

Schedule 2.2 (a)(ii)

Schedule 2.2 (a)(ii)

Schedule 2.2 (a)(ii)

Schedule 2.2 (a)(ii)

via email: Schedule 2.2 (a)(ii)

Dear Schedule 2.2 (a)(ii)

FREEDOM OF INFORMATION REQUEST

I refer to your following applications under section 30 of the *Freedom of Information Act 2016* (the Act), received by Major Projects Canberra (MPC) between 12 November and 18 November 2021.

In your application of 12 November 2021 you sought access to:

Any correspondence, briefing materials, and other relevant documents from October 2012 to October 2016, regarding:

- *the selection of the CAF Urbos 3 LRV, and*
- *known issues and mentions of cracking with the CAF Urbos 3 LRV operating in other jurisdictions prior to and following acquisition.*

In your application of 16 November 2021 you sought access to:

Any correspondence, briefing materials, and other relevant documents from October 2016 to November 2019, regarding:

- *known issues and mentions of cracking with the CAF Urbos 3 LRV operating in other jurisdictions prior to and following acquisition.*

In your application of 18 November 2021 you sought access to:

Any correspondence, briefing materials, and other relevant documents from November 2019 to present, regarding:

- *known issues and mentions of cracking with the CAF Urbos 3 LRV operating in other jurisdictions prior to and following acquisition.*

After correspondence with your office, on 22 November 2021 it was agreed that MPC could regard these three requests as one combined request and scope should be considered as:

Any correspondence, briefing materials, and other relevant documents from October 2012 to October 2016, regarding:

- *the selection of the CAF Urbos 3 LRV.*

And

Any correspondence, briefing materials, and other relevant documents from October 2012 to present, regarding:

- *known issues and mentions of cracking with the CAF Urbos 3 LRV operating in other jurisdictions prior to and following acquisition.*

You have requested any draft documents also be included.

Authority

I am an Information Officer of MPC appointed by the Chief Projects Officer under section 18 of the Act to deal with access application made under Part 5 of the Act.

Decision on access

Searches were completed for relevant documents and thirty-two (32) documents were identified that fall within the scope of your request.

I have included as **Attachment A** to this decision the schedule of relevant documents. This provides a description of each document that falls within the scope of your request and the access decision for each of those documents.

My decision in relation to the documents relevant to your request is summarised as follows:

- full release of eleven (11) documents;
- partial access to fourteen (14) documents;
- Deferred access to one (1) document; and
- withheld access to six (6) documents.

My decision is detailed further in the following statement of reasons.

Statement of Reasons

In making my decision on disclosing government information, I must identify all relevant factors in schedule 2 of the FOI Act and determine, on balance, where the public interest lies. In reaching my access decision, I have taken the following into account:

Factors favouring disclosure in the public interest (Schedule 2, Section 2.1)

- Section 2.1(a)(i) - promote open discussion of public affairs and enhance the government's accountability,
- Section 2.1(a) (ii) contribute to positive and informed debate on important issues or matters of public interest, and
- Section 2.1(a) (viii) reveal the reason for a government decision and any background or contextual information that informed the decision.

Factors favouring non-disclosure (Schedule 1 Information disclosure of which is taken to be contrary to the public interest)

- Section 2.2(a)(ii) prejudice the protection of an individual's right to privacy or any other right under the *Human Rights Act 2004*,
- Schedule 2.2 (a) (x) prejudice intergovernmental relations,

- Schedule 2.2 (a) (xi) prejudice trade secrets, business affairs or research of an agency or person,
- Third Party objects to the disclosure of government information set out in Section 38 of the Act, and
- Information that is outside the scope of your request.

Online Publishing – Disclosure Log

Under section 28 of the Act, MPC maintains an official online record of access applications called a disclosure log. Your original access application, my decision and documents released to you in response to your access application will be published in the MPC disclosure log three (3) to ten (10) business days after the date of the decision. Your personal contact details will not be published. You may view the MPC disclosure log at <https://www.act.gov.au/majorprojectscanberra>.

Ombudsman Review

My decision on your access request is a reviewable decision as identified in Schedule 3 of the Act. You have the right to seek Ombudsman review of this outcome under section 73 of the Act within 20 working days from the day that my decision is published in the MPC disclosure log, or a longer period allowed by the Ombudsman.

If you wish to request a review of my decision you may write to the Ombudsman at:

The ACT Ombudsman
GPO Box 442
CANBERRA ACT 2601

Via email: actfoi@ombudsman.gov.au

ACT Civil and Administrative Tribunal (ACAT) Review

Under section 84 of the Act, if a decision is made under section 82(1) on an Ombudsman review, you may apply to ACAT for review of the Ombudsman decision. Further information may be obtained from the ACAT at:

ACT Civil and Administrative Tribunal
Level 4, 1 Moore Street
GPO Box 370
CANBERRA CITY ACT 2601

Telephone: (02) 6207 1740
<http://www.acat.act.gov.au>

Should you have any queries in relation to your request, please contact me by telephone on (02) 6205 5288 or email MPCFOI@act.gov.au.

Yours sincerely

Schedule 2.2 (a)(ii)

Kylie Bailey
Information Officer
Major Project Canberra
13 January 2022

FREEDOM OF INFORMATION REQUEST SCHEDULE

Please be aware that under the *Freedom of Information Act 2016*, some of the information provided to you will be released to the public through the ACT Government's Open Access Scheme. The Open Access release status column of the table below indicates what documents are intended for release online through open access.

Personal information or business affairs information will not be made available under this policy. If you think the content of your request would contain such information, please inform the contact officer immediately.

Information about what is published on open access is available online at: <https://www.act.gov.au/majorprojectscanberra/home>

FOI Reference Number		Request Details				
MPCFOI2021/12		<p><i>Any correspondence, briefing materials, and other relevant documents from October 2012 to October 2016, regarding:</i></p> <ul style="list-style-type: none"> <i>the selection of the CAF Urbos 3 LRV.</i> <p><i>And</i></p> <p><i>Any correspondence, briefing materials, and other relevant documents from October 2012 to present, regarding:</i></p> <ul style="list-style-type: none"> <i>known issues and mentions of cracking with the CAF Urbos 3 LRV operating in other jurisdictions prior to and following acquisition</i> <p><i>You have requested any draft documents also be included.</i></p>				
Ref No.	No. of Folios	Description	Date	Status	Reason for non-release or partial release	Open Access release status
1.	1-2	Email Correspondence	11 March 2020	Partial	Schedule 2.2 (a)(ii) Personal Privacy	Y
2.	3-56	Project Management Plan: Carbody Issue Canberra Trams	19 July 2019 & 2 August 2019	Partial	Schedule 2.2 (a)(ii) Personal Privacy & Schedule 2.2 (a)(xi) Prejudice trade secrets, business affairs or	Y

					research of an agency or person;	
3.	57- 62	Email Correspondence	Friday 16 October 2020	Partial	Schedule 2.2 (a)(ii) Personal Privacy & Out of Scope	Y
4.	63 – 64	Email Correspondence	10 February 2021	Partial	Out of Scope	
5.	65 - 68	Email Correspondence	15 June 2021	Partial	Schedule 2.2 (a)(ii) Personal Privacy	Y
6.	69 - 70	Email Correspondence	12 October 2021	Partial	Schedule 2.2 (a)(ii) Personal Privacy & Schedule 2.2(x) Prejudice intergovernmental relations	Y
7.	71	Email Correspondence	8 November 2021	Partial	Schedule 2.2 (a)(ii) Personal Privacy	Y
8.	72-73	Canberra Metro Operations: Sydney LRV Cracking Issues Key Messages	Undated	Full		Y
9.	76	Email Correspondence	8 November 2021	Full		Y
10.	75 77	Draft Question Time Brief	8 November 2021	Partial	Out of Scope	Y
11.	78	Email Correspondence	9 November 2021	Full		Y
12.	79 – 81	Draft Question Time Brief	8 November 2021	Partial	Out of Scope	Y
13.	82 – 88	Email Correspondence	9 November 2021	Partial	Out of Scope	Y
14.	89 – 92	External Input Request	Undated	Partial	Out of Scope	Y
15.	93	Email Correspondence	12 November 2021	Full		

16.	94	Draft Correspondence to Canberra Metro	12 November 2021	Partial	Schedule 2.2 (a)(ii) Personal Privacy	Y
17.	95	Email Correspondence	16 November 2021	Full		Y
18.	96 – 105	Draft TCCS Technical Note Urbos Frame Cracking	November 2021	Full		Y
19.	106	Email Correspondence	18 November 2021	Full		Y
20.	107-110	Draft Question Time Brief	17 November 2021	Full		Y
21.	N/A	Office of Transport Safety Investigations Rail Safety Investigation Interim Factual Statement. This is not included in our pack as is available online - 211103 LRV underframe fractures IFS.pdf (nsw.gov.au)	29 October 2021	Full		Y
22.	111 – 112	Canberra Metro Operations: Sydney LRV Cracking Issues Key Messages	Undated	Full		Y
23.	113 – 122	TCCS Technical Note Urbos Frame Cracking	November 2021	Full		Y
24.	123	Canberra Metro Correspondence to Transport Canberra	17 November 2021	Partial	Schedule 2.2 (a)(ii) Personal Privacy	Y
25.	124– 125	CAF Rail Services Correspondence to Canberra Metro	17 November 2021	Partial	Schedule 2.2 (a)(ii) Personal Privacy	Y

Total Number of Documents						
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25

From: Schedule 2.2 (a)(ii)
To: Schedule 2.2 (a)(ii)
Cc: Schedule 2.2 (a)(ii); [Kilfeather, Jim](#); [Dragos, Jonathon](#)
Subject: FW: SPV-CCOMM-005346: Urbos 100 Fleets - Door Portals Fatigue Issues
Date: Wednesday, 11 March 2020 12:11:56 PM
Attachments: [PMP_Carbody_Issue_Canberra_Trans.pdf](#)
[CAF_Fatigue_response_to_Aconex_ref_CMC-GCOR-016232.pdf](#)
[0-URBOS_Fatigue_Performance_-_CMC_\(1\).pdf](#)

Schedule 2.2 (a)(ii)

We have finally received advice re structural cracking in below Aconex. Docs extracted and attached. Covering advice below. We will need structural SME advice. Not tomorrow urgent but a preliminary view would be helpful when possible.

Regards

Schedule 2.2 (a)(ii)

From: Aconex Notification (Canberra Light Rail) [mailto:noreply@aconex.com]
Sent: Wednesday, 11 March 2020 10:57 AM
To: Schedule 2.2 (a)(ii)
Subject: SPV-CCOMM-005346: Urbos 100 Fleets - Door Portals Fatigue Issues
Dear Schedule 2.2 (a)(ii)

You have received a new [Contract Communication: SPV-CCOMM-005346](#)

Project: Canberra Light Rail
Type: Contract Communication
Mail Number: SPV-CCOMM-005346
To: Mr Ashley Cahif, Transport Canberra Light Rail
Cc: [Redacted]
Ms Jo Dawson, Transport Canberra Light Rail
CMA Document Management, Transport Canberra Light Rail
Jonathon Dragos, Transport Canberra Light Rail
Mr Andrew Fawcett, Transport Canberra Light Rail
Mr Ki Johnson, Transport Canberra Light Rail
Jim Kilfeather, Transport Canberra Light Rail
Ms Tahniah Littlejohn, Transport Canberra Light Rail
Mr Marcus Sainsbury, Transport Canberra Light Rail
From: Schedule 2.2 (a)(ii)
Sent: 11/03/2020 11:27:10 AM AEDT (GMT +11:00)
Status: N/A
Subject: Urbos 100 Fleets - Door Portals Fatigue Issues
Area: 00 All Areas
Discipline: OAM Operations & Maintenance

[Aconex](#)

Project success. Easy as Aconex.

This email is automatically generated by Aconex.

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If you need assistance please contact our Service Desk at the following numbers :

Australia: 1300 ACONEX (1300 226 639)

Int: +61 3 9240 0200

Regards,
The Aconex Team

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PROJECT MANAGEMENT PLAN:
CARBODY ISSUE CANBERRA TRAMS

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Page 1 de 7

ISSUE CONTROL

EDITION	REASON	DATE
-	Issue	19/07/2019
A	Attached submitted docs	02/08/2019

Prepared by:

Name: **Schedule 2.2 (a)(ii)**

Signature:

Date: 18/07/2019

Reviewed by:

Name: **Schedule 2.2 (a)(ii)**

Signature:

Date: 19/07/2019



INDEX


1. INTRODUCTION.....	3
1.1. BACKGROUND	3
1.2. TARGETS.....	3
2. SCOPE AND ON-SITE INTERVENTIONS.....	4
2.1. REGULAR INSPECTIONS AND INTERIM REPAIRS	4
2.1.1. SCOPE.....	5
2.1.2. ASSESSMENT AND FURTHER ACTIONS.....	5
2.1.3. INSPECTION RECORDS.....	6
2.2. FINAL CARBODY SIDE REPARATION	6
2.2.1. SCOPE.....	6
2.2.2. PROGRAMME AHEAD	7

ANNEX A: 0-URBOS Fatigue Performance - CMC

ANNEX B: Q56-Canberra_2019.02.06 videoconf final version

ANNEX C: 190509_URBOS Response letter Canberra - CMC_V1

ANNEX D: Q.40.90.805.00. Inspection and drilling procedure

		PROJECT MANAGEMENT PLAN: CARBODY ISSUE CANBERRA TRAMS	-
	-		Page 3 de 7

1. INTRODUCTION

1.1. BACKGROUND

On the 6th February 2019, CAF officially informed CMC about a fatigue issue which affects a number of Urbos 100 fleets and can cause the appearance of minor fissures in the upper corners of the door portals. The root cause has been identified as a combination of a stress concentrator not well identified and assessed during the design, and a weld which was assumed to be more resistant (as per EN1999) than reality.

On the 15th April 2019, CAF sent a formal letter, "0-URBOS Fatigue Performance - CMC.pdf" under reference *CAF,S.A.-CCOMM-000733*, providing brief background of the issue, and statements and assurance of performance, together with the document "Q56-Canberra_2019.02.06 videoconf final version", which presents the investigation performed to diagnose the problem and the reparation methods. In addition, CAF reiterated that Canberra vehicles are safe to operate with no performance limitation.

On the 9th May 2019, CAF sent another formal letter, "190509_URBOS Response letter Canberra - CMC_V1.pdf" under reference *CAF,S.A.-CCOMM-000743*, in response to the questions raised by CMC about the inspection and reparation program.

1.2. TARGETS

The general targets of the project, consisting of the inspection, interim reparations and final modification, are the fulfilment of the expectations of the client and the resolution of the structural fatigue issue.

2. SCOPE AND ON-SITE INTERVENTIONS

CAF have defined two levels of intervention:

1. Regular inspections and interim repairs
2. Final reparation

The on-site interventions are managed and planned by the Core Team in Spain, in conjunction with the Rail Services on-site Managers and the operator.


2.1. REGULAR INSPECTIONS AND INTERIM REPAIRS

The object of the regular inspections is to:

- A) Detect the crack appearance
- B) Monitor the crack length status

The appearance of these cracks is the result of a fatigue issue which depends on a number of factors such as the track conditions, welding execution, fleet mileage, etc. This provides difficulty to predict the fatigue life and therefore the appearance of the earliest fatigue cracks. With the experience gained in similar projects, CAF have proposed to carry out the **first inspection at 75,000 km** coinciding with the major maintenance routine P1. Considering the current fleet mileage, as shown in the table below, the first inspection will be completed in March/April next year.

Meter History		GRUPO CAF				
Equipment	Meter	UOM	Roll Down	Roll Up	Reading	Date
S	7208-UT_LRV001 (TCAMBERRA)	KMT	+	-	16.060	16-JUL-2019 00:00
S	7208-UT_LRV002 (TCAMBERRA)	KMT	+	-	24.631	16-JUL-2019 00:00
S	7208-UT_LRV003 (TCAMBERRA)	KMT	+	-	22.429	16-JUL-2019 00:00
S	7208-UT_LRV004 (TCAMBERRA)	KMT	+	-	25.665	16-JUL-2019 00:00
S	7208-UT_LRV005 (TCAMBERRA)	KMT	+	-	22.669	16-JUL-2019 00:00
S	7208-UT_LRV006 (TCAMBERRA)	KMT	+	-	22.604	16-JUL-2019 00:00
S	7208-UT_LRV007 (TCAMBERRA)	KMT	+	-	19.827	16-JUL-2019 00:00
S	7208-UT_LRV008 (TCAMBERRA)	KMT	+	-	22.521	16-JUL-2019 00:00
S	7208-UT_LRV009 (TCAMBERRA)	KMT	+	-	29.845	16-JUL-2019 00:00
S	7208-UT_LRV010 (TCAMBERRA)	KMT	+	-	22.018	16-JUL-2019 00:00
S	7208-UT_LRV011 (TCAMBERRA)	KMT	+	-	28.401	16-JUL-2019 00:00
S	7208-UT_LRV012 (TCAMBERRA)	KMT	+	-	25.573	16-JUL-2019 00:00
S	7208-UT_LRV013 (TCAMBERRA)	KMT	+	-	22.668	16-JUL-2019 00:00
S	7208-UT_LRV014 (TCAMBERRA)	KMT	+	-	15.322	16-JUL-2019 00:00

		PROJECT MANAGEMENT PLAN: CARBODY ISSUE CANBERRA TRAMS	-
			Page 5 de 7
Code	Ed.		
	-		

In this respect, it has been taken into consideration that Canberra is particularly a very low risk project due to the low mileage and the fact that the earliest cracks usually appear after 100,000 km.

Once the inspections have commenced, the second inspection will be carried out coinciding with the maintenance routine P0, which is scheduled every 18,750 km. After this inspection the on-site team will assess whether this frequency can be increased if there are not evidences of fatigue issues.

The inspections will be carried out in the Canberra Depot and won't have any impact on the P1 and P0 activities, and the fleet availability.

The inspection activities are part of a specific car body service campaign, and they will not be integrated into the maintenance instructions. They are interim actions which will be concluded once the final modification has been implemented.

2.1.1. SCOPE

The inspection consists of a visual check of all door portal upper corners and doesn't require any disassembly operation. The access to the related areas can be gained from outside of the unit with the door open. The inspection and drilling procedure is indicated in the work instruction Q.40.90.805.00.


The inspections will be applied to the whole fleet.

2.1.2. ASSESSMENT AND FURTHER ACTIONS

Cracks might require to be drilled to stop further propagation, according to work instruction Q.40.90.805.00. Following this instruction, crack stop drills shall be accessible for further monitoring.

Given these specific cracks, once are drilled, cannot progress further, but the monitoring activities are maintained. The following tasks are proposed:

- Monitoring Regime: Visual inspection every 18,750 km coinciding with the maintenance P0 activity.
- Further actions in case crack initiates: Drilling according to Q.40.90.805.00 instruction and keep the same inspection frequency.
- Further actions in case crack initiates on the hole edge: Redrilling according to Q.40.90.805.00 instruction and keep the same inspection frequency.

		PROJECT MANAGEMENT PLAN: CARBODY ISSUE CANBERRA TRAMS	-
			Page 6 de 7
Code	Ed.		
	-		

- After two inspections with no reported crack evolution, inspection to be relaxed to every 56,250 km.

2.1.3. INSPECTION RECORDS

All the information gathered during an inspection will be recorded in a template inspection document and will be available for the client when requested. For each door upper corner, recordings will be taken in the presence of a crack including the picture of the crack, the crack length and the performed actions (evidence of any interim reparation will be recorded). The result of the inspection is sent to CAF Zaragoza for a proper analysis of the problem in order to determine further actions and assess the inspection frequency.

2.2. FINAL CARBODY SIDE REPARATION

2.2.1. SCOPE


The final modification, as presented during previous communications, is shown on pages 21-26 of the document “Q56-Canberra_2019.02.06 videoconf final version”.

This solution will be implemented in all the areas exposed to fatigue failure.



Validation of the modification:

In one year's time, after the reparation has been completed, the whole fleet will be re-inspected to confirm the solution has been effective.

		PROJECT MANAGEMENT PLAN: CARBODY ISSUE CANBERRA TRAMS	-
			Page 7 de 7
Code	Ed.		
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2.2.2. PROGRAMME AHEAD

CAF has designed a global intervention program to implement this solution in all the affected fleets, and the order of priority has been determined by fleet mileage and expected severity. Under this criteria, Canberra is a very low risk project due to the specific vehicle configuration (single central door in S modules), new track/infrastructure and recent service start (low mileage).

For this reason, Canberra reparations have been scheduled to commence not before 2021. The final dates will be confirmed by the end of 2020 according to resources availability and the conversations held with the operator and affected stakeholders.

A specific reparation program will be developed and agreed with the operator to minimize risks to its operations and the impact on fleet availability, including considerations of:

- Scheduling coincidence with other maintenance activities
- Giving preference to units out of service
- Minimizing facilities occupation

A typical reparation program requires putting one Unit out of service during the whole fleet reparation, and the repair time for this level of intervention is 3-4 weeks per Unit.

This management plan will be updated when there are changes or new relevant information available from other projects where we are already implementing the final modification.



PROJECT MANAGEMENT PLAN:
CARBODY ISSUE CANBERRA TRAMS

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ANNEX A: 0-URBOS Fatigue Performance - CMC



Schedule 2.2 (a)(ii)
CMC

15-04-2019

Statement. Fatigue performance of URBOS 100 vehicle.

Dear Schedule 2.2 (a)(ii)

We would like to make the following statement regarding the body shell issue of the URBOS 100 vehicles for Canberra project.

Background

In February 2019 CAF informed CMC officially about the occurred body shell issue in the aluminium construction of the door corners, see "Q56-Canberra_2019.02.06 videoconf final version.pdf".

The main root causes of the body shell cracks in URBOS projects are:

- Due to the corner welded design of the aluminium flaps on doors, it has difficulties on alignment of flaps and difficulties of the post finishing of the corner welding.
- Not identified stress concentration on the corner during FEM simulation. The stress concentration is also not detected during carbody static tests of the URBOS platform in the laboratory.
- Fatigue strength was not well assessed of the detail due to the particular design of corner weld of the aluminium flaps.



Statements and conditions

In order to obtain a modification to the URBOS 100 vehicles for Canberra, which is suitable for both parties, CAF proposes and guarantees the following conditions and statements:

1. CAF confirms that the corner flaps welded is a particular design issue and only occurs at upper level of the door carbody sides and will not appear in the rest of the carbody design.
2. The revised structural analysis and work instruction for the modification for the modified bodysells of the vehicles will be available for review in September 2019.
3. CAF has contracted the independent third party ITAINNOVA, an external lab and investigation center, to review and validate the revised structural analysis and proposed modification.
4. Once the vehicles start to accumulate mileage, a visual or non-destructive inspection of the carbodies will be performed by CAF regularly, based on time or km, to control the absence of cracks. The results of these inspections will be reported formally to CMC.
5. The vehicles will be modified in Canberra. CAF will supply specific equipment requirements that the CAF modification team will need at the location (e.g. power supplies, pneumatic supply, lifting equipment etc.).
6. The problem, if occurs, appears with tens of thousands of km mileage, and Canberra is far away of this scenario. Based on the experience, CAF guarantees that a safe and reliable operation of the vehicles can be executed before the modification is performed.
7. CAF will provide updated documentations, drawings, e.g. The maintenance plan as provided will not change due to this issue / modification.
8. Canberra vehicles are safe and can start commercial operation with no performance limitation.

Yours faithfully,

Schedule 2.2 (a)(ii)




Schedule 2.2 (a)(ii)



Technical Project Manager

CONSTRUCCIONES Y AUXILIAR DE FERROCARRILES, S.A. (CAF)

		PROJECT MANAGEMENT PLAN: CARBODY ISSUE CANBERRA TRAMS		-
Code	Ed.			
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ANNEX B:
Q56-Canberra_2019.02.06 videoconf final version

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PROJECT MANAGEMENT PLAN:
CARBODY ISSUE CANBERRA TRAMS

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ANNEX C:
190509_URBOS Response letter Canberra -
CMC_V1



Schedule 2.2 (a)(ii)

CMC

330 Northbourne Avenue, Dickson
ACT Australia 2602

May 9th, 2019

Response to request for additional information on the management plan for the carbody issue resolution of URBOS 100 vehicles.

Dear Schedule 2.2 (a)(ii)

In response to your request for additional information on the management plan for the resolution of the carbody issue in the URBOS 100 vehicles for Canberra project, CAF are providing below further detail which we expect will clarify the questions raised in Canberra Metro communication Aconex CMC-CCOMM-013922.

Interim actions;

- As it has been stated during previous meetings, we are facing a fatigue issue which depends on a number of factors such as the track conditions, welding execution, fleet mileage, etc. This provided difficulty to predict the fatigue life and therefore the appearance of the earliest fatigue cracks. With the experience gained in similar projects, CAF propose to carry out the first inspection at 75,000 km coinciding with P1. In this respect, it has been taken into consideration that Canberra is particularly a very low risk project due to the earliest cracks having always been detected after 100,000 km.
- The frequency of inspection will be every 18,750 km coinciding with the maintenance P0 activity. After each inspection the service team will assess whether this frequency can be increased if there are not evidences of fatigue issues, up to a maximum of 37,500 km.
- The inspection consists of a visual check of all door portal upper corners and doesn't require any disassembly operation. The access to the related areas can be gained from outside of the unit with the door open.



- The inspection activities are part of a specific carbody service campaign, and they will not be integrated into the maintenance instructions. They are interim actions which will be concluded once the final reparation has been completed.
- All the information gathered during an inspection will be recorded. For each door upper corner, recordings will be taken in the presence of a crack including the picture of the crack, the crack length and the performed actions. Evidence of any interim reparation will also be recorded.
- If and once a crack has been detected it will be measured and marked. When the crack length is between 10mm and 40mm, stop-drilling of the crack will be performed during the same intervention to stop further propagation. The crack propagation is a very slow process and the planned inspection frequency, every 18,750 km once the crack has been detected, will give enough notice to perform the reparation in the best conditions.

Final modification;

- CAF has designed a global intervention program that has been determined by the fleet mileage and expected severity. Under this plan, Canberra reparations have been scheduled to commence not before 2021. The final dates will be confirmed in the next coming months according to resources availability and the conversations held with the operator and affected stakeholders.
- A specific reparation program will be developed and agreed with the focus on minimizing the impact on fleet availability and facilities occupation, coinciding with other maintenance activities or giving preference to units out of service.
- A multidisciplinary team will be set up to perform the final reparations on site with the support of the local service teams.


We remain at your disposal, please do not hesitate to contact us for any further clarifications on this subject.

Sincerely,

Schedule 2.2 (a)(ii)



Technical Project Manager

		PROJECT MANAGEMENT PLAN: CARBODY ISSUE CANBERRA TRAMS		-
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ANNEX D:
Q.40.90.805.00. Inspection and drilling procedure



LISTADO DE REVISIONES

EDICIÓN	OBJETIVO	FECHA
- A B	Issue	2018.09.14 Feb. 2019 Mar. 2019

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Prepared:

Nombre: **Schedule 2.2 (a)(i)**

Firma:

Fecha: 2018.07.19

Reviewed:

Nombre: **Schedule 2.2 (a)(ii)**

Firma:

Fecha: 2018.07.19

Approved:

Nombre: **Schedule 2.2 (a)(i)**

Firma:

Fecha: 2018.07.19



Í N D I C E

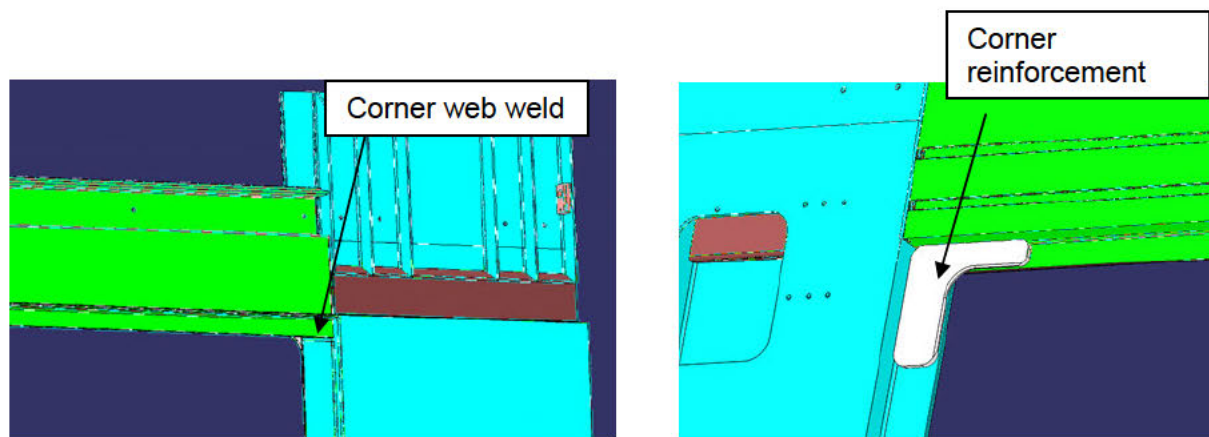
1. OBJET.....	3
2. SCOPE.....	3
3. INSPECTION	3
4. DRILLING PROCEDURE	6
4.1. CRACK END IDENTIFICATION	6
4.1.1. Scenarios 1&2.....	6
4.1.2. Scenario 3	6
4.2. CRACK END MARKING	6
4.2.1. Scenarios 1&2.....	6
4.2.2. Scenario 3	6
4.3. DRILLING.....	8
4.3.1. All scenarios	8
4.4. CHAMFER.....	9
4.5. DRILL INSPECTION	9
4.6. MASKING	9
5. REQUIRED TOOLS (or equivalent).....	10
6. STAFF QUALIFICATION.....	11

1. OBJET

The object of the present procedure is to describe the correct process for the inspection and “stop-drilling” of the cracks that could be identified during the inspection.

2. SCOPE

This procedure applies to the upper corners of door portals of S and C modules.



Corner door view from outside

Corner door view from inside

Figure 1 – Upper corners scope of this procedure

3. INSPECTION

A visual inspection of the door corners from the exterior will be performed. In case of crack appearance, if no mitigation action is taken, the following scenarios could be presented. In any case, once a crack is detected, the mitigation measure (drilling) will be applied to avoid no longer than scenario 1 or 2.

1. Scenario 1: Crack initiation. Crack length up to 10 mm concentrated at the corner, according to Figure 2.



Figure 2 Scenario 1

- Scenario 2: Crack length lower than approx. 50 mm. In those cases, the crack is contained on the weld connecting the webs to seal the door portal with door leaves when these ones are closed, not affecting the vertical weld. See Figure 3



Figure 3 Scenario 2

- Scenario 3: Crack length between 50-55 mm. Horizontal weld between webs sealing the door portal have completely failed and crack tip is on the vertical web. See Figure 4

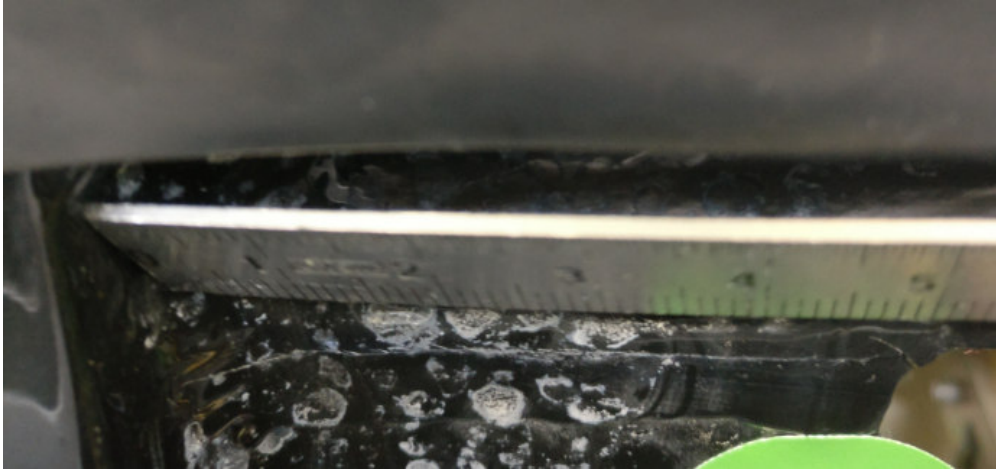


Figure 4

Scenario 3

4. DRILLING PROCEDURE

In case a crack is identified and in order to reduce the stress concentration factor at the crack tip and mitigate further propagation, the following drilling procedure will be applied.

4.1. CRACK END IDENTIFICATION

4.1.1. Scenarios 1&2

Crack end shall be identified visually from both sides of the web. The crack could affect to the weld or to the corner reinforcement or to both at the same time

Optionally it shall be possible to use dye penetrant test (colored or UV).

4.1.2. Scenario 3

Crack end shall be identified using Penetrant Testing according to ISO 3452-1, applied over both vertical welds, inside and outside the vehicle. Acceptance criteria is 2X according to ISO 23277. .

The surfaces shall be prepared prior the inspection by removing painting layers using the dremel set tool

4.2. CRACK END MARKING

4.2.1. Scenarios 1&2

For each crack end identified on the weld material or the reinforcement material, it shall be flattened in the area around the crack end using the dremel set tool, and **the end position shall be marked with the center punch marking tool.**

4.2.2. Scenario 3

For each crack end identified on the weld material:

- weld material shall be removed around the crack end using the dremel set tool, **avoiding parent material** removal or damages of aluminum profiles. It is same flatness operation required in 6.2.1, but in this case, removing fillet weld material.
crack end position shall be marked with the center punch marking tool..



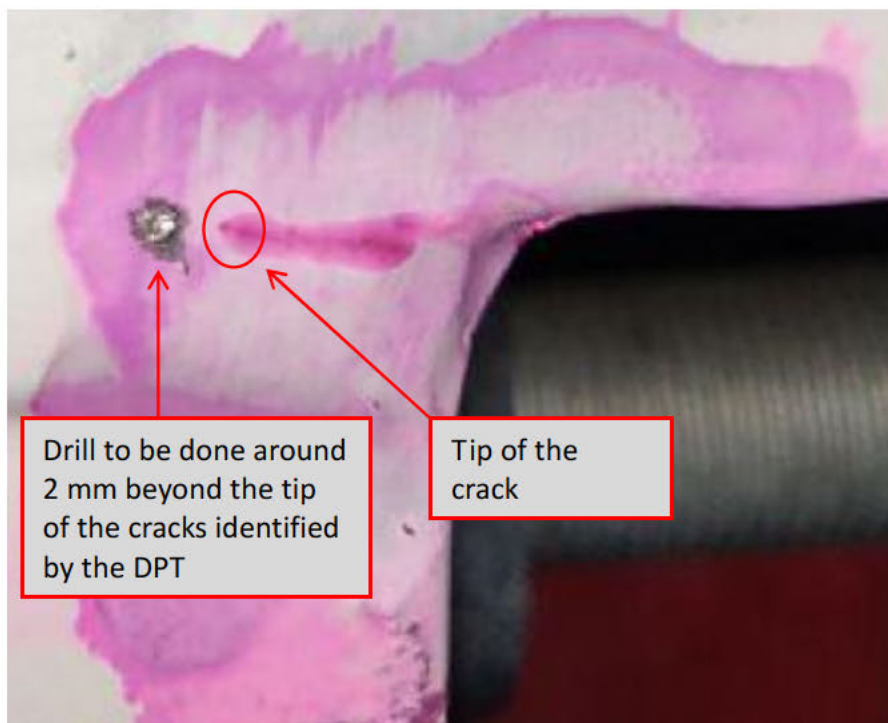
Figure 9 Dremel application in scenario 3

4.3. DRILLING

4.3.1. All scenarios

Corner web Weld

- Using the 6 mm drill, drill a hole around 2 mm beyond the tip of the cracks identified by the DPT. The drill should be done **as much perpendicular as possible to the surface (the drill will be necessary in a tilted position to avoid any interference with the door leaf)**.



Drill to be done around
2 mm beyond the tip
of the cracks identified
by the DPT

Tip of the
crack

Figure 10 Drilling application

- The depth of the drill shall be controlled, taking into account that the wall thickness is 4 mm. Do the operation gently so the drill contact as minimum as possible the reinforcement surface.

Corner reinforcement

- Using the 6 mm drill, drill a hole around 2 mm beyond the tip of the cracks (Figure 10) identified by the DPT. The drill should be done as much perpendicular as possible to the surface. Do the operation gently so the drill contact as minimum as possible the reinforcement surface.

Ensure internal surface of the drill is as smooth as possible without steps or burrs

4.4. CHAMFER

Once drilling is complete, round the edges of to the hole using a manual sharp flute countersink tool or similar.

Ensure the surface is as smooth as possible without steps or burrs. Lightly finish with fine emery paper if necessary.

4.5. DRILL INSPECTION

Having completed initial drillings, it must be confirmed that the tip of the crack has been captured as indicated in Figure 11

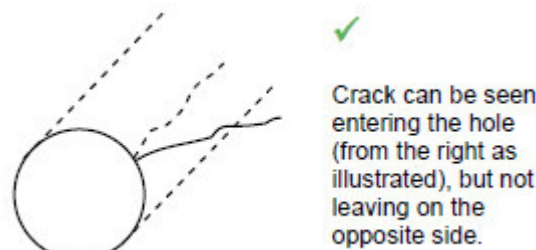


Figure 11 Capture of crack ends

As far as possible, confirm that the crack can be seen entering the hole but not leaving on the opposite side.

Where possible, also check on the rear of the surface drilled that no crack can be seen to exit the hole.

If the crack appears to continue beyond the hole, following actions shall be considered:

- Enlarging the hole to either 6mm or 8 mm, repeating previous steps.
- New drill hole

Inspections required to be done:

- For all scenarios: Visual inspection and Penetrant Testing according to ISO 3452-1 from both sides of the web (inside&outside).

4.6. MASKING

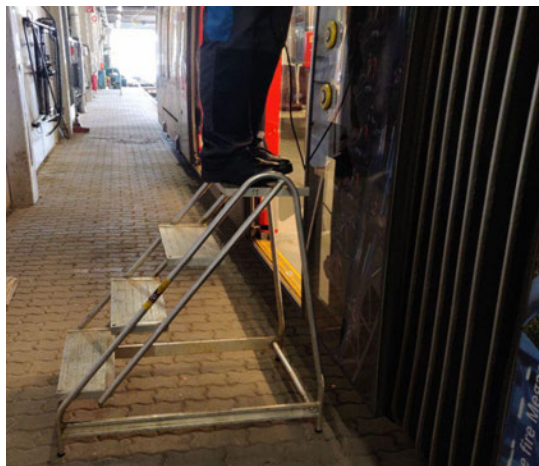
Stop drill shall be masked with American tape or similar so as they remain unpainted in order to allow ongoing re-examinations and protect outside crack&holes from water entrance

5. REQUIRED TOOLS (or equivalent)

- Drill
- Drill tips (Diameters 6 mm, 8 mm and 10 mm). The length for the 6 & 8 mm should be around 150 – 200 mm)
- Chamferer / Countersink
- Dremel or similar (with extension and tips. See following pictures as a reference)



- Edge scrapper
- Cutter
- American tape
- Dye penetrant test sprays (Proportions for the quantities: Penetrant: 1, Remover: 4, Developer:4)
- Rags without lint.
- Camera
- Stairs (attention: since it will be necessary to operate over the stair, it needs to be sufficiently stable. See following picture as a reference)





**WORK INSTRUCTION. INSPECTION &
DRILLING PROCEDURE.
DOOR PORTAL ISSUE**

Q.40.90.805.00

B

Page 11 of 12

- Measuring tape
- Screwdriver
- Manual wire brush
- Torch
- Hammer
- Center Punch Marking Tool
- Drill Stop

6. STAFF QUALIFICATION

VISUAL INSPECTION

Maintenance CAF Technician

DRILLING PROCEDURE

Trained staff by a NDT inspector certified as Level 2 according to ISO 9712.

From: [REDACTED]
To: [Cahif, Ashley](#)
Cc: [Kilfeather, Jim](#)
Subject: RE: Canberra Metro; Outstanding Issues - CAF and the Structural Cracking issue
Date: Friday, 16 October 2020 3:37:50 PM
Attachments: [image001.png](#)
[image002.jpg](#)
[image003.png](#)
[image004.jpg](#)
[image005.jpg](#)

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Hi Ash

Jim and I have discussed and both agree is a good response with no suggested changes.

Regards

[REDACTED]

From: Cahif, Ashley [mailto:Ashley.Cahif@act.gov.au]
Sent: Friday, 16 October 2020 9:35 AM
To: Kilfeather, Jim <Jim.Kilfeather@act.gov.au>; **Schedule 2.2 (a)(ii)** [REDACTED]
Subject: FW: Canberra Metro; Outstanding Issues - CAF and the Structural Cracking issue

OFFICIAL: Sensitive

Hi [REDACTED] and Jim

Thanks for the guidance – here is my proposed reply

Let me know if you think there should be any changes

Ash

Dear [REDACTED]

Thank you for sending through the correspondence from CAF and it is positive.

For context this issue arose due to the 12 May 2020 statement from CM (CM CON-RESTECHQ-000140) about CAF advice about structural modifications for the OESS, this was not limited to the fatigue cracking issues. We have not seen the advice from CAF that was the cause of the statement from CM, which makes it difficult to analyse the reasons for the initial advice and why CAF has now changed its position.

Further, it appears that the latest CAF advice is limited to the door fatigue issue (“In order to provide the necessary comfort to all Parties, we hereby provide further details in relation to fatigue issues around the door portals of the Urbos 100 LRVs: “); however, the CM statement says “This is not related specifically to the fatigue cracking issue”.

Accordingly, in order for the Territory to have comfort from the correspondence, noting that this would not limit any of its rights under the Project Agreement, the Territory would request that CAF provide written confirmation that:

- There are no structural modifications (not limited to the fatigue cracking issues) to the Canberra Light Rail LRVs required to enable wire free running
- The current LRVs meet the design life requirements contained in SPR Appendix 11 section 16(a) Table 2
- A commitment to future inspections throughout the design life
- Clarification of what “will continue being operated as per the operational requirements, as well as the track quality maintained as per the maintenance requirements” means as they are not defined in the SPRs and may be the subject of separate agreement between CMC and CAF that the Territory has not had visibility of – the Territory is looking for comfort that CAF agrees that the CMET standards are sufficient for CAF to

stand by its representations.

From: Schedule 2.2 (a)(ii)

Sent: Thursday, 15 October 2020 4:34 PM

To: Kilfeather, Jim <Jim.Kilfeather@act.gov.au>; Cahif, Ashley <Ashley.Cahif@act.gov.au>

Subject: RE: Canberra Metro; Outstanding Issues - CAF and the Structural Cracking issue

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Thanks Jim – highlights import of CAF stating no other known structural issues.

Regards

Schedule 2.2 (a)(ii)

From: Kilfeather, Jim [<mailto:Jim.Kilfeather@act.gov.au>]

Sent: Thursday, 15 October 2020 1:51 PM

To: Schedule 2.2 (a)(ii) Cahif, Ashley <Ashley.Cahif@act.gov.au>

Subject: RE: Canberra Metro; Outstanding Issues - CAF and the Structural Cracking issue

UNOFFICIAL

Hi Schedule 2.2 (a)(ii) Schedule 2.2 (a)(ii) SNC Metallurgical guy (who has also been long at the track standards here) is working on the Birmingham fatigue cracking issue for the client, noted that CAF blamed poor maintenance of track as reason for extensive cracking around bogey surround 'not our fault, if track were maintained properly then...'. Note, cracking Birmingham additional to the cracking around door frames.

From: Schedule 2.2 (a)(ii)

Sent: Thursday, 15 October 2020 2:08 PM

To: Kilfeather, Jim <Jim.Kilfeather@act.gov.au>; Cahif, Ashley <Ashley.Cahif@act.gov.au>

Subject: RE: Canberra Metro; Outstanding Issues - CAF and the Structural Cracking issue

CAUTION: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Thanks Jim – aagh I have continued misuse of referring Nottingham for Birmingham. Did CAF try to release or did they realise they caught by poor track standards? Birmingham advice acknowledged their very poor track condition.

Also I had thought track maintenance standards defined in App17 but see not – only design. So yes we need to call them out as well.

Regards

Schedule 2.2 (a)(ii)

From: Kilfeather, Jim [<mailto:Jim.Kilfeather@act.gov.au>]

Sent: Thursday, 15 October 2020 12:37 PM

To: Schedule 2.2 (a)(ii) Cahif, Ashley <Ashley.Cahif@act.gov.au>

Subject: RE: Canberra Metro; Outstanding Issues - CAF and the Structural Cracking issue

UNOFFICIAL

Jus to add to this Schedule 2.2 (a)(ii) /Ash, CAF relied heavily in Birmingham on the track standards not having been maintained as a means of seeking to release themselves from obligations to remedy the serious cracking that developed on those trams (same CAF Urbos). So when CAF say "track quality maintained as per the maintenance requirements" is this the CMET track maintenance standards viewed by the Territory or have CAF specified track maintenance standards of CMET that we may not be aware of? CMET has produced draft track maintenance standards (Manual) which we reviewed and commented upon. CMET responded to some and not others and on some of the ones that they commented upon, their responses were unsatisfactory. May be one to watch out for.

From: Schedule 2.2 (a)(ii)

Sent: Thursday, 15 October 2020 12:33 PM

To: Cahif, Ashley <Ashley.Cahif@act.gov.au>; Kilfeather, Jim <Jim.Kilfeather@act.gov.au>

Subject: RE: Canberra Metro; Outstanding Issues - CAF and the Structural Cracking issue

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Thanks Ash – generally pleasing CAF response.

Out of Scope

[Redacted]

- [Redacted]

Practically CAF would be expected to remain committed to resolve as structural issues go to core standing of their vehicles – hence (as you would recall) advice from Nottingham has been that CAF response to issue which first arose there has been exemplary. A major structural issue for the Siemens Combino trams (then no 3 seller in world) took them out of the tram market for well over a decade. This is not said to negate need for contractual clarity.

- Proposed wording could be clearer also if there was an express statement that there is no other known structural issue beyond the door portal issue – see my yellow highlight below

- **Out of Scope** [Redacted]

- [Redacted]

Happy to assist further/discuss where helps.

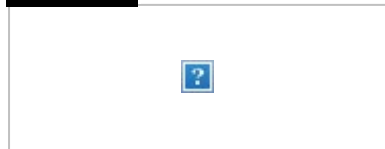
Regards

Schedule 2.2 (a)(ii)

Operations/ LRV Adviser

Light Rail Project

Schedule 2.2 (a)(ii)



Out of Scope [Redacted]

[Redacted]

Out of Scope

[Redacted]

Out of Scope

[Redacted]

[Redacted]

[Redacted]

[Redacted] 

[Redacted]

Out of Scope

[Redacted]

[Redacted] 

[Redacted]

Out of Scope

[Redacted]

Schedule 2.2 (a)(ii)

[Redacted]

[Redacted]

[Redacted]

[Redacted]

Schedule 2.2 (b)(1)

[Redacted]

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Out of Scope

[Redacted text block]

[Redacted text block]



[Redacted text block]

From: Schedule 2.2 (a)(ii)
To: Cahif, Ashley
Cc: Kilfeather, Jim; Doctor, David
Subject: RE: OESS Structural Modifications
Date: Wednesday, 10 February 2021 2:26:55 PM
Attachments: image001.jpg
image004.jpg

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V interesting mention in Feb issue of Int. Rail Journal. Urbos 3 (2.4m wide) provided from 2013



Web search provides little more other than was announced in Jan 21 and the comment in another precis of "after protracted negotiations".

Regards

Schedule 2.2 (a)(i)

Out of Scope

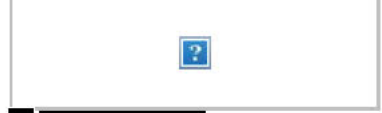
[Redacted content]

[Redacted content]

[Redacted content]

Out of Scope

[Redacted text block]



[Redacted text block]

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[Redacted text block]



From: [Cahif, Ashley](#)
To: [Schedule 2.2 \(a\)\(ii\)](#); [Doctor, David](#); [Kilfeather, Jim](#)
Cc: [Schedule 2.2 \(a\)\(ii\)](#)
Subject: RE: CAF's official statement about West Midlands Metro precautionary operation suspension
Date: Tuesday, 15 June 2021 10:06:00 PM
Attachments: [image004.png](#)
[image005.jpg](#)
[image002.png](#)

OFFICIAL: Sensitive

Thanks [Schedule 2.2 \(a\)\(ii\)](#)
Kind regards
Ash

From: [Schedule 2.2 \(a\)\(ii\)](#)
Sent: Tuesday, 15 June 2021 4:40 PM
To: Cahif, Ashley <Ashley.Cahif@act.gov.au>; Doctor, David <David.Doctor@act.gov.au>; Kilfeather, Jim <Jim.Kilfeather@act.gov.au>
Cc: [Schedule 2.2 \(a\)\(ii\)](#)
Subject: FW: CAF's official statement about West Midlands Metro precautionary operation suspension

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Update from CAF below fyi. Existing CLR service assurance now provided. This issue will need to be further understood as we progress on LRV element of MPC Project.

Regards

[Schedule 2.2 \(a\)\(ii\)](#)

*Operations/ LRV Adviser
Light Rail Project*

[Schedule 2.2 \(a\)\(ii\)](#)



From: [Schedule 2.2 \(a\)\(ii\)](#)
Sent: Tuesday, 15 June 2021 4:04 PM
To: Dawson, Jo <Jo.Dawson@act.gov.au>; [Schedule 2.2 \(a\)\(ii\)](#)
Cc: [Schedule 2.2 \(a\)\(ii\)](#)
Subject: RE: CAF's official statement about West Midlands Metro precautionary operation suspension

Hi Jo,

As may have already heard, the operation of the Urbos CAF LRVs in Birmingham, called West Midlands Metro, have been precautionary suspended.

Hereby CAF would like to share with you the official statement for all CAF URBOS Customers:

With respect to the precautionary suspension from service of the West Midlands Metro, CAF is working closely with Transport for West Midlands to preserve customer and staff safety as a priority.

CAF has been engaged by TfWM to undertake effective repairs as each vehicle is inspected by us to support the resumption of services as soon as possible in order to minimise passenger service disruption.

The root cause of some problems in the steel box over the bogies, was investigated and reported to be caused by the influence of external infrastructure and operational aspects. Mitigating measures have been placed to ensure safe operation and prevent future reoccurrence.

Service has been resumed today Tuesday 15 June:

<https://westmidlandsmetro.com/using-the-metro/service-status/>

It's important to remark that the root cause has been analysed and, so far, it's reported as NOT affecting Canberra Metro URBOS CAF fleet as long as the infrastructure, operational and maintenance aspects remain as considered during design phase. Should you have any question, please don't hesitate to contact us.

Regards,

Schedule 2.2 (a)(ii)

Area Director

Construcciones y Auxiliar de Ferrocarriles, S.A.

De: Dawson, Jo [<mailto:Jo.Dawson@act.gov.au>]

Enviado el: martes, 15 de junio de 2021 0:32

Para: **Schedule 2.2 (a)(ii)**

CC: **Schedule 2.2 (a)(ii)**

Asunto: [EXTERNAL] Re: CAF's official statement about West Midlands Metro precautionary operation suspension

OFFICIAL

Hi,

We would appreciate similar urgent advice back to us and also to Canberra Metro/CMET as the operator.

Mikel cc'd so he ensures CMET advised of any risk as well.

Jo Dawson

Executive Branch Manager

Light Rail Operations - TCCS

Schedule 2.2 (a)(ii)

From: **Schedule 2.2 (a)(ii)**

Sent: Tuesday, June 15, 2021 08:28

To: **Schedule 2.2 (a)(ii)**

Cc: **Schedule 2.2 (a)(ii)**

Subject: RE: CAF's official statement about West Midlands Metro precautionary operation suspension

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Hi **Schedule 2.2**

I note the advice below provides assurance in regard to the TfNSW fleets. A similar specific assurance regarding the Canberra Light Rail fleet is requested as a matter of urgency. This should also be directed to Jo Dawson who is the Executive Branch Manager of Light Rail Operations, Transport Canberra & City Services and is responsible for the existing operations and fleet for the ACT Government.

Further correspondence will follow.

Regards

Schedule 2.2 (a)(ii)

Operations/LRV Adviser

Light Rail Project

ph **Schedule 2.2 (a)(ii)**



From: **Schedule 2.2 (a)(ii)**

Sent: Tuesday, 15 June 2021 1:05 AM

To **Schedule 2.2 (a)(ii)**

Cc: Schedule 2.2 (a)(ii)

Subject: CAF's official statement about West Midlands Metro precautionary operation suspension

Hi

Please find below CAF statement being provided to our URBOS Customers.

Regards,

Schedule 2.2 (a)(ii)

Area Director

Construcciones y Auxiliar de Ferrocarriles, S.A.

De: Schedule 2.2 (a)(ii)

Enviado el: lunes, 14 de junio de 2021 11:44

Para: Schedule 2.2 (a)(ii)

CC: Schedule 2.2 (a)(ii)

Asunto: CAF's official statement about West Midlands Metro precautionary operation suspension

Hi

As may have already heard, the operation of the Urbos CAF LRVs from Birmingham, called, West Midlands Metro, have been precautionary suspended. Hereby CAF would like to share with you the official statement for all CAF Urbos owners.

With respect to the precautionary suspension from service of the West Midlands Metro, CAF is working closely with Transport for West Midlands to preserve customer and staff safety as a priority.

CAF has been engaged by TfWM to undertake effective repairs as each vehicle is inspected by us to support the resumption of services as soon as possible in order to minimise passenger service disruption.

The root cause of some problems in the steel box over the bogies, was investigated and reported to be caused by the influence of external infrastructure and operational aspects. Mitigating measures have been placed to ensure safe operation and prevent future reoccurrence.

It's important to remark that the root cause has been analysed and, so far, it's reported as NOT affecting TfNSW URBOS CAF fleets as long as the infrastructure, operational and maintenance aspects remain as considered during design phase.

Should you have any question, please don't hesitate to contact us.

Best regards,

Schedule 2.2 (a)(ii)

Program Manager | Program Management

Schedule 2.2 (a)(ii)

Schedule 2.2 (a)(ii)

J.M. Iturrioz, 26 - 20200 Beasain - SPAIN

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From: Schedule 2.2 (a)(ii)
To: Sargent_Tom (LRS2); Cahif_Ashley
Cc: Kilfeather_Jim
Subject: FW: URBOS cracked yaw brackets.
Date: Tuesday, 12 October 2021 7:09:04 AM
Attachments: [image006.png](#)
[image007.png](#)
[image008.png](#)
[image009.png](#)
[oledata.mso](#)
[image001.png](#)
[image005.png](#)
[image002.jpg](#)
[image003.jpg](#)
[image004.jpg](#)
[image010.jpg](#)
[SLR - Urbos 3 - Cracked Rotation Stops - 2021-10-02.pptx](#)

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Tom
See below and attached ahead of our catch up with Jo D this am.

Ash – expect Jo shared with you but just to be sure. Will keep you posted.

Schedule 2.2 (a)
[Redacted]

From: Schedule 2.2 (a)(ii)
Sent: Monday, 11 October 2021 2:40 PM
To: Schedule 2.2 (a)(ii)
Cc: Schedule 2.2 (a)(ii)
Subject: RE: URBOS cracked yaw brackets.

H [Redacted]

Thanks for the info. A few questions which I recognise you may not have any answer for.

- Are the lateral stops showing any impact damage?
- Is the R module trailer bogie affected?
- Do you know when SLR intend to complete the “GoPro” assessment of the route?

Clearly, if infrastructure is an influence on the failure mechanism, being able to make a comparison to similar topography in Canberra will be very important in order to understand potential impact to LRVs there.

Finally, and because I’m not fully conversant with what rolling stock operates where in Sydney anymore, is this a CAF Urbos specific failure, or does other rolling stock exhibit similar bump stop impacts when operating on the route?

Kind Regards

Schedule 2.2 (a)(ii) [Redacted]
Principal Consultant
Asia Pacific
Engineering, Design and Project Management
Tel.: Schedule 2.2 (a)(ii)
Mob.: Schedule 2.2 (a)(ii)
Email: Schedule 2.2 (a)(ii)
LinkedIn: Schedule 2.2 (a)(ii)

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From: Schedule 2.2 (a)(ii) [redacted]
Sent: 11 October 2021 07:57
To: Schedule 2.2 (a)(ii) [redacted]
Cc: Schedule 2.2 (a)(ii) [redacted]
Subject: URBOS cracked yaw brackets.
Importance: High

Good morning [redacted]

An urgent issue has been detected on the Sydney URBOS, which appears similar to the Birmingham issue that stopped the fleet recently.

CAF have pointed to bad track on Birmingham, but I feel that the Sydney Line 1 track is a reasonable quality, so not so sure.

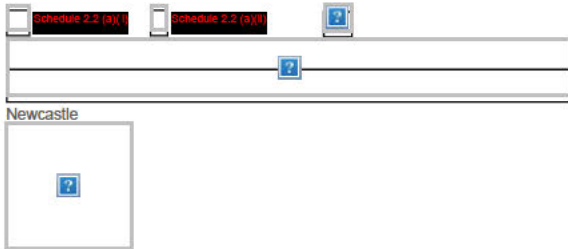
I know that there are new designs proposed for Sydney and we have also seen new designs proposed for the US URBOS fleet (Kansas etc) to strengthen the bracket.

I have shared with the Territory (last week), but wanted to make sure you had a copy as well.

Regards,

[redacted]

Schedule 2.2 (a)(ii) [redacted]
Lead – Technical Services NSW
Transport - Asia Pacific
Engineering, Design & Project Management



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This email has been checked for viruses by Avast antivirus software.

www.avast.com

From: [Cahif, Ashley](#)
To: [Edghill, Duncan](#); [Strachan, Shaun](#)
Subject: FW: LRV Cracking
Date: Monday, 8 November 2021 10:16:27 AM
Attachments: [image001.jpg](#)
[LRV Cracking Issues FAQ Key Messages.docx](#)

OFFICIAL

Hi Duncan and Shaun

Here are the Canberra Metro talking points on the CAF cracking issue – Jo and I will continue to actively monitor and engage with Sydney.

Kind regards

Ash

From: Dawson, Jo <Jo.Dawson@act.gov.au>
Sent: Monday, 8 November 2021 10:09 AM
To: Cahif, Ashley <Ashley.Cahif@act.gov.au>; Virtue, Geoff <Geoff.Virtue@act.gov.au>
Subject: FW: LRV Cracking

OFFICIAL

Ash, Geoff,

Please find attached cleared talking points and a statement from Canberra Metro which can be used externally.

Jo Dawson

Executive Branch Manager

Light Rail Operations - TCCS

Schedule 2.2 (a)(i)

From: Schedule 2.2 (a)(ii)
Sent: Monday, 8 November 2021 10:04 AM
To: Dawson, Jo <Jo.Dawson@act.gov.au>
Cc: Schedule 2.2 (a) (ii)
Subject: LRV Cracking

CAUTION: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Jo

Talking points and statement attached

Regards

Schedule 2.2 (a)(i)

Schedule 2

Canberra Metro



P: Schedule 2.2 (a)(ii)

A: 9 Sandford Street Mitchell ACT 2911

E: Schedule 2.2(a)(i)

Sydney LRV Cracking Issues

Key Messages

- Canberra Metro operate a fleet of 14 *CAF Urbos 3 Series* light rail vehicles.
- All of our light rail vehicles undergo regular maintenance which includes rigorous safety and serviceability checks.
- While the vehicles on the inner-west Sydney line and Canberra's light rail are the same CAF model, to date, there is no evidence of cracking in Canberra's light rail vehicles.
- Canberra Metro will be undertaking regular inspections to check for this issue in addition to the regular maintenance and inspection program already in place.
- Canberra light rail vehicles operate on a different track type to Sydney light rail and are a much younger fleet
- Canberra Metro will continue to work closely with CAF, Sydney Light Rail and the ACT government.

Frequently Asked Questions (FAQ – Internal)

1. Do we have any cracks in our LRVs?

No. CMET and CAF have undertaken structural inspections and to date have found no evidence of any cracks.

2. Are we likely to see cracks forming in our LRVs?

We know that the Canberra Light rail is different to the Sydney light rail system with a different track type, operating profile and younger fleet (newer models) and therefore the same cracking issues may not occur. Our maintainer CAF undertake regular inspections and no cracking has been identified.

3. Have our maintenance teams already been looking for cracks?

Yes. CMET and CAF have been undertaking regular inspections to check for this issue in addition to the regular maintenance and inspection program already in place.

4. What measures are we introducing to our maintenance program?

In addition to our usual rigorous safety and serviceability checks, Canberra Metro will continue to work closely with CAF, Sydney Light Rail and the ACT government receiving frequent updates for any developing issues.



Statement

Canberra Metro is aware of the cracking issues reported in the media on the Sydney Light Rail. Our operator and maintainer continue to undertake the required inspections and maintenance of our fleet to ensure all our light rail vehicles are safe to operate and there is no risk to our customers, staff or community safety.

Our operator and maintainer will undertake additional inspections to ensure all our light rail vehicles are safe to operate. Canberra Metro can confirm through these additional and regular inspections no cracking has been found. We will continue to work closely with CAF, Sydney Light Rail and the ACT government.

End.



From: [Littlejohn, Tahni](#)
To: [Cahif, Ashley](#)
Cc: [Dawson, Jo](#)
Subject: FW: QTB on CAF LRV's and Issues in Sydney - Due to Ben McHugh by 9am tomorrow
Date: Monday, 8 November 2021 6:31:57 PM
Attachments: [E_CAF Light Rail vehicles and issues in NSW - sent to Shonah for urgent action 08_11.obr](#)
[E_CAF Light Rail vehicles and issues in NSW - sent to Shonah for urgent action 08_11.docx](#)
Importance: High

OFFICIAL

Hi Ash,

Sorry I missed an earlier text from Jo asking me to include you in the email with the attached QTB on CAF LRV's and Issues in Sydney.

I'm sorry for the fast ball, but the QTB needs to be with Ben McHugh by 9:00am tomorrow for his review.

Please let us know if you would like any changes made.

Kind regards,

Tahni

Tahni Littlejohn

Director, Light Rail Operations and Performance

Email: Tahni.Littlejohn@act.gov.au | Phone: (02) 6205 2928

Light Rail Operations | Transport Canberra and City Services | ACT Government
Level 3, 480 Northbourne Avenue, Dickson | GPO Box 158 Canberra ACT 2601

From: Littlejohn, Tahni

Sent: Monday, 8 November 2021 5:45 PM

To: Dawson, Jo <Jo.Dawson@act.gov.au>; Garrett, Rebecca <Rebecca.Garrett@act.gov.au>

Subject: QTB on CAF LRV's and Issues in Sydney

OFFICIAL

Hi Jo,

I couldn't find any details for fleets in other cities, so I removed the reference to specific cities.

I added the additional questions at the end of the document. I will add an answer for the patronage stats tonight.

Kind regards,

Tahni

Tahni Littlejohn

Director, Light Rail Operations and Performance

Email: Tahni.Littlejohn@act.gov.au | Phone: (02) 6205 2928

Light Rail Operations | Transport Canberra and City Services | ACT Government
Level 3, 480 Northbourne Avenue, Dickson | GPO Box 158 Canberra ACT 2601

Portfolio: Transport and City Services

CAF LIGHT RAIL VEHICLES AND ISSUES IN NSW

Sydney's Inner-West Light Rail (IWLRL) Fleet

- On 5 November 2021, the NSW Transport Minister announced cracking had been identified in 12 CAF Urbos 3 Light Rail Vehicles (LRV's) that service Sydney's inner-west network.
- The Sydney IWLRL network may be decommissioned for up to 18 months, and replaced with rail replacement buses, while the identified issues are rectified.
- The cracks are primary located near the wheel-arch of the LRV frame.
- The NSW Transport Minister said the problem identified was "*likely to be a design flaw*" and "*is likely to be a global concern.*" The Minister also referred to issues identified with West Midlands Light Rail earlier in the year which also operates CAF Urbos 3.
- The LRV model used on inner-west light rail network is manufactured by CAF, and is used on other networks in Canberra, Newcastle and in other countries.
- The inner-west light rail network operates on a variety of track types, including a mixture of in-slab and ballast (which is not used in Canberra).
- The inner-west light rail vehicles were manufactured by CAF but the maintenance of the vehicles has been changed to Alstom by TfNSW as part of the extension of the Sydney Light Rail Network. There is dispute from CAF as to whether it's a design issue, or a operational and maintenance issue with calibration checks.

Canberra Light Rail Fleet

- The ACT Government has a Public Private Partnership (PPP) agreement with the Canberra Metro Consortium (a group of companies) to design, construct, finance, operate and maintain the Canberra Light Rail system over a 20-year period.
- Canberra Metro Operations (CMET) is responsible for operating the light rail network and ensuring the safety of the system.
- CAF is responsible for manufacturing and maintaining the LRV's throughout the 20-year period. This provides clearer lines of responsibility for any issues than in Sydney.
- The Canberra fleet operates on a different track type (in-slab) and has differences in operating profile (track geometry, vibration, braking, speeds, etc).

Cleared as complete and accurate: 08/11/2021

Contact Officer name:

Judith Sturman

Ext: 52639

Lead Directorate:

Transport Canberra and City Services

- The Canberra fleet is younger, than both the Sydney and East Midlands fleet with the LRV's only having travelled up to 190,000km (the inner-west fleet has travelled up to 350,000-500,000km).
- Canberra Metro have advised CAF have undertaken inspections of the LRV's and have not detected any cracking in the frame structure around the wheel-arch's.
- Senior representatives from Canberra Metro, CMET, CAF and TCCS are attending an in-person inspection on the 9 November 2021.
- Regular inspections will continue to check for this issue in addition to the ongoing maintenance and inspection program already in place.
- The Office of the National Rail Safety Regulator (ONRSR) is actively investigating the situation in NSW and has not raised any concerns on the Canberra light rail fleet.
- Newcastle Light Rail which entered service in 2019 at a similar time to Canberra has not identified any issues at this stage.
- TCCS and MPC will continue to work closely with Canberra Metro and the NSW Government to be assured of the safety and ongoing reliability of the Canberra light rail fleet and to ensure any root cause findings are considered for Canberra.

Commercial Considerations

- TCCS are working closely with MPC to identify any impacts to future stages of light rail and procurement of new LRV's.
- The opposition have questioned why the issue was not known prior to the procurement of the Canberra Light Rail Fleet - Responses to this include:
 - The Canberra Light Rail Vehicles were ordered in 2016, whereas the issues in East Midlands and Sydney were not been identified until 2021 – Two years after the commencement of operations in Canberra. CAF have advised these issues are not a risk for the Canberra LRV fleet.
 - Press articles in Sydney refer to potential cracking issues previously having been identified in other fleets, however these were not publically reported until after Canberra Light Rail operations commenced and have not been advised as a concern from CAF.
 - Further details will be formally requested from CAF on these occurrences.

Out of Scope

- **Out of Scope** [Redacted]
- [Redacted]

Out of Scope

- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]

From: [Rowe, Shannon](#)
To: [Edghill, Duncan](#)
Cc: [Strachan, Shaun](#); [Cahif, Ashley](#); [Ross, Carolina](#)
Subject: For CPO FYI: TCCS QTB - E. CAF Light Rail vehicles and issues in NSW
Date: Tuesday, 9 November 2021 8:49:10 AM
Attachments: [E. CAF Light Rail vehicles and issues in NSW - sent to Shonah for urgent action 08_11.docx](#)

OFFICIAL

Good morning Duncan,

As requested please find attached a copy of the TCCS QTB for information, this is a draft and is still being finalised.

Shaun has also asked if the chair of the Light Rail Board should receive a copy of this when finalised?

Thank you

Shannon

Portfolio: Transport and City Services

CAF LIGHT RAIL VEHICLES AND ISSUES IN NSW

Sydney's Inner-West Light Rail (IWLRL) Fleet

- On 5 November 2021, the NSW Transport Minister announced cracking had been identified in 12 CAF Urbos 3 Light Rail Vehicles (LRV's) that service Sydney's inner-west network.
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- The inner-west light rail vehicles were manufactured by CAF but the maintenance of the vehicles has been changed to Alstom by TfNSW as part of the extension of the Sydney Light Rail Network. There is dispute from CAF as to whether it's a design issue, or a operational and maintenance issue with calibration checks.

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Cleared as complete and accurate: 08/11/2021

Contact Officer name:

Judith Sturman

Ext: 52639

Lead Directorate:

Transport Canberra and City Services

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- Regular inspections will continue to check for this issue in addition to the ongoing maintenance and inspection program already in place.
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 - The Canberra Light Rail Vehicles were ordered in 2016, whereas the issues in West Midlands and Sydney were not been identified until 2021 – Two years after the commencement of operations in Canberra. CAF have advised these issues are not a risk for the Canberra LRV fleet.
 - Press articles in Sydney refer to potential cracking issues previously having been identified in other fleets, however these were not publically reported until after Canberra Light Rail operations commenced and have not been advised as a concern from CAF.
 - Further details will be formally requested from CAF on these occurrences.

Out of Scope

Out of Scope

[Redacted]

Out of Scope

[Redacted]

From: [Edghill, Duncan](#)
To: [Strachan, Shaun](#); [Cahif, Ashley](#); [Navarro, Tania](#)
Subject: FW: FOR URGENT DG CLEARANCE: - PMB - CAF LRVs [to MO by mid-morning tomorrow 9 Nov]
Date: Tuesday, 9 November 2021 1:22:00 PM
Attachments: [image002.png](#)
[image003.jpg](#)
[image004.jpg](#)
[Dot Point Template.docx](#)
[image001.jpg](#)
Importance: High

OFFICIAL

fyi

From: Playford, Alison <Alison.Playford@act.gov.au>
Sent: Tuesday, 9 November 2021 12:47 PM
To: Edghill, Duncan <Duncan.Edghill@act.gov.au>
Subject: FW: FOR URGENT DG CLEARANCE: - PMB - CAF LRVs [to MO by mid-morning tomorrow 9 Nov]
Importance: High

OFFICIAL

fyi

From: Riley, Lindsay <Lindsay.Riley@act.gov.au>
Sent: Tuesday, 9 November 2021 12:10 PM
To: Playford, Alison <Alison.Playford@act.gov.au>
Cc: Willson, Helen <Helen.Willson@act.gov.au>
Subject: FOR URGENT DG CLEARANCE: - PMB - CAF LRVs [to MO by mid-morning tomorrow 9 Nov]
Importance: High

OFFICIAL

Alison

Urgent clearance sought on the attached – cleared by Ben.

Lindsay Riley | Executive Assistant

Phone 02 6207 1229 | Email: Lindsay.riley@act.gov.au

Office of the Director-General | Transport Canberra and City Services Directorate | ACT Government

480 Northbourne Avenue, Dickson | GPO Box 158 Canberra ACT 2601 | www.act.gov.au

Connected services for the people of Canberra



From: Anderson-Clift, Chloe <Chloe.Anderson-Clift@act.gov.au>
Sent: Tuesday, 9 November 2021 11:29 AM
To: Riley, Lindsay <Lindsay.Riley@act.gov.au>
Subject: URGENT - FOR DG CLEARANCE - PMB - CAF LRVs [to MO by mid-morning tomorrow 9 Nov]
Importance: High

OFFICIAL

Hi Lindsay

See below request from Jen in Min's Office – she requested this info by mid-morning.

It's been cleared by Ben and reviewed by Sarah B, **are you able to get Alison's urgent clearance on this one?**

Chloe Anderson-Clift | Ministerial Liaison Officer

Phone 02 6205 5357 | Email: Chloe.Anderson-Clift@act.gov.au

Governance and Ministerial Services | Transport Canberra and City Services Directorate | ACT Government

Transport Canberra and City Services | ACT Government

480 Northbourne Ave Dickson | GPO Box 158 Canberra ACT 2601 | www.act.gov.au

Connected services for the people of Canberra

From: May, Sarah <Sarah.May@act.gov.au> **On Behalf Of** TCCS_DLO

Sent: Monday, 8 November 2021 3:28 PM

To: Bourne, Sarah <Sarah.Bourne@act.gov.au>

Cc: TCCS_DLO <TCCS.DLO@act.gov.au>; TCCS_AssemblyLiaison <TCCS.AssemblyLiaison@act.gov.au>

Subject: Urgent - PMB - CAF LRVs [to MO by mid-morning tomorrow 9 Nov]

Importance: High

OFFICIAL

Hi Sarah

As flagged – we have also received an urgent request for dot points relating to the **PMB re: CAF LRVs** – email request from Jen below. She has asked for this info by **mid-morning tomorrow please:**

.....
FYI there's a motion coming forward in the Assembly later this week in relation to the CAF LRVs issue that Tom asked for a QTB on late last week. The original text is below and the amendments we are discussing with our Parliamentary colleagues is marked up below that. We'll prepare the response in-house, but to assist in the preparation for this can TCCS please provide some high-level information on the following:

- How often are LRVs and the light rail system more generally inspected for safety and serviceability?
- What regulatory safety standards is Canberra's light rail subject to under the national ONRSR regime?

Out of Scope

- Confirming it's correct that under the PPP arrangements, it's Canberra Metro's responsibility to make LRVs available to service the route? So if there turned out to be a problem with them in future, this would be a matter for them to resolve by sourcing new vehicles?
- What steps has TCCS asked Canberra Metro to undertake in order to confirm the safety and good functioning of our LRVs?

If we could please have the responses to these by mid-morning tomorrow, that would be much appreciated. Happy to chat with anyone from the team to clarify these questions and what's needed here.

Thanks very much,

Jen

Original:

MR PARTON: To move—That this Assembly:

(1) notes:

- (a) the NSW Inner West Light Rail line has been decommissioned for 18 months because of structural issues with the CAF Urbos 3 light rail

vehicles;

(b) that the same vehicles are used on the ACT light rail line;

(c) that the NSW CAF Urbos 3 vehicles were purchased seven years ago; and

(d) that the ACT fleet was purchased two to three years ago; and

(2) calls on the ACT Government to:

(a) report back to the Assembly on the risks for our light rail vehicle fleet by the second sitting week of 2022; and

(b) advise the Assembly on the contingency planning it will undertake in the event the fault experienced in NSW and other countries emerges in the ACT light rail vehicle fleet.

Proposed amended:

MR PARTON: To move—That this Assembly:

(1) notes:

(a) the NSW Inner West Light Rail line has been decommissioned for up to 18 months because of structural issues with the CAF Urbos 3 light rail vehicles;

(b) that the same vehicles are used on the ACT light rail line;

(c) that the NSW CAF Urbos 3 vehicles were purchased seven years ago; and

(d) that the ACT fleet was purchased two to three years ago; and

(2) calls on the ACT Government to:

(a) report back to the Assembly on outcomes of safety inspections on the light rail vehicle fleet by the last sitting day of 2021; and

(b) advise the Assembly on the contingency planning it will undertake in the event the fault experienced in NSW and other countries emerges in the ACT light rail vehicle fleet. *(Notice given 8 November 2021. Notice will be removed from the Notice Paper unless called on within 4 sitting weeks – standing order 125A).*

Jennifer Rayner

Chief of Staff

Office of Chris Steel MLA

Minister for Transport and City Services

Minister for Skills

Special Minister of State

ACT Legislative Assembly

GPO Box 1020, CANBERRA, ACT 2601 Australia

Mob: **Schedule 2.2 (a) (ii)**

www.chrissteel.com.au



Out of Scope

[Redacted content]

>

Out of Scope

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Out of Scope

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[Redacted]

[Redacted]

[Redacted]

Out of scope

[Redacted]

[Redacted]

[Redacted]

Motion 2:

Mr Parton: To move—That this Assembly:

(1) notes:

(a) the NSW Inner West Light Rail line has been decommissioned for 18 months because of structural issues with the CAF Urbos 3 light rail vehicles;

(b) that the same vehicles are used on the ACT light rail line;

(c) that the NSW CAF Urbos 3 vehicles were purchased seven years ago; and

(d) that the ACT fleet was purchased two to three years ago; and

(2) calls on the ACT Government to:

(a) report back to the Assembly on the risks for our light rail vehicle fleet by the second sitting week of 2022; and

(b) advise the Assembly on the contingency planning it will undertake in the event the fault experienced in NSW and other countries emerges in the ACT light rail vehicle fleet.

Out of Scope

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

Out of Scope

Will send through any requests as soon as they land.

Sarah

Sarah May | Directorate Liaison Officer

Office of Minister Steel MLA

Office of Minister Berry MLA (Sportsgrounds)

Phone: 02 6205 2790 | **Schedule 2.2 (a) (ii)** | Email: tccs.dlo@act.gov.au

Transport Canberra and City Services Directorate | ACT Government | act.gov.au





ACT
Government

Transport Canberra and
City Services

External Input Request

Requesting Directorate: Min's Office

Responding TCCS Division: Light Rail Operations, Transport Canberra

Subject: CAF Light Rail Vehicles

Please address the following issues:

Out of Scope

[Redacted]

3. How often are LRVs and the light rail system more generally inspected for safety and serviceability?
4. What regulatory safety standards is Canberra's light rail subject to under the national ONRSR regime?
5. What steps has TCCS asked Canberra Metro to undertake in order to confirm the safety and good functioning of our LRVs?
6. Confirming it's correct that under the PPP arrangements, it's Canberra Metro's responsibility to make LRVs available to service the route? So if there turned out to be a problem with them in future, this would be a matter for them to resolve by sourcing new vehicles?

ANSWERS:

Out of Scope

[Redacted]

[Redacted]

3. Canberra Metro Operations undertake daily infrastructure and LRV maintenance inspections as well as in-depth weekly and monthly 6 monthly and yearly inspections to ensure the safe and continued operation of the network.



ACT
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Transport Canberra and
City Services

4. The Office of the National Rail Safety Regulator (ONRSR) has regulator oversight of rail safety in every Australian state and territory. The ONRSR independently administers the Rail Safety National Law (RSNL) to ensure the safety of the community. Under the RSNL National Regulations, ONRSR grants accreditation to Rail Transport Operators, which include Canberra Metro. This accreditation is granted on the basis of the operator demonstrating an approved Safety Management System which includes requirements on having an asset management policy and processes that address all phases of the asset life cycle of the rail infrastructure or rolling stock operations as well as systems and processes for monitoring and maintenance. Further details on this can be found in [Attachment A – Safety Standards](#) (on page 3, below).
5. The steps TCCS has asked Canberra Metro to undertake to confirm the safety and good functioning of our LRVs include:
 - a. Ensuring they are aware of the issues identified in the Sydney Fleet, TfNSW and their operator have provided an overview of the issues identified and the testing conducted. This allows Canberra Metro to ensure they have inspected the areas of concern. Canberra Metro has also been in contact with West Midlands Light Rail to understand the issues experienced in the UK. Again, both networks have different infrastructure and operational environments meaning the issues may not directly relate across to Canberra Light Rail.
 - b. Although CAF have confirmed that no cracking has been identified in the frames around the wheel arches, TCCS is participating in an independent inspection (with Canberra Metro executives) to independently witness these statements.
 - c. Additional inspections of the LRV frame in areas which are not regularly inspected are being investigated on a sample of the LRVs, with additional non-visual structural testing to be investigated.
 - d. Discussed the intent to operate a small number of LRVs as ‘fleet leaders’ to provide proactive assurance of reliability. This approach follows an approach in aviation with these vehicles will build up km’s in excess of the remaining fleet and be regularly inspected for cracking which will allow any issues to be identified early before the remaining fleet reach the same level of use.
 - e. Instructed Canberra Metro to confirm that all maintenance to calibrate the suspension is being conducted and validate the vehicles operation is within the design limits of the vehicles.
6. Under the PPP arrangements, Canberra Metro is responsible for providing a Light Rail Service. Failure to provide the service will result in a number of potential contractual remedies and financial implications for the operator. The Territory will seek legal advice on the contractual implications as the facts and implications of the NSW issues become clearer.



Attachment A – Safety Standards

The ONRSR do not mandate safety standards, rather requirements within the Act and Regulation that require evidence of being met. The following are the key Acts, Regulations and Standards CMET must maintain compliance to.

Reference Doc No.	Reference Title
Act (ACT)	WHS Act (ACT) 2011
Act (ACT)	Utilities (Technical Regulation) Act 2014
Act (ACT)	Rail Safety National Law (ACT) Act 2014
Act (ACT)	Utilities (Technical Regulation) (Light Rail Regulated Utility (Electrical) Network Code) Approval 2016
Act (Commonwealth)	WHS Act (Commonwealth)2011
Regulation (ACT)	WHS Regulations (ACT) 2011
Regulations (ACT)	Rail Safety National Law (ACT) Regulation 2014
Regulation (Commonwealth)	WHS Regulations (Commonwealth) 2011
Regulations (NSW)	Rail Safety National Law National Regulations 2012
SPR	Scope and Performance Requirements (SPR) Appendix 34 Sections 3.1 & 3.2
Standards	ISO 45001, ISO 14001, ISO 9001, SIO 31000, EN50126, EN50128, EN50129, IEC61508

The ONRSR provide a set of guidelines for Rail Operators to follow. ONRSR guidelines provide key information and clarification to both the rail industry and public on legislative, regulatory, and technical matters associated with safe railway operations.

These include, but are not limited to:

- Fatigue Risk Management Guideline
- Asset Management Guideline
- Meaning of Duty to Ensure Safety SFAIRP Guideline
- Rail Resource Management Guideline
- Safety Management System Guideline - This guideline covers Schedule 1 of RSNL – Content of safety management system of the Regulations.

For example, the Asset Management Guidelines States:

“RTOs should demonstrate that they use appropriate systems engineering processes and safety assurance processes (e.g. EN50126/8/9 for complex systems) in their design and procurement approach. This might be achieved through the creation of a systems engineering management plan



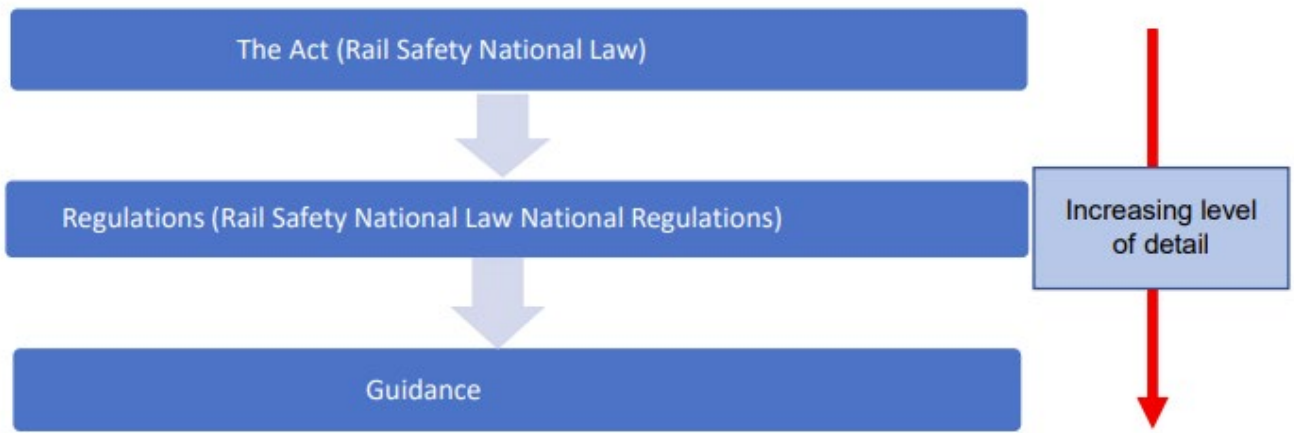
ACT
Government

Transport Canberra and
City Services

(SEMP), which would specify the procedures to identify and record stakeholders, system requirements, and safety needs.”

However, this is not mandated, the requirement to provide evidence of processes in place to safely maintain the asset are required.

As such the ONRSR stipulate the following RSNL model of safety requirements:



Action Officer: Jo Dawson

Cleared by: Deputy Director-General, Transport Canberra and Business Services

From: [Dawson, Jo](#)
To: [Cahif, Ashley](#)
Subject: 2021.11.12 - Letter From Territory - CAF Urbos 3 Cracking (A31628485)
Date: Friday, 12 November 2021 12:40:42 PM
Attachments: [2021.11.12 - Letter From Territory - CAF Urbos 3 Cracking.docx](#)

OFFICIAL

Can I just get your quick review on this letter? Was putting you as a cc.

Jo

Jo Dawson has sent you a copy of "2021.11.12 - Letter From Territory - CAF Urbos 3 Cracking" (A31628485) v2.0 from Objective.



Light Rail

Ref. A31628485

12 November 2021

Schedule 2.2 (a)(ii)

Canberra Metro Pty Ltd
9 Sandford Street, Mitchell, ACT, 2911

Cc: Ash Cahif, Major Projects Canberra

Dear **Schedule 2.2 (a)(ii)**

Subject: CAF Urbos 3 Structural Integrity
PA Reference: Section 13.1 (b)(ii)

I refer to your advice of 5 November 2021 to Transport Canberra Light Rail, per Aconex SPV CCOMM-006702, in which you provided CAF's response on the bogie rotation stop cracks on the Sydney Light Rail CAF vehicles.

In light of the bogie box cracking that has been reported in Sydney, and in order to provide confidence to the Territory government, Canberra Metro is asked to request CAF to provide details as a matter of urgency on the specific nature of cracking locations on the Urbos 3 fleets reported in the media for Sydney, Belgrade, Norway, Besancon and West Midlands Metro and any other networks where cracking on CAF Urbos 3's has been identified.

The Territory wish to know for each of these networks if the cracking is related to the Door Portal, Bogie Box, L Bracket, Bump Stops or is in another location on the LRV fleet.

The Territory also requests Canberra Metro's summary of the applicability of these issues to the Canberra Light Rail Fleet and advice on both what work Canberra Metro has conducted to date to independently verify that no cracking has occurred and what further works are planned to demonstrate that the Canberra Light Rail Fleet is structurally safe and will meet its asset life without any impact to availability.

Immediate advice on these matters is requested by Close of Business Tuesday 16th November.

Signed for and on behalf of the Territory

Jo Dawson

From: [Dawson, Jo](#)
To: [Cahif, Ashley](#)
Subject: Technical Note on Frame Inspections and IWLR Cracking issues Nov 2021 Draft (A31655396)
Date: Tuesday, 16 November 2021 2:20:27 PM
Attachments: [Technical Note on Frame Inspections and IWLR Cracking issues Nov 2021 Draft.docx](#)

OFFICIAL

This is where we are at so far in terms of inspection etc - was putting as an attachment to the Board paper (and then cab paper)

But waiting on further info (requested by COB today, but may come tmrw) from CM.

Jo Dawson has sent you a copy of "Technical Note on Frame Inspections and IWLR Cracking issues Nov 2021 Draft" (A31655396) v2.0 from Objective.

TCCS Technical Note

Urbos Frame Cracking

1.0 Background

West Midlands Metro, Birmingham UK

On 12 June 2021 Transport Canberra Light Rail (TCLR) became aware of an issue with cracks in the bogie box of CAF Urbos 3 LRVs on West Midlands Metro (WMM) network in Birmingham, UK. The WMM network was closed for 3 days (12-15 June 2021) whilst inspections were completed. CAF proposed a temporary repair to allow service to resume whilst a permanent repair is implemented. The CAF Urbos is also used on the Canberra Light Rail system and assurance was sought from CAF at this time.

On 15 June 2021 CAF advised TCLR that *“the root cause has been analysed and, so far, it’s reported as NOT affecting Canberra Metro URBOS CAF fleet as long as the infrastructure, operational and maintenance aspects remain as considered during design phase”*.

TCLR have been in contact with the WMM who have confirmed CAF have been engaged to provide both a temporary repair and a permanent repair solution for the cracking experienced there, but whether the root cause is design, operations or maintenance has not been determined.

These repairs allowed the fleet to continue to operate after the initial June 3 day shutdown. However, the temporary repairs may have been insufficient as on 12 Nov 2021 the WMM announced a shutdown for at least a month with media reporting *“Temporary repairs were carried out to return our fleet to service as soon as possible but inspections have found that more extensive and permanent repairs are now required”*. WMM is also replacing some track, which some media have attributed to the closure, but it is unknown at this stage if it is directly related to the closure.

Inner West Light Rail, Sydney

On 05 October 2021 TCLR became aware cracking in the stiffening web of the bogie rotational brackets (bump stops) had been identified in the Sydney Inner West Light Rail (IWLR) CAF Urbos 3 LRV fleet. A risk assessment performed by the IWLR team deemed it safe to continue running vehicles as long as no cracks were detected in the horizontal welds as the brackets would remain functional while these were intact.

At this stage it was thought the cracking was limited to these bump stops and on 5 November 2021 Canberra Metro advised TCLR that they *“do not foresee cracking of the bump stops to occur on the Canberra LRV fleet”* and, in summary:

- Canberra has a different bump stop design,
- The specific maintenance checks carried out on the Canberra fleet confirm tolerances which were out in IWLR are not out in Canberra, and
- An operational check is to be put in place by CMET.

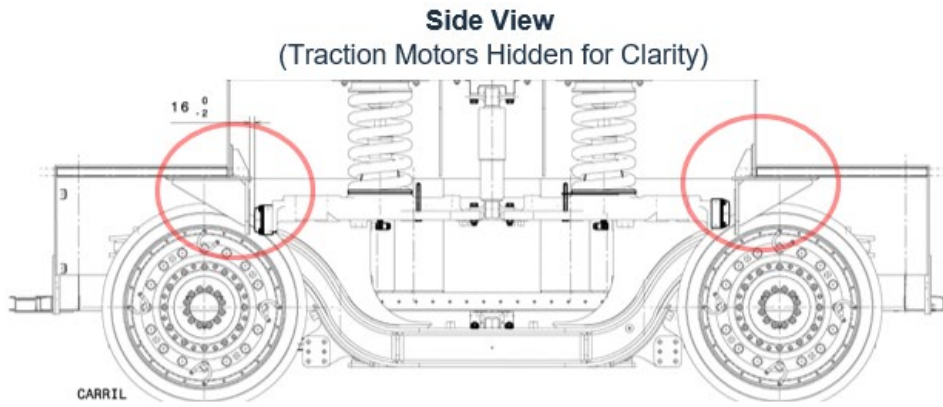


Figure 1: Bogie rotational bracket (bump stop) on traction motor bogie

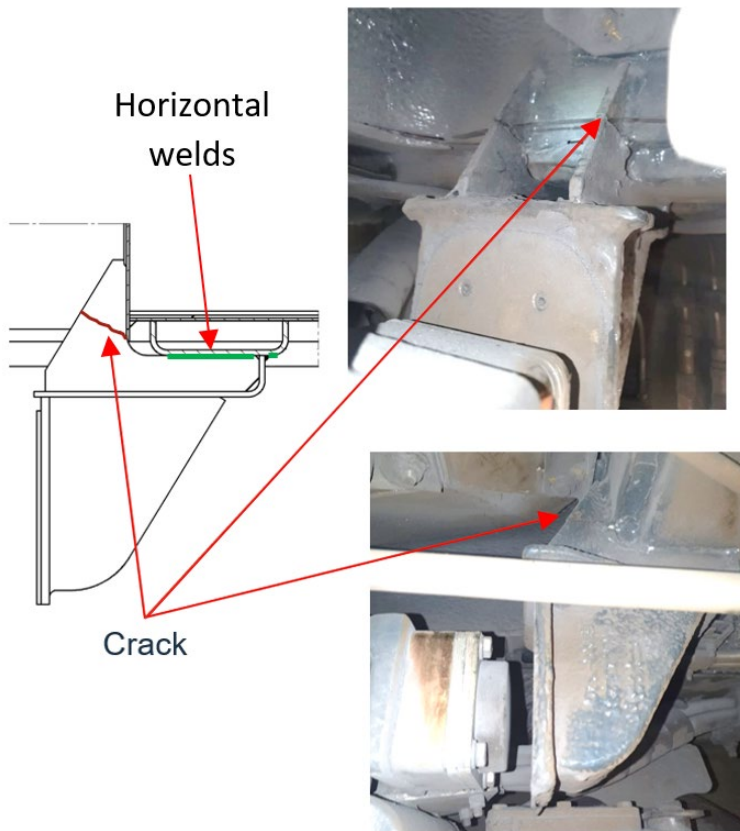


Figure 2: Location of crack on IWLR stiffening web of the bump stop

On the 28 October 2021, TfNSW advised that buses would replace light rail services on the IWLR. On 5 November 2021 it was revealed that cracking in the bogie box similar to West Midlands Metro had been found in all 12 LRVs operating on the IWLR system. Investigation into the root cause of the cracking experienced in both the bogie bump stop and the bogie box in Sydney is ongoing and is being monitored by both Canberra Metro and TCLR.

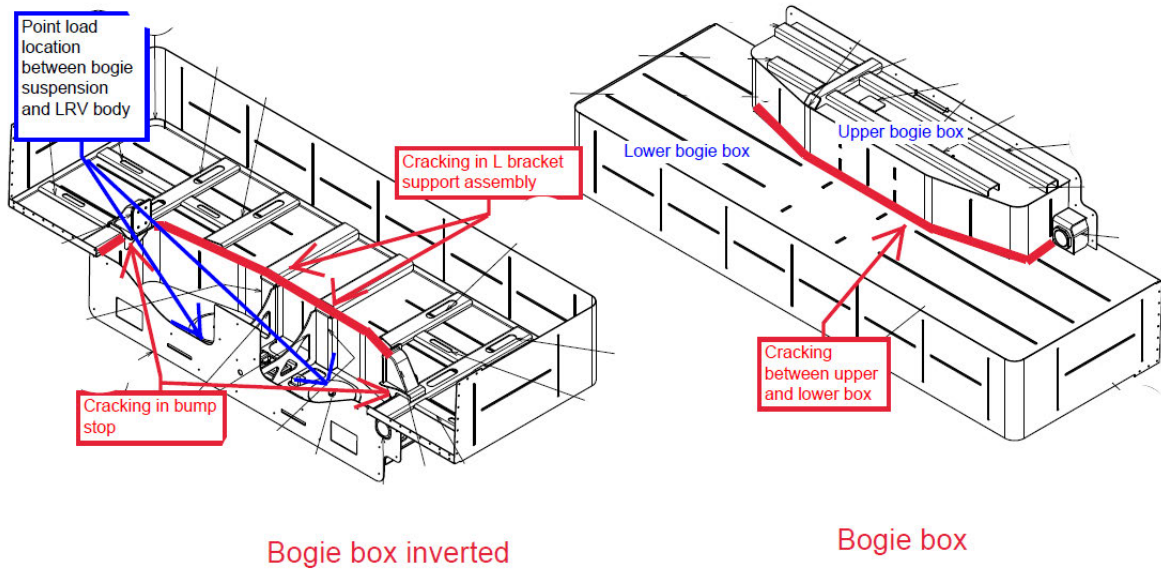


Figure 3: Location of cracks on IWLR Bogie Box

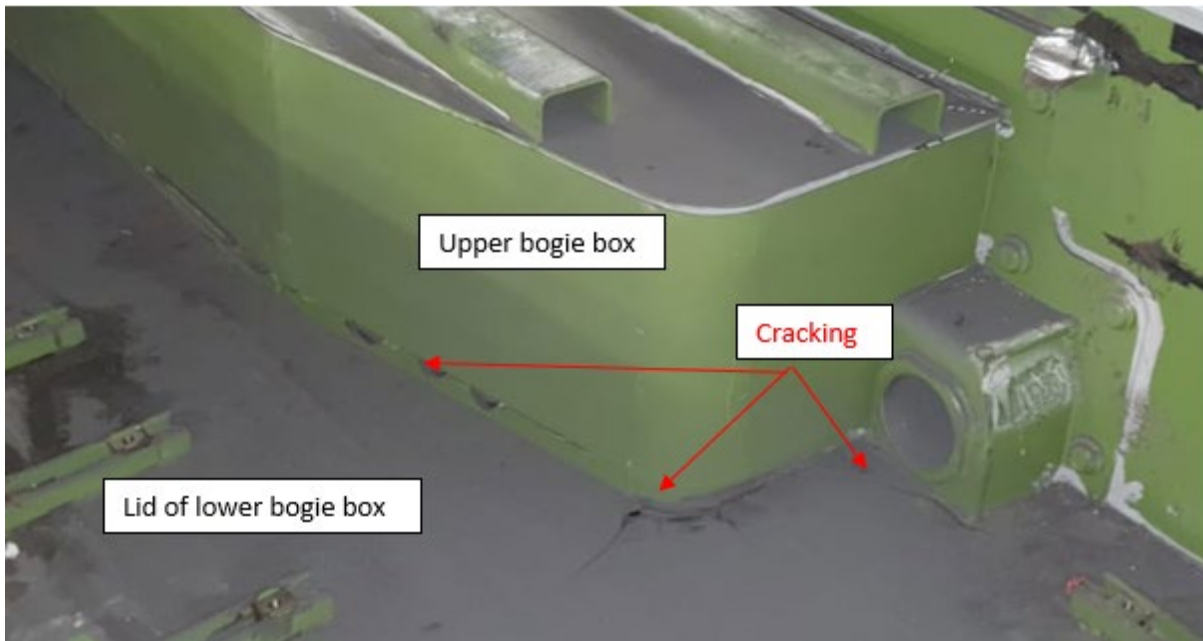


Figure 4: IWLR Cracks between upper and lower bogie boxes visible after removal of seats and floor



Figure 5: Cracks in L brackets visible after removal of bogie and protective coating (using dye penetrant test)

Both TCLR and Canberra Metro are staying in regular contact with TfNSW and Transdev respectively to remain abreast of the investigations as they continue in Sydney. The NSW Office of Transport Safety Investigations (OTSI) has commenced an investigation into the Sydney Light Rail Vehicles underframe structural cracking issues. This, when finalised, will be reported publicly in the NSW Parliament providing greater detail on the potential causes of the cracking.

Once more is understood regarding the root cause of the cracking it will be possible to further examine the Canberra fleet, rail network, maintenance procedures and operating environment to ensure any necessary action (if required) is taken to further mitigate the risk of this failure mode occurring in future in Canberra.

2.0 Canberra Inspections

Canberra's fleet is significantly younger than both the IWL and WMM. However, as an immediate action, CMET arranged for LRV011 to be inspected by employees from Canberra Metro including CAF. This was witnessed by Territory representatives. LRV011 was selected as it has the highest odometer reading in the Canberra fleet, at approximately 192,000km¹.

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LRV010	176641	145
LRV011	192580	97
LRV012	181712	107
LRV013	162455	394
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Figure 6: Canberra LRV Odometer Readings on 09 Nov 2021

Canberra Metro advised that the bump stop, and stiffening web are inspected on the 2xIS inspections performed by CAF monthly and during the bogie replacement verification checks which are undertaken during bogie replacement and no cracking has been identified on any LRV in the Canberra Fleet by CAF in these locations.

On 9 November 2021 the underside of the LRV was inspected by Canberra Metro (separate to CAF personnel) to observe the locations of the cracking on other fleets and to observe if any cracking of the bogie bump stop could be seen and confirm the bump stop could be checked. From this visual inspection, no cracking was identified in the single bump stop observed. This inspection was conducted with the bogie still in place and provided good visibility of the bump stop cracking location on IWL vehicles. Providing confidence that CAF should be able to check this location during the inspections as advised.

¹ For reference, the TfNSW advised the Inner West Light Rail vehicles have odometer readings of between 350,000km and 500,000km.

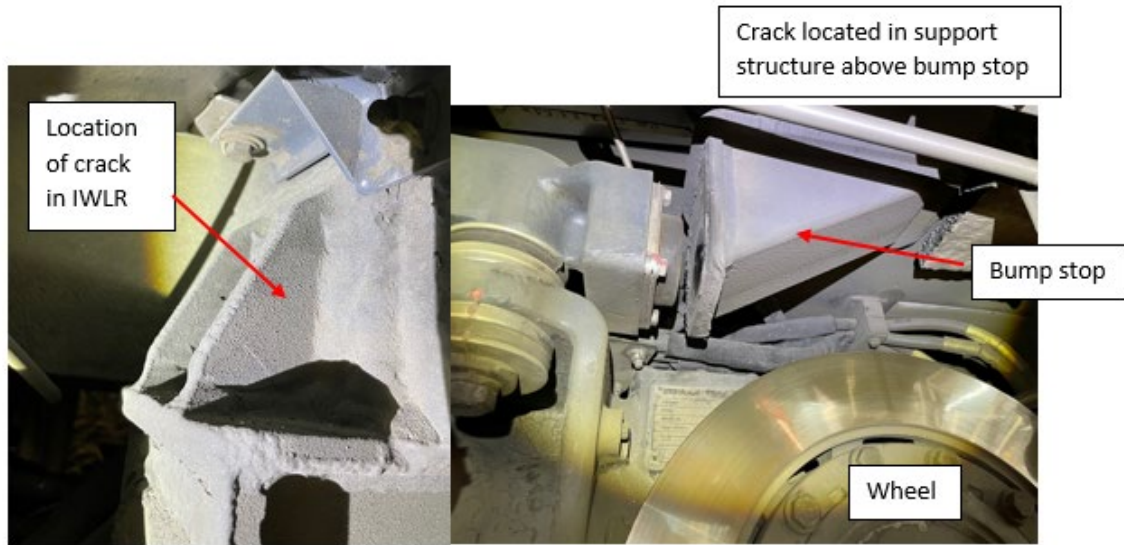


Figure 7: Canberra bump stop on LRV011 showing no signs of cracking.

On 11 November 2021 the seats in a single C car of LRV011 were removed to allow visual inspection of the bogie box from above. This is not part of a regular inspection activity as the seats are not removed as part of the standard maintenance checks. No evidence of cracking was visible between the upper and lower bogie box, or the lower bogie box and the floor. The floor is joined to the lower bogie box by rivets along the side of the bogie box, but the floor plate itself was not visible below the surface covering.

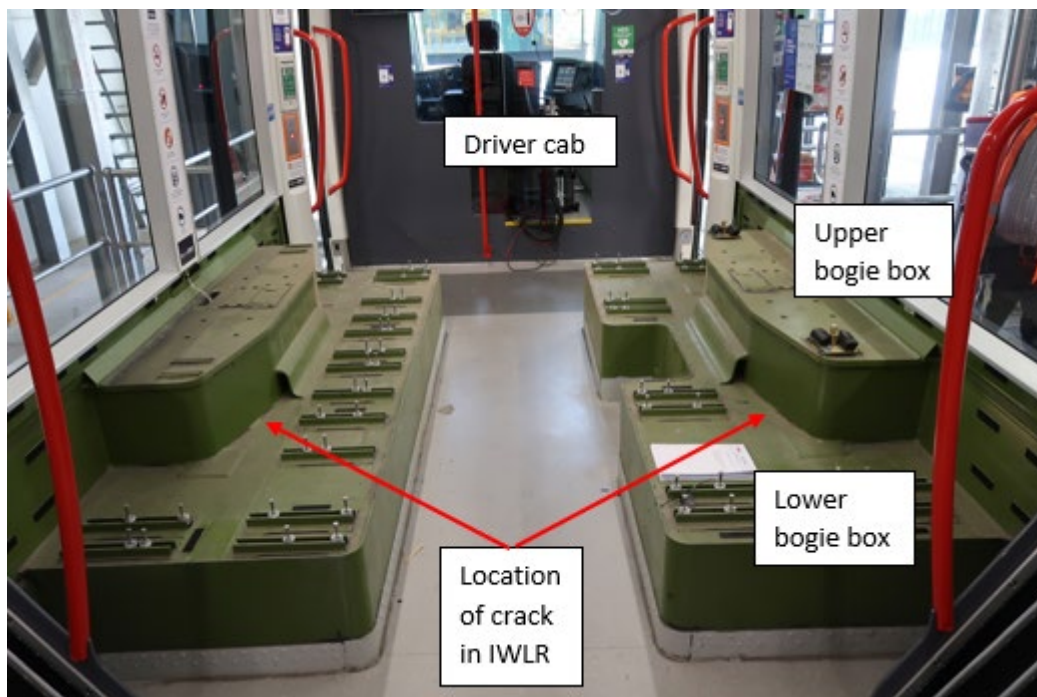


Figure 8: Canberra bogie box on LR011 showing no visible signs of cracking

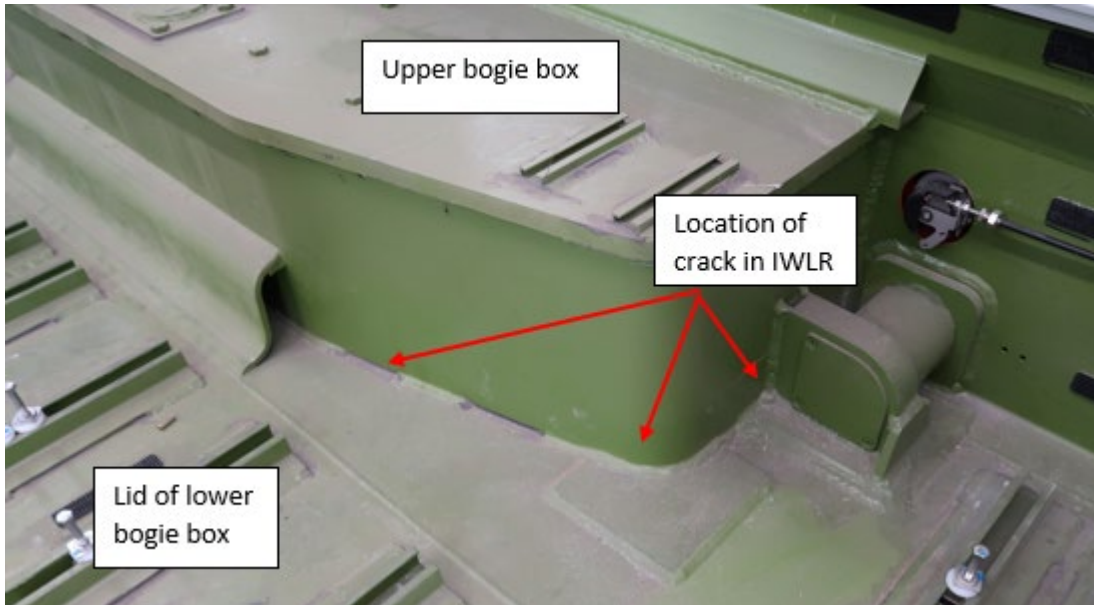


Figure 9: Canberra bogie box on LR011 showing no visible signs of cracking

3.0 Canberra LRV Design Differences

Visually, there are several design differences between the CAF Urbos 3 used on the Sydney IWLR and what is used in Canberra. It is expected these differences are due to the normal process of improvement in manufacturing between models, with the Canberra fleet entering service from April 2019 and the Sydney IWLR fleet entering service a few years earlier in 2014/15.

The following sections focus on the differences in the bump stop, bogie box and L-brackets.

Canberra bogie box additional features

The below annotated drawings and photos of the Canberra Light Rail and Sydney IWLR bogie boxes highlight the differences between the two models evident from the visual inspection on 9 November 2021.

1. The addition of a structural element between the upper and lower bogie boxes
2. The addition of a flat plate on the lower bogie box, supporting the corners of the upper bogie box.
3. A change to the lid of the upper box.
4. Addition of stitch welding to join the upper and lower bogie box.
5. A different element to facilitate the lifting of the LRV using an external jack, attached directly to the lower bogie box and reinforcement at this location².
6. Additional element between upper bogie box and side wall of the car.

These are all visible and annotated in Figure 9 and Figure 10, below.

² On the Inner West Light Rail LRVs this point is only supported by the outer frame.

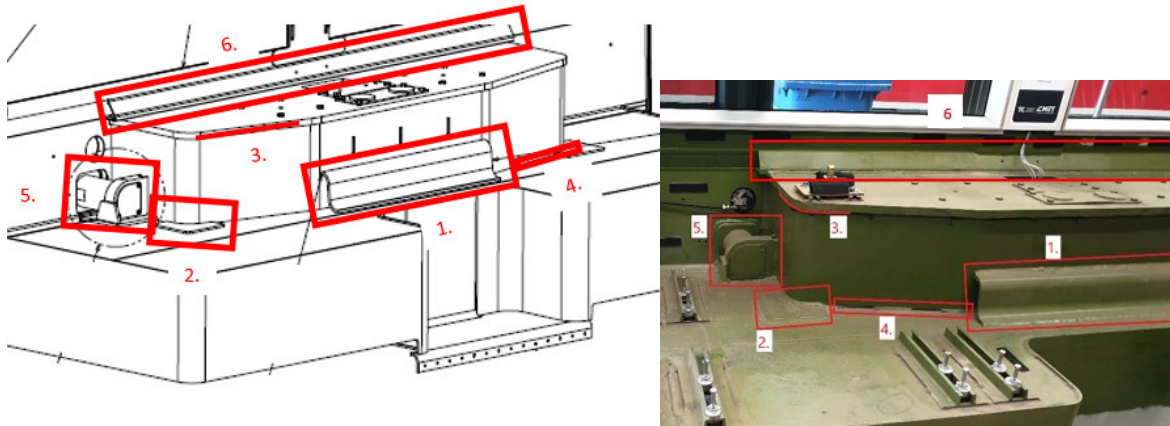


Figure 10: Annotated image of bogie box – Canberra Light Rail

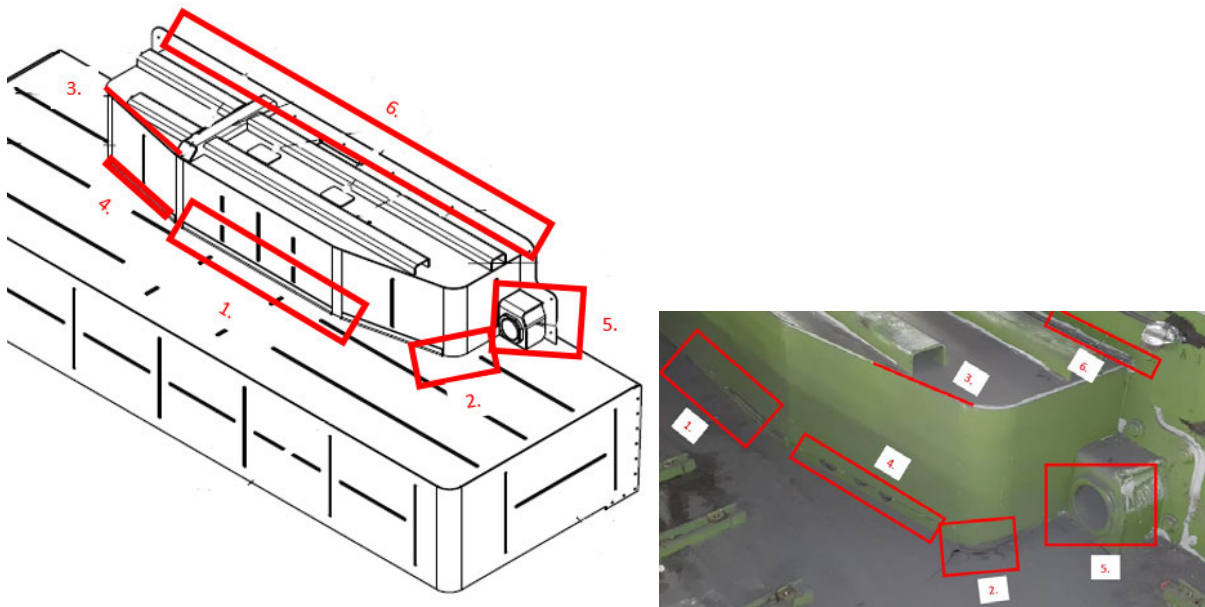


Figure 11: Annotated image of bogie box – Sydney IWLR

Canberra bump stop additional features

The below annotated drawings and photos of the Canberra Light Rail and Sydney IWLR bump stop attempts to highlight the key difference between the two models.

1. The size and shape of the bump stop on the Canberra Light Rail provides a more robust design with a larger triangular wedge.

This difference is visible and annotated in Figure 11 and Figure 12, below.

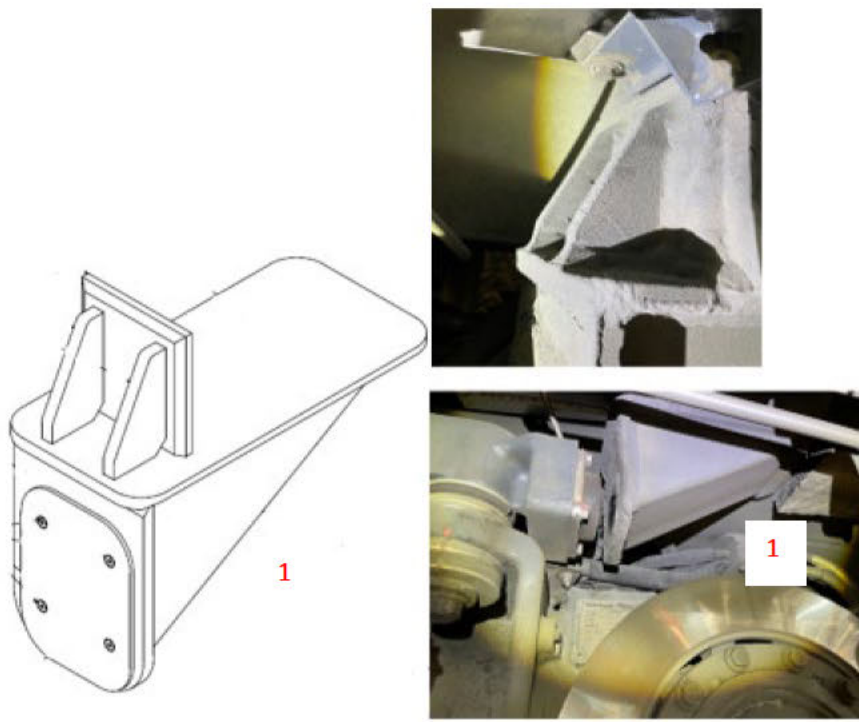


Figure 12: Annotated image of bump stop – Canberra Light Rail

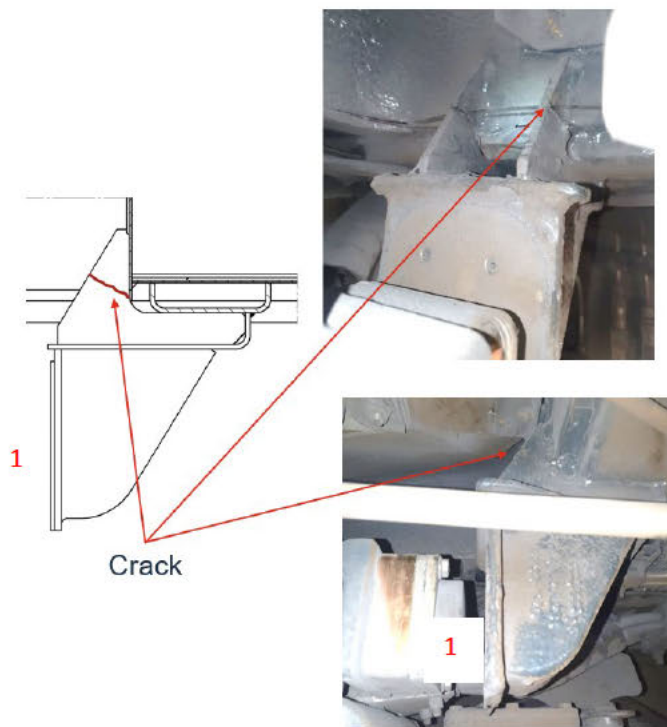


Figure 13: Annotated image of bump stop – Sydney IWLR

Canberra L bracket additional features

4.0 Other key differentiators between Canberra Light Rail and IWLR

The Canberra Light Rail has a different operating environment to the Sydney IWLR. The two key differences identified to date which may impact the structural integrity of the LRV are as follows:

Track

- Canberra operates on embedded rail slab track which was purpose built for light rail operations. A ride quality test is undertaken annually to check noise and vibration levels.
- In comparison, IWLR uses a repurposed freight line with a mixture of ballast and slab track (as does WMM). It is not known what track monitoring is conducted.

Therefore, it is possible some of the geometry experienced on the IWLR may inflict harsher forces on the vehicles than would occur in Canberra, there may also be differences in vibration levels. Noting this has been stated as contributory regarding the WMM.

Maintenance Arrangements

- The Canberra LRV's are maintained by the original manufacturer (CAF) who are responsible for the maintenance of the LRV's until 2038.
- In IWLR the maintenance has been subcontracted to Alstom by the Altrac consortium and in WMM the LRV maintenance is performed by an alternate contractor, with what is believed to be a spares and support contract to access further services from CAF.

As such, there may be subtle differences in how the maintenance is carried out as well as the maintenance documentation. At the least this would occur given the differences in age of the fleet and differing designs.

5.0 Next Steps

CMET has indicated that LRV006 is scheduled to have a C car bogie removed in the next one to two months. The removal will facilitate an inspection of the underside of the bogie box while the bogie has been removed.

This will allow for inspection of the underside of the join between the bogie box and the floor, as well as the L brackets.

Canberra Metro are yet to respond to confirm the steps they will take to monitor the identified areas. It is anticipated an enhanced monitoring program will be proposed as part of their maintenance processes.

An independent review of the design and Canberra Metro's response will be arranged by a structural specialist to provide additional assurance.

From: [Dawson, Jo](#)
To: [Cahif, Ashley](#)
Subject: FYI only - Updated QTB - E. CAF Light Rail vehicles and issues in NSW - with EGM (A31724271)
Date: Thursday, 18 November 2021 8:33:35 AM
Attachments: [E. CAF Light Rail vehicles and issues in NSW - with EGM.docx](#)

OFFICIAL

This is the updated QTB (not a lot changed) But fyi for MPC's pack as well.

Out of Scope

Jo Dawson has sent you a copy of "E. CAF Light Rail vehicles and issues in NSW - with EGM" (A31724271) v6.0 from Objective.

Portfolio: Transport and City Services

CAF LIGHT RAIL VEHICLES AND ISSUES IN NSW

- Canberra's light rail service runs with a fleet of 14 CAF manufactured and maintained Urbos light rail vehicles. These vehicles came into service when Stage 1 of light rail commenced operations two and a half years ago in April 2019.
- Following reports of cracking problems with the light rail fleet servicing Sydney's Inner West line, CAF – has undertaken regular inspections of the full vehicle fleet. This has not detected any cracking in the Canberra light rail vehicle (LRV) frames.
- CAF maintain that the issues on the Inner West light rail fleet will not arise on other Urbos vehicles in Australia due to differences in design between Urbos 3 and the newer Urbos 100.
- The Office of the National Rail Safety Regulator (ONRSR) has advised the ACT Government that they are investigating the issue, including any impact on other LRV's in Australia that may be affected. ONRSR have not raised any safety concerns regarding the Canberra fleet.
- Canberra Metro undertakes an ongoing program of inspections and maintenance of the light rail fleet to ensure all LRVs are safe to operate and there is no risk to customers, staff or community safety.
- Transport Canberra and City Services is now working closely with Canberra Metro and the NSW Government to understand progress on the rectification for the Inner West light rail fleet, and any further insights we can gain.

Sydney's Inner-West light rail (IWLR) fleet

- On 5 November 2021, the NSW Transport Minister announced cracking had been identified in 12 CAF Urbos 3 Light Rail Vehicles (LRVs) that service Sydney's inner-west network. The cracks are located near the bogie (around wheel-arch) of the LRV.
- The Sydney IWLR network may be decommissioned for up to 18 months, and replaced with buses, while the identified issues are rectified.
- The NSW Transport Minister said the problem identified was "*likely to be a design flaw*" and "*is likely to be a global concern.*" The Minister also

referred to issues identified with West Midlands Light Rail earlier in the year which also operates CAF Urbos 3.

- The Sydney inner-west light rail network operates on a variety of track types, including a mixture of in-slab and ballast (which is not used in Canberra). West Midlands also operates on a mixture of in-slab and ballast track.
- The IWLR vehicles were manufactured by CAF but the maintenance of the vehicles is now performed by Alstom for TfNSW as part of the extension of the Sydney Light Rail Network. The West Midlands vehicles are also not maintained by CAF.
- The Canberra light rail fleet are CAF Urbos 100's, which although very similar, are a newer model than the CAF Urbos 3's which are in operation on Sydney's Inner West and Birmingham's West Midlands operator in the UK.

Canberra light rail fleet

- The ACT Government has a Public Private Partnership (PPP) agreement with the Canberra Metro Consortium (a group of companies) to design, construct, finance, operate and maintain the Canberra Light Rail system over a 20-year period.
- Canberra Metro Operations (CMET) is responsible for operating the light rail network and ensuring the safety of the system.
- CAF is responsible for manufacturing and maintaining the LRVs throughout the 20-year period. This provides clearer lines of responsibility for any asset issues. This differs from the Sydney IWLR, and West Midlands, which have a different manufacturer and maintainer.
- The Canberra fleet operates on a different track type (in-slab) and has differences in operating profile (track geometry, vibration, braking, speeds etc) compared with the Sydney system.
- Annual ride quality checks ensure Canberra's track is performing well.
- The Canberra fleet is also significantly younger than both the Sydney and West Midlands fleet, with the LRVs only having travelled up to 190,000km (the inner-west fleet has travelled up to 350,000-500,000km).
- Canberra Metro has confirmed that CAF has undertaken inspections of the LRVs, in response to the issues in Sydney, and no cracking was evident in the frame structure around the wheel-arches.

- Senior representatives from Canberra Metro, CMET and TCCS attended an independent inspection on 9 November 2021 and 11 November 2021.
- Regular inspections will continue to check for this issue in addition to the ongoing maintenance and inspection program already in place and an enhanced inspection regime is being developed for further confidence.
- Checks have been undertaken on NSW Newcastle light rail system which also uses these LVR's, and in media articles Keolis Downer (the operator) have said no issues have been identified there either.
- What the Canberra and Newcastle systems have in common in that they are both more recent manufactured vehicles than Sydney's Inner West Line, with Newcastle's system also having been commissioned in 2019.

Commercial considerations

- TCCS will work with MPC to identify any impacts to future stages of light rail and procurement of new LRVs.
- The opposition have questioned why the government proceeded with procurement of the current LRV fleet in light of allegedly known issues – responses to this include:
 - The Canberra LRVs were ordered in 2016, whereas the issues in West Midlands and Sydney (relating to bogie box cracking) were not identified until 2021 – two years after the commencement of operations in Canberra. CAF have advised these issues are not a risk for the Canberra LRV fleet.
 - Press articles in Sydney refer to potential cracking issues previously having been identified in other fleets, however, these were not publicly reported until after Canberra Light Rail operations commenced and have not been advised as a concern from CAF.
 - Further details have been formally requested from CAF on these occurrences in other light rail systems.
- Under the PPP arrangements, in addition to ensuring that the maintenance regime of the LRVs complies with all relevant safety standards, Canberra Metro is responsible for providing a Light Rail Service to the timetable set by Transport Canberra.
- Failure to provide services in accordance with the timetable will result in a number of potential contractual remedies and financial implications for the

operator. The Territory will seek legal advice on the contractual implications as the facts and implications of the NSW issues become clearer.

Sydney LRV Cracking Issues

Key Messages

- Canberra Metro operate a fleet of 14 *CAF Urbos 3 Series* light rail vehicles.
- All of our light rail vehicles undergo regular maintenance which includes rigorous safety and serviceability checks.
- While the vehicles on the inner-west Sydney line and Canberra's light rail are the same CAF model, to date, there is no evidence of cracking in Canberra's light rail vehicles.
- Canberra Metro will be undertaking regular inspections to check for this issue in addition to the regular maintenance and inspection program already in place.
- Canberra light rail vehicles operate on a different track type to Sydney light rail and are a much younger fleet
- Canberra Metro will continue to work closely with CAF, Sydney Light Rail and the ACT government.

Frequently Asked Questions (FAQ – Internal)

1. Do we have any cracks in our LRVs?

No. CMET and CAF have undertaken structural inspections and to date have found no evidence of any cracks.

2. Are we likely to see cracks forming in our LRVs?

We know that the Canberra Light rail is different to the Sydney light rail system with a different track type, operating profile and younger fleet (newer models) and therefore the same cracking issues may not occur. Our maintainer CAF undertake regular inspections and no cracking has been identified.

3. Have our maintenance teams already been looking for cracks?

Yes. CMET and CAF have been undertaking regular inspections to check for this issue in addition to the regular maintenance and inspection program already in place.

4. What measures are we introducing to our maintenance program?

In addition to our usual rigorous safety and serviceability checks, Canberra Metro will continue to work closely with CAF, Sydney Light Rail and the ACT government receiving frequent updates for any developing issues.



Statement

Canberra Metro is aware of the cracking issues reported in the media on the Sydney Light Rail. Our operator and maintainer continue to undertake the required inspections and maintenance of our fleet to ensure all our light rail vehicles are safe to operate and there is no risk to our customers, staff or community safety.

Our operator and maintainer will undertake additional inspections to ensure all our light rail vehicles are safe to operate. Canberra Metro can confirm through these additional and regular inspections no cracking has been found. We will continue to work closely with CAF, Sydney Light Rail and the ACT government.

End.



TCCS Technical Note

Urbos Frame Cracking

Introduction

This technical note summarises the information known to date regarding frame cracking in the Urbos fleet with other operators. This involves information obtained from third parties and observations made by the Light Rail Operations team when witnessing Canberra Metro inspections.

Background

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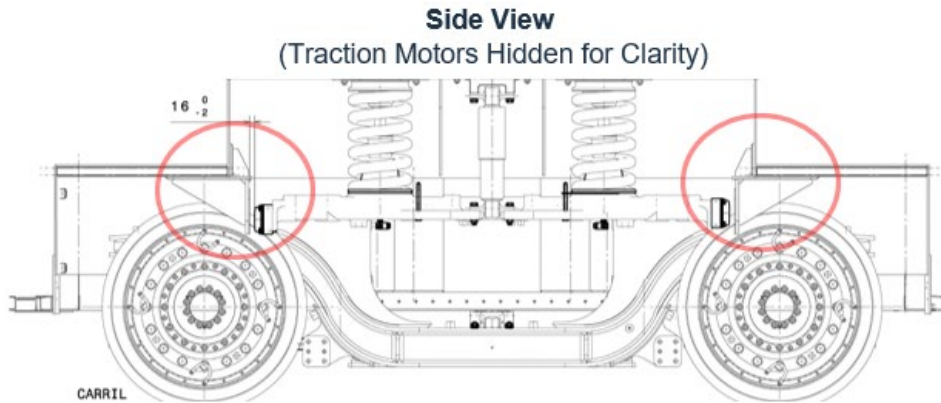


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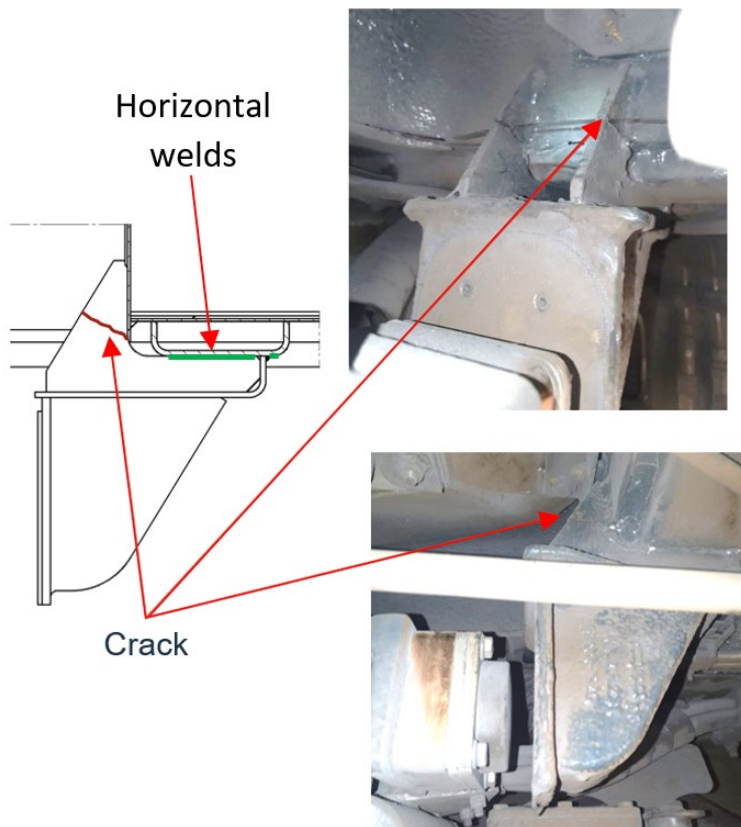


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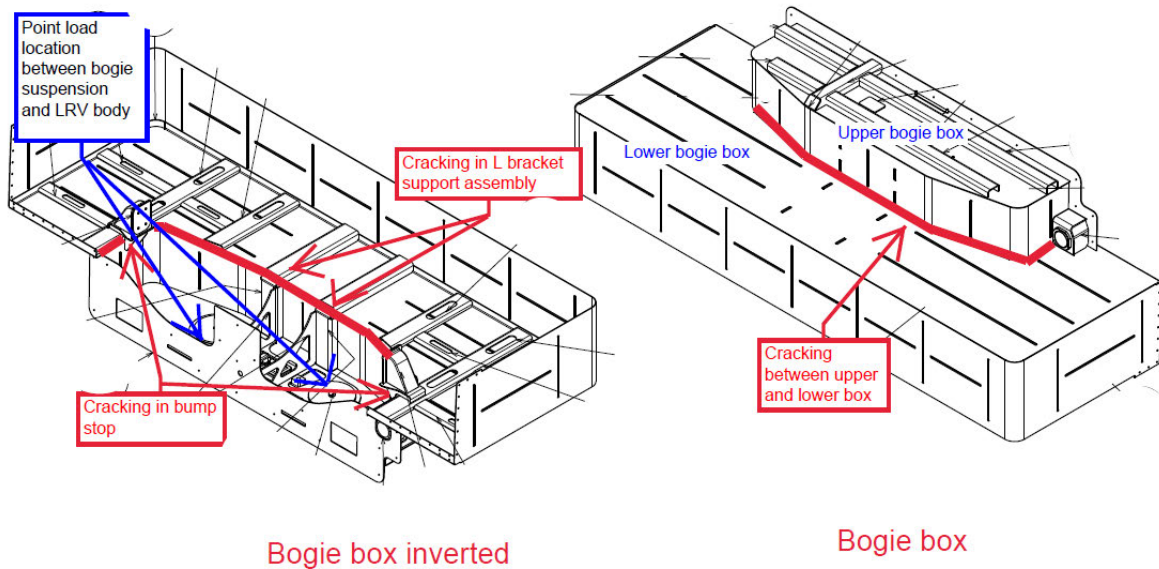


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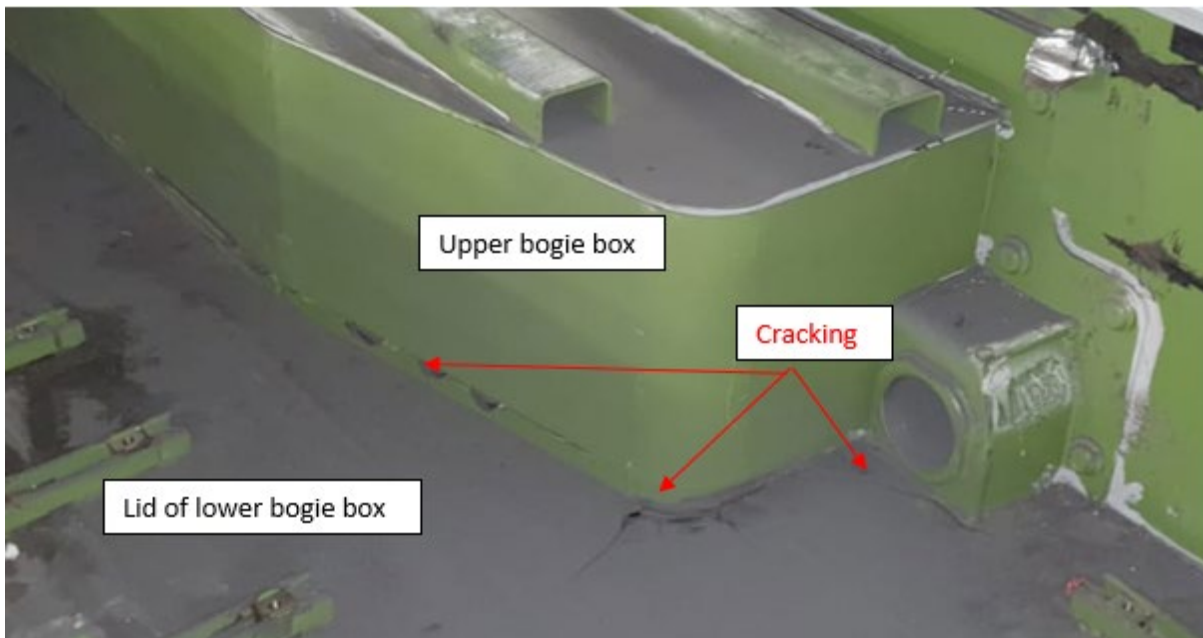


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Canberra Metro advised that the bump stop, and stiffening web are inspected on the 2xIS inspections performed by CAF monthly and during the bogie replacement verification checks which are undertaken during bogie replacement and no cracking has been identified on any LRV in the Canberra Fleet by CAF in these locations.

On 9 November 2021 the underside of the LRV was inspected by Canberra Metro (separate to CAF personnel) to observe the locations of the cracking on other fleets and to observe if any cracking of the bogie bump stop could be seen and confirm the bump stop could be checked. From this visual inspection, no cracking was identified in the single bump stop observed. This inspection was conducted with the bogie still in place and provided good visibility of the bump stop cracking location on IWL vehicles. Providing confidence that CAF should be able to check this location during the inspections as advised.

¹ For reference, the TfNSW advised the Inner West Light Rail vehicles have odometer readings of between 350,000km and 500,000km.

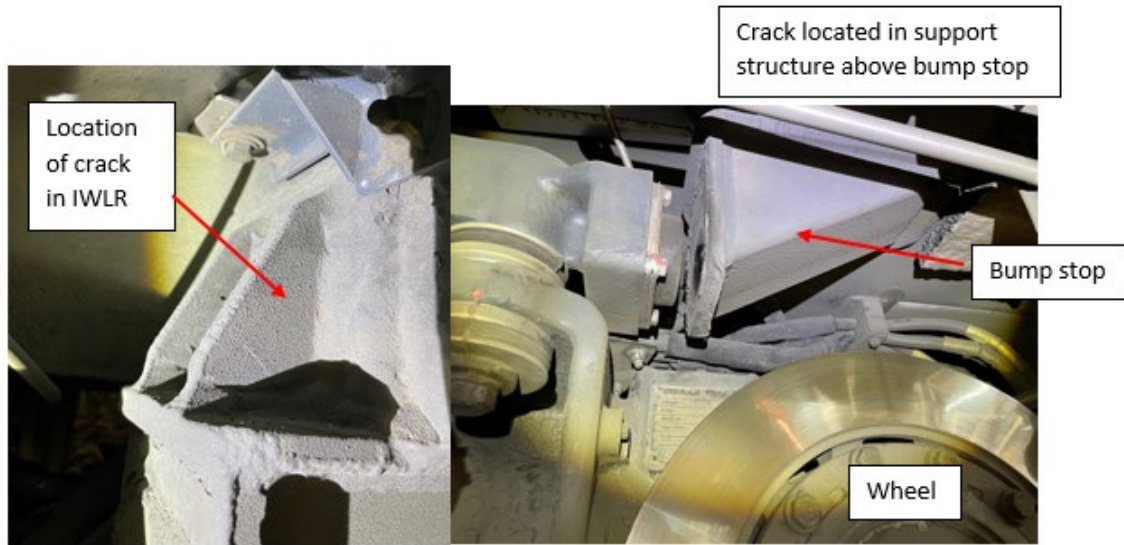


Figure 7: Canberra bump stop on LRV011 showing no signs of cracking.

On 11 November 2021 the seats in a single C car of LRV011 were removed to allow visual inspection of the bogie box from above. This is not part of a regular inspection activity as the seats are not removed as part of the standard maintenance checks. No evidence of cracking was visible between the upper and lower bogie box, or the lower bogie box and the floor. The floor is joined to the lower bogie box by rivets along the side of the bogie box, but the floor plate itself was not visible below the surface covering.

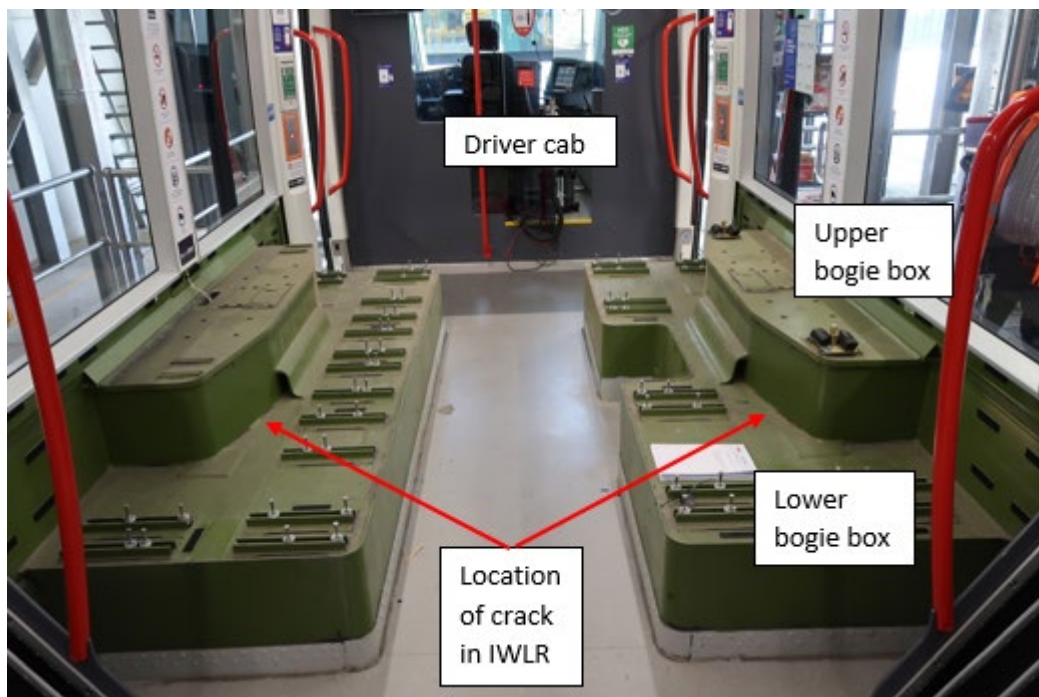


Figure 8: Canberra bogie box on LR011 showing no visible signs of cracking

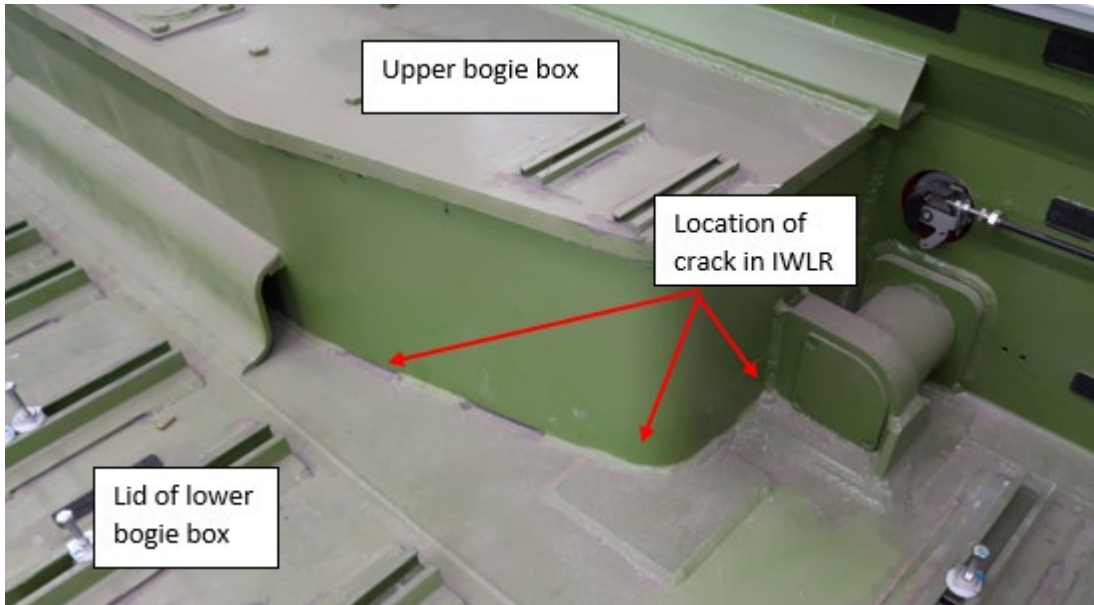


Figure 9: Canberra bogie box on LR011 showing no visible signs of cracking

Canberra LRV vs IWLR Design Differences

Visually, there are several design differences between the CAF Urbos 3 used on the Sydney IWLR and what is used in Canberra. It is expected these differences are due to the normal process of improvement in manufacturing between models, with the Canberra fleet entering service from April 2019 and the Sydney IWLR fleet entering service a few years earlier in 2014/15.

The following sections focus on the differences in the bump stop, bogie box and L-brackets.

Canberra bogie box additional features

The below annotated drawings and photos of the Canberra Light Rail and Sydney IWLR bogie boxes highlight the differences between the two models evident from the visual inspection on 9 November 2021.

1. The addition of a structural element between the upper and lower bogie boxes
2. The addition of a flat plate on the lower bogie box, supporting the corners of the upper bogie box.
3. A change to the lid of the upper box.
4. Addition of stitch welding to join the upper and lower bogie box.
5. A different element to facilitate the lifting of the LRV using an external jack, attached directly to the lower bogie box and reinforcement at this location².
6. Additional element between upper bogie box and side wall of the car.

These are all visible and annotated in Figure 9 and Figure 10, below.

² On the Inner West Light Rail LRVs this point is only supported by the outer frame.

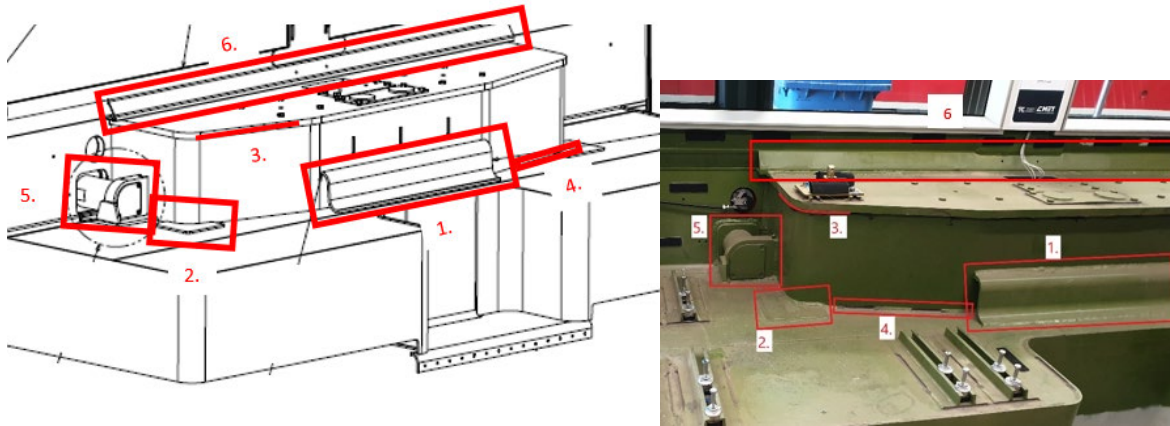


Figure 10: Annotated image of bogie box – Canberra Light Rail

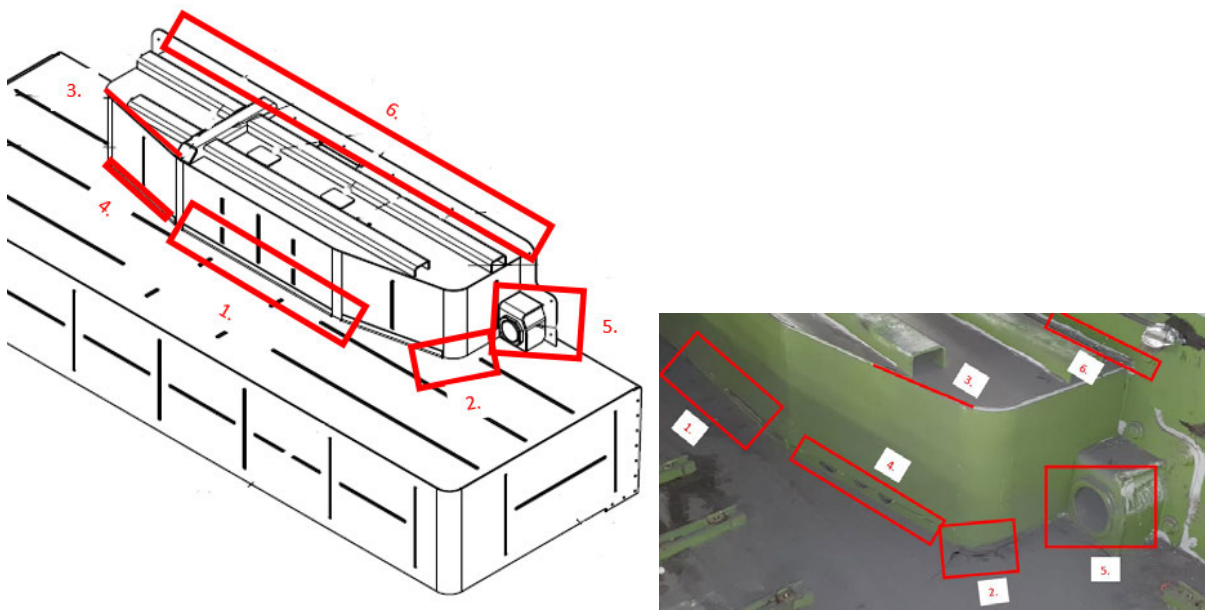


Figure 11: Annotated image of bogie box – Sydney IWLR

Canberra bump stop additional features

The below annotated drawings and photos of the Canberra Light Rail and Sydney IWLR bump stop attempts to highlight the key difference between the two models.

1. The size and shape of the bump stop on the Canberra Light Rail provides a more robust design with a larger triangular wedge.

This difference is visible and annotated in Figure 11 and Figure 12, below.

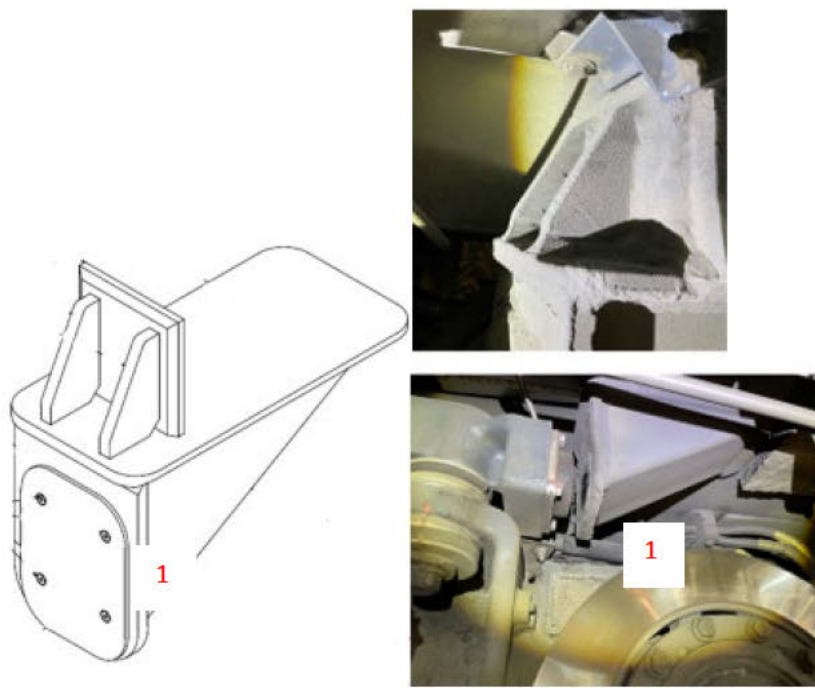


Figure 12: Annotated image of bump stop – Canberra Light Rail

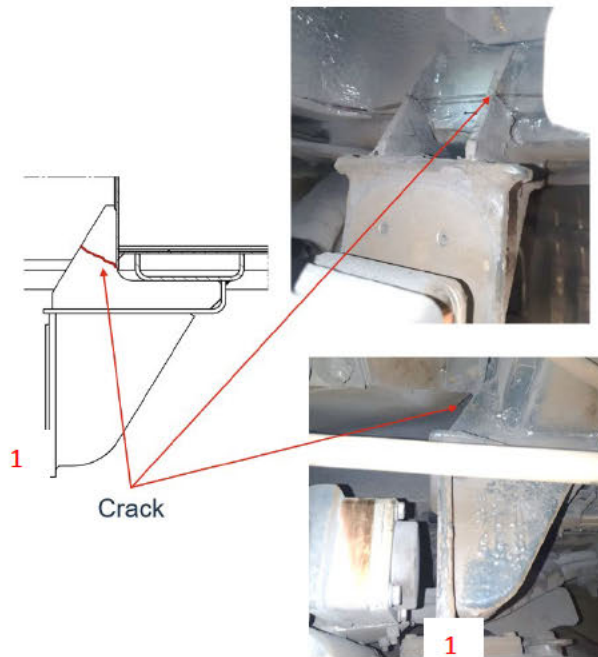


Figure 13: Annotated image of bump stop – Sydney IWLR

Canberra L bracket additional features

After an initial inspection of the L bracket with the bogie on there appear to be differences in the design of the L brackets between the IWLR vehicle and the Canberra vehicle.

A detailed drawing of the area has been requested from CAF and a more detailed review will be completed with the bogie removed. This will allow us to better understand the differences between the vehicles used on the two different systems in this specific area.

Other differentiators between Canberra Light Rail and IWLR

The Canberra Light Rail has a different operating environment to the Sydney IWLR. The two key differences identified to date which may impact the structural integrity of the LRV are as follows:

Track

- Canberra operates on embedded rail slab track which was purpose built for light rail operations. A ride quality test is undertaken annually to check noise and vibration levels.
- In comparison, IWLR uses a repurposed freight line with a mixture of ballast and slab track (as does WMM). It is not known what track monitoring is conducted.

Therefore, it is possible some of the geometry experienced on the IWLR may inflict harsher forces on the vehicles than would occur in Canberra, there may also be differences in vibration levels. Noting this has been stated as contributory regarding the WMM.

Maintenance Arrangements

- The Canberra LRV's are maintained by the original manufacturer (CAF) who are responsible for the maintenance of the LRV's until 2038.
- In IWLR the maintenance has been subcontracted to Alstom by the Altrac consortium and in WMM the LRV maintenance is performed by an alternate contractor, with what is believed to be a spares and support contract to access further services from CAF.

As such, there may be subtle differences in how the maintenance is carried out as well as the maintenance documentation. At the least this would occur given the differences in age of the fleet and differing designs.

Next Steps

CMET has indicated that LRV006 is scheduled to have a C car bogie removed in the next one to two months. The removal will facilitate an inspection of the underside of the bogie box while the bogie has been removed. This will allow for inspection of the underside of the join between the bogie box and the floor, as well as the L brackets.

Canberra Metro have advised that the O&M Contractor [CMET] and their light rail vehicle maintainer, CAF, are currently developing an **enhanced inspection regime** for the bogie bumper stop and bogie box.

A work order to review of the design, maintenance records and the enhanced inspection regime has been developed to appoint an independent structural specialist to provide additional assurance.

Prepared by – Director Asset and Technical, Light Rail Operations. 16 Nov 2021.

17 November 2021

Ref: SPV-CCOMM-006726

Ms Jo Dawson
Transport Canberra
Territory Representative
480 Northbourne Avenue
Dickson, ACT 2604

Dear Jo

Subject; CAF Urbos 3 Structural Integrity - Update

Further to our letter ref: SPV-CCOMM-006718 dated 16 November 2021 we provide further information in relation to the Urbos 3 Structural Integrity.

Our O&M Contractor has had confirmation from their light rail vehicle maintainer, CAF, on further additional inspections they will perform on the Canberra Light Rail Fleet.

- CAF will carry out an interior side visual inspection of the bogie box area on every Canberra Light Rail Vehicle over the next three months
- CAF will in addition once a year undertake an interior side visual inspection of the bogie box area on three Canberra Light Rail Vehicle with the highest km's
- This will continue until the root cause analysis of the Sydney Inner West light rail vehicles cracking can be established.

CAF have also provided comments on why they believe Sydney Inner West Light Rail cracking is not going to appear in the Canberra Light Rail Fleet, we have attached their letter.

We will continue to work closely with the Territory and provide updates as further information is available.

Kind regards,

Schedule 2.2 (a)(ii)



Schedule 2.2 (a)(ii)

Schedule

Canberra Metro Pty Ltd

Attached: CAF Letter 17 November 2021

Canberra Metro Operations

9 Sandford st

Mitchell, ACT, 2911

Schedule 2.2 (a) (ii)

Engineering Manager, Operations & Maintenance

CRA – CMO – 045_17112021

Project : Canberra Light Rail

Subject : Bogie box area regular inspections

Ref : -

CC : **CMET**
Schedule 2.2 (a)(ii)

CAF
Schedule 2.2 (a)(ii)

17th Nov 2021

Dear **Schedule 2.2 (a) (ii)**,

As previously discussed and in light of the recent events related to the cracks identified on the bogie box of the Sydney Light Rail vehicles, in order to provide assurance to TC and CMET that external factor are not going to affect to the Canberra Light Rail vehicles in a similar way to the above mentioned vehicles, CAF RA is proposing to undertake a full fleet check by accessing to the interior side of the bogie box area for visual inspection in every vehicle within the next 3 months, in order to avoid disruption to service. CAF RA is proposing and ongoing check once a year for the 3 vehicles with highest km until the root cause analysis of the Sydney Light Rail vehicles is identified, at that stage ongoing inspection regime will be amended if required.

The reasons why CAF believes this problem is not going to appear in the Canberra LRVs is listed below:

- Canberra uses aluminium instead of mild steel for the affected area on the Sydney IWE LRVs, none of the projects with this configuration (around 14 projects prior to Canberra LRVs) have ever reported any issues.
- For projects with the mild steel configuration such as Sydney, only 1 project suffered this issue, and it was identified to be due to external factors. In Sydney we are still investigating the root cause of this issue.
- Inspection with the highest amount of KM in Canberra fleet performed on 11/11/2021 showed no signs of cracks.

Due to the above reasons, CAF RA believes the proposed regime will be enough to provide assurance to all stakeholders.



RAIL SERVICES

If you have any question, feel free to contact me. [REDACTED]

Yours faithfully,

Schedule 2.2 (a)(ii)

Schedule 2.2 (a) (i)

Rail Services Manager Australia

CAF Rail Australia (Grupo CAF S.A.)

[REDACTED]

[REDACTED]