Memorandum

To	Waimakariri District Council
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From	Willis Macbeth
Office	Christchurch
Date	18 December 2020
File/Ref	6-DHLHH.01/60026
Subject	Additional Service Task 60026: Rangiora Eastern Link NOR: AEE Technical Assessments – Supplementary Information

1 Methodology

1.1 Traffic assessment

Introduction

The following provides a description and scope of the necessary traffic assessment inputs for the proposed Rangiora Eastern Link Designation Project.

This baseline proposal is currently based on traffic modelling being completed using the CAST v18 traffic model of Greater Christchurch (completed by WSP sub-consultant QTP)

Note: Traffic modelling would be based on the intersection layouts proposed from the previous 2004/2005 Rangiora Eastern Link works unless otherwise instructed.

Process

The proposed process to be used for the traffic assessment is outlined below

1. Traffic Modelling (completed by sub-consultant QTP, using the existing CAST v18 traffic model of Greater Christchurch):
    - Run the agreed do-minimum models without the Rangiora Eastern Link
    - Run the model with the Rangiora Eastern Link included (full length from Lineside Road to Coldstream Road)
    - Model will be run for 2028, 2038 and 2048. Periods modelled will include AM, Interpeak and PM periods, although results will be aggregated into daily figures where relevant.

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- Produce CAST model outputs:
    - Network flow diagrams (absolute and change)
    - Network delay/ LoS diagrams (absolute and change)
    - Intersection movement outputs for every intersection on the link
    - Summary of network veh.km and veh.hrs to establish potential travel time and distance savings.
    - Point to point travel time comparisons for key journeys

2. Assessment of intersection form at SH71 on existing rail level crossing (i.e. queue length)
3. Qualitative assessment of likely impacts on access to adjacent land (especially key destinations such as the function centre).
4. Assessment of likely impacts on pedestrians, cyclists and public transport users. This would be based on first principles rather than modelling.
5. Safety assessment.
6. Reporting
    - Assessment methodology
    - Existing Transport Environment
    - Transportation Objectives and Policy
    - Assessment of Operational Effects (Route Efficiency, reliability, level of service, resilience, safety)
    - Identification of any transportation effects that may require mitigation and, if required, investigation of what mitigations are practically available

1.2 Contaminated land

The following provides a description and scope of the necessary Contaminated Land assessment inputs for the proposed Rangiora Eastern Link Designation Project.

To address the 'contaminated soil' assessment and request for a 'high-level preliminary site investigation', WSP has proposed to undertake a Desktop HAIL Review of the area subject to the proposed designation of the Rangiora Link project.

The desktop HAIL review will comprise a review of available sources for evidence of current or historical Hazardous Activities and Industries List (HAIL)[1] activities along, or within 200 m of, the area subject to the proposed designation. The review will assess whether it is more likely than not that HAIL activities have occurred, or are occurring, that may impact the designation area.

The proposed scope of work for the Desktop HAIL Review will comprise:

- Review of historical aerial photographs available on Canterbury Maps[2], Retrolens[3] and Google Earth;
- Review of the Environment Canterbury (ECan) Listed Land Use Register (LLUR);

[1] https://www.mfe.govt.nz/land/hazardous-activities-and-industries-list-hail. The HAIL lists industries or activities which have the potential to cause contamination through current or historical land uses or site activities.
[2] Online source of aerial photographs of Canterbury: https://mapviewer.canterburymaps.govt.nz/
[3] Online source of aerial photographs of New Zealand: http://retrolens.nz/Map/

- Review of proposed designation plans for the link roads; and
- Preparation of a letter that will document the information reviewed and assess whether there are any high-level contamination risks identified for the designation area. The letter will be prepared in an integrated manner with relevance to other disciplines and will also address:
    - What effects may require mitigation measures to be applied
    - What mitigation measures are practically available to address those effects
    - When those mitigation measures are best considered, for example:
        - *Through inclusion of conditions on the notice of requirement (NOR), or*
        - *Through the Outline Plan process/as part of the more detailed design process, or*
        - *Through other processed (e.g. regional council consents).*
    - What other authorisations may be required in relation to the proposal (as relevant to the topic) and a very brief outline of those authorisations, for example:
        - *Regional Council consents; or*
        - *Traffic management processes; or*
        - *An authorisation under the another Act, such as an archaeological report.*

1.3 Archaeology

Preparation of a **Desktop Archaeological Report** to determine whether there are any specific archaeological risks to the proposed works.

The Desktop Archaeological Report will cover:

- Brief Project Description
- Research Methodology
- Historic overview of the project area, based on documentary research of publicly available information source (i.e. historic survey plans, aerial photographs, local histories).
- Legislative overview of HNZPTA and relevant RMA and local TLA planning provisions relating to archaeology and heritage.
- Review of NZAA ArchSite database, Heritage New Zealand Digital Report Database, Rārangi Korero New Zealand Heritage List, Kā Huru Manu (Ngāi Tahu Atlas), District and Regional Plans, LINZ archives and Papers Past NZ.
- Identification and mapping of any archaeological risk areas identified.
- Discussion and recommendations on appropriate risk management or mitigation measures.

Please note, this will be a high-level appraisal of any risks within the extent of the designation corridor as defined in the existing documentation. The appraisal does not constitute a full archaeological assessment for the purposes of applying for an archaeological authority. An Assessment of Archaeological Effects (AAE) specific to actual developments is recommended once proposed development plans are confirmed. We understand that at this early stage of planning, detailed design of the road corridor within the designation has not be developed. Accordingly, we assume that all intersections with existing roads will be at grade (i.e. roundabouts or signalised intersections) and that any water courses encountered along the route will be culvert crossings or low bridges.

We have not anticipated any preliminary geotechnical or contaminated land investigation work. Please be aware that should any archaeological risks be identified, then the authority

application process will able to these early investigation works as well for the main construction phase of this project. A full archaeological assessment may be required for any such proposed preliminary site investigation work.

We also recommend obtaining a Cultural Values Statement from Mahaanui Kurataiao Ltd on behalf of Te Runanga o Ngai Tūāhuriri.

Technical Input and Review:

Stephen Conroy, Archaeologist, will prepare the Desktop Report for this project. Stephen brings archaeological and historical research experience from the UK, New Zealand and the United States to this project. Stephen has worked on multiple roading projects, most recently the NZTA SH7 Bridge Replacement in Ahaura on the West Coast.

Nick Cable, Senior Archaeologist, will provide technical review. Nick is an experienced archaeologist with s.45 approval from Heritage New Zealand Pouhere Taonga. Nick has provided archaeology planning inputs on numerous roading projects across the country, including Te Rapa Bypass, Southern Links Designation in Hamilton, Western Belfast Bypass, Christchurch Southern Motorway and Christchurch Northern Arterial. Nick was also the Lead Archaeologist for NCTIR in Kaikōura during the initial two-year recovery programme.

1.4 Landscape architecture

Introduction

The following provides a description and scope of the necessary landscape and visual assessment inputs for the proposed Rangiora Eastern Link Designation Project. These include:

- Review of *Rangiora Southern, Western & Eastern Link Roads Scheme Assess Report; Appendix G: Resource Management Scoping Report*[4]
- A site visit to view the route and take site photos; and
- Preparation of a high-level Landscape and Visual Assessment (LVA).

Preparation of LVA

The LVA will cover:

- Project description;
- Methodology;
- Project context – including background, landscape context and character type;
- Background document overview; being a review of 2005 SAR and the operative WDC District Plan;
- A high-level assessment of the landscape and visual effects – landform, landcover, landuse, visual amenity (consideration of new structures ie bridges or culverts, noise mitigation bunds and the like);
- Consideration of other amenity factors ie opportunities for and connectivity with local cycle/walkways;
- Landscape mitigation measures;
- Summary; and
- Appendices - site photos and photo viewpoint plan.

It is noted that the LVA will describe and assess landscape and visual effects at a high-level. This relates to the NOR route being, at this early stage, a broad 'line on the map' and road design detail, other than an indicative cross section, has not been developed at this stage.

[4] The 'Rangiora Link Roads' SAR was prepared for WDC by Opus in February 2005. I prepared the 'Landscape Values' sections in the RM Scoping Report. This report also outlines amenity values as they were in 2004-5.

It is understood that all intersections with existing roads will be at grade ie roundabouts or signalised intersections and that any water courses encountered along the route will be culvert crossings or low bridges. Potential mitigation measures to remedy other potential environmental effects ie noise bunds or walls will be discussed with the relative expert in our Project Team and their potential adverse and beneficial effects addressed.

Technical Input and Review

David McKenzie, Technical Principal: Landscape Architecture, Christchurch, who has prepared LVAs for NORs for numerous roading projects ie Waka Kotahi NZ Transport Agency's SH1 Western Belfast Bypass and for Christchurch Northern Arterial. Meg Back, Landscape Architect will prepare the photo viewpoint plan.

Internal technical review will be provided by Jeremy Head, Senior Landscape Architect, Christchurch. Jeremy is a registered landscape architect and has provided landscape architectural input to various Plan Changes in the broader Canterbury area; both written and reviewed.

1.5 Flooding and stormwater

Introduction:

The following provides a description and scope of the necessary Stormwater and Flooding inputs for the proposed Rangiora Eastern Link Designation Project.

Stages / Methodology

1. Data Collection, meeting with WDC staff and Site Walkover
2. Assessment of effects - Water Quantity - Flooding Risks (covering construction and operational effects)
    a. Flooding assessments along route
    b. Rough identification of crossing locations, flows and design requirements
3. Assessment of effects - Water Quantity & Water Quality - Stormwater management concepts for road corridor effects (covering construction and operational effects)
    a. Preliminary Assessment of flows/loads
    b. Preliminary assessment of stormwater management infrastructure for the AEE – derivation of preferred approach and concept level sizing.
    c. Review of risks to future design stages.
4. Reporting
    a. Draft Technical report on high level considerations for SW management and flooding
    b. Input into Draft AEE
    c. Final Technical report
    d. Input into final AEE

Deliverables

Short report on the high level technical considerations for the appropriate management of stormwater quantity and quality impacts from the proposed corridor and assessment of the key flooding, erosion and environmental requirements for the corridor and its management.

Requirements

We require the following from WDC:

WDC flooding information available – Overland flow paths assessments, hydraulic modelling shape files for the wider project area (buffer of 1km around the road corridor as a minimum).

1.6 Noise

Proposed Criteria

The NZ Resource Management Act 1991 establishes the overarching legal requirement for management of road-traffic noise effects, requiring that noise emission "does not exceed a reasonable level". Local authorities are then involved in determining what constitutes a reasonable level of road traffic noise for a given scenario. The Waimakariri District Plan predates the widespread adoption of the road traffic noise standard NZS 6806[5], but this standard has been applied to local road projects in recent years, and is appropriate for assessment of noise for the proposed Rangiora Eastern Link Project.

Objectives

The Project design will continue to evolve over time, so the NoR noise assessment will allow flexibility whilst still providing certainty to the community that any noise effects will be reasonable:

- The assessment will demonstrate that the noise effects of the Project (as built) can be made reasonable, and establish a process to achieve that.
- The assessment will anticipate the nature and extent of structural noise mitigation that will be required, as this may introduce non-acoustic effects.

Outline Methodology

1. Locations of all current Protected Premises and Facilities (PPFs[6]) will be identified.
2. Future noise levels will be predicted based on the best available traffic and road surface information. It is not intended for noise levels to be reported for every individual PPF, but geographical areas corresponding to each noise category in NZS 6806 will be identified.
3. Assessment of noise levels against NZS 6806 criteria will identify where noise mitigation may be required and the level of acoustic performance it must achieve.
4. Any structural noise mitigation (walls, bunds, and low-noise road surfaces) that is identified as the best practicable option will be defined against the P40 specification[7].
5. Draft designation conditions will be proposed.

Construction Noise and Vibration

The NoR Noise Assessment will briefly consider construction noise and vibration.

Waimakariri District Plan Rule 31.12.1.13 specifies that construction noise shall be assessed in accordance with NZS 6803:P1984. Our methodology will recommend that construction noise and vibration are assessed in accordance with the most recent version of this standard, NZS 6803:1999[8], and managed via a Construction Noise and Vibration Management Plan.

Draft designation conditions will be proposed to this effect.

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[5] NZS 6806:2010, Acoustics – Road-traffic noise – New and altered roads
[6] PPFs include dwellings, marae, educational facilities, and overnight medical facilities.
[7] NZTA (2015) P40 Specification for Noise Mitigation
[8] NZS 6803:1999, Acoustics – Construction Noise

Operational Vibration

The proposed road alignment[9] appears to present a low risk of operational vibration effects, and will not be specifically assessed for vibration for the NoR.

1.7 Ecology (sub-consultant)

TBC

2 Exclusions

2.1 Traffic assessment

The following assumptions have been made:

- Land use and growth will be assumed to be that agreed for use in the v18 Christchurch Transport Model and Christchurch Assignment and Simulation Traffic (CAST) model scenarios. This assessment will not test the impacts of the designation under different land-use scenarios, and also assumes this project will not result in a change in the surrounding land-use.
- Traffic mode share and trips will be assumed to be that output by the Christchurch Transport Model, and that this project will not result in a change to these.
- Assessment years are 2028, 2038 and 2048.

2.2 Contaminated land

- Site visits, soil or groundwater sampling are not provided as part of this scope.
- We have allowed for 1 round of WDC review comments, with not more than 4 hours total effort to discuss and review/incorporate comments into final.

2.3 Archaeology

This scope includes the work described above and excludes:

1. Meetings with client or project management team, or attendance at any scoping or risk workshops.
2. Site visits or any site investigations as part of the assessment process.
3. Revisions or reworkings of reporting due to changes in design or scope or requests from the client or key stakeholder.
4. Any further assessment required for the purposes of an AEE or Authority Application, including assessment work as part of preliminary site investigations.

2.4 Landscape architecture

Given that this will be a high-level LVA, the following has not been included/scoped:

- Development of landscape concept/mitigation plans (as there is no current roading design to bases this on…);
- Preparation of visual simulations for use in the assessment report and Urban Design reports have not been included in the fee estimate.
- Other supporting visuals ie panoramic photos with the proposed designation ‘centre line’ superimposed
- Offsite meetings to liaise with WDC.

[9] Drawing: Rangiora Link Roads, Option P: Eastern Links Land Plan, Sheets 1 & 2, 20/11/2020

2.5 Flooding and stormwater

This scope includes the work described above and excludes:

1. No allowance for subsequent stages within our scope – including any needs for attendance or preparation for hearings.
2. Allowed 1 site visit to walkover the site corridor to look at the key areas of concern for stormwater and flooding over 4 hours to take place on same day as a 2 hour meeting with key WDC SW and Land Drainage staff
3. No allowance for mana whenua engagement or hui

2.6 Noise

None provided.

2.7 Ecology (sub-consultant)

TBC