



APECX
planning and environmental

**Wellington Inner City Improvements
National War Memorial Park (Pukeahu)
Air Quality (Dust) [CAQMP1-TR]**

Certification Review

22 November 2012

Prepared in association with:

**GRAHAM
ENVIRONMENTAL
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Appendix A

Technical peer review

CERTIFICATION OF DOCUMENT

In accordance with section 19(2)(b) of the National War Memorial Park (Pukeahu) Empowering Act 2102 ("the Act"), the following document is certified as being consistent with, and will give effect to, the condition(s) of Schedule 3 of the Act to which it relates:

Construction Air Quality (Dust) Management Plan – Temporary Road [CAQMP1–TR]

prepared by URS for the WICI Alliance and NZTA, and
dated 21 November 2012

This certification is given for the reasons set out in the review titled:

*Wellington Inner City Improvements,
National War Memorial Park (Pukeahu),
Air Quality (Dust) [CAQMP1–TR]
Certification Review*

prepared by Apecx in association with
Graham Environmental Consulting, and
dated 22 November 2012.

Certifier



Mark Ashby
Member, New Zealand Planning Institute

Dated: 22 November 2012

1. Introduction

1.1 Review authors

This review has been prepared under commission to the Interim Alliance engaged by the New Zealand transport Agency (NZTA) to implement the undergrounding of Buckle Street. The review's authors are Apecx and Graham Environmental Consulting. The purpose of this review is "certification", as defined by sections 4 and 19(2)(b) of the National War Memorial Park (Pukeahu) Empowering Act 2012 ("the Act").

Section 20 of the Act, and condition NZTA 29 of Schedule 3 to the Act, requires the certifier to be a qualified planner, supported by a suitably qualified air quality engineer. To meet these requirements, the certifier is Mark Ashby (Apecx), who specialises in resource consent acquisition and the development of planning policy. The supporting air quality engineer is Dr. Bruce Graham (Graham Environmental Consulting), who brings technical expertise in air quality management. Dr. Graham's peer review comments are attached as Appendix A.

The qualifications and affiliations of the reviewers are:

Mark Ashby

Role: Planner / Certifier
Qualifications: Bachelor Regional Planning (Hons), Massey, 1984
Affiliations:

- Member New Zealand Planning Institute (MNZPI)
- Member Resource Management Law Association of New Zealand

Dr Bruce Graham

Role: Air quality engineer
Qualifications: Bachelor and Master of Science (Chemistry), and Phd, Waikato, 1974
Affiliations:

- Fellow of the New Zealand Institute of Chemistry (FNZIC)
- Member of the Clean Air Society of Australia and New Zealand
- Member Resource Management Law Association
- Member Water New Zealand
- Member Waste Management Institute of New Zealand

1.2 Wellington inner city improvements

The Wellington inner city improvement projects are aimed at making State Highway 1 the preferred and most efficient route for vehicles travelling between Wellington's central business district and the eastern suburbs. The undergrounding of a section of Buckle Street (and construction of the National War Memorial Park overhead), is one of a suite of projects being implemented by NZTA.

On 7 August 2012, the Government announced a project to underground Buckle Street in front of the National War Memorial. Government also allocated funds to create a new, unified National Memorial precinct. This project is a key part of the Ministry of Culture and Heritage's commemoration of the centenary of the First World War, and the completed New Zealand Memorial Park will be in place by ANZAC Day 2015.

1.3 Empowering Act and schedules

To expedite the project, the Government chose to pass empowering legislation. That legislation, the National War Memorial Park (Pukeahu) Empowering Act 2012, grants all necessary statutory authorisations to NZTA and the Ministry of Culture and Heritage. In effect, the authorisations have provided a project-specific alternative to the Resource Management Act, Historic Places Act, and Building Act processes that would otherwise be required.

Schedules to the Act specify, among other things, resource consents granted to NZTA and the conditions attached to them, and the designation provided to NZTA, and the conditions attached to it.

1.4 Environmental management plans and certification

As specified by the schedules to the Act, particular environmental management plans (EMP) are required to be prepared. The Act also requires that those plans be certified by suitably qualified persons. The purpose of certification is to ensure that any EMP is consistent with the conditions set out in schedules to the Act, and that the plan provides an appropriate means to ensure that the conditions are able to be met.

An overall Construction Environmental Management Plan is required to be formulated for the project, under which sit the following other management plans:

- Construction noise and vibration management plan (temporary road)
- Construction noise and vibration management plan (undergrounding)
- Construction air quality (dust) management plan (temporary road)
- Construction air quality (dust) management plan (undergrounding)
- Heritage management plan
- Construction traffic management plan
- Local roads traffic improvement plan
- Network utility management plan

The EMP that is the subject of this review is the construction air quality (dust) management plan for the temporary road.

1.5 Nature of environment management plans

The content of the required management plans is set out in the conditions of Schedule 3 to the Act. The conditions note a specific range of matters to be addressed by each of the EMPs.

Notwithstanding the matters spelled out by the scheduled conditions, EMPs as a general class of plan have the following typical characteristics. They:

- Are a 'living' document that focusses on continual improvement and should be updated as necessary;
- Help ensure the application of best practice environmental management to a project;
- Implement conditions of approval or consent;
- Ensure compliance with environmental legislation; and
- Ensure that environmental risks associated with a project are properly managed.

2. Applicable conditions

The National War Memorial Park (Pukeahu) Empowering Act 2012 includes conditions applicable to the Construction Air Quality (Dust) management plan.

Those conditions, taken from Schedule 3 of the Act, are set out below followed by the reviewers' notes on how the management plan is consistent with and gives effect to the conditions.

2.1 NZTA 29

Specific to the CAQMP1–TR, condition NZTA 29 of Schedule 3 of the Act specifies that:

The Agency shall, at least 5 working days prior to submitting the Construction Air Quality (Dust) Management Plan—Temporary Road (CAQMP1–TR) to a qualified planner (supported as necessary by a suitably qualified air quality engineer) for certification ..., submit a draft of the relevant plan to the Manager for comment. Any comments received shall be supplied to the certifier when the CAQMP1–TR ... is submitted for certification against the requirements set out in condition NZTA 30, along with [a] clear explanation of where any comments have not been incorporated and the reasons why.

As noted at the beginning of Schedule 3 of the Act, “Manager” in the context of this condition means the Wellington City Council’s Manager, Development, Planning and Compliance or their nominee.

Reviewer notes

- The document has been submitted for review to a planner, and an air quality engineer, who are both suitably qualified as noted in section 1.1 of this review.
- WCC and Greater Wellington Regional Council comments (which express general satisfaction with the document) were provided separately to the review team, and also incorporated into the final CAQMP1–TR document.

Finding 29

Based on the matters referred to above under Reviewer Notes, condition NZTA 29 has been met.

2.2 NZTA 30(a)

Specific to the CAQMP1–TR, condition NZTA 30(a) of Schedule 3 specifies that:

The CAQMP1–TR ... shall provide a methodology for managing the effects of dust from –

- (a) all relevant construction activities associated with the enabling works for the Project including the creation of an at-grade diversion of part of Buckle Street in the case of the CAQMP1–TR;

Reviewer notes

- The document provides an overall methodology for managing the effects of dust and odour, which is described with an appropriate level of detail.
- The document identifies all relevant construction activities associated with the creation of an at-grade diversion of part of Buckle Street.
- Activities with the greatest potential for dust release have been correctly identified.
- The document includes management systems and procedures that are an essential part of the methodology for effective dust control.
- Procedures for complaint recording and investigation are considered acceptable. The use of a website for recording complaints and actions is considered useful.
- Site induction training related to dust and odour management will be given. The information to be covered under the training is considered adequate.
- The document follows good practice by adopting guidance from a range of relevant national and international sources.

Finding 30(a)

Based on the matters referred to above under Reviewer Notes, condition NZTA 30 “shall provide a methodology”, and condition NZTA 30(a), have been met.

2.3 NZTA 30(b)

Condition NZTA 30(b) is not relevant to this review, as it concerns air quality (dust) management for the undergrounding phase of the project.

2.4 NZTA 30(c)

Specific to the CAQMP1–TR, condition NZTA 30(c) of Schedule 3 specifies that:

The CAQMP1–TR ... shall as a minimum, include –

- (c) identification and implementation of dust suppression measures appropriate to the environment in which the works are located, and the sensitivity of nearby receptors;

Reviewer notes

- The document identifies dust suppression measures whose implementation will be appropriate to the environment in which the works are located, and to the sensitivity of nearby receptors.
- Dust suppression measures and procedures identified by the document are all appropriate for the identified construction activities.
- Provided the measures and procedures are applied consistently and conscientiously, they will be effective in minimising any nuisance effects due to dust. It is noted that WCC has expressed the same view.

Finding 30(c)

Based on the matters referred to above under Reviewer Notes, condition NZTA 30(c) has been met.

2.5 NZTA 30(d)

Specific to the CAQMP1–TR, condition NZTA 30(d) of Schedule 3 specifies that:

The CAQMP1–TR ... shall as a minimum, include –

- (d) identification of contingency measures to address identified and verified adverse effects on sensitive receptors. Contingency measures may include options such as:
 - (i) cleaning of houses; and
 - (ii) cleaning of other buildings and infrastructure.

Reviewer notes

- Condition NZTA 30(d) is a requirement for *future* action, if it is shown to be required.
- The document appropriately identifies sensitive receptor locations.
- The document provides a monitoring framework covering the entire project area, which will allow contingency measures to be efficiently developed and implemented if required.
- As identified by the document, an on-site weather station and a continuous dust monitor will be used for the project. It is agreed that in combination, these can be a very effective means of triggering rapid responses to increasing dust concentrations.
- It is agreed that the need for odour management will only become apparent as the work proceeds, and that the contingency measures for addressing most likely odour will be adequate.
- It is considered that more extensive odour control measures would only be required if extreme levels of ground contamination are revealed. It is agreed that any necessary responses would be best developed on a case-by-case basis.

Finding 30(d)

Based on the matters referred to above under Reviewer Notes, condition NZTA 30(d) has been met.

3. Summary of findings

The document *Construction Air Quality (Dust) Management Plan (CAQMP1-TR)* dated 21 November 2012, has been reviewed by a qualified Planner and a qualified Air Quality Engineer. The document has been found to be consistent with the applicable conditions of Schedule 3 of the Act, being conditions NZTA 29 and 30.

Provided that the measures and procedures identified in the document are consistently adhered to, the dust management framework will give effect to the conditions of the Act. The reviewers note that the management plan provides a suitable framework for addressing issues as (or if) they arise. This 'reactive framework' approach is consistent with the typical nature of an environmental management plan.

The dust management plan logically falls under, or is closely related to, the Construction Environmental Management Plan (CEMP) required by NZTA condition 11. The reviewers note that the CEMP is still being prepared, and that NZTA condition 11 specifically allows construction and use of the temporary road to commence prior to the CEMP being certified.

The reviewers recommend that CAQMP1-TR be reviewed for consistency with the CEMP, once that plan is finalised.

Appendix A

Technical peer review

**Wellington Inner City Improvements -
National War Memorial Park (Pukeahu)**

**Peer Review of the Construction Air
Quality (Dust) Management Plan –
Temporary Road**

Prepared by Dr Bruce Graham

November 2012

**GRAHAM
ENVIRONMENTAL
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Wellington Inner City Improvements - National War Memorial Park (Pukeahu): Peer Review of the Air Quality (Dust) Management Plan – Temporary Road

1. Introduction

A National War Memorial Park is to be created in inner Wellington, on the area of land known to Maori as Pukeahu. One part of that development involves the creation of an underpass to replace the section of Buckle Street between Taranaki and Tasman Streets. The first stage of the works for the underpass involves the construction of a temporary bypass road on the vacant land adjacent to the north side of Buckle Street.

This report provides a peer review of the draft air quality management plan that has been prepared in support of the construction activities for the temporary road¹. The management plan (CAQMP1-TR) is required under the conditions (specifically NZTA 30) applying to the exercise of the Designation authorised by the *National War Memorial Park (Pukeahu) Empowering Act 2012*.

1.1 Outline of the Proposal

The construction of the temporary bypass road will involve the following activities:

- (i) cutting and removal of the existing concrete slabs over part of the site for the purposes of archaeological investigations;
- (ii) removal and off-site disposal of all existing concrete and bitumen from the site;
- (iii) excavation of underlying material, as necessary, from the site to create a level surface, followed by the placement of base-course material and pavement construction.

The length of the temporary road will be about 350 m, and the excavations will be down to a depth of between 0.5 and 1.2 m.

1.2 Potential for Discharges to Air

Dust Effects

The air discharges of most relevance to the construction activities are dust emissions. These have the potential to cause a variety of nuisance effects beyond the site boundaries although, in this case, the effects should be mainly limited to within a few tens of metres of the site activities, because of the built-up environment. The potential for dust nuisance effects is strongly related to weather conditions, with strong winds increasing the potential for dust releases, while wet weather will have the opposite effect.

Odour

Some of the areas within the work site are known to be contaminated. This raises the possibility of odour releases while the material is being disturbed. However it is not known at this stage whether there is any potential for significant odour problems to arise. This will only become clear as the excavation work proceeds

1.3 Potentially Sensitive Parties

Two potentially sensitive locations are identified in the management plan; namely a building used by the National Museum (Te Papa) – presumably for storage - and Mt Cook School. Both of these

¹ Wellington Inner City Improvements - National War Memorial Park (Pukeahu): Air Quality (Dust) Management Plan – Temporary Road, (CAQMP1-TR). Prepared by URS New Zealand Ltd for the WICI Alliance, rev. 3, dated 5 November 2012.

properties are immediately adjacent to the northern side of the temporary road site, and I agree that they have the greatest potential for adverse effects, especially due to dust.

There are a number of other nearby properties that may also be affected by dust. However the proposed dust mitigation measures are to be applied across the entire work site, as necessary. Hence, I don't see any reason for singling out any other properties for particular attention.

1.4 Report Content and Scope

This report is laid out as follows:

Section 2 summarises the measures proposed for controlling the air quality impacts of the development along with an assessment of their likely effectiveness.

Section 3 summarises and assesses the systems and procedures that will be used for managing the air quality aspects of the development.

Section 4 provides an overall summary and conclusions.

As required by section 21(2)(a) of the *National War Memorial Park (Pukeahu) Empowering Act 2012*, the main purpose of this review is to certify that the management plan is consistent with, and gives effect to condition NZTA 30 of the Designation. This condition required that the plan should provide a methodology for managing the effects of dust, and should include as a minimum:

c) identification and implementation of dust suppression measures appropriate to the environment in which the works are located, and the sensitivity of nearby receptors; and

(d) identification of contingency measures to address identified and verified adverse effects on sensitive receptors. Contingency measures may include options such as:

(i) cleaning of houses; and

(ii) cleaning of other buildings and infrastructure

These requirements have been kept in mind while carrying out this review.

2. Measures Proposed for Managing the Air Quality Impacts

2.1 Potential for Dust Releases

Section 4 of the management plan provides an assessment of the potential for dust releases during each stage of the proposed works. The key elements of this assessment are summarised below.

Site Investigations

The activity with the greatest potential for dust generation here is concrete cutting. There may also be some dust releases when the concrete slabs are lifted and placed onto trucks for removal.

Site Preparation

Dust may be generated during this phase when slabs of concrete are lifted and placed onto trucks.

Road Construction

The main dust sources in this case will be the placement of excavated soil and other materials onto trucks, dumping and spreading of roading materials onto the ground, especially the base-course, and vehicle movements over the unsealed surfaces.

I agree that these are the activities with the greatest potential for dust releases.

2.2 Dust Mitigation Methods

The procedures to be used for dust mitigation are described in section 5 of the management plan, and are summarised below.

1. Vehicle speeds will be limited to no more than 10 km per hour;
2. A water truck will be available on site at all times and will be used as necessary to control dust from unconsolidated surfaces. Hand-held hoses or sprinklers will also be available for damping down any surfaces not accessible by the water truck;
3. All concrete cutting will be done using wet cutting equipment;
4. Water will also be used for dust control during the removal of concrete during dry weather conditions;
5. As far as practicable excavated material will be placed directly into trucks rather than being stored on site, and the material will be sprayed with water prior to removal if the wind is blowing from the south and stronger than 10 m/s;
6. Trucks exiting the site with potentially dusty materials will be covered wherever practicable, as will trucks delivering dusty fill materials;
7. Fill material will not be placed when wind speeds are greater than 10 m/s unless the material is damp and/or unlikely to give rise to dust;
8. Wind fencing will be established where needed, particularly adjacent to sensitive areas;
9. A vehicle wheel wash facilities will be available at the site exit to minimise the potential for tracking of materials onto public roads, and the section of road adjacent to the site exit will be swept from time to time;
10. It is not expected that there will be any stockpiling done on site. However if any stockpiles are needed, they will be covered or otherwise controlled to prevent dust emissions during dry windy conditions;
11. Any exposed areas remaining after the works will be stabilised using re-vegetation, covering with mulch or hydroseeding.

The above measures are all appropriate for the construction activities and, if applied consistently and conscientiously, will be effective in minimising any nuisance effects due to dust.

2.3 Dust Monitoring

Section 8 of the management plan addresses the use of a continuous dust monitor to assist with dust control. The dust monitor will be linked to an alarm system and operated around alert levels; the first of these will give a warning that dust concentrations may be rising to unacceptable levels, while the second will indicate that all dust generating activities should cease.

There will also be an on-site weather station, which will provide the wind speed and direction information relevant to some of the control measures noted above.

The use of real-time dust monitoring can be a very effective way of managing potential dust emissions because it allows for a rapid response to increasing dust concentrations. In combination with the on-site weather station, this should help to ensure that the dust emissions from the site are effectively controlled.

2.4 Potential for Odour Releases

As indicated previously, there is some potential for odour emissions from the site when contaminated materials are being excavated. However, the specific nature of the contaminants and the extent of the contamination are currently uncertain. These will only become clear as the excavations proceed.

2.5 Odour Management Methods

The measures proposed for odour mitigation are as follows:

1. Minimising the open areas of excavations as much as practicable, including covering or temporary backfilling when necessary;
2. Holding supplies of an odour masking agent or deodoriser on site for use as and when necessary;
3. Removal of odorous materials off-site as soon as practicable after excavation using covered trucks and/or covering the materials with clean spoil or fill material.

These measures should be quite adequate for the majority of odorous materials likely to be encountered on the site. More extensive measures would only be required if extreme levels of contamination were revealed, such as a pooled concentrated liquid. Any necessary responses to that sort of situation would be best developed on a case-by-case basis, at the time it arises.

3. Management Systems and Procedures

The overall systems and procedures for managing the air quality aspects of the project are covered under sections 6, 7 and 9 of the management plan, which deal with, respectively, staff responsibilities, complaint investigation, and training. These are all essential components of an effective dust management system.

The day to day responsibilities for dust control on the site are clearly laid out in section 6, along with a list of the regular checks that should be carried out by the site supervisors. Emergency contact details are also provided.

The maintenance of a complaints register and the associated investigation and response procedures are an essential element of activities such as those proposed here. Procedures for complaint recording and investigation are laid out in section 7 of the management plan and cover all of the steps that I would expect to see. The use of a website for recording each of the complaints, and the resulting actions, is a potentially useful innovation.

All staff are to be given a site induction program which will include specific training on environmental matters including those relating to dust and odour management. Section 9 of the management plan gives a list of the information to be covered under the training. This should provide an adequate coverage of all of the relevant matters.

4. Summary and Conclusions

The construction activities for the development of the temporary bypass road have the potential to cause off-site dust nuisance effects and there may also be some potential for odour nuisance effects. The systems and procedures to be applied for managing and mitigating these potential effects are laid out in the Air Quality (Dust) Management Plan - Temporary Road, CAQMP1-TR. Having reviewed this plan, my conclusions are as follows:

1. The range of dust management methods proposed for the site, if applied consistently and conscientiously, should be effective in minimising any nuisance effects due to dust.
2. The potential for odour releases from the site is highly uncertain. However, the range of measures proposed for responding to any such releases should be quite adequate for dealing with most situations.
3. The systems and procedures that will be used for managing the air quality aspects of the operation are described with an appropriate level of detail in section 6, 7 and 9 of the plan.

I consider that that the management plan is consistent with, and gives effect to condition NZTA 30 of the Designation authorised under the *National War Memorial Park (Pukeahu) Empowering Act 2012* .



Bruce W Graham

12 November 2012