APPENDIX 5

Traffic Report

TPK & Associates Pty. Ltd.
TRAFFIC MANAGEMENT & SAFETY CONSULTANTS

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TRAFFIC REPORT

PROPOSED SAND MINING DEVELOPMENT

LOT 218 DP 1044608, WILLIAMTOWN

October 2012

Macka's Sand Pty Ltd
The Applicant

Port Stephens Shire Council Local Government Area

Prepared by
Terry Keating
Director
TPK & Associates Pty Ltd

P R O P O S E D S A N D M I N I N G

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TRAFFIC REPORT

SECTION 1 – INTRODUCTION

1.1 – The Project

TPK & Associates Pty Ltd (TPK) was invited by Umwelt (Australia) Pty Ltd (for The Client) to join their project team to provide traffic assessment and report services for the proposed land use at:

Lot 218 DP1044608, Williamtown (See Figure 1)

The sand mining precinct has no abutting public roads; one of the key focus points of this assessment will be to confirm the suitability of the access to the broader road network.

1.2 – Task Description

This report has focused on: -

- Site connection to the public road network
- The background to the need for the intersection.
- The preferred geometric layout.
- The impact on the road network.

1.3 – Project Representative

Mr. Terry Keating, Director TPK, undertook the evaluation and preparation of the report. He has over 40 years experience in the road safety and traffic management profession, including the assessment of traffic generating developments, road safety audits (Lead Auditor) and practical deliberations for Land and Environment court matters.

SECTION 2 – BACKGROUND

The proposed intersection onto Nelson Bay Road (MR 108) is required as part of connection of an approved sand extraction site to the broader road network; the proposed access road is the final alternative in a prolonged consideration of access options for the site (Lot 218 DP 10-44608). Figure 1 shows the route of the access track.

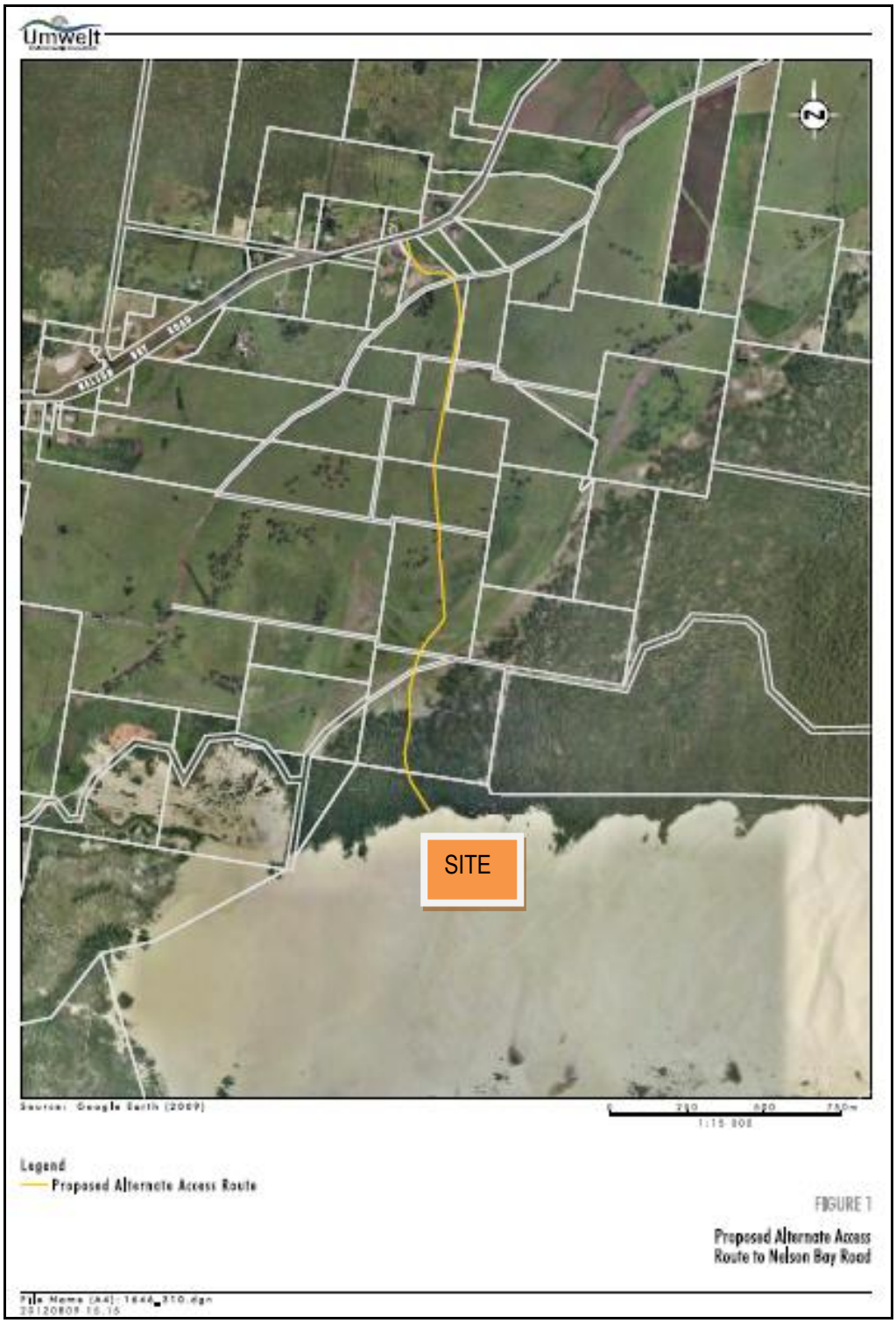


FIGURE 1 – PROPOSED ACCESS TRACK ROUTE

TPK has not expanded on the history to date surrounding site access in this report as it is irrelevant to the assessment given a recent meeting by members of the project team with Roads & Maritime Services (RMS) Newcastle reached agreement in principle to permitting this access onto Nelson Bay Road.

Members of the Project Team met recently with representatives of RMS, Newcastle to discuss access for the sand extraction site. Prior to the meeting a concept plan for the connection of the Access Road onto Nelson Bay Road had been sent to RMS for comment at the meeting; that plan is shown as Figure 2 of this report.

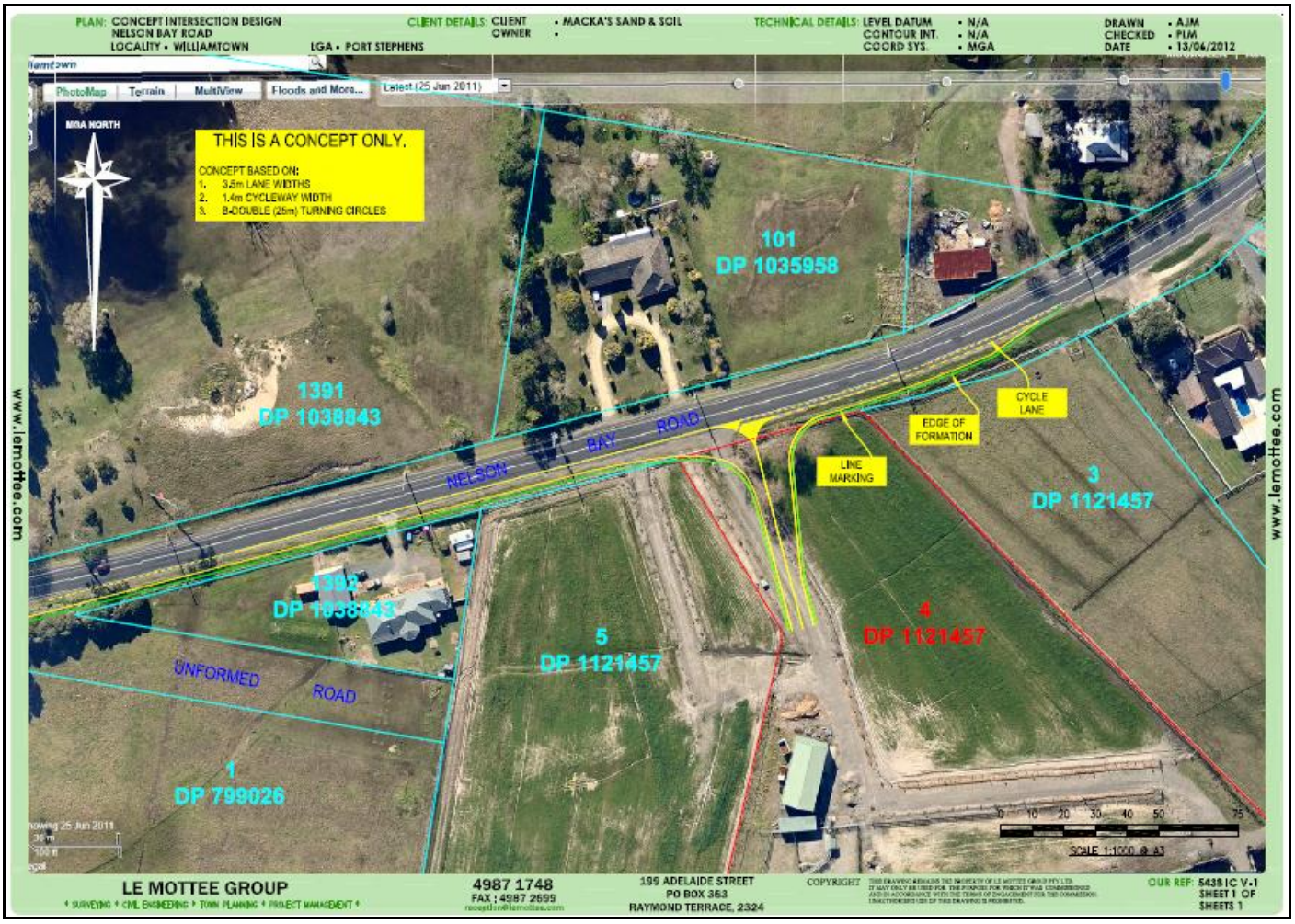


FIGURE 2 – CONCEPT FOR NELSON BAY RD INTERSECTION

RMS provided confirmation of their acceptance to the access in a letter dated 13th July 2011 (should be 2012); an extract from the letter relevant to this assessment is inserted below.

EXTRACT FROM RMS LETTER 13th JULY 2012

RMS has reviewed the information provided and has discussed this matter with the Department of Planning and Infrastructure and Council. RMS would be prepared to concur with the vehicular access to/from the approved sand extraction area through your property provided certain requirements are met at full cost to the developer. The following preliminary comments apply:

- The proposed intersection / access driveway on Nelson Bay Road shall be designed and constructed to accommodate left in / left out movements only and the design vehicle. The left in movement will require a deceleration lane (Austroads AUL) and the left out movement will be a give-way arrangement. The intersection shall be designed in accordance with the Austroads *Guide to Road Design 2009* (with RMS supplements) and relevant Australian Standards, to RMS / Council satisfaction. The intersection shall include the provision of a raised concrete median to physically prevent right in and right out movements. Appropriate signage should also be provided to reinforce these restrictions.

- The intersection / access driveway should be sealed to the returns, as a minimum, and designed / constructed in accordance with Council requirements.

- The proponent should engage a traffic consultant to undertake a traffic analysis in accordance with the *RMS Guide to Traffic Generating Developments* as supporting information to be submitted with the development application. The traffic analysis should include:

END OF EXTRACT

The project team prepared a new version of the concept plan responding to RMS comments primarily adjusting to the RMS comment of “the left out movement will be a give way arrangement”; Figure 3 is a snapshot from the adjusted concept plan.

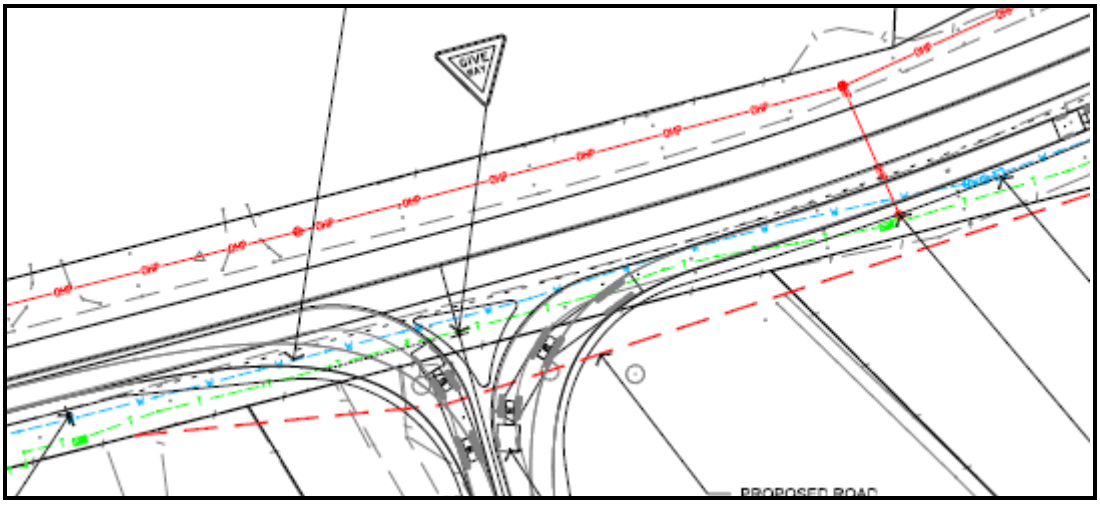


FIGURE 3 – EXTRACT FROM ADJUSTED CONCEPT PLAN

RMS reviewed the second concept plan and responded to the Umwelt on the 14th September 2012; an extract from that letter, relevant to this report is provided on the following page.

EXTRACT FROM RMS LETTER DATED 14th SEPTEMEBER 2012

RMS has reviewed the concept plan and would concur with and left in / left out vehicular access onto Nelson Bay Road to / from Lot 4. The following preliminary comments apply to the concept design layout:

- The left turn deceleration lane shall be designed for 80kph design speed, refer to Austroads Guide to Road Design Part 4A section 5.3. Truck turning speeds also need to be considered.
- A raised island shall be provided to physically deny right turn movements in and out of the property - reference RMS letter dated 13 July 2011.
- Carriageway widths on Nelson Bay Road and the access road are required to determine lane configurations for vehicles and cyclists. Adjacent sealed shoulders are required.
- The provision for cyclists as shown travelling between the southbound through vehicles and a decelerating left turning truck is considered to be inappropriate in this high speed environment. Cyclists should be brought along a 2m shoulder up to and through the intersection, crossing on the road carriageway side of the proposed raised island.

Additionally, as loaded trucks pulling out onto Nelson Bay Road for the access road will not have sufficient sight to enter and accelerate up to 80% of the posted speed in accordance with standard design criteria, the requirement for an acceleration lane should be included in the Traffic Impact Assessment for the proposal. Other matters raised in my letter dated 13 July 2011 still apply.

END OF EXTRACT

TPK's analysis has adopted the geometric form recommended by RMS on the 14th September 2012; a concept plan for the core section of the intersection is provided in Appendix A.

That plan is part of a series of design plans that will no doubt be provided to RMS by Umwelt.

SECTION 3 – TRAFFIC GENERATIONS

The proposed sand extraction will generate traffic based on:

Operation: 7 days, Sundays & Public holidays limited activity.

Times: 6am to 10.30pm; last load out at 10pm.

Staff: 2 shifts per day, 2 persons per shift. TPK will adopt 2 trips in for the am peak analysis and 2 trips in and out for the pm peak.

Trucks: Average of 80 loads per day, 5 per hour. TPK will adopt 8 inwards 8 outwards trips for the peak analysis.

TPK undertook peak hour traffic survey on Nelson Bay Road as part of this assessment, the outcomes were:

23.07.12 PM Peak 1500 to 1600

Westbound 347vph Eastbound 601vph

24.07.12 AM Peak 0745 to 0845

Westbound 697vph Eastbound 276vph

TPK referenced RMS Traffic Volume Data from a nearby permanent counting station 05.191; historic data disclosed an AADT for 1995 of 13364vpd & for 2004 17174vpd. 2% growth per annum is indicated and has been adopted for this assessment.

SECTION 4 - ASSESSMENT

4.1 – Access Track & Work Site

The Access Track carriageway will be a sealed surface for a distance of approximately 200m from Nelson Bay Road intersection; this will minimise the potential for the transportation of loose material onto the public road network.

The working site area will be a shifting point and will have the flexibility to accommodate the staff vehicles and provide manoeuvre areas for heavy vehicles. Site OH & S standards will further support the safety of staff and traffic movements on the work site.

4.2 – Intersection Nelson Bay Road & Access Track

The proposed intersection will restrict access to the Access Track to left in & left out; SIDRA has been used to model performance.

TPK utilise the intersection-modelling program SIDRA to review intersection performance. The outcomes of the model include:

- Level of Service.
- Average Delay.
- 95% back of queue length.

The term Level of Service (LoS) is one output parameter of the SIDRA model; it provides an insight into "operating conditions" of the intersection and each approach. The output range is indicated in the range LoS A to LoS F where A indicates good operating conditions reducing to F where other forms of control may need to be considered.

The geometric layout utilised in the model is shown in Figure 4.

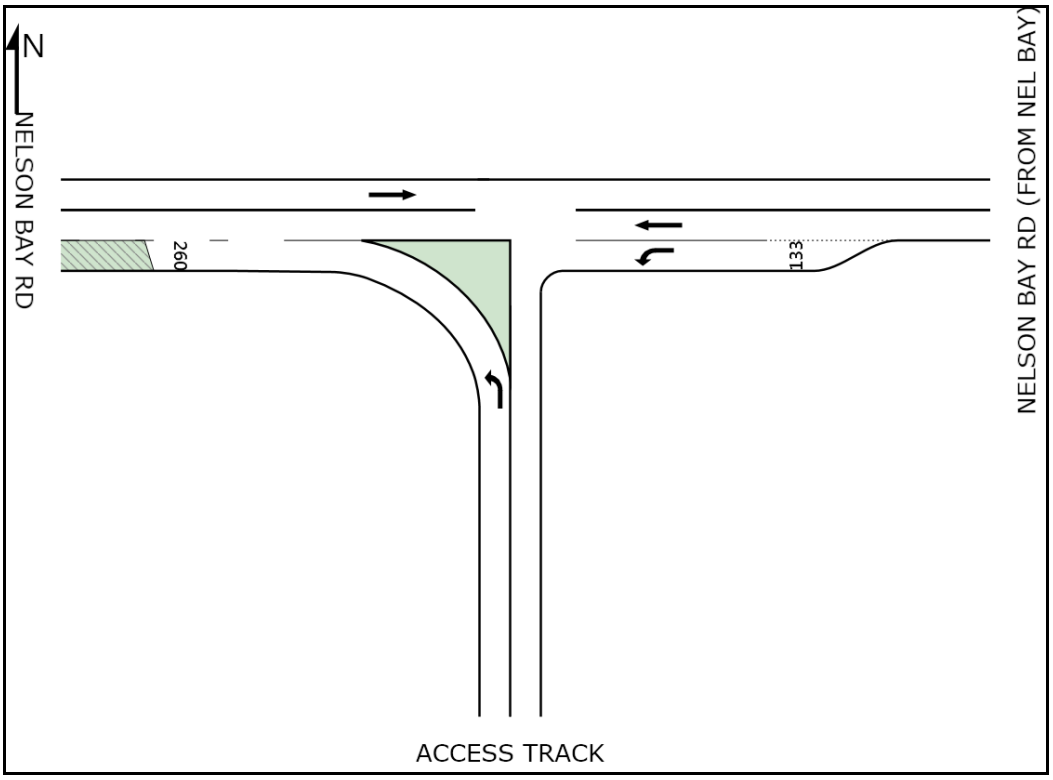


FIGURE 4 – SIDRA GEOMETRIC LAYOUT

The scenarios modelled were:

- AM Peak 2012
- AM Peak 2022 (2% growth pa)
- PM Peak 2012
- PM Peak 2022 (2% growth pa)

The outcomes of the modelling are summarise in the SIDRA output Movement Summary; the outcomes for this assessment are provided as Movement Summaries 1 to 4 on the following pages.

The output data indicates that the intersection performance will be acceptable for the present peaks and the year 2022.

M1 – MOVEMENT SUMMARY

Site: NELSON BAY RD & ACCESS TRACK AM

NELSON BAY RD & ACCESS TRACK, WILLIAMTOWN
AM PEAK 2012
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: ACCESS TRACK											
1	L	8	50.0	0.006	9.0	X	X	X	X	0.59	49.8
Approach		8	50.0	0.006	9.0	NA	0.0	0.0	0.00	0.59	49.8
East: NELSON BAY RD (FROM NEL BAY)											
4	L	11	56.0	0.008	10.2	LOS B	0.0	0.0	0.00	0.67	49.0
5	T	734	5.0	0.388	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		744	5.7	0.388	0.1	NA	0.0	0.0	0.00	0.01	59.8
West: NELSON BAY RD											
11	T	291	5.0	0.154	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		291	5.0	0.154	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		1043	5.9	0.388	0.2	NA	0.0	0.0	0.00	0.01	59.8

M2 – MOVEMENT SUMMARY

Site: NELSON BAY RD & ACCESS TRACK AM

NELSON BAY RD & ACCESS TRACK, WILLIAMTOWN
AM PEAK 2022
Giveway / Yield (Two-Way)
Design Life Analysis (Practical Capacity): Results for 10 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: ACCESS TRACK											
1	L	10	50.0	0.007	9.0	X	X	X	X	0.59	49.8
Approach		10	50.0	0.007	9.0	NA	0.0	0.0	0.00	0.59	49.8
East: NELSON BAY RD (FROM NEL BAY)											
4	L	13	56.0	0.010	10.2	LOS B	0.0	0.0	0.00	0.67	49.0
5	T	880	5.0	0.466	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		893	5.7	0.466	0.1	NA	0.0	0.0	0.00	0.01	59.8
West: NELSON BAY RD											
11	T	349	5.0	0.185	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		349	5.0	0.185	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		1252	5.9	0.466	0.2	NA	0.0	0.0	0.00	0.01	59.8

M3 – MOVEMENT SUMMARY

Site: NELSON BAY RD & ACCESS TRACK PM

NELSON BAY RD & ACCESS TRACK, WILLIAMTOWN
PM PEAK 2012
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: ACCESS TRACK											
1	L	11	50.0	0.008	9.0	X	X	X	X	0.59	49.8
Approach		11	50.0	0.008	9.0	NA	0.0	0.0	0.00	0.59	49.8
East: NELSON BAY RD (FROM NEL BAY)											
4	L	8	62.5	0.007	10.5	LOS B	0.0	0.0	0.00	0.67	49.0
5	T	365	10.0	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		374	11.2	0.200	0.2	NA	0.0	0.0	0.00	0.02	59.7
West: NELSON BAY RD											
11	T	633	2.3	0.329	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		633	2.3	0.329	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		1017	6.1	0.329	0.2	NA	0.0	0.0	0.00	0.01	59.8

M4 – MOVEMENT SUMMARY

Site: NELSON BAY RD & ACCESS TRACK PM

NELSON BAY RD & ACCESS TRACK, WILLIAMTOWN
PM PEAK 2022
Giveway / Yield (Two-Way)
Design Life Analysis (Practical Capacity): Results for 10 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: ACCESS TRACK											
1	L	13	50.0	0.009	9.0	X	X	X	X	0.59	49.8
Approach		13	50.0	0.009	9.0	NA	0.0	0.0	0.00	0.59	49.8
East: NELSON BAY RD (FROM NEL BAY)											
4	L	10	62.5	0.008	10.5	LOS B	0.0	0.0	0.00	0.67	49.0
5	T	438	10.0	0.239	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		448	11.2	0.239	0.2	NA	0.0	0.0	0.00	0.02	59.7
West: NELSON BAY RD											
11	T	759	2.3	0.395	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		759	2.3	0.395	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		1220	6.1	0.395	0.2	NA	0.0	0.0	0.00	0.01	59.8

SECTION 5 – SUMMARY

This assessment by TPK has concluded that the sand mining activity will not have an adverse impact on the road network, that the site connection to Nelson Bay Road can operate at acceptable levels of performance and that OH & S standards set up by management will manage the interaction of staff and heavy transport.

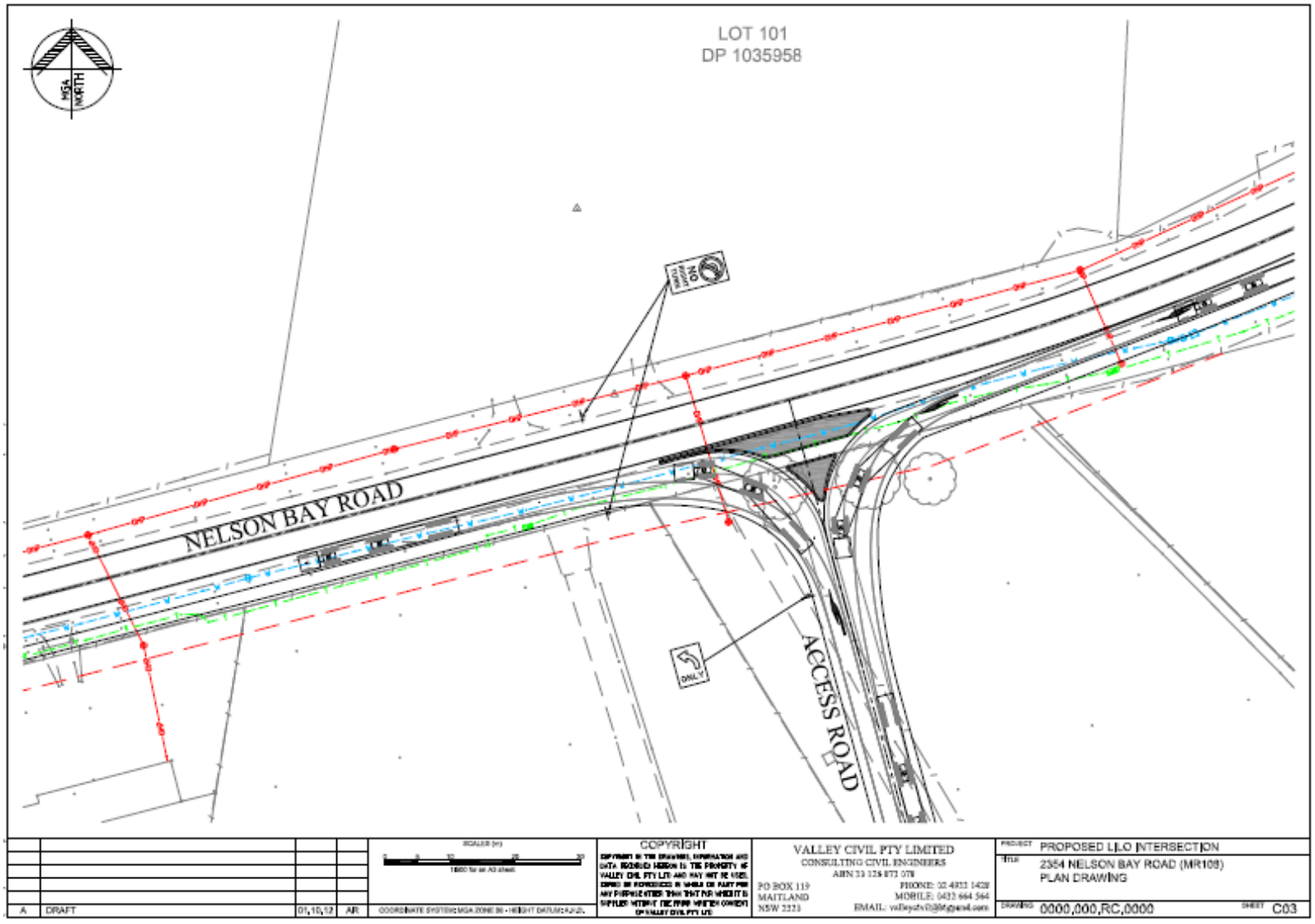
Prepared by

T Keating

Mr. T Keating
Director, TPK & Associates
4th October 2012

APPENDIX A

INTERSECTION CONCEPT LAYOUT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DP 1035958
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ACCESS ROAD
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PROPOSED LILO INTERSECTION
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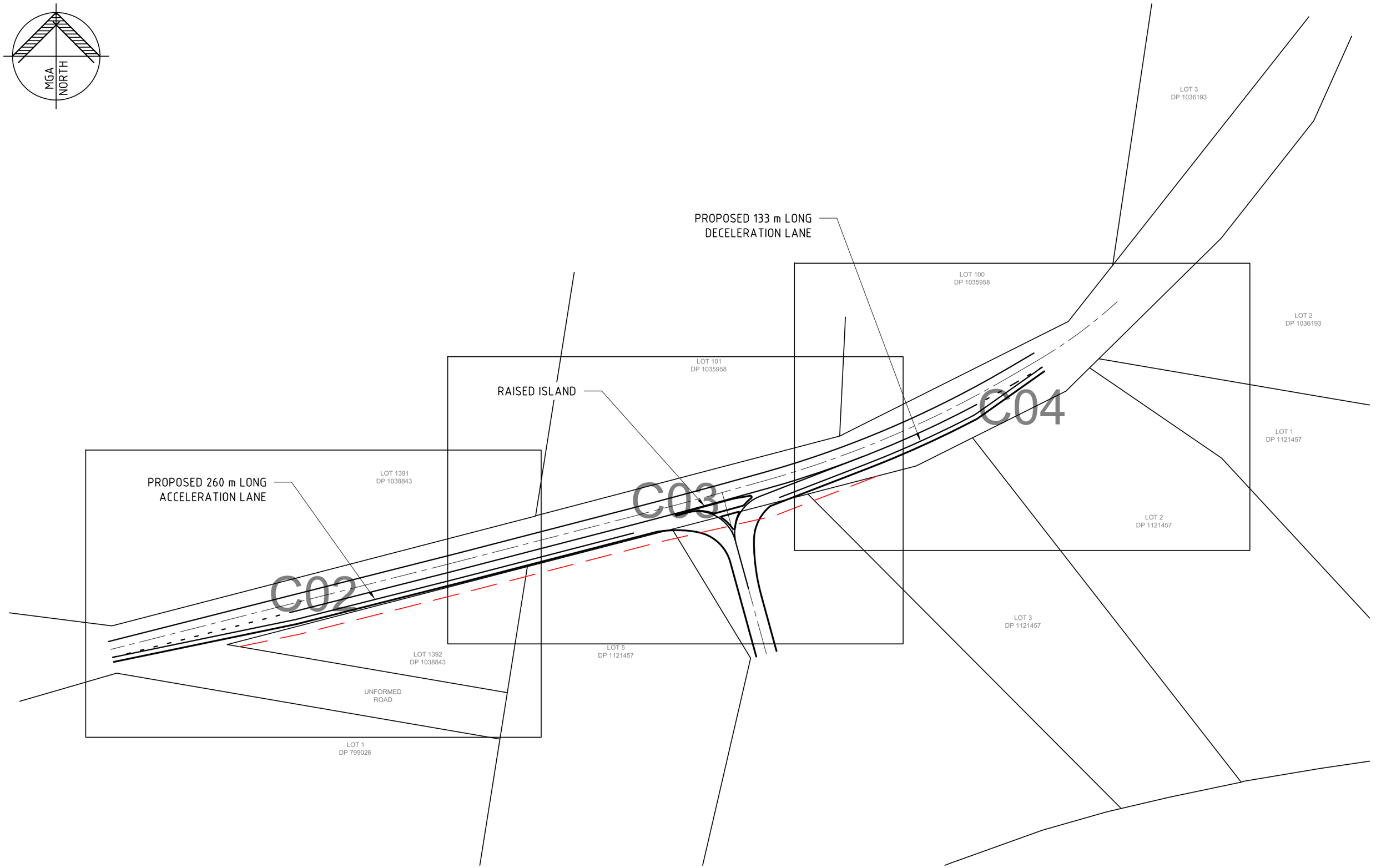

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EMAIL: valleycivil@bigpond.com

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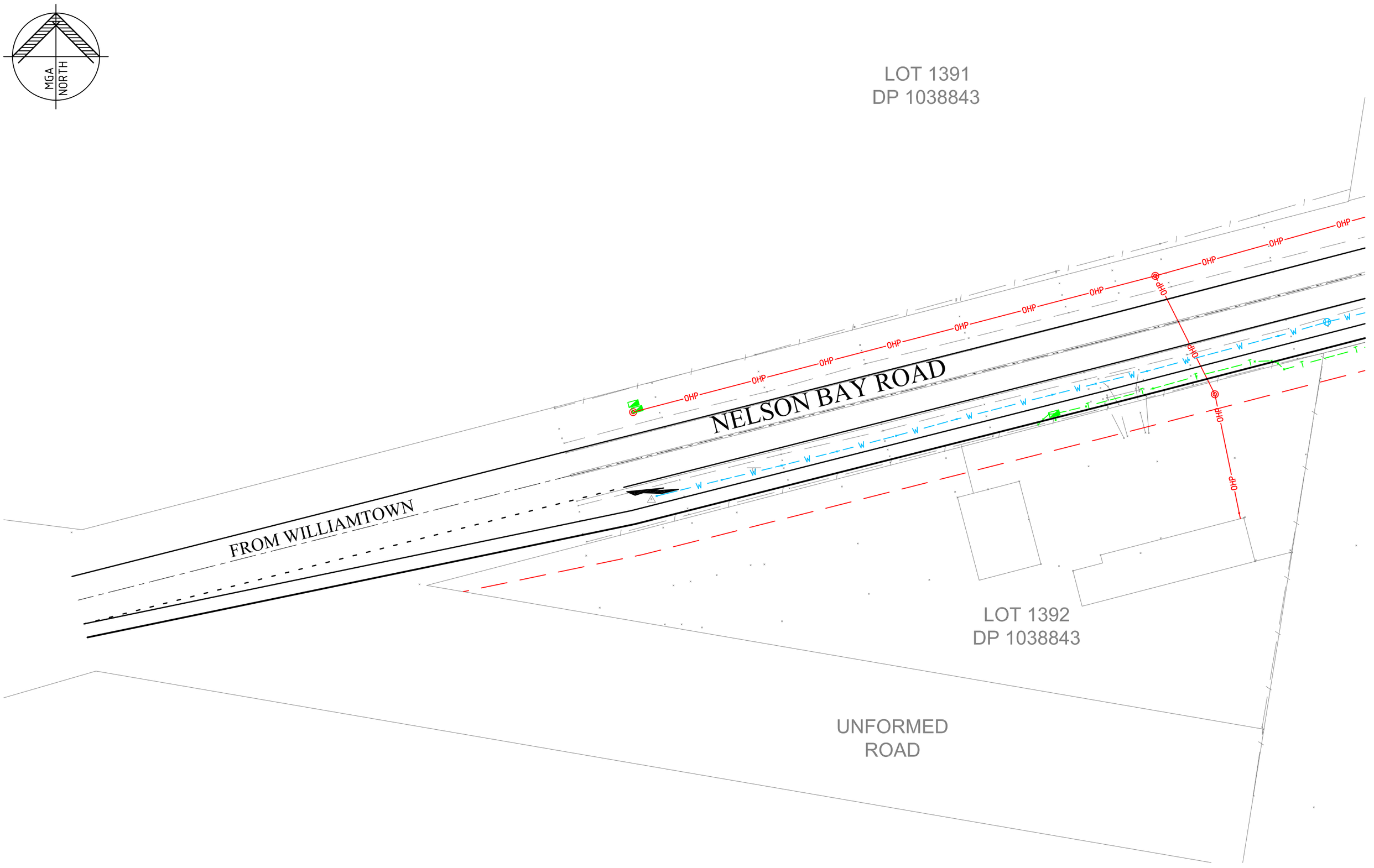

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PROJECT PROPOSED LILO INTERSECTION

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DP 1035958

MGA NORTH

NELSON BAY ROAD

ACCESS ROAD

NO RIGHT TURN

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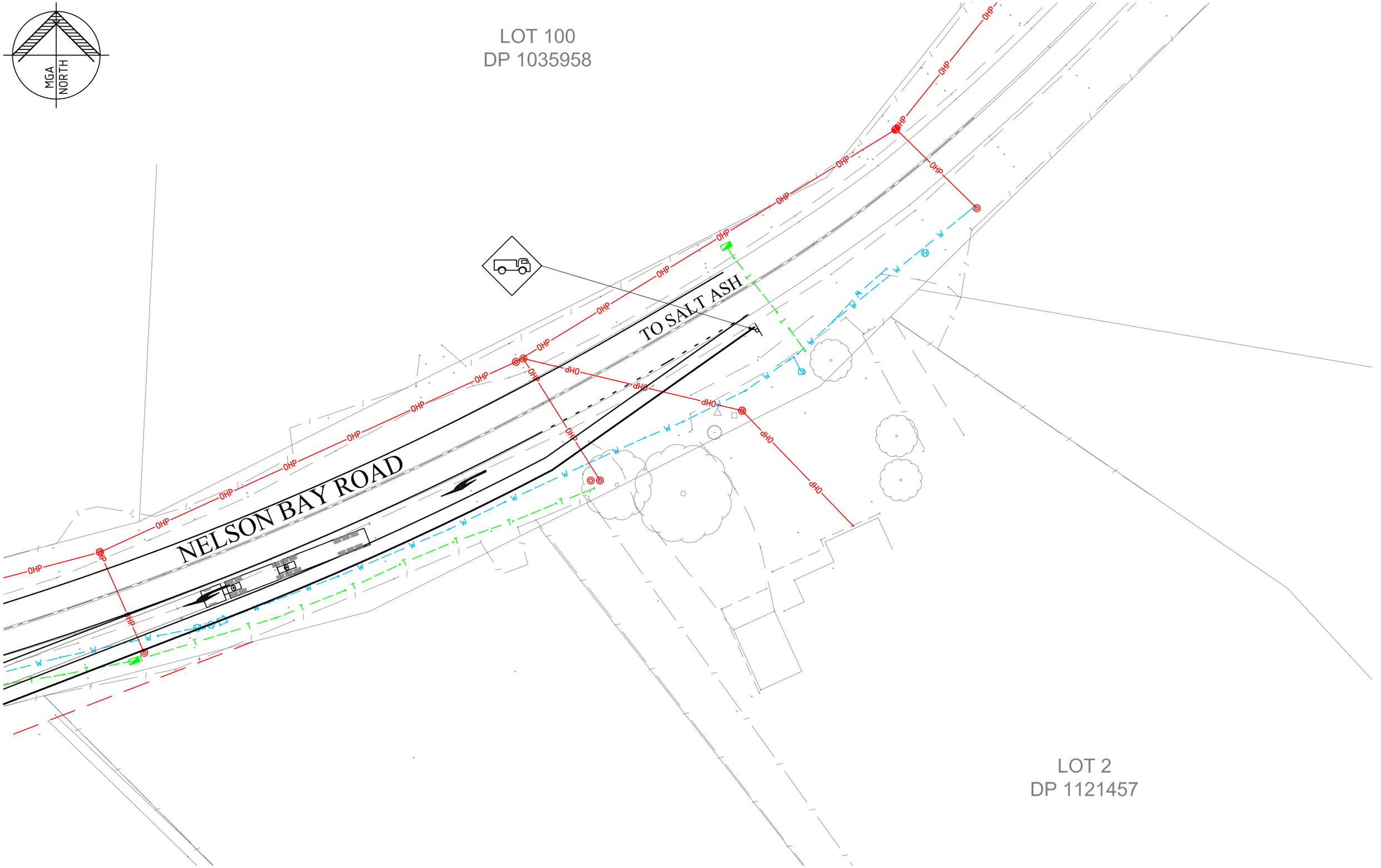

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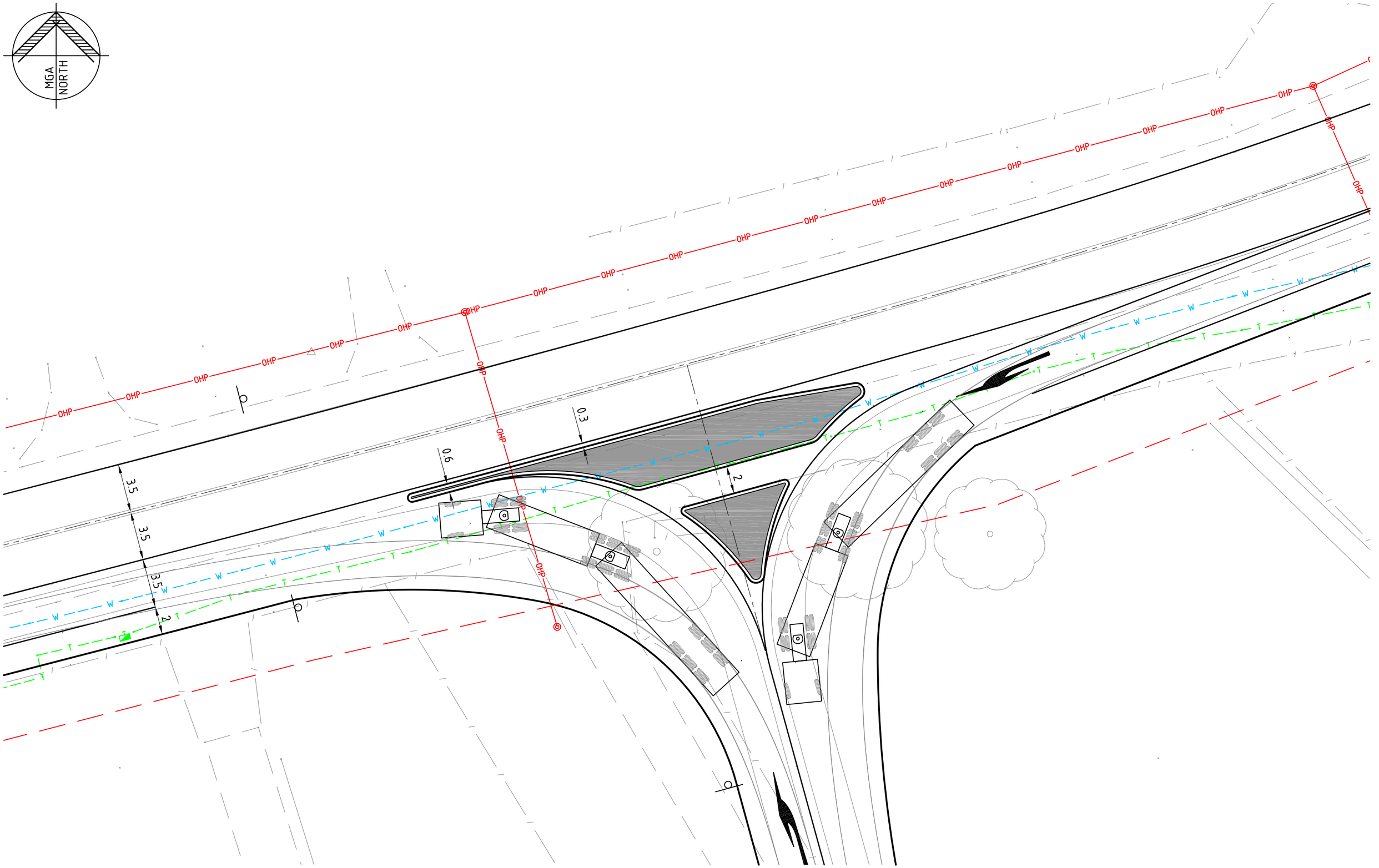

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PROJECT: PROPOSED LILO INTERSECTION

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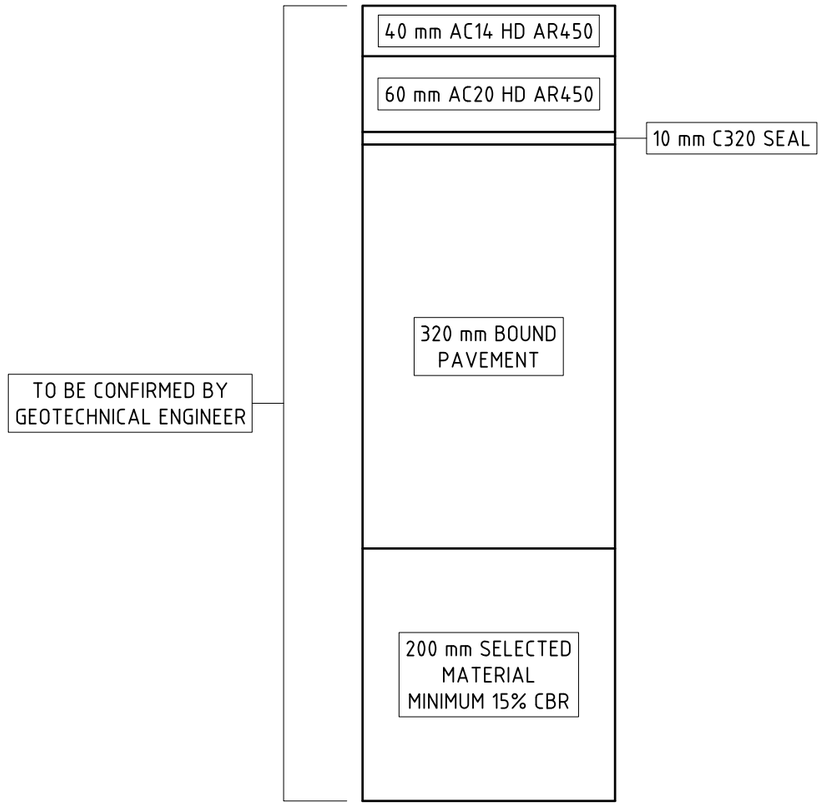

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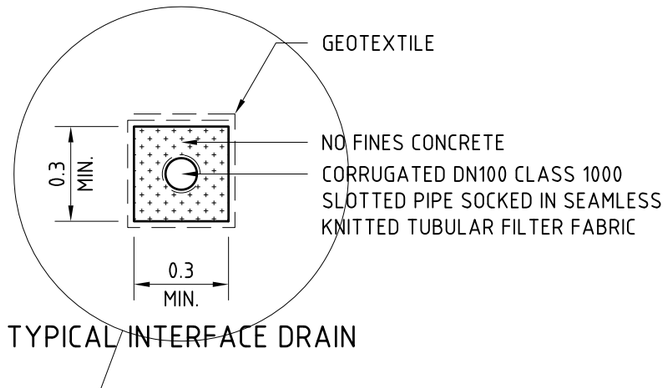

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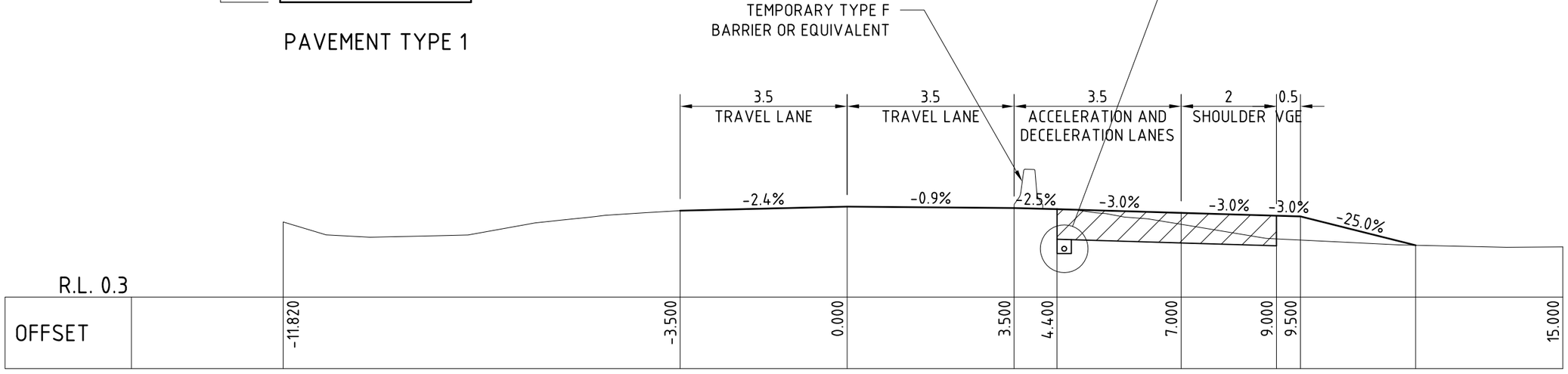

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PROJECT: PROPOSED LILO INTERSECTION
TITLE: 2354 NELSON BAY ROAD (MR108)
TYPICAL SECTIONS
DRAWING: 0000.000.RC.0000
SHEET: C06

(FILE) D:\Valley Civil\Tasks\12044\01\12044-01-A.dwg (LAYOUT) C06 (DATE) 01/10/2012 (TIME) 8:25 PM