

19 April 2011

Michael Azar
Development Manager
Site 3 Development Co. Pty Limited
5 Bay Drive
MEADOWBANK NSW 2114

Dear Michael

Stage 2 & 3 SOPA Site 3 Derailment Risk Workshop

To satisfy the consent conditions for the above project, Aurecon, Site 3 Development Co. Pty Limited and RailCorp held a risk assessment workshop at Railcorp's Infrastructure offices at 6 Herb Elliot Ave in Homebush on 15 April 2011 for Collision Loadings from a derailed train impacting the External Development.

Please find the risk register developed during the workshop, RailCorp's risk matrix and the attendance list attached.

The risk register ranks the risks associated with potential scenarios where a derailed train could collide with the proposed structure adjacent to the Homebush loop.

During this workshop we were advised that the design documentation has been developed whereby entire superstructure of the proposed stage 2 & 3 development is designed and will be constructed beyond 10m from the centreline of the track.

Consideration was given to site conditions, derailment history, the type of structure, track geometry, track speed and rolling stock.

During the workshop it was established that the worst risk ranking across ten different possible causes by the attendees was a C+ where rankings were based on the RailCorp Level 2 Risk Matrix.

The development structural designer can now proceed finalising their design on the basis of this workshop outcome in accordance with ESC 380 Clause 6.13 – Table 1.

Yours faithfully



Robert Angus
AURECON

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Derailment Risk Register
Railcorp Level 2 Risk Matrix
Risk Workshop Attendance List

Project Title	Stage 2 & 3 - Site 3 Sydney Olympic Park - Derailment Risk Assessment		
Project Principal	Kourosh Kayvani	Project Leader	Matt Thomson
Meeting Attendees	Chris Bailey, Eddie Lucas, Michael Azar, Rob Angus, Kjeld Madsen, Bill Gunther, Marko Damic		

Project No.	218091
Meeting Date	15-Apr-11



Client	Site 3 Development Co. Pty Limited		
Other Stakeholders	RailCorp, Architectus, Bates Smart, Bonnaci Group, Aurecon		

Ref	Hazard Description	Location	Possible Cause	Consequence	Existing Control Measures	Current Risk Ranking			Proposed Control Measures	Proposed Risk Ranking			Action		
						Likelihood	Consequence	Risk		Likelihood	Consequence	Risk	Task / Comment	By	Done
2. Structure between 10 and 20 m of track centre line															
2.1	Structure hit by derailed train	Between 10 and 20 m of track centre line (planter box feature, perimeter carpark columns, plant rooms)	Damaged track and/or formation infrastructure failure due to poor maintenance	Collapse of edge columns/walls compromising the structure and leading to major injury train/rail staff, residents and bystanders	Low Speed to Homebush Loop of 40km/hr, Ensure QA compliance with RailCorp standards. Regular track maintenance carried out every 72 hrs	F3	C3	C+		-	-				
2.2			Obstruction on or beside track		Ensure track is checked in accordance with RailCorp standards every 72 hrs for certification and systems assurance.	F3	C2	C-		-	-				
2.3			Trains colliding into each other due to driver error (Rear end collision)		Low Speed to Homebush Loop of 40km/hr, rail curvature away from the development site Ensure experienced and adequately qualified drivers for all train movements.	F2	C3	C-		-	-				
2.4			Trains colliding into each other due to poor sight lines and/or signalling equipment failure		Low Speed to Homebush Loop of 40km/hr Ensure experienced and adequately qualified drivers for all train movements. Regular signalling maintenance checks to be carried out.	F2	C3	C-		-	-				
2.5			Train speed too high due to driver error and/or mechanical failure		Ensure experienced and adequately qualified drivers for all train movements. Vigilance Control System currently in place. ATP in the future. 2 signals only before station. Train acceleration limited from standstill at station. Regular train maintenance checks to be carried out.	F2	C4	C+		-	-				
2.6			Reflection of finishes into Train Driver's eyes		Low Speed to Homebush Loop of 40km/hr 3 storey high wall from track level faces the rail corridor. The wall is made of concrete and non-reflective finish to ventilation louvres. Glazing approximately 20m above track.	F1	C2	D							
2.7			Objects landing on tracks from adjacent site at Podium Level within 20m of track		1800 high screen wall of concrete to prevent objects being directly thrown on to the track. Screen approximately 10m from the track.	F1	C1	D							
2.8			Objects landing on tracks from adjacent site at Residential and Roof Levels within 20m of track		Louvred screen to all apartments where balconies within 20m of the tracks.	F1	C1	D							
2.9			Objects on tracks due to vandalism		Rail corridor fencing maintained with perimeter security. CCTV in this area.	F3	C2	C-							
2.10			Flooding of tracks due to storm event causing track wash out		Low Speed to Homebush Loop of 40km/hr. railcorp alarm system in place. Track circuits will shutdown with water ingress. Low point in the tunnel at the station.	F4	C1	C-							
2.11			Rolling stock failure		Low Speed to Homebush Loop of 40km/hr Train maintenance in accordance with manufacturer's recommendations	F3	C3	C+							
								C+					WORST CASE SCENARIO		

Workshop Attendance List

Project:	Stage 2 & 3 SOP Site 3 – Rail Risk Assessment Workshop	Reference:	218091
Location:	Homebush, NSW	Meeting date:	15/04/2011

Present:

Apology: Copy:

Circulate: Name:

Organisation:

Location/Facsimile:

✓				Alan Paton	Railcorp	6 Herb Elliott Ave
✓				Chris Bailey	Railcorp	Olympic Park 421, 477 Pitt Street
✓				Bill Gunther	Bonacci Group	37 York St Sydney
✓				MARKO DAKIC	BATES SMART.	240 LIVERPOOL ST. EAST SYDNEY.
✓				Eddie Lucas	Lucas Consulting Eng	25 Angus St. Meadowbank
✓				MICHAEL AZAR	SITE 3 DEVELOPMENT	11 BAY DR MEADOWBANK.
✓				KJELD MADSEN	AURECON	116 MILITARY ROAD.
✓				ROB ANGUS	AURECON	116 MILITARY RD.

Workshop
 Chaired by:

Rob Angus, Kjeld Madsen

Subject:

The above signature confirms agreement with the outcomes of the workshop held today as captured in the risk register for the risk score/category associated with the collision loadings required for the structural design of the multistorey development directly adjacent to the rail corridor

RailCorp Level 2 Risk Matrix - Regional & Local

RailCorp Level 2		Likelihood/Frequency						
Risk Matrix - Regional & Local		Event Frequency	Less than once every 1000 years	Once every 100 to 1,000 years	Once every 10 to 100 years	Once every 1 to 10 years	More than once per year up to and including 10 times per year	More than 10 times per year
		Historical (Likelihood)	Unheard of in the Industry	Has occurred once or twice in the industry	Has occurred many times in the Industry, but not In NSW	Has occurred once or twice in NSW	Has occurred frequently in NSW	Has occurred frequently at specific locations
		Workplace Historical (Likelihood)	Not expected to occur	May occur only in exceptional circumstances	Could occur at some time but not likely	You would expect it to occur at least once in the next 10 years performing similar activities	You would expect it to occur at least once this year performing similar activities	You would expect it to occur at least once this month performing similar activities
			F1	F2	F3	F4	F5	F6
Consequence			Incredible	Improbable	Remote	Occasional	Probable	Frequent
>10 Fatalities	C6	Disastrous	B-	B+	A	A	A	A
2-10 Fatalities	C5	Catastrophic	C+	B-	B+	A	A	A
1 Fatality (2-10 Major Injuries)	C4	Critical	C-	C+	B-	B+	A	A
1 Major Injury	C3	Major	D	C-	C+	B-	B+	A
1 or more Minor Injuries	C2	Minor	D	D	C-	C+	B-	B+
Illness, first aid treatment or injury not requiring treatment	C1	Negligible	D	D	D	C-	C+	B-

Level 2 –Regional and local safety risk matrix

Definition for Use

Used for safety risks that do not consider the whole of network. Indicatively this matrix is appropriate for use where hazards under consideration are up to 10% of the total network exposure. This includes local and regional workplace risk assessments.

As an example, the Level 2 scale would be used when examining the risk of slips, trips and falls on all specific RailCorp platforms within a region or at a particular station, or the risk of derailment on a section of track or within a depot.

To score the risk, follow the steps:

1. Identify the magnitude of the credible consequence if the risk were to occur. If applicable, risks should be considered in terms of the safety (this matrix) and business or environmental risk (using the matrices in RailCorp Business and Environmental risk management frameworks).

2. Identify the likelihood of this level of consequence occurring. (This is done after considering the effectiveness of the current controls in place using the most appropriate likelihood descriptor)

3. Score the risk using the combination of likelihood and consequence ranking.

Note: Where there are a range of credible consequences which may lead to a different level or risks and/or where the controls may be different. It may be useful to score the risk more than once.