



# WestConnex M4-M5 Link

## Rozelle Interchange - Modification: Iron Cove ventilation underground

Modification report

### **Appendix C**

Operational air quality



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# Roads and Maritime Services

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WestConnex - M4-M5 Link

Iron Cove Ventilation Underground Modification Report

Modification report

Appendix C Operational Air Quality

November 2019

## **Prepared for**

Roads and Maritime Services

## **Prepared by**

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# Contents

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1	Introduction .....	1
2	Implications for construction phase impacts .....	2
3	Implications for dispersion performance of MOC4 ventilation outlet .....	3
4	Conclusions.....	4

# 1 Introduction

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A modification to the M4-M5 Link Project approval is being prepared to support proposed changes to the ancillary facilities at Iron Cove.

The environment impact statement (EIS) described an electrical substation and ventilation exhaust facility located in separate buildings that together comprise Motorway Operations Complex 4 (MOC 4) to be located on the western side of the realigned Victoria Road, on land occupied during construction by the Iron Cove Link civil site (C8). The electrical substation (that provides power for the operation of the ventilation facilities) would be located on the corner for Victoria Road and Callan Street, while the ventilation facilities would be located between Callan Street and Springside Street. A ventilation outlet would be located in the middle of the widened Victoria Road carriageway.

The proposed modification would relocate the MOC 4 underground within caverns housing the electrical substation and ventilation facilities and a ventilation tunnel connecting to the ventilation outlet (which will remain above ground in the same location illustrated in the EIS). Only a switch room, high voltage regulators, an alternative Operational Motorway Control System (OMCS) room and a stair access leading down to the ventilation tunnel would be required on the surface on the western side of Victoria Road between Toelle and Callan Streets.

The main elements of the proposed modification include:

- Construction of a ventilation tunnel about 340 metres in length that connects the Iron Cove Link tunnel, at an underground location between Cambridge and Waterloo Streets, with the Iron Cove cut and cover structure near Callan Street
- The ventilation tunnel would include two caverns for the housing of ventilation equipment and the electrical substation, along with access tunnels to be used for maintenance
- The Iron Cove cut and cover area would be extended on the southwestern side of Victoria Road to facilitate connection to the ventilation tunnel
- All plant, equipment and materials required to construct the proposed new ventilation tunnel and caverns would be supported from the Iron Cove civil site (C8), with the potential for some tunnelling to be supported from the Rozelle civil and tunnel site (C5) later in the construction program.

## 2 Implications for construction phase impacts

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It is understood that the construction of the modification would involve the following:

- Tunnel excavation would be completed using the methodology presented in the EIS
- An additional amount of tunnel spoil would be generated by these tunnelling works (approximately 61,000 bank cubic metres (BCM))
- All plant, equipment and materials required to construct the proposed new ventilation tunnel and caverns would be supported from the Iron Cove civil site (C8), with the potential for some tunnelling to be supported from the Rozelle civil and tunnel site (C5) later in the construction program
- The proposed new Iron Cove ventilation tunnel and caverns can be easily accessed from within the Iron Cove cut and cover and would not require any change to the design or construction of the cut and cover. Tunnelling works using a roadheader launched from Iron Cove would commence once the southern half of the cut and cover structure has been constructed and the chamber beneath the roof of the cut and cover structure would be temporarily converted into a shed
- Any tunnelling of the proposed new ventilation tunnel and caverns supported from the Rozelle civil and tunnelling site (C5) would be commenced from within the Iron Cove Link Tunnel once it is excavated. This would not require the installation of any additional temporary surface support infrastructure at the Rozelle civil and tunnelling site (C5).

On review of the above information, it is not considered that the construction phase vehicle emission and dust impacts assessed in the EIS would alter as a result of the modification.

### 3 Implications for dispersion performance of MOC4 ventilation outlet

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The John Holland CPB Contractors Joint Venture (the Contractor) has requested that EMM Consulting Pty Ltd (EMM) review the potential implications to the traffic emissions dispersion performance from the MOC4 ventilation outlet. EMM is currently assisting the Contractor with the final design of the Rozelle Interchange by undertaking dispersion modelling of the proposed ventilation system.

The dispersion modelling being completed by EMM of the MOC4 outlet uses the exit ventilation flow rate, traffic pollution emission rates, air temperature and ventilation outlet dimensions (release height and exit diameter) as input into the model.

To date, traffic pollutant emission rates and ventilation flow rates for the MOC4 outlet were provided to EMM by WSP Global Inc (WSP) in order to complete the dispersion modelling. Advice was sought from WSP in relation to how the proposed modification to MOC4 would alter the provided emissions data. WSP confirmed that the change from an above ground facility to a subterranean facility would have no tangible effects on the emissions to be released from the outlet. In both cases, the tunnel ventilation system is required to capture all of the vehicle emissions generated within the entire tunnel carriageway area. The factors that impact the in-tunnel pollutant concentrations (e.g. traffic volumes, tunnel grades, flow rates, vehicle pollutant generation rates, etc) will be the same for either facility configuration.

This advice from WSP therefore indicates that there would be no change to the likely traffic pollution emission rates, or the ventilation flow rates due to the modification. Further, it is understood that the modification would not alter the shape, size (release height or exit diameter) or location of the MOC4 ventilation outlet. The modification would therefore not alter any of the parameters used in the dispersion modelling for the MOC4 ventilation outlet (dimensions or emission characteristics).

On the basis of this information, it is concluded the modification would have no material effect on the dispersion performance of the MOC4 ventilation outlet.

## 4 Conclusions

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The implications of the proposed modification for potential air quality impacts were assessed. It is concluded that the modification would not alter the potential air quality impacts, related to either construction or operational phases.