

**IN THE MATTER** of the Resource Management Act 1991

**AND**

**IN THE MATTER** of applications by **EVO LANDS LIMITED** to the **WHANGAREI DISTRICT COUNCIL** under section 88 of the Act to authorise a comprehensive land use and subdivision consent at 390 Three Mile Bush Road, Kamo.

## **STATEMENT OF EVIDENCE OF CHRIS SOLLEDER**

### **1. INTRODUCTION**

#### **Qualifications and experience**

- 1.1 My name is Chris Solleder. I am a Chartered Professional Engineer and Principal of Cato Bolam Consultants Limited. I have a New Zealand Certificate of Engineering (Civil) and have 20 years engineering experience within the land development field. I am a member of the Institution of Professional Engineers New Zealand (IPENZ). I also have a background in geotechnical engineering from the early beginnings of my career.

#### **Involvement in project**

- 1.2 I have been involved in the Karanui project since 2013 in an advisory and peer review role for the civil engineering design through various stages of the project development process. Cato Bolam Consultants, Directors, Planners and Engineers have worked in collaboration with the applicant, its specialist experts and Council officers to develop the design as presented within the application.
- 1.3 This project has been overseen by Cato Bolam Consultants Director, Simon Reiher who is a Registered Professional Surveyor and Engineering Technology Practitioner, being a member of NZIS and a technical Member of IPENZ. He has over 20 year's practical engineering experience within the land development field. He has been involved with the development from its inception and carried out mediation with Council Engineers and Submitters.

1.4 My role within this development design has included:

- a) Reviewing the finished earthworks and roading levels to integrate with the surrounding natural contour and site features including vegetation and a central watercourse, whilst considering acceptable gradients for building development and providing access.
- b) Reviewing stormwater and infrastructure solutions for the development and ensuring compliance with Whangarei District Council standards or best practical option

**Purpose and scope of evidence**

1.5 The purpose of my evidence is to provide overview of the civil infrastructure design and components of the project and the management of construction activities in line with my peer review of all engineering data. I am comfortable to expand on this overview within the hearing should it be required.

1.6 My evidence will specifically:

- a. Provide a summary of design components (Section 2)
- b. Address roading issues raised at section 92 request from WDC engineers (section 3)
- c. Comment on issues raised in submissions relevant to my area of expertise (Section 4);
- d. Comment on planners report and conditions of consent (Section 5);

1.7 My evidence relies on and should be read alongside the evidence of:

- Mr Dean Scanlen, Engineer, Engineering Outcomes;
- Mr Dean Botica, Engineer, Hawthorn and Geddes Ltd

and the Current Engineering report being:

- Engineering Infrastructure Report by Cato Bolam Consultants, Dated November 2017, W Morunga.

**Expert Witness Code of Conduct**

1.8 I have read the Code of Conduct for Expert Witnesses, contained in the Environment Court Consolidated Practice Note (2011) and I agree to

comply with it. I can confirm that the issues addressed in this statement are within my area of expertise and that in preparing my evidence I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

## 2. **SUMMARY OF DESIGN**

- 2.1 Engineering Design has been completed to comply generally with Whangarei District Council Environmental Engineering Standards 2010 (WDC EES 2010).
- 2.2 The overall preliminary development design has been produced in consideration of a number of natural and physical constraints along with applying reasonable design standards. The overland flow of water has been critical in consideration of this design and allowance for the construction of large dry ponds to attenuate total flow from the catchment of this overland flow. From this design the earthworks required is 7,000m<sup>3</sup> cut to fill which is balanced and relatively minor for a project of this scale. A Northland Regional Council Consent has been applied for these earthworks.
- 2.3 A comprehensive stormwater solution has been proposed which will provide stormwater quality treatment, detention and conveyance of site flows including allowance for climate change. This stormwater solution is in line with WDC EES 2010 and has been generally accepted by Whangarei District Council.
- 2.4 Road swale devices will provide stormwater treatment for road areas and some private lot impervious areas. These are to be vested as private infrastructure on public road reserve whereas the onsite attenuation and treatment devices such as tanks and dry pond devices will be in private land. Both privately and publicly owned stormwater devices will have private management in line with the draft maintenance manual submitted within the application and the draft conditions of consent.
- 2.5 Stage 4 will attenuate the impervious surface of the proposed buildings and driveways with the use of individual detention tanks, several tank designs have been provided as part of this design to allow for a range in house sizes. Discharge will be to the main stream in the central gully. Stage 5 will utilise two dry ponds positioned in private lots (Lots 4 and 801) to achieve attenuation of all stormwater from this stage. Lot 4 pond shall discharge to the swales in Three Mile Bush Road and the lot 801 pond shall discharge to the existing overland flow path on the south west of the site. Stage 6 will incorporate the main dry pond in the central gully of lot 32 to attenuate all

stormwater from this stage and the southern part of stage 5. Upon this pond construction the pond in lot 801 can be removed. The ponds have been designed to allow for the construction of large flat basins that are able to be either grazed, mown or landscaped. These basins will fill during storm events and discharge slowly by ground soakage and through designed orifice outlets. These ponds provide compensation attenuation for all impervious surfaces within the catchment draining to them. The ponds and tanks attenuate all storms up to the 100yr ARI event to 80% of pre-development flow rate to meet WDC standards.

- 2.6 Individual lot treatment shall be achieved by disposal of all flows from impervious surfaces in line with ARC TP124. The design currently allows for most lots to drain by piped reticulation or overland flow to a formed swale. These swales have been shown to have sufficient size and length to allow for the treatment of the Water Quality Storm allowing for at least 650m<sup>2</sup> of impervious area from lots and from the road surface. On site disposal to similar filtration strips, raingardens or soak holes is possible for individual lots with impervious areas greater than 650m<sup>2</sup> or that are unable to drain efficiently to the swales. This will allow some flexibility to the future lot owner to allow for the range of methods available for stormwater treatment to be explored and implemented on a site by site basis. The design solution is based on the use of road swale treatment and onsite treatment by filter strip. Lots that are able to flow directly to the road swales can meet their treatment requirement within these public devices as the swales are adequately sized. Lots shall meet these treatment requirements by consent notice as specified in the proposed conditions.
- 2.7 Flows from the upstream catchment to the central gully in the site have been allowed for within the calculation of flood flows including allowance for 20% climate change increase. This shows that 100yr flood does not top the banks of the existing stream formation.
- 2.8 An application for a Stormwater diversion and discharge consent has been made to Northland Regional Council following completion of the detailed engineering design. This is a controlled activity consent and will be required before development works commence and this fact can be detailed as an advice note in line with the draft conditions of consent.
- 2.9 The maintenance of the public road swales is proposed by private covenant or consent notice that landowners shall be responsible for the section of the device adjacent to their property frontage. Maintenance shall be in line with the Draft Maintenance Manual supplied with the application.

- 2.10 The maintenance of all attenuation and treatment devices on private property shall be the responsibility of the private landowner. Maintenance shall be in line with the Draft Maintenance Manual supplied with the application.
- 2.11 Whangarei District Council has agreed to the proposed stormwater management measures as being suitable for the development.
- 2.12 The proposed entrance for lots 3 and 4 of the development off Three Mile Bush Road has been constructed under a Whangarei District Council Vehicle Crossing Application (VC20552) incorporating observation and testing with Whangarei District Council roading staff input.

3. **SECTION 92 MATTERS**

- 3.1 Whangarei District Council Roding Engineers have reviewed the current design and provided approval with the exception that they consider the existing intersection of Karanui and Three Mile Bush Roads requires retrospective upgrading to achieve compliance with a crossing in line with Type 2 as per WDC EES 2010. This being widening on the opposite side of the road to the intersection thereby allowing vehicles to pass stationary vehicles attempting to make a right turn into the site from the west. Traffic Engineer Mr Dean Scanlen of Engineering Outcomes Ltd has carried out an assessment of this requirement and concludes that the traffic numbers turning from a westerly direction do not justify this upgrade. This matter will be resolved with a traffic study. I am in agreement with WDC proposed condition of consent within stage 6 that allows for this traffic study to be carried out and an appropriate Austroads design implemented **or** the intersection to be upgraded to a crossing in line with Type 2 as per WDC EES 2010 – refer email from Mr Reiher dated 9/11/2017 and from WDC Development Engineer Nadia De-La-Guerre dated 28/11/2017 (Appendix A).

4. **SUBMISSIONS**

- 4.1 Although there have been five submissions received, they raise common engineering issues which are consistent with questions that have been raised by Council officers and answered throughout the consent processing to date. These submissions are best summarised as follows as they relate to my evidence:

- Effects on the stormwater and wastewater discharge;

- Effects of earthworks construction on the environment;
  - Development traffic effects.
- 4.2 The effects of stormwater and wastewater discharge have all been investigated and considered throughout the application process. Whangarei District Council is satisfied with the development proposal. Discharges of stormwater will be treated from all impervious surfaces and stormwater will be attenuated to meet Whangarei District Council EES 2010.
- 4.3 Stormwater diversion effects have been investigated on the receiving neighbour to the west and the diversion will be placed back into the same receiving environment following attenuation with no requirement for any change to this discharge area.
- 4.4 Wastewater discharge is proposed to be discharged by secondary treatment systems and these devices are proven to be capable of discharge onto each site in accordance with the Northland Regional Council Soil and Water Plan. Additionally, consent conditions are proposed to limit any potential effect of contamination of drinking water.
- 4.5 Traffic effects on Three Mile Bush Road have been assessed for the existing granted vehicle crossing and the existing intersection with Karanui Rd. Both these have complying safe sight stopping distances based on the operating traffic speed and have been considered appropriate for the vehicle numbers proposed for this development. A consent condition requires that the Karanui Road intersection be investigated by a full traffic study including vehicle count at stage 6 of the development. If this study proves further works are required, the engineering approval at this stage will enforce this requirement.
- 4.6 There are also some other individual matters raised through submissions as summarised below with a brief response.
- Northland District Health Board – the proposal has potential for cumulative effect based on recent adjacent development. The wastewater discharge has potential to contaminate groundwater from poorly installed and maintained or unmonitored secondary treatment systems. Drinking water can be affected in time of drought and land owners may seek boreholes for groundwater.

The Cumulative effect of the proposal on the groundwater forms a part of the Geotechnical assessment carried out by Hawthorn and Geddes Ltd.

Consent notice provision includes for all wastewater systems to meet AS/NZS 1547/2002 which requires 24hr emergency storage and audible and visual alarm systems.

Consent notice provisions include a requirement that all wastewater systems will be within a maintenance contract at all times.

Consent notice provision of a minimum of 2 x 25,000lt tanks is considered sufficient to maintain water storage through drought periods. Water will be filtered to a minimum 5 micron level with an in line device.

Consent notice provision that any new borehole be consented through NRC water take procedure and that the NRC consider the wastewater discharge and at-risk aquifer in this area.

- R and L McGregor – concerned about the potential affects on the redirection of stormwater flows. Sightline restriction from their current entranceway and allowance for future roading.

The Mr Simon Reiher has undertaken significant consultation with Rod McGregor regarding catchment analysis and from this has developed a proposal that splits discharge into the McGregor property to two points, being the "Drain" at the base of the slope within the central gully and secondly the "main stream" within the central gully. The proposal seeks to divert water from an overland flow through the McGregor property for approx. 80m to enable it to enter a large dry pond within the flat wetland area of the central gully. All flows that currently enter the Drain from this overland flow are proposed to be discharged at attenuated flowrates back to the Drain via the existing 450Ø culvert and overtopping the existing farm tack within the McGregor Property with no works on their site required.

It has been assessed that all water flow within the Drain and the Main Stream will meet pre-development flow rates in line with WDC EES 2010 requirements.

The sight line restriction caused by existing landscaping undertaken as part of the existing Three Mile Bush vehicle crossing has been modified to allow sight distance from the McGregor's entrance to comply with WDC EES 2010 for the operating speed in this area.

I note that the application has made all efforts to future proof the engineering design to allow for road to be extended from road 2 within stage 6. Any such extension would be done at the future developer's expense and at the discretion of the owner of lot 300.

**5. PLANNERS REPORT & PROPOSED CONDITIONS**

- 5.1 I have reviewed the sec 42A report and subject to the comments I have made within this evidence I am in general agreement with the report.
- 5.2 I note that the Mr Sasagi refers to the Engineering & Infrastructure report submitted with the application. I can confirm that this report was updated as part of the section 92 response and in regard to mediation with Submitter Mr Rod McGregor. The current Engineering & Infrastructure report by Cato Bolam Consultants is dated 4<sup>th</sup> November 2017. This document has been reviewed and accepted by Council Engineering officers.
- 5.3 The Mr Sasagi notes that Draft Conditions of Consent are not available at the time of writing this evidence and will be supplied at the hearing. A comprehensive set of conditions has been created by the Council and this has been amended by Cato Bolam on 28<sup>th</sup> November 2017. These conditions incorporated all the engineering requirements I have noted in this evidence. I will make any comment on WDC's review of these conditions (and any changes to them) at the hearing.



**Chris Solleder**

**28 November 2017**



## APPENDIX A

### EMAIL CORRESPONDENCE

## Simon Reiher

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**From:** Nadia de la Guerre <nadia.delaguerre@wdc.govt.nz>  
**Sent:** Tuesday, 28 November 2017 1:17 PM  
**To:** Simon Reiher  
**Cc:** Ueli Sasagi  
**Subject:** Evo Holdings

Hi Simon,

I will update the intersection design condition to provide for an alternative design in accordance with Austroads.

We agree in general with the engineering plans provided, therefore the reference to these plans in the conditions.

We will however give these plans the “stamp” of approval at 223 stage. The reason for this is that I have not had enough time to review the stormwater design updates prior to releasing the draft conditions.

Kind Regards,

**Nadia de la Guerre**  
Development Engineer | Whangarei District Council  
Private Bag 9023 | Whangarei 0148 | [www.wdc.govt.nz](http://www.wdc.govt.nz)  
P: 09 430 4200 | DDI: 09 470 3012 | M: 021 241 1075  
E: [nadia.delaguerre@wdc.govt.nz](mailto:nadia.delaguerre@wdc.govt.nz)

**WHANGAREI: LOVE IT HERE!**

## Simon Reiher

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**From:** Simon Reiher  
**Sent:** Thursday, 9 November 2017 1:58 PM  
**To:** 'Nadia de la Guerre'  
**Cc:** Dean Scanlen (dean@e-outcomes.co.nz)  
**Subject:** RE: EES: Rural entrance warrants - EVO Land - Three Mile Bush

Ok Nadia

I would accept a condition for engineering approval at stage 6 that incorporates this condition with the caveat that an alternative design in accordance with recorded traffic and Austroads may be submitted. This will give Dean time to nail down any proposed traffic count and Austroads design. However given the traffic numbers we see it is reasonable to not require this widening for stages 4 or 5. These stages will total 18 new sites, therefore 92 total lots from Karanui Rd. To this end we are still of the opinion that stages 4 and 5 can be processed with no required engineering approval conditions if you are comfortable with resubmitted plans that address your points to date.

Based on this we will proceed to add a type 2 intersection with a "or as approved in discussion with WDC roading" note for the Karanui and Three Mile Bush intersection. I will also add separated stormwater attenuation for stage 5 and 6 with temp stormwater attenuation pond for stage 5, this can then be conditioned in stage 6 engineering approval condition to be removed and replaced.

Regards

**Simon Reiher** RPSurv | ETPract | MNZIS | TIPENZ  
Director | Cato Bolam Consultants Ltd



PLANNERS | SURVEYORS | ENGINEERS | ENVIRONMENTAL

m 027 210 2797 | p 09 438 1684

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**From:** Nadia de la Guerre [mailto:nadia.delaguerre@wdc.govt.nz]  
**Sent:** Thursday, 9 November 2017 1:40 PM  
**To:** Simon Reiher <SimonR@catobolam.co.nz>  
**Subject:** RE: EES: Rural entrance warrants - EVO Land - Three Mile Bush

Hi Simon,

I have just had a discussion with our Senior Roding Engineer and he is in support of my opinion below. I will include the condition in the consent unless you can do a traffic count of the current situation and provide a design in accordance with Austroads.

Our roading department would prefer a type 3 intersection but will accept type 2 in this instance.

Kind Regards,

**Nadia de la Guerre**  
Development Engineer | Whangarei District Council  
Private Bag 9023 | Whangarei 0148 | [www.wdc.govt.nz](http://www.wdc.govt.nz)  
P: 09 430 4200 | DDI: 09 470 3012 | M: 021 241 1075  
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