

9 August 2019

Ref: A27601615

Glenn Snow
Director of Transport Assessments Team
NSW Department of Planning Industry and Environment
GPO Box 39
Sydney NSW 2001

Dear Glenn

Re: NorthConnex Project (SSI-6136) - CoA E11 Modification Request – Amendment of VOC ventilation outlet limit

I refer to the approval granted by the Minister for Planning for the NorthConnex project on 13 January 2015 (SSI 13_6136).

In carrying out the project, Roads and Maritime has identified that the VOC (Volatile Organic Compounds) limit in Condition E11 reflects a transcription error during the preparation of the EIS and SPIR. Roads and Maritime, therefore, request the modification of the VOC ventilation outlet limit from 1 mg/m³ to 4 mg/m³. This correspondence constitutes a request to the Minister under *Division 5.2 State Significant Infrastructure, subdivision 5.25 Modification of Minister’s approval*, to modify the approval to amend the VOC ventilation outlet limit.

Current Condition E11 referenced below.

Ventilation Outlets — Limits

E11 The concentration of a pollutant discharged from the ventilation outlets referred to must not exceed the respective limits specified for that pollutant in **Table 10**.

Table 10 — Ventilation Outlet Mass Pollutant Concentrations

Pollutant	100 percentile limit	Units of measurement	Averaging period	Reference conditions
Solid particles	1.1	mg/m ³	1 hour, or the minimum sampling period specified in the relevant test method, whichever is the greater	Dry, 273K, 101.3kPa
NO ₂ or NO or both, as NO ₂ equivalent	20	mg/m ³	1 hour block	Dry, 273K, 101.3kPa
NO ₂	2.0	mg/m ³	1 hour block	Dry, 273K, 101.3kPa
CO	40	mg/m ³	1 hour rolling	Dry, 273K, 101.3kPa
VOC (as propane)	1.0	mg/m ³	1 hour rolling	Dry, 273K, 101.3kPa

The requested VOCs outlet limit of 4mg/ m³ is consistent with the VOCs limit specified in the consents for subsequent major tunnel projects after NorthConnex. Note that all other ventilation outlet concentration limits for NorthConnex are identical to those projects with the exception of the current VOCs limit.

Justification of the modification request

1. The EIS/SPIR did not assess continuous emissions at the VOC limit of 4 mg/m³ due to a transcription error during the preparation of the EIS and SPIR.
2. RMS is seeking a change to the VOC limit from 1 mg/m³ to 4 mg/m³ to provide a reasonable margin to manage short-term incidents in the tunnel in compliance with limits. This will allow for the management of unplanned short term incidents of less than a few hours duration such as a breakdown that brings traffic movement to a standstill until it is cleared. These incidents have the potential to result in a short term exceedance of the existing 1 mg/ m³ emission limit which would trigger the notification, reporting and options to prevent recurrence requirements of consent condition E13.
3. Ventilation outlet concentrations are not constant as they vary over the daily cycle due to changing traffic volumes and speeds, and operation of the ventilation system to maintain in tunnel air quality in variable traffic conditions. While an incident with stopped/idling traffic may lead to a short term increase in ventilation outlet concentrations above the current 1mg/ m³ limit, concentrations will generally be lower under expected traffic conditions when traffic is free flowing.
4. The modelling provided by AECOM to support the modification request (attached) is conservative in that it assumes the ventilation outlets are emitting the maximum concentration of 4mg/ m³ on a continuous basis. This represents theoretical maximum changes in air quality for all potential traffic scenarios and is analogous to the tunnel operating under constant worst case congested traffic and breakdown conditions which is highly unlikely. It is conducted to demonstrate that operation at the regulatory limits would deliver acceptable air quality.
5. The proposed change will not change air quality impacts associated with the operation of NorthConnex.

The expected traffic case results best characterise the air quality impacts relating to VOC emissions from NorthConnex, and the proposed modification does not change the expected traffic case emissions or air quality impacts.

As noted in the NorthConnex Technical Working Paper: Human Health Risk Assessment, the results of continuous emissions at the proposed emission limits is not relevant for the assessment of exposure and health impacts in the community¹:

This design analysis has been conducted to ensure that regardless of when the peak traffic period occurs or for how it lasts, the project's ventilation system would be able to meet applicable air quality criteria. This design analysis assumes that the project's ventilation outlets emit the maximum concentration of pollutants based on peak forecast traffic flows on a continuous basis. In reality, emissions concentrations would vary during the day depending on the number and type of vehicles using the tunnels at the time.

The design analysis is not representative of emissions that may occur during normal or peak traffic flow conditions and is therefore not relevant for the further assessment of exposure and health impacts in the local community

¹ Technical Working Paper: Human Health Risk Assessment – NorthConnex p 49

6. Supplementary modelling results show maximum impacts of 5% or less than the relevant criteria with continuous emissions at a VOC limit of 4 mg/m³

Supplementary modelling was undertaken for the northern ventilation outlet post completion of the SPIR and after receipt of the development consent conditions to examine the model predictions with an increased stack elevation to match the preferred tender design plus five metres stack elevation (200.8m AHD).

As the results for the Northern Outlet were higher than those for the Southern Outlet (as shown in the SPIR), compliance achieved for the northern outlet infers compliance for the southern outlet.

The supplementary modelling examined the predicted impacts for PAH's (Polycyclic Aromatic Hydrocarbons) and speciated VOCs at a constant VOC emissions concentration of 4 mg/m³.

The maximum increment from the Northern Outlet for PAHs was 1% of the PAH criteria and was 5% or less for the relevant speciated VOC criteria.

Refer to the attached Dispersion Modelling Results Report from AECOM.

7. The amendment to the VOC limit will not affect other Conditions of the NorthConnex Approval.
8. The EPA has reviewed the modification request in relation to the modification of Condition E11 of NorthConnex Condition of Approval (CoA). Based on the information provided, the EPA considers the information provided was sufficient to support the increasing of the VOC emission limit from 1 mg/m³ to 4 mg/m³. The EPA notes the AECOM modelling demonstrates the increased VOC emission limit from 1mg/m³ to 4 mg/m³ does not result in adverse air quality impacts. The EPA therefore is satisfied with the information provided. Refer to the attached record of consultation.
9. NSW Health defers to the EPA's assessment that the AECOM modelling demonstrates the increased VOC emissions limit does not result in adverse air quality impacts and that the information provided was sufficient to support increasing the VOC limit. Refer to the attached record of consultation.

Summary and Conclusions

- The EIS/SPIR did not assess continuous emissions at the VOC limit of 4 mg/m³ due to a transcription error during the preparation of the EIS and SPIR.
- RMS is seeking a change to the VOC limit from 1 mg/m³ to 4 mg/m³ to provide a reasonable margin to manage short-term incidents in the tunnel in compliance with limits.
- The proposed limit change will not change air quality impacts associated with the operation of NorthConnex as no modifications to the design and operation of the ventilation system are proposed.
- Supplementary modelling results show maximum impacts of 5% or less than the relevant criteria with continuous emissions at a VOC limit of 4 mg/m³
- EPA and NSW Health have advised that the modelling demonstrates the increased VOC emissions limit does not result in adverse air quality impacts and that the information provided is sufficient to support increasing the VOC limit.

- An amended VOC limit will result in little, if any change to local air quality for the surrounding community and no mitigation measures are required.
- The amendment to the VOC limit will not affect other Conditions of the NorthConnex Approval.

Yours sincerely,



SONJA SHAND

Senior Project Manager – NorthConnex

Attachments:

1. *Dispersion Modelling Results_NorthConnex(AECOM)_28Sept2015*