Section 92 Response Attachments

Attachment 1 - Auckland Council s92 further informaton request letter

Memo

18/09/2012

To: Paulette Gagamoe - Project Management Support Projects, Practice and Resolutions

From: Vanessa Tanner – Senior Archaeologist Environmental Strategy and Policy

Subject: Central Interceptor review of archaeological reports for the Central Interceptor Main Project Works and CSO Collector Sewers

I have read the Clough and Associates (July 2012) Central Interceptor Project: Archaeological Assessment and the Clough and Associates (August 2012) Auckland Central Interceptor – CSO Collector Sewers: Preliminary Archaeological Assessment. The reports are an assessment of pre-1900 archaeological values only; they do not address other types of historic heritage such as wahi tapu or sites of significance to Maori, historic structures, post 1900 infrastructure or historic trees. I understand that wahi tapu and Maori cultural values are addressed in a separate section of the AEE which is appropriate.

According to the AEE (p. 5) the Auckland Isthmus is serviced by the older components of Watercare's wastewater network. Much of this network was constructed in the earlier part of the 20th century to support a developing Auckland. The AEE does not supply any further information on the historic values associated with this infrastructural component of Auckland's development history; nor are the effects of the present proposal on the historic heritage values of this system, which will be connected to or decommissioned assessed.

The proposed Central Interceptor is a 13km gravity tunnel with three sewer tunnels extending from the main tunnel westwards requiring a series of connections to the existing trunk sewer network to pick up wastewater flow.

The majority of earthworks for the project will be undertaken at depth (up to 110m below the ground surface) and will not have the potential to impact on archaeology. The Central Interceptor project requires the creation of 19 construction sites including three primary construction sites at Western Springs, May Road and Mangere and 16 secondary constructions sites at locations along the route. The construction activities at the primary and secondary sites will include a wide range of activities, such as removal of vegetation, earthworks, relocation of services, establishment of site access, construction yards and lay down areas, traffic management, works in watercourses, construction of the physical works, commissioning and site reinstatement. The project also requires the construction of eight CSO collector sewers involving micro-tunnelling and open trenching, and the creation of six surface construction sites. Earthworks on or close to the surface have the potential to affect archaeology.

A desk top study with limited field survey formed the Clough and Associates (July 2012) archaeological assessment for the Central Interceptor Main Works proposal. Three of the proposed construction sites: Kiwi Esplanade, Hillsborough Bay and Western Springs were subject to archaeological field survey involving limited subsurface testing. The remaining 16 construction sites were not assessed for archaeological values or effects on the basis that archaeological evidence was considered by Clough and Associates to be unlikely; this assumption is based primarily on the belief that that past residential development and landscaping would have destroyed any archaeological evidence had it been there. For the CSO collector sewers proposal (Clough and Associates August 2012) a desk top study with limited visual assessment and photography was completed; further archaeological assessment involving methods such as subsurface testing was not considered feasible (p. 4).

Many of the proposed Main Works construction sites are located within areas of reserve adjacent to suburbs that were created in the 1930s and 1940s; the assumption that residential development and landscaping would have destroyed all archaeological values is incorrect for a period in development history in which earthworks were superficial in comparison with earthworks on the scale witnessed in developments today. It is considered entirely possible that archaeological evidence could remain intact in these areas and that it might be affected by the present proposal.

In terms of the CSO collector sewer proposal Clough and Associates (August 2012) consider it likely that archaeological evidence might be present in a number of the proposed locations including sites at Howlett and Waterview walkway, Seaside Reserve, Moa Reserve and Alan Wood Reserve and have recommended that further archaeological survey involving subsurface testing be undertaken prior to construction taking place.

Despite the fact that no assessment of the actual or potential effects on archaeological sites has been undertaken for the majority of the project's surface construction work, Clough and Associates (July 2012 and August 2012) advise that there should be no major constrains on the proposed works for the Central Interceptor project on archaeological grounds as no known archaeological sites will be affected. In addition, the unknown effects are described as likely to be less than minor (Clough and Associates July 2012 p. 2). Clough and Associates (July 2012 and August 2012) imply that the as yet unknown effects on archaeology might be mitigated under an Accidental Discovery Protocol and an Archaeological Authority under the Historic Places Act 1993.

In May 2012 when asked to provide comment on the draft version of the Clough and Associates Central Interceptor Project: Archaeological Assessment I recommended to the Projects, Practice and Resolutions Unit that a more detailed assessment of the proposed above ground construction sites be undertaken. This has not occurred.

The fact that an adequate assessment of effects on archaeology is not provided, nor an assessment of the effects on historic structures associated with the existing sewer been undertaken the information supplied in the AEE is insufficient to provide an understanding of the extent and scale of adverse effects on historic heritage as a matter of national importance under s 6 (f) of the RMA and it does not enable the extent and scale of any adverse effects on historic heritage to be assessed.

Recommendations:

- An assessment is undertaken of the effects the proposal will have on the historic values associated with the present wastewater system, much of which was constructed in the early 20th century.
- That a more comprehensive archaeological assessment is undertaken of the 16 proposed Main Works construction sites where archaeological assessment has not yet taken place.
- That a thorough archaeological assessment of the proposed CSO Collector Sewer proposal is undertaken.
- That an assessment of effects on historic heritage as a matter of national importance under s 6 (f) the RMA is provided for the proposed Central Interceptor and CSO Collector Sewers.
- Mitigation of effects on archaeology under the provisions of the Historic Places Act is not necessarily considered mitigation of effects on historic heritage under the Resource Management Act.

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24th September 2012

Graeme Michie
Senior Resource Consents Project Manager
Policy Projects and Resolutions
Auckland Council

By email: graeme.michie@aucklandcouncil.govt.nz

Dear Graeme,

RE: Central Interceptor Scheme – Main Works, 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 sets out the matters in the applications that in my view require further information to enable a full understanding of the proposal and its associated noise and vibration effects. The primary documents referred to herein are Technical Reports F and G being the Noise Impact Assessment[1] and the Vibration Assessment[2] respectively.

In order to ensure that the proposal and its effects are fully described I consider that the following information should be provided:

Noise

(1) The Noise Impact Assessment is primarily focussed on determining whether or not the noise emissions from each site and phase of works complies with the recommended noise limits. The report does not provide an indication of the likely noise effects that the nearby receivers will be exposed to and I consider that such a description of the effect of the noise levels that are being predicted is necessary. It is important that the submitters and decision-makers have a good understanding of how the predicted construction noise levels will affect the receivers of noise, especially in terms of day-to-day living activities and for educational facilities and nearby businesses.

[1] *Central Interceptor Project, Environmental Investigations Programme – Noise Impact Assessment*, Marshall Day Acoustics, 23/7/2012
[2] *Central Interceptor – Vibration Assessment for Main Tunnels and Link Sewers*, Tonkin & Taylor Ltd, July 2012

I suggest that the description of potential noise effects for both the construction and operational phases be set out in a new section in the Noise Impact Assessment.

I note that the Vibration Assessment contains several helpful tables that explain the consequence of felt and structural effects for various levels of vibration. Such a scale may be helpful in this instance also.

(2) The Noise Impact Assessment mentions the results of ambient noise measurements in each of the site specific assessments. Without also setting out the relevant contextual information as well as a full description of the measurement results, the results provided are of little worth. In order to provide an adequate description of the ambient noise measurements, I consider that the following information should be provided:

(i) The time of day that the measurement was undertaken;

(ii) The duration of the measurement;

(iii) The location of the measurement;

(iv) The equipment used;

(v) A description of the noise sources that controlled the measurements including the reasons why certain sources have been excluded from the results; and

(vi) The noise level as measured by other descriptors, including L_{Amax} and L_{A90} or L_{A95} as a minimum.

(3) Notwithstanding (2) above, I consider that in order to properly determine whether or not the proposed noise limits for the operational phase of the project are reasonable in terms of s16 of the Resource Management Act, (the Act) longer term measurements are necessary – particularly where there are operational noise effects anticipated at night time and in locations where ambient noise levels are low. Section 4.4 of the Noise Impact Assessment recommends further monitoring to establish the appropriateness of the limits but a process or method for dealing with the results and possible reassessment of the proposed noise limits is absent.

I consider that the longer term monitoring should be undertaken to determine appropriate operational noise limits for sites where there will be ongoing operational noise effects. If the weather is suitable, such monitoring may be possible over a period as short as 1 or 2 nights at each location. A full set of results should be presented along with reasons for determining the reasonableness of the limits selected for each site.

(4) The Noise Impact Report appears to underestimate the predicted noise levels for a number of activities and locations. For example, in section 4.5.15, a level of up to L_{Aeq} 63dB is predicted for 16 Norgrove Ave, where the temporary shaft construction is less than 12m from the facade of the dwelling. Taking the sound power level for a bored piling rig from Appendix 4, a noise level of L_{Aeq} 82dB would be expected without any acoustically effective fence in place. Therefore, the Noise Impact Assessment appears to be allowing for a 19dB reduction in noise level for the proposed 2.5m high fence, which in my opinion is impossible. A similar situation seems to exist for the AS5 Keith Hay Park site, where noise levels of up to L_{Aeq} 64dB are predicted at the ground floor of 18 Gregory Place, but taking the same sound power level and a distance of approximately 13m, a noise level of 82dB is predicted with no fence. This means that the Noise Impact Assessment is allowing for a reduction of up to 18dB for the fence; a situation that I consider to be unachievable.

I suggest that the noise level predictions provided in the Noise Impact Assessment be reviewed to ensure that they are accurate, or if they are indeed accurate that the reductions assumed in the predictions are fully explained. Either way, the noise level predictions should be supplemented with sufficient information to enable a reviewer to reproduce them with reasonable agreement.

(5) The noise level predictions for the operational phase of the proposal appear to be unsupported by any source levels, similar measurements or any other calculations. In order for the reviewer to be confident that the predictions are robust, I consider it necessary for additional information to be provided, including the source data upon which the level predictions are based and/or measurements of other similar plant where those have been used.

(6) It is my view that the proposed Construction Noise Management Plan (CNMP, appended to the Noise Impact Assessment as Appendix 5) is insufficient in terms of detail and management methods given the scale of the project and the potential degree of effects it will have on its neighbours. The CNMP does not in my view satisfy the requirements of Annex E of NZS6803:1999 *Acoustics – Construction Noise*.

I suggest that the CNMP be expanded to cover at least the requirements of Annex E of NZS6803:1999 *Acoustics – Construction Noise* and to ensure that it is adequate for the management of potential effects, including a robust set of definitive triggers for mitigation measures, including for example when the relocation of residents should be considered.

Vibration

(7) Rock fracture and removal in close proximity to dwellings (<15m) will be a regular feature of the project. The Vibration Assessment notes in Table 9.1 that a number of phases of the works at various sites are deemed to be High Risk or Very High Risk in terms of their vibration effects on nearby receiving structures and persons. Some of the mitigation measures may or may not be practicable for these situations owing to site constraints, ground conditions and cost. For example, activities around AS1 (in Table 9.1) are likely to have significant effects according to the Vibration Assessment.

I note that very similar activities are currently being undertaken on the Waterview site at similar distances from the nearest dwellings. The recommended vibration limits and mitigation measures preclude such activity from occurring and in order to allow works to continue the limits now proposed for the works are in the order of five times those found in the DIN4150 Standard. Importantly, the nearby dwellings have been deemed capable of withstanding the new limits.

Dwellings constructed in New Zealand are mostly capable of withstanding levels of ground-borne vibration that are far higher than the DIN4150 limits, and in my view it is appropriate to allow for this. Although the DIN4150 limits are appropriate for an initial compliance target, it is prudent to allow the limits to be exceeded if the receiving structure is deemed capable of withstanding a greater degree of movement. This must be considered in the context that the DIN4150 provisions are designed specifically for application where the buildings subject to movement are not designed according to any codes or standards relating to dynamic loading. Clause B of the New Zealand Building Code does require consideration of dynamic loading and such requirements have been in place in New Zealand for some time. The DIN4150 provisions can therefore be considered quite conservative for New Zealand conditions. As well as being 'low' in terms of the likelihood of damage, they can concomitantly severely restrict works.

It is my view that the currently proposed vibration controls for the CIS will likely preclude some the proposed works from occurring with any degree of efficiency or practicability. Following the flow chart in Appendix C of the Vibration Assessment, if the vibration levels are not able to be reduced to within twice the DIN4150 criteria for at least a large percentage of the blasts or works, the project will effectively be stopped. It is not clear whether a change to the Designation conditions would be required to increase the vibration limits to allow works to continue where it can be shown that the receiving structures are capable of withstanding higher levels.

In the context of the comments above 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.

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: 18 September 2012

From: Campbell Stewart
SouthernSkies Environmental Limited

Cc:

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

SouthernSkies has undertaken a review of the Assessment of Environmental Effects (AEE) for the above project, in relation to the proposed earthworks. The AEE generally provides an appropriate level of information to understand the scope and potential extent and scale of effects of the proposal. However, additional detail is required to adequately assess the adverse effects of the project.

Overall, the Erosion and Sediment Control plans (ESCPs) provided in the application contain many inconsistencies and do not show how compliance with the stated relevant guideline (TP90) will be achieved. 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. The problem is that the documents provided will comprise part of the information that contractors will tender on. If the ESCPs do not show compliance with TP90, problems may occur in requiring the contractor to comply with TP90 in the preparation of the final ESCPs prior construction.

Listed below are questions or areas that require further clarification to better understand and allow a full assessment of the adverse effects on the environment from the proposed earthworks and associated operations:

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.

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.

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.

(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.

(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.

(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.

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AHN/R2819-2/cam

20 September 2012

Auckland Council
Private Bag 92303
Auckland

Attention: Mr Graeme Michie
Senior Resource Consents Project Manager
<Paulette.Gagamoe@aucklandcouncil.govt.nz>

Dear Sir

RE: PEER REVIEW OF GROUNDWATER AND SETTLEMENT EFFECTS OF PROPOSED CENTRAL INTERCEPTOR WASTEWATER PROJECT – EFFECTS OF TUNNELS ON GROUNDWATER AND SURFACE SETTLEMENT

1. Background

Watercare has submitted AEE documents to Auckland Council (AC) for the Central Interceptor Project. Earthtech has been engaged by AC to review the documents with respect to groundwater and ground settlement effects.

AC wishes to determine whether the information provided is adequate in terms of:

i. describing the nature and scope of the proposed activity, and
ii. assessing the extent and scale of any adverse effects.

If the AEE is not considered adequate, the review is to identify omissions, inaccuracies and areas of disagreement.

The following document has been reviewed:

> *Tonkin and Taylor (2012a). Central Interceptor Project. Effect of Tunnels on Groundwater and Surface Settlement. Report prepared for Watercare Services Limited dated July 2012.*

The review also follows the Watercare project briefing meeting held on 30 April 2012 and the review of pre-lodgement, draft AEE documents provided in April 2012.

2. Groundwater and Settlement Effects from Construction of Main Tunnel, Link Tunnels and Associated Shafts (TT, 2012a)

2.1 Nature and Scale of Proposed Activity

This portion of the project involves:

i. 13*km* gravity tunnel of 4.5*m* diameter from Western Springs to the Mangere WWTP and constructed between 20*m* and 110*m* depth below the ground surface.
ii. 5*km* of link tunnels constructed up to 80*m* depth.
iii. Three large diameter (25*m* to 35*m*) construction access shafts.
iv. Seven operations access shafts (up to 13.5*m* diameter).
v. Ten connection shafts.

The nature and scale of the project is presented in TT(2012a).

The report is well written and clearly presents the geological and hydrogeological information currently available to the project. The settlement predictions show that an Earth Pressure Balance Tunnel Boring Machine (EPB TBM) and permanent tunnel lining is required to control settlement effects. Previous experience of similar size tunnels in Auckland in similar geology support the settlement predictions provided. Specific lining requirements are also shown to be needed where settlement sensitive structures are located within 200*m* to 300*m* of shafts. The report indicates a need for more detailed and site specific investigations and provides guidance on conditions and a monitoring plan.

2.2 Extent and Scale of Adverse Effects

In order to assess whether there will be any adverse effects in relation to groundwater and/or settlement effects, it is necessary to provide detailed information on:

a. *Geological Conditions*

The length of the project results in at least eight different geological units, each with their own range of materials and strength parameters.

b. *Groundwater Conditions*

These vary over the length of the project and in response to surface topography and geological conditions.

c. *Soil and Rock Strength Parameters*

These vary between units and also vary over a range of parameters within each unit, depending on factors such as depth, degree of weathering, groundwater conditions, etc.

d. Construction Methodology

Different construction techniques produce different outcomes. Sensitive areas need to be identified and matched with the appropriate construction methodology.

e. Permanent Design Details

Construction effects can take many months to years to affect groundwater systems. Where long-term adverse effects are predicted, additional protection measures are required, e.g. installation of an effective, low permeability tunnel and/or shaft lining system.

f. Credible Predictive Models

Accurate and representative modelling of complex geological and groundwater systems is not easy and there are limits to the accuracy of the tools available.

g. Type and Sensitivity of Existing Building or Services that could be Affected

Building types and services (roads, pipelines, cables, etc) vary enormously over the length of the project. In general terms, the depth of the tunnel itself provides protection against surface effects. Construction of the shafts however, are more likely to cause adverse effects on adjacent structures.

The characterisation of geology and groundwater conditions is based on 34 boreholes and historic data. The extent of site investigations, while appropriate for concept design, is considered inadequate for the detailed assessment of settlement effects. Due to the limited geotechnical investigation data available, the settlement estimates presented in TT(2012a) are considered preliminary.

For shafts, site specific analyses are limited to six locations. These site specific assessments are based on limited investigation data and simplistic geological and groundwater models. The assessments for the remainder of the shafts are based on generic analyses.

The predictive models are extremely useful in identifying the response to different ground conditions and construction techniques, but without adequate input data (site specific borehole and groundwater information), the models are limited in accurately predicting the likely effects.

Building types and their response to adverse settlements are well described in general terms, but detailed information on existing structures located around the shaft areas has not been provided. A review of the proposed shaft location drawings indicates that the following shafts have existing dwellings within 30*m* of the proposed shaft locations; AS1, AS4, WS2, AS5, L2S2, L3S2, L3S3 and L3S5. Of these WS2 and L3S5 include brick walls and/or brick veneers which may be particularly sensitive to any settlement effects.

Historically, the consenting of large projects involving potential dewatering and ground settlement in Auckland has required detailed settlement assessments based on good, site

specific data prior to consenting. The Applicant acknowledges that further investigation data is required but prefers to delay this until after the consents are granted.

The nature and length of this project requires a different approach as it is not reasonable to require all of the detailed information at this stage. The fact that three similar tunnelling projects have recently been successfully investigated, designed, consented, constructed and monitored lends weight to the approach that more detailed information is only made available after the project is consented.

This approach however, still leaves potentially affected parties in a difficult position, e.g. the neighbouring properties to a shaft having to rely on good faith that the actual construction details will be adequately matched to the site specific ground and groundwater conditions.

As a minimum, all parties should be provided with a clear set of guidelines that specify the scope of the site specific investigations and the process for selecting an appropriate design and construction methodology. This will not necessarily be the final set of consent conditions but will provide more certainty for affected parties.

A better approach would be for the Applicant to select two key shafts (say WS2 and L3S5) and to complete the site specific investigations, modelling predictions, design details and proposed monitoring conditions.

This would provide a clear example of how the site specific conditions can be accommodated in the design options outlined in the Application.

2.3 Omissions, Inaccuracies and Areas of Disagreement

The technical information is well presented but limited by the lack of site specific investigation data. The reviewers acknowledge that it is not reasonable to provide all the necessary data prior to consenting but recommend that the detailed design and monitoring procedures be provided for a least two shaft sites to: (a) confirm that the available design and construction options are adequate when assessed on the basis of site specific data; and (b) to provide a clear model of the process to be used at other locations.

2.3.1 *Detailed Investigations for Selected Sites*

Detailed geotechnical investigations, analysis and specimen designs are requested at WS2 and one other shaft site to demonstrate that settlement limits can be achieved (total of two detailed investigations areas). The following is requested:

i. Detailed geotechnical investigations.
ii. Groundwater modelling with and without mitigation.
iii. Assessment of cumulative effects from mechanical and dewatering induced settlement, based on the proposed detailed design drawings.
iv. Assessment of building locations and foundation details for all buildings located within 30*m* of the shaft perimeter.

2.3.2 *Detailed Conditions and Monitoring Plans for Selected Sites*

The conditions and monitoring plans will become the primary means of controlling adverse effects. Preparation of detailed plans for the two specimen design sites should address:

i. Groundwater drawdown limits based on site specific details.
ii. Settlement limits – maximum allowable settlement of 50*mm* total and 1:1000 differential.
iii. Tunnel liner – liner permeability of $\leq 10^{-10} m/s$ and installed within seven days of excavation.
iv. Shaft and floor liner details (if any).
v. Methodology to demonstrate how monitoring can be used to control construction techniques to ensure that no adverse settlement effects occur.

Yours faithfully

AIDAN NELSON
Senior Geotechnical Engineer
EARTHTECH CONSULTING LTD

c.c.: Nick Hazard, Auckland Council

isthmus

Proposed Central Interceptor Main Project Works

Assessment of Landscape and Visual Effects s92 Review

Client	Auckland Council
Project	Proposed Central Interceptor Main Project Works
Document	Assessment of Landscape and Visual Effects s92 Review
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INTRODUCTION

1 This report is a s92 review of the **'Assessment of Landscape and Visual Effects'** technical report[1] (the Report), to assess whether there is sufficient information for the project to be notified, or if further information is required taking into account the following matters:

(a) Is the methodology appropriate?
(b) Is there sufficient information to enable the nature of the project to be understood?
(c) Have the relevant issues been identified and analysed in sufficient detail to enable the effects to be independently assessed?

2 An earlier review[2] was carried out on a draft 'landscape and visual assessment' and a meeting held with the applicant. The matters raised in that earlier review were generally addressed in the revised report that now forms part of the application.

METHODOLOGY

3 The Report includes a statement of methodology at section 3.0. The methodology is appropriate.

4 The Report (Section 3.0) addresses each of the sites separately (Section 4.0) which is an appropriate approach given that the effects will be experienced site-by-site rather than collectively. For each site the report covers the appropriate matters as follows:

(a) A description of the existing environment;
(b) A description of the works;
(c) An assessment of the likely nature and magnitude of effects; and
(d) Recommended mitigation measures.

5 The effects analysed include both biophysical and visual effects with no apparent omission of landscape matters, and also cover both temporary effects (during the construction period) and permanent effects.

6 Revisions that addressed matters raised in the earlier review include:

(a) The nature and degree of effects are now assessed for each site;
(b) The summary includes a summary of the comparative effects for the individual sites;
(c) There is reference to alternative locations and methods at some of the sites where effects may be significant. Such an approach is explicit at the Kiwi Esplanade site, and implied at the Frederick Street Pump Station (PS23) where it is understood options were considered to locate the pump station either against

[1] Boffa Miskell Limited 2012. *Central Interceptor and Associated Works*: Assessment of Landscape and Visual Effects. Report prepared by Boffa Miskell Limited for Watercare Services Limited.
[2] Gavin Lister, Isthmus Group, 2 May 2012, *Central Interceptor: Review of Landscape and Visual Assessment*

the cliff or on the location of the existing pump station. Similarly it is apparent from the plans that alternative methods have been adopted at the Lyons Avenue site that would reduce the effects compared with the earlier plans, although this is not explicit in the text. While such consideration of alternative methods could be made more explicit, such information is not essential for notification;

(d) Vegetation removal information from the arboricultural assessment has been used and incorporated into the Report in the individual site assessments;

(e) There is a section addressing 'Landscape and Urban Design Principles and Mitigation Measures' which would be a benchmark for an Outline Plan; and

(f) A number of detailed matters relating to individual sites have generally been addressed.

7 Some qualifications that were noted in the earlier review remain with regard the photosimulations. The qualifications include (i) the lack of information on reading distance, (ii) illustration of mitigation planting that is suggested and not proposed, and (iii) omission of aspects such as access roads that will be built during construction and may or may not be removed. At the meeting on 2 August 2012 a question was raised about whether a large existing pohutukawa shown in the photosimulation to the left of the existing pump station at the Frederick Street Pump Station site (PS23) would in fact be retained. This has yet to be confirmed. However, with these qualifications, the photosimulations are a useful tool and generally contain sufficient information for the project to be notified.

SUFFICIENCY OF INFORMATION AND IDENTIFICATION OF RELEVANT ISSUES

8 There is sufficient information on the nature of the project in the AEE and associated plans and photomontages to enable the project to be understood for the purpose of notification.

9 Similarly, there is now sufficient information on the likely nature and magnitude of both temporary and permanent effects at each site, to enable the effects to be appraised. The information covers:

(a) The **nature** and **magnitude** of effects;

(b) Both biophysical and visual effects; and

(c) Temporary and permanent effects.

10 On the basis of inspections it is considered that the relevant issues particular to each site have been sufficiently identified.

11 While the mitigation measures are 'suggestions' rather than proposed, they are generally sufficiently detailed to be understood and if necessary applied by way of conditions. It is noted that the building designs (for instance at Western Springs Park, and PS23) are currently basic shapes and would require further design work in order to make their appearance acceptable.

CONCLUSION

12 There is sufficient information on landscape and visual matters to enable the project to be notified, and no further information is required at this stage.

13 To avoid any misunderstanding, this is not necessarily an indication that the reviewer agrees with all the findings of the Report, and further information may be sought later.

Gavin Lister
Isthmus
21 September 2012

Main Works S92 questions:

1. Please provide clarification that the Site Management Plan (T&T, July 2012, provided as Technical Report I in Part D) (the SMP) covers both the Main works and CSO Collector sewers.

2. Further to the above, please confirm whether the SMP is draft or final.

3. Please advise whether the results of ground contamination assessments for specific sites will be provided to Auckland Council prior to excavation working progressing on that particular site. If so this requirement should be included in the SMP.

4. The SMP states "*Additional soil sampling and testing is proposed to be undertaken either prior to excavation or during the construction process by sampling and testing open excavations or stockpiles*" (refer pg 5, section 3.2). Please advise how the effects of any contamination at the site on the environment and on workers will be managed if works are underway while soil sampling and testing is being carried out. It is acknowledged that the SMP identifies the "*The advantages of establishing contamination levels and obtaining a waste manifest prior to any excavation starting on site...*" (refer pg 5, section 3.2, last paragraph).

5. Clarification is required on the soil handling management protocols in Table 3.3 (section 3.2.2, pg 7). It is considered that the management procedures to be followed for soil contaminant concentrations above cleanfill criteria but below NES SCS, should include the management procedures in sections 4 – 9, and not only sections 4 and 5, as documented in Table 3.3.

6. It is understood that in the event that soil contaminant levels are below the NES SCS for recreational and/or commercial/industrial land use, soils will potentially be re-used on site. Please provide an Assessment of Environmental Effects (AEE) to support the re-use of these soils on site, given that levels may exceed relevant discharge criteria in Schedule 10 of the Proposed Auckland Regional Plan: Air, Land and Water. The assessment should give consideration to the potential for discharge associated with placing soils below the groundwater table and also the placement of contaminated soils at the surface.

7. The SMP makes no reference to the potential for discovery of asbestos during excavation, and associated management and transport. It is noted that the Desk Study and Ground Contamination Assessment – Main Works (T&T, July 2012, Technical Report I, Part D) has found that asbestos is present at some of the construction sites investigated, at levels or in a form that are unlikely to affect human health. Please advise what procedures will be used for dealing with material that is suspected or confirmed as containing asbestos whilst undertaking the excavation, for the protection of worker health and safety. These procedures should be included in the SMP. For sites where asbestos is assessed to have a potential risk to human health, consideration should be given to the monitoring of airborne asbestos fibres.

8. The SMP refers to staff training and the identification of indicators of contamination (refer pg 12, section 8). Please confirm whether this will include training on the identification of signs of asbestos.

9. Please provide further clarification and detail of the process to be followed in the event of accidental discovery of contamination is required. This should address the health and safety of workers, the role of sampling and field testing and the decision-making process for stopping/resuming work.

10. The SMP makes mention of “suitable qualified Environmental Consultant to address specific contamination issues outlined in this report” (refer pg 2, section 2.1), with references to the

Environmental Consultant in a number of sections. Please provide further clarification on the particular roles and responsibilities of the Environmental Consultant or Contaminated Land Specialist (CLS) in ensuring that the SMP is fully implemented. This should include consideration of the level of involvement of the CLS in overseeing/inspecting excavations.

11. Section 4.1, page 7 of the SMP states that there may be "temporary" stockpiling of contaminated soil on site.

    a. Please provide clarification on the meaning of "temporary" stockpiling.
    b. Please also provide clarification on the level of soil contamination in the soil potentially to be stockpiled (refer section 4.2, pg 7), as no stockpiling of soil with contaminant levels above the NES SCS is permitted.
    c. In the event that soils are stockpiled that have contaminant levels above background, but below NES SCS, please advise whether any measures will be used in addition to the measures in section 4.2 to isolate the stockpile from the ground surface to prevent the possibility of contaminant migration into the subsurface.

12. Please provide further information on the level of staff training proposed (refer section 8, pg 12). Induction training alone is considered to be insufficient, and consideration of weekly training and daily toolbox meetings is required.

13. Please provide further detail on the procedures for identifying and removing underground structures such as underground storage tanks, and validating remaining in-situ soils (refer section 4.4, pg 8).

14. Please provide further detail on the decision making process for the disposal of dewatering discharges on contaminated sites, in relation to the results of testing undertaken (refer section 4.7, pg9).

15. Please advise how it has been determined that the 12 construction sites are likely to have contaminant levels similar to or lower than the four investigated sites (refer section 14, pg 46 of Desk Study and Ground Contamination Assessment – Main Works), as the land-use and site history at the 12 sites is different to the four sites investigated.

Auckland Council
Te Kaunihera o Tāmaki Makaurau

2 October 2012

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

I refer to your recent applications for the Main Project Works component of the Central Interceptor Wastewater Project, dated 17 August 2012.

Further to my earlier letter of 12 September 2012 the Main Project Works applications (resource consents and notices of requirement) were formally accepted into the Council's system on 12 September 2012, and the Council proposes to process the applications in accordance with the agreed timeframe set out in the Council's letter regarding section 37A matters dated 4 September 2012.

The attached table sets out the allocation of consent number references for the various matters requiring consent under the relevant statutory documents. This table is based on that provided by Watercare on 31 August 2012 but with some modifications to better match the nature of the applications to the matters for which consents are required (in particular the coastal permits).

Since receipt of the applications, the Council's consents and policy project team have reviewed the documents to determine their adequacy for processing and to ascertain whether further information is required to enable to the Council to complete its assessments. The Council team have identified a number of areas where further information is required.

1. AEE Reports

1.1 Certificates of Title

We note that a number of the Main Project Works sites are subject to particular covenants, caveats or building line restrictions on their respective certificates of title, as follows:

(a) Mt Albert War Memorial Reserve: Certificates of title NA217/108 and NA1999/21 are subject to Certificate D626310.1 (re the Building Act).

(b) Haverstock Road: Certificate of title NA576051 is subject to Caveat C558939.9.

(c) Keith Hay Park, Arundel Street: Certificate of title 175714 is subject to Consent Notice 6387944.3 and Encumbrance 6387944.5.

(d) PS 23 (Frederick Street): Certificate of title NA97C/394 is subject to Caveat 480523.2.

AC001

(e) Miranda Reserve: Certificate of title NA1875/79 is subject to a building line restriction (K83194). It is unclear whether this restriction will need to be lifted to enable the proposed works (pursuant to section 327A of the Local Government Act 1974).

Please provide copies of these documents and advise of any additional legal requirements that may need to be addressed to enable the works.

1.2 Other Matters

Other matters arising from a review of the AEE are set out as follows:

(a) It was anticipated that a schedule of proposed conditions for the construction stage of the Main Project Works would be provided with the application. Please confirm whether these will be provided.

(b) Please include clarification for the term 'venturi effects' as referred to at paragraph J (Odour) at page 20 of the Part B AEE. This term may not be known to submitters.

2. Specialist Reports

2.1 Earthworks

Campbell Stewart of Southern Skies has reviewed the application documentation in terms of the proposed earthworks. Further to discussions held on 18 September 2012, Mr Stewart has confirmed his response to the application documents by way of a memorandum of the same date. In summary, Mr Stewart advises that:

> *Overall, the Erosion and Sediment Control plans (ESCPs) provided in the application contain many inconsistencies and do not show how compliance with the stated relevant guideline (TP90) will be achieved. 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. The problem is that the documents provided will comprise part of the information that contractors will tender on. If the ESCPs do not show compliance with TP90, problems may occur in requiring the contractor to comply with TP90 in the preparation of the final ESCPs prior construction.*

A copy of Mr Stewart's memorandum is attached.

2.2 Groundwater and Settlement

Aidan Nelson of Earthtech Consulting Limited has reviewed the application documentation in relation to groundwater and ground settlement effects. The review dated 19 September 2012 outlines some concerns with the level of information provided for the various construction sites. It states that:

> *The technical information is well presented but limited by the lack of site specific investigation data. The reviewers acknowledge that it is not reasonable to provide all the necessary data prior to consenting but recommends that the detailed design and monitoring procedures be provided for a least two shaft sites to:*
> *(a) confirm that the available design and construction options are adequate when assessed on the basis of site specific data; and*
> *(b) to provide a clear model of the process to be used at other locations.*

As a result, detailed information is sought as follows:

(a) Detailed geotechnical investigations, analysis and specimen designs are requested at WS2 and one other shaft site to demonstrate that settlement limits can be achieved (total of two detailed investigations areas). The following is requested:

i. Detailed geotechnical investigations.
ii. Groundwater modelling with and without mitigation.
iii. Assessment of cumulative effects from mechanical and dewatering induced settlement, based on the proposed detailed design drawings.
iv. Assessment of building locations and foundation details for all buildings located within 30m of the shaft perimeter.

(b) The conditions and monitoring plans will become the primary means of controlling adverse effects. Preparation of detailed plans for the two specimen design sites should address:

i. Groundwater drawdown limits based on site specific details.
ii. Settlement limits – maximum allowable settlement of 50mm total and 1:1000 differential.
iii. Tunnel liner – liner permeability of =10-10m/s and installed within seven days of excavation.
iv. Shaft and floor liner details (if any).
v. Methodology to demonstrate how monitoring can be used to control construction techniques to ensure that no adverse settlement effects occur.

Two sites are therefore recommended to be subject to geotechnical investigations, and should be sites that will clearly demonstrate how the design process will match site specific conditions.

A copy of Mr Nelson's letter is attached.

2.3 Archaeology

The archaeological aspects of the proposal have been considered by Vanessa Tanner, the Council's Senior Archaeologist. In her memorandum dated 18 September 2012, Ms Tanner advises that an adequate assessment of effects on archaeology has not been provided. Ms Tanner also notes that no assessment of the effects on historic structures associated with the existing sewer has been undertaken. Ms Tanner concludes that the information supplied in the AEE is insufficient to provide an understanding of the extent and scale of adverse effects on historic heritage as a matter of national importance under section 6(f) of the RMA and it does not enable the extent and scale of any adverse effects on historic heritage to be assessed.

Ms Tanner makes the following recommendations:

- That an assessment is undertaken of the effects the proposal will have on the historic values associated with the present wastewater system, much of which was constructed in the early 20th century.
- That a more comprehensive archaeological assessment is undertaken of the 16 proposed Main Works construction sites where archaeological assessments have not yet taken place.
- That an assessment of effects on historic heritage as a matter of national importance under section 6(f) the RMA is provided for the proposed Central Interceptor.

Ms Tanner also makes the observation that the mitigation of effects on archaeology under the provisions of the Historic Places Act is not necessarily considered mitigation of effects on historic heritage under the RMA.

A copy of Ms Tanner's memorandum is attached.

2.4 Contamination

Renate Schutte has reviewed the application in terms of contamination issues, including those arising in terms of the relevant national environmental standard. Ms Schutte's memorandum contains a list of 15 matters that are required to be addressed. A copy is attached.

2.5 Stormwater

The stormwater aspects of the application have been reviewed by Gemma Chuah (the Council's Consents and Compliance Advisor – Stormwater). In a memorandum dated 20 September 2012, Ms Chuah raises a number of general and site specific queries. A copy of Ms Chuah's memorandum is attached.

2.6 Landscape

The landscape and visual aspects of the application have been reviewed by Gavin Lister of Isthmus Group. In a memorandum dated 21 September 2012, Mr Lister advises that no further information is required at this stage, although some clarification is likely to be required in the future with regard to some aspects of the photosimulations. A copy of Mr Lister's memorandum is attached.

2.7 Traffic

The traffic-related aspects of the applications have been reviewed by Angie Crafer of Flow Transportation. In a letter dated 20 September 2012, Ms Crafer notes a range of issues for each of the construction sites. The letter notes the requirement for all sites that a generic construction traffic management plan be prepared, and incorporates feedback from Auckland Transport. A copy of Ms Crafer's letter is attached.

2.8 Noise and Vibration

The noise and vibration related aspects of the applications have been reviewed by Jon Styles of Styles Group. In a memorandum dated 24 September 2012, Mr Styles notes a number of issues in relation to both matters that would need to be resolved before he is able to carry out a substantive review. A copy of Mr Styles' letter is attached.

Clarification is also sought in the AEE as to acoustic fences for each construction site. Some reliance is placed on the efficacy of such fencing in order to achieve suitable noise reductions at the respective boundaries and further detail with regard to the material/density and height of such fencing is required.

2.9 Other Matters

No issues have been identified at this stage in regards to coastal, odour or heritage matters.

3. Site Specific Issues

3.1 Western Springs Interchange – Main Works site

Please advise what if any consultation has been undertaken with the neighbouring Caltex service station site.

3.2 Mt Albert War Memorial Reserve (AS1 and L2S3)

Please clarify why noise barriers/walls are not being proposed along the eastern boundary of 9 Wairere Avenue despite acknowledgement in the application (page 53 of AEE) that noise management measures may be needed when noise intensive works occur in close proximity to the site.

3.3 Lyon Avenue (AS2)

Please advise what consultation has been undertaken with Mt Albert Grammar School and the Ministry of Education given that part of the Lyon Avenue site is part of the Mt Albert Grammar School designation (E05-24).

3.4 Keith Hay Park (AS 5)

Please provide an assessment of effects for the area to be designated for micro-tunnelling on Frost Road, Mt Roskill, to the north of Keith Hay Park. This area is shown on the inset to drawing AEE-MAIN-7.1 in Part C of the Main Project Works package. This assessment should include the full range of matters covered in the assessments for all other sites to be designated.

3.5 Pump Station 25 (Miranda Reserve L3S1)

Please advise what consents are expected to be required for demolition of the above ground sewer, and how will demolition noise be remedied or mitigated.

3.6 General – Dust Effects

Please provide an assessment of dust emission effects on neighbours surrounding the proposed construction sites.

4. Maps - Trenching

Please identify more clearly the proposed areas of trenching. Table 2-2 of the AEE refers, as part of the project-wide reasons for consent, to "all construction sites and all surface trenching works". We note that the present mapping keys are not clear on this point other than in relation to Link Sewer 4, although this is identified through a specific tag rather than the use of parallel dashed lines.

5. Process Timeframes

In accordance with the agreed section 37A timetable (and the more recently agreed extension to that timetable in regards to this section 92 response), it is proposed that the above information requests will not affect the date of notification of the applications. I anticipate that if the information is outstanding following the close of submissions then it may be necessary to formally place the applications on hold, although it expected that some work will be able to be continued in terms of the preparation of the hearing reports.

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
Central Interceptor Project Team

Enc

Memo

20 September 2012

To: Graeme Mitchie

From: Gemma Chuah (Consents and Compliance Advisor - Stormwater)

Cc: James Fuller

Subject: Section 92 Questions re Stormwater– Central Interceptor

The general questions apply to both the CSO and Main Project works.

For sites where runoff is proposed to be managed by TP90 controls for the duration of the works I have no particular comments and I am happy to rely on Campbell's assessment regarding earthworks controls and if what is proposed is appropriate.
The answer's to Campbells questions regarding metalled areas as stabilised may alter the stormwater assessments for some sites.

General

1. The majority of sites are located adjacent to streams however the ecological effects sections within the site specific assessments do not acknowledge or discuss the effects on the stream at all.

2. There are inconsistencies between the sizes of the construction site areas in the AEE and in ESCP. Please amend.

3. For sites where once the site is stabilised, runoff is proposed to be managed by TP10 controls, clarity will be required to be provided in the CMP regarding the point at which the site will be considered stabilised and the TP90 controls will be removed and replaced with TP10 controls.

4. ESCP/SW plan uses the construction activities duration (eg 12-18 months) to estimate runoff however the AEE indicates that for the majority of sites the site will be occupied for considerably longer (eg 5 years) although construction activities will not be occurring for the whole duration. The impervious surfaces and potential for effects from the runoff from these sites in particular with respect to water quantity will remain whilst the sites are not actively operational. Please provide comment on how this will be managed. The details for each site may be able to be addressed through the CMP.

5. The maintenance of devices at end of construction phase once the sites are re-established will be very important. This will need to be addressed in CMP for sites those controls will be relied on during construction phase (in particular Western Springs, Haverstock Road, Mangere Pump Station).

Site Specific

6. PS25 proposed SW works plan for the permanent works proposed proprietary devices to provide water quality control however does not address the effects on water quantity from the proposed impervious surfaces. The existing stormwater network discharges almost immediately into the stream so these effects need to be considered and managed.

7. Site L1S1 (Motions Road) – incorrectly refers site being adjacent to the Motions Creek. This is actually Meola Creek. Please amend

flow
TRANSPORTATION SPECIALISTS

20 September 2012

Graeme Michie
Senior Resource Consents Project Manager
Auckland Council
Private Bag 92300
AUCKLAND 1142

Via email Graeme.Michie@aucklandcouncil.govt.nz
cc Paulette Gagamoe: Paulette.Gagamoe@aucklandcouncil.govt.nz
Richard Blakey: Richard@blakeyscott.co.nz
Aut Karndachurak: Auttapone.Karndacharuk@aucklandtransport.govt.nz

Dear Graeme

WATERCARE CENTRAL INTERCEPTOR – REVIEW OF ADEQUACY OF INFORMATION FOR S92 REQUEST – MAIN PROJECT WORKS

This document provides details of a review of the information provided by Watercare to determine whether the level and detail of the information provided (as it relates to transportation planning and engineering) for the Main Project Works are adequate to:

- Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).
- Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.

We have considered the relevant specialist technical report and provided comments in written form so that they can be included in a single coordinated written response, where that is required, in terms of section 92 of the Resource Management Act 1991 ("request for further information").

Our review has included liaison with Aut Karndachurak of Auckland Transport. Aut noted that parking restrictions will require a formal process through Auckland Transport to confirm any necessary parking resolutions. Aut would like information to be provided on the following:

- has permission been sought and gained from the relevant stakeholders with regard to gaining access to site AS2 via Morning Star Drive, which is a private road
- are alternatives available to avoid locating permanent structures outside the road carriageway, particularly at sites L2S2 and L3S3
- how will residents and affected parties be informed of the construction activity and how will the area of affected parties be identified

1 CENTRAL INTERCEPTOR PROJECT – MAIN PROJECT WORKS

In general, information is sought on:

- A generic CTMP (to include for example, requirements for notifying residents, property owners, businesses, wheelwash, parking, etc)

Information requests specific to each site are noted in the text that follows, which also includes explanatory commentary.

1.1 WS1 (Westerns Springs)

This site will be one of the three major construction sites, used for constructing the central interceptor tunnel over a period of some five to six years.

1.1.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	The SIDRA files supplied for the intersection of Great North Road and Bullock Track do not correspond to those documented in the report
		The secondary site on the eastern side of the Caltex service station on Great North Road is constrained by existing structures/facilities and topography. We would therefore like to see if its feasible to turn a truck around on site using the existing access gate. A truck backing from or onto Great North Road would create potential significant safety concerns. Could a tracking assessment be supplied?
		The traffic modelling has considered the impacts of construction traffic upon existing traffic flows. This area will experience different traffic flows when the Waterview Connection is completed. Therefore we would like to see the predicted effects of construction traffic on the forecast

Does the information provided:	Yes/No	If No, what information is required
		future traffic flows, post Waterview Connection completion, including an assessment of traffic coming from/going to the west (eg towards the Waterview interchange).
		Cumulative effects of construction at sites WS1, AS1, AS2, L1S1, L1S2 and L2S2 have not been considered. These effects need to be assessed, particularly with regard to the St Lukes Interchange operation to determine if restrictions need to be placed on truck movements during peak traffic times. This may need to consider a network model (eg using transit) due to the interaction between the St Lukes Road/westbound ramps, St Lukes Road/Great North Road and Great North Road/eastbound ramps/Stadium Road intersections.

General comments that could be addressed:

- Figure 2 from the Traffic Impact Assessment report shows the tracking curve for a semi trailer truck extending outside the designated works area at the Bullock Track entrance. Confirm if widening of the existing crossing is required.
- The Bullock Track/Great North Road intersection has an existing safety problem. The effect of heavy vehicles turning left into Bullock Track could reduce safety for vehicles exiting Bullock Track. A review condition could be considered that limits truck access to the site during peak morning and evening periods should the safety record worsen.
- The SIDRA models provided show significantly different results to those reported in the TIA.
- Consider providing a pedestrian crossing facility at the northern end of Stadium Road

1.1.2 Access

The proposed site access is through an existing vehicle crossing on Bullock Track, which will need to be widened to accommodate large trucks. Pedestrians making use of the path network internal to the playing fields will have to cross this access, directly adjacent to the vehicle crossing. Vehicle movements through this access are expected to be low however (peaking at 15 standard vehicles and 5 heavy vehicles inbound per hour).

The proposal includes the inbound movement of vehicles from Bullock Track to be made via a left turn movement. Some contractors may travel from the Ponsonby/Grey Lynn area and they will likely turn right into the site. We support the suggestion that they be instructed not to access via a right turn from Bullock Track.

Sight distance to the site entrance on Bullock Track is restricted because of the Great North Road intersection 45 m to the north, however vehicles will be travelling somewhat slowly as they will have just made a turn. Stopping sight distance at 30 km/hr is 22 m (using a reaction time of 1.5 sec and a longitudinal friction factor of 0.36). Therefore, there is sufficient distance for a driver to see a pedestrian and wait for them to cross over the vehicle crossing before turning into the site.

With the Bullock Track being for entering vehicles only and because stopping sight distance requirements are met, it is considered that the effects of this vehicle crossing on pedestrian access and safety will be acceptable.

There is however concern regarding the increase of heavy vehicles turning left into Bullock Track from Great North Road, impacting on traffic turning right out of Bullock Track. Presently, there is a high incidence of crashes involving right turning vehicles in this location, caused at least in part by drivers accepting relatively small critical and follow up gaps when exiting Bullock Track. Heavy vehicles turning left from Great North Road into Bullock Track restrict visibility to the west for vehicles exiting Bullock Track. An increase in these heavy vehicles would result in a decrease in opportunities for right turning traffic to exit, in turn further frustrating drivers and resulting in them being likely to accept smaller critical gaps than may be safe. Drivers may additionally attempt to pull out further from the limit lines in an attempt to see past the turning heavy vehicle. The SIDRA modelling predicts a small increase in delay of 22 seconds, 11 seconds and 14 seconds in the morning peak, evening peak and Saturday midday periods respectively. The additional 15 standard vehicles (cars/utes) expected to turn left into Bullock Track from Great North Road is within the expected daily variance of traffic volumes. The additional five truck movements per day averages 1 every 12 minutes. Whilst the existing safety aspects are of concern, the proposed activity is unlikely to have a noticeable effect on the operation and safety at the intersection. However, a review condition could be considered that limits truck access during peak times if the safety record worsens.

Egress is through a new crossing on Stadium Road, and this egress, and the resulting increase in heavy vehicle volumes on Stadium Road, will cause additional conflict with pedestrians. This raises some concern, given the level of pedestrian activity on this street. These effects however are mitigated in part by the proposed construction of a 2 m footpath and bus drop off area on the western side of Stadium Road. It is recommended that in addition, a pedestrian crossing facility be provided in order to provide a safe location for pedestrians to cross from the western side of Stadium Road to the pedestrian entrances at the stadium. This may require the removal of a small number of on street parking spaces. Sight distance to and from the proposed egress on Stadium Road is acceptable.

Access widths and gradients are suitable for the proposed construction traffic. However, Figure 2 from the Traffic Impact Assessment report shows the tracking curve for a large semi trailer type truck extending outside the designated works area at the Bullock Track entrance. Acceptable on site manoeuvring is proposed to enable vehicles to exit the site in a forward direction onto Stadium Road.

A proposed secondary access on the corner of Great North Road and the SH16 eastbound off ramp (next to Caltex) is expected to generate only minor traffic, with movements restricted to left in and left out. It sits however immediately west of the existing pedestrian crossing across this off ramp, introducing potential pedestrian conflict.

The secondary site access adjacent Caltex raises safety concerns for drivers approaching from the SH16 off ramp. These vehicles will be travelling fairly slowly, as drivers need to give way to vehicles westbound on Great North Road. However, their driver's attention will be focussed towards the opposing traffic stream to their right, and they may not be aware if the preceding vehicle has indicated or stopped to enter the site access directly in front of them. While this issue has not been addressed in the Traffic Impact Assessment report, the site and its associated access are existing Watercare facilities. Mitigation could include erecting appropriate signs (eg TW-29 sign) in advance of the site access during times when the site is being used.

1.1.3 Trip Generation

While there will be a significant number of trucks movements expected to access the site throughout the construction duration, traffic generation on a daily and hourly basis is considered to be relatively low. Vehicle movements expected to be generated during the peak hours during the busiest times are:

- 19 inbound and 8 outbound trips in the morning peak,
- 8 inbound and 19 outbound trips in the evening peak
- 13 to 14 inbound and outbound trips in the weekend interpeak

These expected vehicle numbers are, on the surface, low enough to be accommodated within the existing road network. The SIDRA modelling carried out confirms this, with no significant changes in network performance predicted as a result of the additional traffic. However a number of inconsistencies in the approach to the modelling have been identified and are detailed below.

The traffic modelling assesses the impacts upon the road network of the expected construction traffic to the main site. Traffic to the secondary site adjacent the Caltex has been disregarded as negligible. The assessment considers two scenarios, that construction traffic will access the site to and from:

- SH16 to the east, connecting with the northern and southern motorways or
- St Lukes Road to the south

A third scenario however, with traffic accessing the site via SH16 to the west, requires testing. This is especially the case given that the Central Interceptor is likely to be constructed *after* the Waterview Connection project linking SH16 to SH20 has been constructed, thereby making access to SH20 viable through the new Great North Road interchange.

Examining the SIDRA modelling more closely, the results indicate morning peak eastbound 95th percentile queues on Great North Road at the Stadium Road intersection of approximately 200 m. Similar queues are predicted on St Lukes Road for the northbound approach to Great North Road. Flow's experience of these intersections is that morning peak queuing frequently exceeds these lengths, with the St Lukes Road queue at times 400 m or longer. Causes for this include:

- the low lane utilisation of the right hand (ie motorway bound) lane on St Lukes Road
- blocking back of motorway bound traffic on Great North Road to the St Lukes Road intersection, and

- the eastbound weave east of St Lukes Road, as through traffic on Great North Road shifts from the kerbside lane to the second and third lanes to access the motorway, while right turning traffic from St Lukes Road shifts from the second lane into the city bound kerbside lane.

By neglecting these factors, the SIDRA modelling of these intersections is overly optimistic in regard to their existing performance. Accordingly, the predicted effects of construction traffic on the road network may be underestimated. As well as delays and queues being longer, safety can be affected, with drivers taking more risks the longer they wait, and pedestrians being affected by potentially longer times between pedestrian crossing phases.

Conversely, the modelling reported in the TIA predicts existing queues on Bullock Track in excess of 350 m for the Saturday peak period and some 260 to 275 m during the weekday peak periods. These queues exceed those observed by Flow staff (possibly due to the signalising of the Motions Road/Great North Road intersection). The model could be refined by considering the platooning (bunching in SIDRA) of traffic from upstream traffic signals and by allowing Bullock Track vehicles to accept smaller critical gaps. The SIDRA files provided by the applicant have very different results to those reported on in the TIA, including for example modelled queues on the Bullock Track in excess of 600 m during peak times.

The modelling makes use of 2012 surveyed traffic data and assumes that these traffic volumes reasonably represent those present during construction (from 2017). While normally this would be a reasonable assumption, as five years' traffic growth is negligible in congested networks, this may not be the case so near to the proposed Waterview Connection and the associated widening of the Northwestern Motorway, both of which have the potential to significantly alter traffic patterns through the St Lukes interchange.

The traffic assessment of construction traffic has considered the effects of the Westerns Springs site in isolation, and has not considered the cumulative effects of additional adjacent sites. Of these, the following sites are noted to share access routes via SH16.

Table 1: Sites that will use SH16 Interchange

Location	Vehicle Movements during Peak Hours	
	Truck Movements	Other Vehicle Movements
Western Springs (WS1)	9	18
Mount Albert War Memorial Park (AS1)	5	4
Lyon Avenue (AS2)	5	4
Motions Road (L1S1)	5	4
Western Springs Depot (L1S2)	5	4
Norgrove Avenue (L2S2)	5	4
TOTAL	**34**	**38**

While it is acknowledged that peak construction at the various sites may not occur concurrently, some degree of overlap is likely. So that an assessment can be made regarding whether or not restrictions on traffic movements during peak times might be necessary, further information regarding the likely

traffic effects of a typical cumulative scenario is needed. This may need to consider outputs from a network model (eg using transit) to assess the interaction between the St Lukes Road/westbound ramps, St Lukes Road/Great North Road, Great North Road/eastbound ramps/Stadium Road and Great North Road/Bullock Track intersections.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.1.4 Parking

For this location:

- Sufficient on site parking is provided to accommodate parking for contractors during construction
- There is no need to remove on street parking to allow for access and manoeuvring. However, a small number of existing on street parking spaces may require removing, should a pedestrian crossing facility on Stadium Road be constructed
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.2 Mount Albert War Memorial Reserve (AS1)

This site will be one of the seven intermediate scale access shaft sites, and will be located within a portion of the Mount Albert War Memorial Reserve.

1.2.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at multiple sites needs consideration. This assessment should consider construction vehicle access to/from the west via SH16, as well as traffic flows post Waterview Connection. See Section 1.1.1
		More detail needs to be provided in terms of how access to the northernmost 36 public parking spaces is to be maintained, while still fencing the proposed construction area

Does the information provided:	Yes/No	If No, what information is required
		Confirm number of existing off street parking spaces that would be removed from public use during construction
		Detail is required regarding the location of contractors parking during construction

General comments that could be addressed:

- No parking restrictions may be required outside number 5 Wairere Avenue, in order to allow left turning heavy vehicles to exit. This will require the approval of Auckland Transport.
- Confirm if parking along access way would be used by contractors.

1.2.2 Access

Both access and egress is proposed via an existing Mount Albert War Memorial Park car park access, on Wairere Avenue. While there is scope to allow car park traffic to share the use of this driveway for egress only, we support the suggestion that the driveway be used for construction traffic only

Use of this driveway by construction vehicles only will restrict access to the on site car parks to Councillors Drive, and may restrict egress similarly (depending on whether car park traffic may egress here). Under either scenario, this will affect only a small number of vehicles, and the Councillors Drive approach is an acceptable alternative, provided that access can be provided to the 36 car park spaces at the northern end of the driveway.

Visibility to and from the proposed access is in excess of 100 m. Speeds are generally low on Wairere Avenue due to speed humps either side of the proposed construction access.

Moderate volumes of pedestrians can be expected on Wairere Avenue, due to the proximity of several schools, Baldwin Avenue train station, the public park, Memorial hall and local shops. However we support the conclusion that the impacts of the proposed construction access will be acceptable due to low vehicle speeds, adequate existing pedestrian facilities, and the use of an existing vehicle crossing to access the site.

1.2.3 Trip Generation

Traffic expected to be generated during the peak construction season is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that, individually, this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable. However, the cumulative effects of construction at sites WS1, AS1, AS2, L1S1, L1S2 and L2S2 have not been considered. Nor has access to and from the west via SH16 been considered, or these effects on traffic volumes post Waterview Connection completion. See Section 1.1.3.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.2.4 Parking

For this location:

- It is not clear where contractor parking is to be located, although the 12 spaces along the accessway to be used by construction vehicles could be used
- There may be a need to restrict parking outside number 5 Wairere Avenue, in order to allow exiting vehicles to turn left onto Wairere Avenue
- The TIA states that 14 existing off street parking spaces are to be temporarily removed during the construction period, although the AEE drawings (AEE-MAIN-2.2) indicate that 20 would be removed (due to the location of a fence). The number needs to be confirmed as the TIA states that sufficient parking spaces remain to cater for the expected demand
- The proposed fencing around the construction area (refer drawing AEE-MAIN-2.2) severs the northernmost 36 public parking spaces from the available access, and it is not clear how access to these spaces is to be maintained
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.3 Lyon Avenue (AS2)

This site will be one of the seven intermediate scale access shaft sites, and will be located on a small public reserve bordered by Morning Star Place, Mount Albert Grammar School and the St Lukes Mega Centre.

1.3.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at multiple sites need consideration. This assessment should consider construction vehicle access to/from SH16 (both east and west), as well as traffic flows post Waterview Connection, with particular attention to the St Lukes Interchange during peak periods. See Section 1.1.1
		The loss of 22 off street visitor parking spaces needs to be addressed.

Does the information provided:	Yes/No	If No, what information is required
		Detail is required regarding the location of contractors parking during construction

General comments that could be addressed:

- Remedial works may be required if damage is caused to the new roundabout on Morning Star Drive (to be addressed in the CTMP and CAR (Corridor Access Request) and any agreement made with property owners.

1.3.2 Access

Access and egress is to be provided off Morning Star Place, which is a private road. Appropriate consultation/notification will be required with property owners, including means to address remedial works.

Sight distance to the proposed access is limited to approximately 30 m by the sharp bend in the street, immediately to the north. We agree however that due to the very low speed environment on Morning Star Drive that the available sight distance is satisfactory. As Morning Star Drive has been designed to cater for single unit trucks, we agree too that the effects of these vehicles accessing this location will be acceptable.

The access, as well as the construction site as a whole, will sever a popular pedestrian path (the Roy Clements Treeway) running between Fergusson Reserve in the south and Alberton Avenue in the northwest. Also severed will be a side path, connecting this walkway with Morning Star Drive. We support the intention to provide a temporary pedestrian diversion where these paths are interrupted by the works.

1.3.3 Trip Generation

Traffic expected to be generated during the peak times is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that, individually, this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable.

A roundabout has recently been constructed on Morning Star Drive, immediately west of the St Lukes Road intersection. This roundabout has a kerbed, trafficable overrun area for heavy vehicles, and it may not be suitable for the proposed number of heavy vehicle movements (56 per day), particularly if these vehicles are carrying heavy loads. Remedial work may be necessary to this roundabout following construction. A condition will be suggested that identifies that any damage caused to existing facilities will need to be remedied.

No traffic operation assessment using traffic models has been carried out for any affected intersections, and while we agree that the effects of construction traffic on the intersections immediately adjacent the site will be negligible, the traffic generated should be considered in the assessment of the St Lukes interchange as part of an assessment of cumulative effects of construction at sites WS1, AS1, AS2, L1S1, L1S2 and L2S2. This assessment should consider the effects upon St Lukes Interchange, using forecast traffic flows post Waterview Connection. All heavy vehicles should

be assumed to access the site to and from this interchange, as this would be the 'worst case' scenario. See Section 1.1.3.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.3.4 Parking

For this location:

- Sufficient on site parking seems available to accommodate parking for contractors during construction; this however requires confirmation
- The area for the site works shown in the plans provided will result in the temporary loss of 22 off street visitor parking spaces, including two mobility spaces, all associated with the residential units on Morning Star Drive. This loss of parking has not been addressed. We note that the August 2012 Central Interceptor scheme drawings (refer drawing AEE-MAIN-3.2) do not show these parking spaces, as they were constructed subsequent to the aerial photography being taken.
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.4 Haverstock Road (AS3)

This site will be one of the seven intermediate scale access shaft sites, and will be located within a portion of the site occupied by the Mount Albert Science Centre. Three possible site access locations have been considered in the TIA, being:

- A two way access between 96 and 98 Haverstock Road
- A two way access to be formed in Camden Road (a cul-de-sac)
- A two way access using the existing MASC access from the end of Hampstead Road

1.4.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 need consideration.
		Detail is required regarding the location of contractors parking during construction

Does the information provided:	Yes/No	If No, what information is required
		Need confirmation that the width of the existing MASC access is suitable for two way access including trucks. Alternatively, describe operation and assess effects of one way movements and location and effects of an on street loading space.
		Need to assess the effects should the access between 96 and 98 Haverstock Road be one way at time. Alternatively, describe operation and assess effects of one way movements and location and effects of an on street loading space.
		The effects of removing on street parking from Haverstock, Camden or Hampstead Roads needs assessing, particularly for Camden and Hampstead roads. The viability of the suggested indented parking on Camden Road needs confirmation.

General comments that could be addressed:

- Use of Fowlds Avenue rather than Haverstock Road could be a more appropriate option to access the site to and from SH16 and avoid potential issues at the Haverstock Road/Sandringham Road intersection. If considered, it should be examined in more detail with regard to truck and trailer tracking through the intersection of Fowlds Avenue and Haverstock Road
- The removal of on street car parking on any of Haverstock, Camden or Hampstead Roads (depending on the access option sought) at the access location and on Haverstock Road west of Sandringham Road requires Auckland Transport agreement
- The use of Haverstock Road will have less traffic effects than using Camden Road or Hampstead Road
- Parking effects are considered to be more than minor for Camden Road and Haverstock Road.

1.4.2 Access

Three potential site accesses have been identified in the TIA, being:

- Through the existing vacant site between numbers 96 and 98 Haverstock Road. The TIA notes that two way access may possibly be provided. The assessment should consider the effects should the access be one way at a time.

- At the end of the Camden Road cul-de-sac. The road is narrow and parking will need to be removed. A new access would need to be formed.
- At the end of the Hampstead Road cul-de-sac, making use of the existing Mount Albert Science Centre (MASC) access. Parking restrictions will be required. This road is used extensively for parking, presumably by MASC employees.

Sight distances to all three potential accesses are sufficient. Accesses from Camden and Haverstock roads would require new vehicle crossings, which would need to be sufficiently wide to accommodate truck movements.

The width of the existing MASC access should be assessed to determine if it is suitable for two way access including trucks, or the effects of travel one way at a time should be assessed, including for example if it is feasible for a loading space to be provided to accommodate a waiting truck.

1.4.3 Trip Generation

Traffic expected to be generated during peak construction times is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable.

Access to construction sites AS3, AS4, WS2 and L3S1 to L3S5 are all intended through the Maioro Street and Dominion Road Interchanges on SH20 (post Waterview Connection). While the cumulative effects of construction traffic from these five sites upon these interchanges have not been assessed, we acknowledge that both interchanges will likely have ample spare capacity at the time of construction. See Section 1.6.3.

We recommend that the two intersections of each interchange be modelled as a single signalised intersection within SIDRA, rather than separately.

1.4.4 Network Effects

In terms of access to and from the south, we agree that construction traffic should be directed via Euston Road and Mt Albert Road towards SH20.

However, in terms of access to and from SH16, we consider Fowlds Avenue to/from St Lukes Road to be a better option than Haverstock and Sandringham Roads, which will require removal of parking at Haverstock Road close to Sandringham Road and has some sight distance issues. Fowlds Avenue is an 11 m wide road, designated a collector route in the District Plan. It connects Haverstock Road with St Lukes Road to the north, and is a more direct route to SH16. Use of this route would require tracking to be assessed for truck and trailer units through the roundabout at the intersection of Fowlds Avenue and Haverstock Road. Use of this route would additionally remove the need for SH16 bound construction traffic to pass through the Duncan Avenue and Sandringham Road intersections, and removes the need to restrict on street parking on Haverstock Road at this latter intersection.

Comparing the three possible site accesses, Camden Road is considered to be the least appropriate for heavy vehicle traffic. While the five peak hour heavy vehicle trips proposed is very modest, this increase will be very noticeable on a cul-de-sac that serves less than 20 residential properties. Both

Haverstock and Hampstead Roads are both wider and more heavily trafficked, and thus better suited to heavy vehicles.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.4.5 Parking

For this location:

- It is not clear where contractor parking is to be located
- The use of Haverstock Road as a construction traffic route would require the temporary removal of on street parking spaces on the south side of the street, adjacent to Sandringham Road. The effects of these need to be specifically addressed as parking is typically in high demand close to the Sandringham town centre. The use of Fowlds Avenue instead of Haverstock Road for vehicles heading to and from SH16would remove the need to remove this parking.
- Approximately four on street parking spaces will be temporarily removed on both sides of Haverstock Road adjacent to the proposed access, if this access is used. While it appears that adequate on street parking is available either side of this location to allow this restriction, an assessment of the likely effects is required.
- All existing on street parking (8 to 10 spaces) will be removed on Camden Road during the works should this access be used. The TIA suggests that this may be partially mitigated by installing indented parking spaces in the large berm; however, mature street trees limit this scope, and residents and their guests may need to park on Euston Road. These effects are considered to be more than minor.
- Should the Hampstead Road access be chosen, some 12 to 13 on street parking spaces will need to be removed on one side of the street to facilitate two way access during the works. Parking would be allowed to remain on one side of the street. Hampstead Road is frequently used for parking, which will need to be accommodated elsewhere (eg Euston Road). An assessment of the effects of this is needed.
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.5 Walmsley Road (AS4)

This site will be one of the seven intermediate scale access shaft sites, and will be located in the southern corner of Walmsley Park, Mount Roskill.

1.5.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 need consideration.
		Detail is required regarding the location of contractors parking during construction
		Information is required regarding how trucks will not block following traffic on Sandringham Road Extension if they are waiting to enter the site.

General comments that could be addressed:

- The temporary loss of on street parking spaces on Sandringham Road Extension will require approval of Auckland Transport

1.5.2 Access

The proposed access is via a new vehicle crossing, to be located on Sandringham Road Extension, opposite the intersection with Gilford Avenue. This access is to be restricted to left in and left out movements only, and is approximately 30 m north of an existing zebra crossing. There is only sufficient room for one truck to enter or exit the site at any one time and further information is required regarding how this will be managed without a truck blocking following traffic on Sandringham Road Extension.

The work site requires the closure of a portion of pedestrian footpath through the park where it meets Sandringham Road Extension. However, there are two such pedestrian connections 10 m apart, so this temporary closure is acceptable.

The proposed site is in close proximity to several pedestrian destinations, including Wesley Primary and Intermediate schools, Wesley Community Centre, bus stops and several parks. The zebra crossing is also the only pedestrian crossing facility for over 300 m in each direction on Sandringham Road. Accordingly, high numbers of pedestrians are expected, particularly around school travel times. We agree with the recommendation that consideration be given to restricting construction traffic access during times of peak pedestrian activity.

1.5.3 Trip Generation

Traffic expected to be generated during peak construction times is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable.

Access to construction sites AS3, AS4, WS2 and L3S1 to L3S5 are all intended through the Maioro Street and Dominion Road Interchanges on SH20 (post Waterview Connection). While the cumulative effects of construction traffic from these five sites upon these interchanges have not been assessed,

we acknowledge that both interchanges will likely have ample spare capacity at the time of construction. See Section 1.6.3.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.5.4 Parking

For this location:

- It is not clear where contractor parking is to be located
- On street car parking is to be temporarily removed on the west side of Sandringham Road Extension, 10 m either side of the proposed construction access. We consider that the effects of this parking loss will be acceptable
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.6 May Road (WS2)

This site will be one of the three major construction sites, used for constructing the central interceptor tunnel over a period of some five to six years. The site is presently vacant.

1.6.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 need consideration.
		Detail is required regarding the location of contractors' parking during construction
		Confirmation is required whether on street car parking is to be removed adjacent to the access, and the scale of this parking removal. Will parking then be reinstated following construction, or will the change be permanent?

Does the information provided:	Yes/No	If No, what information is required
		A more detailed assessment of the crash history of the May Road and Roma Road intersection is requested, comparing this with the typical crash rate for an intersection of this type.

General comments that could be addressed:

- The effects of construction traffic at the intersection of May Road, Stoddard Road and Denbigh Avenue are significant, with delay and queue increases (by approach) of up to 25%, and levels of service reducing on some approaches from D to E and from E to F
- Any removal of on street parking on Roma Road will require the approval of Auckland Transport

1.6.2 Access

Site access is proposed through a strip of land between 44-52 and 54-60 Roma Road. Sight distance to the proposed access is adequate. The access will require the construction of a new vehicle crossing, but this is unlikely to affect pedestrian safety.

Within the site, manoeuvring will be carried out via a clockwise one way loop around the site.

1.6.3 Trip Generation

Trips generated by this site have been assumed to be the same as at site Western Springs (WS1). As such, vehicle movements expected to be generated during the peak hours during the busiest times are:

- 19 inbound and 8 outbound trips in the morning peak,
- 8 inbound and 19 outbound trips in the evening peak
- 13 to 14 inbound and outbound trips in the weekend interpeak

These expected vehicle numbers are, on the surface, low enough to be accommodated within the existing road network.

An assessment of the expected number of injury crashes at the intersection of May Road and Roma Road, using the Economic Evaluation Manual (EEM), indicates a typical rate of 0.3 to 0.4 crashes per year. Crash history records given in the TIA state that three injury crashes occurred within the study area over a five year period (an average of 0.6 injury crashes per year). While it is not clear how many of these injury crashes occurred specifically at the intersection of Roma Road and May Road, the comment that 'the number of crashes within the study area of the search is low' does not seem valid. A more detailed analysis of the crash history, comparing this with the typical crash rate from the EEM is requested, together with any suggested mitigation, if considered necessary.

Truck access has been assumed to occur to and from the southeast, via the Dominion Road interchange on SH20. However, access may equally be to and from the northwest, via the (to be completed) Maioro Street interchange. Whilst the interchanges should have adequate capacity, the routes to and from them should be assessed based on forecast traffic flows following completion of

the Waterview Connection project, rather than existing flows. This assessment should additionally consider the cumulative effects of those construction sites that will gain access from the same interchanges, as detailed below.

Table 2: Sites that will use SH20 Mairo Street and Dominion Road Interchanges

Location	Vehicle Movements during Peak Hours	
	Truck Movements	Other Vehicle Movements
May Road (WS2)	9	18
Haverstock Road (AS3)	5	4
Walmsley Road (AS4)	5	4
L3S1	5	4
L3S2	5	4
L3S3	5	4
L3S4	5	4
L3S5	5	4
TOTAL	**49**	**50**

While it is acknowledged that peak construction at the various sites may not occur concurrently, some degree of overlap is likely. So that an assessment can be made regarding whether or not restrictions on traffic movements during peak times might be necessary, further information regarding the likely traffic effects of a typical cumulative scenario is needed.

The TIA reports that modelling of the northbound internal queue within the Dominion Road Interchange is currently some 250 m in both the morning and evening peaks. This exceeds the 50 m available within the interchange, and in reality reflects queued traffic at the southern intersection. We recommend that the two intersections of the interchange be modelled as a single signalised intersection within SIDRA, rather than separately. So too should Maioro Street interchange when considering traffic approaching to and from the northwest.

We also note that the modelling has assumed the defunct left turn rule to be in use. However, we acknowledge that this will likely have little effect on the results.

Considering the intersection of Roma Road and May Road, the modelling indicates negligible increase in either queues or delays, and we agree that effects at this intersection will be acceptable. At the May Road intersection with Stoddard Road and Denbigh Avenue however, delay increases of up to 15 seconds are predicted (Stoddard Road approach, evening peak) and queue increases of up to 33 m (May Road northbound, Saturday peak). As this intersection is already operating at a very low level of service (level of service E during the evening peak), any further deterioration in the operation is not desirable. However, the relative increases in delay and queues compared to the modelled operation of the existing flows are not significant, although we do consider them more than minor. If the cumulative traffic effects of other construction sites are additionally considered, these changes are likely to increase.

At the intersection of Denbigh Avenue and Dominion Road, as well as at the Dominion Road Interchange, delay and queue increases are predicted to be acceptable. This may not be the case however once the cumulative effects of construction sites WS2, AS3, AS4 and L3S1 to L3S5 are considered.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.6.4 Parking

For this location:

- It is not clear where contractor parking is to be located
- The TIA variously states that removal of 10 m of on street parking 'may be required' and 'will be required'. Confirmation is requested whether this will be the case or not. The scale of the removal also requires confirmation, as the truck tracking curves appear to require up to 40 m of parking to be removed. While we agree that removing 10 m of parking (one or two spaces) will have negligible effects, removing 40 m of parking (six spaces) will have effects.
- Maintenance vehicles are understood to require permanent and ongoing access to the site, approximately once per week following construction. It seems likely that these maintenance vehicles will be smaller than those used for construction. This provides an opportunity to reinstate on street parking following construction, and confirmation is needed as to whether this will be carried out.
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.7 Keith Hay Park (AS5)

This site is proposed to be an intermediate scale construction site that will serve construction of an access sewer and micro tunnelling. The estimated construction period is 12 to 18 months.

1.7.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Confirmation of whether the access will be for one direction at a time or two way traffic. If one way at a time then details of how this will be managed, together with an associated assessment of effects is needed. Ideally the access should be able to accommodate trucks turning in and then waiting off the street should another truck be exiting.
		Provide a truck tracking assessment for access from Rainford Street, including access over the bridge and turnaround on site.
		Provide information on the feasibility of providing an alternative foot/cycle path into and through Keith Hay Park. If not feasible, then provide details of how pedestrian and cyclist safety and amenity will be provided for and an assessment of effects.
		Provide detail regarding what vehicles and volume of traffic is proposed to enter and exit from the Gregory Place access, as noted on drawings AEE-MAIN-7.1. Provide an assessment of effects of this traffic.

General comments that could be addressed:

- The CTMP should address timing the arrival of heavy vehicles to not coincide with the busy periods at the pools and the gymnasium to improve safety for school children and other pedestrians.

1.7.2 Access

The main site is located at 20-22 Gregory Place, Mount Roskill. This site is accessed from Arundel Street through number 50 and 51 Arundel Street. Two minor work sites will be located along the shared foot/cycle path on the eastern boundary of Keith Hay Park. These sites will be accessed via the wooden bridge at the end of Rainford Street and the existing 3.5m wide foot/cycle path.

Arundel Street

The main access to the site will be from Arundel Street, via a new access that will be constructed through two residential dwellings (to be removed). Sight distance along Arundel Street looking east appears to be sufficient. Sight distance looking west is not ideal due to some planting next to the

access location, which could be addressed. Arundel Street at the location of the access is a low speed environment, with a speed hump is placed at the entrance of the Cameron Pool car park.

The tracking diagram shows the access provides enough width for one vehicle turning in or out of the access way. Clarification is needed on whether or not the access way is intended to be for one direction at a time, or will be able to accommodate two way traffic. If one direction at a time, then further information is required on how the access will be managed and where vehicles waiting to enter the site will do so without impacting on other vehicles. Ideally the access should be able to accommodate trucks turning in and then waiting off the street should another truck be exiting the site.

The location of the access way is not ideal in relation to potential pedestrian conflicts. The main entry to the Cameron Pools is right next to the proposed vehicle access, which potentially will cause safety issues with children visiting the pools and gymnasium by bike or walking. The CTMP should advise contractors and truck drivers to be aware of a high level of pedestrian and cyclist activity associated with the pools.

The tracking diagram shows that the site provides sufficient manoeuvring space to ensure trucks can access and egress the site in a forward direction.

Rainford Street

Access to the sites used for micro tunnelling along the footpath on the eastern boundary of the Keith Hay Park is proposed to be through Rainford Street, a cul-de-sac accessed from Stamford Park Road. The existing wooden bridge can (once reinforced) provide access to the proposed sites across the creek. Access and egress across the bridge will not pose any issues with regards to sight distance, the bridge is located at the end of a straight cul-de-sac with ample sight distance and very little planting.

The existing timber bridge has an approximate aisle width of 3.5 m, which requires widening and strengthening to make the use of this bridge possible. Reference is made to Figure 14 showing a tracking assessment for truck; however Figure 14 shows trucks tracking to and from the Arundel Road site and no tracking is shown for access from Rainford Street. Tracking is also required to be shown for trucks turning around within the construction site.

As noted in the TIA, it is important that pedestrian and cyclists facilities are provided for to an appropriate standard. An assessment of the use of the existing cycle/footpath would assist in determining what is appropriate and needs to consider school and commuter travel as well as those using the park for recreation. Temporary alternative routes would need to be considered by Auckland Council. If none exist, then the effects of this access route are considered to be significant with regard to pedestrian and cyclist safety and amenity as widening the existing path seems unrealistic given the constraints on both sides of the existing path.

A one way system is suggested in the TIA but clarification is needed regarding this as it appears to be a two way/one way at a time scenario, using traffic lights to control vehicles accessing the site from Rainford Street. This would not necessarily address pedestrian and cyclist safety and amenity and further information is also required regarding where vehicles would wait prior to crossing the bridge from Rainford Street. Passing bays could be considered, although an assessment as to their feasibility is also required.

1.7.3 Trip Generation

Traffic generation on a daily and hourly basis is relatively low. Vehicle movements expected to be generated during the peak hours during the busiest times are:

- 4 standard vehicle movements during the peak hour and 3 heavy vehicle movements per hour over a 12 hour day during stage one
- 4 standard vehicle movements during the peak hour and 5 heavy vehicle movements per hour over a 12 hour day during stage two.

These expected vehicle numbers are low enough to be accommodated within the existing road network without noticeable delays to other vehicles. It is recommended that the CTMP advise truck drivers to beware around pedestrians in these areas.

1.7.4 Parking

For this location:

- It is unclear if contractors will be able to park on site during construction. If not, the impact of extra on street parking needs to be assessed.
- The tracking diagram shows the need to remove some on street parking (two spaces) on the northern side of Arundel Street to allow for access and manoeuvring.
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes for the main construction site
- The smaller site used for micro tunnelling does not appear to provide sufficient space for internal circulation. This issue needs to be addressed in more detail.

1.8 Pump Station 23 (AS6)

This site will be one of the seven intermediate scale access shaft sites, and will be located within an existing Watercare site in Hillsborough.

1.8.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Detail is required regarding the location of contractors' parking during construction. If on street, then an assessment of the effects of this is required

Does the information provided:	Yes/No	If No, what information is required
		Truck manoeuvres within the site during the construction of the temporary platform needs to be addressed. Smaller trucks may be necessary, as well as three point turns within the site. Confirmatoin is required that smaller trucks will be able to manoeuvre adequately.
		Confirmation is sought as to the quantity of on street parking to be temporarily removed to allow truck movements into and out of the site
		The effects of restricting on street parking in the location of the truck waiting area should similarly be assessed
		Truck tracking showing movements turning left into the site access requires assessment

General comments that could be addressed:

- Remedial work to the Queenstown Road/Frederick Street roundabout may be required following construction
- Resolutions are required for removal of on street car parking

1.8.2 Access

Access to the proposed site is to be via an existing access at 39 Frederick Street. Vehicles are to circulate anticlockwise around the construction site, via a temporary construction platform constructed into Hillsborough Bay (Manukau Harbour). It is not clear however how trucks will manoeuvre within the site while this platform is being constructed; smaller trucks may be necessary, as may three or more point turns within the site.

We agree that a truck waiting area is necessary on Frederick Street, in order to allow heavy vehicles on site to exit prior to a second vehicle entering the site. This will need appropriate resolutions to be made by Auckland Transport. The proposed location of this wait area sits within the T intersection of Frederick Street and Pallister Drive; which is not ideal. A review condition may be appropriate to monitor how often this is required and if safety is of concern. If any issues arise, then an alternative waiting area would be required. Consideration of an indented wait area is suggested, with the footpath relocated to the back of the road reserve.

Sight distances to and from the access are adequate for the speed environment provided that a truck is not waiting in the proposed wait area. A truck waiting on the road will obstruct visibility for drivers attempting to exit the site access as well as the adjacent driveway. The proposed speed restriction

would assist, but will also require traffic calming measures to advise drivers of the need for a speed restriction.

Truck access to and from the site is expected to be via the Queenstown Road interchange on SH20. However the truck tracking curves show vehicles accessing the site from the southeast and turning right into the site. Tracking should be rerun showing trucks approaching from the northeast and turning left into the site access.

1.8.3 Trip Generation

Traffic expected to be generated during the peak construction season is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable.

We note that four non injury crashes have been recorded within the past five years at the intersection of Frederick and Carlton Streets. We do not necessarily agree with the conclusion that there are no inherent safety concerns with this intersection, as this appears on observation to be a relatively high crash incidence. However, typical crash rates for a stop controlled T intersection as calculated in the EEM are only available for injury crashes, and as such no definitive conclusions may be drawn. Sight distance could be improved to the northwest by the trimming of vegetation.

The proposed heavy vehicle route takes trucks through the roundabout at the intersection of Frederick Street and Queenstown Road. Remedial work may be necessary to this roundabout, should damage occur due to trucks overrunning the central island. The CAR (corridor access request) will address this.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.8.4 Parking

For this location:

- It is not clear where contractor parking is to be located
- On street parking will have to be temporarily removed in order to accommodate turning movements of heavy vehicles entering and exiting the site. While a figure of 6 m is quoted in the TIA report, the truck tracking curves supplied suggest that more than this may need to be restricted. The scale and effects of this removal requires confirmation
- In order to ensure the truck waiting area is available for use at all times, on street parking will additionally be restricted in this location
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes once the platform is constructed
- Additional information is sought regarding the ability to manoeuvre within the site during construction of the platform.

1.9 Kiwi Esplanade or Ambury Park (AS7)

This site is proposed to be an intermediate scale construction site. Two site locations have been considered: within either Kiwi Esplanade or Ambury Park.

In addition, a trenched pipeline is proposed from AS7 to Witla Court.

1.9.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	No	Information with respect to the site access for the Kiwi Esplanade site within the Traffic Impact Assessment report (TIA) appears to be contradictory. Plans included in the TIA appendix and the drawing AEE-MAIN-9.1 show the site access as being via the reserve road which is accessed from Kiwi Esplanade. However, text within the TIA as well as Photograph 15 and the proposed truck routes all refer to a different Kiwi Esplanade site access opposite Andes Avenue.
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Detail is required regarding the location of contractors' parking during construction

General comments that could be addressed:

- Temporary loss of on street parking will be required during construction of the link sewer between the Central and Western Connectors (LS4). The scale and effects of this loss requires addressing and additionally requires Auckland Transport's consideration

1.9.2 Access

Two alternative locations for site AS7 have been considered, at either Kiwi Esplanade, accessed from the reserve road opposite 85 Kiwi Esplanade, or at Ambury Park, accessed from Ambury Road.

Kiwi Esplanade Site

The proposed site access for the Kiwi Esplanade site is via the existing reserve road off Kiwi Esplanade, opposite 85 Kiwi Esplanade. The reserve road is approximately 7 m wide and will satisfactorily accommodate two-way truck traffic.

Vehicles are proposed to access the site via Kiwi Esplanade, turning right into the reserve road from Kiwi Esplanade and left out of the reserve road onto Kiwi Esplanade. Traffic volumes on Kiwi Esplanade are low so there should be minimal delay to general traffic and traffic accessing/exiting the site.

Sight distances have not been assessed for the proposed site access (from the reserve road); however, vehicle speeds will be low and sight distance appears to be met.

There is no footpath along the northern side of Kiwi Esplanade where trucks access/egress the reserve road. However, there is no pedestrian footpath alongside the reserve road and it is likely that pedestrians utilise the berm or the reserve road as well as vehicles.

Tracking provided shows that both a single dump truck and tandem dump truck (truck and trailer) can adequately access/egress the site.

Ambury Park Site

The proposed access for this site is from Ambury Road. The construction site includes the internal access road within the park, which can be accessed from Kiwi Esplanade in the north (a gated access) and from Ambury Road in the south (at a gated access). Access via this southern (Ambury Road) access is proposed.

Ambury Road is approximately 5 m wide, and while on street parking is permitted, there are no adjacent land uses that would generate parking. As such, the available width is considered sufficient, although two trucks passing would likely result in the trucks tracking into the verge. Any remedial works would need to be addressed after completion of the works, or as agreed with Auckland Council.

Sight distances have not been assessed for the proposed site access; however, sight distances to and from the proposed access appear unlimited. We note that vehicle speeds may exceed 50 km/hr on Ambury Road due to its straight geometry and 'rural road' type environment. Due to its short length however (approximately 200 m) we acknowledge that this effect will be modest.

There is no footpath along either side of Ambury Road at the location of the proposed access. The existing pedestrian path between Ambury Road and Kiwi Esplanade is to be maintained with a pedestrian diversion.

Tracking provided shows that a single dump truck can adequately access/egress the site.

1.9.3 Trip Generation

Traffic generation on a daily and hourly basis is relatively low. Vehicle movements expected to be generated during the peak hours during the busiest times are:

- four standard vehicle movements during the peak hour and three heavy vehicle movements per hour over a 12 hour day during stage one
- four standard vehicle movements during the peak hour and five heavy vehicle movements per hour over a 12 hour day during stage two.

These expected vehicle numbers are low enough to be accommodated within the existing road network without noticeable delays to other vehicles.

We agree that there are no inherent safety issues relating to either site access that may be exacerbated by additional trips.

1.9.4 Parking

For this location:

- Sufficient space appears to be available on both sites for contractor parking, although this should be confirmed
- There is no need to remove on street parking to allow for access and manoeuvring
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.9.5 Trenched Pipeline to Witla Court (LS4)

Additional works are associated with the connection of a link sewer, connecting the Central Connector at site AS7 to the existing Western Connector at Witla Court. The sewer will be constructed by open trench method, and will require temporary traffic management measures, including:

- 30 km/hr speed restrictions
- Closure of footpaths on one side only of various roads
- Lane width restrictions
- Stop/go control where traffic is to be restricted to a single lane of operation

Access to existing properties is to be maintained, and delays are within the guidelines of the CoPTTM. We consider these effects to be acceptable to road users and residents of the area. However, the effects of temporary restrictions to on street parking has not been addressed, nor the issue of contractor parking during the works.

1.10 Mangere Pump Station (WS3)

This site will be one of the three major construction sites, used for constructing the central interceptor tunnel over a period of some five to six years.

This site will be one of the three major construction sites, used for constructing the central interceptor tunnel over a period of some five to six years. The site is an existing Watercare site, and the majority of the works are authorised by the existing designation. As such, no transport implications have been assessed.

1.11 Motions Road (L1S1)

This site will be one of the nine intermediate scale link sewer sites, and will be located within a reserve adjacent to Motions Road, Western Springs.

1.11.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at multiple sites need consideration. This assessment should consider construction vehicle access to/from SH16 (both east and west), as well as traffic flows post Waterview Connection. See Section 1.1.1
		Detail is required regarding the location of contractors' parking during construction

General comments that could be addressed:

- The proposed vehicle crossing on Motions Road may be able to be reduced in width
- The intersection of Motions Road/Great North Road is now controlled by traffic signals

1.11.2 Access

The proposed access is via a new vehicle crossing, to be located on Motions Road. This will require a new vehicle crossing approximately 40 m south of an existing signalised pedestrian crossing. We agree that sight distances to and from the proposed access are acceptable, aided by the prohibition of on street parking on the northbound side of Motions Road, both north (within 100 m) and south (within 50 m) of the access.

The truck tracking curves provided in Figure 20 suggest the proposed vehicle crossing will be in the order of 10 m wide. This is excessively wide, particularly given the high number of pedestrians that can be expected at this location, particularly children.

A temporary diversion will maintain pedestrian access to an existing footbridge connecting Motions Road to Pasadena Intermediate School, west of the site. Existing footpaths on Motions Road are to remain.

We support the recommendation that construction vehicles be limited during school travel times.

1.11.3 Trip Generation

Traffic expected to be generated during the peak construction stage is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that, individually, this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable. However, the cumulative effects of construction at sites WS1, AS1, AS2, L1S1, L1S2 and L2S2 have not been considered. Nor has access to and from the west via SH16 been considered, or these effects on traffic volumes post Waterview Connection completion. See Section 1.1.3.

As the intersection of Motions Road/Great North Road is now controlled by traffic signals, there is no need to restrict heavy vehicles from turning right at this intersection from a safety perspective.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.11.4 Parking

For this location:

- It is not clear where contractor parking is to be located
- No on street car parking will be removed by the works
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.12 Western Springs Depot (L1S2)

This site will be one of the nine intermediate scale link sewer sites, and will be located within a council depot area behind the Western Springs Stadium.

1.12.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at multiple sites need consideration. This assessment should consider construction vehicle access to/from SH16 (both east and west), as well as traffic flows post Waterview Connection. See Section 1.1.1
		Detail is required regarding the location of contractors' parking during construction

General comments that could be addressed:

- Consider providing a pedestrian crossing facility at the northern end of Stadium Road (See Section 1.1.2)

1.12.2 Access

The proposed access to the site will be via Stadium Road and a single accessway is proposed to serve both as an entry and an exit for vehicles. Given that this will be a single point of entry and exit traffic management measures such as a convex mirror have been proposed to minimise the conflict between opposing traffic movements. It would be useful if more information is provided on how traffic will be managed in terms of this one way operation, as it appears that there is a significant distance (some 50 m) between the entry and the site, and visibility may be limited.

Pedestrian Access

We agree that restrictions should be placed on vehicle movements at all times when there are major events at Western Springs Stadium given the high pedestrian and traffic movements that substantial events will generate. While restricting construction vehicle movements during school bus arrival and departure times would be desirable, we acknowledge that this may not be practicable, as school buses arrive at MOTAT throughout the day on school trips.

The measures that have been proposed on Stadium Road in particular providing a 2 m footpath on the western side and a bus drop off on the western side will improve pedestrian safety on Stadium Road, particularly for students walking by foot to the main entrance of MOTAT from the bus drop off. It is recommended that in addition, a pedestrian crossing facility be provided in order to provide a safe location for pedestrians to cross from the western side of Stadium Road to the pedestrian entrances at the stadium. This may require the removal of a small number of on street parking spaces.

1.12.3 Trip Generation

Traffic expected to be generated during the peak construction season is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that, individually, this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable. However, the cumulative effects of construction at sites WS1, AS1, AS2, L1S1, L1S2 and L2S2 have not been considered. Nor has access to and from the west via SH16 been considered, or these effects on traffic volumes post Waterview Connection completion. See Section 1.1.3.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.12.4 Parking

For this location:

- It is not clear where contractor parking is to be located and if there is sufficient space to accommodate contractor parking given the current use.
- No on street car parking will be removed by the works
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.13 Rawalpindi Reserve (L2S1)

This site will be one of the nine intermediate scale link sewer sites, and will be located within the Rawalpindi Reserve in Mt Albert.

1.13.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Detail is required regarding the location of contractors parking during construction
		Confirmation is sought regarding whether or not the existing vehicle crossing is to be widened to accommodate the tracking as shown in the plans (Figure 24 of the TIA)
		The means by which two way traffic is to be managed within the section of the site access that allows only one way operation is to be advised and effects assessed. This should include what is required to avoid congestion occurring on the street from vehicles waiting to turn into the site.
		Truck tracking curves suggest that it may be necessary for some on street parking to be temporarily removed on Rawalpindi Street. An assessment of the scale and effects of any removal is required
		Proposed heavy vehicle routes to and from the site need reconsideration with regards to eastbound and westbound access onto SH16, and routes both to and from SH20

General comments that could be addressed:

- Temporary restrictions to on street parking on Rawalpindi Street will require resolutions by Auckland Transport
- Widening of the accessway may require Council approval for the removal or trimming of trees

1.13.2 Access

The proposed access to the site is via an existing formed accessway through the reserve, making use of an existing vehicle crossing on Rawalpindi Street. Tracking curves supplied (figure 24 of the TIA) indicate that this accessway is to be widened to accommodate two way access, however this is not described in the text of the TIA. A pinch point exists with the site however, on the southeast corner of number 11 Rawalpindi Street, and it is not clear how two way traffic will be managed through this section. Confirmation is also sought regarding whether the existing vehicle crossing is to be widened.

While sight distances to and from the site access have not been provided, we acknowledge that they are adequate for the speed environment of the street.

Pedestrian access to the children's playground within the park is to be maintained parallel to the proposed access. The CTMP will need to address how vehicle traffic and pedestrians will share the accessway, particularly as children are anticipated to be a high proportion of foot traffic.

1.13.3 Trip Generation

Traffic expected to be generated during the peak construction stage is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable.

The proposed heavy vehicle route to and from SH20 is via Mt Albert Road, Sandringham Road and the Sandringham Road interchange. This interchange has been replaced with the Maioro Street interchange, and we consider the proposed routing to no longer be likely. Rather, heavy vehicle route will likely be via the Dominion Road interchange, or via the new Waterview Connection from the Great North Road interchange.

We note that the route supplied from the site to SH16 eastbound is not possible, as no link is in place for westbound traffic on Great North Road to access the eastbound ramp to SH16, nor is such a link intended as part of the Waterview Connection project. An alternative eastbound route to SH16 should be supplied, presumably via the St Lukes Interchange.

We also note that no route from the site to SH16 westbound has been supplied, but acknowledge that it will be via Carrington Road and Great North Road.

Both this site and site L2S2 could gain access to the motorway network via the Great North Road Interchange. While the cumulative effects of construction traffic to and from these two sites has not been assessed, we acknowledge that such effects will be negligible for two such small sites.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.13.4 Parking

For this location:

- It is not clear where contractor parking is to be located and if there is sufficient space to accommodate contractor parking given the current use
- On street car parking is currently permitted adjacent to the site on both sides of the road. With a relatively narrow carriageway however (approximately 8 m), a modest number of on street car

parking may have to be temporarily removed. The truck tracking curves provided support this. The scale of this parking loss, and its effects, requires assessment.

- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.14 Norgrove Avenue (L2S2)

This site will be a small scale link sewer site, located at the cul-de-sac end of Norgrove Avenue, in Mt Albert.

1.14.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at multiple sites need consideration. This assessment should consider construction vehicle access to/from SH16 (both east and west), as well as traffic flows post Waterview Connection. See Section 1.1.1
		Detail is required regarding the location of contractors parking during construction
		The effects of removing on street parking on Norgrove Avenue requires assessment
		Clarification is requested regarding the length of Norgrove Avenue to be closed due to construction: 40 m as referred to in the Traffic Impact Assessment Report, or 20 m as shown in the associated plans
		Detail required in terms of how two way traffic flow is to be managed to the properties at number 14 and 16 Norgrove Avenue

Does the information provided:	Yes/No	If No, what information is required
		We request that, should heavy vehicles be expected to turn right from Asquith Avenue onto New North Road, that this be assessed in terms of both safety and traffic operation. Conversely, heavy vehicles could be restricted to routes via St Lukes Interchange

General comments that could be addressed:

- Reasons for the site being located in the carriageway could be stated to understand what has been considered in trying to avoid or minimise the traffic effects associated with it being located in the carriageway
- A suitable on street waiting area should be identified for heavy vehicles, as space exists for only one heavy vehicle on site at a time
- The intersection of New North Road and Asquith Avenue requires assessment, in terms of both the safety and traffic impacts of heavy vehicles turning right at this location
- The temporary restrictions to on street parking on Norgrove Avenue will require Auckland Transport consideration

1.14.2 Access

The proposed site will occupy the cul-de-sac end of Norgrove Avenue, and the Traffic Impact Assessment report states that the last 40 m of Norgrove Avenue will we closed due to construction. This scale however is approximately double what is shown in the plans provided, and clarification is sought with regard to this.

Site access will be directly from Norgrove Avenue. With no existing pedestrian footpath circulating around the end of the cul-de-sac, nor a footpath proposed across the face of the work site, there will be no direct conflict between pedestrians and site vehicles, other than when pedestrians cross the road.

While sight distances to and from the site access have not been supplied, we acknowledge that these will be adequate for the low speed environment of both Norgrove Avenue and Verona Avenue.

The site is very restricted, and somewhat awkward on site manoeuvring is proposed to ensure heavy vehicles do not have to egress the site in reverse. We agree that heavy vehicle manoeuvring on Norgrove Avenue outside the site should be kept to an absolute minimum, and should only be carried out with the assistance of a spotter.

Space constraints permit only a single vehicle on site at a time. A suitable location needs to be identified for heavy vehicles to wait on the street, should a heavy vehicle arrive while another is being loaded or unloaded.

Temporary access over the existing footpath and berm is proposed to properties at numbers 14 and 16 (a, b and c) Norgrove Avenue, via the existing berm. Comment is requested regarding how this access is to be managed in terms of two way traffic flow, particularly as visibility will be limited.

The above temporary access will be shared by both vehicles and pedestrians. We agree however that the effects of this shared use will be acceptable, as only pedestrians wishing to access these four properties will be affected.

1.14.3 Trip Generation

Traffic expected to be generated during the peak construction stage is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that, individually, this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable. However, the cumulative effects of construction at sites WS1, AS1, AS2, L1S1, L1S2 and L2S2 have not been considered. Nor has access to and from the west via SH16 been considered, or these effects on traffic volumes post Waterview Connection completion. See Section 1.1.3.

Heavy vehicle routes have been supplied, variously, to SH16 via the St Lukes and Great North Road interchanges, and to SH20 via St Lukes Road and Mt Albert Road. Two of these routes require heavy vehicles to turn right from a stop control on Asquith Avenue onto New North Road, which has four lanes and cycle lanes at this location. If this route is intended, we request that an assessment of this intersection be carried out, both in terms of safety and traffic operation. Conversely, we recommend that heavy vehicles be restricted to routes via St Lukes Interchange, from which both SH16 and SH20 will be accessible. We additionally consider the route southeast via St Lukes Road to be redundant, once the Waterview Connection project has been completed.

We agree that advance planning of heavy vehicle routes through the residential streets will be required.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.14.4 Parking

For this location:

- It is not clear where contractor parking is to be located and if there is sufficient space to accommodate contractor parking given the current use.
- All on street parking is to be temporarily removed on Norgrove Avenue east of Verona Avenue. This affects some 80 m of road frontage, and the effects of this loss requires assessment
- A suitable on street waiting area should be identified for heavy vehicles queuing to enter the site
- The plans indicate that adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes, albeit that trucks will need to make several point turns to turn around on site. The CTMP should confirm the size of truck able to make this turn and therefore what size trucks should generally be used during construction.

1.15 Pump Station 25 (L3S1)

This site will be one of the nine intermediate scale link sewer sites, located within an existing Watercare pump station site, within Miranda Reserve in Avondale.

1.15.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 need consideration.
		Detail is required regarding the location of contractors parking during construction
		Commentary requested regarding how the future signalisation of the intersection of Wolverton Street and Blockhouse Bay Road may be affected by heavy vehicle movements

General comments that could be addressed:

- Heavy vehicle tracking curves show swept paths that encroach beyond the existing 6 m wide vehicle crossing. It may be necessary to remove some on street car parking in order to allow a tighter heavy vehicle turning movement
- Any temporary restrictions to on street parking will require Auckland Transport consideration

1.15.2 Access

The proposed access is via an existing Watercare access on Miranda Street. This site access, as well as the existing vehicle crossing, is approximately 6 m wide, and sufficient for two way operation. Vehicle tracking curves supplied however (figure 29) indicate heavy vehicle swept paths that extend beyond the existing vehicle crossing. Widening the existing vehicle crossing beyond 6 m to accommodate these manoeuvres is not a desirable outcome, and tracking should be revisited. On street car parking may require removal to permit this.

Should the vehicle crossing width be restricted to the existing 6 m, effects upon pedestrian safety are considered acceptable. East of the site access, the existing pedestrian access between numbers 14 and 16 Miranda Street is to be sealed, maintaining a sealed access to the path network within Miranda Park.

Sight distances to and from the site access are in excess of 100 m and are satisfactory.

1.15.3 Trip Generation

Traffic expected to be generated during the peak construction season is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable. However, the cumulative effects of construction at sites AS3, AS4, WS2, L3S1, L3S2, L3S4 and L3S5 have not been considered. See Section 1.6.3.

In particular construction traffic using the adjacent sites of L3S1 (accessed from Miranda Street) and L3S2 (accessed from Blockhouse Bay Road, just south of Miranda Street) should be considered together if work at these sites could be undertaken concurrently.

The TIA report identifies three minor injury crashes in the past five years involving northbound vehicles on the approach to the pedestrian crossing on Blockhouse Bay Road, but does not highlight this as a safety issue. We consider this a safety concern, highlighting possible high speeds on Blockhouse Bay Road on the approach to the Miranda Street intersection as well as to the pedestrian crossing. However, sight distance from Miranda Street is adequate and anti skid markings appear to have been marked on the approaches to the pedestrian crossing. A review condition may be required to ascertain if the additional construction traffic might be exacerbating this problem.

We agree that heavy vehicles should not be permitted to turn right from Miranda Street onto Wolverton Street.

We further agree that a low increase in heavy vehicles through the school zone on Blockhouse Bay Road does not pose any particular safety concerns, given that this route is designated a District Arterial in the Auckland City District Plan.

We note that the intersection of Wolverton Street and Blockhouse Bay Road, currently a roundabout, has been earmarked for signalisation in future.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.15.4 Parking

For this location:

- It is not clear where contractor parking is to be located
- Temporary restrictions to on street car parking may have to be applied in order to reduce the swept path of heavy vehicles accessing and exiting the site.
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.16 Miranda Reserve (L3S2)

This site will be one of the nine intermediate scale link sewer sites, located within the Miranda Reserve in Avondale.

1.16.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 need consideration.
		Detail is required regarding the location of contractors parking during construction
		If the site can only accommodate one truck at a time, then appropriate facilities for waiting need to be provided off site and an assessment of the effects of this waiting area needs to be provided
		Shifting the existing bus stop to the south may restrict visibility to and from the site access, and this safety concern requires addressing
		Similarly, the relocated bus stop will take the place of existing on street parking. The loss of this parking requires assessment

General comments that could be addressed:

- Truck and trailer tracking curves suggest a vehicle crossing width of approximately 10 m would be required, which is not desirable over a footpath. Options to reduce this width need exploring, and may include restricting heavy vehicle access to single unit trucks, or allowing anticlockwise vehicle circulation on site.
- The proposed shifting of the existing bus stop and shelter on Blockhouse Bay Road requires Auckland Transport consideration

1.16.2 Access

The proposed access is via a new vehicle crossing, to be located at number 337 Blockhouse Bay Road. Sight distance to and from this access has not been expressly measured, but we acknowledge that it is adequate for the speed environment of the road.

Tracking curves for this access suggest a vehicle crossing width of approximately 10 m will be required in order to accommodate truck and trailer units. We do not consider that this acceptable due to the close proximity to Glenavon School and bus stops. The width of the crossing could be reduced by restricting access to single unit trucks, or by allowing anticlockwise vehicle circulation within the site (in this regards, we note that clockwise circulation is shown in the tracking curves, but that anticlockwise circulation is referred to in the report).

The access allows only one vehicle to enter the site at a time. Consideration of where another truck will wait is required, together with an assessment of effects.

The proposed access will require the relocation of an existing bus stop and shelter 40 m to the south. Buses parked at this stop may restrict visibility to and from the site access. We note however that bus stops in Auckland are frequently located 10 to 15 m away from intersections with minor roads. If shifted 40 m south, approximately 20 m of separation will exist between the bus stop and proposed access. As such we consider the separation acceptable.

All existing pedestrian movements are to be maintained.

1.16.3 Trip Generation

Traffic expected to be generated during the peak construction stage is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable. However, the cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 have not been considered. See Section 1.6.3.

The same safety concern regarding the pedestrian crossing on Blockhouse Bay Road and identified in site L3S1 applies here.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.16.4 Parking

For this location:

- It is not clear where contractor parking is to be located
- The relocation of an existing bus stop to the south will result in an equivalent loss in on street parking. The effects of this loss of parking requires assessing
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.17 Whitney Street (L3S3)

This site will be one of the nine intermediate scale link sewer sites, located within the road reserve outside numbers 120 to 124 Whitney Street, Avondale.

1.17.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Y	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	N	Cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 need consideration.
		Clarification of the temporary traffic management methodology is required in order to assess the traffic effects should alternating flow be required. This may require restrictions on site works during peak travel times.
		Detail is required regarding the location of contractors parking during construction

General comments that could be addressed:

- The proposed temporary restriction of on street parking on Whitney Road requires Auckland Transport consideration
- Provide comment on effects should useable carriageway width (excluding channel) not be sufficient to provide for two way flow as well as required longitudinal and lateral safety zones.
- The proposed temporary islands sit opposite existing vehicle crossings, suggesting pedestrians are to cross the street using vehicle crossings. Safe places for pedestrians to cross Whitney Street both north and south of the works site will need to be identified in the CTMP, in order to maintain pedestrian access to and from the local shops
- The issue of traffic performing u turns to the north of the site in order to access residential properties blocked by the proposed temporary pedestrian traffic islands requires addressing

1.17.2 Access

The site occupies a section of the eastern berm, footpath and carriageway on Whitney Street, immediately north of the Margate Road/Mulgan Street roundabout. Two way traffic flow is proposed to be maintained on Whitney Street through temporary traffic management, using a 6 m carriageway. Confirmation is required that this is feasible, considering the usable with of the carriageway and allowing for lateral safety zones and cones. Sight distances to and from the north are over 100 m and are considered acceptable. .

We agree that site access to the site should be only from the north on Whitney Street, while egress should be to the south. Similarly, we agree that site vehicles be directed when both entering and exiting the site.

The footpath on the east side of Whitney Street will be closed to foot traffic during the works. Pedestrians will detour around the site, crossing Whitney Street via a temporary pedestrian refuge located north of the site. It is not clear whether a second temporary traffic island appears to be intended to allow pedestrians to cross back to the east side of Whitney Street, outside number 120. Both of these temporary islands sit opposite existing vehicle crossings, and it would seem pedestrians are to share these crossings with vehicles when crossing the street. Encouraging pedestrians to share a kerb ramp with vehicles is not ideal and creates a conflict between pedestrians and vehicles. How this conflict is to be managed requires addressing.

If the second temporary traffic island is not intended as a pedestrian refuge, pedestrians from the north will be unable to directly access the local shops on the northeast corner of the Margate Road/Mulgan Street roundabout. These pedestrians will either cross the west, south and east arms of the roundabout, or attempt to cross the north arm unassisted, where no crossing facilities exist. This issue requires addressing.

The above temporary island restricts movements into various properties to left in and left out only, and this will result in an increase in u turn manoeuvres on Whitney Street. The roundabout immediately south of the site will allow safe u turns in this location, but u turns to the north are likely to occur in a less safe manner. This requires addressing.

During periods of construction, Whitney Street is to be narrowed to a single lane of operation, managed by stop/go control. We agree that this should be limited to times outside peak hours, and that the effects of such will be acceptable provided that delays do not exceed those allowed by Auckland Transport (refer Code of Practise for Temporary Traffic Management C16.2.2).

All existing pedestrian movements are to be provided for in a safe manner.

1.17.3 Trip Generation

Traffic expected to be generated during the peak construction season is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable. However, the cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 have not been considered. See Section 1.6.3.

Truck and trailer units are shown traversing the overrun area on the roundabout at the intersection of Margate Road, Mulgan Street and Whitney Street. Remedial work may be necessary to this roundabout following construction.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.17.4 Parking

For this location:

- It is not clear where contractor parking is to be located

- On street parking on Whitney Street will be temporarily restricted immediately north of the site. Approximately six spaces will be unavailable, and the impacts of this have not been addressed
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes

1.18 Dundale Avenue (L3S4)

This site will be one of nine intermediate size link sewer sites, located in a small reserve opposite 67-73 Dundale Avenue, Blockhouse Bay.

1.18.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 need consideration.
		An assessment of the ability of the site to accommodate only one truck at a time or an assessment of the need for and effects of a waiting area for trucks on street.
		Detail is required regarding the location of contractors parking during construction. Especially in conjunction with the proposed loss of on-street parking.

General comments that could be addressed:

- Loss of 15 m of on-street parking requires Auckland Transport consideration.

1.18.1 Access

The site occupies a section of reserve on the northern side of Dundale Avenue, approximately 170 m west of the intersection with Boundary Road. This section is located within the road reserve. Access to and from the site is proposed through a 6 m wide two-way access point approximately 25 m west of the adjacent kindergarten driveway, which is adequate separation. Dundale Avenue is approximately 9.5 m wide at the location of the proposed access point which may require no parking restrictions to be imposed on both sides of Dundale Avenue. This needs to be confirmed.

Sight distance is not measured on site, but given the straight nature of Dundale Avenue, it is sufficient. Traffic volumes are relatively low, access and egress are not assumed to cause any issues with congestion; however a waiting area may be required on street as only one truck can access the site at any one time. This needs to be confirmed.

Pedestrian access will be maintained throughout the construction period. Pedestrian volumes are observed to be very low, so conflicts between pedestrians and heavy vehicles are not anticipated.

Any potential conflict between pedestrians and (heavy) vehicles is limited by the fact that no heavy vehicles are to access or egress the site around opening or closing hours of the adjacent kindergarten.

1.18.2 Trip Generation

Traffic expected to be generated during the peak construction stage is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable. However, the cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 have not been considered. See Section 1.6.3.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.18.3 Parking

For this site:

- It is not clear where contractor parking is to be located
- The loss of 15 m of on street parking is required on the north side of Dundale Avenue, approximately 2 spaces. The tracking diagram shows that parking restrictions may be required on the southern side of Dundale Avenue.
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes. No vehicles will have to reverse out of the site.

1.19 Haycock Avenue (L3S5)

This site will be one of nine intermediate size link sewer sites, located at 4 Haycock Avenue, Mount Roskill. This site is currently occupied by two residential dwellings.

1.19.1 Adequacy of Information Provided

The **first objective** of the requested review is to determine whether the level and detail of the information provided (as it relates to the traffic impact assessment) for the Main Project Works and the CSO Works are adequate. The following provides a summary:

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the nature and scope of the proposed activity as prescribed in the district and regional plan(s).	Yes	

Does the information provided:	Yes/No	If No, what information is required
Provide an understanding of the extent and scale of any adverse effects on the environment, or to enable the extent and scale of any adverse effects on the environment to be assessed.	No	Cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 need consideration.
		Detail is required regarding the location of contractors parking during construction.
		Detail is required as to the provision of access for the neighbouring properties when lane closures are in place.
		Details on potential delays on Haycock Avenue and White Swan Road should be provided to enable an assessment regarding operating times.
		Details on the extent of parking restrictions with and without the lane closure is required.

General comments that could be addressed:

- It would be preferable that alternating flow traffic management is not required. It is unclear for how long, Haycock Avenue will be narrowed to one lane only.
- No on-street parking survey has been undertaken to assess the impact of on street parking loss.
- Tracking diagrams do not match with proposed access routes for heavy vehicles. Tracking indicates right in/right out only. Access routes indicate reverse direction.
- Delays on White Swan Road have not been assessed.

1.19.2 Access

The site occupies a section of land at 4 Haycock Avenue, which is approximately 100 m west of the intersection with White Swan Road. This section is currently occupied by a residential dwelling. Access to and from the site is proposed through a 7 m wide two-way access point on the western site boundary. Haycock Avenue is approximately 7. 5m wide at the location of the proposed access point which is adequate for the required vehicle movements according to the tracking diagram. Sight distance is not measured on site, the report does not provide enough information to assess the sight distance.

Traffic volumes are relatively low, access and egress are not assumed to cause any issues with congestion during construction that does not occur on the carriageway.

Closure of one lane will cause minor delays on Haycock Avenue due to low traffic volumes, although no calculations are provided in the TIA report. Delays on White Swan Road have not been assessed. The southern footpath on Haycock Avenue will be closed to pedestrians during the construction phase. Pedestrians will have to use the northern footpath, and suitable crossing facilities need to be provided including kerb ramps to assist those with mobility vehicles and pushchairs.Trip Generation

Traffic expected to be generated during the peak construction season is low, with four light vehicle and five heavy vehicle movements in the peak hour. We agree that this is well within the available capacity of the surrounding road network, and that the effects of this additional traffic are acceptable. However, the cumulative effects of construction at sites AS3, AS4, WS2 and L3S1 to L3S5 have not been considered. See Section 1.6.3.

Long term trip generation associated with ongoing maintenance is acknowledged to be insignificant.

1.19.3 Parking

For this site:

- It is not clear where contractor parking is to be located
- The significant loss of on street parking during lane closures on Haycock Avenue is not adequately assessed.
- Adequate provision is made for on site manoeuvring and internal circulation for required vehicle sizes. No vehicles will have to reverse out of the site.

Yours sincerely

Angie Crafer
DIRECTOR

Reference: S:\ACXX\035 Central Interceptor\L1A120920_S92 mainworks.docx - Angie Crafer