

# Central Interceptor Scheme



## Central Interceptor Main Project Works Section 92 Response Report to Auckland Council

## Quality Information

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Section 92 Response Report to Auckland Council


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## Section 92 Response Attachments

Attachment No.	Attachment Title
1.	Auckland Council Section 92 further information request letter
2.	Mt Albert War Memorial Reserve Car Park Updated Drawings
3.	Traffic
4.	Vibration
5.	Noise
6.	Soil Conditioner Data Sheets
7.	Mt Albert War Memorial Reserve Car Park Erosion and Sediment Control Plan
8.	Mt Albert War Memorial Reserve Car Park - Contamination
9.	Mt Albert War Memorial Reserve Car Park – Groundwater and Settlement

## A. Introduction and Background

### 1.1 Central Interceptor Main Project Works

Watercare Services Limited (Watercare) is proposing to construct a new underground wastewater interceptor within the Auckland Isthmus to collect, store, and convey wastewater to the Mangere Wastewater Treatment Plant (Mangere WWTP). This new interceptor is called the Central Interceptor. The Central Interceptor main project works comprise a 13 km gravity tunnel from Western Springs to the Mangere WWTP, four link sewers extending from the main tunnel, a series of connections to the existing Watercare wastewater network, and a new pumping station at the Mangere WWTP to pump wastewater from the tunnel to the plant. These works will provide the network capacity required for future growth within the Auckland Isthmus, will duplicate the lower section of the Western Interceptor which is ageing and at risk of failure, and will provide overflow mitigation at a number of Watercare's largest wastewater overflow points.

### 1.2 Purpose and Structure of this Report

Resource consent applications and Notices of Requirement for the proposed Central Interceptor main project works were lodged by Watercare with Auckland Council ("Council") on 17 August 2012. In addition, a Notice of Requirement for the Mt Albert War Memorial Reserve Car Park site was lodged with Auckland Council on 8 March 2013.

Auckland Council requested further information under Section 92 of the Resource Management Act 1991 (RMA) in a letter dated 2 October 2012. Watercare responded to the request in December 2012 (Central Interceptor Main Project Works Section 92 Response Report to Auckland Council) and March 2013 (Central Interceptor Main Project Works Section 92 Response Report to Auckland Council – Groundwater and Surface Settlement).

Following a review of the additional information and submissions, Auckland Council has made a second request for further information. The information requested is set out in Council's letter of 8 April 2013 ("the Section 92 request", a copy of which is included as **Attachment 1**). This Section 92 Response Report provides the further information requested. The report is structured in the following manner:

- Part A (this section) outlines the purpose of this report;
- Part B contains the requested information.

In each case, the question asked by Council is summarised and shown in italics and Watercare's response to the question follows immediately thereafter.

The responses to some of the questions will require additional time to compile and will be provided in a subsequent Section 92 response. Where this is the case it is noted.

### 1.3 Technical Inputs

Technical inputs for this Section 92 Response Report have been provided by the following consultants:

- Traffic – Traffic Design Group;
- Noise – Marshall Day;
- Vibration – Tonkin & Taylor;

- Erosion and Sediment Control – SKM;
- Contaminated sites – Tonkin & Taylor;
- Groundwater and settlement – Tonkin & Taylor.

The technical information provided by these consultants is included in the attachments to this Section 92 Response Report.

#### 1.4 Attachments

Attachments which support the responses to questions are listed numerically and included at the end of this report under the divider page titled “Section 92 Response Attachments”.

#### 1.5 Supporting Documents

The following documents and reports were submitted to Auckland Council as part of the August 2012 Notices of Requirement and resource consent applications (refer Table 1). These documents should also be referred to for a complete understanding of the Central Interceptor main project works.

**Table 1: Application Documents**

<b>Part A</b>	<b>Assessment of Effects on the Environment</b> (referred to throughout this report as “the AEE”)	
	Appendix A	Application forms
	Appendix B	Objectives and policies assessment
	Appendix C	Schedule of properties
	Appendix D	Planning maps
<b>Part B</b>	Site Specific Assessments	
	Appendix A	Certificates of title
	Appendix B	Stormwater calculations
<b>Part C</b>	Drawing Set	
<b>Part D</b>	Technical Reports	
	Technical Report A	Landscape and Visual Assessment
	Technical Report B	Arboricultural Assessment
	Technical Report C	Assessment of Ecological Effects
	Technical Report D	Archaeological Assessment
	Technical Report E	Traffic Impact Assessment
	Technical Report F	Noise Impact Assessment
	Technical Report G	Vibration Assessment
	Technical Report H	Odour Assessment
	Technical Report I	Ground Contamination Assessment
	Technical Report J	Groundwater and Surface Settlement

		Assessment
	Technical Report K	Erosion and Sediment Control and Stormwater Management
Notice of Requirement 1 Auckland Council District Plan: Auckland City Isthmus Section		
Notice of Requirement 2 Auckland Council District Plan: Manukau Section		

The following additional reports respond to Council's October 2012 Section 92 request:

- Central Interceptor Main Project Works Section 92 Response Report to Auckland Council, December 2012.
- Central Interceptor Main Project Works Section 92 Response Report to Auckland Council – Groundwater and Surface Settlement, March 2013.

Additional material is also presented in the 8 March 2013 NoR and AEE submitted in relation to the Mt Albert War Memorial Reserve Car Park site.

#### **1.6 Mt Albert War Memorial Reserve Car Park Revised Drawing**

A revised site layout for the Mt Albert War Memorial Reserve Car Park site is attached (Drawing AEE-MAIN-2.1A Issue C and AEE-MAIN-2.2A Issue D, **Attachment 2**). This shows the control chamber located further to the north than the previous version. This revision to the site design has been taken into account in our responses to the noise and vibration questions in Part B of this report. The outcome of this revision is that the control chamber and associated construction works are shifted further from the boundary with 9 Wairere Avenue.

## B. Section 92 Questions and Response

### 1.0 Traffic

#### Question 1.1: Matters arising from submissions

The responses to the questions in Section 1.1 of the Section 92 request relating to traffic have been provided by Traffic Design Group and are contained in **Attachment 3**.

#### Question 1.2: Section 92 Response

The responses to the questions in Section 1.2 of the Section 92 request relating to traffic have been provided by Traffic Design Group and are contained in **Attachment 3**.

### 2.0 Noise and Vibration

Question 2 of the Section 92 Request references a letter from Styles Group dated 20 March 2013 (Attachment 1 to the Section 92 Request).

The response to the question relating to vibration (Question 1 in the Styles Group letter) has been provided by Tonkin & Taylor and is contained in **Attachment 4**.

The response to the question relating to noise (Question 2 in the Styles Group letter) has been provided by Marshall Day Acoustics and is contained in **Attachment 5**.

### 3.0 Earthworks

*...Without a draft CMP to assess and comment on we will be left with no choice but to prepare a detailed consent condition outlining the specific details to be provided in the CMP and the specific approval process that will apply so that Auckland Council can have confidence in the robustness of the management plan approach. This very prescriptive approach will be necessary to support a recommendation that the likely adverse effects will be no more than minor.*

*So in summary, either the applicant provides a draft CMP or we adopt that very prescriptive approach in the consent recommendation.*

A Construction Management Plan (CMP) will be prepared for the project and this will be developed as part of the design development and construction phase, as is usual for projects of this scale. The August 2012 AEE report provides an overview of the typical content that is expected to be included in the CMP. The requirements for the CMP are set out in proposed designation condition 9. Watercare has also proposed a similar consent condition addressing this requirement, set out as follows:

Prior to the commencement of works authorised by these consents, the Consent Holder shall submit a Construction Management Plan or Plans ("CMP") for the Project overall or for each of the relevant Project stages to the Manager for approval (such approval not to be unreasonably withheld).

The purpose of the CMP is to confirm final project details and staging of works to illustrate that the works remain within the limits and standards approved under these consents and that the construction and operation activities avoid, remedy or mitigate adverse effects on the environment.

Where minor enabling works or isolated works are to be undertaken prior to commencement of the main works, a site specific CMP may be prepared commensurate with the scale and effects of the proposed works, for the approval of the Manager. In some cases, with the approval of the Manager, a CMP may not be required.

The CMP(s) required by this Condition shall include specific details relating to the management of all construction activities associated with the Project or relevant Project stage, including:

- a) Details of the site or project manager and the construction liaison person, including their contact details (phone, postal address, email address);
- b) An outline construction programme;
- c) The proposed hours of work;
- d) Measures to be adopted to maintain the land affected by the works in a tidy condition in terms of disposal / storage of rubbish, storage and unloading of construction materials and similar construction activities;
- e) Location of site infrastructure including site offices, site amenities, contractors yards site access, equipment unloading and storage areas, contractor car parking, and security;
- f) Procedures for controlling sediment run-off, dust and the removal of soil, debris, demolition and construction materials (if any) from public roads or places adjacent to the work site;
- g) Procedures for ensuring that residents, road users and businesses in the immediate vicinity of construction areas are given prior notice of the commencement of construction activities and are informed about the expected duration and effects of the works;
- h) Means of providing for the health and safety of the general public;
- i) Procedures for the management of works which directly affect or are located in close proximity to existing network utility services;
- j) Procedures for responding to complaints about construction activities;
- k) Procedures for the refuelling of plant and equipment;
- l) Measures to address the management of construction noise and vibration;
- m) Traffic management plans;
- n) Measures for the protection of trees;
- o) Measures to be implemented to avoid, remedy or mitigate effects on and from the electricity network, including a procedure detailing how the proposed works will be carried out in accordance with NZECP 34:2001 New Zealand Electrical Code of Practice for Electrical Safe Distances;
- p) Measures to address the storage of fuels, lubricants, or hazardous or dangerous materials, along with contingency procedures to address emergency spill response and clean-up;
- q) Procedures for the maintenance of machinery to avoid discharges of fuels of lubricants to watercourses or the CMA;
- r) Methods and systems to inform and train all persons working on site of potential environmental issues and how to avoid remedy or mitigate any potential adverse effects.

The CMP shall be implemented and maintained throughout the entire construction period for the Project or relevant Project stage to manage potential adverse effects arising from construction activities and shall be updated when necessary. Any substantive change to the CMP shall be submitted to the Manager for approval at least ten working days prior to the change taking effect.

Watercare is also holding further discussions with Mr Campbell Stewart from Southern Skies regarding the comments in the Section 92 request and will provide any further information as necessary.

*(a) Dewatering*

*...No discussion is given for other potential water quality measures relating to specific chemical/conditioners that may be used during the tunnelling operations. It would be useful and appropriate to add these parameters.*

TBM tunnelling routinely uses soil conditioners added in small quantities at the cutting head to improve the cutting and handling of the spoil. The conditioners are usually proprietary foams and polymers, which are biodegradable and contain no hazardous materials. Datasheets for two such products are included in **Attachment 6**. These products are delivered to the TBM in sealed containers under normal transport, storage and handling procedures. Once added to the TBM via a pump they remain bound into the spoil which is then disposed of at an appropriate site.

Small quantities may enter the dewatering stream being pumped from inside the tunnel. In addition, cementation grouts will be used to fill the annulus around the tunnel lining, producing elevated pH levels within the tunnel water. This water will be pumped out and will pass through settlement tanks and be treated in accordance with the Construction Discharges Management Plan (a draft of which was provided with the December 2012 Section 92 Response Report). This practice has been completed recently without adverse environmental effects on the Hobson and Rosedale tunnels.

*(c) The CTMP [Chemical Treatment Management Plan] does not meet best practice...In the absence of a satisfactory Draft CTMP consent conditions could be developed detailing the requirements and expectations of the CTMP that would meet Auckland Council's expectations.*

As noted above, Watercare is holding further discussions with Mr Campbell Stewart from Southern Skies regarding the comments in the Section 92 request. A draft consent condition has been proposed for the overarching CMP, as noted earlier. Details on the final treatment methods for tunnel dewatering and site discharges will be developed as part of the process of compiling the CMP, once detailed designs have been developed and construction methods confirmed. The draft CTMP provided with the first Section 92 report will be updated and methods confirmed as part of that process.

## 4.0 Contamination

The Section 92 Request does not request further information regarding contamination (except as addressed in relation to Mt Albert War Memorial Reserve in Section 9 of this report).

## 5.0 Groundwater and Settlement

The Section 92 Request does not request further information regarding groundwater and settlement (except as addressed in relation to Mt Albert War Memorial Reserve in Section 9 of this report).

## 6.0 Air Quality

*(a) Provide an outline of the intended complaint response procedures to be used on the project for dealing with complaints of odour and dust.*

Watercare has existing processes for dealing with day-to-day complaints (service requests). Complaints are typically received by telephone at Watercare's customer service centre. Each complaint received is recorded and coded reflecting the type of issue reported. Responses to complaints are tracked using the Watercare's asset management system. Key Performance Indicators (KPIs) are used to monitor overall performance in dealing with customer complaints.

The complaint process as it relates to odour complaints is shown below.

**Figure 1. Complaint Response Procedures (Odour)**

Process Steps	Comments
<b>Call Logged by Call Centre</b>	<ul style="list-style-type: none"> <li>- Details taken from customer on nature and location of the complaint</li> <li>- Each job given a Service Request Number</li> <li>- Each job given a Code</li> </ul>
<b>Initial Response</b>	<ul style="list-style-type: none"> <li>- Identify cause of complaint <ul style="list-style-type: none"> <li>o Is Central Interceptor the source of the odour?</li> <li>o Is the odour from another part of the network?</li> </ul> </li> <li>- Fix specific problem; or</li> <li>- Implement mitigation measures (if appropriate and practicable)</li> </ul>
<b>Customer Call Back</b>	<ul style="list-style-type: none"> <li>- If requested, the customer will be phoned back and advised of the resolution</li> </ul>
<b>Investigate repeat complaints</b>	<ul style="list-style-type: none"> <li>- Customers encouraged to continue to notify Watercare if they experience ongoing nuisance</li> <li>- Repeat problems are investigated</li> <li>- If nuisance continues, additional mitigation measures (if available and practicable) are implemented</li> </ul>
<b>Investigate additional measures</b>	<ul style="list-style-type: none"> <li>- If complaints continue, escalate to Watercare's Infrastructure Planning team to investigate</li> </ul>
<b>Install ATF</b>	<ul style="list-style-type: none"> <li>- Design and construct ATF where appropriate</li> </ul>

The CMP for the construction phase of the project will also set out a detailed complaints procedure and response process, which will include response to complaints regarding dust generation should this occur. A liaison person will be appointed for the duration of the construction works, as set out in

Watercare's proposed Designation Condition 3, providing a point of contact 24 hours a day, 7 days a week, to respond to any person affected by the construction work.

- (b) *Air treatment facilities (ATF's) will be installed in a staged approach dependent on the outcome of performance reviews at each stage. Please identify the intended frequency of these reviews and clarify whether it is intended to involve anyone external to Watercare (i.e. public, Council, independent peer reviewer).*

During operation of the Central Interceptor Watercare will monitor odour at the various sites, based on any complaints received. If odour is determined to be a problem, Watercare would look to implement additional ATFs as appropriate. The determination of whether additional ATFs are required will be established by Watercare based on complaints received in relation to odour. If complaints are received, then response procedures will be implemented as described above and consideration will be given to the cause, frequency and intensity of odour. This would be an internal process and is consistent with Watercare's current management procedures for the wastewater network. Watercare does not propose to implement reviews at set frequencies or at set stages as, if there is no evidence of odour nuisance, a review would be unwarranted.

- (c) *The application states that the main factors taken into account in the odour performance reviews will be the frequency of the discharges and the number of odour complaints. Please clarify how much variation from the anticipated discharge frequency and/or number of odour complaints will be considered sufficient to trigger installation of an additional ATF.*

Watercare is not expecting frequent or problematic discharges of odour from the Central Interceptor. Watercare intends to follow its existing procedures (as outlined in Figure 1 above) in relation to identifying whether odour is a problem at any site and determining appropriate mitigation measures. In practice it is relatively straightforward to establish whether or not odour nuisance is a serious issue which is likely to be ongoing.

As described, Watercare's procedures involve recording complaints, investigating the cause, and fixing a specific problem or putting in place mitigation measures (if appropriate and practicable). Watercare encourages those with odour complaints to continue to notify Watercare if they experience recurrence of odour nuisance. This ensures that records of odour incidence are as accurate as possible. If there is significant variation from what is anticipated and there are recurring issues with odour associated with operation of the Central Interceptor, Watercare will consider whether an additional ATF is required in accordance with the process set out in Figure 1. Watercare has successfully installed in the order of 25 biofilters on the transmission network to date to address odour issues following this process.

- (d) *Provide an estimate of how long it will take to source and install an additional ATF if this is identified as necessary. Please provide estimates for the three main types of ATF outlined in the Main Project Works - Odour Assessment Report (Technical Report H), specifically: biofilters, biotrickling filters and activated carbon filters.*

As noted in Section 5.5.4 of the AEE, it is likely to take between 1 and 12 months to implement an air treatment system upon confirmation that action will be taken, though interim temporary measures are also possible. The timing is dependent on the type and scale of facility required, equipment availability, and any local site constraints. Generally, for smaller activated carbon systems the implementation would be expected to be in the order of 1 to 6 months. Biofilters would be expected to take around 6 to 10 months to implement and larger bio-trickling filter ATFs may take around 10 to 12 months.

- (e) *Blasting may be undertaken at some of the work sites. Please outline what mitigation measures will be in place to ensure dust is contained within the construction area during blasting.*

To control dust during blasting blast mats will be used to suppress dust and fly rock. Surrounding soil will also be watered to keep it moist and minimise dust generation. Specific measures and procedures relating to the management of dust will be included in the Construction Management Plan.

- (f) *Please clarify whether any diesel generators will be operating at the construction sites, and if so the anticipated locations, duration and frequency of use. Please also outline what measures will be taken to mitigate potential effects from exhaust fumes arising from any such generators.*

The primary and secondary construction sites will be established with mains power for day to day use. Portable diesel generators may be required for the initial stages of the site establishment before mains power is connected and will be brought on to the site for short periods, for specific activities, where mains power is not available. The generators will be located within the designated sites so as to minimise the extent of fumes outside the site boundary depending on the prevailing wind.

The portable equipment will be enclosed in a noise reducing enclosure and comply with the Construction Noise Standards. A typical example is shown below:



**Figure 2. Portable equipment enclosure**

## **7.0 EPR Discharge**

The S92 request questions relating to the emergency pressure relief discharge will be provided in a subsequent response.

## **8.0 Assessment of Environmental Effects – Statutory Assessment**

*A number of matters have arisen from further review of the AEE during the preparation of the Council's hearing report, as follows:*

### **8.1 Lyon Avenue**

- (a) *Section 3.5.2 of the AEE states that pedestrian access will be maintained along the treeway, and an alternative access is to be provided to St Lukes Mega Centre (apparently connecting to the southern extent of the treeway). However, it is unclear from plan 3.1 and 3.2 how such*

*access will be maintained to Alberton Avenue to the west given the north-western extent of the designation boundary.*

The north-western extent of the designation boundary extends to the end of the spillway which crosses beneath the Roy Clements Treeway boardwalk. The existing Watercare designation over the spillway also extends across the boardwalk in the vicinity of the spillway. Alternative access will be provided while the works are undertaken on this part of the spillway. Various options may be implemented, for example, constructing a path diversion across to the other side of the creek. This will be determined during detailed design and any additional resource consents that may be required to undertake the work would be applied for at that time.

- (b) *Section 3.5.10 of the AEE states that odour discharges will be reduced compared to the current situation, with 6 to 8 annual odour incidents per annum predicted. Please advise the current average number of odour discharges.*

Currently discharges of air occur during every large overflow occurrence (i.e. nearly every time it rains). Not all these current discharges of air are odorous or result in complaints. Watercare records show few recent complaints at this site since the modifications to the spillway (only one complaint between June 2011 and April 2013). Odour discharges are discussed in Section 3.5.10 of Part B of the AEE and Section 4.3.3 of the Odour Assessment Report (Technical Report H of Part D of the AEE). This refers to the potential for discharges of air to occur from the air intake during heavy rainfall events, approximately 6 to 8 times per year. It is not expected that every discharge of air will necessarily result in an "odour incident" or complaint.

- (c) *The alternative sites and layouts shown on page 68 of the AEE show more construction features than in the chosen site, which may have contributed to these options being discounted. Please clarify if those additional features are required for those alternative construction site options only. If not, please advise where those features will be accommodated within the preferred site.*

In the early phases of the concept design it was proposed to install a grit trap at the site, and this is shown on the first two drawings provided on page 68 of Part B of the AEE. However, Watercare's operational staff subsequently determined that grit is not a significant problem in the collection tributary system to this overflow. It is not proposed to install a grit trap at the current proposed location on the eastern side of the creek.

- (d) *One factor in evaluating the alternative sites is the degree of impact on the school's playing fields. How important is that factor to Watercare's analysis, relative to the impact on vegetation and ecological values arising from the preferred option?*

An alternative construction site was considered in the Mt Albert Grammar School playing fields. This was considered during concept design and has also been reviewed in light of submissions received. Both the proposed site and the site on the playing fields have advantages and disadvantages.

The primary reason for the Lyon Ave construction site is to pick up one of the largest overflows on the network. Major construction works will be required on the eastern side of the Meola Creek to connect the tunnel to the overflow location regardless of where the rest of the construction site is located (i.e. on the same bank or on the playing fields and across Meola Creek). If the construction site was to be located on the playing fields the connection of the existing overflow structure to the tunnel would require either a deep trench excavation from the overflow location on the east bank across and through Meola Creek to the playing fields, or a drop structure near to the overflow on the eastern bank and a cross connection tunnel. Accordingly, an alternative site located on the playing fields would not avoid adverse effects on vegetation or ecological values, or the other construction related effects described in the AEE (noise, traffic etc). Both options would impact on the vegetation and ecological values.

Watercare has discussed the option of locating the site in the Mt Albert Grammar School playing fields with the Headmaster of Mt Albert Grammar School (MAGS) and with the Ministry of Education (MoE), representing the Crown as landowner. The area of land at the proposed Lyon Ave construction site is owned by the Crown, as is the MAGS sports field.

The establishment of a construction site on the MAGS sports fields is not supported by MAGS or MoE. Key reasons given in feedback from MAGS and MoE are: the playing fields are highly utilised by the school; construction access off Alberton Ave would pass adjacent to the School's boarding hostel; Alberton Ave is very busy during school hours and construction traffic may present a safety hazard and increase congestion; an option of access across the playing fields from Ferguson Ave would have additional impact on the playing fields and additionally on the Roy Clements walkway which is heavily utilised by students accessing the school.

## 8.2 Manukau District Plan – Assessment Criteria

*The assessment of the application in terms of the Manukau District Plan (Table 14-12 AEE) does not address the criteria at section 7.13 and 7.14 in relation to network utility services within roads. Please provide comment in relation to these matters.*

Commentary against the assessment criteria in Sections 7.13 and 7.14 of the Auckland Council District Plan (Manukau Section) is included in Table 1 below.

**Table 1**      **Auckland Council District Plan (Manukau Section) – Network Utility Services Assessment Criteria**

Rule	Criteria	Comment
7.13.2.1 Network Utility Services beneath Roads	<p>When assessing an application for a restricted discretionary activity for Network Utility Services beneath Roads, Council will have regard to the following assessment criteria:</p> <p>(i) Whether the location of the proposed network utility service will ensure that the road space is used efficiently and safely, with minimal inconvenience and disruption to road users and other Network Utility Services and provide ready access for maintenance purposes, and the extent of impacts of such effects;</p> <p>(ii) Whether the proposed location of the network utility service is likely to adversely affect the functionality and safety of existing or probable future network utility services that are likely to use the road corridor, including the maintenance of adequate separation distances, and the extent or impacts of such effects;</p> <p>(iii) Whether structures located adjacent to a road will be sited so as to avoid the potential for traffic and pedestrian safety problems including sight lines for turning traffic or the visibility of traffic signage;</p> <p>(iv) Whether the proposal will be situated in an</p>	<p>Link Sewer 4 comprises an underground pipe that will be constructed by trenching. The project has been developed to the concept design stage and consent is being sought to locate the pipe anywhere within the road corridor. Existing services will be identified prior to construction and any issues addressed if necessary.</p> <p>A Construction Management Plan(s) will be prepared for the works to manage effects of construction. This will include the preparation of a Traffic Management Plan which will guide the implementation of traffic management measures to minimise disruption for road users and residents.</p> <p>Following construction the road surface will be reinstated.</p> <p>The underground location of the link sewer means that after construction it</p>

Rule	Criteria	Comment
	<p>approved city-wide location or will require assessment on a site specific basis, and the extent of impacts of such effects;</p> <p>(v) Whether the proposed location of the network utility service will, or is likely to impact on, or be impacted on by any proposed or required future road widening, or vertical or horizontal realignment of the road.</p> <p>(vi) Whether the proposal will adversely affect the amenity values of the locality, and the extent or impact of such effects including cumulative effects.</p> <p>(vii) Whether the proposed network utility service will adversely affect the road carriageway, vehicle crossings, footpaths, berms or planting in terms of their safety, structural integrity, design life, functionality and amenity values;</p> <p>(viii) Whether the construction methods and materials used in the installation and maintenance of the network utility service in the road may affect the performance and safety of other network utility services;</p> <p>(ix) Whether the proposed network utility service will meet the Engineering Performance standards in Chapter 9, Land Modification, Development and Subdivision, and the extent or impacts of any such non-compliance;</p> <p>(x) Whether alternative locations, technologies and techniques such as shared facilities have been adequately considered.</p>	<p>will not impede sightlines or affect pedestrian or traffic safety in the long term, nor will it have adverse effects on amenity values.</p> <p>The proposed Central Interceptor works will be undertaken in accordance with the requirements of the National Code of Practice for Utility Operators' Access to Transport Corridors and Corridor Access Requests will be sought from Auckland Transport.</p> <p>Due to the nature of the infrastructure it is not feasible to implement shared facilities.</p>
7.14.1 General Assessment Criteria	<p>7.14.1.1 Where equipment or structures for any mast, aerial, tower, pole, antenna or support structure for network utility services are to be considered as a discretionary activity, the Council will have regard to those matters listed in Rule 7.11, 7.13, the following assessment criteria and any relevant matters set out in Section 104 of the Resource Management Act 1991.</p> <p>7.14.1.2</p> <p>(a) Effects on existing character of the locality and amenity values:</p> <p>(i) Whether there are sensitive activities in the vicinity including residential neighbourhoods and heritage areas whose amenity values could be adversely affected by the proposed type and location</p>	<p>The proposed works will largely take place within the road reserve.</p> <p>Due to the underground location of the link sewer after construction it will not have adverse effects on landscape or amenity values.</p> <p>The Kiwi Esplanade Reserve site is utilised by native shore birds. Trenching works will be undertaken between 1 August and 30 November so as to limit potential effects on roosting shore birds. Watercare has proposed a condition of consent to this effect.</p> <p>The proposed works are not</p>

Rule	Criteria	Comment
	<p>of the network utility service.</p> <p>(ii) Whether the proposal has the potential to adversely affect landforms, landscapes, or areas of visual or scenic worth which contribute to the amenity values of the City, particularly where those areas are located on the coast or along visually prominent ridgelines.</p> <p>(iii) Whether there are native bush, bird or wildlife habitats that could be adversely affected by the proposal.</p> <p>(iv) Whether the proposal could have adverse effects on landforms or areas with scientific, cultural or archaeological value.</p> <p>Council shall assess the significance of the affected area and the degree of damage which could result from network utility services in those areas and may limit or not approve network utility services in these areas.</p> <p>(v) Whether the location of the network utility service in the new road space enables ready access for maintenance purposes and will not seriously limit the opportunity for additional underground network utility services in the future.</p> <p>(vi) Whether alternative technologies and design have been considered and included in the proposal which would avoid remedy or mitigate adverse effects on the environment.</p> <p>(vii) Whether the proposal is necessary to support strategic directions in the District Plan</p> <p>(viii) Noise, Dust and Vibration:</p> <p>Whether the amenity values of properties are likely to be adversely affected by the proposal, and the extent or impacts of such effects</p> <p>(ix) Engineering Performance Standards:</p> <p>Whether the proposed network utility service will meet the Engineering Performance Standards in Chapter 9, Land Modification, Development and Subdivision, and the extent or impacts of any such non-compliance.</p> <p>(x) Location:</p> <p>Whether the proposed location of the Network</p>	<p>expected to have adverse effects on landforms or areas with scientific, cultural or archaeological value. No known archaeological sites will be affected and accidental discovery protocols will be developed to address the possibility of uncovering previously undiscovered sites.</p> <p>Watercare has proposed a condition of consent requiring accidental discovery protocols.</p> <p>The project will provide capacity in the system to support the future growth and development of Auckland in a manner consistent with the strategic growth containment policies of the relevant plans.</p> <p>A Construction Management Plan(s) will be prepared for the works to manage effects of construction.</p>

Rule	Criteria	Comment
	<p>Utility Service will improve the operational efficiency of the network utility service, and the extent or impacts of such effects;</p> <p>Where alternative locations of network utility services are proposed to accommodate alternative subdivision design or layout, the extent to which these services can be installed, operated and maintained in a manner which does not adversely affect other network utility services.</p> <p>(xi) Air Emissions:</p> <p>Whether the proposal may discharge fumes, smoke or gases to a level that causes a nuisance or affects the amenity values of the area, and the extent or impacts of such effects;</p> <p>Whether the activity creates any objectionable or offensive odour that is able to be detected at the site boundary or road and the extent or impacts of such effects.</p> <p>(xii) Dust:</p> <p>Whether measures to mitigate potential dust nuisance and detract from visual amenity values of the area have been considered, and the extent or impacts of such effects.</p> <p>(xiii) Traffic Control:</p> <p>Whether the proposed traffic control measures will ensure the safety of persons and vehicles using the road, and the extent or impacts of such effects.</p> <p>(xiv) Radio Frequency Radiation:</p> <p>The extent to which the proposal complies with NZ Standards 6609 Parts 1 and 2, and the extent or impacts of such effects on health and safety.</p> <p>(xv) Maintenance and Obsolescence:</p> <p>Whether conditions are required to address adverse effects from future maintenance of the network utility service or to remove the network utility in the event it becomes obsolete.</p>	

## 9.0 Mt Albert War Memorial Reserve – NOR 357

A review of the new notice of requirement for Mt Albert War Memorial Reserve Car Park site has also been carried out. Responses to the questions relating to this site are set out below.

### 9.1 Assessment of Effects

*Your covering letter of 8 March 2013 seeks that the resource consents lodged in August 2012 be amended to incorporate the potential for either construction site option at the site to be developed. The AEE appears to therefore rely on the commentary in relation to earthworks, contamination and groundwater/settlement contained in sections 2.5.10 – 2.5.12 of the Part B AEE (Site Specific Assessments), August 2012.*

*However, further assessment in regards to these matters for this second option is requested for the following reasons:*

- (a) The proposed new site involves an existing sealed car park area, and will require a different erosion and sediment control plan than that provided in the previous section 92 response (Main ESCP 2.1, 4 December 2012, Revision D).*

A new erosion and sediment control plan has been prepared and is provided as **Attachment 7**.

- (b) The December 2012 contamination assessment indicated that a council depot, workshops and underground storage tank were located to the east of the construction site. It would therefore appear that the proposed site will be closer to or over this area of contamination, and additional commentary in this regard should be provided.*

Commentary in relation to contamination at the Mt Albert War Memorial Reserve Car Park site has been provided by Tonkin & Taylor and is attached as **Attachment 8**.

- (c) The discussion of groundwater and settlement effects should be updated to reflect the additional analysis of such effects that included this construction site.*

Commentary in relation to the groundwater and settlement effects at the Mt Albert War Memorial Reserve Car Park site has been provided by Tonkin & Taylor and is attached as **Attachment 9**.

### 9.2 Traffic and Parking

The responses to the questions relating to traffic have been provided by Traffic Design Group and are contained in **Attachment 3**.

### 9.3 Noise and Vibration

Questions in relation to noise and vibration at Mt Albert War Memorial Reserve have been addressed in **Attachments 4** (vibration ) and **5** (noise).

## **Section 92 Response Attachments**

**Attachment 1: Auckland Council Section 92 request**

8 April 2013

Watercare Services Limited  
Private Bag 92521  
Wellesley Street  
**AUCKLAND 1141**

Attention: Belinda Petersen

Dear Belinda

**CENTRAL INTERCEPTOR WASTEWATER PROJECT: SECTION 92 RESPONSE TO APPLICATION DOCUMENTS**

Further review of the NOR's and resource consent applications for the main project works of the Central Interceptor has been carried out by Council officers and project team. This follows receipt of Watercare's section 92 response of December 2012 and 8 March 2013, and a review of the submissions to the application.

In particular, the Council's project team have reviewed the additional information and submissions in order to ascertain whether further information is required to enable the Council to complete its assessments. The Council team has identified a number of areas where further information is required, as well as other matters arising in relation to the new car park site at the Mt Albert War Memorial Reserve.

Please note a number of these matters have already been raised with you in prior communication, particularly with reference to the Mt Albert War Memorial Reserve site and noting traffic and noise/vibration matters.

**1. Traffic**

**1.1 Matters arising from submissions**

The submissions and section 92 response has been reviewed by Angie Crafer of Flow Transportation who advises of the following remaining issues:

- (a) Please advise if there is a suitable location for the pedestrian crossing on Sandringham Road to allow construction access to AS4 (Walmsley Park) to be south of Oakley Creek (submission 679). Also consider and provide assessment of effects during regular nearby events that generate greater than typical traffic, parking and foot traffic, e.g. regular events at the Wesley Community Centre, markets, etc.
- (b) Further assessment as to the safe operation of the WS2 (May Road) site driveway and of Roma Road appears warranted, including whether the site access can accommodate two-way car movements, and effects on the operation of Roma Road given that trucks are shown to need the whole width of the driveway to turn to/from Roma Road. Given the number of construction vehicles and two way operation not being possible, please advise how will this be managed and what effects this may have on other vehicles using Roma Road (submission 696). Has a one way system with entry off Roma Road and exit onto May Road been considered?

- (c) Please provide further assessment as to the operational effects on the adjacent road network, including cumulative effects, in the vicinity of WS2 during the working day (submission 696).
- (d) Further consideration is required in respect of how to safely manage access to the Western Springs Interchange site (adjacent to Caltex) (submission #741), and whether access should be restricted to outside of peak times due to the exiting truck tracking into the centre rather than kerbside lane.
- (e) Assessment of the operation of the St Lukes Road/Morningstar Place intersection including expected changes in traffic from nearby developments (e.g. St Lukes Mall) as well as cumulative effects of other Central Interceptor construction traffic using St Lukes Road (submission 742).
- (f) Identification of means to minimise and manage effects on residents and visitors (pedestrians, cyclists, parking, deliveries) as a result of access to AS2 (Lyon Avenue) (submission 742).

It is understood that there may be separate arrangements with land owners/bodies corporate regarding the AS2 (Lyon Avenue) site; however the further information sought in respect of this site is not confined to issues of land ownership.

## 1.2 Section 92 Response

Further information is sought following the section 92 response:

- (a) Please provide clarification of vehicle speeds used for tracking assessments.
- (b) Please provide clarification of morning peak traffic volumes assumed on Bullock Track (queues in Tables 10 and 11 of TDG Transport Response appear low) and details of calibration of critical gap assumed in modelling.
- (c) Please provide confirmation that the pedestrian refuge proposed on Whitney Street south of Trevola Street is feasible (text indicates not), or remove from drawing 34.v2.

## 2. **Noise and Vibration**

The noise and vibration aspects of the application have been assessed by Jon Styles of Styles Group. In a letter dated 20 March 2013 Mr Styles notes remaining concerns regarding vibration (including the Mt Albert War Memorial Reserve site) and requires further information before his substantive review can be completed. A copy of Mr Styles' letter is annexed as **Attachment 1**.

Mr Styles has also advised that remaining concerns regarding noise and vibration can be addressed through the inclusion of conditions relating to the proposed construction noise and vibration management plan(s).

## 3. **Earthworks**

The section 92 response has been reviewed by Campbell Stewart of SouthernSkies Environmental Limited. Some concerns remain with respect to some of the information that has been provided, as follows:

- The lack of a draft Construction Management Plan (and the potential need for very detailed conditions to address this omission).
- The need to identify other potential water quality measures relating to specific chemical conditioners that may be used during the tunnelling operations.

- The draft Chemical Treatment Management Plan does not meet best practice (and the potential need for conditions to be drafted to address this matter).

A copy of Mr Stewart's memorandum is annexed as **Attachment 2**.

#### **4. Contamination**

Renate Schutte has reviewed the section 92 response and four submissions that raise contamination issues. Ms Schutte advises that the information provided in the section 92 response of 13 December 2012 is considered satisfactory. The few queries that Ms Schutte does have regarding the SMP is considered able to be addressed in direct communication with Tonkin & Taylor.

#### **5. Groundwater and Settlement**

Aidan Nelson of Earthtech Consulting Limited has reviewed the additional groundwater and settlement information and advise that he is satisfied with that request, and that no further information is required.

#### **6. Air Quality**

Jared Osman has reviewed the section 92 information and submissions related to air quality (including dust, fumes and odour effects from operation of the project). The following additional matters arise from that review:

- (a) Provide an outline of the intended complaint response procedures to be used on the project for dealing with complaints of odour and dust.
- (b) Air treatment facilities (ATF's) will be installed in a staged approach dependent on the outcome of performance reviews at each stage. Please identify the intended frequency of these reviews and clarify whether it is intended to involve anyone external to Watercare (i.e. public, Council, independent peer reviewer).
- (c) The application states that the main factors taken into account in the odour performance reviews will be the frequency of the discharges and the number of odour complaints. Please clarify how much variation from the anticipated discharge frequency and/or number of odour complaints will be considered sufficient to trigger installation of an additional ATF.
- (d) Provide an estimate of how long it will take to source and install an additional ATF if this is identified as necessary. Please provide estimates for the three main types of ATF outlined in the Main Project Works - Odour Assessment Report (Technical Report H), specifically: biofilters, biotrickling filters and activated carbon filters.
- (e) Blasting may be undertaken at some of the work sites. Please outline what mitigation measures will be in place to ensure dust is contained within the construction area during blasting.
- (f) Please clarify whether any diesel generators will be operating at the construction sites, and if so the anticipated locations, duration and frequency of use. Please also outline what measures will be taken to mitigate potential effects from exhaust fume arising from any such generators.

#### **7. EPR Discharge**

Further information is sought in relation to the EPR discharge, and following concerns raised in a number of submissions:

#### 7.1 Combination of Events

Please advise the combination of events that could lead to the discharge for which consent is sought. The AEE includes an estimate of the combined probabilities of events leading to the EPR activating, showing that it is unlikely to activate more than once every 50 years. Please describe the events and combination of events taken into account in estimating the probability of a discharge.

#### 7.2 Discharges

- (a) Please confirm if under any of those events and combined event scenarios, the discharges upstream in the network are different to discharge scenarios modelled for 2027 and 2062 and considered in the assessment of effects.
- (b) Please provide further information in relation to the effects on the environment from the emergency discharge of wastewater to the coastal marine area of the Manukau Harbour in the event the discharge does occur. In particular:
  - (i) Please provide a targeted assessment of effects of the potential discharge from the proposed EPR structure with particular regard to with regard to effects on public health, recreational use areas, ecological values and on any areas with identified cultural values. As an example, a risk assessment based on likely consequences of the discharge on the environment and identifying short, medium and any long term risks to any of the identified values can satisfy this requirement.
  - (ii) Please clarify whether such effects are unavoidable or whether there are any measures that would need to be implemented to avoid, remedy or mitigate any adverse effects in the coastal environment, particularly with regard to effects on public health, high recreational use areas, high ecological values and any areas with identified cultural values.
  - (iii) In respect of the above, please identify measures consistent with the level of risk. Are there any measures required in addition to Watercare's standard overflow response procedures?
  - (iv) Will procedures be in place to ensure (as far as practicable) that any emergency discharge will be limited to an outgoing tide.
  - (v) Please advise of likely reporting procedures likely to be instigated following an emergency discharge event (i.e. identification of events leading to the emergency discharge, estimated volume and characteristics of the discharge and any remedial measures undertaken, and monitoring of effects).
- (c) Please provide further information with respect to the operational linkages and staging of planned improvements at the Mangere WWTP in respect of the Central Interceptor and other network upgrades referenced in the application. In this regard please provide a description of the linkages between the Disinfection Facility and the Wet Weather Treatment Facility with the Central Interceptor and the Mangere Pump Station implementation and operation. Please also describe linkages between secondary treatment improvements at the WWTP and other network upgrades referenced in the application documents (Northern Diversion, potential extension of Central Interceptor to the CBD, etc).

### 7.3 Determination of Discharge Location

Please provide further information in relation to the assessment and criteria used in the determination of the location of the point of discharge. In particular:

- (a) Please provide the rationale behind the alternative selected and the full range of alternatives considered.
- (b) Clarify whether providing disinfection to the emergency discharge at the treatment plant is feasible, providing the reasons for this alternative having been discounted.
- (c) Clarify whether discharging to the outgoing tide using the existing WWTP discharge channel and outfall structure is feasible, providing the reasons for this alternative having been discounted.

### 7.4 Reference to Permit 30083

Please provide details of any recommendations or feedback made by the various groups (Audit Group, the Microbiological Review Group, and, or the Disinfection Review Group Community Liaison Group) established under permit 30083 (Mangere WWTP discharge consent) regarding the emergency discharge location, the alternatives, effects on the environment and any monitoring or mitigation recommendations.

## **8. Assessment of Environmental Effects – Statutory Assessment**

A number of matters have arisen from further review of the AEE during the preparation of the Council's hearing report, as follows:

### 8.1 Lyon Avenue

- (a) Section 3.5.2 of the AEE states that pedestrian access will be maintained along the treeway, and an alternative access is to be provided to St Lukes Mega Centre (apparently connecting to the southern extent of the treeway). However, it is unclear from plan 3.1 and 3.2 how such access will be maintained to Alberton Avenue to the west given the north-western extent of the designation boundary.
- (b) Section 3.5.10 of the AEE states that odour discharges will be reduced compared to the current situation, with 6 to 8 annual odour incidents per annum predicted. Please advise the current average number of odour discharges.
- (c) The alternative sites and layouts shown on page 68 of the AEE show more construction features than in the chosen site, which may have contributed to these options being discounted. Please clarify if those additional features are required for those alternative construction site options only. If not, please advise where those features will be accommodated within the preferred site.
- (d) One factor in evaluating the alternative sites is the degree of impact on the school's playing fields. How important is that factor to Watercare's analysis, relative to the impact on vegetation and ecological values arising from the preferred option?

### 8.2 Manukau District Plan – Assessment Criteria

The assessment of the application in terms of the Manukau District Plan (Table 14-12 AEE) does not address the criteria at section 7.13 and 7.14 in relation to network utility services within roads. Please provide comment in relation to these matters.

## **9. Mt Albert War Memorial Reserve – NOR 357**

A review of the new notice of requirement for Mt Albert War Memorial Reserve has also been carried out. You have requested that this new NOR be assessed on a limited notified basis, and that this occur by 28 March 2013.

At this stage, however, a number of issues have been identified with this amended proposal that will need to be addressed before a decision regarding notification can be made. These are set out below:

#### 9.1 Assessment of Effects

Your covering letter of 8 March 2013 seeks that the resource consents lodged in August 2012 be amended to incorporate the potential for either construction site option at the site to be developed. The AEE appears to therefore rely on the commentary in relation to earthworks, contamination and groundwater/settlement contained in sections 2.5.10 – 2.5.12 of the Part B AEE (Site Specific Assessments), August 2012.

However, further assessment in regards to these matters for this second option is requested for the following reasons:

- (a) The proposed new site involves an existing sealed carpark area, and will require a different erosion and sediment control plan than that provided in the previous section 92 response (Main ESCP 2.1, 4 December 2012, Revision D).
- (b) The December 2012 contamination assessment indicated that a council depot, workshops and underground storage tank were located to the east of the construction site. It would therefore appear that the proposed site will be closer to or over this area of contamination, and additional commentary in this regard should be provided.
- (c) The discussion of groundwater and settlement effects should be updated to reflect the additional analysis of such effects that included this construction site.

#### 9.2 Traffic and Parking

Ms Crafer has also considered the proposed new Notice of Requirement at Mt Albert War Memorial Reserve, and notes the following matters arising from her review of the Transport Assessment provided with the NOR:

- (a) Whilst generally the public parking demands at the Reserve are likely to be met on site, there will be times when the loss of 65 car park spaces will have an effect on the surrounding network, with motorists looking for parking spaces and parking on-street. Accordingly, and as recommended in the Transport Assessment report, alternative parking areas should be identified to compensate for the potential parking shortfall on weekends and Friday evenings. Whilst this could be addressed by a condition of consent, if no viable alternative can be arranged then there would potentially be more than minor effects on the surrounding network. Accordingly, it is suggested that the applicant identify possible locations at this stage and assess their viability in terms of management, proximity and pedestrian access.
- (b) Both the AEE and Traffic Assessment indicate that north-south pedestrian movement will still be possible adjacent to the Recreation Centre, separated from the site by fencing. It is not clear from the plans which route this is, or how it connects to existing paths and further information should be requested from the applicant. The paths northeast of the path past the recreation centre appear to be in disrepair and not connected with other paths.
- (c) Further information may be sought as a result of submissions to this new NOR.

Additional matters in relation to traffic and access noted by Council reporting officers are:

- (d) The traffic impact assessment discusses parking supply, a proposed parking reduction and predicted shortfalls to be experienced particularly during major events. Please explain what Watercare considers to be a major event, and their typical frequency at this site.
- (e) Please amend plan AEE-MAIN-2.2A to identify the pedestrian access path that is to be used to maintain pedestrian access through the reserve during construction.

It is noted that, in respect of item (a) above, that the presently proposed distribution of parking demand within the surrounding road network or an undisclosed site in the vicinity may extend the range of affected parties beyond just adjacent sites. Public notification may be more appropriate if effects are to extend beyond the construction site and adjoining properties.

### 9.3 Noise and Vibration

Please refer to the attached letter from Styles Group.

## 10. **Process Timeframes**

### 10.1 Late Submissions

As the submission period was doubled from the standard 20 day timeframe, acceptance of late submissions is subject to approval by Watercare (per section 37A(5) of the RMA). Please advise if a further extension of the timeframe is agreed by Watercare to allow these submissions to be accepted.

### 10.2 Section 92 (General)

The originally approved timeframe noted that the response to this second section 92 stage would be required within 15 working days. However, please advise if a longer period is required.

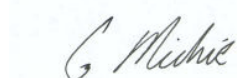
### 10.3 Section 92 (NOR 357)

As noted above, there are several matters that will need to be addressed before the Council can reach a view as to limited notification or public notification of the new NOR.

There may be additional matters which may arise from the notification of the Mt Albert WMR site, or subsequent technical discussions during finalisation of the technical reports, however I am sure these will be resolved through direct discussions before final reports are ready.

Should you have any queries regarding this request, please do not hesitate to contact the undersigned in the first instance on phone 353 9313.

Yours sincerely,



Graeme Michie  
Senior Resource Consents Project Manager

Enc Attachment 1 (Letter re Noise and Vibration – Styles Group)  
Attachment 2 (Memo re Earthworks – SouthernSkies)



20<sup>th</sup> March 2013

Graeme Michie  
Senior Resource Consents Project Manager  
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Auckland Council

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By email: [graeme.michie@aucklandcouncil.govt.nz](mailto:graeme.michie@aucklandcouncil.govt.nz)

Dear Graeme,

**RE: Central Interceptor Scheme – Main Works, Post-Notification s92 Request**

Styles Group has been engaged by the Auckland Council to consider the relevant technical reports and the information provided as part of the Central Interceptor Scheme, (CIS) specifically in relation to the potential vibration and noise effects. This advice has been prepared following notification of the proposals and the close of submissions. This advice comprises a request for further information prior to the preparation of a substantive review report and is subsequent to our earlier request dated 24<sup>th</sup> September 2012, and the response from Tonkin & Taylor (T&T) dated 12<sup>th</sup> December 2012. In our previous request the following was suggested:

*“...I recommend that one or both of the following be considered and addressed in the Vibration Assessment:*

*(i) That in the event of non-compliance, the vibration limit regime and flow chart be amended to allow for situations where a structure-specific structural evaluation has found that a particular structure is capable of withstanding greater levels of vibration than the DIN4150 limits or twice thereof.*

*And/or;*

*(ii) The Vibration Assessment is expanded to include a section that demonstrates that the proposed works can be carried out within the currently proposed constraints with a high degree of confidence. Particular examples should include blasting and piling activities within 10-15m of a dwelling whilst achieving an acceptable level of progress.”*

The T&T response addresses this by suggesting that condition 14G may require some amendment to allow for higher vibration limits to be applied. Effectively this comprises a response to (i) above.

In light of the response to (i), and with particular regard to the Mt Albert War Memorial site and indeed any other site where rock will be encountered, I consider that a response to item (ii) should be provided also. This is because access to neighbouring properties for pre-condition surveys may not always be available and therefore it may not be possible to effect any change in the vibration limits beyond those permitted by the DIN4150 guidelines. The T&T response rightly points out in the summary section that the requirement to proceed with works whilst complying with the DIN4150 vibration limits could cause significant delays and costs for the job, and would also likely have some considerable effect on the noise effects for the receivers, (where rock breakers are used for a long duration). The T&T response notes however that they expect works to be able to be completed without any adjustments to the vibration limits notwithstanding.

So, in summary I consider that in the event that compliance with the DIN4150 limits is required, the works can be progressed either by blasting with very low charge weights and significant blast-hole drilling requirements, or by long term rock breaking or even a combination of both. In terms of effects, either of these options or a combination of both will lead to a considerable increase in potential noise effects.

In order to complete the assessment of effects, I consider that the following should be provided:

- (1) An assessment that demonstrates that blasting, rock breaking and piling can be undertaken close to receiving dwellings whilst maintaining compliance with the DIN4150 limits. The separation distances used in the assessment should be representative of those encountered at the various sites where such activities are required ( $\leq 30\text{m}$ ); and
- (2) For cases where blasting cannot be undertaken practicably, (due to vibration limit constraints) an assessment of noise effects dealing with long term rock breaking activities, (for example the excavations required at the Mt Albert War Memorial site).

The response should contain sufficient detail to give a good level of certainty that the works can be completed within the constraints of the currently proposed conditions, and taking into account the possible limitations of compliance with the DIN4150 standard.

In the case of Mt Albert War Memorial, particular regard should be had to the fact that there is no free face for blasting in any of the shaft excavations. The lack of a free face can significantly increase the level of vibration in the surrounding ground, and if rock breaking is used the level of effort required to create a face to work from can be significant and time consuming.

I consider that it may be appropriate to provide some indicative blast design(s) if blasting is deemed practicable, and/or the likely duration and plant requirements for rock breaking and the concomitant assessment of noise and vibration effects if this option is indeed deemed to be a candidate.

Once this information has been received, I will be able to complete a substantive review.

I trust that this information is satisfactory. Please do not hesitate to contact me should you have any queries or require any further information.

Kind regards,



Jon Styles  
Director & Principal  
Styles Group

# Memo

To: Graeme Michie  
Auckland Council

Date: 7 March 2013

From: Campbell Stewart  
SouthernSkies Environmental Limited

Cc:

<b>Re:</b>	<b>Purchase Order:</b>	<b>TBA</b>
	<b>Consent Application No.</b>	<b>TBC</b>
	<b>Project:</b>	<b>Central Interceptor (including the CSO</b>
	<b>Collector Sewers)</b>	
	<b>Applicant:</b>	<b>Watercare</b>

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SouthernSkies has undertaken a review of the Section 92 response report submitted to Auckland Council and applicable appendices for the above project, in relation to the proposed earthworks. I have attached my assessment comments below under each relevant question posed in the original S92 technical memo

## Earthworks

- 1. It is clearly understood that the detailed construction methods for the works will not be known until a construction contract has been awarded, and for this reason a CMP approach is proposed. The CMP approach is a proven management approach for large infrastructure projects. In assessing the effects of a project that proposes the use of a CMP, rather than providing the construction methodologies and detail at the time of application, the level of detail in the CMP, the expectations, the standards, procedures and protocols become the key aspects of assessment to determine the effects of the proposed project. Please provide further information in this regard.*

In response to Question 1 the applicant has referred to the Draft Construction Discharge Management Plan (CDMP). See below 2(a) for comment on the CDMP. The CDMP addresses one aspect of a CMP. In all previous large scale infrastructure projects that I have been involved with where a CMP is proposed, a draft CMP has been submitted at the time of application.

The CMP approach provides the expectations, the standards, procedures and protocols that become the key aspects of assessment to determine the effects of the proposed project in the absence of detailed construction information. This is often the case at the time of consenting large infrastructure projects due to the complexity and the timing of the applications vs actual timing of construction (generally several years after the commencement of the planning process).

The applicant has proposed that environmental management will be undertaken in accordance with a CMP that will be prepared by the Contractor which will set out the construction methodologies and mitigation measures to be taken to minimise the effects on the environment.

Without a draft CMP to assess and comment on the parameters and expectations of the CMP, there is very little to assess in regard to construction methodology and the possible effects.

Without a draft CMP to assess and comment on we will be left with no choice but to prepare a detailed consent condition outlining the specific details to be provided in the CMP and the specific approval process that will apply so that Auckland Council can have confidence in the robustness of the management plan approach. This very prescriptive approach will be necessary to support a recommendation that the likely adverse effects will be no more than minor.

So in summary, either the applicant provides a draft CMP or we adopt that very prescriptive approach in the consent recommendation.

2. The draft erosion and sediment control plans (ESCP's) have a significant number of inconsistencies (referring to controls in the reports that are not in the plans) and examples of devices not complying with TP90. Whilst it is considered that there is no obvious reason that TP90 could not be achieved on the sites, the current set of ESCP's do not confirm this. Further work is required to present ESCP's that are in accordance with TP90.

The ESCP's have been revised and now generally show a consistent approach and standard in general accordance with TP90. As previously stated, I acknowledge that in these large projects detailed erosion and sediment control plans can be provided through a Contractors Management Plan (CMP) and that approach is proposed for this project. Moreover, there is no reason that TP90 compliance cannot be achieved for this project for the surface based earthworks associated with the project. Therefore, I accept the information now provided in revised draft the ESCPs/

3. There are other specific aspects of the project where there is limited information supplied associated with what are likely to be the main construction related impacts.

(a) Dewatering:

It is acknowledged that dewatering will be required and there are estimates as to the volume of water that may need to be managed. Where dewatering will be discharged to the receiving environment, water quality standards and expectations of the contractor will be required. Please detail the project methodologies, standards and protocols for dewatering. In addition, please indicate what chemicals/conditioners will potentially be used in tunneling works and the potential effects these have on discharged water.

A Draft Construction Discharge Management Plan (CDMP) has been supplied. The CDMP describes activities that are likely to necessitate dewatering and the procedure and process for managing the water. Specific details of the water treatment devices are not given and this is accepted as the specifics of the devices and operation and maintenance etc would be expected to be provided by the successful contractor.

The CDMP indicated water quality standards to be checked prior to discharge referring to pH ranges and a water clarity measure.

No discussion is given for other potential water quality measures relating to specific chemical / conditioners that may be used during the tunneling operations. It would be useful and appropriate to add these parameters.

(b) Wheel washes:

Wheel wash systems are proposed at the construction sites. Wheel wash water has the potential to create significant water quality discharge issues if not managed well. Wheel wash water will typically need to be chemically treated to achieve a discharge standard. The discharge of wheel wash water to a TP90 device during a rain event generally results in the device being overwhelmed creating non compliance with conditions of consent and TP90. Unless the site methodologies includes closing access during rain events, simply treating the wheel wash with a TP90 device will not achieve an acceptable level of treatment. Please amend the proposal to show a revised methodology to ensure that wheel washes will be closed systems or incorporate chemical flocculation to achieve an appropriate level of treatment.

The additional information supplied now refers to wheel wash water to be directed to a dewatering treatment plant / device, indicating a separate control to the TP90 device "treating" the surface area of the construction yard. Specific details of the water treatment devices are not given and this is accepted as the specifics of the devices and operation and maintenance etc would be expected to be provided by the successful contractor.

(c) Chemical treatment of pumped water (dewatering and wheel wash water) will likely be required to achieve acceptable water quality standards. A draft chemical treatment plan is required to clearly detail the standards and protocols for the use of chemicals for water treatment.

A Draft Chemical Treatment Management Plan (CTMP) has been supplied. The CTMP does not meet best practice and would not be approved. It proposed batch dosing for impoundment devices within 24 hours of a rainfall event. Batch dosing following the rain event is generally regarded as pointless as the device would have discharged during the event and 24 hours later settlement time would have in many cases cleared up the remaining water. Best practice for all impoundment devices involves rainfall activated systems. Batch dosing is only used in situations when pumping to a device that has a capped outlet. Following the batch dosing and once water quality standards have been achieved, the cap can be removed and the device allowed to discharge.

In the absence of a satisfactory Draft CTMP consent conditions could be developed detailing the requirements and expectations of the CTMP that would meet Auckland Councils expectations.

(d) The proposal includes the metaling of the site access road and compounds to create "stabilised" environments. From experience,

metalled access roads create significant sediment related issues under heavy traffic loads in wet conditions. The status of the access roads and compounds through the duration of the projects need to be understood as currently the assertion is that they will be stabilised and therefore clean and the effect on the receiving environment has been described as such. Again, to avoid potential issues in achieving effective controls during the tendering and subsequent construction phase, more detail is required to show how stabilized access roads will be maintained in a non-erodible state.

The Draft ESCP now states that the access roads will be chip sealed with concrete vehicle crossings. This is a satisfactory outcome.

## **Section 92 Response Attachments**

### **Attachment 2: Mt Albert War Memorial Reserve Updated Drawings**

Plot Date: 14-May-13 8:59 a.m.  
File path: P:\0538 - Central Interceptor\04 Drawings\4.3 Working\AEE\Consent\General\DWG

Project No.

					DESIGNED	NL		
					DES. CHECKED	JS	-	
					DRAWN	AP		
C			AP	JQC	DWG. CHECKED	NL	-	
B	01/03/13	CONSENT ISSUE	AP	PR	REV'D P.MGR	JS		
A	-	DRAFT	AP	PR	APP'D P.DIR	CC		
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE	

OPERATIONS

SITE LAYOUT AND DESIGNS INDICATIVE  
ONLY AND SUBJECT TO CHANGE DURING  
DETAILED DESIGN DEVELOPMENT

ASSET MANAGER

AEE MAY 2013



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## CENTRAL INTERCEPTOR GENERAL

MT ALBERT WAR MEMORIAL RESERVE CAR PARK - PERMANENT WORKS PLAN

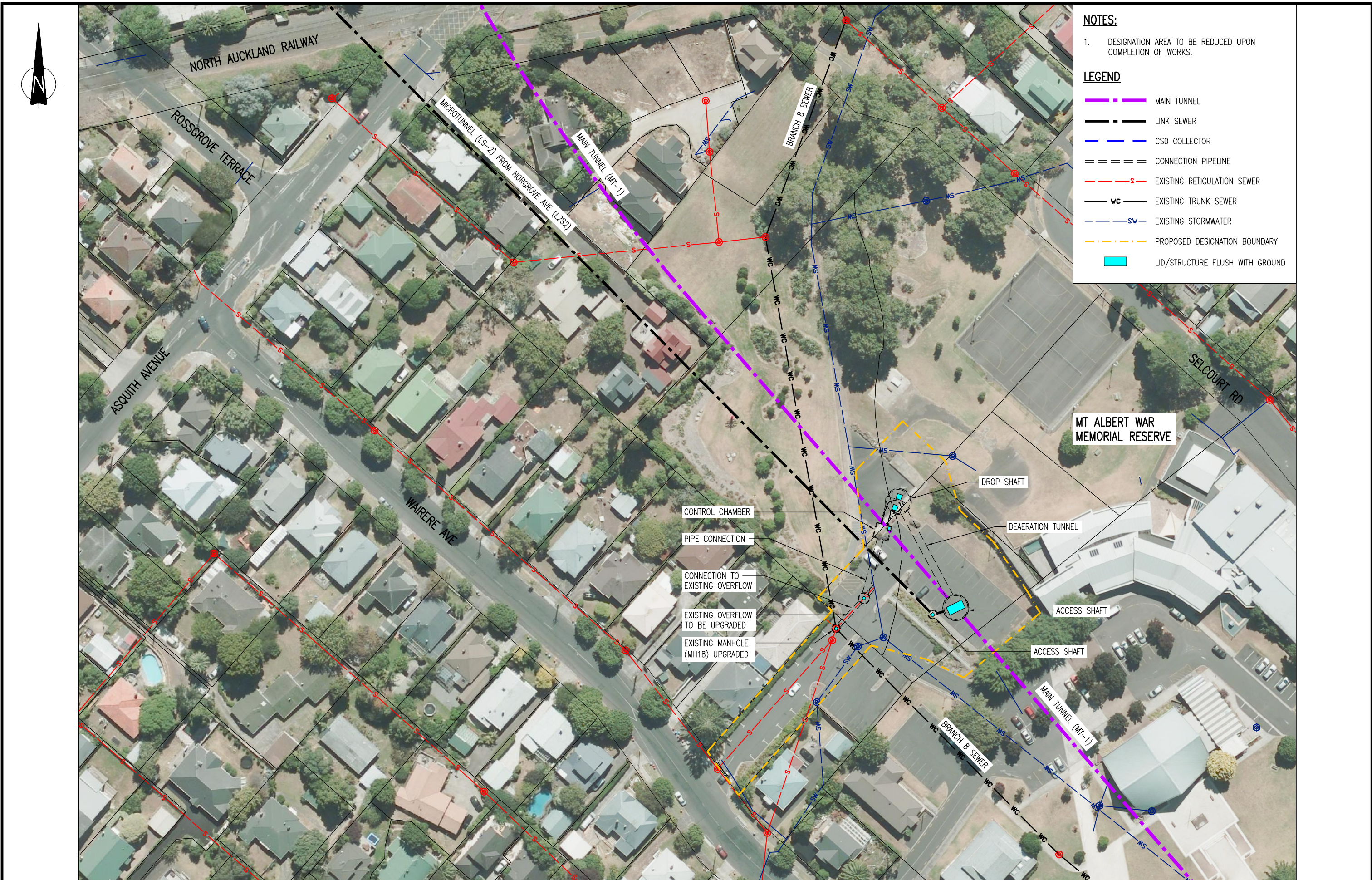
CAD FILE AEE-MAIN-2.1A_C_Draft DATE 14-May-13			
ORIGINAL SCALE A1		CONTRACT No.	
1:1000 A3		0538	
DRAWING No.			ISSUE
AEE-MAIN-2.1A			C

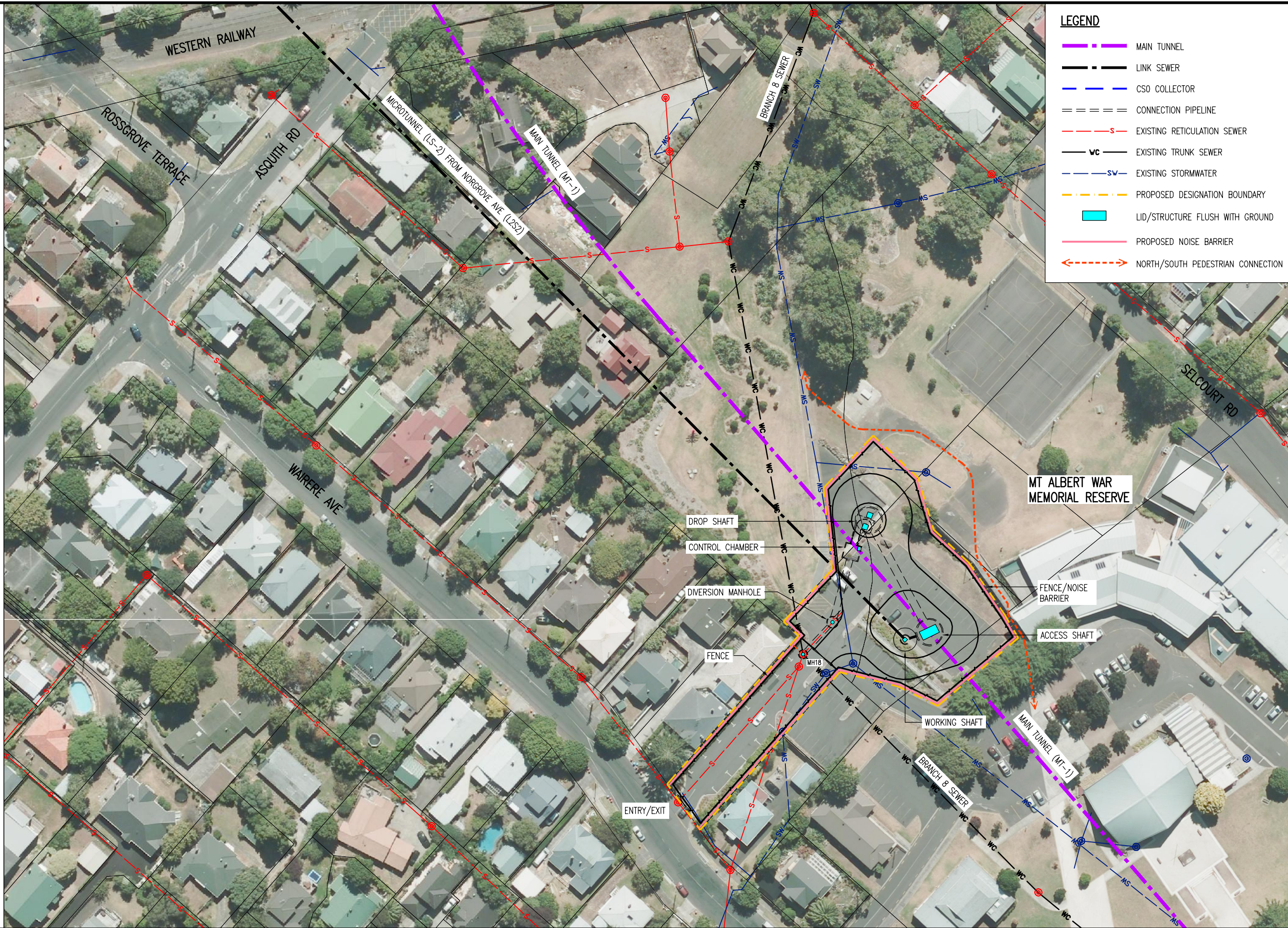
### NOTES:

1. DESIGNATION AREA TO BE REDUCED UPON  
COMPLETION OF WORKS.

### LEGEND

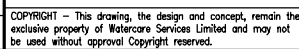
	MAIN TUNNEL
	LINK SEWER
	CSO COLLECTOR
	CONNECTION PIPELINE
	EXISTING RETICULATION SEWER
	EXISTING TRUNK SEWER
	EXISTING STORMWATER
	PROPOSED DESIGNATION BOUNDARY
	LID/STRUCTURE FLUSH WITH GROUND





OPERATIONS
ASSET MANAGER

AEE MAY 2013



## MT ALBERT WAR MEMORIAL RESERVE CAR PARK – CONSTRUCTION WORKS PLAN

CAD FILE AEE-MAIN-2.2A_D_Draft DATE 14-May-13	
ORIGINAL SCALE A1 1:1000 A3	CONTRACT No. 0538
DRAWING No. AEE-MAIN-2.2A	ISSUE D

## **Section 92 Response Attachments**

### **Attachment 3: Traffic**

Watercare Services Ltd  
c/- Central Interceptor Project Team  
Aecom  
PO Box 4241  
Shortland Street  
**Auckland 1141**

TDG Ref: 11117/6  
6 May 2013

**Copy via email:** [acederma@tonkin.co.nz](mailto:acederma@tonkin.co.nz)

Dear Alia

**Central Interceptor Main Project Works  
Response to Section 92 Request**

Auckland Council has undertaken a review of additional information provided in response to the previous section 92 request (December 2012) and submissions received on the NOR's and resource consent applications for the main project works of the Central Interceptor. Following this review, a further information request has been made (8 April 2013).

Ms Angie Crafer of Flow Transportation has reviewed the submissions and s92 response pertaining to traffic issues and has identified a number of areas where further information is required, as well as other matters arising in relation to the new Mt Albert War Memorial Reserve Car Park site. The following provides this further information in relation to transport matters. In each case, the question asked by Council is quoted and shown in italics and the response to the question follows immediately thereafter.

**1. Traffic**

**1.1 Matters arising from submissions**

- (a) *Please advise if there is a suitable location for the pedestrian crossing on Sandringham Road to allow construction access to AS4 (Walmsley Park) to be south of Oakley Creek (submission 679). Also consider and provide assessment of effects during regular nearby events that generate greater than typical traffic, parking and foot traffic, e.g. regular events at the Wesley Community Centre, markets, etc.*

Comment

The proposed location of the construction access to the north of Oakley Creek at Walmsley Park was selected following consideration of effects on pedestrian access. Options for relocating the pedestrian crossing have been considered and discounted, as described below.

In essence there are three options for the crossing:

- (i) retain the existing pedestrian crossing location,
- (ii) shift the crossing to the north of Gifford Avenue, or
- (iii) shift the crossing south of its existing location.



Some existing sizeable trees are located within Walmsley Park and as such, to be able to provide access to the worksite on the southern side of the stream, the access would need to be located some 10m north of from the existing pedestrian crossing. It is noted that there are no protected trees in Walmsley Park specified in the District Plan. During the major construction component of the works the access is expected to generate up to 56 heavy vehicle movements and 12 passenger vehicle movements daily. This volume of vehicles in this proximity to the existing crossing is not considered to be suitably separated from pedestrian movements to ensure pedestrian safety whilst retaining the existing location.

To move the crossing to the north it would need to be placed between the driveways for properties 725 and 728 Sandringham Road, some 75m from its existing location and some 65m from a potential vehicle entrance on the southern side of Oakley Creek. This is dictated by the location of Gilford Avenue and of the surrounding property driveways. Each of these driveways would directly abut the crossing. This would begin to move the crossing away from the pedestrian desire lines of Walmsley Park and the popular Wesley Community Centre and Markets which are located near to the existing crossing location. In this northern location it is considered that pedestrians arriving at either of these facilities from the south would not use the crossing due to its location. Further this would also require all pedestrians using the crossing to also cross Gilford Avenue. With the current location of the pedestrian crossing only pedestrians approaching from the eastern side of Sandringham Road are required to cross Gilford Avenue.

To move the crossing to the south it would need to be placed either in front of 763 Sandringham Road, some 30m from its existing location and some 40m from a potential vehicle entrance on the southern side of Oakley Creek, or it could be moved 150m to the south, to outside number 754 Sandringham Road. This is the next closest possible location due to the intersection with O'Donnell Avenue and the location of the existing bus stops. Both locations would provide for the general pedestrian desire lines, although the further away location would not provide for pedestrians approaching from the north or from O'Donnell Avenue.

All locations are dependent on approach sight distance. For a vehicle travelling at 60 km/hr (typical design speed for a 50 km/hr road) in an urban area such as this, the Land Transport NZ Pedestrian Planning and Design guide suggests a sight distance of at least 55m. These have been checked on site and are able to be met by the potential alternative locations.

It is noted that, once the construction works have been completed, vehicle access will need to be retained for inspection and maintenance. Once construction works are completed the temporary access bridge will be removed and a new driveway adjacent to the existing pedestrian crossing will be constructed to service the site with minimal vehicle movements (once a month), thereby posing a significantly reduced risk in comparison to if the construction access was located here.

In regards to the Wesley Community Centre, it is noted that every Tuesday and Friday between 7:00am – 1:00pm there is a Farmers Market on-site. The positioning of the construction access as currently proposed (north of pedestrian crossing and creek) purposefully separates construction vehicles from the Community Centre (located south of the creek/crossing). The relatively low volume of additional traffic (9 vehicles per hour) is not expected to adversely affect the Community Centre.

- (b) *Further assessment as to the safe operation of the WS2 (May Road) site driveway and of Roma Road appears warranted, including whether the site access can accommodate two-way car movements, and effects on the operation of Roma Road given that trucks are shown to need the whole width of the driveway to turn to/from Roma Road. Given the number of construction vehicles and two way operation not being possible, please advise how will this be managed and what effects this may have on*



*other vehicles using Roma Road (submission 696). Has a one way system with entry off Roma Road and exit onto May Road been considered?*

#### Comment

Figure 12b (attached) shows two-way car movement over the entire access. Given the site driveway will need to be around 7.5m in width to accommodate the truck tracking shown in Figure 12a included in Attachment 6 of December 2012 Section 92 Response Report (attached), two-way operation of cars will be easily achievable.

Two-way operation for trucks will not be possible at the driveway entrance (but will be along the access-way itself). Of note the majority of users (including all truck drivers) will be entirely familiar with the site as it will be the same drivers using the site on a regular basis. The signals / driveway are intended to work as follows:

- Generally signals will be on red for all exiting vehicles thus giving priority to entering vehicles.
- When a vehicle exits the site they will come up to the signals, stop and trigger the green exit aspect. At the same time the “truck coming” warning sign will be illuminated.
- The exiting vehicle then leaves the site and gives way to vehicles on Roma Road as per a standard driveway.
- The reason for the “truck coming” sign is when a truck exits another truck cannot enter at the same time. Thus there is the possibility that when the truck is exiting another truck could be coming along Roma Road wanting to enter the site which needs to be managed. This should however be put into context that there will generally be 6 truck movements per hour (3 in, 3 out) in Stage 1, and nine movements per hour in Stage 2 (as per the original traffic report) and as such the chance of meeting another truck in this location will be relatively low. However it is recognised that it will occur.
- When the “truck coming” sign is illuminated, entering truck drivers on Roma Road will be advised to slow and pull over and /or stop in the area where the on-street parking has been removed and wait for the truck to exit the driveway before turning in (ie it is simply a warning device). If another general vehicle on Roma Road is behind them they will simply go past the stationary / parked truck.

Given the length of time involved a manual controller will only likely be present when larger / one-off deliveries occur (likely with the semi-trailers also shown in the right window of Figure 12a), with the remainder of time generally being truck and trailer units (spoil removal, shown in the left window of Figure 12a).

In terms of a one way system with entry off Roma Road and exit onto May Road, this option has been considered and discarded due to other non-traffic effects. In particular, access to May Road along the northern boundary of the property is not considered practicable given the extent of culverting that would be required along the length of the existing watercourse. Other alignment options would require use of private land.

- (c) *Please provide further assessment as to the operational effects on the adjacent road network, including cumulative effects, in the vicinity of WS2 during the working day (submission 696).*



#### Comment

This has previously been provided in the Section 92 Response Report dated December 2012, Attachment 6, under Section 1.4 and 1.6.1 (1<sup>st</sup> bullet point and 5<sup>th</sup> bullet point). This covered cumulative effects of six construction sites in operation (including WS2) in the adjacent road network including the Dominion Road/SH20 interchange, Mairoro Road/SH20 Interchange; Dominion Road/Denbigh Avenue intersection and May Road/Stoddard Road/Denbigh Avenue intersection. This covers all the major surrounding road network in terms of cumulative effects based on the likely truck routes.

- (d) *Further consideration is required in respect of how to safely manage access to the Western Springs Interchange site (adjacent to Caltex) (submission #741), and whether access should be restricted to outside of peak times due to the exiting truck tracking into the centre rather than kerbside lane.*

#### Comment

In regards to the secondary site adjacent to the Caltex it is noted that the site is very small and can only cater for single unit trucks. Within the December 2012 Section 92 Response Report Attachment 6, Figure 2a was produced showing a truck entering and exiting the site in a forwards direction to/from the site. As such, while the access to the site is adjacent to the Caltex site, the impact will be negligible given that vehicle volumes will be low (likely up to 9 per hour) and all vehicles will enter and exit the site in a forwards direction and only undertake left turns (due to the presence of a solid central island). In terms of the existing truck tracking into the centre rather than kerbside lane, this will be dependant on the width and design of the proposed vehicle crossing. Revised Figure 2a.v2 attached shows the truck only tracking into the kerbside lane which would require a slightly amended crossing design. No restrictions to these movements are therefore considered necessary.

- (e) *Assessment of the operation of the St Lukes Road/Morningstar Place intersection including expected changes in traffic from nearby developments (e.g. St Lukes Mall) as well as cumulative effects of other Central Interceptor construction traffic using St Lukes Road (submission 742).*

#### Comment

With approximately nine vehicle movements generated by the site per hour, the worst case scenario would be to assume all nine vehicles will be exiting the site within the hour and accessing the St Lukes Road / Morning Star Place intersection. This is equivalent to one additional vehicle exiting Morning Star Place every seven minutes. The cycle time for this intersection is between 100 - 130 seconds. This suggests that one site vehicle would be added to the intersection every third or fourth phasing cycle. This will have a minimal effect on the traffic light phasing, thus the overall effect on the function of the intersection and capacity of St Lukes Road / Morningside Drive intersection will be negligible. It is noted however that the cycle time for exiting Morningstar Place is very small (2 – 3 seconds) and the operation of this leg could be greatly improved by adding a couple of seconds to this phase, especially in the morning peak period.

Further, SIDRA analysis of the St Lukes Road / Morning Star Place signalised intersection has been undertaken both with and without the Central Interceptor traffic added. As noted in submission 742 the St Lukes shopping centre is proposed to be expanded (as provided for by Plan Change 8) by the time the Central Interceptor construction takes place. As such, we have used the predicted traffic volumes from the supporting documentation of Plan Change 8 in the analysis (PM peak period) and factored in minor upgrades to this intersection proposed as part of the expansion). This modelling also included cumulative effects of traffic from other Central Interceptor construction sites along St Lukes Road. These could

potentially include Western Springs (although very unlikely as access is more likely via SH16 and to SH20 via Waterview Connection), Mt Albert War Memorial Reserve, Motions Road, Western Springs Depot, and potentially Norgrove Avenue (although also very unlikely). These are unlikely to all occur at the same time. If it is assumed that two of the three likely secondary sites generate traffic along St Lukes Road at the same time, this equates to up to 18 vehicle movements in the peak hour (10 trucks and 8 cars).

As noted in the original s92 response the Waterview Connection project will be completed by the time construction of the Central Interceptor begins. Traffic modelling undertaken by BECA for NZTA predicts that volumes on St Lukes Road will reduce by at least 13% once the Waterview Connection is in place. This reduction has been included in the modelling (ie assumed that Waterview Connection is in place).

The results of the modelling confirm that with the additional Central Interceptor construction traffic, the performance of the St Lukes Road / Morning Star Place intersection essentially remains unchanged. In particular, the average delays at the intersection as a whole increase by around 2 seconds while average delays to vehicles on Morning Star Place increases by only 0.2 seconds. The results of the SIDRA analysis are attached.

- (f) *Identification of means to minimise and manage effects on residents and visitors (pedestrians, cyclists, parking, deliveries) as a result of access to AS2 (Lyon Avenue) (submission 742).*

Comment

The number of vehicles expected to use the site is low, with up to nine vehicle movements per hour (five heavy and four light cars). Further, the size of trucks is expected to be a single unit truck. Discussions are currently being held with the submitter regarding means to minimise and manage effects to residents and visitors to the site. These measures could possibly include:

- Providing temporary parking to compensate for any lost parking (including visitor spaces),
- Temporarily adding additional green time to the phasing of the Morning Star Place leg of the signalised intersection with St Lukes Road,
- Providing additional traffic calming measures on Morningstar Place especially at critical locations when pedestrians and cyclists are present,
- Providing alternative pedestrian access to Roy Clements Treeway,
- Providing a monitoring programme relating to any effects created by heavy trucks on the existing road surface,
- Ensuring representatives of the resident's society in Morning Star Place are involved in the production of the development of the detailed Traffic Management Plan for the site.

## **1.2 Section 92 Response**

Further information is sought following the section 92 response:

- (a) *Please provide clarification of vehicle speeds used for tracking assessments.*

### Comment

The majority of truck vehicle tracking is based on 5kph when entering from a public road into a driveway as well as traversing through the construction sites. Other areas (eg along public roads) have been based on the expected speed environment including current posted speed limits or proposed speed restrictions (eg 30km/hr speed limits).

- (b) *Please provide clarification of morning peak traffic volumes assumed on Bullock Track (queues in Tables 10 and 11 of TOG Transport Response appear low) and details of calibration of critical gap assumed in modelling.*

### Comment

Traffic volumes at the Great North Road / Bullock Track / Tuarangi Road intersection were based on those observed during the TDG surveys of July 2011, scaled to 2016 flows. These 2016 flows were based on the Waterview Connection model data as requested by Council in the original s92 request.

In practice this meant that the 2 hour flow volumes for the Great North Road / SH 16 Eastbound interchange from BECA WRR model were factored to peak hour (60 min) flow volumes. The scaling factor was based on the actual ratio between the two hour and peak hour flows observed at the SH16/ St Lukes interchange during the 2011 surveys. The resultant flows entering this intersection from the east (westbound along Great North Road) and exiting this intersection to the east (eastbound along Great North Road) could thus be obtained.

This 2016 total flow was then apportioned to each of its legs based on the ratio of these components in the surveyed 2011 volumes. It so happens that the BECA 2016 model has a significant reduction in overall traffic in the area (AM in particular) due to the construction of the Waterview Connection project thus improving the performance of this intersection in the AM period, in particular.

The Gap Acceptance for the right turn out of Bullock Track is 5.5 seconds.

Regardless of the above, an analysis of the Bullock Track /Great North Road intersection has also been undertaken using the higher 2011 TDG surveys. Table 1 summarises the 2012 model based on TDG Survey data. As shown in Table 1 and observable on site, currently large delays occur for vehicles exiting the Bullock Track.

Approach	Weekday AM Peak			Weekday PM Peak		
	Average Delay (s)	LOS	95 <sup>th</sup> % Queue (m)	Average Delay (s)	LOS	95 <sup>th</sup> % Queue (m)
Great North Road WB	0.3	N/A	1	0.3	N/A	3
Great North Road EB	1.7	N/A	1	4.3	N/A	4
Bullock Track	238.5	F	236	290.2	F	258
Tuarangi Road	20.4	C	45	15.5	C	12
<b>Intersection</b>	<b>30.8</b>	<b>N/A</b>	<b>236</b>	<b>35.4</b>	<b>N/A</b>	<b>258</b>

**Table 1: Model Results for Great North Road/ Bullock Track/ Tuarangi Road –Surveyed 2012 Volumes**

Table 2 summarises the results from the 2012 Construction Year, which reflects the effect of adding predicted construction traffic to the 2012 Surveyed Traffic volumes model.

Approach	Weekday AM Peak			Weekday PM Peak		
	Average Delay (s)	LOS	95 <sup>th</sup> % Queue (m)	Average Delay (s)	LOS	95 <sup>th</sup> % Queue (m)
Great North Road WB	0.3	N/A	1	0.3	N/A	3
Great North Road EB	1.8	N/A	1	4.3	N/A	4
Bullock Track	256.1	F	250	299.5	F	264
Tuarangi Road	20.4	C	45	15.9	C	12
<b>Intersection</b>	<b>32.4</b>	<b>N/A</b>	<b>250</b>	<b>36.4</b>	<b>N/A</b>	<b>264</b>

**Table 2: Model Results for Great North Road/ Bullock Track/ Tuarangi Road –Construction Year 2012**

As can be seen in the table above the effects of the construction traffic are minor, with an overall increase in delay of between 1 and 1.6 seconds for the two peak hours modelled and an overall increase in queue length of up to two vehicles.

It is again noted that the truck routes have been chosen (and the entry / exit arrangement chosen) so to ensure that no additional vehicles (cars or trucks) are added to the critical right turn exit movement from Bullock Track onto Great North Road which is known to experience delays in peak periods. As such, the modelling results of this leg at the intersection are largely immaterial.

- (c) *Please provide confirmation that the pedestrian refuge proposed on Whitney Street south of Trevola Street is feasible (text indicates not), or remove from drawing 34.v2.*

Comment

As per Section 1.16.1 of Attachment 6 of the December 2012 Section 92 Response Report), an additional pedestrian refuge island is likely to be inappropriate given the proximity to driveways. Rather, a cut-out of the existing island near the roundabout will be provided (Figure 33.v2 and Figure 34.v2). A temporary pedestrian crossing to the north of Trevola Street could be provided (as noted in Section 1.16.1), however given the reduced speed environment we consider this is unwarranted).

## 2. Traffic and Parking

Ms Crafer has also considered the proposed new Notice of Requirement for the Mt Albert War Memorial Reserve Car Park site, and notes the following matters arising from her review of the Transport Assessment provided with the NOR:

- (a) *Whilst generally the public parking demands at the Reserve are likely to be met on site, there will be times when the loss of 65 car park spaces will have an effect on the surrounding network, with motorists looking for parking spaces and parking on-street. Accordingly, and as recommended in the Transport Assessment report, alternative parking areas should be identified to compensate for the potential parking shortfall on weekends and Friday evenings. Whilst this could be addressed by a condition of consent, if no viable alternative can be arranged then there would potentially be more than minor effects on the surrounding network. Accordingly, it is suggested that the applicant identify possible locations at this stage and assess their viability in terms of management, proximity and pedestrian access.*



(b) Comment

Figure 1c attached shows potential/possible locations of viable additional parking spaces within the Mt Albert War Memorial Reserve (23 spaces shown). Watercare is currently discussing options for providing alternative parking with Auckland Council Parks. In addition to these parking spaces that would be in place for the duration of the construction works, the tennis courts off Selcourt Road have been identified as possible 'peak' event parking which has an overall area of approximately 1,350sqm and could easily accommodate up to 45 spaces.

Of note, the additional spaces on Councillors Drive would mean that Councillors Drive (off New North Road) will be required to be one-way. This option was suggested by the Council Parks department and is considered viable. It is suggested that the one-way direction should be in an east-west direction so entry can still occur from New North Road and thus avoid any confusion for vehicles entering from the road network. All exiting traffic will do so via Wairere Avenue. This will mean that all exiting movements will be confined to one exit where Councillors Drive meets Wairere Avenue.

It is also noted that the all possible arrangements and options to provide parking within the reserve are subject to agreement from Auckland Council Parks and the Local Board.

Using July 2011 surveyed volumes as well as April 2013 surveys for the Councillors Drive/New North Road driveway, it is likely that the exiting volume will be up to 88 vph; occurring at around lunchtime on a Saturday (44 existing, plus 14 relocated from the construction driveway on Wairere Avenue and 30 relocated from New North Road / Councillors Drive). SIDRA modelling of the Wairere Avenue/Councillors Drive driveway shows that the queue will be up to one car length and delays of up to 11 seconds per vehicle at this driveway on a Saturday. This is considered acceptable and will cause minimal disruption to users of the reserve.

As noted in the original traffic assessment on a typical weekend with the removal of 65 spaces associated with the works there is expected to be a shortfall of approximately 25 spaces (generally outside major events there is a current surplus of 40 spaces). This will occur on typical weekends particularly in the summer periods during the middle of the day. However with the addition of the parking spaces shown in Figure 1c this shortfall will be almost completely negated.

During weekdays there is expected to be no spill-over.

During major events, the site carparks have been observed to be completely utilised and as such the potential shortfall during these event there will be up to 65 spaces (all those displaced by the construction works). This could however be completely compensated by the 23 on-site spaces shown in Figure 1c and the additional temporary tennis court spaces (45 spaces). It is anticipated that major events at the reserve or the community centre will be infrequent and will be pre-arranged with the authorities.

- (c) *Both the AEE and Traffic Assessment indicate that north-south pedestrian movement will still be possible adjacent to the Recreation Centre, separated from the site by fencing. It is not clear from the plans which route this is, or how it connects to existing paths and further information should be requested from the applicant. The paths northeast of the path past the recreation centre appear to be in disrepair and not connected with other paths.*



Comment

This temporary north-south pedestrian movement connection is also shown at Figure 1a.v2 attached. The existing state of the disrepair of the paths connected to the site is a matter for Auckland Council.

Additional matters in relation to traffic and access noted by Council reporting officers are:

- (a) *The traffic impact assessment discusses parking supply, a proposed parking reduction and predicted shortfalls to be experienced particularly during major events. Please explain what Watercare considers to be a major event, and their typical frequency at this site.*

Comment

Auckland Council has provided a list of “events” permitted at the Mt Albert War Memorial Reserve (attached). It lists a total of 14 confirmed “events” at the site from 26 November 2011 to 25 April 2013. Of them, the two events on the 24<sup>th</sup> and 25<sup>th</sup> November 2012 (and the same events a year before) are by far the largest and are considered “major events”. Of particular note the two large events in November 2012 were both captured in the survey undertaken as part of the Traffic Assessment (Appendix E to the AEE submitted with Notice of Requirement 3) and all other events are significantly smaller in size.

- (b) *Please amend plan AEE-MAIN-2.2A to identify the pedestrian access path that is to be used to maintain pedestrian access through the reserve during construction.*

Comment

Figure 1a.v2 attached shows the pedestrian access path.

I trust this meets your requirements. If you have any further questions please do not hesitate to contact us.

Yours sincerely  
**Traffic Design Group Ltd**

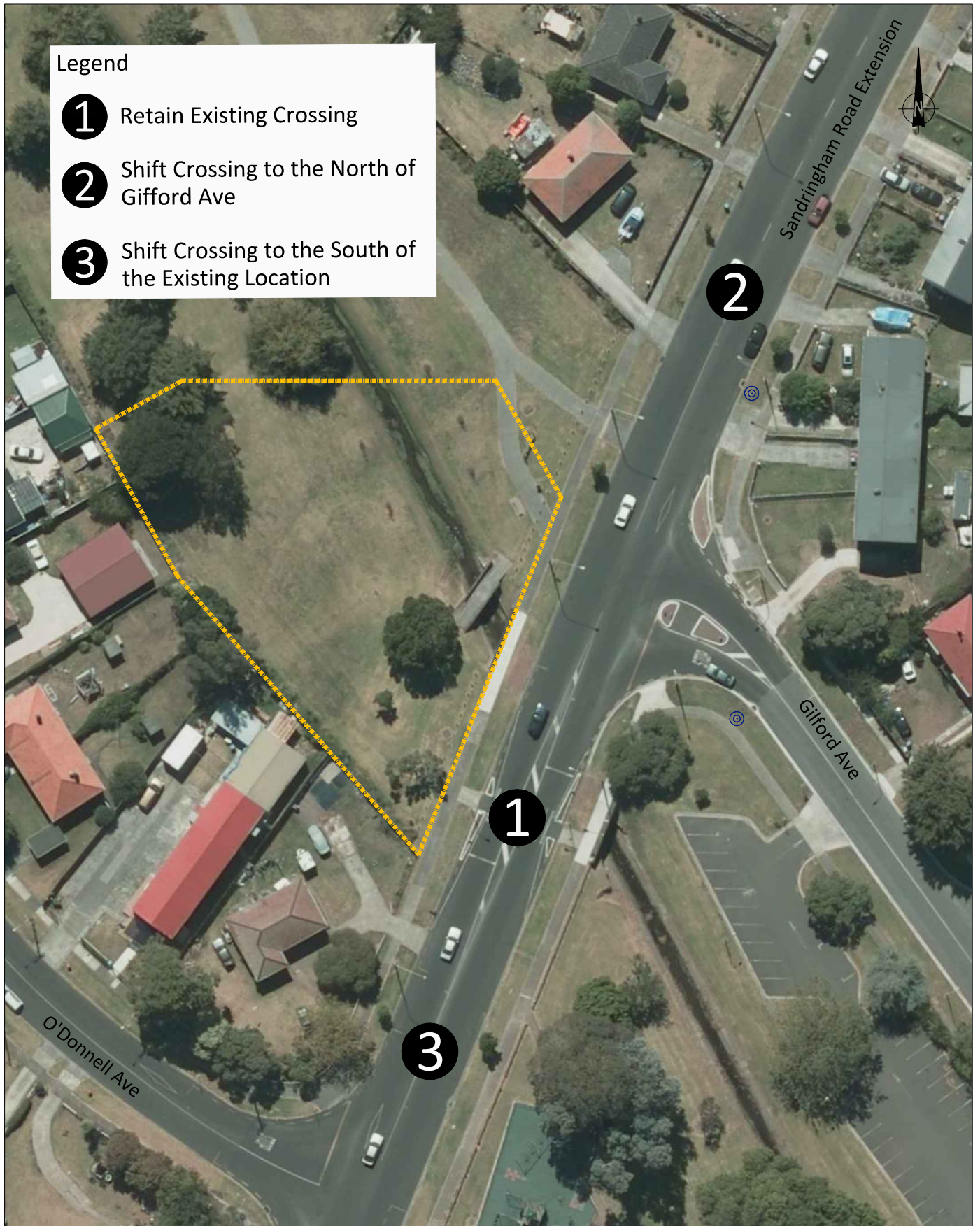
Leo Hills  
**Associate**

leo.hills@tdg.co.nz

attach: Figure 10 a  
Figure 12 a  
Figure 12 b  
Figure 1a.v2  
Figure 2a.v2  
Figure 4c  
List of events for MAWMR  
SIDRA analysis for St Lukes/Morningside Drive

# Legend

- 1** Retain Existing Crossing
- 2** Shift Crossing to the North of Gifford Ave
- 3** Shift Crossing to the South of the Existing Location



Monday, 6 May 2013 0 20mm

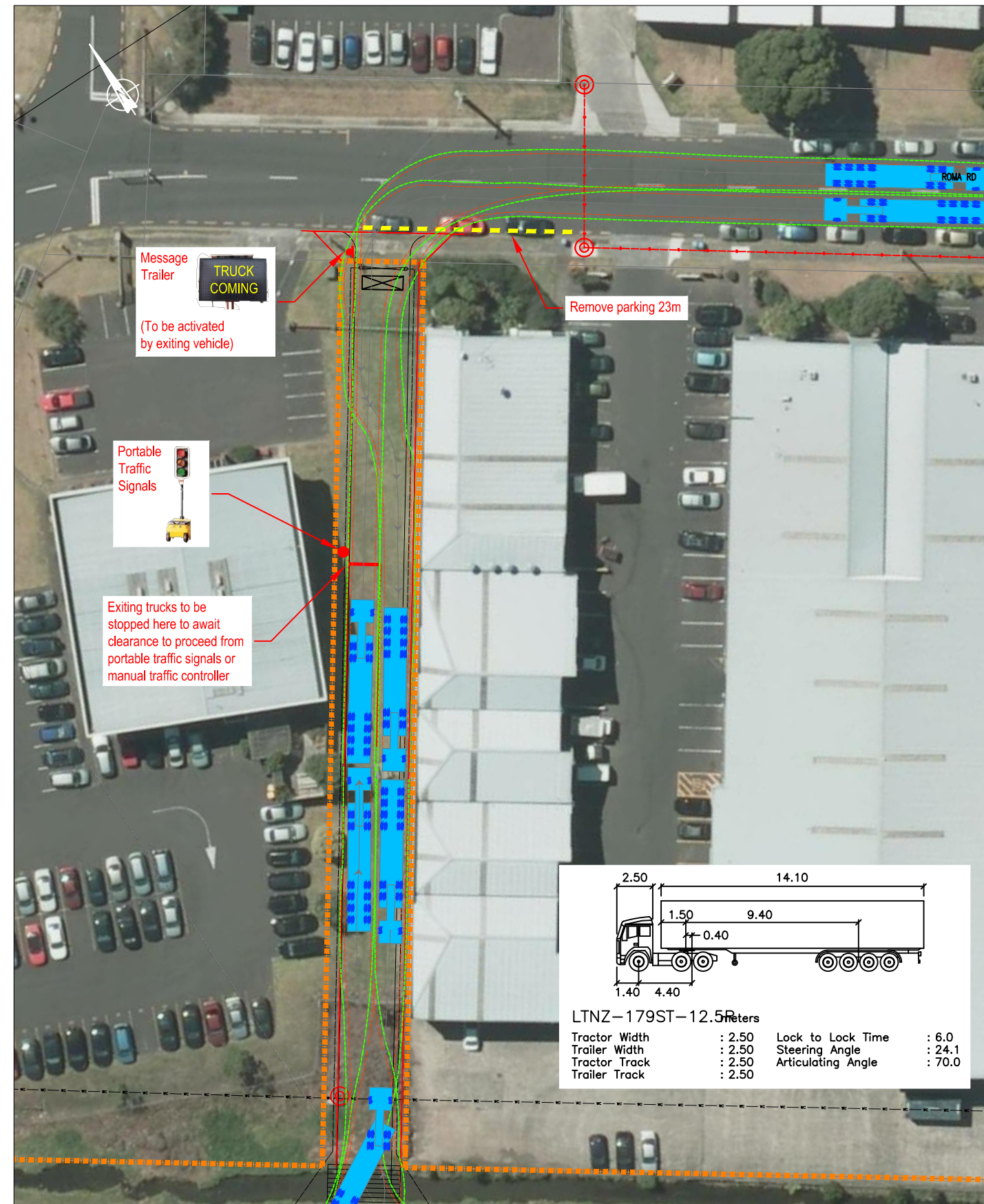
## Watercare Central Interceptor Options For Pedestrian Crossing Locations



10a

SCALE: 1:750@A4

Wednesday, 5 December 2012



REVISION	DATE	DESCRIPTION
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Watercare Central Interceptor  
May Road (WS2) - Truck Tracking



DRAWN: SP  
DATE: 05.12.2012  
SCALE: N.T.S  
DWG NO:1117A49A

Traffic Design Group

12a



Thursday, 18 April 2013

REVISION	DATE	DESCRIPTION
---	05.06.2012	Sourced from Watercare - AEE-MAIN-6.2.dwg
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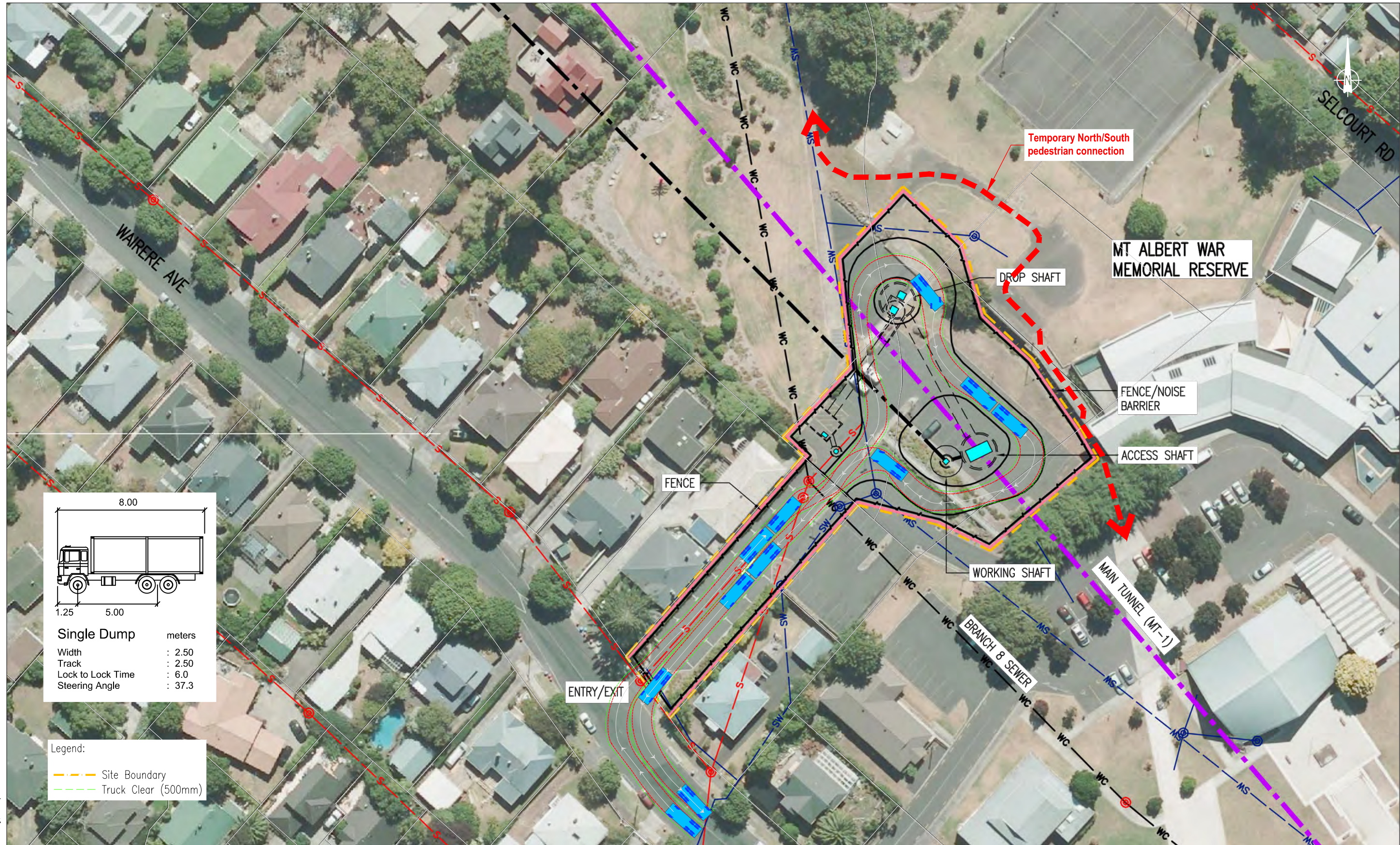
Watercare Central Interceptor  
May Road (WS2) - Car Tracking



DRAWN: CTM  
DATE: 18.04.2013  
SCALE: 1:250@A3  
DWG NO:11117A49A



12b



Thursday, 18 April 2013

REVISION	DATE	DESCRIPTION
---	26.02.2013	Sourced from Watercare - AEE-MAIN-2 2A.pdf
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## Watercare Central Interceptor

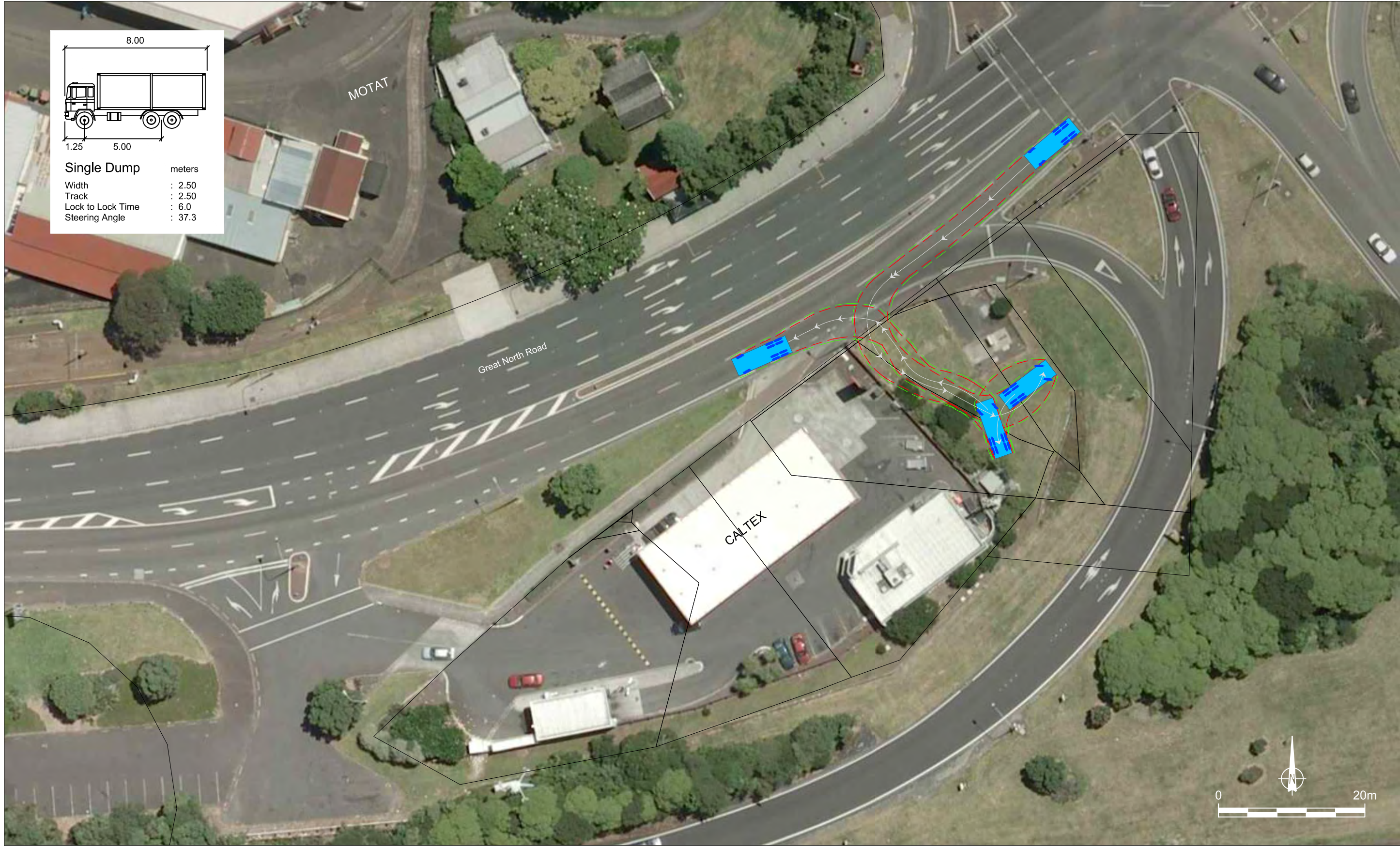
### Mt Albert War Memorial Reserve Car Park (AS1) - Truck Tracking



DRAWN: SP  
DATE: 18/04/2014  
SCALE: 1:750@A3  
DWG NO:11117A48F

Traffic Design Group

1a  
(version 2)



8.00

1.25

5.00

Single Dump

meters

Width : 2.50

Track : 2.50

Lock to Lock Time : 6.0

Steering Angle : 37.3

Thursday, 18 April 2013

REVISION	DATE	DESCRIPTION

Watercare Central Interceptor - WS1 to CSO Collector

Access to Secondary Site

DRAWN: SP

DATE: 18.04.2013

SCALE: 1:500@A3

DWG NO:11117A60B



2a

(version 2)



Friday, 19 April 2013

REVISION	DATE	DESCRIPTION
---	05.06.2012	Sourced from Watercare - AEE-MAIN-1.3.dwg
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Watercare Central Interceptor - Mt Albert War Memorial Reserve

Potential Additional Car Parks

DRAWN: SP  
DATE: 04/04/2013  
SCALE: 1:600@A3  
DWG NO:11117A62A



List of events for MAWMR:

134	Eden Albert Schools Cultural Festival	Mt Albert War Memorial (Rocket Park)	26-Nov-11	1	26-Nov-11	2011	November	Albert Eden	Permitted & Facilitated	Independent	No	Confirmed	Leilana Meredith	28462	9:00 am - 4:00 pm	7200
145	Christmas in Rocket Park	Mt Albert War Memorial (Rocket Park)	27-Nov-11	1	27-Nov-11	2011	November	Albert Eden	Permitted & Facilitated	Independent	No	Confirmed	Matthew Tamaki	28618	6:30 pm - 9:30 pm	4000
343	Talented Tots Childrens Xmas Party	Mt Albert War Memorial (Rocket Park)	10-Dec-11	1	10-Dec-11	2011	December	Albert Eden	Low Impact Permitted / Parks Bookings	Independent	No	Confirmed	Leilana Meredith	33033		200
557	Wedding Ceremony - Harriett Kirkpatrick	Mt Albert War Memorial (Rocket Park)	6-Jan-12	1	6-Jan-12	2012	January	Albert Eden	Low Impact Permitted / Parks Bookings	Independent	No	Confirmed	Leilana Meredith	29309		200
1205	Allergy NZ Birthday Bash	Mt Albert War Memorial (Rocket Park)	19-Feb-12	1	19-Feb-12	2012	February	Albert Eden	Low Impact Permitted / Parks Bookings	Independent	No	Confirmed	Grant Martin	32807		250
2267	Thai New Year Celebration	Mt Albert War Memorial (Rocket Park)	15-Apr-12	1	15-Apr-12	2012	April	Albert Eden	Permitted & Facilitated	Independent	No	Confirmed	Leilana Meredith	27317		300
2369	ANZAC Day - Mt Albert	Mt Albert War Memorial (Rocket Park), Alberton	25-Apr-12	1	25-Apr-12	2012	April	Albert Eden	Permitted & Facilitated	Civic	No	Confirmed	Leilana Meredith	21316		300

		Avenue, New North Road															
2783	Interschool Kiwikick Day	Mt Albert War Memorial (Rocket Park)	14- Jun- 12	1	14- Jun- 12	2012	June	Albert Eden	Permitted & Facilitated	Independent	No	Cancelled	Leilana Meredith	34525		200	
3416	Focus on Fathers BBQ	Mt Albert War Memorial (Rocket Park)	1- Sep- 12	1	1- Sep- 12	2012	September	Albert Eden	Permitted & Facilitated	Independent	No	Confirmed	Leilana Meredith	38630		30	
4246	Eden Albert Schools Cultural Festival	Mt Albert War Memorial (Rocket Park)	24- Nov- 12	1	24- Nov- 12	2012	November	Albert Eden	Permitted & Facilitated	Funded/Sponsored	No	Confirmed	Chade Julie	33514		7000	
4279	Christmas in Rocket Park	Mt Albert War Memorial (Rocket Park)	25- Nov- 12	1	25- Nov- 12	2012	November	Albert Eden	Permitted & Facilitated	Funded/Sponsored	No	Confirmed	Chade Julie	33546		4000	
4498	Thai King's Birthday Celebration	Mt Albert War Memorial (Rocket Park)	9- Dec- 12	1	9- Dec- 12	2012	December	Albert Eden	Permitted & Facilitated	Independent	No	Confirmed	Chade Julie	30968		250	
4810	Allergy NZ Birthday Bash	Mt Albert War Memorial (Rocket Park)	10- Feb- 13	1	10- Feb- 13	2013	February	Albert Eden	Low Impact Permitted / Parks Bookings	Independent	No	Cancelled	Grant Martin	34925		0	
5121	Thai New Year Celebration	Mt Albert War Memorial	14- Apr- 13	1	14- Apr- 13	2013	April	Albert Eden	Permitted & Facilitated	Independent	No	Tentative	Chade Julie	35881		300	

		(Rocket Park)														
5127	ANZAC Day Parade - Mt Albert	Mt Albert War Memorial (Rocket Park), Alberton Avenue, New North Road	25-Apr-13	1	25-Apr-13	2013	April	Albert Eden	Permitted & Facilitated	Civic	No	Tentative	Chade Julie	35821		300
6253	ANZAC Day Parade & Service - Mount Albert	Cenotaph, Mount Albert War Memorial Reserve, New North Road	25-Apr-13	1	25-Apr-13	2013	April	Albert Eden	Permit Not Required	Civic	No	Confirmed	Kaye Thomas	35821	9.15 am	300

# MOVEMENT SUMMARY

Site: PM\_WithSTLexpansion -  
Waterview

St Lukes / Morningside

Signals - Fixed Time Cycle Time = 105 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Morningstar Pl											
1	L	18	16.7	0.067	47.5	LOS D	0.8	6.3	0.88	0.70	23.4
2	T	17	0.0	0.369	55.0	LOS D	2.1	14.8	1.00	0.73	20.4
3	R	23	0.0	0.369	61.2	LOS E	2.1	14.8	1.00	0.73	20.5
Approach		58	5.2	0.369	55.1	LOS E	2.1	14.8	0.96	0.72	21.3
East: St Lukes Road (E)											
4	L	39	0.0	0.600	14.2	LOS B	10.3	75.2	0.40	0.89	38.1
5	T	1059	5.2	0.600	7.7	LOS A	10.3	75.5	0.40	0.36	41.1
6	R	415	1.2	0.514	38.4	LOS D	8.4	59.7	0.83	0.79	26.0
Approach		1513	4.0	0.600	16.3	LOS B	10.3	75.5	0.52	0.49	35.4
North: Morningside Dr											
7	L	356	4.7	1.000 <sup>3</sup>	50.5	LOS D	17.9	130.6	1.00	0.86	22.6
8	T	114	0.0	0.903	55.0	LOS D	20.0	142.4	1.00	0.99	20.2
9	R	581	0.9	0.903	57.2	LOS E	20.0	142.4	1.00	0.94	21.1
Approach		1051	2.6	1.000	54.7	LOS D	20.0	142.4	1.00	0.92	21.4
West: St Lukes Rd (W)											
10	L	600	1.3	1.002	69.4	LOS E	48.1	344.0	1.00	1.20	18.9
11	T	816	6.3	1.002	75.9	LOS E	48.1	344.0	1.00	1.29	17.1
12	R	20	0.0	0.188	60.4	LOS E	1.0	7.1	0.97	0.70	20.4
Approach		1436	4.1	1.002	73.0	LOS E	48.1	344.0	1.00	1.24	17.9
All Vehicles		4058	3.7	1.002	46.9	LOS D	48.1	344.0	0.82	0.87	23.2

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

3 x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	29.0	LOS C	0.1	0.1	0.74	0.74
P3	Across E approach	53	46.7	LOS E	0.1	0.1	0.94	0.94
P5	Across N approach	53	33.6	LOS D	0.1	0.1	0.80	0.80
All Pedestrians		159	36.4	LOS D			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Processed: 19 April 2013 12:07:50

SIDRA INTERSECTION 5.1.13.2093

Project: G:\111100-49\11117\11117-6\Sidra\StLukes\_Morningside.sip

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INTERSECTION**

# MOVEMENT SUMMARY

Site: PM\_WithSTLexpansion +  
WCare - Waterview

St Lukes / Morningside

Signals - Fixed Time Cycle Time = 105 seconds (User-Given Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Morningstar Pl											
1	L	20	15.0	0.074	47.5	LOS D	0.9	7.0	0.88	0.71	23.4
2	T	18	0.0	0.420	55.4	LOS E	2.3	17.0	1.00	0.74	20.4
3	R	26	7.7	0.420	61.7	LOS E	2.3	17.0	1.00	0.74	20.4
Approach		64	7.8	0.420	55.5	LOS E	2.3	17.0	0.96	0.73	21.2
East: St Lukes Road (E)											
4	L	42	7.1	0.609	14.4	LOS B	10.6	77.6	0.40	0.89	38.1
5	T	1068	5.6	0.609	7.8	LOS A	10.6	77.9	0.40	0.36	41.0
6	R	415	1.2	0.514	38.4	LOS D	8.4	59.7	0.83	0.79	26.0
Approach		1525	4.5	0.609	16.3	LOS B	10.6	77.9	0.52	0.49	35.4
North: Morningside Dr											
7	L	356	4.7	1.000 <sup>3</sup>	50.5	LOS D	17.9	130.6	1.00	0.86	22.6
8	T	114	0.0	0.903	55.0	LOS D	20.0	142.4	1.00	0.99	20.2
9	R	581	0.9	0.903	57.2	LOS E	20.0	142.4	1.00	0.94	21.1
Approach		1051	2.6	1.000	54.7	LOS D	20.0	142.4	1.00	0.92	21.4
West: St Lukes Rd (W)											
10	L	600	1.3	1.012	76.0	LOS E	50.6	362.6	1.00	1.23	17.9
11	T	825	6.8	1.012	82.3	LOS F	50.6	362.6	1.00	1.33	16.2
12	R	20	0.0	0.188	60.4	LOS E	1.0	7.1	0.97	0.70	20.4
Approach		1445	4.4	1.012	79.4	LOS E	50.6	362.6	1.00	1.28	16.9
All Vehicles		4085	4.0	1.012	49.1	LOS D	50.6	362.6	0.82	0.88	22.6

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

3 x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	29.0	LOS C	0.1	0.1	0.74	0.74
P3	Across E approach	53	46.7	LOS E	0.1	0.1	0.94	0.94
P5	Across N approach	53	33.6	LOS D	0.1	0.1	0.80	0.80
All Pedestrians		159	36.4	LOS D			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Processed: 19 April 2013 12:10:40

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Project: G:\111100-49\111117\111117-6\Sidra\StLukes\_Morningside.sip

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## **Section 92 Response Attachments**

### **Attachment 4: Vibration**

T&T Ref: 27993  
10 May 2013

Watercare Services Ltd  
Private Bag 92-521  
Wellesley Street  
Auckland 1141

Attention: Belinda Petersen

Dear Belinda

## **Central Interceptor Scheme Response to post notification S92 Request on Potential Vibration Effects**

In response to the S92 Request prepared by Jon Styles of Styles Group for Auckland Council on 20 March 2013 (provided with the Auckland Council letter "Central Interceptor Wastewater Project: Section 92 Response to Application Documents", 8 April 2013), we respond to the issues raised about vibration effects.

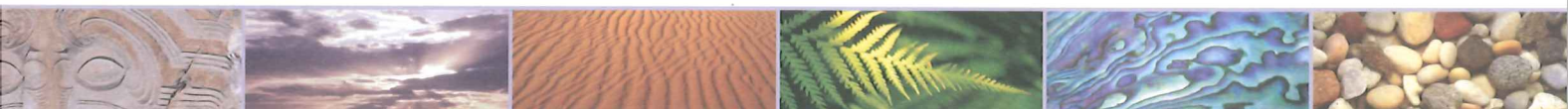
The original Section 92 Request letter of October 2012 recommended one of both of the following be considered and addressed:

*(i) That in the event of non-compliance, the vibration limit regime and flow chart be amended to allow for situations where a structure-specific structural evaluation has found that a particular structure is capable of withstanding greater levels of vibration than the DIN4150 limits or twice thereof.*

*And/or;*

*(ii) The Vibration Assessment is expanded to include a section that demonstrates that the proposed works can be carried out within the currently proposed constraints with a high degree of confidence. Particular examples should include blasting and piling activities within 10-15m of a dwelling whilst achieving an acceptable level of progress."*

The Section 92 Response (December 2012) addressed (i) and we understand that the proposal to apply increased limits for vibration where this is approved by property owners is acceptable to Mr Styles (Option (i)). The second Section 92 request letter (20 March 2013) requests a response also to item (ii) to demonstrate that the works can be undertaken using blasting, rock breaking and piling in compliance with the recommended limits of DIN 4150. It notes a concern with respect to work in Mt Albert War Memorial Reserve that approval by neighbours, whose properties have been subject to a pre-condition survey for the proposed option of increasing the permitted levels of vibrations, may not always be possible.



The assessment undertaken as part of the vibration report prepared in July 2012, was based on a Scale Distance  $d/(W)^{0.5}$  of 61 for 97.5% compliance and 20 for 50% compliance with the DIN 4150 residential standards. This utilised experience from blasting of basalt in the Auckland region where a standard deviation of 0.23 was achieved. This represents a good level of control for quarry blasting activities. We expect this to be conservative and a higher level of control would be achieved using small Maximum Instantaneous Charge (MIC) weights for the shaft excavations. This would be offset by some increased level of confinement when excavating a shaft, albeit the charges would only be used primarily for loosening of the rock.

Applying these parameters, we expect the smallest Maximum Instantaneous Charge weights practical for use on the project will be about 0.3 kg. This would correspond to a set back distance of 30 m for residential properties at 97.5% compliance. If the standard deviation can be reduced and can be confirmed by site specific testing and vibration monitoring, a distance closer to 20 m may be feasible but this would be the minimum recommended unless property owners have consented to the increased limits in Option (i) when the minimum distance would reduce to 15 m. This 15 m structural damage limit would also apply to the closest point to the Community Centre. We do, however, note that blasting using these charge weights was undertaken within 10 m of the owner's structures at Brightside Hospital without damage.

Using these distance controls we have assessed the use of blasting methods for rock excavation for both the original and car park construction sites at The Mt Albert Memorial Reserve. The layouts for the 2 options are shown on Drawings AEE-Main-2.1 Issue A and AEE-Main-2.2A Issue D for the original and car park options respectively.

For the original layout it is considered that blasting using small charge weights to loosen the rock will be feasible for all rock excavation works except the drop shaft which is located about 17 m from 65b Asquith Ave. Blasting may be utilised if alternative solutions are developed in consultation with any affected neighbours for any increase in vibration levels based on condition of the dwelling and tolerance of occupiers.

For the Mt Albert War Memorial Reserve Car Park site we expect blasting will be feasible for the access shaft, working shaft and drop shaft structures which are over 30 m from the nearest dwelling and 20m from the Community Centre. The control chamber excavation extends to about 25m from 9 Wairere Ave and over 30m from all other structures which may allow blasting methods to be used with high levels of control. Alternatively smaller charges may be used to loosen the rock and reduce the time required for excavation by alternative methods. Rock breaking equipment will need to be used to supplement the blasting or as the primary excavation method where blasting is not feasible, eg the 3m diameter Diversion Manhole. Published information provides vibration data which indicates light rock-breakers e.g. Krupp HM170 (now supplied by Atlas Copco) will achieve the DIN 4159 criteria at 5 m while a medium rock breaker e.g. Krupp HM580 will comply at 10 m distance. Rock breakers will need to be the primary excavation.

Piling equipment will be required for installation of ground support in the materials below the basalt rock for the shaft excavations. The connecting pipeline between the Diversion Manhole and Control Chamber will likely be pipe jacked through the Pleistocene soils below the basalt rock. We expect the DIN 4150 criteria will be achieved for bored piling and pipe jacking equipment as well as driven sheet piling at 10 m from residential structures. Hence these plant items may be utilised without additional controls.

## In summary

We conclude that, for the original layout of works at Mt Albert War Memorial Reserve, blasting methods using small charge weights may be undertaken for all but the drop shaft excavations in the basalt rock at Mt Albert Memorial Reserve with vibration limits within the DIN 4150 criteria, ie Option (i) of the Styles' Section S92 request. If approval is obtained from the nearest property owners at 65b Asquith Ave to utilize higher limits, Option (ii), then blasting may also be considered for this shaft.

If the Mt Albert War Memorial Reserve Car Park site is used, excavation of all the shafts should be feasible using the DIN4150 (Option i) limits. Excavation using high levels of control may also permit use of blasting using small charges for the Control Chamber and reduce the requirement for use of rockbreakers. However, rock breakers are expected to be required as the primary excavation method for the Diversion Manhole.

The piling, pipe jacking and excavation works below the basalt rock should be feasible within the DIN4150 criteria for all the proposed works.

Yours faithfully



Peter J Millar  
Senior Geotechnical Engineer

10-May-13

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## **Section 92 Response Attachments**

### **Attachment 5: Noise**

13 May 2013

Watercare Services Ltd  
C/- Central Interceptor Project Team  
Tonkin & Taylor  
PO Box 5271  
Wellesley Street  
Auckland 1141

**Attention: Alia Cederman**

Dear Alia

## **RESPONSE TO SECTION 92 REQUEST – CENTRAL INTERCEPTOR SCHEME MAIN PROJECT WORKS**

### **Introduction**

This letter details Marshall Day Acoustics' (MDA) response to a request for further information made by Auckland Council's noise and vibration technical expert – Styles Group.

The Styles Group letter dated 20 March 2013 raised concerns in relation to the potential increase in noise and vibration effects from rock breaking designed to comply with the vibration limits of DIN 4150.

As excavation through basalt in close proximity to dwellings will inevitably be required for certain sites, the vibration limits of DIN 4150 would constrain the use of blast charges for carrying out the initial rock break-up in some instances. Where it is determined that a larger number of smaller charge sizes would not be effective, the use of hydraulic rock-breakers would be required. The consequence of this is that higher short-term effects are traded for lower long-term effects. However, it is recognised that the potential long-term effects could still exceed the Construction Noise Standard.

In relation to the potential for increased noise effects described above, Styles Group has requested the following assessment:

- (2) *For cases where blasting cannot be undertaken practicably, (due to vibration limit constraints) an assessment of noise effects dealing with long term rock breaking activities, (for example the excavations required at the Mt Albert War Memorial Site).*

This letter assesses noise effects from rock breaking in basalt from the sites identified to contain basalt in the shaft excavation.

The identified sites and estimated duration of excavation in basalt are indicated in the following table.

**Table 1: Site excavations in basalt**

Site	Duration (months)
Western Springs (WS1)	1-2
May Road (WS2)	1-2
Mount Albert War Memorial Reserve (AS1)	1
Lyon Avenue (AS2)	1
Haverstock Road (AS3)	0.5
Walmsley Park (AS4)	1-1.5
Kiwi Esplanade (AS7)	1-1.5
Motions Road (L1S1)	1
Western Springs Depot (L1S2)	1

### Construction Methodology

Shaft excavation in basalt initially requires the basalt to be broken up by mechanical force and/or blasting. As blasting may not be practicable at some sites due to the reasons outlined above, alternative break-up of basalt may occur using a hydraulic hammer mounted on the arm of excavators.

The following summarises the key activities which would typically occur for shaft excavation and support in basalt using hydraulic rock breaking.

- Break-up of basalt by hydraulic hammer excavator(s)
- Muck-out typically by loading buckets/skips by small excavators, hoisting crane, and tipping to muck pile
- Front end loader or excavator used to load spoil from muck pile onto waiting trucks
- Grouting requires rock drilling (by pneumatic hammer drill) pumps and generators
- Rock bolts in basalt by hammer drill

As the MDA Noise Impact Assessment report submitted with the AEE (Technical Report F) has already predicted and assessed the effects of shaft construction activities, this assessment focuses solely on the effects from the long-term use of hydraulic hammer rock breaking machinery.

### Construction Noise Standard – NZS 6803: 1999

The MDA Noise Impact Assessment report recommended the noise limits contained in NZS 6803: 1999 (the Construction Noise Standard) as the Project Construction Noise Limits. The 'Long-term' duration noise limits from Table 2 of the Construction Noise Standard are as follows:

**Table 2: Construction noise limits (long-term duration)**

Time of week	Time period	$L_{eq}$ (dBA)	$L_{max}$ (dBA)
Weekdays	0630-0730	55	75
	0730-1800	70	85
	1800-2000	65	80
	2000-0630	45	75
Saturdays	0630-0730	45	75
	0730-1800	70	85
	1800-2000	45	75
	2000-0630	45	75
Sundays and public holidays	0630-0730	45	75
	0730-1800	55	85
	1800-2000	45	75
	2000-0630	45	75

### Noise Prediction Methodology

The noise from rock breaking has been predicted for a range of receiver setback distances where basalt would be encountered. Annex D of British Standard BS 5228-1:2009 “*Code of practice for noise and vibration control on construction and open sites*”, has been referenced for guidance on a representative activity sound level for rock breaking. A level of 92 dB  $L_{Aeq}$  at a distance of 10 metres is considered to be representative of the sound level (without mitigation) from this activity. Measurements carried out by MDA for basalt breaking on other construction projects showed similar levels.

### Assessment of Construction Noise Effects

The following table shows the results of predictions for a range of distances.

**Table 3: Predicted rock breaking noise levels (without shielding)**

Activity	Equipment	Noise level (dB $L_{Aeq}$ )			
		10m	20m	30m	50m
Shaft excavation	Rock breaker	92	86	83	78

The predicted results in Table 3 indicate that rock breaking noise would exceed the daytime limits of the Construction Noise Standard, with the associated radius of effects extending out past 50 metres from source without mitigation. It should be noted that the predicted noise levels in the table do not include shielding effects from buildings, therefore the radius would generally be somewhat reduced in reality.

The table overleaf provides prediction results including a reduction of 10 decibels for shielding from buildings or where a site noise barrier interrupts line-of-sight between source and receiver.

**Table 4: Predicted rock breaking noise levels (with shielding)**

Activity	Equipment	Noise level (dB L <sub>Aeq</sub> )			
		10m	20m	30m	50m
Shaft excavation	Rock breaker	82	76	73	68

The predicted results in Table 4 indicate that rock breaking would still exceed the limits of the Construction Noise Standard. However, the results also show that the effects radius can be practicably contained to approximately 50 metres or less from the source of rock breaking.

Considering the results in Table 4 and the layout of each site where rock breaking may occur, a more detailed assessment of potential noise effects is warranted. As such, a table of effects has been prepared for the sites where rock breaking in basalt is anticipated to occur (refer to Appendix A). The intention of the table is to provide a tool with which to easily assess the effects of construction noise for each relevant receiver, thereby enabling affected parties to be identified and communicated with prior to construction.

The estimated duration of rock breaking works across the sites where this method may be used ranges between 0.5 – 2 months (see Table 1). Therefore, the predicted noise levels shown in Table 1 of Appendix A would be anticipated to occur for the durations indicated. This assessment shows that even with mitigation, some receivers will be exposed to noise from rock-breaking above the noise limits of the Construction Noise Standard. Therefore potential management measures such as ongoing communication and advance notification, and timing of activities so as to minimise disturbance to affected parties, will be required.

We trust this information is satisfactory. If you have any further questions please do not hesitate to contact us.

Yours faithfully

**MARSHALL DAY ACOUSTICS LTD**



**MATHEW COTTLE**

**Consultant**

## APPENDIX A ROCK BREAKING NOISE TABLE OF EFFECTS

Table A1

Site Location	Duration (months)	Affected Dwellings	Predicted Noise Level Without Mitigation dB L <sub>Aeq</sub>	Potential Structural Mitigation Options	Predicted Noise Level With Mitigation dB L <sub>Aeq</sub>	Comply with 6803:1999
Western Springs (WS1)	1-2	42 Sefton Avenue	65	-	65	Yes
		6 Old Mill Road	59	-	59	Yes
		744 Great Nth Road	57	-	57	Yes
May Road WS2	1-2	53A & 55A Marion Avenue	80	3 metre noise barrier	73	No
		2/51 Marion Avenue	77	3 metre noise barrier	70	Yes
		2/49 Marion Avenue	74	3 metre noise barrier	68	Yes
		45B Marion Avenue	69	3 metre noise barrier	65	Yes
Mt Albert War Memorial Reserve (AS1)	1	2-4/9 Wairere Avenue	87	3 metre noise barrier	74	No
		11A Wairere Avenue	81	3 metre noise barrier	70	Yes
		13A Wairere Avenue	81	3 metre noise barrier	72	No
		15 Wairere Avenue (2 <sup>nd</sup> floor)	76	3 metre noise barrier	73	No
		17 Wairere Avenue	75	3 metre noise barrier	70	Yes
		19 Wairere Avenue	74	3 metre noise barrier	69	Yes
		21 Wairere Avenue	73	3 metre noise barrier	67	Yes
		65B Asquith Avenue (2 <sup>nd</sup> floor)	79	-	79	No
		65C Asquith Avenue (2 <sup>nd</sup> floor)	80	-	80	No
		65 Asquith Avenue	76	3 metre noise barrier	71	No
		65E-G Asquith Avenue	77	3 metre noise barrier	65	Yes

Site Location	Duration (months)	Affected Dwellings	Predicted Noise Level Without Mitigation dB L <sub>Aeq</sub>	Potential Structural Mitigation Options	Predicted Noise Level With Mitigation dB L <sub>Aeq</sub>	Comply with 6803:1999
Mt Albert War Memorial Reserve (AS1) – Car Park Drawing AEE-MAIN-2.2A D	1	2-4/9 Wairere Avenue	84	3 metre noise barrier	71	No
		11A Wairere Avenue	78	3 metre noise barrier	64	Yes
		13A Wairere Avenue	77	3 metre noise barrier	63	Yes
		15 Wairere Avenue (2 <sup>nd</sup> floor)	72	3 metre noise barrier	59	Yes
		17 Wairere Avenue	70	3 metre noise barrier	58	Yes
		19 Wairere Avenue	71	3 metre noise barrier	49	Yes
		21 Wairere Avenue	69	3 metre noise barrier	61	Yes
		65B Asquith Avenue (2 <sup>nd</sup> floor)	71	3 metre noise barrier	63	Yes
		65C Asquith Avenue (2 <sup>nd</sup> floor)	71	3 metre noise barrier	64	Yes
		65 Asquith Avenue	69	3 metre noise barrier	50	Yes
Lyon Avenue (AS2) Haverstock Road (AS3)	1 0.5	65E-G Asquith Avenue	68	3 metre noise barrier	60	Yes
		27/28 Morning Star Place	80	-	80	No
		7 & 8 Camden Road	73	-	73	No
		96 Haverstock Road	82	3 metre noise barrier	72	No
Walmsley Park (AS4)	1-1.5	98 – 102 Haverstock Road	78	-	78	No
		3 O'Donnell Avenue	82	3 metre noise barrier	71	No
		7, 9 & 11 O'Donnell Avenue	77	3 metre noise barrier	68	Yes
		725 Sandringham Rd Ext.	71	-	71	No
		734 Sandringham Rd Ext.	69	-	69	Yes
Kiwi Esplanade (AS7)	1-1.5	85-87 Kiwi Esplanade	66	-	66	Yes

Site Location	Duration (months)	Affected Dwellings	Predicted Noise Level Without Mitigation dB L <sub>Aeq</sub>	Potential Structural Mitigation Options	Predicted Noise Level With Mitigation dB L <sub>Aeq</sub>	Comply with 6803:1999
<b>Motions Road (L1S1)</b>	1	Auckland Zoo	70	-	70	Yes
		Pasadena Intermediate	67	-	67	Yes
		Western Springs College	64	-	64	Yes
<b>Western Springs Depot (L1S2)</b>	1	Westview Road	49	-	49	Yes
		Old Mill Road	51	-	51	Yes

## **Section 92 Response Attachments**

### **Attachment 6: Soil Conditioner Data Sheets**

## Description

MEYCO SLF P2 liquid polymer is used to enhance the performance of the MEYCO SLF foaming products in difficult ground conditions.

MEYCO SLF P2 liquid polymer is used in coarse soil with low fine content or saturated soil with high water pressure.

MEYCO SLF P2 liquid polymer can also be used to modify the properties of bentonite slurries for slurry TBM applications.

## Applications

Recommended for use in:

- Soil conditioning in Earth Pressure Balance (EPB) shield machines
- Poorly graded and low fine ground, saturated ground and high water pressure ground in EPB shield machines
- Bentonite slurry modification in slurry shield machines

# MEYCO® SLF P2

## Soil-Conditioning Polymer for TBM's

### Features

- Ready-to-use liquid polymer
- Environmentally friendly

### Benefits

MEYCO SLF P2 liquid polymer was designed for soil conditioning with shielded TBM excavation. MEYCO SLF P2 liquid polymer has excellent performance in restructuring soil and is effective in coarse, clean sands and gravels. When mixed with one of the MEYCO SLF foams, MEYCO SLF P2 liquid polymer provides:

- Reduced permeability and increased sealing at the face
- Even and controlled support pressure and increased face stability
- Lower inner friction and lower abrasiveness of the soil at the cutterhead through to the screw conveyor. This reduces power consumption and wear to the tools
- Increased cohesion of coarse, clean sands and gravels – smoother soil extraction
- Water soaking and swelling effect, turning wet soil into a more manageable consistency
- Improving the yield of bentonite slurries. Suitable for bentonite slurries in saline conditions

### Performance Characteristics

**Consumption:** Typically, the consumption of MEYCO SLF P2 liquid polymer is between 0.3-4% of the foam solution. In some circumstances, other dosage levels may be required. Contact your local sales representative for assistance.

### Technical Data

Form	Viscous Liquid
Color	Light Brown
pH; 68 °F (20 °C)	8.5-10.5
Density @ 68 °F: lb/ft <sup>3</sup> (20 °C): (kg/m <sup>3</sup> )	56.2-59.3 (900-950)
Viscosity; mPa•s (cps) 68 °F (20 °C)	< 500

### Guidelines for Use

**Application:** MEYCO SLF P2 liquid polymer is normally added through a separate pump into the foam solution stream before the foam generator. The mixture is then generated into the foam by the foam generator and injected into the cutterhead and working chamber. MEYCO SLF P2 liquid polymer can also be added after the foam has been generated and prior to injection to the cutterhead and working chamber. MEYCO SLF P2 liquid polymer can also be used alone, in which case it is injected directly to the working chamber or the bottom of the screw conveyor. The quantity of MEYCO SLF P2 liquid polymer used will vary according to the soil condition.

# Product Data: MEYCO® SLF P2

## Storage and Handling

**Storage Temperature:** MEYCO SLF P2 liquid polymer should be stored at temperatures between 41 °F and 95 °F (5 °C and 35 °C). Do not allow MEYCO SLF P2 liquid polymer to freeze. If MEYCO SLF P2 liquid polymer freezes, contact your local sales representative prior to use.

**Shelf Life:** MEYCO SLF P2 liquid polymer has a minimum shelf life of 6 months if stored in original tightly secured containers. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of MEYCO SLF P2 liquid polymer has been exceeded.

**Handling:** MEYCO SLF P2 liquid polymer contains no hazardous materials. However, it is recommended that all normal precautions be taken when handling the product such as the use of eye protection and gloves. Refer to the MSDS for MEYCO SLF P2 liquid polymer for more information.

## Packaging

MEYCO SLF P2 liquid polymer is available in 53 gal (200 L) drums and 263 gal (1000 L) totes.

## Related Documents

Material Safety Data Sheets: MEYCO SLF P2 liquid polymer.

## Additional Information

For additional information on MEYCO SLF P2 liquid polymer, contact your local sales representative.

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# MEYCO<sup>®</sup> SLF 10

05/2009

## Soil conditioning foam for Tunnel Boring Machines

### Product description

MEYCO SLF 10 is a foaming agent especially designed for soil conditioning in Shielded Tunnel Boring Machines.

### Fields of application

- Soft ground tunnelling with Tunnel Boring Machines

### Features and benefits

- Improved soil behavior
- Easier 'mucking'
- Environmentally friendly

MEYCO SLF 10 has been especially developed for soil conditioning in tunnelling with shielded TBM excavation. Generally, the product when mixed with the soil provides for:

- Reduced permeability and increased sealing at the face
- Creation of plastic deformation properties in the soil, which provides an even and controlled support pressure and increased face stability
- Lower inner friction and lower abrasiveness of the soil at the cutter head through to the screw conveyor and conveyor. This reduces power consumption; enables soil extraction and conveyance, as well as reducing wear costs.
- Reduces stickiness in certain soils, which would lead to problems with blockage
- In hard rock tunnelling and mining it can be used for dust suppression

### Packaging

MEYCO SLF 10 is available in standard 200 litre drums.  
Bulk tanker or 1000 litre polytank supply is available on request.

### Technical data

Form	Liquid
Color	Transparent
Density [kg/m <sup>3</sup> ] 20 °C	1005 -1015
pH 20 °C	8 – 10
Viscosity [mPa.s] 20 ° C Bohlin, Syst.3/Sp1	700 - 1000
Solubility in water	Total

### Application procedure

Foam is produced by dispersion of air into an aqueous solution of the MEYCO SLF 10. MEYCO SLF 10 foam solution can be expanded with air to produce stable foam.

The foam recipe, foam expansion and the foam injection rate into the face, working chamber or screw conveyor will depend on soil conditions encountered.

### Consumption

Typically the MEYCO SLF 10 is made into a 3 – 4% (typical range 2 – 6%) solution in water. MEYCO SLF P1 or MEYCO SLF P2 (see separate data sheets) can be added with the MEYCO SLF 10 to strength the foam or adjust the properties of the excavated soil.

### Storage

The storage temperature of MEYCO SLF 10 is between 5 °C and 35 °C. If stored in original tightly closed containers MEYCO SLF 10 will have a shelf life of 12 months.

Do not allow the product to freeze.

It is recommended that your local MEYCO representative be consulted prior to the use of any product that has become frozen.

## Safety precautions

MEYCO SLF 10 contain no hazardous substances requiring labeling. However, standard precautions for handling chemical products should be observed: Avoid eye and skin contact and wear rubber gloves and goggles.

If contact occurs, rinse with plenty of water. In case of eye contact seek medical advice. For further information, refer to the Material Safety Data Sheet.

A Risk Assessment report on the use of MEYCO SLF products in tunnels can be downloaded from our website. Or ask your MEYCO representative for a copy.

The information given here is true, represents our best knowledge and is based not only on laboratory work but also on field experience. However, because of numerous factors affecting results, we offer this information without guarantee and no patent liability is assumed. For additional information or questions, please contact your local representative.

Headquarter:

**BASF Construction Chemicals Europe Ltd**

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## **Section 92 Response Attachments**

### **Attachment 7: Mt Albert War Memorial Reserve Car Park Erosion and Sediment Control Plan**

# **Central Interceptor Erosion & Sediment and Stormwater Control Plan**

Plan No:	MAIN ESCP 2.1A- Mt Albert War Memorial Reserve Car Park		
Location:	Mt Albert		
Prepared by:	Aidan Cooper revised Tomas Ussher	Date:	23/04/13
Checked by:	Dietmar Londer	Revision:	A

## **1 Introduction**

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the AS1 – Mt Albert War Memorial Reserve Car Park construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

## **2 Site Activity**

Construction at the AS1 – Mt Albert War Memorial Reserve Car Park site will last 18 months.

Construction activities on the site may include the construction of three shafts, the tunnel construction to the next shaft site, construction of the permanent access structures and reinstatement of the site.

During construction heavy vehicles will remove construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

## **3 Erosion and Sediment Control Plan**

### **3.1 Introduction**

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions and a Decanting Earth Bund (DEB).

The construction site area (0.25 ha) will be shaped so that all surface flow is directed to the DEB which will start treating the catchment immediately.

### **3.2 Erosion and Sediment Control Methodology**

- 1) Install DEB, stabilised spillways and outlets.
- 2) Construct clean water diversion drains to divert clean water from construction site.
- 3) Form construction site area and shape so that all surface flow is directed to the DEB.
- 4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.
- 5) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
- 6) Progressively stabilise site in accordance with TP90.
- 7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring reserve.

A spill response plan will be developed to mitigate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

#### **3.2.1 Decanting Earth Bund**

The DEB will be constructed in the north eastern part of the site in accordance with TP90. The DEB outlet will discharge to the existing 1500 mm diameter stormwater pipe. A stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring reserve.

- The DEB will have a volume of 75 m<sup>3</sup> (3%) and will be connected to the existing stormwater drain which runs beside the site; the DEB's spillway will be directed safely to the neighbouring reserve. The DEB is not flocculated.
- Live storage is 53 m<sup>3</sup>.
- Dead storage is 22 m<sup>3</sup>.
- Control efficiency is 75%.

#### **3.2.2 Diversion Bund**

Lined (stabilised) clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the treatment device.

#### **3.2.3 Site access**

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

#### **3.2.4 Water treatment plant**

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain groundwater extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the existing stormwater network.

## 4 USLE Calculations

AS1- Mt Albert War Memorial																	
								USLE Parameters									
Works Phase	Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B)		Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)
						Pasture (P)	New Grass (E)										
Site construction phase	DEB	AS1	0.25	2	50	E		18	78	0.1	0.23	0.1	1.00	1.50	0.50	75%	0.01

## 5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

Plot Date: 01-May-13 8:21 AM  
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**NOTES**  
1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.  
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)  
0 10 20 30 40 50m  
10 8 6 4 2

**CONSENT ISSUE**

E		22/4/13	ISSUED FOR CONSENT	DL	DL	DESIGNED	AC	OPERATIONS	ASSET MANAGER
D		22/11/12	ISSUED FOR CONSENT	RM	TH	DRAWN	LC		
C		18/7/12	UPDATED USLE TABLE - SITE ESTABLISHMENT DURATION	AGT	AC	DWG. CHECKED	CTC		
B		26/6/12	ISSUED FOR CONSENT			REV'D P.MGR			
A		7/6/12	ISSUED FOR CONSENT			APP'D P.DIR			
ISSUE	DATE	AMENDMENT		BY	APPD.		BY	DATE	

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**CENTRAL INTERCEPTOR  
EROSION AND SEDIMENT CONTROL PLAN**  
MT ALBERT WAR MEMORIAL RESERVE CARPARK - EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-2.1A		DATE 7-Jun-12	
ORIGINAL SCALE A1		CONTRACT No.	
1:500		0538	
DRAWING No.			ISSUE
MAIN-ESCP-2.1A			A

## **Section 92 Response Attachments**

### **Attachment 8: Mt Albert War Memorial Reserve Car Park - Contamination**

T&T Ref: 26145.402  
02 May 2013

Watercare Services Limited  
c/- Central Interceptor Project Team  
AECOM  
PO Box 4241, Shortland Street  
Auckland 1140

Attention: Alia Cederman

Dear Alia

## **Further information request for Central Interceptor Main Project Works - Mt Albert War Memorial**

As requested, this letter provides our response to the additional information relating to contaminated land that has been requested by Auckland Council for the Central Interceptor main project works consent application. Tonkin & Taylor Ltd (T&T) has undertaken this work according to our variation of 29 October 2012.

Information requested by Council is presented below in blue italics followed by our response in black text.

*The December 2012 contamination assessment indicated that a council depot, workshops and underground storage tank were located to the east of the construction site. It would therefore appear that the proposed site will be closer to or over this area of contamination, and additional commentary in this regard should be provided.*

The potential for ground contamination at the Mt Albert War Memorial Reserve (AS1) construction site was originally assessed and documented in T&T, July 2012, *Desk Study and Ground Contamination Assessment – Main Works Central Interceptor Project*. The footprint for the original construction site is located to the east of the former council depot. The proposed Mt Albert War Memorial Reserve Car Park construction site will be located on the former council depot.

Information collated in the T&T July 2012 assessment showed that the depot was constructed in 1955 and an underground storage tank (UST) including associated facilities (such as pump and pipelines) was installed by Shell Oil Co. Ltd. within the depot in 1971. The contents of the UST are not known, but are likely to be diesel. These buildings were reported to have been demolished in 2001 to create the City Council Recreational Precinct Carpark. We have found no records to confirm if the UST and associated infrastructure have been removed. Site inspection indicates the proposed construction site is currently sealed with asphalt and used as a carpark and basketball court. There is no evidence of a UST currently on the proposed construction site.



Potentially contaminating historical activities on the proposed Mt Albert War Memorial Reserve Car Park construction site, based on the T&T July 2012 desk study information, include the presence of a UST and fill as summarised in Table 1 below.

**Table 1: Summary of potentially contaminating activities**

Site Name	Potentially contaminating activities	Likely contaminants	Predicted extent and risk assessment
Mt Albert War Memorial Reserve Car Park	Fill, UST and associated facilities	Metals, Hydrocarbons (total petroleum hydrocarbons, benzene, toluene, ethylbenzene, xylene and polyaromatic hydrocarbons) and asbestos containing material	We have found no information about the source of fill material in the vicinity of the proposed construction site. Low to moderate levels of contaminants could be present in near surface fill. Deeper soil and groundwater may be contaminated in the vicinity of the former UST. However, given the geology (volcanic), the likelihood of residual contamination is low.

The desk study information indicates that there is potential for ground contamination at both the original Mt Albert War Memorial Reserve construction site location and the Mt Albert War Memorial Reserve Car Park location.

Hence, confirmation of ground contamination will be required at both of these locations in accordance with procedures set out in the Site Management Plan (SMP) lodged with the consent application. The testing results will determine whether the measures outlined in Section 4 of the SMP will need to be adopted during the works.

As for the Mt Albert War Memorial Reserve site, the potential for adverse effects to arise as a result of the Mt Albert War Memorial Reserve Car Park site can be managed, as long as the measures outlined in the SMP are followed.

## Applicability

This report has been prepared for the benefit of Watercare Services Ltd with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

Authorised for Tonkin & Taylor Ltd by:



Lean Phuah

Senior Environmental Engineer



Gerard Bird

Project Director

2-May-13

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## **Section 92 Response Attachments**

### **Attachment 9: Mt Albert War Memorial Reserve Car Park – Groundwater and Settlement**

Watercare Services Limited  
Private Bag 92521  
Wellesley Street  
Auckland 1141

Attention: Belinda Petersen

Dear Belinda

## **Central Interceptor Project - Response to Auckland Council Review of S92 Documents - Groundwater and Settlement**

As requested, we have reviewed the Auckland Council letter to Watercare Services Limited titled "Central Interceptor Wastewater Project: Section 92 Response to Application Documents", 8 April 2013.

On March 1, 2013 Watercare provided a letter to Auckland Council responding to S92 queries relating to the construction of shafts associated with the tunnel. The letter provides results and commentary of modelling that tested example construction methodologies for shafts. The Auckland Council letter provides comment from its reviewer(s) on that letter.

In Section 5, Auckland Council's reviewer advises that there is no further information required relating to the S92 response on groundwater and settlement. In Section 9.1 (c), in relation to the Mt Albert War Memorial Reserve Car Park site, the Auckland Council letter requests additional information:

*"The discussion of groundwater and settlement effects should be updated to reflect the additional analysis of such effects that included this construction site".*

Responding to Section 9.1 we advise that our S92 response considers this site specifically and the assessment of potential groundwater and settlement effects at the site is not sensitive to the change in shaft location. Our S92 response acknowledges potential for such alternative layouts. Section 2, last paragraph of our S92 response states,

*"The overall conclusions of this report are expected to apply to alternative layouts that position the shafts no closer to buildings than the current minimum distance to any building structure.*

We note that the Mt Albert War Memorial Reserve Car Park site layout for AS1 however locates shafts closer to buildings (specifically the YMCA building) than previously.

The results of modelling of shaft AS1 have been reviewed in light of this. The review confirms that the overall findings of our S92 response still apply. Structural damage is unlikely to occur as a result



of shaft construction utilising the example construction methodologies for the revised layout. Total settlements, and importantly, differential settlements estimated at the YMCA building are indicated to be below the level which would be expected to result in damage.

Yours sincerely



Graeme Twose  
Senior Geotechnical Engineer

3-May-13  
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