

City Rail Link Notices of Requirement – Air Quality Report

Auckland Transport

Prepared for Auckland Council
May 2013

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			Prepared by	Checked by	Reviewed by	Approved by
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CONTENTS

1	Introduction.....	1
1.1	Purpose of report.....	1
2	Documents considered.....	1
3	Overview of air quality matters.....	1
3.1	Key issues relating to air quality.....	1
3.2	Summary of key issues raised in submissions.....	1
4	Assessments of effects on air quality.....	2
4.1	Construction effects.....	2
4.1.1	Description of air quality effects.....	2
4.1.2	Auckland Transport assessment and proposed mitigation.....	2
4.1.3	Submitter issues and associated mitigation measures proposed.....	3
4.2	Operational effects.....	4
4.2.1	Description of air quality effects.....	4
4.2.2	Auckland Transport assessment and proposed mitigation.....	4
4.2.3	Submitter issues.....	4
5	Conclusion and conditions.....	4

1 Introduction

1.1 Purpose of report

The purpose of this report is to assess the effects on air quality of the City Rail Link Project, consider the issues raised by the submitters in respect of air quality and determine the adequacy of the measures proposed by Auckland Transport (AT) to avoid, remedy or mitigate these effects.

2 Documents considered

The following documents (and their appendices) have been considered in preparing this report.

- Environmental Management Framework, Auckland Transport, July 2012
- City Rail Link Notices of Requirement: Draft Notice of Requirement: Conditions, Auckland Transport, April 2013
- City Rail Link Notices of Requirement: Assessment of Effects on the Environment, Auckland Transport, August 2012
- City Rail Link Notice of Requirement; Assessment of Effects on the Environment, Appendix 7 Air Quality Assessment, August 2012
- City Rail Link Adjacent Owners Briefing, Auckland Transport, September 2012

3 Overview of air quality matters

3.1 Key issues relating to air quality

Dust emissions during construction activities are by far the most significant expected air quality issue associated with the CRL project. It follows that monitoring and mitigation measures to maintain air quality along the route during CRL construction activities must focus on dust as the primary impact.

Odour could be a problem if contaminated material is uncovered during excavations associated with CRL construction. This is an unlikely event but if it did occur it would be over a brief timeframe and mitigation measures are readily available.

Exhaust emissions from equipment and vehicles powered by hydrocarbon fuels (typically diesel engines) have the potential, if the equipment is improperly operated or maintained, to diminish local air quality.

There are no significant issues likely to result in diminution of air quality during the operational phase of the CRL.

3.2 Summary of key issues raised in submissions

Air quality is an environmental issue which is discussed, often in some detail, in about 35 of the 257 submissions.

For some submitters the CRL is seen as having a positive effect with respect to air quality, specifically by “removing a significant number of hydrocarbon-powered vehicles from the roads”, thus reducing the emissions of pollutants from motor vehicle exhausts.

One submission directly opposed to this view however notes that, while the move to electric-powered trains is positive, the effect of the CRL will be to attract “hundreds of diesel-powered buses” to the termini and stations associated with the CRL, thus immediately negating (via these buses’ exhaust emissions) the positive impact on air quality of the electric trains.

A number of submissions note (or imply) the potential adverse impact during the construction period of the exhaust emissions from construction traffic and powered equipment.

The major concern for submitters with respect to adverse effects on air quality is from dust emissions during construction activities for the CRL. The potential adverse effects are considered to be on peoples' health and/or properties adjacent to the route corridor. While most submitters raising concerns about dust require the matter to be addressed by robust, detailed and effective dust management measures encapsulated in the proposed Construction Environmental Management Plan (CEMP), there are also a number of calls made for a cleaning programme to be instigated for buildings along the route corridor that are likely to be impacted by dust emissions.

One particular submission from the Bear Park Child Care facility notes the sensitivity of their premises (and, more particularly, the children) to the adverse effects of dust emissions from CRL construction activities, and requests that “best practice dust control methods” are implemented. Further, it is suggested that additional measures such as a high (but transparent) fence could be erected on the relevant property boundary so that the children can be protected from dust impacts but can, at the same time, enjoy the fascination of safely observing CRL construction activities.

The Department of Corrections note that, in connection with possible impacts of construction of the CRL on the Mt Eden Corrections Facility, significant dust emissions “may impact on security equipment”. Presumably (although not explicitly stated) this could be by obscuring the lenses of surveillance cameras.

Other miscellaneous submissions on air quality issues note the potential for odour discharges if contaminated soil is disturbed, and that “dangerous gases” might be emitted from the several ventilation stacks which will be in use along the route during the operational phase of the CRL.

4 Assessments of effects on air quality

4.1 Construction effects

4.1.1 Description of air quality effects

Dust emissions are by far the most significant air quality impact expected from CRL construction activities. Whenever the subsoil is exposed, excavated, stockpiled or removed off-site during construction works there will be potential for dust to be entrained and carried both vertically and laterally from the immediate environs of activities. The built-up areas through which the CRL route passes range from commercial and governmental office buildings and related facilities, through to residential apartments and houses, hotels, retail outlets and child care facilities. These premises and particularly their occupants have considerable sensitivity to the impacts of dust emissions.

The effects of dust are manifested primarily in health-related adverse impacts and the sizes of dust particles can give rise to various different outcomes; in general, the finer the dust particles then the more significant is the potential health impact. It is also relevant that wherever there are coarse dust particles there will also be a proportion of successively finer particles. For the CRL construction phase the majority of dust particles released are likely to be coarse in size (i.e. non-respirable) but there will still be a proportion of respirable particles, known as Total Suspended Particulate (TSP). It follows that monitoring of concentrations of TSP is a valid and useful tool to measure, and then ensure the mitigation of, potential adverse effects of dust emissions.

Dust emissions can also be a significant nuisance in terms of diminution of amenity values in an impacted neighbourhood where coarser non-respirable dust particles are discharged in significant concentrations. This can be manifested in such impacts as soiling of laundry and, in this context, buildings; this applies both to the building fabric and also the windows.

4.1.2 Auckland Transport assessment and proposed mitigation

The AQA begins with a brief summary of the CRL project and then provides a review of the existing air quality environment along the route. This is from the points of view of expected meteorological conditions, current air quality in the environs of the route corridor and an area-by-area description of the route divided into several spatial sections for ease of discussion of the particular air quality issues inherent in each, especially with regard to sensitive receptors.

The meteorological data summary within the AQA provides sufficient information and is in appropriate detail to enable the adequate assessment of the ways in which prevailing climatic conditions may exacerbate any adverse effects of, particularly, dust emissions from CRL construction activities.

The summary of ambient air quality in terms of available data and the associated area-by-area description of potential impacts on identified sensitive receptors are each detailed and informative. They allow a defensible assessment of the environmental impacts of expected emissions to air to be made.

The technical assessment methodology is robust and is appropriately described. The operational and construction assumptions are explicitly stated and are all reasonable in the context of the route, the construction methodologies to be employed in particular areas, and the assessment against receptors in those areas.

The discussion of air quality assessment criteria is complete and correctly focusses on the key issues of dust emissions and their assessment.

The assessment of environmental effects identifies the potential impacts of the construction methodologies and the expected effects on air quality. Dust is afforded particular emphasis, which is appropriate as it is the most critical potential adverse air quality-related environmental impact. Considerable detail is provided about the ways in which dust releases might occur during CRL construction activities and this is informative in underpinning the mitigation measures which are then advanced.

Other potential contributors to adverse impacts on air quality are given attention, to the extent commensurate with their significantly more limited potential adverse effects. This is appropriate. Such miscellaneous potential impacts include odour emissions if contaminated soil were to be uncovered during construction earthworks and the particulate emissions from diesel engine-powered maintenance trains which may operate on the CRL route to a very limited extent. These two types of impacts are both extremely unlikely and, in any event, will be of relatively short duration; these impacts are thus not further considered in this assessment.

The extensive mitigation measures outlined, particularly for dust control, are all relevant and clearly stated and will provide the essence of a dust management plan, to be subsumed within the proposed Construction Environmental Management Plan.

The expected impact of vehicle exhaust emissions, both from construction machinery and diverted and/or delayed traffic, is considered in the AQA and is deemed correctly to be limited in significance.

Proposals for the monitoring of air emissions are provided; these include visual monitoring as a qualitative approach and the use of specific monitoring instruments. Total Suspended Particulate (TSP) monitoring is, correctly, given particular attention as this parameter is a potential matter of most concern to certain sensitive receptor groups, particularly young children. The air monitoring proposed is endorsed as being necessary and sufficient.

The summarised tabulation of potential air quality impacts, with associated suggested management, mitigation and monitoring measures, is a helpful inclusion in the AQA.

4.1.3 Submitter issues and associated mitigation measures proposed

The issues identified in submissions that relate to CRL construction activities have been summarised in section 3.2 above. They include dust impacts, particularly in terms of dust as a nuisance and as an adverse factor with respect to amenity values.

The matter of soiling of windows and building facades by dust is not strictly an environmental impact although it must be acknowledged that it is a potential impact on property and amenity values.

It is notable that many submissions point to the positive impact of the CRL on Auckland's air quality once the system is commissioned, by way of reducing the number of vehicles needing to access the City centre.

The dust mitigation and associated monitoring measures, as proposed in the draft conditions prepared by Auckland Transport will deal satisfactorily, in most instances, with submitters' concerns about dust. For the more unique possible impacts, such as the effect of dust on security cameras at Mt Eden prison, the ultimate impact is in fact irrelevant, if the mitigation measures successfully reduce dust loads in the ambient air to negligible levels. If the proposed conditions, to be given effect in the air quality section of the CEMP, are properly implemented dust-related air quality issues will be successfully ameliorated to the extent that the ambient air along the CRL route is not compromised; thus the concerns of all

submitters about dust can be accommodated if appropriate monitoring and mitigation measures are in place.

4.2 Operational effects

4.2.1 Description of air quality effects

The AQA states quite categorically that “because it is proposed to operate the CRL with electric trains there will be no adverse effects on air quality or human health arising from the operation of the CRL”

The presence of ventilation stacks along the route to provide for ventilation of tunnels and stations is noted; the inference is that there will be no significant concentrations of air pollutants within these ventilation discharges and we endorse this conclusion.

4.2.2 Auckland Transport assessment and proposed mitigation

No particular mitigation measures are warranted and none are advanced with respect to impacts on air quality from the operation of the CRL.

4.2.3 Submitter issues

One submission noted that “dangerous gases” might be emitted from the ventilation stacks along the CRL route during the operational phase of the CRL. This will not in fact be the case, as described above. The ventilation system emissions associated with the operation of the CRL will be typical of those arising from any confined area where people gather. No hydrocarbon-powered engine exhaust gases will be present. It is concluded that the operation of the CRL will have no significant impacts on air quality.

5 Conclusion and conditions

The following comments are based on considering dust as the principal environmental issue associated with air quality aspects of the CRL, especially during the construction phase of the project.

A large part of the draft Conditions document prepared by Auckland Transport is taken up with a discussion of what the Construction Environmental Management Plan (CEMP) should comprise and the fine details of what should be dealt with within it. The CEMP itself has not yet been prepared but, if it follows the quite detailed outline of the draft Conditions document, it should be an appropriate instrument to ensure that environmental impacts of CRL construction activities are minimised. Of course, the CEMP will only be effective if the various conditions are complied with.

Condition 26 sets out details of air quality issues to be covered off in the relevant section of the CEMP; these provisions are all endorsed as being the requirements of a comprehensive set of measures to manage and monitor air quality, and there is nothing notable missing from these provisions.

Notwithstanding these comments, it is noteworthy that no details about a peer review requirement for the preparation of the CEMP have been provided; in fact such a provision should be part of the overarching generic conditions that establish the CEMP as a key aspect of the formalisation of satisfactory environmental management for the CRL project.

In a similar vein, there are no details within the draft conditions about the timeframe for the preparation and submittal of the CEMP.

As a final point, there is also nothing about revision of the CEMP if it is found to be deficient in particular areas when actually applied during the construction timeframe for the project. However, this may be an oversight at this point because the Environmental Management Framework prepared by Auckland Transport as an overarching document to deal with environmental issues does note that regular review of documents supporting environmental management associated with the CRL (and thus, by inference, the CEMP) will be subjected to regular review to ensure they “remain relevant and comply with the conditions of any statutory authorisations ...”.

Once these improvements are made to the CEMP it will form a suitable yardstick to ensure and enable environmental mitigation for the construction phase of the CRL project.