

SUBMISSION TO THE HERITAGE COUNCIL



REGULATION 7

1. Submitter Details

Title	Ms
First Name	Felicity
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Is this submission on behalf of a company or organisation?	Yes
What is its name?	National Trust of Australia (Victoria)
What is your position title?	Executive Manager, Advocacy

2. Place or Object Details

Place or object name	Eastern Freeway – Stage One
Address or GPS location	Hoddle Street/Alexander Parade, Clifton Hill to Bulleen Road, Kew (City of Yarra, City of Boroondara)

3. Details of Executive Director's Recommendation

Date of recommendation	11 December 2019
Recommendation was to <u>*include</u>	

4. Purpose of Submission

Note: This submission must relate only to whether or not a place or object is of cultural heritage significance or to the recommended extent of registration or permit policy or permit exemptions.

This submission:

- ☒ Supports the Executive Director's recommendation
- ☐ Objects to the Executive Director's recommendation
 - ☒ Supports the "Extent of Registration" and "Permit Policy/Permit Exemptions" recommended by the Executive Director
- ☐ Objects to the "Extent of Registration" and "Permit Policy/Permit Exemptions" recommended by the Executive Director

HERITAGE COUNCIL FORM A

☐ Other (please state)

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Reasons for submission:	Submission attached.
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5. Hearings

Do you wish to cause a Heritage Council hearing in relation to this matter?

☐ Yes

☒ No

Note: If you cause a hearing you may be requested to lodge a detailed submission to support your position.

If a hearing is caused by another party do you wish to participate in the hearing?

☒ Yes


☐ No

Note: If a hearing is not requested by another party the Heritage Council may determine the matter on written submissions.

*Note: In the event of a hearing, your submission will be provided to other interested parties and your personal details will not be removed. The Heritage Council is also bound by the **Freedom of Information Act 1982**. You should expect your submission to be freely and wholly available to anyone seeking access to it.*

6. Submitter Statement

I state that the information I have given on this form is correct to the best of my knowledge.

Name	Felicity Watson
Signature	
Date	14 February 2020

Form lodgment details

Please send this form to:

**Heritage Council of Victoria
DELWP GPO BOX 527
MELBOURNE VIC 3001**

Email: heritage.council@delwp.vic.gov.au

For further information, please contact the Heritage Council Hearings Coordinator on 03 9194 0868

14 February 2020



Professor Stuart Macintyre AO
Chair
Heritage Council of Victoria

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File No.: B7418 Eastern Freeway Stage 1 Bridges, Eastern Freeway, Clifton to Bulleen, Cities of Yarra and Boroondara

RE: National Trust support for the Executive Director's recommendation to include Eastern Freeway – Stage One in the Victorian Heritage Register

Dear Professor Macintyre,

The National Trust of Australia (Victoria) (National Trust) is the state's largest community-based heritage advocacy organisation actively working towards conserving and protecting our heritage for future generations to enjoy. As Victoria's premier heritage and conservation organisation, the National Trust has an interest in ensuring that a wide range of natural, cultural, social and Indigenous heritage values are protected and respected, contributing to strong, vibrant and prosperous communities.

The National Trust supports the Executive Director's recommendation to include Eastern Freeway – Stage One in the Victorian Heritage Register. We support the Executive Director's recommendation as advertised, including the proposed extent of registration, and assessment that the place reaches the threshold for state significance under Criterion A and D. We provide the following submission in support of this recommendation.

1. RATIONALE FOR EXTENT

We support the ED's recommended extent of registration for the Eastern Freeway – Stage One, which includes all of the land and structures between Hoddle Street and Bulleen Road. We further support the ED's rationale for extent that Stage 1 is significant in demonstrating 'the changing approach to the design of freeways in the 1960s and 70s', and that Stage 2 and 3 do not demonstrate these attributes to the same extent. We agree that the inclusion of Stage 1 is 'sufficient to protect the cultural heritage significance of the place'.

2. STATEMENT OF CULTURAL HERITAGE SIGNIFICANCE

We support the ED's recommendation that the Eastern Freeway – Stage 1 is historically significant and meets the threshold for Criterion A at the State Level for its clear association with the early development of freeways in Victoria, and for the prolonged and at times violent community protests that met its announcement, construction and openings.

We further support the ED's recommendation that the Eastern Freeway – Stage 1 reaches the threshold for Criterion D as a 'fine, intact, influential and pivotal example of a freeway'.

3. PROPOSED PERMIT POLICY

3.1. Conservation Management Plan

We support the advice provided by the ED in the proposed permit policy that a Conservation Management Plan should be developed to manage the place in a manner which respects its cultural heritage significance.

3.2. Specific Permit Exemptions

We support the specific permit exemptions as advertised by the Executive Director. We submit that they provide a suitable balance in preserving the established cultural heritage significance of the place whilst allowing for change in the future.

4. PHYSICAL DESCRIPTION AND EXTENT OF REGISTRATION

We support the proposed extent of registration as proposed by the ED, including the land, roadways, bridges, light poles and medians, escarpments and rock cuttings, trees, landscape elements and other features.

We note that a Historic Concrete Road Bridges Study was undertaken by Gary Vines of Biosis Research Pty Ltd on behalf of the National Trust with major funding from VicRoads and further financial assistance from Heritage Victoria in 2008. This study recognised the significance of the Eastern Freeway bridges as a group, finding them to be significant at the State level.

A draft National Trust Classification Report for the Eastern Freeway bridges was prepared following the completion of the study. While our files show that it was never ratified by the Board of the National Trust, it nevertheless provides useful information and analysis which supports the recommendation of the Executive Director, and may assist the Heritage Council in making a determination.

5. CONCLUSION

Thank you for the opportunity to provide comment regarding the Executive Director's recommendation that the Eastern Freeway – Stage 1 should be included in the Victorian Heritage Register. The National Trust strongly supports the Executive Director's recommendation. We would welcome the opportunity to make further submissions in support of the inclusion of the Eastern Freeway – Stage 1 in the Victorian Heritage Register if a Registration Hearing is called.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'F. Watson', with a long horizontal flourish extending to the right.

Felicity Watson
Executive Manager, Advocacy
National Trust of Australia (Victoria)

Attached:

1. National Trust of Australia (Victoria) Draft Classification Report for Eastern Freeway Stage 1 Bridges, 2006.

NATIONAL TRUST OF AUSTRALIA (VICTORIA)

DRAFT CLASSIFICATION REPORT

Nat Trust File No B7418

NAME: Eastern Freeway Stage 1 Bridges

LOCATION: Eastern Freeway, Clifton Hill to Bulleen, Cities of Yarra and Boroondara

The first stage of the freeway extends from Clifton Hill at Hoddle St to Bulleen Rd. It includes 8 major road bridges - Hoddle Street, Merri Creek, Yarra Bend Rd, Yarra River, Yarra Boulevard, Chandler Highway, Belford Rd and Burke Rd plus one major rail bridge and a foot bridge.

OTHER / FORMER NAMES: Eastern Freeway Stage 1 bridges identified in the classification are:

NT BRIDGE No:	VICROAD S STR ID:	DATE:	FEATURE CARRIED:	FEATURE CROSSED:	MAP REF:	NEAREST TOWN:
8706	SN7094	1975	Hoddle Street (Hoddle Highway)	Eastern Freeway	Mel 2CJ5	Clifton Hill
8707	SN7095	1976	Clifton Hill Railway	Eastern Freeway	Mel 2CJ5	Clifton Hill
8705	SN7092	1976	Pedestrian Overpass	Eastern Freeway	Mel 2DA5	Clifton Hill
7761	SN3684	1977	Eastern Freeway	Merri Creek	Mel 2DB5	Clifton Hill
7758	SN3679	1977	Eastern Freeway	Merri Creek	Mel 2DB5	Clifton Hill
8714	SN7102	1972-6	Yarra Bend Road	Eastern Freeway	Mel 2DF4	Fairfield
7759	SN3680	1977	Eastern Freeway	Yarra River	Mel 2DK3	Kew
7762	SN3685	1977	Eastern Freeway	Yarra River	Mel 2DK3	Kew
8585	SN6836	1971-7	Yarra Boulevard	Eastern Freeway	Mel 45A2	Kew
9022	SN8370	1977	Chandler Highway	Eastern Freeway Unbuilt Off Ramp	Mel 45B2	Kew
8708	SN7096	1977	Chandler Highway	Eastern Freeway	Mel 45B2	Kew
7760	SN3681	1977	Eastern Freeway	Willsmere Park Footway	Mel 45E2	Kew
8713	SN7101	1976	Belford Road	Eastern Freeway	Mel 45G2	Kew
8709	SN7097	1977	Burke Road	Eastern Freeway	Mel 31K12	North Balwyn
9244	SN9141	1977	Burke Road (West Bound On Ramp)	Eastern Freeway	Mel 31K12	North Balwyn
8710	SN7098	1977	Columba Street	Eastern Freeway	Mel 32C11	North Balwyn
8712	SN7100	1977	Bulleen Road	Eastern Freeway	Mel 32D11	North Balwyn

CATEGORY: BRIDGE, ROAD – Various Forms



National Park Overpass – Yarra Bend Road photo VicRoads

STATEMENT OF CULTURAL HERITAGE SIGNIFICANCE:

What is significant?

The Eastern Freeway Stage 1 bridges comprise a related group of 14 major prestressed concrete road bridges and a major prestressed concrete rail bridge built to a variety of complementary designs. The designation includes the road-over bridges at Hoddle Street, Yarra Bend Road, Chandler Highway, Belford Road, Yarra Boulevard, Burke Road, Columba Street and Bulleen Road, the rail-over bridge on the Clifton Hill rail line, and the paired road bridges that carry the Freeway over Merri Creek and the Yarra River. All were planned and built between 1971 and 1977 as integral parts of the first stage of the F19 or Doncaster Freeway (now Eastern Freeway). The Melbourne & Metropolitan Board of Works (MMBW) Planning and Highways Department were responsible for the design of all but one of the road bridges and initial construction phase up to 1974, when the Country Roads Board (CRB) assumed responsibility for all major metropolitan roads. The CRB was responsible for the design and tendering of the Yarra River Bridges and all outstanding contracts from the MMBW's work. The Victorian Railways department was responsible for the design and construction of the Clifton Hill Railway Bridge over the freeway in consultation with the MMBW & CRB.

How is it significant?

The Eastern Freeway Stage 1 bridges are significant for Scientific (Technical), Historic and Aesthetic reasons at a State level.

Why is it significant?

The Eastern Freeway Stage 1 bridges are of significance as part of an elaborately and aesthetically designed modern freeway, which was a major shift in freeway design philosophy from the earlier (and most later) freeways and major roads constructed in Victoria in the 20th century where cost considerations were always paramount and produced the most economic, but not always most aesthetically pleasing designs. In this case, the aesthetics of the freeway was a key design criterion.

The freeway bridges are of **technical** significance for their use of innovative designs and prestressing technology, in site specific contexts, particularly in their use of new and distinctive engineering approaches, designs and technologies such as rigid frame prestressed box girders on the Yarra Boulevard and Yarra Bend Road bridges. The standard CRB designs, generally using prefabricated beams to reduce costs may have been considered inappropriate for the new freeway, not because of any structural inadequacy, but because they did not reflect the modern planning and design approach that the Metropolitan Transport Plan had promoted under the Bolte Government. In particular, the Yarra Boulevard, Belford Road Bridge and Yarra Bend Road Bridges are among the longest span bridges in Victoria, representing the third, fourth and sixth longest bridge spans respectively after the West Gate Bridge and Bolte Bridge. The Yarra Boulevard and Yarra Bend Road Bridges are also the longest single span bridges in the state.

The railway bridge was only the second prestressed railway bridge in Victoria after the Kananook Creek rail bridge designed by Jack Emmins, chief structural engineer with the Victorian Railways. The Eastern Freeway crossing was the first cast in situ prestressed concrete bridge in Victoria and was designed by Hardcastle and Richards Pty Ltd, Consulting Engineers. It is still the largest prestressed concrete rail bridge in Victoria. It is unique in that its 3 tracks are each supported on 4 spans of individual simply-supported prestressed concrete box girders.

This type of design is unlikely to be replicated today but was dictated by the Victorian Railway's fear of stray current corrosion, which it considered of more concern for a continuous bridge than for a simply supported bridge. The railways have also maintained a policy of requiring bridges that allow any girder to be replaced individually at any time in the event that it was struck by a truck or otherwise damaged beyond repair. The decision to adopt simply supported spans in turn dictated large girders with large piers to support the large bearings, and hence the form of the bridge. That form then led to the similar boxlike designs of the Hoddle St Road Bridge and Trenerry Crescent

footbridge.

The Trennery Crescent footbridge was not built to the intended design, but to a standard CRB footbridge design, albeit a very long example. This bridge reflects the necessary compromises to the original vision, when the CRB take-over brought cost cutting.

The freeway bridges are of **aesthetic** significance for their dramatic designs, particularly the rigid frame Yarra Boulevard and Yarra Bend Road bridges, which were chosen expressly to provide sweeping un-interrupted spans, even though simpler and cheaper alternatives were available. The design approach which integrated all the bridges (including the Clifton Hill line rail bridge the nearby footbridge) and created a sequential variation from one bridge to the next was revolutionary in road design in Australia. The off-form concrete finish was important aspect of the Brutalist architectural style which was prominent at the time.

The design of the bridges also set a standard for aesthetic design of freeways in Australia, evident in the comparison with the south Eastern and Tullamarine Freeways. There is one exception to this, namely the bridge over the Yarra River. The MMBW intended that this bridge would be an iconic design, in effect the same design as the bridge over the Merri Creek but with two mirror halves. However, when the MMBW road planning and construction function was taken over by the CRB, the cost of this design was deemed excessive and the bridge was built using a standard design. The Willesmere underpass, while a minor structure on the freeway, was also designed with curved portal frame and off-form concrete continuing the aesthetic scheme.

The freeway and its bridges are equally important **historically** for the role they played in galvanising public opposition and protest to the destruction of Melbourne's established inner suburbs and parklands from a proposed network of over 500 kilometres of freeways designated in the 1969 Metropolitan Transportation Plan. The Eastern Freeway was the first of the projects attempted under this plan, and came at the end of the 27 years of Henry Bolte's Premiership. Bolte at this time gained control of the upper house, and no longer was beholden to the Country Party, and so was able to take control of road planning from the MMBW. Bolte had been an enthusiastic advocate of freeways, having seen developments in American cities.

Protest campaigns during the construction drew together public transport advocates, local residents in the inner suburbs of Fitzroy, Collingwood and Carlton, students and academics and radical social groups, unions and the Labor Party at both State and Federal level. It culminated in barricades of old cars and the arrests of many protestors, including the Mayors of Collingwood and Fitzroy in full regalia.

Despite the protests, the freeway was completed and opened, but the new Premier, Rupert Hamer took a different approach to freeway construction, insisting that environmental and social issues should also be taken into account.

The freeway and bridges are also significant for their historical association with a number of architects and engineers, including Bruce Day, who had overall design responsibility. The aesthetic qualities were instituted by Bruce Day and the design team, but enabled by the attitude of Alan Croxford, the Chairman of the MMBW who considered that "...the bridges would be viewed by the public for many years and that the cost should not be the main deciding factor" (Bruce Day).

EXTENT:

The designation applies to the bridges of the original stage of the Eastern Freeway extending from Hoddle Street in Clifton Hill to Bulleen Road, as identified in the table under 'other/former names' above. The designation includes eight major road bridges - Hoddle Street, Merri Creek, Yarra Bend Road, Yarra River, Yarra Boulevard, Chandler Highway, Belford Road and Burke Road, plus the Clifton Hill line railway bridge and a footbridge at Trennery Crescent.

HISTORY:

The Melbourne Strategy Plan of 1954, proposed as series of radial freeways and ring roads to provide for Melbourne's future transport needs (MMBW 1954). Although some projects that came out of this

plan, such as Kings Way and the South Eastern Freeway, were commenced in the late 1950s and early 1960s, it was not until the late 1960s that freeway construction in Melbourne really took off and at the same time became a major social and political issue.

The 1969 Melbourne Transportation Plan was promoted by the then transport minister, Vernon Wilcox, as: "... a plan that recognises that there is a place for all forms of transport in attempting to solve the problem ... in other words, it believes that balanced transport is the only hope." However, of the various rail projects proposed, only the rail loop was retained as policy, while freeway construction was given the green light. The 1969 Melbourne Transportation Plan took up the earlier 1954 MMBW Strategy Plan for a new eastern arterial route designated Route 19 in the 1954 plan, and the F19 in the 1969 plan (Lay 2003:55). Initial investigations for the F19 construction work had commenced as early as 1961, when the MMBW undertook a geotechnical study (VicRoads project no 11359, 1/06/1961). In 1971, the State Government passed the Eastern Freeway Lands Act (8204/1971) which provided for compulsory acquisition of private land and revocation of various parkland, golf courses and other reserves along the Yarra River from Alexandra Parade to Thompson's Road.

The role of the Melbourne & Metropolitan Board of Works at this time can be seen as an outcome of the competing interests between various Government departments for influence in and responsibility for Metropolitan planning and road construction. The CRB had made some inroads through its involvement in upgrading main roads leading into the City. However, the MMBW had a major town planning role, expressed in the 1954 Melbourne Strategy Plan. As a consequence of its role in other Melbourne planning and infrastructure development such as the South Eastern Freeway, the MMBW was authorised as the construction authority for the freeway, while the Railway Construction Board was authorised to build the proposed Eastern Suburbs Railway along the centre median (Eastern Railway Construction Act 1971). The MMBW was also empowered to undertake works to alter the courses of the Yarra River and Merri Creek within Yarra Bend Park.



Design model of Eastern freeway, MMBW/Museum Victoria

Design of the bridges is credited to a number of people. George Deutsch (then of the Victorian Railways engineering department) was responsible for the railway overbridge near Hoddle Street, Maurice Low (then of the MMBW but later the CRB) undertook designs for the Merri Creek structures, while Bruce Day was responsible for the overall design concept. Rosa Nirán, was the

architect, who, with Bruce Day, had input into the shapes and surface treatments of the bridges.

Bruce Day had previously honed his design skills during two years with the Highways Branch of the MMBW. Here he worked on the approach spans of the Punt Road Overpass and the elevated structure on the Eastern Freeway over the Yarra River. In these projects, elimination of water leakage and staining and careful tapering of support columns were seen as ways of improving aesthetics of the bridges. He then worked on the MacRobertson's High School footbridge over Kingsway which included graceful "flyaway" stairs as a compromise to his original elliptical stairway proposal. Bruce then went on to the Kings Bridge repairs and strengthening which involved retrofitting a system of prestressing using external cables in ducts between concrete anchor blocks. Further projects including the St. Kilda Junction development and St. Kilda road underpass at the Arts Centre contributed further aesthetic elements such as subtly curved soffits. A number of these early projects also used elastometric bearings to accommodate high expansion rates and costs involved in piling to accommodate bending.

The Eastern Freeway was a controversial project from its commencement. By 1972, thousands of concerned Melbourne residents were attending public meetings in the inner city, signing petitions, and building links with the ALP and the unions in a wide public attempt to influence the direction of urban planning and development. The Liberal Government of Sir Henry Bolte had been in government since 1955, but in August 1972 a new Liberal Premier, Rupert Hamer, took over the leadership. Although not anti-freeway, Hamer as transport minister, had previously delayed some of the freeway proposals and demanded further assessment of their sociological and environmental effects (Lay 2003:201).

The cream of Melbourne society was also fighting freeways, at least the one that would follow the Yarra through Heidelberg. They used their connections to have the road reserve removed from their side of the river. In March 1973, Hamer scrapped some of the most controversial freeways, but opposition continued against those that remained.

Hamer's 1973 compromise gave the Eastern Freeway the go-ahead, but opposition continued. The protest had some help from Tom Uren, Minister for Urban and Regional Development in Whitlam's federal government, and a relatively large sum of money from Fitzroy and Collingwood Councils, but they were never able to get the Doncaster rail on the political agenda as an alternative to a half-built freeway. Instead, the argument centred on where the traffic would go after it left the freeway.



Eastern freeway under construction, photo MMBW/Museum Victoria

In 1977, the road was built and Hamer announced the inevitable: traffic would be allowed across Hoddle Street and into Alexandra Parade. The protest culminated in residents building barricades and hundreds of police were brought in to take them down. The local protests included direct action by residents, radical students and even councillors such as Theo Sidiropoulos, Mayor of Collingwood, and Bill Peterson, Mayor of Fitzroy, who were arrested at the blockade in full Mayoral regalia. Hamer eventually offered bus lanes on the freeway and some limits to road widening in Rathdowne Street and other approaches to the city. (Sparrow 2004; Stone, MA Thesis in prep).

In 1974, the State Government legislated to transfer the MMBW's road related functions (road planning, road design and construction) to the CRB and approximately 140 staff from the Melbourne Metropolitan Board of Works (MMBW) went to the CRB. The change occurred in July 1974. At the time, a number of major road projects were under way or completed, including the Eastern Freeway, as well as the St Kilda Junction upgrade, South Eastern arterial road, Tullamarine Freeway-Bell Street interchange. The City Road underpass at St. Kilda Road was still being built and widening of Hoddle Street and Brighton Road was underway. The designs for Eastern Freeway Yarra River bridges had been practically completed by this time but the contract had not been let, whereas the contracts for the other bridges had been awarded so, at the CRB takeover, the new authority took the opportunity to use a more economical design for the Yarra River bridges.

A pedestrian bridge over Koonung Creek providing temporary access to the Freeway Public Golf Course (Camberwell Golf Course) appears to have been the first structure completed, probably to maintain access during roadworks (VicRoads project no 8822 (VicRoads 27/11/1974). Most of the other bridges on this first section of freeway were designed during 1975 along with details for the retaining walls, underpasses, service tunnels and the reconstruction of the Reilly Street Drain under the Alexandra Parade interchange.

The Eastern Freeway was designed with the idea of constructing a heavy-rail track down its median, and engineering provisions for this had been made, examples include the lack of support pylons for bridges crossing the freeway and the generous space afforded by the median strip, although the plan eventually fell out of favour in the 1980s (VPRS 6039, Major Works Project Files, Public Works Department, CRB 136461, South Eastern Freeway 1948-1976).

The bridges were unlike any major road bridges constructed previously by the CRB or any other road authority in Victoria in their variety of styles, exceptional span lengths and structural forms. They were designed as a consistent and related group, with visual references between each bridge intended to be viewed in sequence as you drove along the road. For example the first three bridges designs were determined by the requirements for the railway bridge with its simply-supported spans creating bulky rectangular forms. The Hoddle Street Bridge therefore follows a similar theme with a cast in situ box girder on two rectangular slab piers and two spill through abutments. This bridge was designed by Parkhill and Freeman.

The Clifton Hill rail overpass bridge was designed by Hardcastle and Richards with the drafting staff led by George Deutsch. H & R had previously worked for Victorian Railways and while Bruce expected a steel girder bridge as was usual for the railways, George Deutsch managed to convince the Railways chief engineer Jack Emmins that a prestressed concrete simply-supported box girder would be suitable, and meet railways design and load criteria. Various types of surface treatment were considered to reduce the visual aspect of their size, and eventually a sand-blasted board marked finish was used longitudinally on the girders and vertically on the piers. Great care was taken in the positioning of the boards to ensure the final result was cohesive and aesthetically logical.

The Trenerry Crescent Overpass was part of the original concept design, but the initially successful consultants, Maunsell and Partners, were taken off the project when their designs did not meet the overall objectives. The bridge was not designed until after the MMBW Highways Branch had disbanded, and so was built to a standard CRB simply supported design.

The Merri Creek Bridges were designed to concepts prepared by Maurice Lowe and Bruce Day, and landscape architect Rosa Niran. A critical factor discovered during foundation investigations was that

the western side had been quarried away and was fill, so that the original design had to be rotated 180 degrees to allow founding the single sloping pier on the sound east bank. The Yarra River bridges were initially intended to be designed using pairs of mirrored, similar sloping-pier spans, but cost-cutting when the Highways Branch was transferred to the CRB resulted in a less aesthetically satisfying and more conventional pre-stressed beam design was used instead.

The Yarra Bend and Boulevard Bridges were designed to frame the approach to the Yarra River crossing. These were designed by MacDonald, Wagner and Priddle, to a sketch provided by Bruce Day using a single span, pre-stressed, hollow box, portal framed bridge. The abutments of the Yarra Bend Road Bridge were designed to give the impression of the cutting face extending right up to the sides of the legs, with the drilled rock-face being overlaid with basalt stonework. This bridge received an "Award for Excellence from the Concrete Institute of Australia in 1977". The Boulevard Bridge, being on stiff clay and Silurian sedimentary rock, required a slightly different abutment treatment. The angle of the legs was steepened slightly and two concrete sidewalls with built in ledges were added to allow stonework to be placed as a blending medium between the structure and the batter, which was laid back more than the Yarra Bend site. Maurice Lowe was the design team leader. The stonework was deleted from the contract by Keith Moodie the CRB Chief Engineer.

The next bridge encountered on the outward journey is the Chandler Highway Bridge, which has the similar tapering underside, but with the added visual interest of a sharp skew angle, curved superstructure and "V" shaped solid piers. Bruce Day prepared the concept and David Payne was design team leader. The V motif is taken up at Belford Road by the steeply angled piers forming triangular openings at the abutments. The design was prepared by Kinnaid Hill, De Rohan, Young and Doug Joyce, who came up with a somewhat different approach using straight tapered forms.

The Burke Road Bridge has the open V expressed in the piers, which are formed from two concrete columns at 45 degree angles sharing a common base (pers. com. George Deutsch 2007). Foundations problems and the complex road geometry had to be dealt with on this site. Bruce Day again prepared the concept and Brian Hensley was the design team leader.

The Columba Street bridge was designed as a two span variable depth continuous box girder with the tall pier also tapered, the effect creating a bird shape with extended wings. The tapered forms again reflect the shapes of the preceding bridge and so continue the rhythm along the freeway.

Bulleen Road was the last bridge in the first stage of the Eastern Freeway. Similar tapered forms to the Columba Street Bridge were employed by Bruce Day, in the deck beams and piers, but because the bridge was much lower and wider, it does not show the same elegance. Widening has resulted in an unsightly interruption on the soffit line on the western side and replacement of railings with heavy barriers. Bob Mann was the design team leader on this bridge.

Extensions of the freeway were undertaken from Bulleen Road to Doncaster Road in 1980, and then to Springvale road in 1993-5. Further extension as part of the Eastlink project to complete the originally intended route to the Ringwood Bypass is now completed.

The Doncaster to Springvale Road extension of the freeway (Stage 3) won the 1998 Royal Australian Institute of Architects' urban design award and the project has continued to collect accolades for the architectural practice Woods Bagot. This to some extent can be seen as a legacy of the original design intent which was further enhanced in the later work; for example one of the footbridges in Stage 3 repeats the portal frame design of the Yarra Boulevard Bridge (VPRS 6039, Major Works Project Files, Public Works Department, CRB 136461, South Eastern Freeway 1948-1976).

DATE BUILT: 1971-77

LAST ALTERATIONS: 2000

DESCRIPTION:

The Eastern Freeway Bridges comprise 14 main road bridges built in prestressed concrete for the Hoddle Street, Yarra Bend Road, Yarra Boulevard, Chandler Highway, Belmore Road, and Belford Road plus the Clifton Hill line rail bridge and the Trenerry Cresc footbridge. Large single spans were achieved at the Yarra Boulevard and Yarra Bend Road by the use of rigid frame designs, where the

main beam is integral with the abutments. Yarra Boulevard was to have stonework applied to the side walls, where ledges to support the stone are still visible, but this was excluded from the final design by the DRB Chief engineer Keith Moodie, probably for cost saving.

Belford Road has a variation with rigid splayed piers angled sharply back into the road cutting. Each of the bridges were designed to express the structural forms in their designs.

The Merri Creek Bridges have a distinctive sharply single angled pier design, which was originally intended to be used also for the main Yarra River Bridges, by mirroring the pier design on each side of the river. However, cost-cutting saw the Yarra crossing changed to a more conventional prefabricated prestressed T beam design with multiple piers.

The unusual form of the Merri Creek Bridge comprises a V shaped pier, with sloping and splayed column from the east bank of Merri Creek to about 1/3rd of the span. A second column slopes in the opposite direction to anchor the end of the bridge near the abutment. The main span therefore is partially cantilevered. This design was used here because only one side of the crossing provided good foundations on the basalt bedrock. The rigid frame box girder section superstructure is formed with two units, one for each carriageway. A subtly curving fillet is used to join the superstructure to the pier columns.

Burke Road Bridge continues the design theme in its steeply angled “V” shaped piers, but with a more conventional precast I beam superstructure. The junction between the main bridge and the on ramp presents an unusual geometry and design, with the beams angled and splayed to match the line of the road lanes above.

A small single lane and very slender box girder bridge was built for access to the Freeway Golf Club, just west of Bulleen Road at Columba Street. A simple footbridge, which uses precast simply-supported beams, is located at Trenerry Crescent while a very large and unusual underpass with distinctive architectural features, evidently using a rigid frame structure, provides access to parkland north of the Yarra from Kilby Road.

Bulleen Road Bridge is another shallow box girder with both the span members and piers subtly tapered, repeating the “V” theme of the other bridges’ piers and the similar tapering effect of the Columba Street Bridge, but at a more robust scale. Recent alterations to the bridge involving widening with precast beams, has resulted in interruptions to the soffit line on the east side, while the railings have been changed to a more massive barrier.

The standard Jersey type concrete barrier with a bracketed large diameter pipe rail attached to the top is used for all the road bridges, providing a consistent appearance.

Details of the bridge structural types and dimensions are summarised in the following table:

NTBD No	VR No	NAME:	FEATURE OVER	FEATURE UNDER	TYPE DESCRIPTION:	TOTAL No SPANS	MAX MAIN SPAN	DECK LENGTH (m):
8706	SN7094	Hoddle Street Bridge	HODDLE HIGHWAY	EASTERN FREEWAY	BOX GIRDER	3	40	87.0
8707	SN7095	Clifton Hill Line Rail Bridge (Hoddle St Rail Bridge)	Clifton Hill Railway Line – 2 tracks + 1 siding	EASTERN FREEWAY	Simply supported cast in situ prestressed concrete box girders.	4	40	150.0
8705	SN7092	Trenerry Cres Pedestrian Overpass	TRENERRY CRES PED OVERPASS	EASTERN FREEWAY	Simply supported prestressed concrete box girder	8	40	186.0
7758	SN3679	Merri Creek Bridges	EASTERN FREEWAY	MERRI CREEK	BOX GIRDER	2	30.0	66.4
7761	SN3684	Merri Creek Bridges	EASTERN FREEWAY	MERRI CREEK	RIGID FRAME BOX GIRDER (rigid frame)	2	30.0	66.4
8714	SN7102	Yarra Bend Road Bridge	YARRA BEND ROAD	EASTERN FREEWAY	PORTAL FRAME BOX GIRDER	1	81.0	100.0
7759	SN3680	Yarra River Bridges	EASTERN FREEWAY	YARRA RIVER	PRECAST I-BEAMS	5	30	140.0
7762	SN3685	Yarra River Bridges	EASTERN FREEWAY	YARRA RIVER	PRECAST I-BEAMS	5	30	135.9
8585	SN6836	Yarra Boulevard Bridge	YARRA BOULEVARD	EASTERN FREEWAY	PORTAL FRAME BOX GIRDER	1	99.5	100.0
8708	SN7096	Chandler Highway Bridge	CHANDLER HWY	EASTERN FREEWAY	BOX GIRDER	5	60	175.0
9022	SN8370	Chandler Highway Bridge – unused freeway off ramp	CHANDLER HWY	EASTERN FREEWAY UNBUILT OFF RAMP TO CHANDLER HWY	BOX GIRDER	3	30	64.7
8713	SN7101	Belford Road Bridge	BELFORD ROAD	EASTERN FREEWAY	PORTAL FRAME BOX GIRDER	3	88.0	133.0
8709	SN7097	Burke Road Bridge	BURKE RD	EASTERN FREEWAY	PRECAST I-BEAMS	9	60	324.8
9244	SN9141	Burke Road Bridge on Ramp (West Bound)	BURKE RD ON RAMP (West Bound)	EASTERN FREEWAY	PRECAST I-BEAMS	3	20	76.2
8710	SN7098	Columba Street Bridge	COLUMBA ST (TO GOLF CLUB)	EASTERN FREEWAY	BOX GIRDER	2	55	110.0
8712	SN7100	Bulleen Road Bridge	BULLEEN ROAD	EASTERN FREEWAY	BOX GIRDER	2	46.5	93.0

In addition, three bridges of different design are considered part of the first stage, but represent a different design approach, dictated in part by the requirement for the railway department, which insisted on a simply supported structure. This resulted in thicker piers, set with shorter spans than the road bridges. The railway bridge was designed by George Deutsch. Because of the close proximity of the Hoddle Street bridge over the freeway entrance, and the nearby Trenerry Crescent pedestrian bridge, these two structures followed a similar arrangement, with more closely spaced straight sided piers and a heavier set rectangular superstructure.

The Eastern Freeway bridge designs can be seen in the context of the freeway bridges that came before and after. Use of prestressed precast concrete girders was probably adapted from experience with the South Eastern Freeway from an earlier decade, while the use of portal frame structures has been revived for some of the later bridges on the Eastern Freeway, Western Ring road and Geelong Bypass.

CONTEXT:

The freeway extends primarily through parkland along the Yarra River valley, with substantial cuttings through basalt at Fairfield and sedimentary rocks at Kew, giving a view to the underlying geology of the landscape. The roadside is lined with planted and regenerating native vegetation, although little of this is within the freeway reserve, which itself is only sparsely landscaped.

INTACTNESS:

All the bridges of the first stage construction are intact to their original designs. Some road widening has occurred but only involving reducing emergency lanes and kerb widths.

COMPARISON:

The range of bridges on the Eastern Freeway have other precedents in Victorian and interstate engineering, but are unusual in the way they were conceived as a group. The South Eastern Freeway Bridge over the Yarra features similar tapered box girder construction to the Chandler Highway Bridge. The Yarra Bend Rd and Yarra Boulevard Rigid Frame Bridges, however, were the first of their kind in Victoria (as was the rail bridge). The design was repeated on one of the footbridges on the second stage of the freeway, but has remained unusual.

Measuring between 81 and 99 metres spans, The Yarra Boulevard, Belford Road Bridge and Yarra Bend Road Bridges are the third, fourth and sixth longest span bridges in Victoria, respectively and the Yarra Boulevard, and Yarra Bend Road Bridges also the longest single span bridges in the state. Interestingly the next longest single span bridges are the Saltwater Railway Bridge of 61 metres, built in 1859, with its span replaced in the 1920s, and the Mia Mia Bridge using trusses from c1861 originally intended for Hawthorn Bridge. More than 99% of all single span bridges are less than 25 metres long, while only 12 exceed 30 metres.

The Eastern Freeway Bridges covered by this classification are depicted in the following images, which are organised from west to east as follows:



8706 Sn7094 Hoddle St Bridge looking east



8707 Sn7095 Clifton Hill Rail Overpass, Hoddle St



8705 Sn7092 Trenerry Cres Pedestrian Overpass (looking north east from the south side)



7761 SN3684 Merri Creek (looking east from the south side)



7758 SN3679 Merri Creek (looking east from the north side)



8714 Sn7102 Yarra Bend Road Bridge (looking east)



7759 - SN3680 & 7762 - SN3685, Yarra River bridge inbound carriageway looking east towards Yarra Boulevard Bridge



8585 Sn6836 Yarra Boulevard Bridge (looking west)



8708 Sn7096 Chandler Hwy (looking west)



9022 Sn8370 Chandler Hwy (looking south)



9022 SN8370 Chandler Highway over unused freeway off ramp (looking west)



8713 Sn7101 Belford Road Bridge (looking west)



8709 Sn7097 Burke Rd (looking north east from westbound on ramp)



9244 Sn9141 Burke Rd On Ramp (West Bound) (looking east)



8710 Sn7098 Columba St (To Golf Club) (looking east)



8712 SN7100 Bulleen road Bridge (looking west)

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APPENDICES

ASSESSMENT AGAINST HERITAGE VICTORIA CRITERIA

- a. *The historical importance, association with or relationship to Victoria's history of the place or object*

The Eastern Freeway Stage 1 bridges described in this report, are of significance as an elaborately and aesthetically designed modern freeway, which was a major shift in freeway design philosophy from the earlier (and most later) freeways and major roads constructed in Victoria in the 20th century where cost considerations were always paramount and produced the most economic, but not always most aesthetically pleasing designs whereas, in this case, the aesthetics of the freeway was a key design criterion.

The freeway and its bridges are equally important **historically** for the role they played in galvanising public opposition and protest to the destruction of Melbourne's established inner suburbs and parklands from a proposed network of over 500 kilometres of freeways designated in the 1969 Metropolitan Transportation Plan. The Eastern Freeway was the first of the projects attempted under this plan, and came at the end of the 27 years of Henry Bolte's Premiership. Bolte at this time gained control of the upper house, and no longer was beholden to the Country Party, and so was able to take control of road planning from the MMBW. Bolte had been an enthusiastic advocate of freeways, having seen developments in American cities.

Protest campaigns during the construction drew together public transport advocates, local residents in the inner suburbs of Fitzroy, Collingwood and Carlton, students and academics and radical social groups, unions and the Labor Party at both State and Federal level. It culminated in barricades of old cars and the arrests of many protestors, including the Mayors of Collingwood and Fitzroy in full regalia.

Despite the protests, the freeway was completed and opened, but the new Premier, Rupert Hamer took a different approach to freeway construction, insisting that environmental and social issues should also be taken into account.

The freeway and bridges are also significant for their historical association with a number of architects and engineers, including Bruce Day, who had overall design responsibility. The aesthetic qualities were instituted by Bruce Day and the design team, but enabled by the attitude of Alan Croxford, the Chairman of the MMBW who considered that "...the bridges would be viewed by the public for many years and that the cost should not be the main deciding factor" (Bruce Day).

- b. *The importance of a place or object in demonstrating rarity or uniqueness*

The Eastern Freeway Stage 1 bridges as a group and individually, comprise **rare** structural forms and designs. In particular, the rigid portal bridges are extremely rare, with the only other examples found in later pedestrian bridges over the later stages of the Eastern Freeway, and on the Geelong bypass (under construction with first stage opened in 2008).

- c. *The place or object's potential to educate, illustrate or provide further scientific investigation in relation to Victoria's cultural heritage*
- d. *The importance of a place or object in exhibiting the principal characteristics or the representative nature of a place or object as part of a class or type of places or objects*
- e. *The importance of the place or object in exhibiting good design or aesthetic characteristics and/or in exhibiting a richness, diversity or unusual integration of features*

The freeway bridges are of **aesthetic** significance for their dramatic designs, particularly the rigid frame Yarra Boulevard and Yarra Bend Road bridges, which were chosen expressly to provide sweeping un-interrupted spans, even though simpler and cheaper alternatives were available. The

design approach which integrated all the bridges (including the Clifton Hill line rail bridge and the nearby footbridge) and created a sequential variation from one bridge to the next was revolutionary in road design in Australia. The off-form concrete finish was an important aspect of the Brutalist architectural style which was prominent at the time.

The design of the bridges also set a standard for aesthetic design of freeways in Australia, evident in the comparison with the South Eastern (now Monash) and Tullamarine Freeways. There is one exception to this, namely the bridge over the Yarra River. The MMBW intended that this bridge would be an iconic design, in effect the same design as the bridge over the Merri Creek but with two mirror halves. However, when the MMBW road planning and construction function was taken over by the CRB, the cost of this design was deemed excessive and the bridge was built using a standard design. The Willesmere underpass, while a minor structure on the freeway, was also designed with curved portal frame and off-form concrete continuing the aesthetic scheme.

f. The importance of the place or object in demonstrating or being associated with scientific or technical innovations or achievements

The freeway bridges are of **technical** significance for their use of innovative designs and prestressing technology, in site-specific contexts, particularly in their use of new and distinctive engineering approaches, designs and technologies such as rigid frame prestressed box girders on the Yarra Boulevard and Yarra Bend Road bridges. The standard CRB designs, generally using prefabricated beams to reduce costs may have been considered inappropriate for the new freeway, not because of any structural inadequacy, but because they did not reflect the modern planning and design approach that the Metropolitan Transport Plan had promoted under the Bolte Government. In particular, the Yarra Boulevard, Belford Road Bridge and Yarra Bend Road Bridges are among the longest span bridges in Victoria, representing the third, fourth and sixth longest bridge spans respectively after the West Gate Bridge and Bolte Bridge. The Yarra Boulevard and Yarra Bend Road Bridges are also the longest single span bridges in the state.

The railway bridge was only the second prestressed railway bridge in Victoria after the Kananook Creek rail bridge designed by Jack Emmins, chief structural engineer with the Victorian Railways. The Eastern Freeway crossing was the first cast in situ prestressed concrete bridge in Victoria and was designed by Hardcastle and Richards Pty Ltd, Consulting Engineers. It is still the largest prestressed concrete rail bridge in Victoria. It is unique in that its 3 tracks are each supported on 4 spans of individual simply-supported prestressed concrete box girders. This design would never be replicated today but was dictated by the Victorian Railway's fear of stray current corrosion being of more concern for a continuous bridge than for a simply supported bridge and their policy that it was necessary to be able to replace any girder of a bridge at any time in the event that it was struck by a truck or was otherwise damaged beyond repair. The decision to adopt simply supported spans in turn dictated large girders with large piers to support the large bearings, and hence the form of the bridge. That form then led to the similar boxlike designs of the Hoddle St Road Bridge and Trenerry Crescent footbridge. The Trenerry Crescent footbridge was not built to the intended design, but to a standard CRB footbridge design, albeit a very long example. This bridge reflects the necessary compromises to the original vision, when the CRB take-over brought cost cutting.

g. The importance of the place or object in demonstrating social or cultural associations

The Eastern Freeway Stage 1 Bridges have contemporary social significance for their critical role in Melbourne's transport network and in association with the on-going debate about solutions to traffic congestion and the value of transport infrastructure.

h. Any other matter which the Council deems relevant to the determination of cultural heritage significance

ASSESSMENT AGAINST BRIDGES STUDY CRITERIA*

Criteria	Variable						Score	Total
Early Example of Structural Type	Arch	T beam	Flat Slab	I beam/U beam	Pre-stressed	Other		
	1899-1910	1904-15	Pre 1930	Pre 1950	Pre 1955	First of type	3	3
	1910-30	1915-25	1930-35	1950-55	1955-60		2	
	Post 1930	1925-35	1935-40	1955-65	1960-65		1	
Length / Height	Outstanding length / span length / height for bridge of its type and age						3	3
	Noteworthy length / span length / height for bridge of its type and age						2	
	Significant length / span length / height for bridge of its type and age						1	
	Typical length / span length / height for bridge of its type and age						0	
Structure Type (Structural composite steel & Concrete)	Outstanding, rare example of its type exhibiting many original features and details						3	3
	Good, relatively rare example of its type exhibiting some original features and details						2	
	Good example of common type including modified						1	
	Total Technical score							9
Historical Settlement and Communication, Route & Site	State						3	
	Regional						2	2
	Local						1	
Designer / Engineer Builder	Outstanding example of important engineer’s work						3	
	Noteworthy Example of important engineer’s contractors or authority’s work,						2	2
	Minor example or important engineers work or representative of other engineer’s						1	
Historical Event	State						3	3
	Regional						2	
	Local						1	
	Total Historical Score							7
Social values	State						3	3
	Regional						2	
	Local						1	
	Total Social Score							3
Aesthetic	Noteworthy proportions and details in highly aesthetic site context leading to high aesthetic appeal						3	3
	Reasonable proportions and details in reasonably aesthetic site context leading to medium aesthetic appeal						2	
	Typical unremarkable bridge in remarkable aesthetic and historic site context						1	
	Typical unremarkable bridge in unremarkable aesthetic and historic site context						0	
	Total Aesthetic Score							3
Total	Total Score for Eastern Freeway Bridges =							22

* For an explanation of assessment criteria scoring refer to "Quantitative Criteria for Significance Assessment" in Metal Road Bridges in Victoria - Part 2, Gary Vines (Biosis Research Pty Ltd) and Ken McInnes, 2003, pp.28-33. or concrete Road Bridges in Victoria. Gary Vines 2007.