
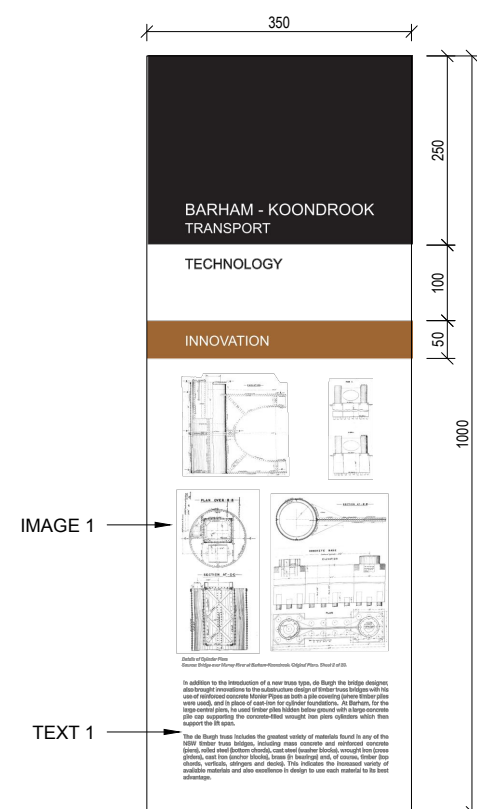
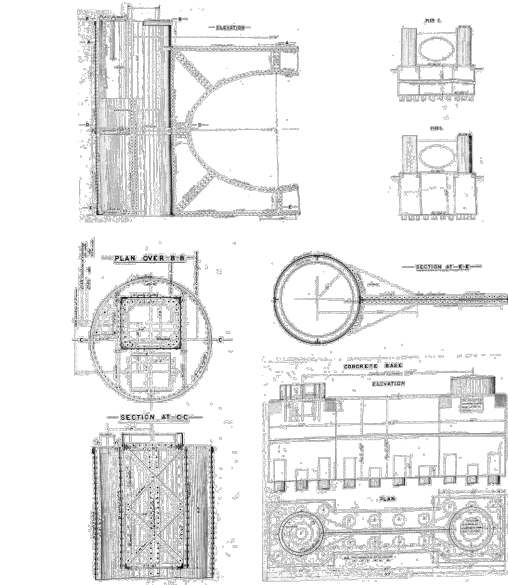


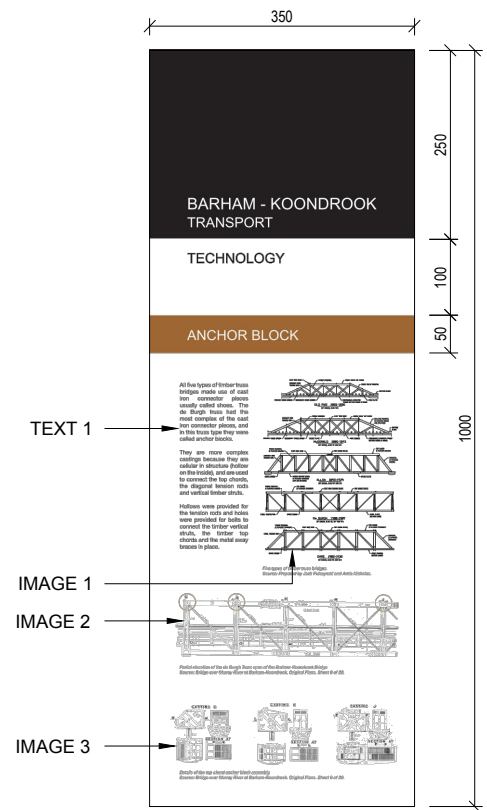
VP/K-01
LD-102
DETAIL
Scale: 1:10

ITEM	VP/K-01
LOCATION	KOONDRUCK
THEME	TRANSPORT / TECHNOLOGY / HISTORY OF de BURGH TRUSS
IMAGE 1	 <i>E.M. de Burgh</i> Source: The Barham-Koondruck Historical Society
TEXT 1	New South Wales grows the best timber in the world for bridge building. In 1896 JJC Bradfield, famous for the design of the Sydney Harbour Bridge, reported on the comparative strength of ironbark and iron, and found that for the same weight, ironbark is more than three times stronger than iron in tension and almost twice as strong as iron in compression. Further testing confirmed that the hardwood timbers of NSW are second to none in Australia and indeed compare favourably, both for strength and durability, with any timbers in the world. Between 1858 and 1936, over 400 timber truss road bridges were built in NSW, all of which were designed by engineers of the NSW Department of Public Works. These can be categorised into five types, each designed by one of five exceptional engineers who applied their sound engineering principles to design elegant and durable timber truss bridges that continue to carry vehicles today that are larger, heavier and faster than the original designers could have possibly imagined. The de Burgh truss is the fourth type and it was designed by E.M. de Burgh. Ernest Macartney de Burgh (1863-1929) was born and educated in Ireland. After graduating, he worked on the railways in Ireland and later came to NSW, joining the Public Works Department in 1885. Within two years he was in charge of the construction of metal bridges across the Murrumbidgee and Snowy Rivers, and then designed and superintended the construction of many other bridges throughout the State including Barham Bridge, which he designed.
TEXT 2	It was said that although he was often, 'a drastic critic in expression, at the same time he possessed that characteristic Irish wit and humour that removed the sting but left the logic'. He was regarded as one of the ablest civil engineers in Australia when he retired on 22 November 1927. There were 20 de Burgh truss bridges constructed in NSW, all between 1900 and 1905. The earlier timber truss bridges, designed in the 1860s to 1880s, made use of the vast resource of large, long, strong and durable NSW hardwoods. However, as the comparative strength and durability of NSW hardwoods became known around the world, so much of it was exported that these earlier types of timber truss bridges could no longer be built. The later bridges, designed in the 1890s to 1900s still made use of the strength and durability of NSW hardwoods, but limited the sizes of these timbers to smaller shorter sections which were still readily available at that time.

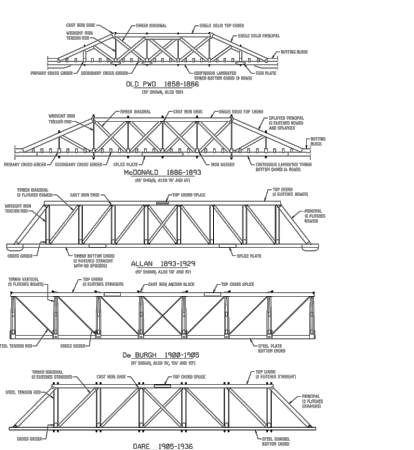
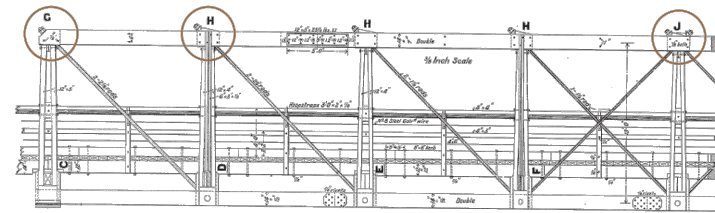
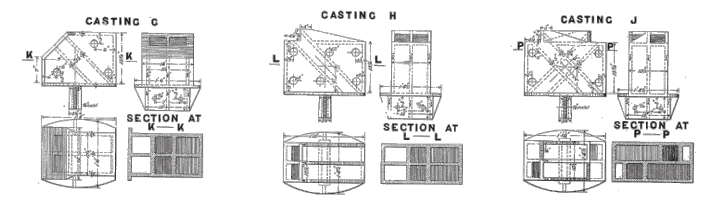


VP/K-02
LD-102
DETAIL
Scale: 1:10

ITEM	VP/K-02
LOCATION	KOONDRUCK
THEME	TRANSPORT / TECHNOLOGY / INNOVATION
IMAGE 1	
TEXT 1	<i>Details of Cylinder Piers</i> Source: Bridge over Murray River at Barham-Koondruck. Original Plans. Sheet 2 of 20. In addition to the introduction of a new truss type, de Burgh the bridge designer, also brought innovations to the substructure design of timber truss bridges with his use of reinforced concrete Monier Pipes as both a pile covering (where timber piles were used), and in place of cast-iron for cylinder foundations. At Barham, for the large central piers, he used timber piles hidden below ground with a large concrete pile cap supporting the concrete-filled wrought iron piers cylinders which then support the lift span. The de Burgh truss includes the greatest variety of materials found in any of the NSW timber truss bridges, including mass concrete and reinforced concrete (piers), rolled steel (bottom chords), cast steel (washer blocks), wrought iron (cross girders), cast iron (anchor blocks), brass (in bearings) and, of course, timber (top chords, verticals, stringers and decks). This indicates the increased variety of available materials and also excellence in design to use each material to its best advantage.



VP/K-03
LD-102
DETAIL
Scale: 1:10

ITEM	VP/K-03
LOCATION	KOONDRUCK
THEME	TRANSPORT / TECHNOLOGY / ANCHOR BLOCK
IMAGE 1	
IMAGE 2	
IMAGE 3	
TEXT 1	All five types of timber truss bridges made use of cast iron connector pieces, usually called shoes. The de Burgh truss had the most complex of the cast iron connector pieces and in this truss type they were called anchor blocks. They are more complex castings because they are cellular in structure (hollow on the inside), and are used to connect the top chords, the diagonal tension rods and vertical timber struts. Hollows were provided for the tension rods and holes were provided for bolts to connect the timber vertical struts, the timber top chords and the metal sway braces in place.

- NOTES**
1. TO BE INSTALLED ON VIEWING PLATFORM AS DETAILED IN LD-402
 2. IMAGES AND TEXT ARE SUBJECT TO CHANGE

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02	100% DOCUMENTATION	MMG	23/05/2017
01	FOR INFORMATION	MMG	2/03/2017
No.	Amendment Description	Initials	Date
A3 original	This sheet may be prepared using colour and may be incomplete if copied		

SCALES

0 200 400mm

1 : 10

Co-ordinate System: MGA Zone 56
Height Datum: A.H.D.

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ROADS AND MARITIME SERVICES

BARHAM-KOONDRUCK BRIDGE
LANDSCAPE DESIGN & HERITAGE INTERPRETATION
HERITAGE INTERPRETATION DETAILS
VIEWING PLATFORM ARTWORK I

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