  In s.  In	all exposed timber.	N N N
the scuppers and install flashing all the bolts in the bridge and the structure for active termited attained timber treatment to pile attent, tighten the bolts, minor reserve the width marker boards and	ings as required.  d replace the rusty ones. s. s, stringers and ends of a	all exposed timber. drail on the bridge.	N N N
n all the bolts in the bridge and the structure for active termited stative timber treatment to pile often, tighten the bolts, minor re- tie the width marker boards an	d replace the rusty ones. s. s, stringers and ends of a	drail on the bridge.	N N N
he structure for active termited stative timber treatment to pile sten, tighten the bolts, minor re- se the width marker boards an	s. s, stringers and ends of a epairs and paint the guard	drail on the bridge.	N N
ntative timber treatment to pile often, tighten the bolts, minor re te the width marker boards an	s, stringers and ends of a	drail on the bridge.	N N
ethe width marker boards an	epairs and paint the guard	drail on the bridge.	N
e the width marker boards an			
	d the signing on the bridg	ge.	N
e debris and farmers fences i			
o dobite dita tarriore reflece i	under the bridge.		N
proaches at the ends of the b	ridge require repairs.		N
oint maintenance.			N
	uld be cleared including d	debris and weed build-up	N
kment status.			N
r scour.			N
OR ENGINEERING ASSESSI	MENT:		
MEDIUM	HIGH	URGENT	Υ
0	petation around the bridge shokerbs.  Inkment status.  OR ENGINEERING ASSESSI	getation around the bridge should be cleared including of kerbs.  Inkment status.  OR ENGINEERING ASSESSMENT:	petation around the bridge should be cleared including debris and weed build-up kerbs.  Inkment status.  OR ENGINEERING ASSESSMENT:

MAIN ROADS Western Australia

(Signed)

3912/01/03/16 1/99

SHEET No MAIN ROADS Western Australia

TIMBER BRIDGE DETAILED INSPECTION REPORT

Inspected By:

Checked By:

Date:

Inspection No...

Bridge No:

WHEAT BELT SOUTH

Local Government:

NARROGIN

Road No. :

Road Name :

SLKm :

NARROGIN BROOK

Overall Length: 11.850m (between C of supports at abutments)

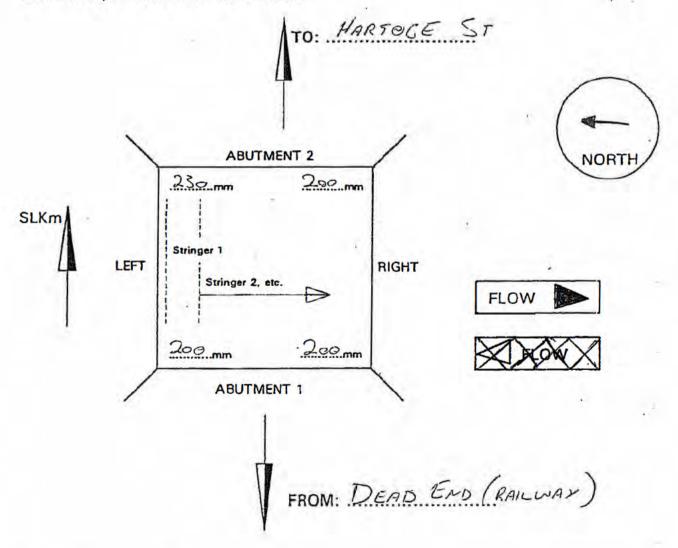
Width Overall: 10.600m Head Room: 1.400m

Spans: S Width Between Kerbs: 10.440 m Existing Conc Overlay:

## GENERAL INFORMATION

Piers are numbered along the bridge in ascending order from ABUTMENT 1 to ABUTMENT 2. Piles are numbered across the bridge in ascending order from LEFT to RIGHT. Stringers are numbered across the bridge in ascending order from LEFT to RIGHT.

Pavement depths noted in corners of sketch.



SHEET No 2



Inspection No: 3 Bridge No: 4629

## TIMBER BRIDGE **DETAILED INSPECTION** REPORT

Inspected By:	PL
Date:	29,3,01
Checked By:	22

GENERAL	INFORMATION	(cont.)
---------	-------------	---------

VEGETATION	MEDILIM GROWTH REDS CLEARING.
STREAM BED CONDITION	MAIN STREAM FLOW SPANS 1 = 2
FENCING AND PAINT CONDITION	NONE
RBING	TIMBER DOOV X 80 H AT AI RHS ONLY (1.0 M WEATHERED - FAIR. THE REST OF KERB
SCUPPERS / FLASHINGS	15 MISSING PHOPO
ROAD SURFACE CONDITION	SEACED CRACKED + MINOR UNDGICATIONS THRU-OUT - FAIR Lange Whole MERLY
APPROACHES	SERLED CRACKED MINOR UNDULATIONS - FAIR. MAJOR SCOURING AD RHS DUE TO STORM WATER DRAINAGE PIPE-1
SIGNING	NONE REOS 4 × WIDTH MARKERS
MITES	ACTIVE ABUT 2 STR. 8.
PREVENTIVE FUNGICIDE	NOT TREATED.
SERVICES	NONE + 7 x 120 mm GALY WATER PIPES 1.000 M RHS OF BRIDGE NOT ATTACHED.
ATTACHED FENCES AND OTHER WATERWAY OBSTRUCTIONS	Nove
BRIDGE CONDITION	PRIORITY FOR ENGINEERING ASSESSMENT  LOW
	TUB PILES DRILLED IN FEW LOCATIONS-LO
/	100 FILES DRICCED IN TEL CUCH/IUNS-50

Shire of Narrogin MAIN ROADS Western Australia Dundas\BDGINSPF.DOC

Bridges Asset Management Plan 2020-2030

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PAGE .....OF.......

MAIN ROADS
Western Australia

## TIMBER BRIDGE DETAILED INSPECTION REPORT

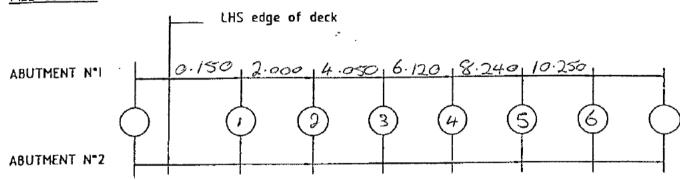
Inspected By: PL
Date: 29,3,0/

Checked By: ...

Date: 24, 4 ,01

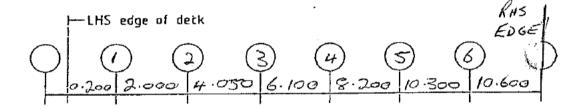
PILE CENTRES

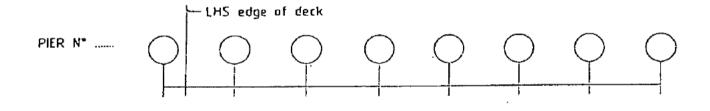
Bridge No:....



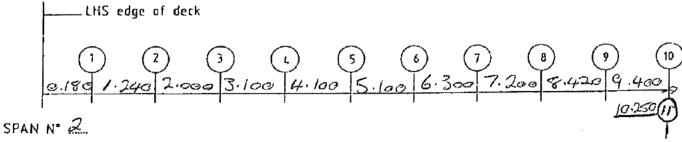


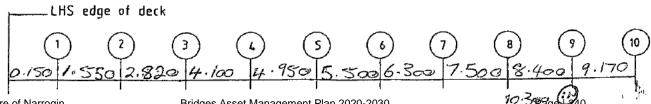
PIER Nº 2





### STRINGER SPACING





4	MAIN ROADS
1	MAIN ROADS Western Australia

Inspection No:.... Bridge No:...

## TIMBER BRIDGE **DETAILED INSPECTION** REPORT

Inspected By:

Date:

5

4

55

Checked By: 24,04,01 Date:

3 2

0

PILE	DIA	DIA	TIMBER DRILLIN			EXTENT OF ROT		SPL	LE .ITS	BLAZE MARKINGS		
No	mm	Solid	Rot	Pipe	Below GL	Above GL	Туре	RQS Band	Marking Ft / m	Ht H/C to Biz	Ht Blz to	
1	300	120		30		AT	LVI	12	1	0.800	-	
2	270	115		20			_		1	0.500	-	
3	250	105		20		AT	-			0.300	_	
4	260	110		20			-	*	-	0.300	_	
5	280	240					-		1	0.300	_	
6	300	130		20			trl	~2	-	0.0	_	
7												
8												
9												
10					F							
11				1							M	
12									1			
13					100							
14									1		1	
15				1								

SE THE VINGVALLS	LHS	- MONTE SKOOT STANKS SCOOKING FAIR
	RHS	· NATURAL GROUND
SHEETING - ABUTMENT	¢	: TOP SHT 10/S REST SOLID
	LHS	· SOLID
	RHS	: TOP SHT U/S REST SOUD
WING CAP CONDITION		: NATURAL GROUND
FULL HALF CAPS / SILL BEAMS	- SIZE	300 × 300 NO. 1 0 LHS END 20/PIDE
COMMENTS		REST SOLID WEATHERED + TERMITE DAMAGE
\$ SOCIE	) K	HS END SOUD
TOP SHEET HAS	FAILE	D BEHIND STRS 7,8,9,10,11
		VED RETWEEN PLES 2+3 546 BOTH ABUTS
	0	ED ON CORBELS THAT AIRE PLACED ON PLES
		YOU HEAVY RUST THAT

MAIN ROADS Western Australia Dundas\BDGINSPF.DOC 3912/01/03/13 08/95

SH	EET	No	5

PAGE	 OF	
1,100	 -	***********

MAIN ROADS Western Australia
Western Australia
Inspection No: 3
11/00
Bridge No: 4621

# TIMBER BRIDGE DETAILED INSPECTION REPORT

Inspected By:	PL
Date:	29,3,01
Checked By:	5.5
Date:	24, 4,01

PIER Nº : 1

PILE	DIA	1	TIMBER		EXTENT OF ROT		SP	SPLITS		BLAZE MARKINGS			
No	mm	Solid	Rol	Pipe	Below	Above GL	Туре	RQS Band ?	Marking Ft/m	HI H/C to Btz	Ht Blz to GL	Sags (mm)	
1	320	140		20		AT TOP	LVT	Ve	-	0.800	-		
2	250	105		20		AT	cv R	1	_	0.800	_		
3	260	100		30		A4 YOP	wat		_	0.800	-		
4	260	230					we de		1	0.900	-		
5	300	120		30		TOP	NUM	13	-	0.900	-		
6	280	100		40		AT	Num 2	11	-	0.900	-		
7													
8													
9													
10													

	CORBELS :	ok		and a second of the second of		0
	IRONWORK :	HEAVY	Russ		3	
	WALERS :	SIZE NA	x		······································	,
	BRACING :	SIZE 220 V	x 70 H	SPLIT AT END	's REST OIL	<.
	HALF CAPS :			LHS END SO		
	COMMENTS :	RHS END.				
	PILES	12,3,	5,6 /	AVE SUBSIDE	D DUE	To
				DLOGS , MAINL		
				OVER - F	0	•
	. Fuce	CAP 15	JOINEL	OVER PILES	3 + BETWEE	N Pico 4+5
				E 1 0.900m Be	THE REAL PROPERTY OF THE PARTY	<b>A</b>
		200 000 000 000 000 000 000 000 000 000		5 WANDOO		
*			_	LHS - P	40 TOS	
	¥	24.4		1 348510ED CHS	***************************************	- PHOTO
		100 1 1		POSSIBLY SUBS		
		1		4 (CENTER OF		
				HT? 78 mm ARO		
		70	112,0	10, 10,00	STRING CIN	

					_
C	ш	F	FT	No	5
0		-			_

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The	MAIN	ROADS Australia

Inspection No:...3 Bridge No:....

## TIMBER BRIDGE **DETAILED INSPECTION** REPORT

PAGE ..... OF ......

Inspected By:

29,3,01

55 Checked By: 24,4,01 Date:

PIER Nº: 2

PILE	DIA	TIMBER DRILLING				NT OF OT	SPI	LITS		BLAZE MARKINGS		HALF CAPS
No	mm	Solid	Rot	Pipe	Below GL	Above GL	Туре	RQS Band ?	Marking Ft/m	Ht H/C to Blz	HI BIZ to GL	Sags (mm)
1	300	SEE	2				LVJ	1	حت	0.600	_	
2	290	115		30		AT	LV I	12	f	0.700	-	
3	270	105		30		TOP	LV	12	1	0.700	_	
4	340	170					LVV	V2	_	0.500	_	
5	320	130		30		TOP	MrT		-0	0.80	-	
6	520	140		20		TOP	NUM	1	-	0.800		
7												
8												
9												
10											1	

CORBELS :#1 REQS REPLACING	
IRONWORK : HEAVY RUST	
WALERS : SIZE - X N/A	
BRACING : SIZE 2201 X 70H WEATHERED AND SOUT AT ENDS-OK	
COMMENTS : FULL CAP WEATHERED - OK . L SOLID LHS END	
RHS END 20/PIPE REST SOLID	
FULL CAP JOINED BETNEEN PLES 2+3 PLUS 4+5	
BEDLOG EXCAUATED AT PICE I O GOOM DOWN. Q 400 APPROX SOLID.	
CORBEL I VERY LARCE PIPE + TERMITE DAMAGE	
AT LHS END. CONTACT TO PILE SOMM X 80 MM APP	ROX
AT RHS TOP OF PILE. CORBEL AT THAT POINT AZ 30/8	
Al. 100/s AT CONTACT POINT, #6 Al 100/s A2 90/5	
PLEI AI-80/S CORREL I END VNEW LHS. PHOSO	
RAS 70/5/ LUS 80/5	
A1. 40/5 RHS.30	
Shire of Narragin 70 Bridges Asset Management Plan 2020-2030 Page I 244	

MAIN ROADS Western Australia 00000144.MNL

3912/01/03/10 Rev 2 11/96

.... OF .....



Inspection No: 4629 Bridge No:.....

ABUTMENT:

## TIMBER BRIDGE **DETAILED INSPECTION** REPORT

Inspected By:

Checked By:

\$5

Dat e

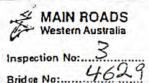
LHS

RHS

PILE	DIA	1		TIMBER			NT OF OT	SPL	LE .ITS	BLAZE MARKINGS				
No	mm	Solid	Rot	Pipe	Below GL	Above GL	Туре	RQS Band	Marking Ft / m	Ht H/C to Blz	Ht Blz to			
1	300	120		30 NENTS		AT	LUL	~	-	0.100	-			
2	320	SEE	CONIL SHT.	PENTS	0.400+	TOP TOP	_		-	0.400	-			
3	290	125		20			-		-	0.400	-			
4	280	140					mu p		)	0.403	-			
5	300	120		30			LUA	V	1	0.300	_			
6	300	SEE	Comm	ents		TOP 500	Lvgi	/	j	0.300	-			
7														
8														
9														
10														
11														
12														
13														
14														
15														

SHEETING - WINGWALLS	LHS	· NATURAL GROUND - MAJOR SCOURING - PHOSE
	RHS	: NATURAL GROUND - OK
SHEETING - ABUTMENT	¢	FOR SHT U/S RESS SOCIO
	LHS	SOLID
	RHS	FOR SHT U/S REST SOUD
WING CAP CONDITION		: NATURAL GADUND RHS-OK, LHS MAJOR SCOUR
HALF CAPS / SHI BEAMS	- SIZE	300 × 300 NO. 1 LHS END 20/PIPE
COMMENTS		REST SOUD WEATHERED AT END OK.
		130/5 FRONG 40/5 BACK REST PIPE. FULL CAP
BELOW STR6-130/	FRON	PIPE TO BACK. VERTICLE 90/5 BOTTOM 60/5 TOP
		ELOW PILE 6 EXCAVATED B. 900 M DOWN
\$ 300 SOLID.	TOP !	SHEETING U/S BETWEEN STRS 4 +11.
MAIN ROADS Western Australia	VORK	HAS 30 HEARTON RUST.

Shire of Narrogin



## TIMBER BRIDGE **DETAILED INSPECTION** REPORT

PC 29, 3,01 Inspected By: Date:

Checked By:

Bridge No:	Date:
SPECIAL COMMENTS	BRIDGE PART:
12:0	
ABUT 2	10.51
	S A2 80/S ONLY SEATED
RNS OF PILE D	UE TO CORREL TILTING
FULL CAP UNDER S	-0 V
FULL CAF UNDER 3	78 0
12/1/14	TIP, FOR 80/S FRONT 30/S BACK
2 1 1/2	11/2
5 1 1 10 Fiel 19 41	BOTTOM 70/S FRONT 40/S BACK
3 111111	- 001 1011 1013 1 KOTOT 4013 WINCK
11176501	
-	VERTICLE DRILL RESULTS
	- 70/s BOTTOM 20/s TOP?
& FULL CAP BELOW ?	STR 9 50/s FRONT 20/s BACK
	VERTICLE 40/5 ROTTOM SO/S TOP
	VERTICUE 40/5 NOTION 30/5 TOP
REST PIPE	
FULL CAP RELOW S	TR 10 40/S FROMS 40/S BACK
REET PIPE VERTICIE	30/s BOTTOM 90/s TOP REST RA
CORBEL L SERTED LH	IS DUE TO TILSTING 160/S FRONT 90/S
BACK REST PIPE & ROT	
PILE 2 A2-70/S	Pue 6 A2-50/S
HS 70/s RHS70/s	LHS-50/5 RHS-60/S
(CONTROL )	
A1-60/s	Al. sols
/11 - 60/5	W1.2018
	Control of the Contro
	05(

Shire of Narrogin

图图外图

SHEET NO 6 MAIN ROADS Inspected By: TIMBER BRIDGE Western Australia 01 DETAILED INSPECTION 35 Inspection No: Checked By: REPORT 4629 Bridge No:.... Date: FAILED STRINGERS - SPAN NO : "REFER TO LEGENO FOR DRILLING LOCATIONS STRINGER NO 5 10 11 H DIAMETER 260 260 260 260 260 260 290 260 260 V MEASUREMENT A 260 260 260 260 260 268 260 260 260 260 Solid B 110 110-110 90 110 110 60 110 110 110 100 DRILL VERY Rot U PTOP Pipe PFO T 20 20 20 20 20 20 30 DRILL HORIZ Left 80 100 Right 1 50 60 VERTICAL SPUT HORIZ E SPUT ROS D BOLTING? H DIAMETER 260 260 260 260 260 260 260 260 M 260 260 960 V MEASUREMENT 260 260 260 I 260 260 268 260 260 260 260 260 Salid 110 D 130 120 80 130 100 130 110 110 100 100 DRILL VERT Ret Pipe S 50 30 20 20 30 30 DRILL HORIZ Left P 70 70 Right 90 100 SPLIT Heriz ROS H.Solin BOLTING? H DIAMETER 260 260 260 1260 260 260 260 260 260 260 V MEASUREMENT A 148 120 260 120 260 130 120 120 B Salid 130 70 60 70 40 110 DRILL VERT Rot U Pipe PTOE T 20 20 20 60 20 50 DRILL HORIZ 90 70 110 Right 90 80 90 VERTICAL Large SPLIT Minor HORIZ. E N SPLIT Minor D V.Split ROS H.Split BOLTING? NOT APPLICABLE S Rot -SIZE COND OF BEARERS COND OF SPIKING PLANK NOT APPLICABLE 50 50 80 COND OF DECK ENDS : S/Rot CONDITION OF DECKING ON FULL CAPS THRU-OUT. COMMENTS : 56.11 DECKING SIZE DUE TO LARGE HORRIZONTAL SPLIT- PHOTO. AZEND Nos 103 1.5. 3912/01/03/11 Rev 2 OVERLAPPED

MAIN ROADS Western Australia

2	MAIN ROADS Western Australia
Com	Western Australia
lasne	ction No:
mapo	

## TIMBER BRIDGE **DETAILED INSPECTION**

Inspected By:	<u>PC</u>
Date:	29,3,01
Checked By:	SS

Bridge No: 46	29		TEFORI		D	ate: 24, 4,01
SPECIAL COMM	ENTS			BRIDGE F	ART:	
SPAN 1	/PCE	DE	cking	NEAR	UK	BETWEEN
STRS	8+9	PIEK	IEND.	VIII. 1	-/-	BETWEEN
	Minimum (minimum minimum minim		ance is manuful time true.	organicale		
- interest of the second of th						
, , , , , , , , , , , , , , , , , , ,					1000-10	
160 m			- Lander			
and the second s	e to transative service.		- Total Indiana - Co		#1947 - 1 - 10-Aren	
					t 300000	N
						p
	where the same states				are no established	
V (prima)						
		J •		- 100		
	of the state of th		w 1		44	
no a remove				-	HEAT MAN	- 56E + 11F (VINCE)
			e (Centre) in			300,000

MAIN ROADS Western Australia Dundas\BDGINSPF.DOC

3912/01/03/13 08/95

LIBRADY

SHEET No 6

MAIN ROADS Western Australia

Inspection No: 3

# TIMBER BRIDGE DETAILED INSPECTION REPORT

Inspected By: SS Checked By:

Date: 29, 4,01

,	STRINGE	RN		1		2	3		5	6	7	В	9	10	11	1
	H DIAMETER		26	0	260	260	260	260	260	260	260	260	260	_	_	
A	V MEASU	REMI	ENT	-	$\rightarrow$		-	-		$\overline{}$	2120		_	_		1
8			Solid	1110			_	110	_	120			55		45	7
U	DRILL VERT		Rot	1	1		1	1.		100	100	130	30	-	40	
T			Pipe	120	3			20		10	1		10	20	20	
	DREL HO	RIZ	Left		1					1				-		
1			Right		1										+	
	VERTICAL SPLIT	L	Mino			1/	/	1	1	/	/	/	1	/	/	
E	HORIZ	4	Miner	1/	1	/	1	1/	1/	1/	1/	/	/	/	/	
0	ROS		Split H.Split			1	/	1	1	1	1		12	1	/	
	BOLTING?		-п.эри			2/2										$\angle$
A	H DIAMET		NT	260	-	260	260	-	-	_				260		
	V MEASON	EME	Solid	260	-	260	_	260	_	-	1			260		
)	DRAL VER		Ret	100	1	130	110	130	130	110	130	130	130	100	110	
	10,20		Pipe	30	+		0.0			,				2	2	
			Left	30	+		20			20				30	20	
	A STATE OF THE STA		Right		+											
	SPLIT	V.	rt Heriz	1	14		/	4	/	7			4			-
	ROS BOLTING?	V.	Splie H.Splie	1	1	1	/	M		/			1.2	/	/	/
=	H DIAMETE				10	10	0/0	010			0 (0)	2/-	2/-	06-1		_
	V MEASURI		п				$\overline{}$				260	_	_	_	_	_
	· Incharge	1	Selid		1	-	260	120			120	4100		_		_
1	DRILL VERT	1	Rot	40	1	09	110	60	60	40	60	180	40	130	40	-
	722-27-20	_	Pipe	20	1,0		2-	-		20		350	6 :		0	-
	DRILL HORE	_	Left	20	13	9	20	-		20		500	20		20	
		-	Right		-	+						90	-	-	-	-
1	VERTICAL	Larg		11	i	1	1	//	1			10	11	1		-
1	SPUT HORIZ.	-	Minor	/	1	1				1	4		/	/		_
1	SPLIT	Larg	Minor	/	1		/	/	/	/	/	/		/	1	/
ROS		V.S		a/	W	1	1	2	1	1	13	31	3	/	/	/
1	BOLTING?		H.Split	1	y		4	a		~	0	7	1 [	/	4	_
0	OF BEARERS OF SPIKING F		<b>k</b> :	NOT AI			_	] %	SIZE	D OF D	X X X	os :	S/Rot		Ro	t _

MAIN ROADS Western Australia

3912/01/03/11 Rev 2 11/96

## TIMBER BRIDGE **DETAILED INSPECTION** REPORT

	STRINGER	NO.	13	12	T 3	14	5	Te	7	0	10	1 10	1 22	110
**	H DIAMETER	_	10.4	-	-	10	-	6	-	8	9	10	0:40	12
	V MEASUREMENT		260	-			-	-	10	1		260	-	
1	7,000		260		-	1			1	260	120	260	-	-
•		Solid	120	130	100	100	20	120	60	70	60	110		
1	DRILL VERY	Rot	-					10						
		Pipe	SOF		30	30	40	PTOP		60		20	20	
	DRILL HORE	Left	60				120	60		80		1		
		Right	90				90	80		60			-	
	VERTICAL SPLIT	Mine	1/	/	/	1	1	/	/	/	1	1	/	/
	HORIZ	Large	1	1	/	1	1	/	/	/	1	1	11	1
	ROS	V.Splin		/		12/	1/		/	/	11/	11/	/	/
	BOLTING?	H.Spil				1	1		/		100		1	/
	H DIAMETER		Tois	260	200	260	1210	200	260	260	260	12/0	2/0	
1	V MEASURE		260			260	260	-	_	260	260	260		
		Solid	-			110	110			80	130			
	DRALL VERT	Ret	70	110	110	110	110	70	130	80	4-50	A7 704	60	
		Pipe	PTO	20	20	20	20	Prop	-	P 10		130	.70	-
1	DRILL HORIZ	Loft	80	20	0.0	20	20	70		TOP 40		80	60	_
		Right	110					50		83		90	100	
1		Vort	1119	7	1	1/	L	7		80	1/	E/	100	-
1	ROS	Heriz		/	11	1	1		/	/	2		1	/
1	BOLTING?	V.Splin			1	1					1	3	12	/
7	H DIAMETER		260	010	0.40	010	010	2/0	010	210	04-	00	0/0	
ŀ	THE MARIN IN THE	MEASUREMENT		260	260	260	-	260	260	260	260	A STATE OF THE PARTY.	260	_
ŀ	-	Solid	260	-	130	-	260		260	260	260		260	_
١	DRILL VERT	Rot	90	80	130	80	90	40	120	50	110	110	70	_
١	DINCE VOIL	Pipe	1	~	-	PTO	D TO	PTO	RIGH	Ca.	0-	20	Pro	-
ŀ	DRILL HORIZ		40	50		250			7		20	20	TOP	
I	DICEL HOTEL	Right	110	80	-	70	80	83	70	60	-	-	70	
ŀ	VERTICAL I	arge	100	90		130	10	40	70	40			50	
	SPLIT	Minor			/	2	2	/	/	4	2	/	/	/
L	HORIZ.	Minor		1	1	1	/	1	1	1	/	1	4	/
Γ		/.Split				21	XX	1	1		2/	2/		-
	BOLTING?	A.Split			1						/	7	10	_
	BULING:		No. Va		_ [						7 [		1	-
			NOT AP	LUCAB	<u> </u>		SIZE	-	┪^		1 5		Re	
	OF BEARERS						SIZE	_	X		S	_	Ro	1
		ANK :	NOT AP	-		7	SIZE					-		
	OF BEARERS			-	20	] ×		D OF D	ECK EN	DS :	S/Ro	. [	20 2	0
I COLO	OF BEARERS OF SPIKING PL	NG :	NOT AP	80	20	-	CON	- 130			S/Ro	_		
I CONTRACTOR	OF BEARERS OF SPIKING PL		NOT AP	80 CTIV	20 G	TERM	CON	5-	57	R 7		JAK	RAH	
I CONTRACTOR	DF BEARERS DF SPIKING PL TION OF DECKI	NG :	NOT AP	80 CTIV	20 3E	-	CON	S. Pik	ST.	R 7 N 5	TRI	JAK B.E		

Shire of Narrogin

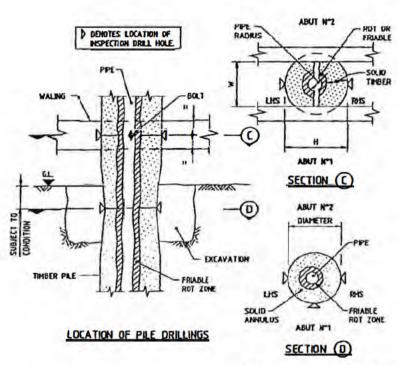
11/96 Bridges Asset Management Plan 2020-2030



TIMBER BRIDGE DETAILED INSPECTION REPORT

Inspection No:....

Bridge No:....



F FIRST DRILL LOCATION IS 4 100 THEN DRILL BOTH ALTERNATE LOCATIONS.

#### LEGEND

LVS - LARGE VERTICAL SPLIT

MVS - MINOR VERTICAL SPLIT

LHS - LARGE HORIZONTAL SPLIT

MHS - MINOR HORIZONTAL SPLIT

LDS - LARGE DIAGONAL SPLIT

MDS - MINOR DIAGONAL SPLIT

ROS - REQUIRES BANDING/BOLTING

#### PRIORITY BOLT/BAND

0 - A.S.A.P

1 - ROUTINE MAINTENANCE

2 - LOW PRIORITY

P - PIPE

F - FRIABLE

S - SOLID

N/A - NOT APPLICABLE

V - VERTICAL

H - HORIZONT AL

D - PIPE DIAMETER

W - WIOTH BETWEEN WALING

GL - GROUND LEVEL

Str - STRINGER

HT - HEIGHT

- CENTRE LINE

H/C - HALF CAP

BIZ - BLAZE

O/A - OVERALL

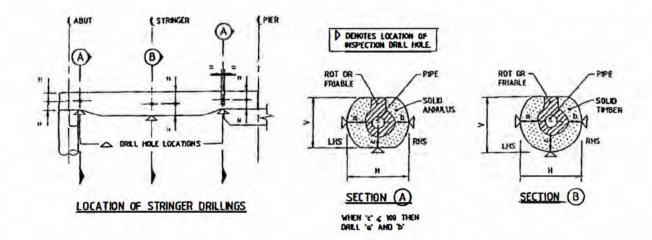
LHS - LEFT HAND SIDE

RHS - RIGHT HAND SIDE

Ft - FEET

Cond - CONDITION

IS UNSOUND (STRUCTURALLY)

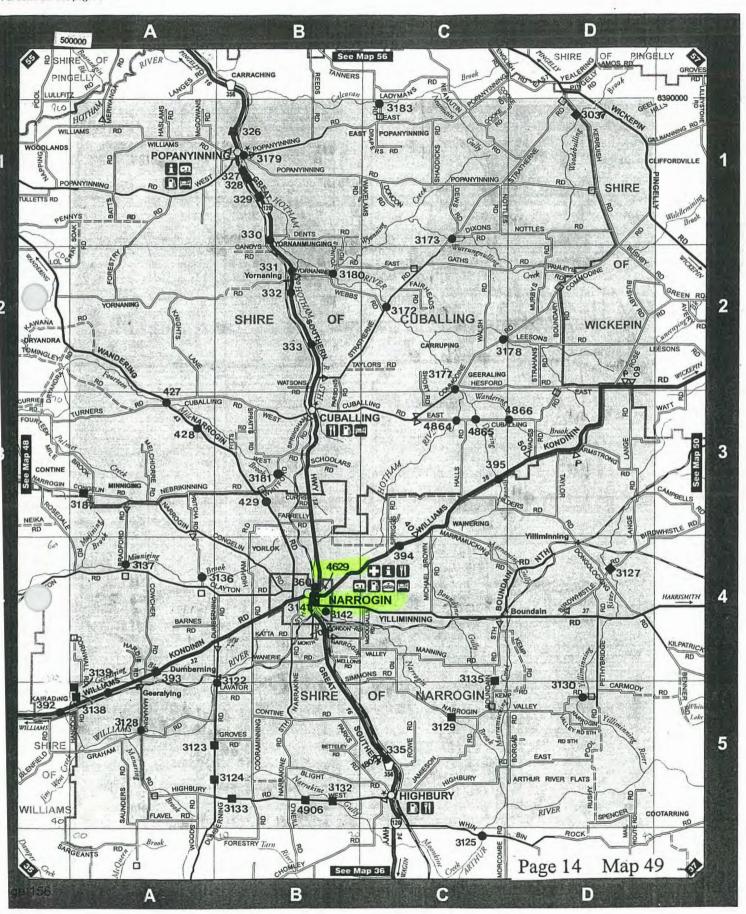


NOTE: All dimensions are of solid timber excluding sap wood and any surface rot on piles and stringers

# **MAP 49**

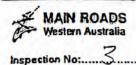
# LIBRARY

Scale 1 : 250 000 (1 cm = 2.5km) For scale bar see page 14



Bridge No:





## TIMBER BRIDGE DETAILED INSPECTION REPORT

Inspected By: 29,3,91
Checked By: SS

Date: 244,0

#### PHOTOGRAPHIC RECORD

#### PHOTO CHECK LIST

- General view of Bridge, for site information.
- Abutment detail, especially if scour a problem.
- Wing wall detail show scale of piles.
- Pier detail show widening if present.

do half caps change in size, or are they repaired?

- Accident or fire damage, or vandalism?
- Significant services how do they interact with abutments. piers?
- Footway details?
- Extent of scour holes, and subsequent structural damage (broken half caps, etc.).
- Are spans propped?
- Serious decay, termite attack or splitting of major members.

Where views of individual structural members are taken, details of Pier/Span No and Pile/Stringer No should be recorded with comments.

Several aspects from the check list may be included in each photograph. In darkened areas, flash photography should normally be used.

NEGATIVE NO	CAPTION
12	4629:
13	OVERAL VIEW FROM ABUT 1
14	LHS VIEW FROM ABYTZ
15	RHS VIEW FROM ABUT 1
16	MAJOR SCOUR AT ABIJT 2 LHS APPROACH - FROM AZ L
17	MAJOR SCOUR AT ABOT 2 LAS APPROACH - FROM LAS
18	KERB MISSING BOTH SIDES TUPICAL
19	ABUT! LHS + CHS WING LAYOUT.
20	ABUT I LAYOUT LHS
	ABUTI LAYOUT RAS
22	ABUT! CORRECT LAS END COND. NB FULL CAP
23	ABUT 1 CORBEL 1 TILTED
24	PIER I LAYOUT AT LHS FROM AI
25	PIER I LAYOUS AT RHS FROM A!

Bridge No:.

4629

# TIMBER BRIDGE DETAILED INSPECTION REPORT

Inspected By: ....

Date: 29,3,0/

Date: 24 4,00

PAGE ..... OF .....

#### PHOTOGRAPHIC RECORD

#### PHOTO CHECK LIST

- General view of Bridge, for site information.
- Abutment detail, especially if scour a problem.
- Wing wall detail show scale of piles.
- · Pier detail show widening if present.

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Several aspects from the check list may be included in each photograph. In darkened areas, flash photography should normally be used.

NEGATIVE NO	CAPTION
	NEW ROLL
0	4629
1	PIER 1 LHS END SHOWING SUBSIDENCE 60-70 MM
	FULL CAP COND + CORBEL I LAS END COND.
2	PIER I RHS END CONDON'S STRIL AZEND
	LARGE HORRIZONTAL SPLIT AT CHECK OUT.
3	SPAN I STRS AZ END. COND FROM AI LHS.
4	SPANI STRS AZ END VIEW FROM BOTTOM.
5	PIER 2 LHS END CONDINE CORBEL 1 COND.
6	PIER LAS END AlSIDE COND.
.7	PIER 2 LHS END AZ SIDE COND OF CORREC
8	PIER I PILE LA AT CORRECT MEICHT.
9	PIERI AT PILE 4 SHOWING TIEING BARS TYPICAL
10	PIER 2 RHS END COND MB OVERLAPPING STRS
11	PIER 2 LAYOUT FROM AI RHS.
12	ABUT 2 LAS LAYOUT FROM LAS AT

Bridge No:



Z.	MAIN R	OADS ustralia
120	otion No:	3

# TIMBER BRIDGE DETAILED INSPECTION REPORT

Inspected	By:
p	-,-

29,3,6

Checked By:

Date:

24,4,01

#### PHOTOGRAPHIC RECORD

#### PHOTO CHECK LIST

- General view of Bridge, for site information.
- Abutment detail, especially if scour a problem.
- Wing wall detail show scale of piles.
- · Pier detail show widening if present.

do half caps change in size, or are they repaired?

- Accident or fire damage, or vandalism?
- Significant services how do they interact with abutments. piers?
- Footway details?
- Extent of scour holes, and subsequent structural damage (broken half caps, etc.).
- Are spans propped?
- Serious decay, termite attack or splitting of major members.

Where views of individual structural members are taken, details of Pier/Span N<sup>o</sup> and Pile/Stringer No should be recorded with comments.

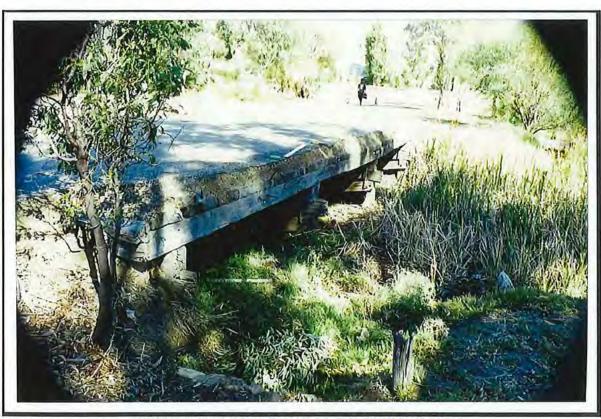
Several aspects from the check list may be included in each photograph. In darkened areas, flash photography should normally be used.

NEGATIVE NO	CAPTION
13	ABUT 2 RHS LAYOUT FROM RHS A1
14	ABUT 2 LHS FULL CAP + CORREL / COND.
15	ABUT 2 LHS FULL CAP + CORREC 1 COND.
16	ABLE 2 LHS END FULLCAP + CORBET FRONT VIEW
	NB END OF BRACING TYPICAL
17	ABUT 2 FULL CAP COND BELOW STRS 7,8,9
18	ABUT 2 RHS END FULL CAP + CORBER 6 COND
19	SPAN 3 STR 19 SHOWING LARGE PIPE AT BOSTOM.
	ALMOST FULL LENGTH OF STR
20	STR OVERLAPS TOPICAL
	MAJOR FAILURE IN ROAD SURFACE OVER STR 5 SPAN
	STRINGER 5 SPAN 1 - SPLIT & BROKEN
	DECKING COLLASPED AT SIR 5 ABT I END

Bridge No: 29.3.01 Region: 4629 Wheatbelt South Date: SLK: 0.03 Road No: Road: **Doney St** 0004 Narrogin Brook Spans: Height: 1.400m Over: 3 Inspector: Length: Narrogin P. Lewkowski 11.850 LGA:



OVERALL VIEW FROM ABUTMENT 1



MAIN ROADS Western Australia

LEFT HAND SIDE VIEW FROM ABUTMENT 2

Region: Bridge No: 4629 Wheatbelt South Road No: SLK: Road: **Doney St** 0004 0.03 Height: Spans: 1.400m 3 Over: Narrogin Brook Inspector: P. Lewkowski Length: 11.850 LGA: Narrogin



RIGHT HAND SIDE VIEW FROM ABUTMENT 1



MAJOR SCOUR AT ABUTMENT 2 LEFT HAND SIDE APPROACH-FROM
Western Australia ABUTMENT 2 END

Region: Bridge No: 4629 29.3.01 **Wheatbelt South** Date: **Doney St** Road No: 0004 SLK: 0.03 Road: Height: Narrogin Brook Spans: Over: 3 1.400m LGA: Narrogin P. Lewkowski 11.850 Inspector: Length:



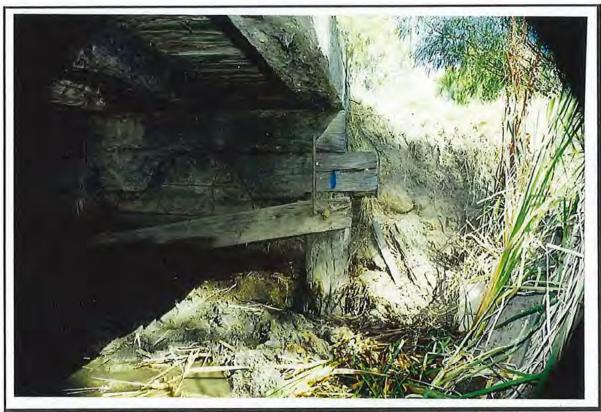
MAJOR SCOUR AT ABUTMENT 2 LEFT HAND SIDE APPROACH – FROM LEFT HAND SIDE



MAIN ROADS Western Australia

KERB MISSING BOTH SIDES TYPICAL

Region: Bridge No: 4629 Wheatbelt South Road No: SLK: **Doney St** 0004 0.03 Road: Height: Spans: 1.400m 3 Over: Narrogin Brook Length: Inspector: 11.850 LGA: P. Lewkowski Narrogin



ABUTMENT 1 LEFT HAND SIDE AND LEFT HAND SIDE WING LAYOUT



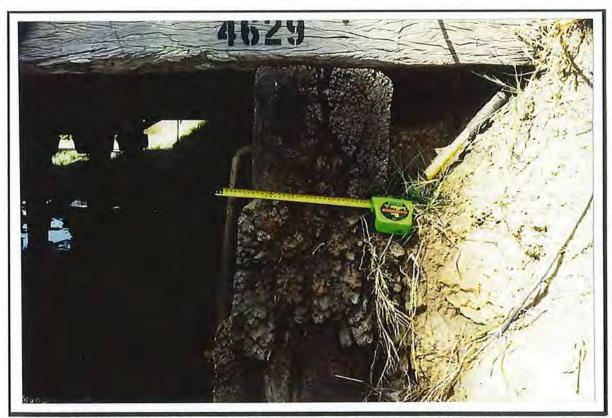
MAIN ROADS Western Australia

ABUTMENT 1 LAYOUT LEFT HAND SIDE

Bridge No: 29.3.01 4629 Date: Region: Wheatbelt South Road No: 0004 SLK: 0.03 Doney St Road: 1.400m Over: Spans: 3 Height: Narrogin Brook Inspector: P. Lewkowski Length: 11.850 LGA: Narrogin

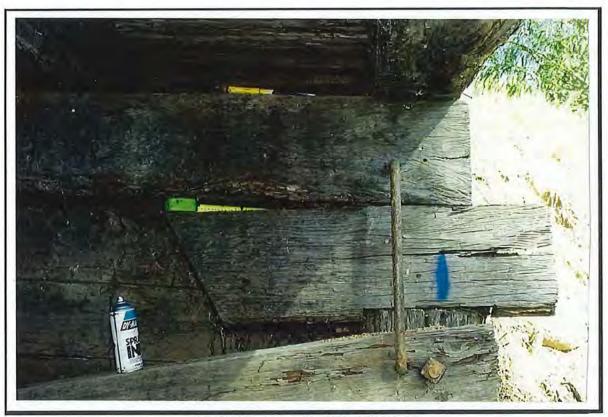


ABUTMENT 1 LAYOUT RIGHT HAND SIDE



ABUTMENT 1 CORBEL 1 LEFT HAND SIDE END CONDITION - NB FULL CAP

29.3.01 Bridge No: Date: 4629 Region: Wheatbelt South Road No: SLK: 0.03 0004 Road: Doney St Height: Narrogin Brook Spans: 3 1.400m Over: 11.850 Narrogin Inspector: P. Lewkowski Length: LGA:



ABUTMENT 1 CORBEL 1 TILTED



PIER 1 LAYOUT AT LEFT HAND SIDE FROM ABUTMENT 1

Region: Wheatbelt South Bridge No: 4629 Date: 29.3.01 **Doney St** Road: Road No: 0004 SLK: 0.03 Spans: Over: Narrogin Brook Height: 3 1.400m LGA: Narrogin Length: Inspector: P. Lewkowski 11.850



PIER 1 LAYOUT AT RIGHT HAND SIDE FROM ABUTMENT 1



PIER 1 LEFT HAND SIDE SHOWING SUBSIDENCE 60-70MM FULL CAP CONDITION & CORBEL 1 LEFT HAND SIDE END CONDITION

Bridge No: Region: 4629 Wheatbelt South Date: Road No: 0004 SLK: 0.03 Road: **Doney St** Height: 1.400m Over: Narrogin Brook Spans: 3 Inspector: Length: 11.850 P. Lewkowski LGA: Narrogin



PIER 1 RIGHT HAND SIDE END CONDITION - NB STRINGER 11 END LARGE HORIZONTAL SPLIT AT CHECK OUT



SPAN 1 STRINGER 5 ABUTMENT 2 END CONDITION FROM ABUTMENT 1 LHS Page 8

LIRRADY

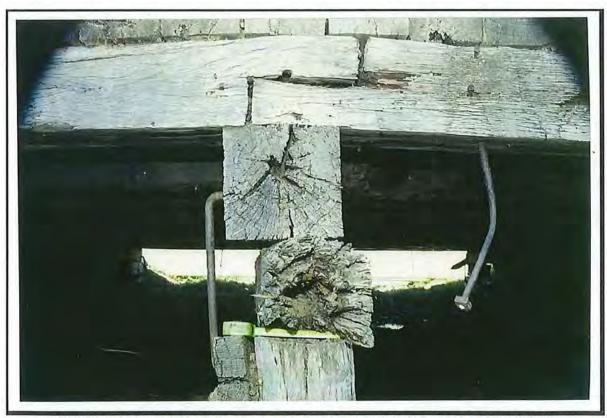
Region: Wheatbelt South Bridge No: 4629 Date: 29.3.01
Road: Doney St Road No: 0004 SLK: 0.03

Road: Doney St Road No: 0004 SLK: 0.03
Over: Narrogin Brook Spans: 3 Height: 1.400m

Over: Narrogin Brook Spans: 3 Height: 1.400m LGA: Narrogin Inspector: P. Lewkowski Length: 11.850



SPAN 1 STRINGER 5 ABUTMENT 2 END VIEW FROM BOTTOM



PIER 2 LEFT HAND SIDE END CONDITION-NB CORBEL 1 CONDITION

LIBRADY

Region: Wheatbelt South Bridge No: 4629 Date: 29.3.01
Road: Doney St Road No: 0004 SLK: 0.03

Over: Narrogin Brook Spans: 3 Height: 1.400m

LGA: Narrogin Inspector: P. Lewkowski Length: 11.850



PIER 1 LEFT HAND SIDE END ABUTMENT 1 SIDE CONDITION



PIER 2 LEFT HAND SIDE END ABUTMENT 2 SIDE CONDITION OF CORBEL

Bridge No: 29.3.01 4629 Date: Region: Wheatbelt South Road: Road No: 0004 SLK: 0.03 **Doney St** Height: 1.400m 3 Over: Narrogin Brook Spans: Length: 11.850 Narrogin Inspector: P. Lewkowski LGA:



PIER 1 PILE 4 AT CORRECT HEIGHT



MAIN ROADS Western Australia

PIER 1 AT PILE 4 TIEING BARS - TYPICAL

Bridge No: 4629 Region: Wheatbelt South Date: 29.3.01 SLK: 0.03 **Doney St** Road No: 0004 Road: Spans: 1.400m Over: 3 Height: Narrogin Brook Inspector: LGA: Narrogin P. Lewkowski Length: 11.850



PIER 2 RIGHT HAND SIDE END CONDITION - NB OVER LAPPING STRINGERS



PIER 2 LAYOUT FROM ABUTMENT 1 RIGHT HAND SIDE

Region: Bridge No: 29.3.01 4629 Date: Wheatbelt South Road: **Doney St** Road No: 0004 SLK: 0.03 Height: Over: Narrogin Brook Spans: 3 1.400m Inspector: Length: LGA: Narrogin P. Lewkowski 11.850



ABUTMENT 2 LEFT HAND SIDE LAYOUT FROM LEFT HAND SIDE ABUT 1

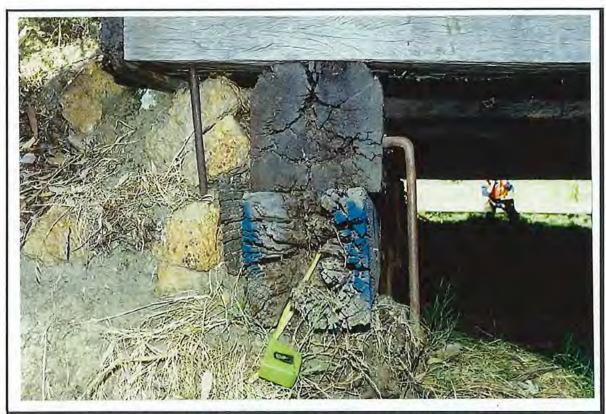


ABUTMENT 2 RIGHT HAND SIDE LAYOUT FROM RIGHT HAND SIDE
Vestern Australia ABUTMENT 1

Region: Bridge No: 4629 Date: 29.3.01 Wheatbelt South Road No: SLK: 0.03 Road: **Doney St** 0004

Height: Spans: 1.400m Over: Narrogin Brook 3

Inspector: Length: LGA: Narrogin P. Lewkowski 11.850



ABUTMENT 2 LEFT HAND SIDE FULL CAP & CORBEL 1 CONDITION



ABUTMENT 2 LEFT HAND SIDE FULL CAP & CORBEL 1 CONDITION

Bridge No: Region: 4629 Date: 29.3.01 Wheatbelt South Road: **Doney St** Road No: 0004 SLK: 0.03 3 1.400m Over: Spans: Height: Narrogin Brook 11.850 LGA: Narrogin Inspector: P. Lewkowski Length:



ABUTMENT 2 LEFT HAND SIDE FULL CAP & CORBEL FRONT VIEW – NB END OF BRACING TYPICAL



ABUTMENT 2 FULL CAP CONDITION BELOW STRINGERS 7, 8 & 9

Bridge No: Region: 4629 Wheatbelt South Road No: 0004 SLK: Road: **Doney St** 0.03 Height: 1.400m Over: Spans: 3 Narrogin Brook Inspector: 11.850 LGA: Narrogin P. Lewkowski Length:



ABUTMENT 2 RIGHT HAND SIDE END FULL CAP & CORBEL 6 CONDITION



SPAN 3 STRINGER 10 SHOWING LARGE PIPE AT BOTTOM ALMOST FULL

SE Western Australia LENGTH OF STRINGER

Region: Bridge No: 4629 Wheatbelt South Road: **Doney St** Road No: 0004 SLK: 0.03 Height: 1.400m Over: Spans: Narrogin Brook 3 LGA: Narrogin Inspector: P. Lewkowski Length: 11.850



STRINGER OVERLAPS TYPICAL



MAJOR FAILURE IN ROAD SURFACE OVER STRINGER 5 ABUTMENT 1 END Page 17

Shire of Narrogin

Region: Wheatbelt South Bridge No: 4629 Date: 29.3.01
Road: Doney St Road No: 0004 SLK: 0.03

Over: Narrogin Brook Spans: 3 Height: 1.400m

LGA: Narrogin Brook Spans: 3 Height: 1.400m



STRINGER 5 SPAN 1 SPLIT & BROKEN



DECKING COLLAPSED AT STRINGER 5 ABUTMENT 1 END

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# Main Roads WA 10 Year Bridge program

# MAIN ROADS WA 10 YEAR BRIDGE PROGRAM

Bridge															Inspection	
No.	Road Name	SLK	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	Date	Scope of Works
3122	Tarwonga Road	2.82			\$0					\$0					17-08-17	2020/21 - Preventative Maintenance - As per Shires schedule \$8,150; Refer D18#627892
3122	Tarwonga Road	2.82							\$1						17-08-17	2024/25 - Replace With Culvert - due in 2022. Only work required is Preventative Maintenance, to be done by the Shire. Then consider replacement at end of RCO life 2026/27; Waterways report Existing Bridge ARI 20 dry 50 wet; Option 1: single span 5m long Bridge ARI 10 dry 20 wet; Option 2: 3x 1500 dia pipe culvert ARI 10 dry 20 wet; Option 3: 3x1200x1200 box culvert ARI 10 dry 20 wet; [A J Humphreys - March 2019].
3125	Whimbin Rock Road	6.10	\$0				\$0								17-01-18	2018/19 - Preventative Maintenance - As per Shires schedule \$14,560; Refer D18#627892. 2018/19 - Preventative Maintenance - As per Shires schedule \$14,560; Refer D18#627892.
3125	Whimbin Rock Road	6.10		\$0		\$15,001										2019/20 - Substructure Repairs - Shire to undertaken: Timber sheeting repairs Abutment 1 between piles 3 and 5, 5 and 9 (two bottom sheets), 10 and 11, Abutment 2 between piles 2 and 3 (three bottom sheets), 3 and 4, 5 and 6 (two bottom sheets), 8 and 9, 9 and 10 (two top sheets); Stringer/half-cap packing between Span 3 stringers 1 and 6, Abutment 2 full-cap; Bolt tightening; Stringer bolting 2021/22 - Substructure Repairs - Pot Abutment 2 pile 10 and repalce span 3 stringer 3. [AJ Humphreys - Sept 2019] Span 3 stringer 7 AB2 end; Wing capping replacement all wingwalls; Spiking rail repairs. [AJ Humphreys - Sept 2019]
3128A	Manaring Road	3.58						\$270,000							17-01-18	2023/24 - Replace With Culvert - 2x 2100 dia pipe culvert, Shire to design and construct, Refer D19#639389 for shires estimate.
3142	Havelock Street	0.61					\$0					\$0				2022/23 - Preventative Maintenance - As per Shires schedule \$11,100; Refer D18#627892 2027/28 - Preventative Maintenance - As per Shires schedule \$11,100; Refer D18#627892
3142	Havelock Street	0.61						\$0							25-11-14	2023/24 - Replace With Culvert - Consider for Replacement. Town of Narrogin to Design n Construct. Waterways report Complete; Existing Bridge ARI 50 dry; Option 1: 7x1800x1800 box culvert ARI 50 dry; Option 2: 5x 1800 dia pipe culvert ARI 20 dry 50 wet; Option 3: 4x1800x1800 box culvert ARI 20 dry 50 wet; Option 4: single span 12m long Bridge ARI 20 dry 50 wet; Shire need to do Preventive Maintenance - for funding. [A J Humphreys - Feb 2018]

# MAIN ROADS WA 10 YEAR BRIDGE PROGRAM

4551	Tarwonga Road	22.78		\$0					\$0						15-01-19	2019/20 - Preventative Maintenance - As per Shires schedule \$27,990; Refer D18#627892 2024/25 - Preventative Maintenance - As per Shires schedule \$27,990; Refer D18#627892
4551	Tarwonga Road	22.78				\$0					\$0				15-01-19	2021/22 - Substructure Repairs - Consider repairs to Pier 3 halfcap, Abutment 2 halfcap between piles 7 and 8; Settlement at Piers 1 and 2; Pier 3 pile 4 pot extension. Remove Prop at Abutment 2 stringer 1 not required, prop installed 2005 -repairs undertaken 2008. [AJ Humphreys Sept 2019] 2026/27 - No work – await next L2 Inspection - due in 2024. [A J Humphreys - Sept 2019]
4629	Former Station Access - Was Doney Street	0.04				\$0					\$0				29-03-01	2021/22 - Preventative Maintenance - Footbridge - As per Shires schedule \$11,080; Refer D18#627892 2026/27 - Preventative Maintenance - Footbridge - As per Shires schedule \$11,080; Refer D18#627892
9250	Northam Cranbrook	167.89					\$0					\$0			08-02-13	2022/23 - Preventative Maintenance - Footbridge - As per Shires schedule \$18,100; Refer D18#627892 2027/28 - Preventative Maintenance - Footbridge - As per Shires schedule \$18,100; Refer
9250	Northam Cranbrook	167.89								\$0					08-02-13	2025/26 - Substructure Repairs - Corrosion protection a bearing repairs, or await next DIR due in 2027 or until bridge recieve preventative maintenance. [AJ Humphreys - Nov 2018]
		Totals(\$)	\$0	\$0	\$0	\$15,001	\$0	\$270,000	\$1	\$0	\$0	\$0	\$0	\$0		

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# Shire of Narrogin Annual L1 Bridge Inspections 2020





(Level 1 Inspection)

	3125 Unsid	Rock	Crossing Name: Road Number:		
SLK: Responsibility Area: Inspected By: Inspection Date:	LD (1 -40-	181 202	Local Authority:  Latitude:  Longitude:	shike of Markagul	
			und that require further inve	stigation? (Y/N)	M
Inspection Item	Yes	ect No	Comment (Including location a	Maint, Required	
1. Road Surface Signs and Delineators: missing, damaged, obscured Road Surface and Footpaths: material defects, surfacing defects, settlement, depressions, joint transitions, kerbing, shoulders			NEW WIDGE MORKERS POSTS AD REALIGHING ROPD SURFACE NEEDS PR EINER GAD	rests to be of	
2. Guardrails/Barriers Accident damage, connections, alignment, material defects		V			
3. Road Drainage Scuppers, drains, gully traps, erosio	n 🗆	V			
4. Waterways, Vegetation and Debris Vegetation and debris in waterways and clearance envelope Embankment erosion, scour, damaged guide-banks		d			
5. Footpaths Drainage, even surface, surface condition, railing			NOT APPLICABLE		

NO APPLICABLE

WINE COPPINE MEETS REPLACING

ON ALL FOUR CORNERS OF PRIDGE

V

TY.

MAIN ROADS Western	Australia		
Timber and Non-Timber	Bridge Routine Visua	al Inspection Report (Level	1

6. Expansion Joints and

damaged/missing seals, damage to deck/nosings, obstructions in gap,

Bearings displaced or damaged,

Debris/dirt build-up, impact damage, excessive movement/vibration, dampness through deck, condition of

Material defects to piles, footings,

Movement of abutment or wing walls Substructure protection (bridges over

seating, corrosion, seized

8. Superstructure

Material defects or damage to beams/stringers, fasteners, soffit, cross bracing or coatings

Deck Joints
Loose/damaged fixings,

gaps closed, decks in

7. Bearings

air release holes

9. Substructure

walls or capbeams

road/rail)





(Level 1 Inspection)

#### **Defect Descriptions**

Material	Defect Descriptions
Concrete	Cracking (hairline: ≤0.1mm) (fine: >0.1 & ≤0.3mm) (medium: >0.3mm & ≤0.7mm) (heavy: >0.7mm), spalling, corrosion of reinforcement, rust staining, efflorescence
Steel	Bending, buckling, cracking, distortion, corrosion, protective coating damage/deterioration, loose fasteners
Timber	Splitting, crushing, rot, failure, termites/termite nest
Masonry	Cracking, opening of joints, mortar loss, bulging
Bituminous Surfacing	Cracking, crazing, breaking up, heaving, shoving, rutting
Protective Coating	Cracked, weathered, peeling, flaking, oxidising
The second secon	

Genera	Comments
--------	----------

BRIDGE IS A TUREL SPAIN BRIDGE.

CONCRETE OVERLAI, STEEL POSTS AD RAILINE, WOOD AGUSMENTS, WOOD MERS, Simble Decking.

PREVENTITIVE MOTERIANCE CARDED OUT OF CLD WIKI IN FEBRUAGE 2019 SWEETING REPAIRS GARRIED OUT BY CLD WIRI IN APRIL 2020

WORK NEEDED . APPROPRIES to BRIDGE BOTH ENDS NEED PREMIXING. NEW WIDTH MARKES NEW REPLIENTING AD PUT ON POSTS. NEW WINE CAPPING NEEDED ON PILL FOLK CORNERS .

Ancillary Items (such as service attachments etc.)

(3)

This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Bridge Inspection Manual for Level 1 Inspections.

Position: Manuferance Foreman Date: 30-04-2020

MAIN ROADS Western Australia Timber and Non-Timber Bridge Routine Visual Inspection Report (Level 1)





(Level 1 Inspection)

Bridge Number:	H55	1		Crossing Name:	
Road Name:	hach	ממ	60	Road Number;	
SLK:			1.00/12/12/12	Local Authority: JUKE OF WARE	ofiel
Responsibility Area:				Latitude:	Crerken Brenner
Inspected By:	CR.	0 6	0521	Longitude:	
Inspection Date:	30-0	y-1 -	2002	٠٠٠٠ ٢	***********
Have stru	ctural issu	es b	een fo	und that require further investigation? (Y/N)	N
Inspection Item		Def es	ect No	Comments (Including location and extent)	Maint. Required
Road Surface     Signs and Delineators: missind damaged, obscured     Road Surface and Footpaths: material defects, surfacing desettlement, depressions, joint transitions, kerbing, shoulders.	fects,		d		
2. Guardrails/Barriers Accident damage, connection alignment, material defects			V		
3. Road Drainage Scuppers, drains, gully traps,	erosion [				
4. Waterways, Vegetal and Debris Vegetation and debris in wate and clearance envelope Embankment erosion, scour, damaged guide-banks	erways	V		SCOUMING AROUND BOTTOM OF PILEY ON PICK 3. (MISSON ROCKING)	
5. Footpaths Drainage, even surface, surfacendition, railing	ice [			not offlicable	
6. Expansion Joints at Deck Joints Loose/damaged fixings, damaged/missing seals, dam deck/nosings, obstructions in gaps closed, decks in contact/damaged	age to			not replicable	
7. Bearings Bearings displaced or damag seating, corrosion, seized	ed,				
8. Superstructure Material defects or damage to beams/stringers, fasteners, scross bracing or coatings Debris/dirt build-up, impact da excessive movement/vibratio dampness through deck, con air release holes	offit, amage, n,		✓		
9. Substructure Material defects to piles, footi walls or capbeams Movement of abutment or wir Substructure protection (bridg road/rail)	ng walls				

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(Level 1 inspection)

#### **Defect Descriptions**

Material	Defect Descriptions
Concrete	Cracking (hairline: ≤0.1mm) (fine: >0.1 & ≤0.3mm) (medium: >0.3mm & ≤0.7mm) (heavy: >0.7mm), spalling, corrosion of reinforcement, rust staining, efflorescence
Steel	Bending, buckling, cracking, distortion, corrosion, protective coating damage/deterioration, loose fasteners
Timber	Splitting, crushing, rot, failure, termites/termite nest
Masonry	Cracking, opening of Joints, mortar loss, bulging
Bituminous Surfacing	Cracking, crazing, breaking up, heaving, shoving, rutting
Protective Coating	Cracked, weathered, peeling, flaking, oxidising

General	Comments

BRIDGE IS A FOUR SPAI BRIDGE ...

CONCRETE OVERLOSI. SIETL POSTS AD ROLLING

himser revinants. himser PIERS. himser Hafters, Stringers, Decking AD

PROJENTITUE MOTERATION CAPIED OUT BY CRD CUTE! IN FEBRUARY 2020 .

SCOUPING PROUD BOTTOM OF PILE 4 ON PIER 3. ( NEEDS POCKING)

Ancillary Items (such as service attachments etc.)

This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Bridge Inspection Manual for Level 1 Inspections.

Position: Manhenance Forman Date: 30-04-2020

(1)





(Level 1 Inspection)

Road Name: SIAL  Road Name: SLK:			Crossing Name:	
			Local Authority: SHIKE OF WORKS	Elic :
Responsibility Area:			Latitude:	
Inspected By:	10 (n)	IRI	Longitude:	
Inspection Date: 30	- مالم -	707	2	
Have structural i	ssues b	een fo	und that require further investigation? (Y/N)	M
Inspection Item	Def Yes	ect No	Comments (Including location and extent)	Maint, Required
1. Road Surface Signs and Delineators: missing, damaged, obscured Road Surface and Footpaths: material defects, surfacing defects, settlement, depressions, joint transitions, kerbing, shoulders				
2. Guardrails/Barriers Accident damage, connections, alignment, material defects		V		
3. Road Drainage Scuppers, drains, gully traps, erosion				
4. Waterways, Vegetation and Debris Vegetation and debris in waterways and clearance envelope Embankment erosion, scour, damaged guide-banks				
5. Footpaths Drainage, even surface, surface condition, ralling			NOT reprices.	
6. Expansion Joints and Deck Joints Loose/damaged fixings, damaged/missing seals, damage to deck/nosings, obstructions in gap, gaps closed, decks in contact/damaged			not effluciat	
7. Bearings Bearings displaced or damaged, seating, corrosion, seized		V		
8. Superstructure Material defects or damage to beams/stringers, fasteners, soffit, cross bracing or coatings Debris/dirt build-up, Impact damage, excessive movement/vibration, dampness through deck, condition of air release holes			(MESSE BUTINE)	
9. Substructure Material defects to piles, footings, walls or capbeams Movement of abutment or wing walls Substructure protection (bridges over road/rail)	Ø		CROCK IN MOSOMAN WALL ON PIER. ABUSMENS WHILL AND PIER MEED RENDERS.	





(Level 1 Inspection)

#### **Defect Descriptions**

Material	Defect Descriptions
Concrete	Cracking (hairline: ≤0.1mm) (fine: >0.1 & ≤0.3mm) (medium: >0.3mm & ≤0.7mm) (heavy: >0.7mm), spalling, corrosion of reinforcement, rust staining, efflorescence
Steel	Bending, buckling, cracking, distortion, corrosion, protective coating damage/deterioration, loose fasteners
Timber	Splitting, crushing, rot, failure, termites/termite nest
Masonry	Cracking, opening of joints, mortar loss, bulging
Bituminous Surfacing	Cracking, crazing, breaking up, heaving, shoving, rutting
Protective Coating	Cracked, weathered, peeling, flaking, oxidising

Seneral Comments,
BRIDGE IS A LUD SPAT BRIDGE.
CONCRETE OVERLAT, STEEL POSTS AD RAILING, MASOMART ABUTIMENTS, MASOMART PIER, TIMBER STRINGERS AD CORBELS.
PREVENTITIVE MOTENPARE WEEKS?
Functions beginnent to outside stringers -
Functions benimen he bestocs -
END GRAIN AREASMENS
BOIL HIGHTONING -
CORREL MEGOS BOLFING.
poulment ad their wals were readering .

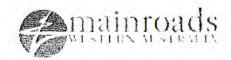
Ancillary	Items	(such	as	service	attachments	etc.)
		and the second second		and the second second		

This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Bridge Inspection Manual for Level 1 Inspections.

Position: Mantenance Forenan Date: 30-04-2020

3





(Level 1 Inspection)

Road Name: MONORIAL SLK:			Road Number:  Local Authority: JUNG OF WALF	********
Responsibility Area: Inspected By: Inspection Date:	20 G	JKI - 202	Latitude:  Longitude:	
	issues b	een fou	and that require further investigation? (Y/N)	N
Inspection Item	Def Yes	ect No	Comments (Including location and extent)	Maint. Required
1. Road Surface Signs and Delineators: missing, damaged, obscured Road Surface and Footpaths: material defects, surfacing defects, settlement, depressions, joint transitions, kerbing, shoulders				
2. Guardrails/Barriers Accident damage, connections, alignment, material defects			replace fightains with Bulmoses .	
3. Road Drainage Scuppers, drains, gully traps, erosion				
4. Waterways, Vegetation and Debris Vegetation and debris in waterways and clearance envelope Embankment erosion, scour, damaged guide-banks		الأهد	SCOUNTIFE UNDER BRIDGE IN SPAT 1	
5. Footpaths Drainage, even surface, surface condition, railing			Not applicable	
6. Expansion Joints and Deck Joints Loose/damaged fixings, damaged/missing seals, damage to deck/nosings, obstructions in gap, gaps closed, decks in contact/damaged			NOT PARTICABLE	
7. Bearings Bearings displaced or damaged, seating, corrosion, seized				
Material defects or damage to beams/stringers, fasteners, soffit, cross bracing or coatings Debris/dirt build-up, impact damage, excessive movement/vibration, dampness through deck, condition of air release holes		d		
9. Substructure Material defects to piles, footings, walls or capbeams Movement of abutment or wing walls Substructure protection (bridges over road/rail)	Ø		ABUTHENT IL RIGHT HOD SIDE. MECE OF WHAT COAPING WEEDS RORACING.	





(Level 1 Inspection)

#### **Defect Descriptions**

Material	Defect Descriptions
Concrete	Cracking (hairline: ≤0.1mm) (fine: >0.1 & ≤0.3mm) (medium: >0.3mm & ≤0.7mm) (heavy: >0.7mm), spalling, corrosion of reinforcement, rust staining, efflorescence
Steel	Bending, buckling, cracking, distortion, corrosion, protective coating damage/deterioration, loose fasteners
Timber	Splitting, crushing, rot, fallure, termites/termite nest
Masonry	Cracking, opening of joints, mortar loss, bulging
Bituminous Surfacing	Cracking, crazing, breaking up, heaving, shoving, rutting
Protective Coating	Cracked, weathered, peeling, flaking, oxidising

General Comments
Brisk is a fine start bridge.
wood Posis, steel forware.
himage reclineds (reclined 1 ALES DRIVEY)
(ABUTINEMY 2 PILES SITTLE ON BEDLOGS / MASONIAGE FOOTING)
Comment & ties sitting of desides ( the rayled bostime)
( MER PLES SITTING ON BEDLAGE / MOSOMBET FOOTING)
himsel stringers , Decking and Corbbes, (NO Overly)
PREVENTIFIED MEDICAL MECHOS.  FUNCIONE PREDIMENT TO BUDGES.  FUNCIONE PREDIMENT TO OUTSINE STRINGERS.  FOR ORAM PREVIOUS.
(2)
Ancillary Items (such as service attachments etc.)

This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Bridge Inspection Manual for Level 1 Inspections.

Signature:

Position: Maintenance Foreman Date: 35-04-2020





(Level 1 Inspection)

Bridge Number: 3142			Crossing Name:		
Road Name: HOVELOCK STREET  SLK:  Responsibility Area:			( Road Number:		
			Local Authority: Slife of WARC	63.5	
			Latitude:	Minte M. Brancason	
	D al	111	Longitude:		
Inspection Date: 30	-04	- 207	<u> </u>	**************	
		0000			
			und that require further investigation? (Y/N)	M	
Inspection Item	Defect Yes No		Comments (Including location and extent)	Maint. Required	
1. Road Surface Signs and Delineators: missing, damaged, obscured Road Surface and Footpaths: material defects, surfacing defects, settlement, depressions, joint transitions, kerbing, shoulders					
2. Guardrails/Barriers Accident damage, connections, alignment, material defects	d		REPLACE FISHIFILS WITH BULLMOSES		
3. Road Drainage Scuppers, drains, gully traps, erosion					
4. Waterways, Vegetation and Debris Vegetation and debris in waterways and clearance envelope Embankment erosion, scour, damaged guide-banks					
5. Footpaths Drainage, even surface, surface condition, railing			not officere		
6. Expansion Joints and					
Deck Joints Loose/damaged fixings, damaged/missing seals, damage to deck/nosings, obstructions in gap, gaps closed, decks in contact/damaged			nor applicable.		
7. Bearings Bearings displaced or damaged, seating, corrosion, seized					
8. Superstructure Material defects or damage to beams/stringers, fasteners, soffit, cross bracing or coatings Debris/dirt build-up, impact damage, excessive movement/vibration, dampness through deck, condition of air release holes					
9. Substructure Material defects to piles, footings, walls or capbeams Movement of abutment or wing walls Substructure protection (bridges over road/rail)			POUTMENT WHILS HEED RENDERING.		





(Level 1 Inspection)

#### **Defect Descriptions**

Material	Defect Descriptions					
Concrete	Cracking (hairline: ≤0.1mm) (fine: >0.1 & ≤0.3mm) (medium: >0.3mm & ≤0.7mm) (heavy: >0.7mm), spalling, corrosion of reinforcement, rust staining, efflorescence					
Steel	Bending, buckling, cracking, distortion, corrosion, protective coating damage/deterioration, loose fasteners					
Timber	Splitting, crushing, rot, failure, termites/termite nest					
Masonry	Cracking, opening of joints, mortar loss, bulging					
Bituminous Surfacing	Cracking, crazing, breaking up, heaving, shoving, rutting					
Protective Coating	Cracked, weathered, peeling, flaking, oxidising					

Canar	-1	Comments	Ī
Genera	-	Comments	

BRIDGE IS A TWO SPORT BRIDGE -

moscupel abulments ad wines - moscupel pier . CONCRETE for . himber DECKING - WOOD STRINGERS - WOOD POSTS AD SKEL ROLLING

PREVENTITIVE MOTERIANCE NEEDED .

RUNGICIDE PRESENTA TO SILL BEARS AD OUTSIDE SKINGERS.

END GRAIN hEARMENT.

BOLT MEHTENING -

REPLACE FISHFALLS WITH BULLHOSES

ABRILLIAN MATS MEED YEADERING .

Two NEW WOOD POSTS .

Ancillary Items (such as service attachments etc.)

This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Bridge Inspection Manual for Level 1 Inspections.

Position: Mandenance Forever Date: 30-04-2020

(3)





(Level 1 Inspection)

SLK: Responsibility Area: Inspected By:	679 del 36 20 (1 0 - 01	المكاد	Crossing Name: Road Number: Local Authority: られんとさられるを Latitude: Longitude:	Robin
Have structural is			und that require further investigation? (Y/N)	N
Inspection Item	Defect Yes No		Comments (Including location and extent)	Maint. Required
1. Road Surface Signs and Delineators: missing, damaged, obscured Road Surface and Footpaths: material defects, surfacing defects, settlement, depressions, joint transitions, kerbing, shoulders			· ·	
2. Guardrails/Barriers Accident damage, connections, alignment, material defects	d		LEMILE DE MESE LIGHTENING.	
3. Road Drainage Scuppers, drains, gully traps, erosion				
4. Waterways, Vegetation and Debris Vegetation and debris in waterways and clearance envelope Embankment erosion, scour, damaged guide-banks	d		BULLAUSHES CLOGGING CREEK.	
5. Footpaths Drainage, even surface, surface condition, railing	П			
6. Expansion Joints and Deck Joints Loose/damaged fixings, damaged/missing seals, damage to deck/nosings, obstructions in gap, gaps closed, decks in contact/damaged			NOT APPLICABLE.	
7. Bearings Bearings displaced or damaged, seating, corrosion, seized				
8. Superstructure  Material defects or damage to beams/stringers, fasteners, soffit, cross bracing or coatings Debris/dirt build-up, impact damage, excessive movement/vibration, dampness through deck, condition of air release holes		d		
9. Substructure Material defects to piles, footings, walls or capbeams Movement of abutment or wing walls Substructure protection (bridges over road/rail)				



#### TIMBER AND NON-TIMBER BRIDGE ROUTINE VISUAL INSPECTION REPORT (Level 1 Inspection)



#### **Defect Descriptions**

Material	Defect Descriptions
Concrete	Cracking (hairline: ≤0.1mm) (fine: >0.1 & ≤0.3mm) (medium: >0.3mm & ≤0.7mm) (heavy: >0.7mm), spalling, corrosion of reinforcement, rust staining, efflorescence
Steel	Bending, buckling, cracking, distortion, corrosion, protective coating damage/deterioration, loose fasteners
Timber	Splitting, crushing, rot, fallure, termites/termite nest
Masonry	Cracking, opening of joints, mortar loss, bulging
Bituminous Surfacing	Cracking, crazing, breaking up, heaving, shoving, rutting
Protective Coating	Cracked, weathered, peeling, flaking, oxidising

Ger	eral Comments
	BRIDGE IS A LUREE SPAN BRIDGE?
	concrete for, steel stringers, wood ficks and files,
A.	ONE CONCRUTE ABUILMENT, ONE WOOD ABUILMENT, WOOD ROSE AD RAILING
	Preventitive montempact meeded:

FUNGICIDE AREASMENT LE LINEURE PILES. END GRAIN AREASMENT. MEHICH WOOD POSTS. FIX HELMISE DAMAGE.

Ancillary Items (such as service attachments etc.)

This bridge has been inspected in accordance with the requirements of the Main Roads Western Australia Bridge Inspection Manual for Level 1 Inspections.

Signature:

Position: Maintenance EverenDate: 30-04-2020.

MAIN ROADS Western Australia
Timber and Non-Timber Bridge Routine Visual Inspection Report (Level 1)

(4)

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# Shire of Narrogin Annual Bridge Routine Maintenance Checklist Template

# Shire of Narrogin Annual Bridge Routine Maintenance Checklist Template

Bridge	No:	
Diluge	110.	

Frequency	Elements	Activities	Completed
Annual	Inspections	Annual Visual Inspections	V
Routine	Drainage - Deck	Clean deck gully drains / scuppers / down pipes	
<u>Maintenance</u>	Drainage -	Clean, repair drainage systems inside abutments	
	Guard railing	Clean / repaint	
		Repair accident damage	
		Install / Replace delineators	
		Replace broken bolts, tighten loose bolts	
	Expansion Joints /	Clean seals	
	Deck Joints	Replace broken bolts, tighten loose bolts	
	Bearings	Clean bearings	
	Approaches	Level pavements	
		Lines	
		Kerbs	
	Signs	Width markers, Signs	
	Deck	Clean fascia panels, repair / replace damaged removable	
	Other	Remove debris & vegetation from roadway, waterway, under	
		Remove Graffiti	
		Clean plaques	
		Maintain landscaping / artwork	
		Minor Scour repairs	
		Maintain access doors & security / locks	
		Remove fences attached to bridges	
		Termates Eradicate	
		Maintain Footpaths	

# Shire of Narrogin Five Year Bridge Preventative Maintenance Checklist Template

#### Shire of Narrogin Five Year Bridge Preventative Maintenance Checklist Template

#### Preventative Maintenance for Bridge No:

	of Works	Specification 850	Y
	tructure		
1.01		850.93.01	ŢĪ.
1.02		850.93.01	
1.03	Guardrail maintenance - timber	850.93.11	
4.04	Replace fishtails with bullnoses	070 00 07	
1.04	Deck drainage	850.93.07	
1.05	The second secon	Table 850.1	4
1.06	and the Control of th	Table 850.1	<u> </u>
1.07	to a manufacture of the second	850.41.07	
1.08	Treatment (fungicide) of gravel pavement Fungicide treatment of timber stringers - spiral grain	Table 850.1 850.93.03	
1.10			
- 4000	S Grant D - market A state and	850.93.02,03	
1.11	munitive and the state of the s	Table 850.1	
1.12	Stringer / corbel bolting and repair splits	850.29,30	
Substru	cture		
2.01	Seal all exposed timber end grain	850.93.01	
2.01	Abutment / wingwall piles	850.93.01	
	Abutment sheeting	850.93.01	
	Halfcaps	850.93.01,06	
	Fullcaps	850.93.01,06	
	Braces		
	Walers	850.36 and 93.01	
2.02	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	850.36 and 93.01	
2.02	Reseal all exposed timber end grain	850.93.01	
	Abutment / wingwall piles	850.93.01	
	Abutment sheeting	850.93.01	
	Halfcaps	850.93.01,06	
	Fullcaps	850.93.01,06	
	Braces	850.36 and 93.01	
	Walers	850.36 and 93.01	
2.03	Tighten all existing bolts and fasteners	850.35	
2.04	Tighten all existing bolts and fasteners within 1.5m of ground line	850.34	Ų.
2.05	Fungicide treatment of timber piles at ground line	850.93.04	
2.06	Fungicide treatment of timber piles in permanent water	850.93.04	
2.07	Fungicide treatment of bedlogs and bearers (in contact with ground)	850.93.05	
2.08	Fungicide treatment of timber bearers, pier bedlogs (off ground)	850.93.05	
2.09	Pile banding and repair splits	850.28	
2.10	Vegetation and debris clearance under bridge	850.93.08	
2.11	Marine organism protection	Table 850.1	Ţ.
Specific			
3.01	Repair gaps in the abutment / wingwall sheeting - pgi strips		
3.02			
3.03			
3.04	Reinstall wingwall capping		
3.05	Remove old bolts - dangerous		
3.06	Remove fences off bridge or guardrailing		
3.07	Packing of Halfcaps		1
3.08	Packing of Stringers and Corbels		
3.09	Render Masonary Abutments and or Pier walls		

Routine Maintenance - Typically 1 year interval

Perodic Maintenance - Typically 5 year interval

Specific Works - As required

Specification 850 is located on the Main Roads Western Australia website. //www.mainroads.wa.gov.au/