Construction Air Quality Management Plan

FCCL-EV-MPN-0003

FINAL C1 – August 2017

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Contents

AUTHORISATION AND REVISION RECORD

Revision	Status	Author	Date	Description
A	Draft	Kylie Eltham	05/02/17	Internal review
B	Draft	Kylie Eltham	21/02/17	PA Review
B.1	Draft	Kylie Eltham	02/03/17	PA Review
B.2	Draft	Emma Boon	13/03/17	Council Review
B.3	Draft	Alice Naylor	19/05/17	Council Review
C	Final	Alice Naylor	09/06/17	Council Certification
C 1	Final	Ed Breese	11/8/17	Council Certification

CERTIFICATION RECORD

Revision	Action	Name	Position	Date	Signature
	Certified by:	Natasha Tod	Resource Consents and Compliance Manager	7/9/17	
	On behalf of KCDC				

GLOSSARY OF ABBREVIATIONS

Acronym	Definition
CAQMP	Construction Air Quality Management Plan
CEMP	Construction Environmental Management Plan
MfE	Ministry for the Environment
TSP	Total Suspended Particulate
µg/m^3	Micrograms per cubic metre, a unit of pollutant concentration

CONDITIONS – REFERENCE GUIDE

The following table is provided to assist with assessing compliance with Consent Conditions. It is our intention this guide be removed before this Management Plan is lodged for certification with council.

Condition Number	Condition Requirement	Reference
55 a)	At least 15 Working Days prior to Commencement of Construction the Requiring Authority shall submit a CAQMP to the Manager for certification. Construction shall not commence until the Requiring Authority has received the Manager's written certification of the CAQMP.	1
55 b)	The purpose of the CAQMP shall be to establish methods to be used to limit dust and odour nuisance, and procedures for responding to any complaints and events in order to comply with the outcomes and standards required under Conditions 59 and 60.	1.1
55 c)	The CAQMP shall include the following details:	-
	i) Identification of the sensitive locations where specific dust mitigation measures may be required, including the Former Rahui Milk Treatment Station and Social Hall, and 23, 33, and 45 Gear Road;	2.1
	ii) Identification of triggers and contingency measures to address identified and verified adverse effects on sensitive receptors. Contingency measures may include options such as: a) Cleaning of water tanks and replenishment of water supplies; b) Cleaning of houses; c) Cleaning of other buildings and infrastructure; and d) Cleaning of local roads in agreement with KCDC's Road Asset Manager.	5.1, 3.4, 3.6, 3.8
	iii) Methods for undertaking visual monitoring of dust emissions;	5.2
	iv) Methods to be used to limit dust and odour nuisance;	3.1, 3.2, 3.3, 3.7
	v) Procedures for responding to process malfunctions and accidental dust discharges;	3.4
	vi) Criteria, including consideration of weather conditions and procedures for use of water sprays on stockpiles and construction areas;	3.4
	vii) Implementation of continuous monitoring of Total Suspended Particulate (TSP) concentrations;	5.1
	viii) Methods for monitoring of the times of offensive odour emissions from the ground	5.3

Condition Number	Condition Requirement	Reference
	ix) Procedures for responding to discharges of odour (including in the event of excavation of contaminated sites);	3.8, 5.3
	x) Methods for monitoring of construction vehicle maintenance;	3.9
	xi) The identification of staff and contractors' responsibilities; and	3.4, 5.2, 5.5
	xii) Criteria for when a vehicle "no idling" policy will be enforced.	3.1
55A	The CAQMP shall be reviewed by a suitably qualified independent person, prior to being submitted to KCDC for certification. Any comments and inputs received from the independent reviewer shall be clearly documented, along with clear explanation of where any comments have 39 not been incorporated and the reasons why. For the purpose of this condition, "independent person" shall be a suitably qualified and experienced person who is not an employee of the Requiring Authority or does not work for any of the companies contracted to design and/or construct the Project.	Certification record
56	In managing dust arising from construction activities, the Requiring Authority shall ensure that Earthworks are managed to minimise the amount of dust received offsite.	3
57 a)	. Monitoring of wind strength, wind direction, air temperature and rainfall shall be undertaken: a) In general accordance with the Good Practice Guide for Air Quality Monitoring and Data Management, Ministry for Environment, 2009; and	5.4
57 b)	Continuously for the duration of the construction of the Project, at a point that is representative of the local weather conditions across the construction site.	5.4
58	The Requiring Authority shall review the CAQMP at least annually during construction and as a result of any material change to the Work.	7
59	As a result of the construction of the Project the Requiring Authority shall ensure the Works are managed to minimise noxious, offensive or objectionable odour, dust or fumes beyond the site boundary caused by discharges from the site, in the opinion of an enforcement officer.	2,3,4,5
60	Beyond the site boundary, there shall be no hazardous air pollutant caused by discharges from the site during	2,3,4,5

Condition Number	Condition Requirement	Reference
	construction that causes, or is likely to cause, adverse effects on human health, environment or property.	

1 PROJECT INTRODUCTION

Preface

This Construction Air Quality Management Plan (CAQMP) has been prepared for the Peka Peka to Ōtaki Expressway Project in accordance with Designation Condition 55 which applies to both NZTA and Kiwirail. This plan is an appendix to the Construction Environmental Management Plan (CEMP) and addresses all the requirements identified in Designation Conditions 55 through 60. In addition, the CAQMP fulfils the requirements of the Dust Suppression Plan detailed in 1.25.8 of the Principal's Requirements.

1.1 Purpose and Scope

Designation Condition 55 clearly identifies the purpose and scope of this CAQMP. The CAQMP is to establish the methods to be used to limit dust and odour nuisance during construction from the site and to identify procedures for responding to complaints and events to ensure the standards identified in Conditions 59 and 60 are met.

Condition 59 requires that "*during construction, works are to be managed to minimise noxious, offensive or objectionable odour, dust or fumes beyond the site boundary caused by discharges from the site, in the opinion of an enforcement officer*".

Condition 60 requires that *"beyond the site boundary, there shall be no hazardous air pollutant caused by discharges from the site during construction that causes, or is likely to cause, adverse effects on human health, environment or property".*

It is recognised that there is potential overlap between district and regional responsibilities when dealing with some air quality issues such as odour. The regional role relating to section 15 of the Resource Management Act (the Act) has intentionally been kept separate form this plan and instead, compliance with this plan falls under the jurisdiction of the Kapiti Coast District Council only and has a specific focus on ensuring compliance with Designation Condition's 59 and 60 in regards to preventing *nuisance* effects beyond the boundary of the site.

The CAQMP will detail the:

- Sensitive locations where specific dust mitigation measures are required
- Triggers and contingency measures to address identified and verified adverse effects on sensitive receivers
- Methods for undertaking visual monitoring of dust emissions
- Site practices to be used to limit dust and odour nuisance
- Procedures for responding to process malfunctions and accidental dust discharges
- Criteria including consideration of weather conditions and procedures for use of water sprays on stockpiles and construction areas
- Implementation of continuous monitoring of Total Suspended Particulate (TSP) concentrations
- Methods for monitoring at times of offensive odour from the ground

- Procedures for responding to discharges of odour (including in the event of excavation of contaminated sites)
- Methods for monitoring construction vehicle maintenance
- Identification of staff and contractors responsibilities
- Criteria for when a vehicle 'no idling' policy will be enforced

1.2 Project Description

The Peka to Ōtaki Expressway is an approximately 12 kilometre, four lane, Expressway running north from Peka Peka where the M2PP Expressway currently terminates, to join the existing State Highway 1 (SH1) north of Ōtaki, near Taylors Road.

Construction works will consist of:

- 12.2 km of four lane, median divided Expressway
- 1.4M m^3 earthworks
- 9km local road
- 9 Bridges, including the 330m Ōtaki River Crossing
- Ōtaki Intersection - split
- East-West connections – Ōtaki, Te Horo
- Grade separation – Taylors Road
- 1.6km railway realignment

The works will follow a general programme of enabling works and site establishment, followed by rail realignment and bridge construction and then road construction.

Additional details including project staging and location drawings can be found in the Construction Environmental Management Plan (CEMP).

Figure 1: Location Map of Peka Peka to Ōtaki Expressway

1.3 KPIs

A number of Key Performance Indicators (KPIs) have been identified in the Construction Environmental Social Management Plan (CESMP). The CESMP is a high level planning document prepared as part of the contractual requirements for the Project. The CESMP identifies the KPIs specific to dust and vehicle emissions are repeated below.

- Number of confirmed dust incidents attributable to the Project less
- Number of confirmed odour incidents attributable to the Project
- Successful implementation of the Project vehicle 'no idling' policy

The target for these KPIs is zero per month.

1.4 Plan Requirements

There are no specific performance standards relating to the potential effects associated with the construction process. However, there is a generic standard in the Wellington Regional Air Quality Management Plan (WRAQMP) that relates to the potential emissions. This standard states that:

The person(s) responsible for the activity shall ensure that:

(i) there is no discharge of particulate matter, smoke, odour, gas, aerosols or vapours from the process, which is noxious, dangerous, offensive or objectionable at or beyond the boundary of the property.

There is little guidance on what "offensive or objectionable" means in the WRAQMP, although in that document it describes the use of the FIDOL tool to assist in determining the effects associated with odour. The WRAQMP does indicate that "In the first instance the consideration of whether a discharge is objectionable or offensive will be made by one or more enforcement officers of the Council."

What this means practically for the Project is that air quality effects need to be no more than what might reasonably be expected to occur from a well-run project. Thus there is no expectation that there will be no dust or odour effects, rather, any increase in effects is minimal.

2 ENVIRONMENTAL IMPACTS OF DUST

2.1 Sensitive Receptors

Dust generation due to construction activities and particulate emissions from construction vehicles are the biggest risk to ambient air quality levels in the vicinity of the Expressway construction works. Odour generation is considered to be less of a risk on this Project but nevertheless is addressed in section 3.7 of this CAQMP.

The receiving environment in which the Project is situated is a mix of rural (including lifestyle farmers), horticultural land uses and urban areas located in Ōtaki and Te Horo townships.

Generally, only receptors in close proximity to the construction works (within 100m) may be impacted by construction dust nuisance issues. However, a number of submitters during the Board of Inquiry process identified construction dust nuisance as a concern. As a result, several sites have been identified in the Designation Conditions as being potentially impacted and specific conditions have addressed these concerns to minimise the impacts of construction dust on these properties.

Sensitive receptors are generally considered to be hospitals, schools, early childhood education facilities, elderly housing and rest homes and premises used as temporary accommodation such as motels. The occupants of these facilities are often more susceptible to the adverse effects of emissions affecting air quality. As a result, extra care is required to minimise or eliminate air quality issues in the vicinity of these areas.

Sensitive receptors identified in Designation Condition 55c) i are:

- Rahui Enterprises Limited comprising the former Rahui Milk Treatment Station and Rahui Milk Factory Social Hall
- 23 Gear Road
- 33 Gear Road
- 45 Gear Road

All buildings and properties within 100m of the designation boundary have also been identified as potentially at risk from dust nuisance issues in the unlikely event that the proposed mitigation

measures detailed in section 3.2 of this plan are insufficient (Refer Appendix B for detailed maps). From this mapping, a table listing the potential nuisance dust receptors along the length of the project has been prepared, with sensitive receptors highlighted in grey.

Table 1: Potential nusiance dust receptors

Address	Notes
Café Te Horo	3 Te Horo Beach Road
Property north of Te Horo Beach Road on SH1 including adjacent horticultural land	
43 Ōtaki Gorge Road	
34 Ōtaki Gorge Road	Includes adjacent horticulture land
Former Rahui Milk Treatment Plant	
Pare-o-matangi Reserve	Included during BoI draft
52 – 58 Rahui Road, Ōtaki	Residential properties on edge of local road widening
BP Service Station, Ōtaki	Solar Panels on roof
Ōtaki Motel	260 Main Highway Ōtaki
Property south of Te Hapua Road	
45 Gear Road	Identified in consent conditions
33 Gear Road	Identified in consent conditions
23 Gear Road	Identified in consent conditions
19 Gear Road	
17 Gear Road	
30 – 34 School Road	
Residential properties south of Te Horo Beach Road	
120 State Highway 1, Ōtaki	Includes adjoining horticulture land
160 State Highway 1, Ōtaki	
75 State Highway 1, Ōtaki	
10 Old Hautere Road	

Address	Notes
Properties including horticulture opposite Old Hautere Road	
Horticultural land north of Ōtaki River	
Land south-west of Ōtaki River	Included during BoI draft
Residential properties in vicinity of 10 County Road, Ōtaki	
Residential properties between County Road and Te Manuao Road, Ōtaki	
Cottage Park Motor Lodge	272 State Highway 1, Ōtaki

2.2 Dust Nuisance Concerns

Concerns over construction dust nuisance issues generally relate to the impacts of dust affecting local amenity values. This will include impacts on water tanks in an areas where people rely on tank water, dust deposition on washing lines and laundry, cars, window sills, swimming pools, gardens and houses. In addition, in rural areas, dust can impact on livelihoods when dust compromises the grass used as a feed source for stock and horticulture fields.

The Kapiti Coast District Plan defines nuisance dust as *"visible evidence of suspended matter in the air beyond the site boundary and/or there is visible evidence of suspended matter traceable from the source of the nuisance settling on the water, land or structure of a neighbouring site".*

While the potentially sensitive receivers (Section 2.1) have been identified as being located within approximately 100m of the designation boundary, it is acknowledged that nuisance dust issues may arise beyond this 100m arbitrary limit dependent on meteorological conditions.

2.3 Dust Risks and Severity

Dust is the resultant effect of wind erosion and therefore minimising the potential for erosion is critical to managing the impact of nuisance dust effects.

The risk and severity of dust nuisance effects depends on:

- the potential for dust generation from open areas
- the prevalent wind direction
- wind speed
- the proximity of works and potential dust sources to adjacent properties
- soil moisture levels
- % of fine particles on surface materials
- location and size of stockpiles
- speed of traffic on haul roads and access ways
- the 'busyness' of the construction site

Activities which are most likely to be a factor in dust generation include:

- Wind entrainment from exposed surfaces
- Dust from roads and access areas generated by trucks and other mobile machinery movements
- Excavation and disturbance of dry sandy material
- Loading and unloading of dry sandy materials to and from trucks
- Stockpiling of materials including material placement and removal
- Storage and handling of bulk cement
- Concrete grinding undertaken as part of the manufacture of pre-cast concrete bridge components
- Pavement activities including cement/lime stabilisation
- Road sweeping
- Use of mobile rock crusher

2.4 Meteorological Factors

Climate in the Ōtaki region is considered to be warm and temperate with an average annual rainfall of 1073mm. The driest month is February with an average of 59 mm of rainfall and the wettest month being July when approximately 109 mm of rainfall occurs. The number of rainfall days each month is generally consistent with between 15 and 24 days per month experiencing rainfall.

Figure 2 below identifies the predominant wind direction and speed developed from data measurements taken at Te Horo.

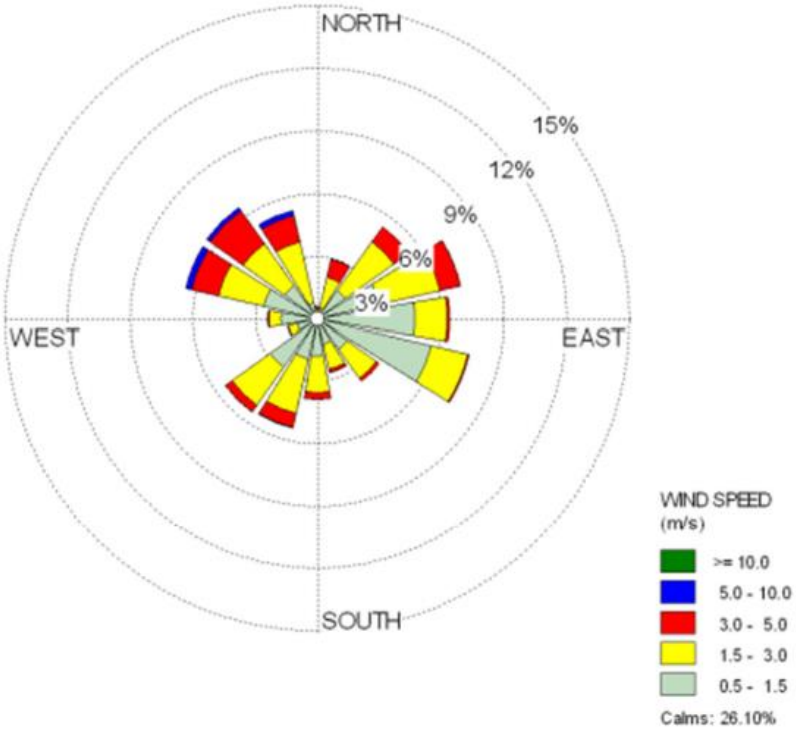

Figure 2: Wind Rose at Te Horo (from PP2O_Vol4_Air Quality Management Plan)

Analysis of the wind rose demonstrates a mix of wind directions although winds from the northwest through to south west are predominant. Wind speeds are variable but generally the north westerly winds bring the highest wind speeds and therefore greatest risks for wind erosion and subsequent dust generation. The north westerly winds tend to dominate during the spring and summer. As a consequence, properties to the south and southeast of the construction site, run the highest risk of nuisance dust issues.

3 ONSITE MANAGEMENT PROCEDURES

3.1 Minimising Dust Generation

To meet the requirements of Designation Condition's 59 and 60, a range of tools will be utilised. These may include, but need not be limited to, the following:

- **Minimising the amount of exposed area open at any one time** – With large areas of sand dunes and river alluvials, minimising the areas open for construction at any one time will be critical to minimising wind erosion. This will be achieved through the staging of works including the removal of any vegetation in a staged manner to minimise the time between removal and the start of excavations. Increased productivity to minimise the duration of earthworks will also be a key tool. This is achieved through the use of GPS enabled machinery which provides the machine operator with immediate information regarding levels and volumes moved without the need to wait for surveying at the end of each day.

- **Increasing the soil moisture content** – The use of water as a dust suppressant is a proven method of minimising dust generation. Increased soil moisture reduces the ability of small soil particles (particularly sand particles) to become entrained by wind blowing across the surface. This can be achieved through the use of water trucks dampening down haul roads through to sprinkler systems set up in high risk areas.

- **Dust suppression agents** – The use of polymers, hydroseeding and straw mulching are popular and effective methods for controlling wind erosion. Polymers were used to good effect on the M2PP project.

- **Altering the wind speed at ground level** – This can be achieved through the use of wind fences where practical. At this stage, it is not envisaged that wind fences will be the in the first line of defence for wind generation. However, this will be reviewed as the Project progresses and depending on the success of other dust prevention measures**.**

- **Reviewing vehicle speeds** – Speed limits on haul roads are to be reviewed in light of wind strength and weather conditions. In the event of excessive dust beyond the boundary from the haul roads, imposing speed limits may be suitable to minimise the entrainment of dust particles.

- **Location of mobile rock crusher** – A mobile rock crusher may be used on site as an opportunity to reuse material recovered from site and produce a product suitable for use as a sub basecourse. It is anticipated that the rock crusher would be located in the vicinity of the existing Winstones Ōtaki Quarry and would meet the requirements of the Permitted Activity Rule in the Air Quality Management Plan for the Greater Wellington Region and the Proposed Natural Resources Plan for the Wellington Region.

3.2 Specific Dust Controls

Table 2 below identifies the specific controls to be used during construction for minimizing the discharge of dust from the site.

Table 2: Specific dust controls to be used during construction

Source of Dust	Control

Stockpiles (including material placement and removal)	• Limit the height and slope of stockpiles to reduce wind entrainment. Stockpiles exceeding 3m in height have a higher risk of discharging dust
	• Locate stockpiles to maximise wind sheltering as much as possible
	• Locate stockpiles away from sensitive receivers where practicable
	• Avoid disturbing stockpiles during very dry, windy conditions where possible
	• Keep the surfaces of stockpiles damp (active stockpiles) or otherwise stabilised (inactive stockpiles) if they are producing visible dust emissions
	• Stabilisation methods may include:
	  ○ Polymer
	  ○ Mulch or straw
	  ○ Vegetation/hydroseed
	Geotextile fabric covers

Unpaved surfaces such as roads and yards	• Limit the amount of exposed/unstabilised surfaces by:
	  ○ Retaining as much vegetation as possible
	  ○ Stabilising exposed surfaces and cleared areas not immediately required for construction, access or parking
	  ○ Surfacing site compounds in the vicinity of sensitive receptors with a clean compacted aggregate
	• Keep unpaved surfaces damp where dust generation is an issue
	• Compact unconsolidated surfaces where practicable
	Regularly maintain aggregate surfaces by grading and the laying of new metal

Sealed Surfaces	Regularly remove dust through washing or vacuum sweeping (ensure dust is not washed into stormwater systems or streams)

Vehicles	• Ensure trucks are not overloaded to avoid spillages
	• Minimise travel distances as far as practicable
	• Cover loads of fine materials where significant travel is required
	• Minimise tracking out from unsealed areas by:
	  ○ Establishing stabilised entranceways where required
	  ○ Providing wheel wash facilities at road exits from construction areas if required
	Enforce reduced speed limits on site

Earthmoving and construction	• Limit the amount of exposed/un-stabilised surfaces by: ○ Retaining as much vegetation as possible

	○ Progressively stabilising exposed surfaces with straw, mulch, polymer or hydroseed as soon as practical • Keep exposed areas damp at all times where practical through the use of water carts or sprinkler systems (or rain) • When loading trucks, drop material from as low as possible within the tray of the truck Avoiding disturbing exposed areas during very dry, windy conditions
Mobile Rock Crusher	• Position in appropriate location away from sensitive receptors Ensure rock crusher comes with water spraying devices or install temporary measures if not fitted

3.3 Management Issues for Dust Control

For the specific dust controls to be successful in managing the discharge of dust offsite, a number of management issues must be addressed. These are:

- **Sourcing, location, availability and storage of required water volumes –** Peak water demand for the project has been calculated at approximately 300m^3 per day for dust suppression and pavement construction requirements. Greatest water demands for dust suppression occur between October and April each year. Successful dust control on large construction projects relies on a reliable source of water. It is important to ensure that the required quantities can be soured or stored in close proximity to where they are required. Water is to be sourced from the Ōtaki River and Waitohu Stream pending successful resource consent applications. In addition, existing bores are to be utilized which are consented for PP2O use. Storage ponds will be constructed in each zone to store water and minimize the travel required for the water carts. Water collected in sediment control ponds will also be used if required.
- **Water truck availability –** In the event of mechanical failure or operator leave, back up water trucks must be available quickly from additional suppliers to ensure soil moisture coverage continues as required.
- **Consideration of 24 hour coverage –** The potential for wind erosion does not stop when works are finished for the day or weekend. Therefore careful management is required to ensure that dust nuisance effects do not increase when the site is not staffed. Experience has shown that by ensuring that high levels of soil moisture are present prior to works finishing for the day, this will minimise the generation of dust overnight. The appropriate levels can be achieved by a final pass of the water truck. In high risk locations, the use of automated sprinklers should be considered as the use of water carts at night can result in noise complaints to the project.
- **Polymer application rates and finished quality –** High quality application of polymer is critical to its success in minimizing dust generation. Polymer is particularly useful for large areas during periods of extended closedown such as Christmas. However, critical to the success of polymer application is clear communication between the project engineer/site person responsible and the contract applicator to ensure the correct areas are dressed at the correct application rates to ensure a quality finish. Once applied, clear signage is required to prevent movements across the area covered with polymer as the crust created by the polymer will break up if it is walked or tracked on, destroying the effectiveness of the applied product.

3.4 Contingency Measures for Dust Control

Due to the windy nature of the site and predominance of sand dunes in sections of the Expressway, water carts will be a common feature of the project. It will be the Site Supervisors responsibility to assign appropriate resources on a daily basis to all sections of the project to ensure offensive and objectionable dust discharges do not occur beyond the boundary of the site. Considerations to be taken into account when assigning resources include the amount of rainfall received and forecast, current soil moisture levels, current and predicted wind strengths and types of work planned.

While it is expected that the specific controls detailed in Section 3.2 will minimise discharge of dust considered to be offensive or objectionable beyond the boundary of the site, occasionally the measures implemented are not sufficient.

In such cases, additional appropriate mitigation measures will be implemented and/or works will cease until the wind strength drops to a suitable level based on observations on site. Dust generating works such as loading of trucks and earthworks will be required to cease or the methodology modified when wind strength exceeds 36 km/h based on an average over 1 minute such that they do not cause excessive dust beyond the boundary of the site. Our experience on M2PP has demonstrated that site crews working in other sections of the Project will often be the first to suggest activities are stopped due to dust nuisance issues that they are experiencing within the site boundary.

In horticulture areas, understanding the susceptibility of the crop to dust deposition will be important for establishing thresholds for acceptable working conditions such as wind strength and direction, type of activity, and methodology. This will be achieved by working with the potentially affected landowner/lessee to understand what is being grown including its season.

Where complaints have been received regarding the deposition of dust on properties beyond the boundary of the site and it is agreed that the source was the PP2O construction site, in consultation with the landowner, the issue(s) will be resolved and impacts remediated to at least the condition of the property prior to construction related impacts.

3.5 Contaminated Soils

A number of potentially contaminated sites have been identified including horticulture land, a potential underground fuel storage tank, rail sidings and a sheep dip. There is also the possibility of uncovering previously unidentified farm dumps and other contaminated sites while undertaking earthworks. Further information regarding the management of contaminated soils can be found in the Bulk Earthworks Contaminated Land Management Plan (BECLMP).

The main air quality risk from known contaminated sites is the potential for contaminated dust particles to be discharged. This can be a nuisance effect as well as potentially having adverse effects on human health through inhalation, ingestion of water containing contaminated dust particles or eating produce contaminated by dust.

Procedures for dealing with dust discharges from contaminated sites are the same as dust discharges from the project. However, a higher level of attention is required to ensure that accidental air discharges through process failure do not occur.

Soils are to be adequately damp to prevent any dust being discharged during the movement and removal of contaminated soils from site. Particular attention should be paid to wind strength and direction during removal to ensure contaminants are not discharged from site. Covered trucks are to be used in the removal of all contaminated soils to ensure accidental discharge off site does not occur.

3.6 Contingency Measures for Contaminated Dust Discharge

Prior to starting earthworks on contaminated or potentially contaminated sites, the site engineer will be responsible for reviewing the predicted and current wind strength and direction.

Measures such as those identified in Section 3.1 will be utilised to ensure that contaminated dust does not cause a nuisance discharge beyond the boundary of the site.

In the unlikely event that contaminated dust is discharged onto neighbouring properties, remediation options may include, but not be limited to, the following:

- Advice to neighbouring property occupiers to wash garden produce prior to consumption
- The cleaning of roof water tanks and refilling of tanks
- Remediation/reinstatement to at least the condition of the property prior to construction related impacts (in consultation with the landowner)

3.7 Odour Sources and Controls

Odour may be discharged following the disturbance of contaminated soils, during peat excavation and removal, or application of organic topsoil or mulch Odour along with wind direction and strength is to be monitored by the site engineer and foreman during excavation works. Based on information currently held on the potentially contaminated sites on the Project, the likelihood of odour-causing contaminants to be present at levels likely to cause nuisance is considered to be very low.

A number of mitigation options may be utilised to prevent the discharge of noxious, offensive, or objectionable odour beyond the site boundary. These include, but are not limited to, the following:

- Minimise the time taken to excavate and remove the odour causing material from site
- Covering the odour causing material when transporting or when stockpiled on site
- The use of odour neutralizing fences, particularly in close proximity to neighbouring properties
- Consideration of stockpile locations i.e. not close to neighbouring properties
- Minimising the area of open ground where practicable. i.e. progressive backfill and surface stabilisation
- Use of odour masking agents or deodorisers where appropriate
- More frequent inspections in areas identified as containing potentially odour-causing material
- Consideration of adjacent residents when allocating locations for worker facilities such as toilets and rubbish disposal areas

- Consideration of proximity to residents when applying topsoil or landscape mulch. It is acknowledged that these activities are a fundamental part of the works and cannot be avoided but methodology changes such as turning mulch stockpiles in locations away from residential properties can be considered

3.8 Contingency measures for odour discharges

In the event that noxious, offensive or objectionable odours are identified beyond the boundary of the site in the opinion of an enforcement officer, additional mitigation measures will be implemented in consultation with the affected party. This may include implementation of one or more of the options outlined above, or alternatively may be a unique measure based on a case by case assessment of the area and affected resident(s). Based on previous experiences at M2PP, contingency measures for odour are very unlikely to be required.

3.9 Vehicle Exhaust Emissions

Air pollutants as a result of poorly maintained vehicle engines can cause localised air quality issues with air pollutants being discharged at a significantly higher rate than those from well-maintained engines. In addition, excessive idling of vehicles can also impact on local air quality.

As a result, the following actions are to be implemented to minimise the effects of air pollutants arising from vehicle exhaust emissions.

- Late model machinery is to be leased or hired as far as practicable
- Construction machinery is to be maintained in accordance with the manufacturer's recommendations. Weekly check sheets will be completed for all equipment and plant identifying any faults or maintenance requirements. These check sheets will be collated by the Project Supervisor for actioning as necessary. This is to be monitored through six monthly random auditing of maintenance records of construction vehicles
- In the event that excessive exhaust smoke is identified from machinery or vehicles, the vehicle or machinery is to be serviced as soon as practicable and taken out of use until the required maintenance can be undertaken
- The PP2O vehicle idling policy is to be displayed in smoko sheds, discussed at site inductions and understood and implemented by all drivers. The vehicle idling policy is detailed in Section 3.10 of the CAQMP
- All fleet vehicles are to be serviced regularly

3.10 Vehicle Idling Policy

Excessive idling of construction machinery and vehicles can contribute to localised air quality issues, cause premature engine wear and waste fuel. As a result, PP2O is committed to ensuring:

- No idling of unattended vehicles and construction machinery
- No idling in excess of five consecutive minutes except in the following circumstances:
    - idling when queuing or waiting to be loaded up
    - idling to verify the vehicle is in a safe operating condition
    - idling for testing, servicing, repairing or diagnostic purposes

- idling to accomplish work for which the vehicle or machine was designed (e.g. crane, concrete pump)
- idling required to bring the machine to operating temperature as specified by the manufacturer
- idling necessary to ensure the safe operation of the vehicle
- idling to provide air conditioning or heating to ensure the health and safety of the operator

The Environmental team will undertake proactive education of the policy at site toolbox talks and team meetings and undertake ad-hoc monitoring of the policy while out on site. Re-education of operators found to be failing to comply with the policy will be undertaken.

The idling policy is to be reviewed by the Construction team in conjunction with the Environmental team as the project progresses to ensure its ongoing relevance and appropriateness.

3.11 Dust Control Contacts

Ultimately, the Environmental Manager will be responsible for ensuring compliance with all consent conditions and ensuring there is no noxious, offensive or objectionable discharges of dust beyond the site boundary.

On a day to day level, all staff are responsible for assessing the activities they are undertaking to ensure all dust discharges beyond the site boundary are minimised. Site supervisors and foremen will be responsible for the areas and activities they are manging to ensure compliance with consent conditions.

Contact details for these key staff can be found in the CEMP.

4 ENVIRONMENTAL TRAINING

Environmental training for all staff will be undertaken as part of the site induction programme. Full details of the Project environmental training programme is included in the CEMP.

The environmental induction will include the following information specific to this Plan:

- Identification of the stages of construction and activities which have the highest risks associated with nuisance dust discharges
- Consent requirements relating to the discharge of dust and odour from the site
- Dust mitigation measures to be implemented
- Details of dust and air pollutant monitoring for the Project
- Actions to be taken when construction activities result in visible dust emissions
- How complaints regarding dust and odour will be addressed

Additional training will be provided to water cart drivers and site supervisors, in assessing whether sufficient water has been applied for effective dust suppression and the monitoring of visible dust emissions and odour emissions.

5 MONITORING AND REPORTING

5.1 Total Suspended Particulate (TSP) Monitoring

Designation condition 55c) vii requires the implementation of continuous monitoring of Total Suspended Particulate (TSP) monitoring. The downside to continuous monitoring is that dust exceedance events can be masked (MfE Dust Guidelines 2016). This is generally due to the short duration, high intensity nature of events which generate objectionable discharges beyond the site boundary, resulting in complaints to the Project.

It is proposed to use the Dust Master Pro, a mobile TSP station. The use of a mobile monitoring station will ensure that wide coverage of the site can be achieved. The Dust Master Pro sends data to a web based real time system which can be accessed and viewed over the internet. In addition, it provides email alerts and SMS messaging to nominated staff (the Environmental Manager and Environmental Advisor) when identified trigger levels are exceeded.

Locations for TSP monitoring have been identified as:

- The former Rahui Milk Treatment Station
- Gear Road

Additional locations such as the horticultural lots may be added as the Project progresses to address issues such as a hotspot of complaints.

Siting of the Dust Master Pro is an important consideration to ensure that it is not located under trees or directly behind fences or other objects which could mask the actual dust levels in the receiving environment. Effective locations require a degree of common sense and an adaptive approach. At each new site, the data being generated will be reviewed by the Environmental Manager to ensure that it is representative of the site and situation. If not, further tweaks as to the monitor's location will be undertaken.

Trigger levels for TSP (from MfE Dust Guidelines 2016) to be used by the Project are detailed below. It is anticipated that the 5 minute averaged levels for highly sensitive receiving environments of 250 µg/m^3 will be adopted as the primary measure.

Table 3: Trigger levels for TSP

Trigger	Average Period	High Sensitivity Receiving environment	Medium Sensitivity Receiving Environment	Low sensitivity Receiving Environment
Short Term	5 min	250 µg/m^3	n/a	n/a
Short Term	1 hour	200 µg/m^3	250 µg/m^3	n/a
*Daily***	*24 hours (rolling average)*	*60 µg/m^3*	*80 µg/m^3*	*100 µg/m^3*
Wind warning	1 minute	10m / s (during two consecutive 10 minute periods)		

Rain warning	12 hours	There has been no rain in the previous 12 hours
Visible dust	Instantaneous	Visible dust crossing the boundary

*** For managing long term dust only*

Table 4: Identification of High, Medium and low Sensitivity Receiving Environments

Sensitivity of Receiving Environment	Example Locations
High	Rahui Road, Gear Road, Horticulture land immediately adjacent to earthworks, Ōtaki Motel, Cottage Park Motor Lodge
Medium	BP Service Station, Café Te Horo, Horticultural and Nursery locations along State Highway 1, Ōtaki Gorge Road, County Road properties, identified sensitive receptors detailed in Table 1 (with the exception of those detailed as High Sensitivity)
Low	All other properties within the vicinity of the project

Although the above trigger levels provide a valuable tool for assessing impacts, visual monitoring will also be a useful on-site approach to managing dust risk. Dust issues are generally identified by site staff at lower levels than the identified trigger values as site staff will be impacted by the dust nuisance prior to it becoming an issue beyond the boundary. In this instance, the foreman or supervisor will inform the work crew that, based on visual monitoring, there is a potential for nuisance dust across the boundary of the site and preventative measures such as increasing water cart frequency or limiting works until additional mitigation measures can be implemented will be adopted.

For clarity, the definition of dust 'nuisance' will align with the District Plan definition (Part Q – Definitions), which states:

'Dust Nuisance means if there is visible evidence of suspended matter in the air beyond the site boundary and/or there is visible evidence of suspended matter traceable from the source of the nuisance settling on the water, land or structure of a neighbouring site'.

In the event that either visual or TSP trigger levels are exceeded, immediate action will be taken by site personnel and the Environmental Manager. This will include:

- Observing the area immediately adjacent to the monitoring equipment to rule out equipment malfunction
- Confirming that the trigger levels are as a result of activities occurring on site
- Review the status of works until additional mitigation measures can be implemented or wind direction and speed changes

In the event that the trigger levels are exceeded after hours, the Environmental Manager will arrange for a site representative to investigate the situation keeping personal safety front of mind. It is considered that such a situation would arise rarely due to the identified need to ensure 24 hour dust suppression coverage (Refer section 3.3).

Contingency measures in the event that the TSP monitor malfunctions or is due for a service will include the short term hire of a replacement TSP monitor with the same or similar specifications.

The Dust Master Pro will be serviced generally every quarter (depending on level of usage) by Air Quality Limited with the servicing occurring between planned monitoring activities.

5.2 Visual Dust Monitoring

Table 5 outlines the visual dust monitoring programme including responsibilities of staff which is to be implemented.

Table 5: Viusal dust monitoring activites and responsibilities

Monitoring Activities	Frequency	Whom
Check weather forecasts for strong winds and rainfall to plan appropriate dust management response (7 day forecasts available on www.metvuw.co.nz)	Daily	Environmental Team. Project wide email to be sent out each day with forecast
Inspect land adjacent to the site, construction exits and adjoining roads for the presence of dust deposits	Daily	Foremen Environmental Team
Observe weather conditions, wind via observations and data outputs from weather station and presence of rain	Daily and as conditions change	Environmental Team Foremen Engineers
Inspect all unsealed surfaces for dampness and to ensure that surface exposure is minimised, check for visible clouds being generated on site or carried off site	Regularly throughout the day and as new activities commence	Foremen
Inspect stockpiles to ensure enclosure, covering, stabilisation or dampness. Ensure stockpile height is less than 3m where possible or appropriately stabilised	Weekly and at times of expected high winds	Foremen Engineers
Inspect dust generating activities (as listed in section 3.2 – Table 2) to ensure dust emissions are effectively controlled	Regularly throughout the day and as new activities are commenced	Foremen Engineers
Inspect watering systems (sprays and water carts) to ensure equipment is maintained and functioning to effectively dampen exposed areas	Weekly	Watercart Operators Foremen
Additional monitoring of dust generating activities and water application rate	In winds over 5.5 m/s (11 knots or a Beaufort scale number of 3 – see Appendix A of this Plan)	Foremen Environmental Team
Inspect site access and egress points to ensure effective operation of wheel wash/truck wash systems and/or stabilised access ways	Weekly	Foremen Environmental Team
Ensure site windbreak fences, if used, are intact	Weekly	Foremen Environmental Team

5.3 Odour monitoring

Odour monitoring will be required in the event of significant odour discharges experienced during earthworks, during the excavation of contaminated sites and in the event of odour complaints being received.
Monitoring of odour will take the form of 'odour scout' monitoring along the site boundaries between the suspected source and sensitive receptors as well as upwind of the suspected source. The aim of this monitoring is to assess the effectiveness of odour control and mitigation measures.

The odour scout should not be a person who works on the immediate site as they may have become desensitized to the odour. Instead, an appropriately trained staff member from another section of the site should be used.

The odour scout will be required to walk the boundary of the property between the work site and potentially affected receivers, identifying where the odours are the strongest. The odour scout will also confirm whether the odours are from the construction works or identify any other source of odour at the time.

5.4 Weather Reporting

The existing weather station located at the corner of School Road and Gear Road will be removed as it currently lies in the path of the Expressway.

A weather station is to be installed at the main site compound located near the Ōtaki River at 2 Ake Ake Place. Alerts from this weather station will be sent to key staff members including the Environmental Manager, Construction Manager, Supervisor and Project Engineers.

This weather station will send text alerts to key staff members when wind levels increase and are sustained above 36km/h (10m/s) as an average over 1 minute during two consecutive 10 minute periods in accordance with MfE Guidelines (refer to Table 3). Monitoring of wind strength, wind direction, air temperature and rainfall will also take into consideration the Good Practice Guide for Air Quality Monitoring and Data Management, Ministry for the Environment, 2009. The guide will be made available to monitoring staff throughout the Project.

The weather station is to be installed in accordance with accepted practice for the installation of meteorological stations. This includes ensuring that anemometers and rain gauges are located well away from obstructions such as buildings and trees. Ideally the anemometer would be located at 10m in height but this is not always practical. A horizontal distance of ten times the height of the obstruction is also ideal but again not always practical. Rain gauges are ideally located at approximately 6 feet above ground level or at a horizontal distance of at least four times the height of the closest object to avoid distortion created by large objects in the vicinity.

5.5 Reporting

General reporting requirements are detailed in the CEMP. However, specific responsibilities for reporting dust, odour and vehicle emissions creating a nuisance effect include:

- All site personnel shall report to their immediate manager any issues they foresee or identify

regarding dust or odour management on their site

- Site Managers are to report all incidents and issues regarding dust or odour nuisance
- The Environmental Manager will report all exceedances of trigger values and actions taken to the Project Manager
- Dust monitoring results, any dust or odour complaints and remedial actions taken will be reported to the Project Manager on a monthly basis
- Performance against the KRIs and Plan requirements identified in Sections 1.3 and 1.4

6 COMPLAINT PROCEDURES

Complaints procedures are detailed in the CEMP. Specific additional procedures for managing complaints associated with dust, odour or vehicle exhaust emissions are described below.

The Environmental Manager has the responsibility to respond to and follow up all complaints regarding dust, odour or vehicle emissions and to ensure that suitably trained personnel are available to respond to complaints at all times.

Actions to be taken as soon as possible by the Environmental Manager:

- Ensure the Project complaint register is updated as far as practicable by the person who took the complaint call.
- Note the time and date of the complaint/s and (unless the complainant refuses to provide them) the identity and contact details of the complainant. Ask the complainant to describe the discharge: is it constant or intermittent, how long has it been going on for, is it worse at any time of day, does it come from an identifiable source? Wind direction and strength and weather conditions are to be recorded. Note if the complaint has been referred to the Regulatory Authority.
- As soon as possible after receipt of a complaint, undertake a site inspection. Note all dust or odour producing activities taking place and the mitigation methods being used. If the complaint was related to an event in the recent past, if possible note any dust or odour producing activities that were underway at that time. Initiate any remedial action necessary.
- As soon as possible (preferably within 90 minutes), visit the area from where the complaint originated to ascertain if dust or odour is still a problem.
- If it becomes apparent that there may be a source of dust or odour other than the construction project causing the complaint, it is important to verify this. Photograph the source and emissions.
- As soon as possible after initial investigations have been completed, contact the complainant to explain any problems found and remedial actions taken. Initiate a damage assessment if required.
- Notify KCDC Compliance Officer of the compliant as soon as practicable.
- If necessary update any relevant procedures to prevent any recurrence of problems and record any remedial action taken.

7 REVIEW

The CAQMP will be updated, with the necessary approvals, throughout the course of the Project to reflect changes associated with construction techniques or to the natural environment. Should changes to the construction methodology occur for any reason, the dust and potential odour impacts will be reassessed and appropriate mitigation measures adopted as required.

A review of the CAQMP will be undertaken at least annually and will take into effect any changes to construction activities and methods, additional sensitive receptors identified as the Project progresses and any changes or technological improvements in the management of dust or odour from the site.

Following the review, if changes to the CAQMP are identified, an amended copy of the CAQMP will be provided to KCDC five working days prior to the changes being implemented. An updated copy will be uploaded to CS-Vue and a hard copy given to the Engineer to the Contract.

REFERENCES

Ministry for the Environment (2016) *Good Practice Guide for Assessing and Managing Dust*

NZTA (2012) *DRAFT Construction Air Quality Plan Peka Peka to North Otaki Expressway Project*

Ridley Dunphy Environmental Limited (2014) *Review of Dust Management M2PP* October 2014

APPENDIX A: BEAUFORT SCALE

Scale	Classification	On a tree	On land	kph
0	Calm	Still	Calm, smoke rises vertically	<1
1	Light air	Still	Smoke drifts, wind vanes are still	1 - 6
2	Light breeze	Leaves rustle	Wind felt on face, vanes begin to move	7 - 11
3	Gentle breeze	Leaves and small twigs move	Flags flap	12 - 19
4	Moderate breeze	Small branches move	Dust and loose paper lift	20 - 30
5	Fresh breeze	Small trees in leaf begin to sway	Flags fully extended	31 - 39
6	Strong breeze	Larger branches shake	Whistling in wires, umbrellas become difficult to use	40 – 50
7	Near gale	Whole trees move	Wind impedes walking	51 - 61
8	Gale	Whole trees shake, twigs break	Windblown dust and dirt	62 - 74
9	Strong gale	Branches start to break	Light damage – twisting to signs, TV aerials, canopies	75 – 87
10	Storm	Pushes over shallow rooted trees, branches break powerlines	Light damage – twisting to signs, TV aerials, canopies, weak roofing lifts,	88 – 102
11	Violent storm	Broken branches big enough to cause structural damage	Windows may blowout, aircraft grounded	103 - 117

APPENDIX B: SENSITIVE RECEPTOR MAPS

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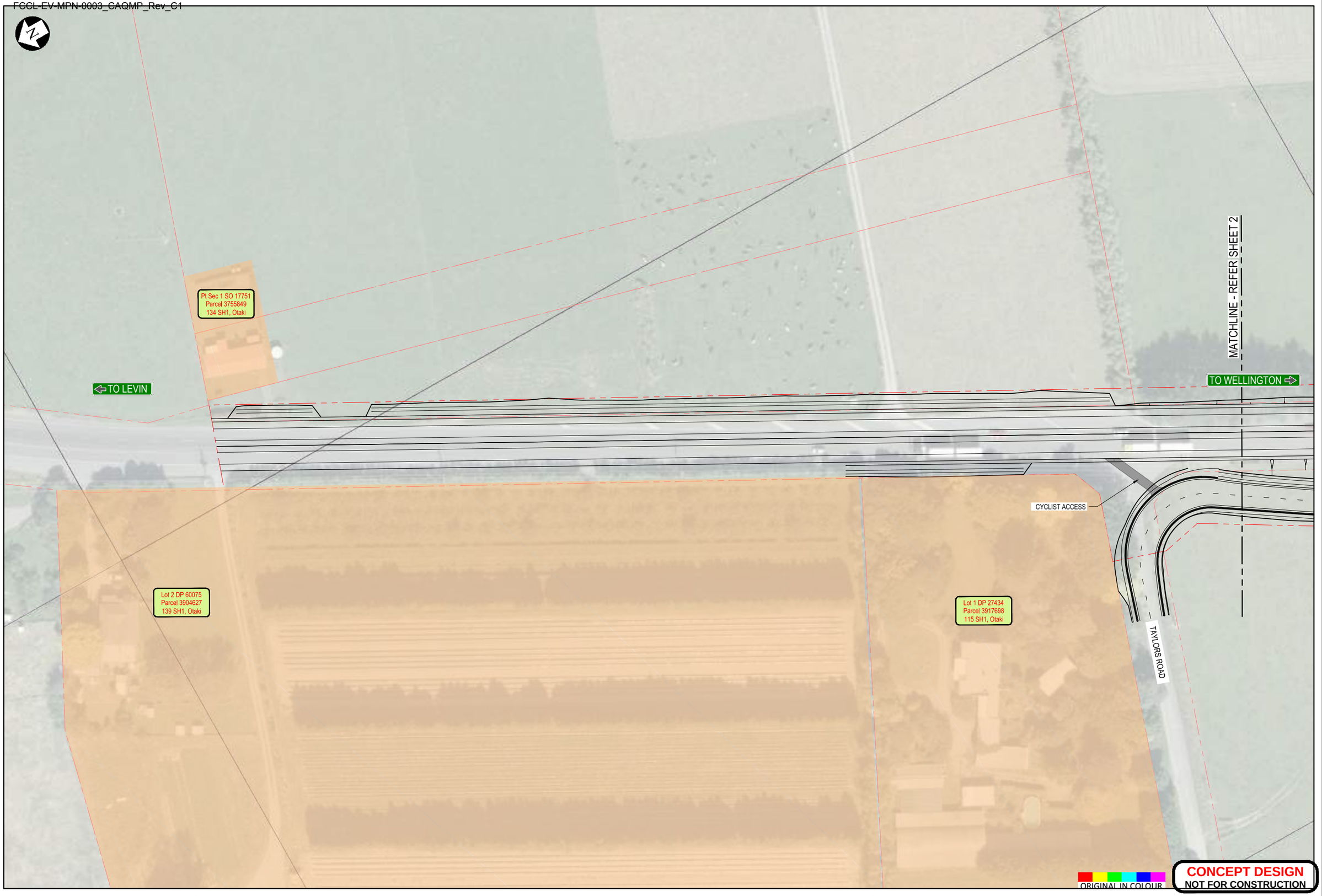

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 1 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0101

Rev.:

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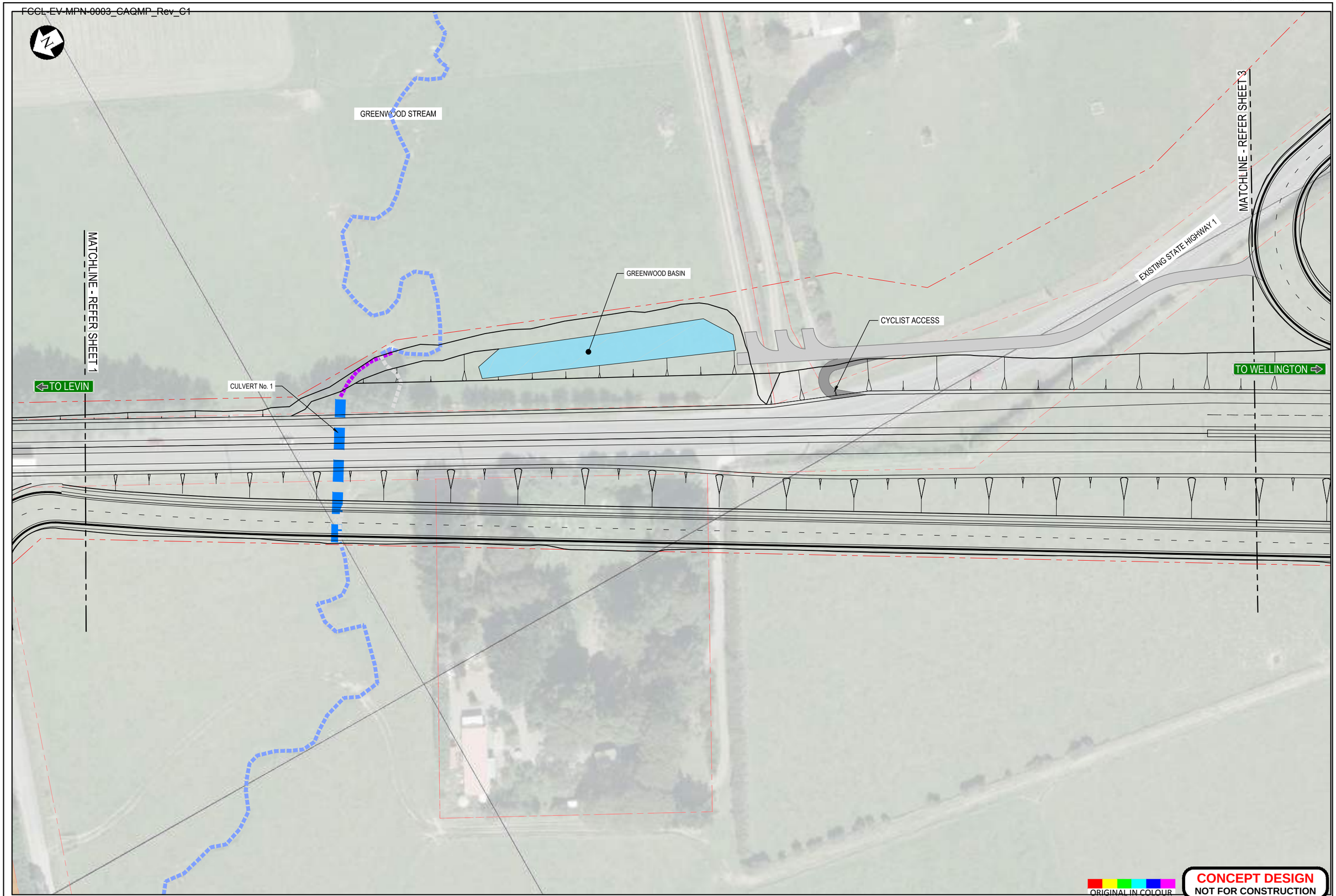

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Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0102

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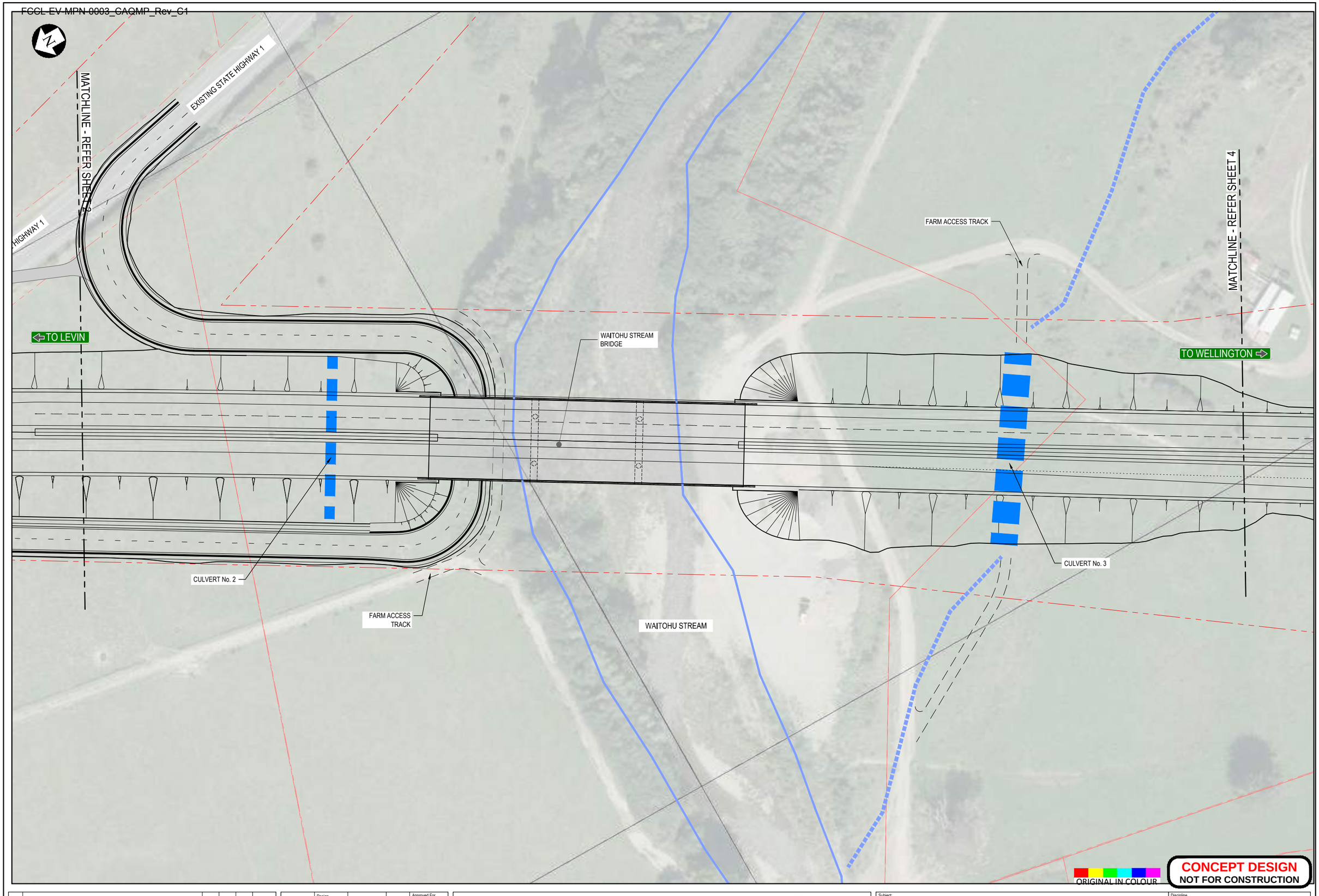

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Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 3 OF 36

Discipline: ENVIRONMENTAL

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Discipline: ENVIRONMENTAL

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Lot 1 DP 25184
Parcel 4002502
287 SH1, Otaki

Lot 1 DP 18538
Parcel 3909473
285 SH1, Otaki

Lot 2 DP 18538
Parcel 3757615
283 SH1, Otaki

Lot 3 DP 18538
Parcel 3832829
281 SH1, Otaki

Lot 4 DP 27147
Parcel 4014774
277 SH1, Otaki

Lot 1 DP 22046
Parcel 3778324
275 SH1, Otaki

Lot 1 DP 49336
Parcel 3912908
273 SH1, Otaki

Lot 2 DP 49336
Parcel 3770907
271 SH1, Otaki

Lot 3 DP 27147
Parcel 4001772
275A SH1, Otaki

Lot 2 DP 27147
Parcel 3923154
277A SH1, Otaki

Pt Pukehou 5K North
Parcel 4050872
291 SH1, Otaki

Pt Pukehou 5K North
Parcel 4050872
291 SH1, Otaki

Lot 2 DP 88670
Parcel 6610791
270A SH1, Otaki

Lot 2 DP 30732
Parcel 3992659
266 SH1, Otaki

Lot 1 DP 30732
Parcel 3811088
268 SH1, Otaki

Lot 1 DP 87515
Parcel 3928426
50 County Rd

EXISTING STATE HIGHWAY 1

ŌTAKI SOUTHBOUND
OFF-RAMP

REMNANT
WETLAND

CULVERT No. 12

NORTH ŌTAKI MAIN
ROAD UNDERPASS

ŌTAKI NORTHBOUND
ON-RAMP

RAIL ACCESS
TRACK

RAILWAY WETLAND A

CULVERT No. 70

RAILWAY WETLAND B

NORTH ISLAND MAIN TRUNK RAILWAY

REMNANT
WETLAND

MATCHLINE - REFER SHEET 4

MATCHLINE - REFER SHEET 6

TO LEVIN

TO WELLINGTON

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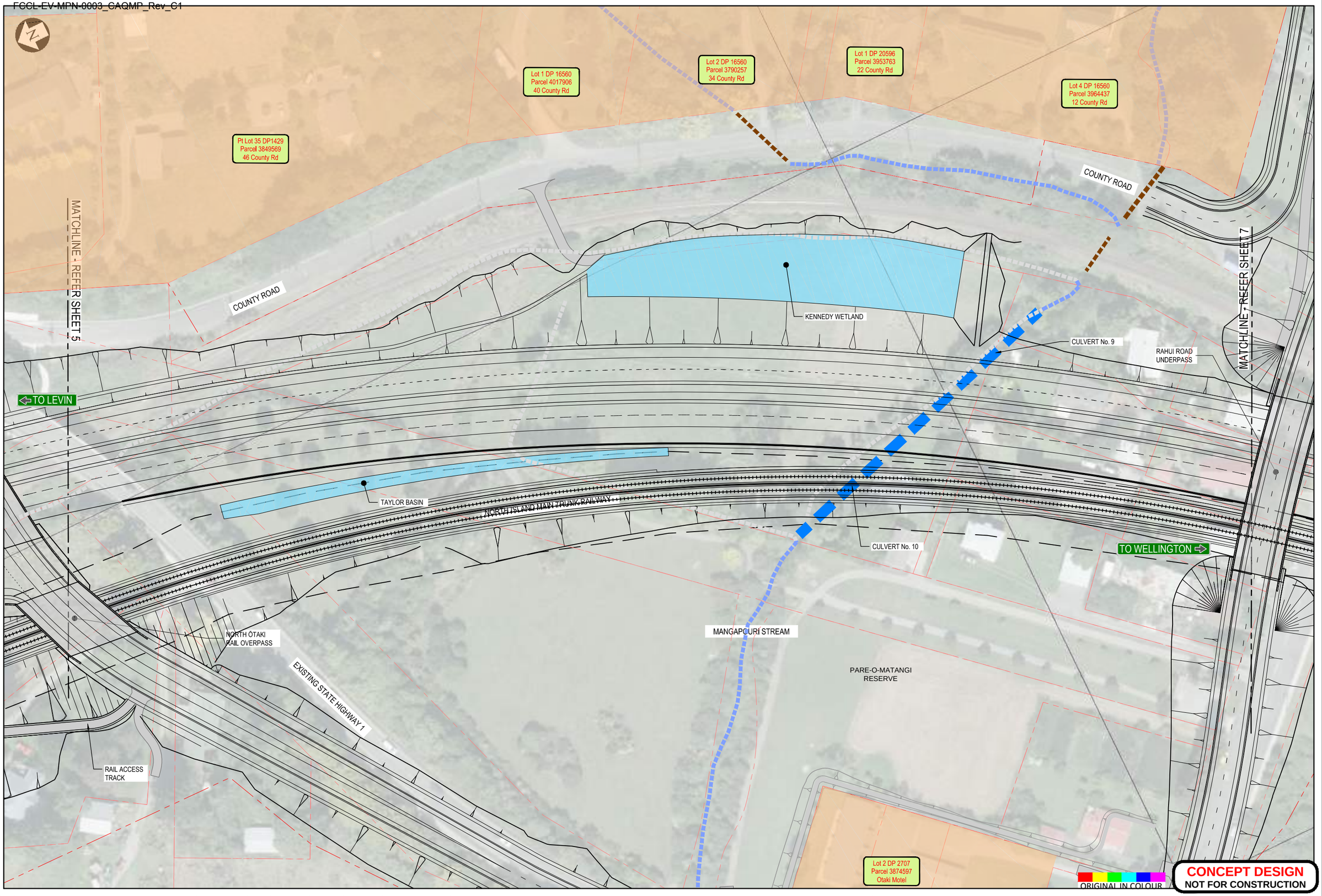

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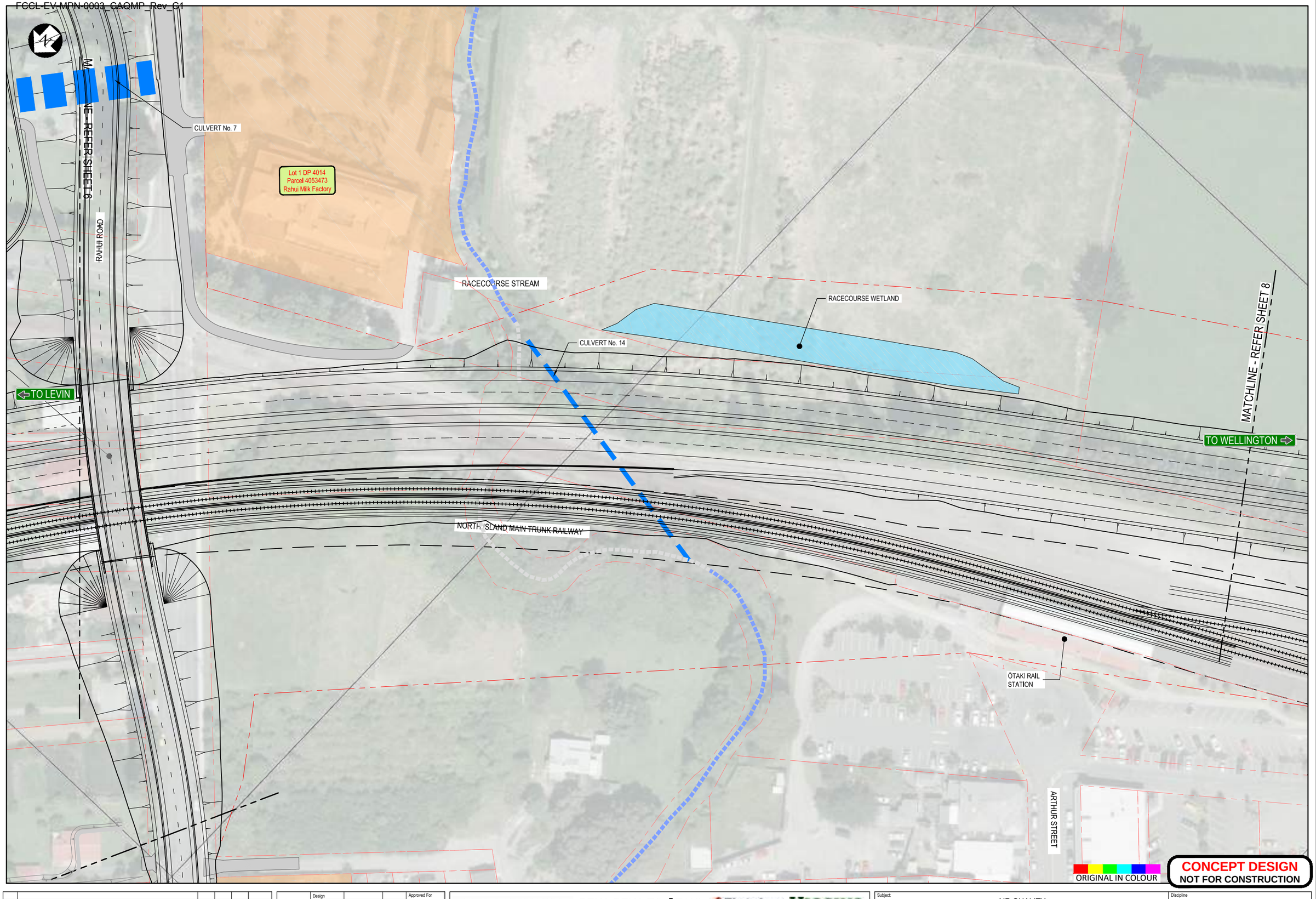

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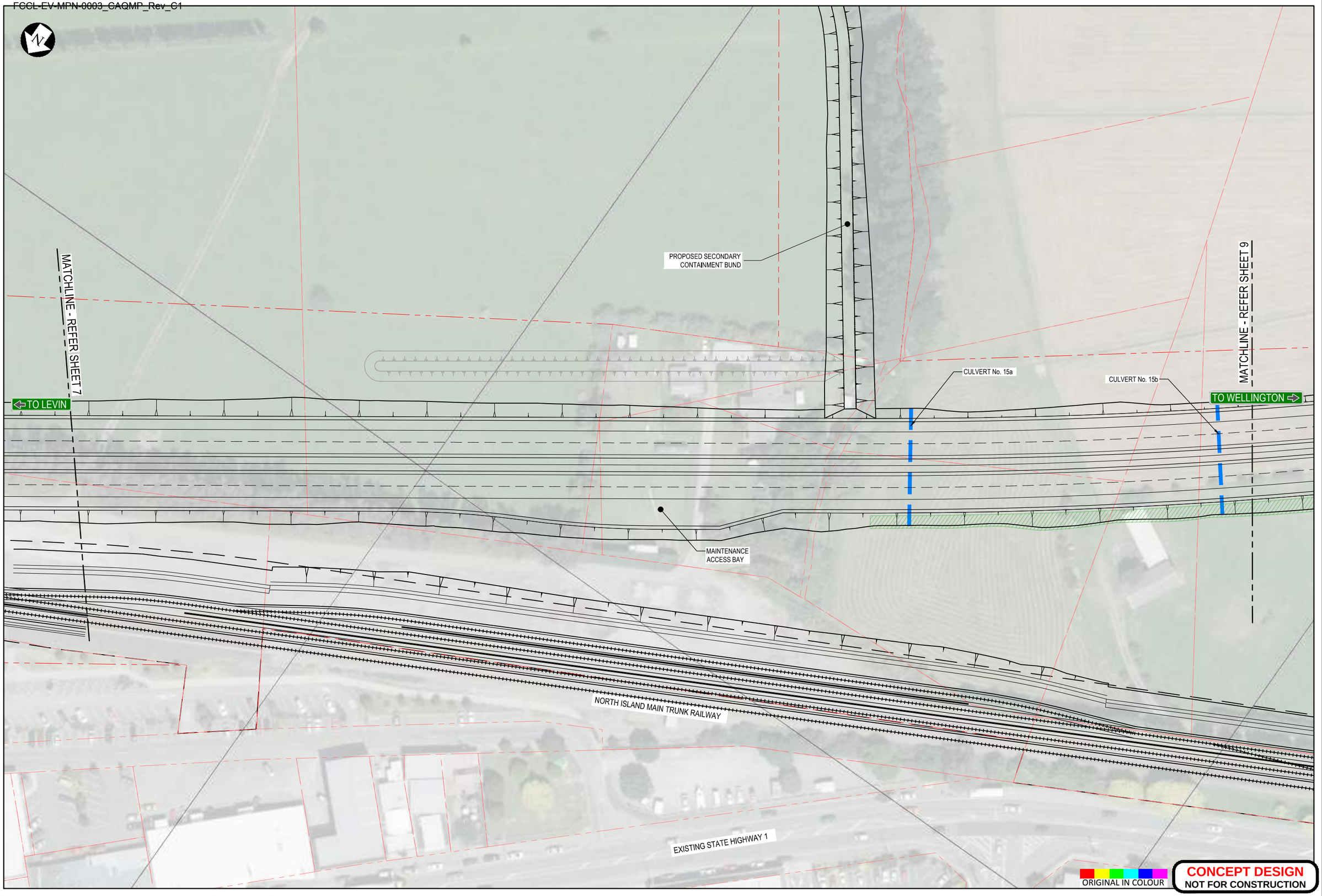

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Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 9 OF 36

Discipline: ENVIRONMENTAL

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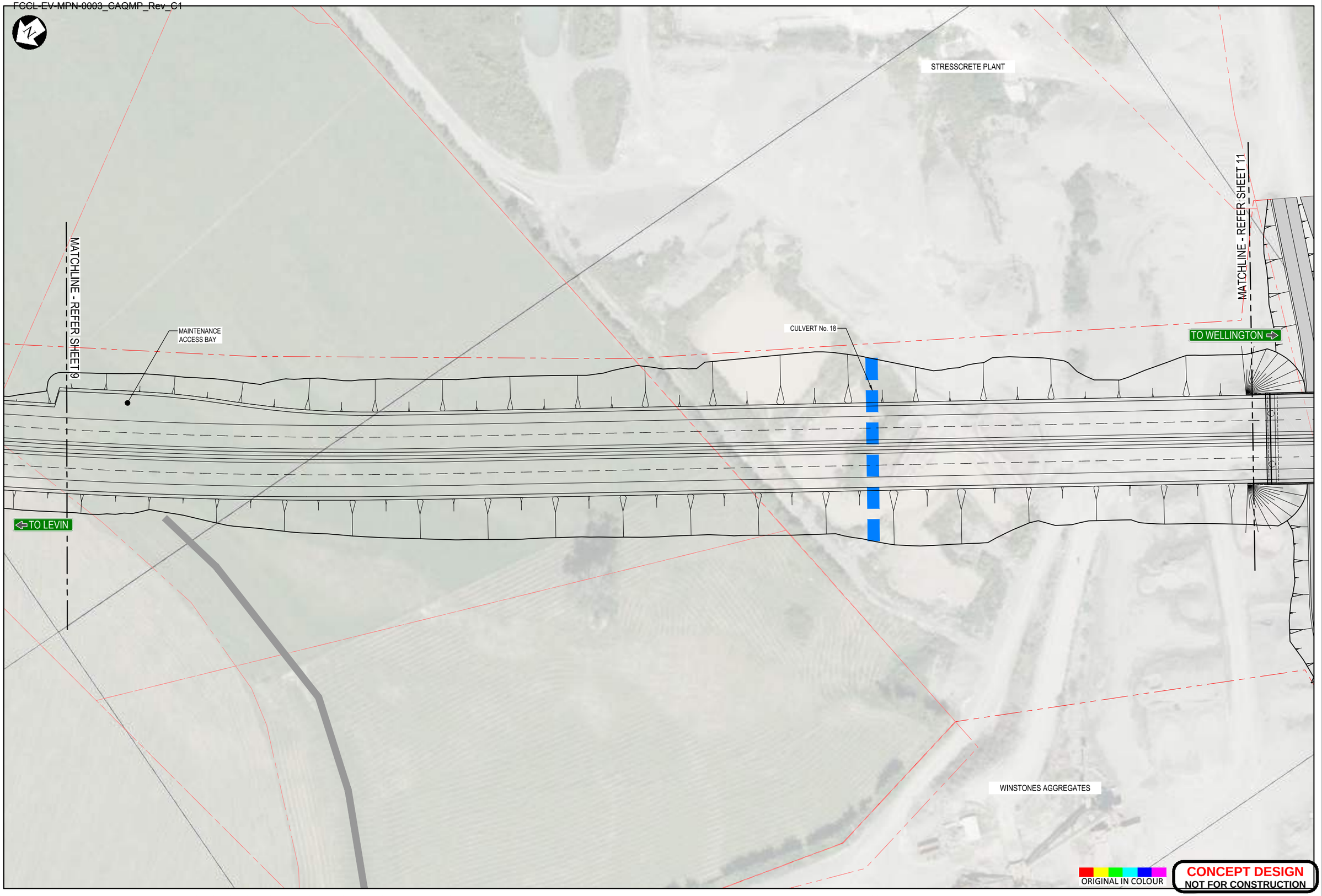

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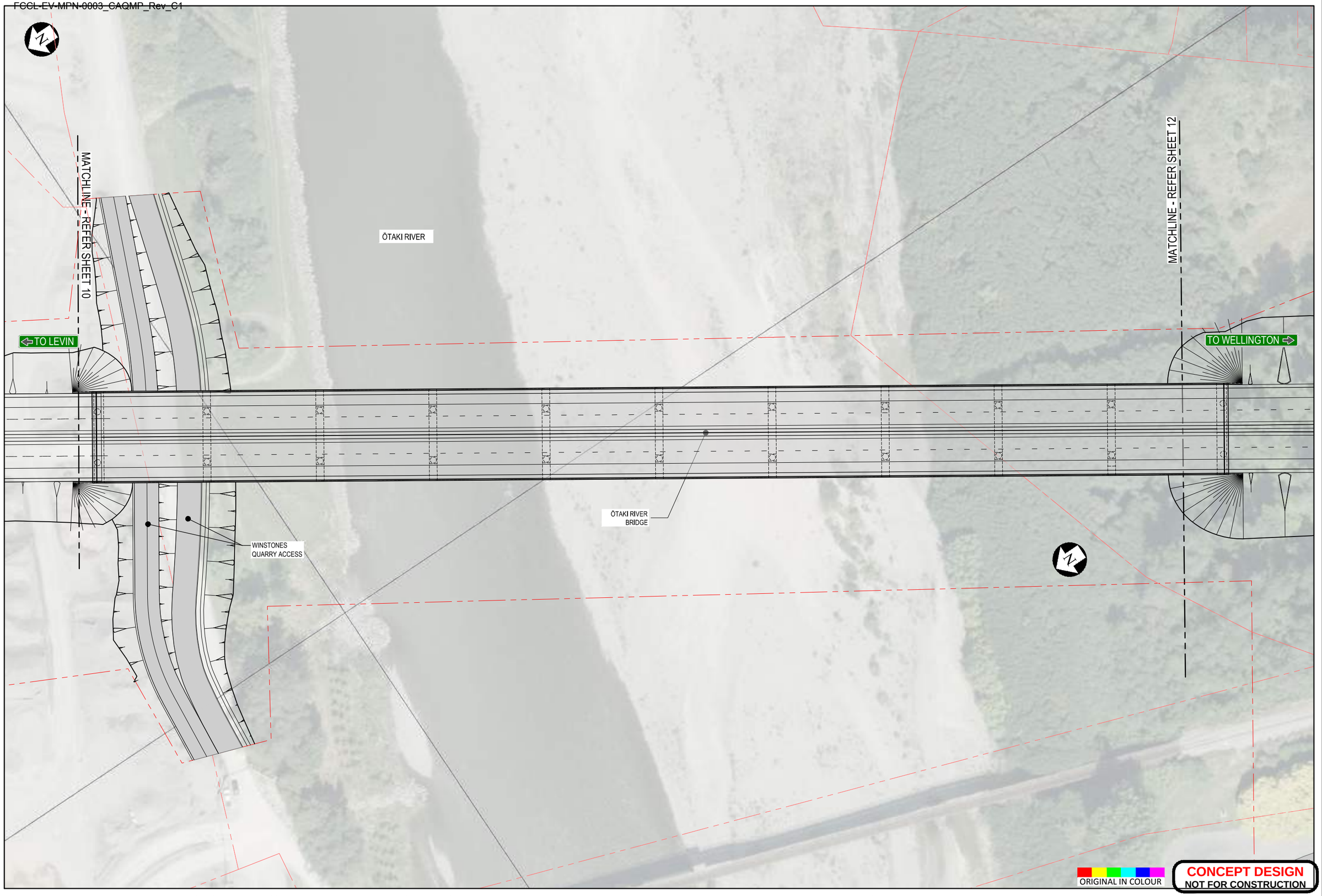

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Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 11 OF 36

Discipline: ENVIRONMENTAL

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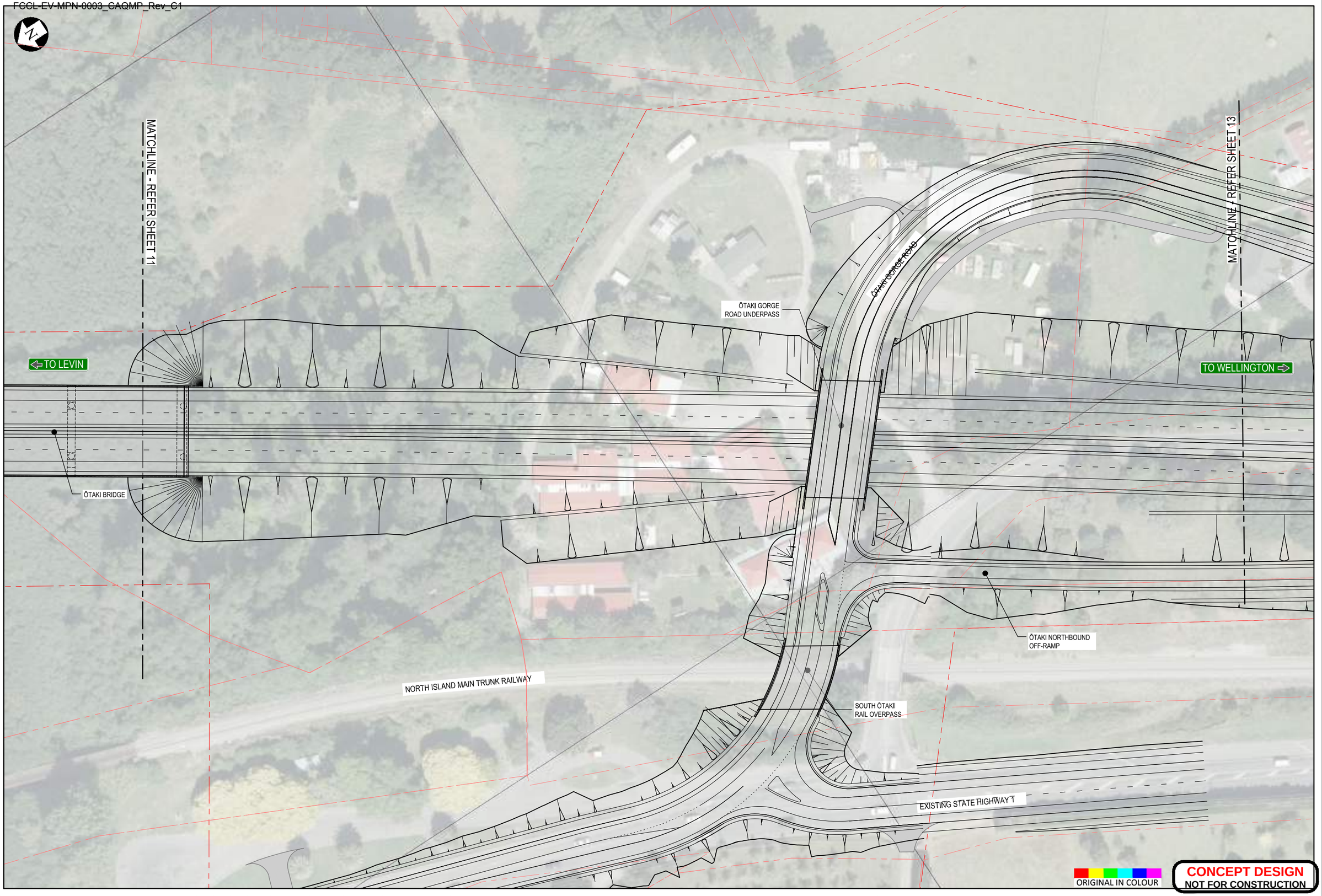

No.	Revision	By	Chk	Appd	Date

Scale (A3) 1:1000

Design			Approved For Tender
Drawn			
Dsg Verifier			
Drg Check			Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 12 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0112

Rev.

ORIGINAL SIZE A3 : DO NOT SCALE

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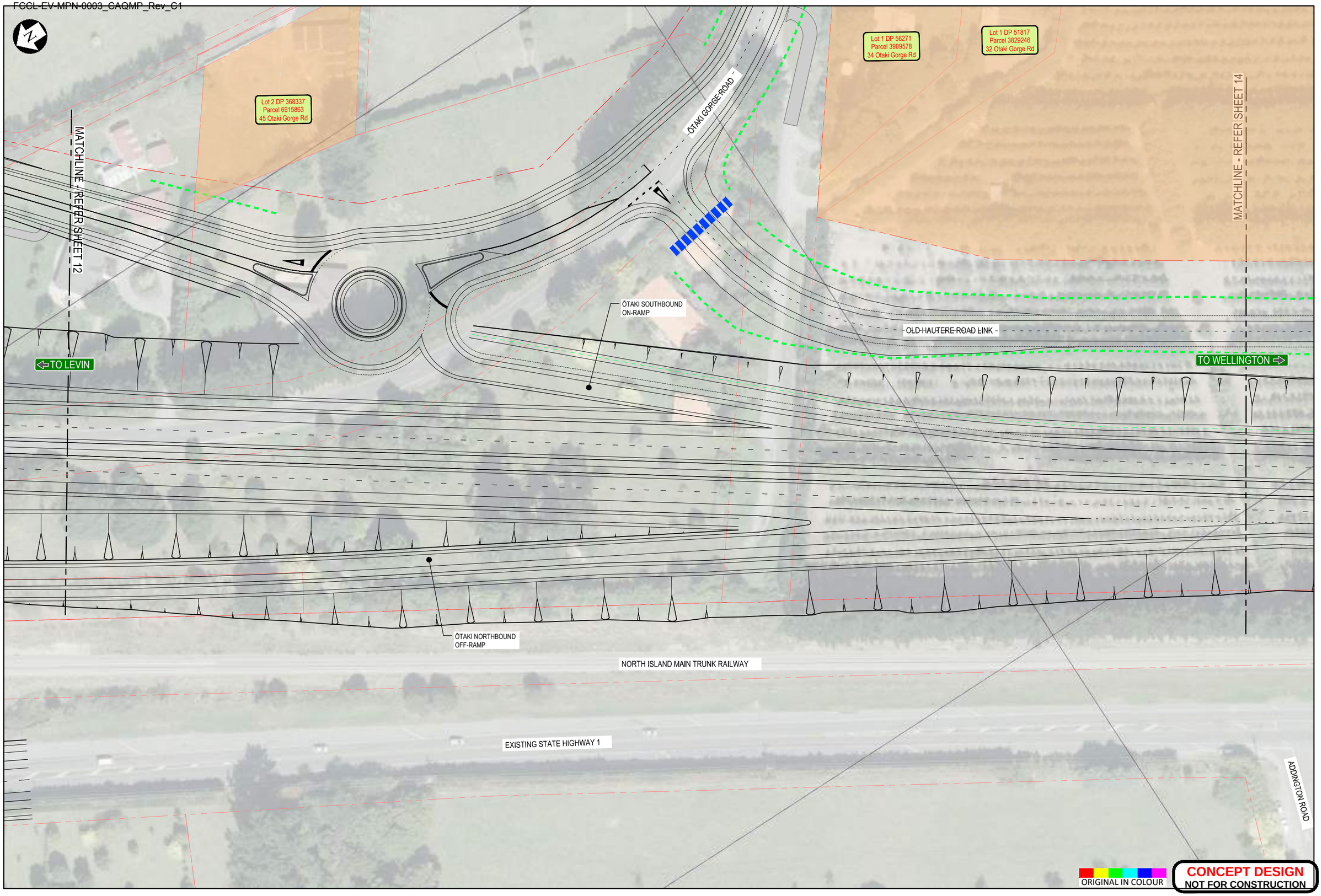

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 13 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0113

Rev.:

ORIGINAL SIZE A3 : DO NOT SCALE

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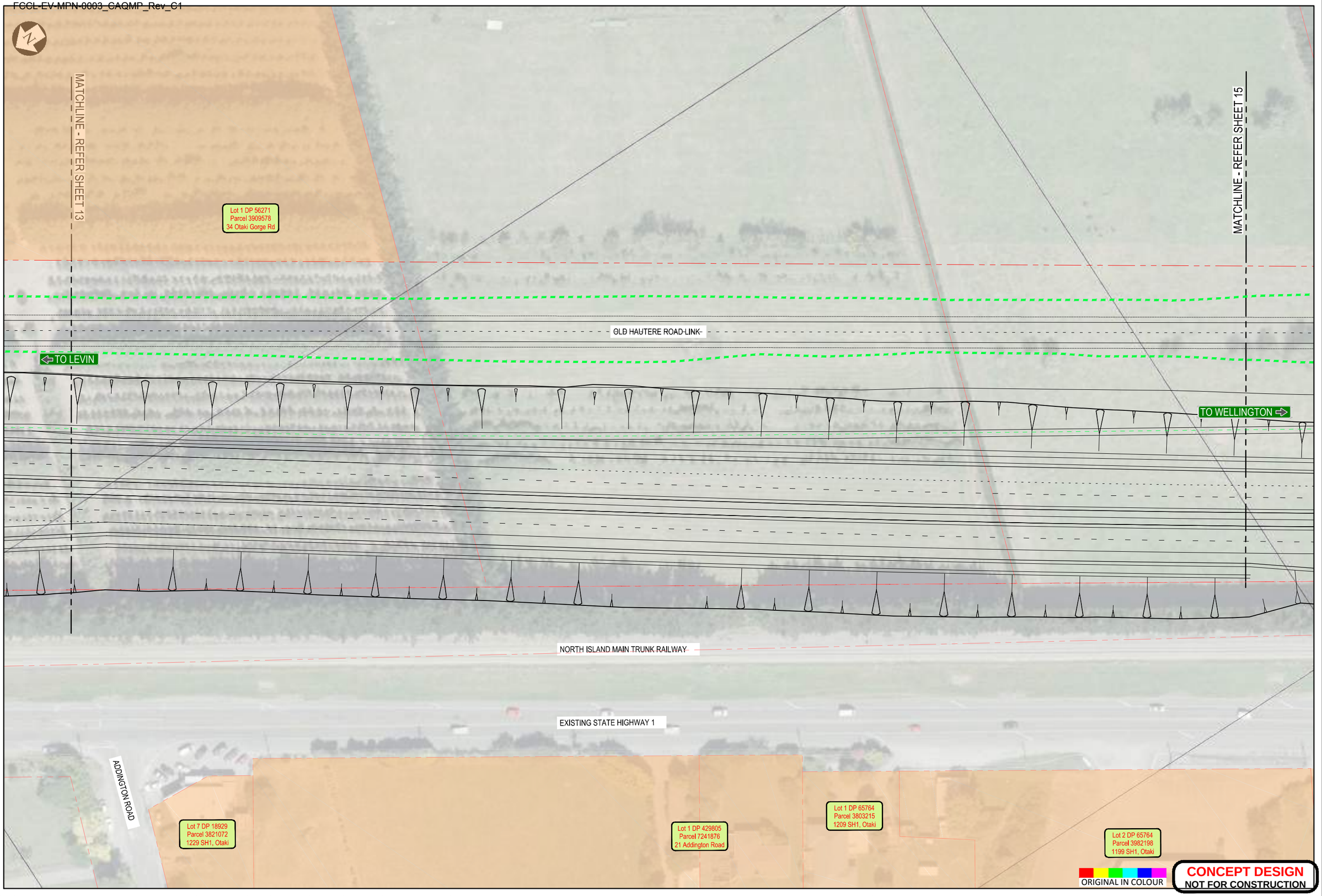

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 14 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0114

Rev.

ORIGINAL SIZE A3 : DO NOT SCALE

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Drg Check			Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 15 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0115

Rev.:

ORIGINAL SIZE A3 : DO NOT SCALE

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MATCHLINE - REFER SHEET 15

MATCHLINE - REFER SHEET 17

OLD HAUTERE ROAD

OLD HAUTERE ROAD LINK

Lot 1 DP 27257
Parcel 3758084
9 Old Hautere Rd

Ngakaroro 3D3B
Parcel 4060982
22 Old Hautere Rd

Pt Lot 2 DP 4262
Parcel 4065642
10 Old Hautere Rd

TO LEVIN

TO WELLINGTON

NORTH ISLAND MAIN TRUNK RAILWAY

EXISTING STATE HIGHWAY 1

Lot 5 DP 15498
Parcel 3941397
1165 SH1, Otaki

Lot 6 DP 15498
Parcel 3815310

Lot 1 DP 15802
Parcel 3824308
1155 SH1, Otaki

Lot 7 DP 15498
Parcel 3973268
1153 SH1, Otaki

Lot 8 DP 15498
Parcel 4030068
1151 SH1, Otaki

Lot 9 DP 15498
Parcel 3907334
1149 SH1, Otaki

Lot 10 DP 15498
Parcel 3770390
1147 SH1, Otaki

Pt Lot 2 DP 4262
Parcel 4065642
1143 SH1, Otaki

ORIGINAL IN COLOUR

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Drg Check			Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 16 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0116

Rev.:

Document No. J:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\ENPP2O-DR-EN-0-0101-0142.DWG

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FCCL-EV-MPN-0003_CAQMP_Rev_C1

MATCHLINE - REFER SHEET 16

MATCHLINE - REFER SHEET 18

TO LEVIN

TO WELLINGTON

NORTH ISLAND MAIN TRUNK RAILWAY

EXISTING STATE HIGHWAY 1

Lot 1 DP 14044
Parcel 3809638
1115 SH1, Otaki

Lot 1 DP 74580
Parcel 3820198
1083 SH1, Otaki

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Scale (A3) 1:1000

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Dsg Verifier			
Drg Check			Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 17 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0117

Rev.

ORIGINAL SIZE A3 : DO NOT SCALE

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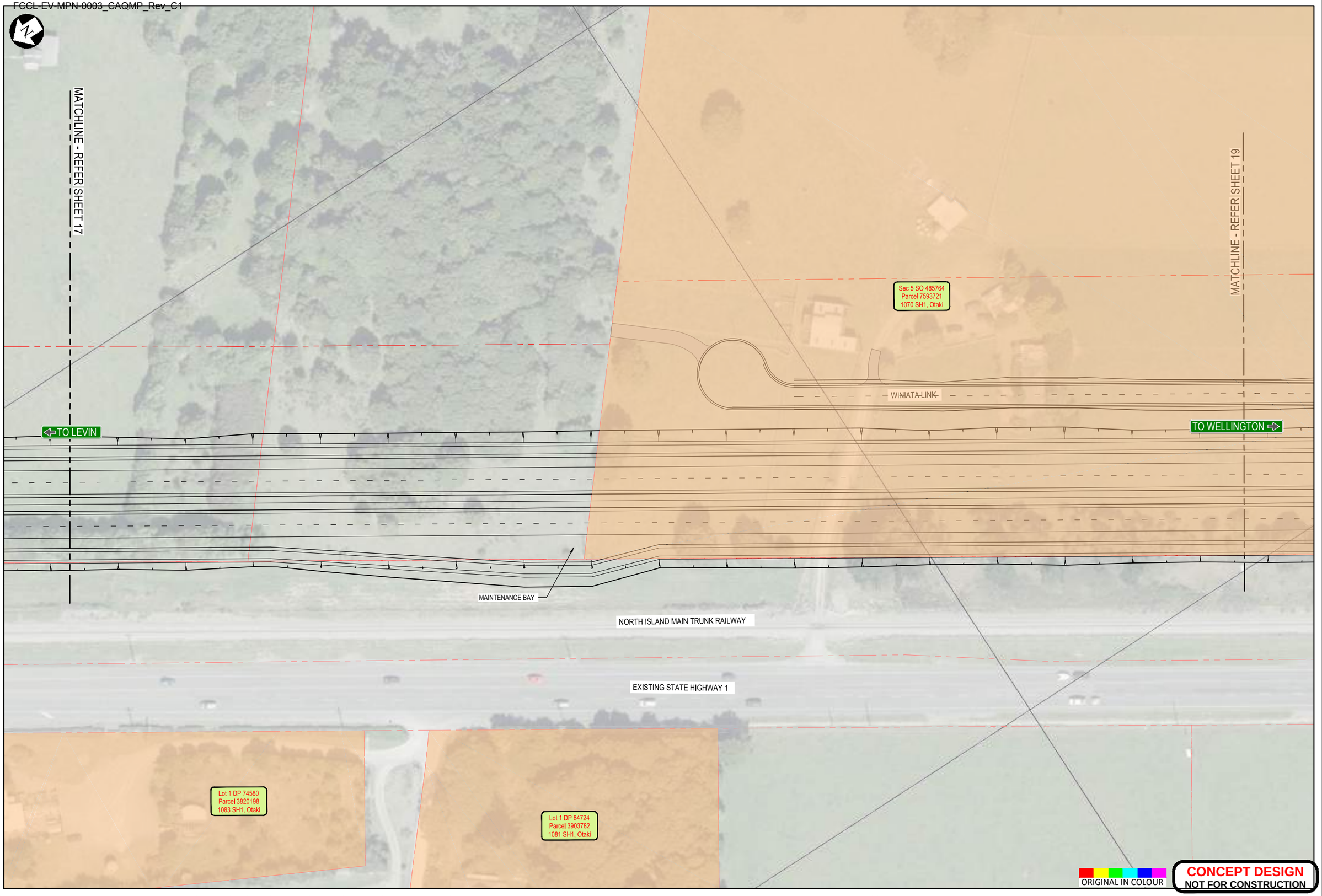

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Drg Check			Date
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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 18 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0118

Rev.:

ORIGINAL SIZE A3 : DO NOT SCALE

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MATCHLINE - REFER SHEET 18

MATCHLINE - REFER SHEET 20

Sec 5 SO 485764
Parcel 7593721
1070 SH1, Otaki

WINIATA LINK

TO LEVIN

TO WELLINGTON

NORTH ISLAND MAIN TRUNK RAILWAY

EXISTING STATE HIGHWAY 1

ORIGINAL IN COLOUR

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Scale (A3) 1:1000

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Dsg Verifier			
Drg Check			Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 19 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0119

Rev.

Document No. J:\300D - DESIGN\DEVELOPMENT GENERAL\09 CAD\DRAWINGS\EN\PP2O-DR-EN-0-0101-0142.DWG

ORIGINAL SIZE A3 : DO NOT SCALE

IF IN DOUBT ASK

FCCL-EV-MPN-0003_CAQMP_Rev_C1

MATCHLINE - REFER SHEET 19

MATCHLINE - REFER SHEET 21

Pt Ngakaroro 3D1,6
Parcel 3900500
990 SH1, Otaki

WINATA LINK

FLOOD BUND

TO LEVIN

TO WELLINGTON

NORTH ISLAND MAIN TRUNK RAILWAY

EXISTING STATE HIGHWAY 1

TE WAKA ROAD

Lot 1 DP 82
Parcel 3929
9 Te Waka

ORIGINAL IN COLOUR

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Dsg Verifier			
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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 20 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0120

Rev.:

ORIGINAL SIZE A3 : DO NOT SCALE

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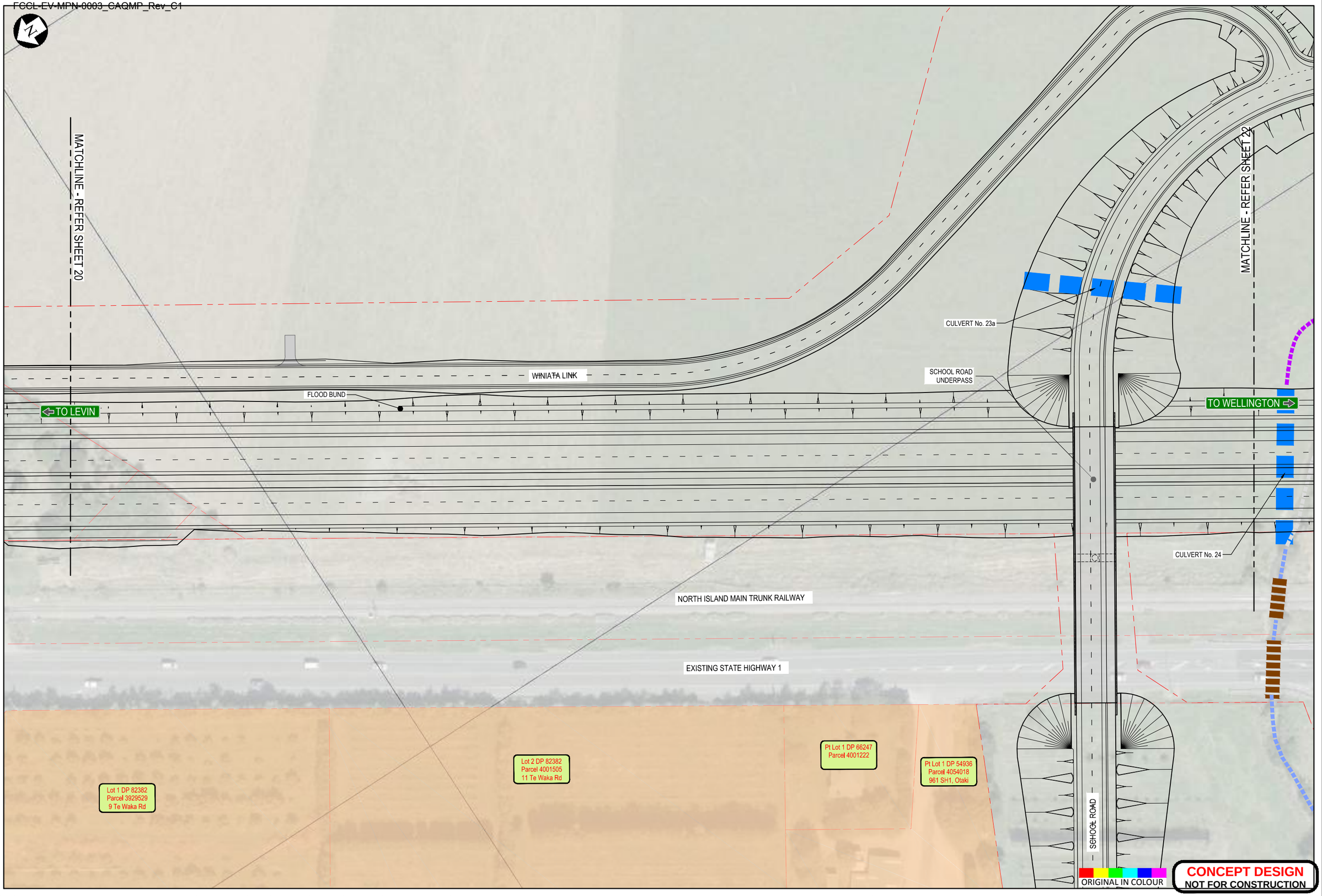

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Dsg Verifier			
Drg Check			Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 21 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0121

Rev.

ORIGINAL SIZE A3 : DO NOT SCALE

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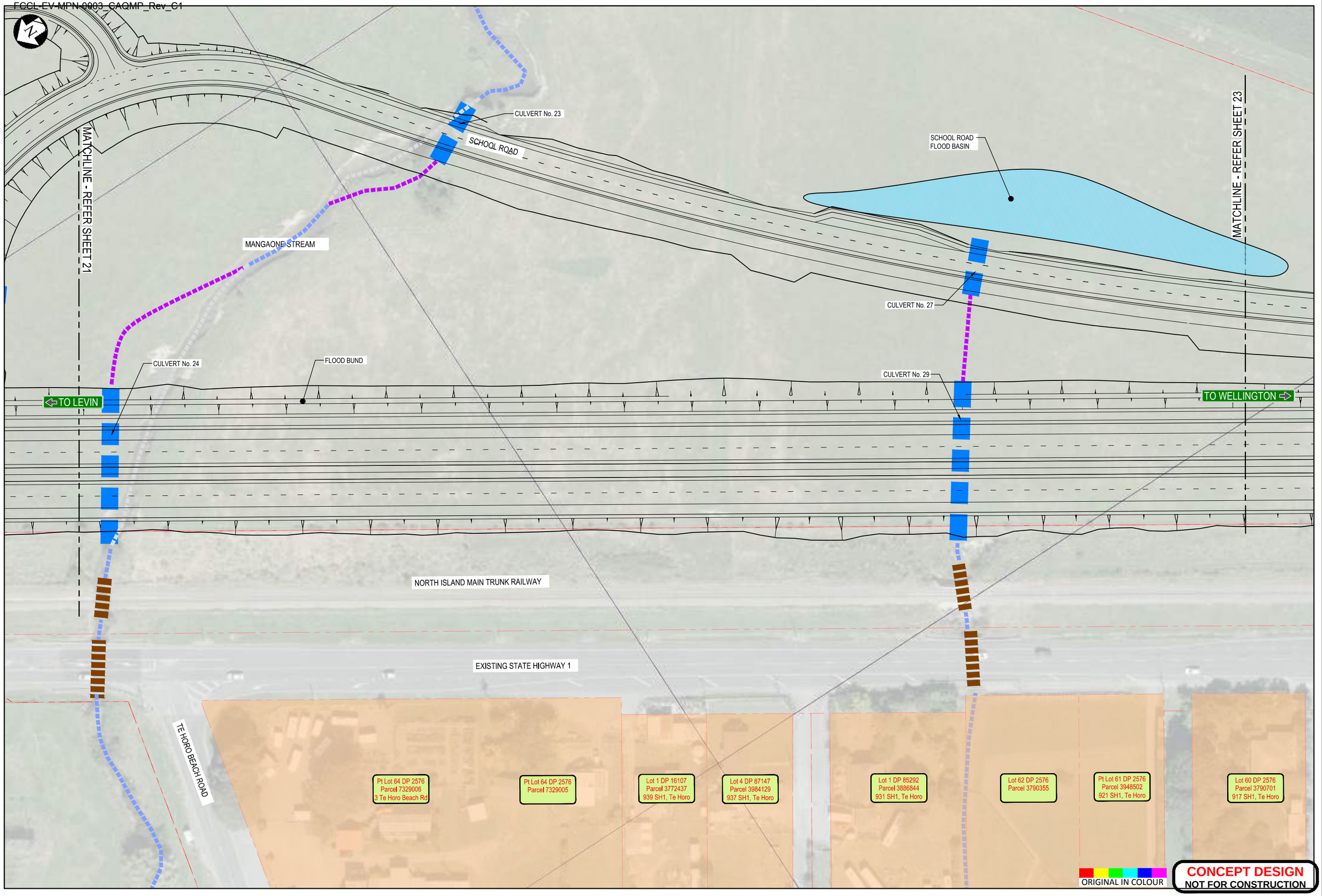

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Dsg Verifier			
Drg Check			Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 22 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0122

Rev.:

Document No. J:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\ENPP2O-DR-EN-0-0101-0142.DWG

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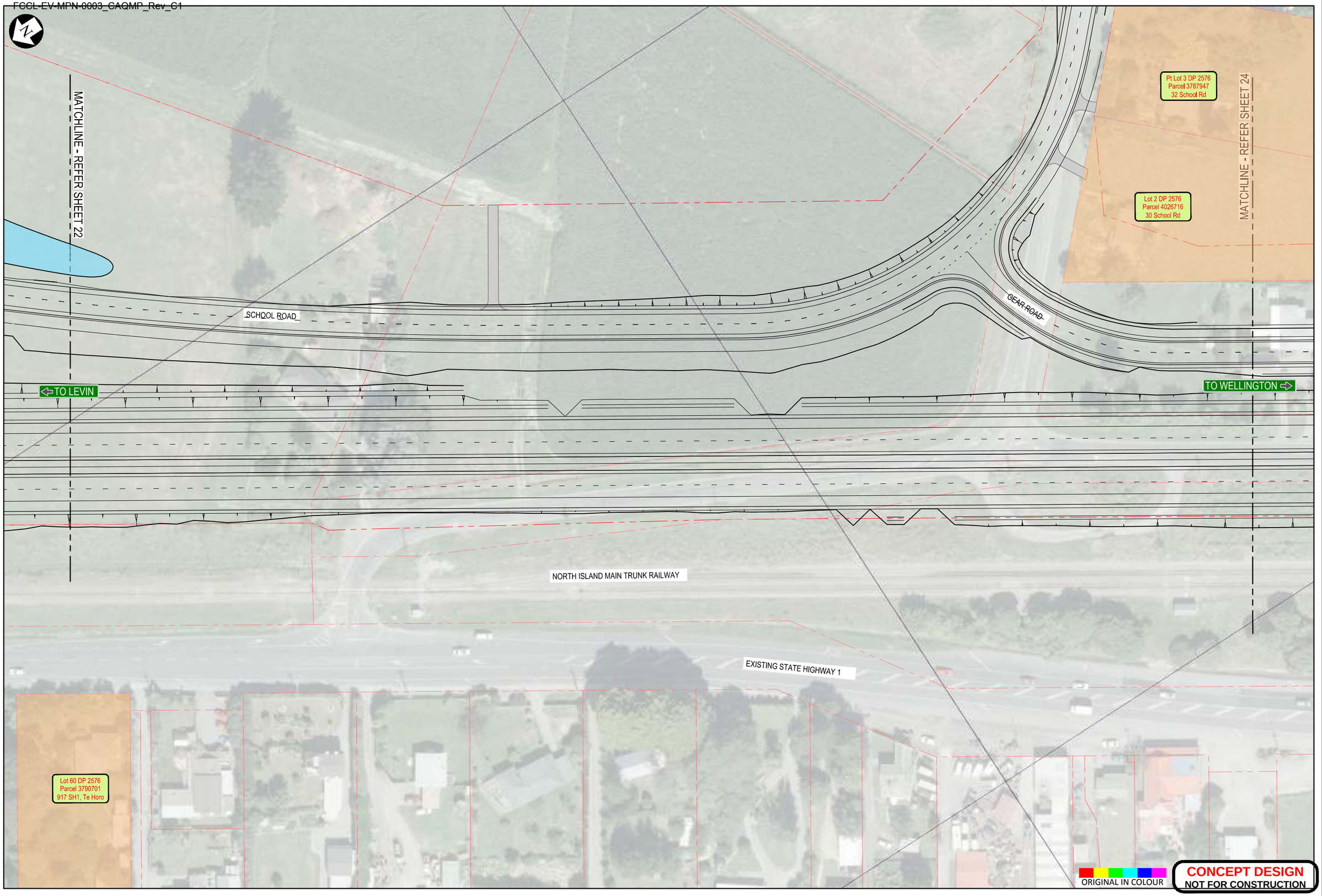

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Dsg Verifier				
Drg Check				Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 23 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0123

Rev.

Document No. J:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\EN\PP2O-DR-EN-0-0101-0142.DWG

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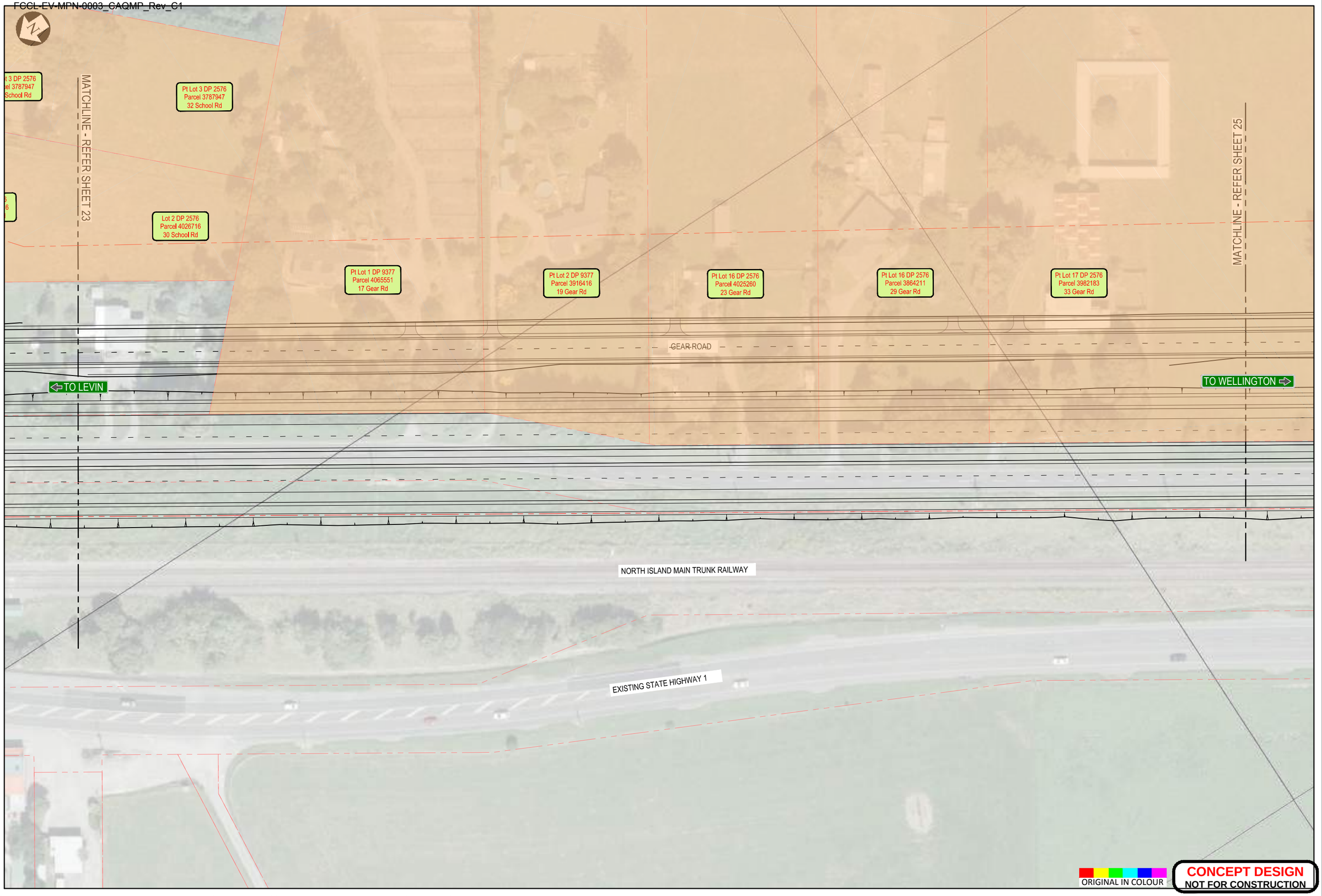

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 24 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0124

Rev.

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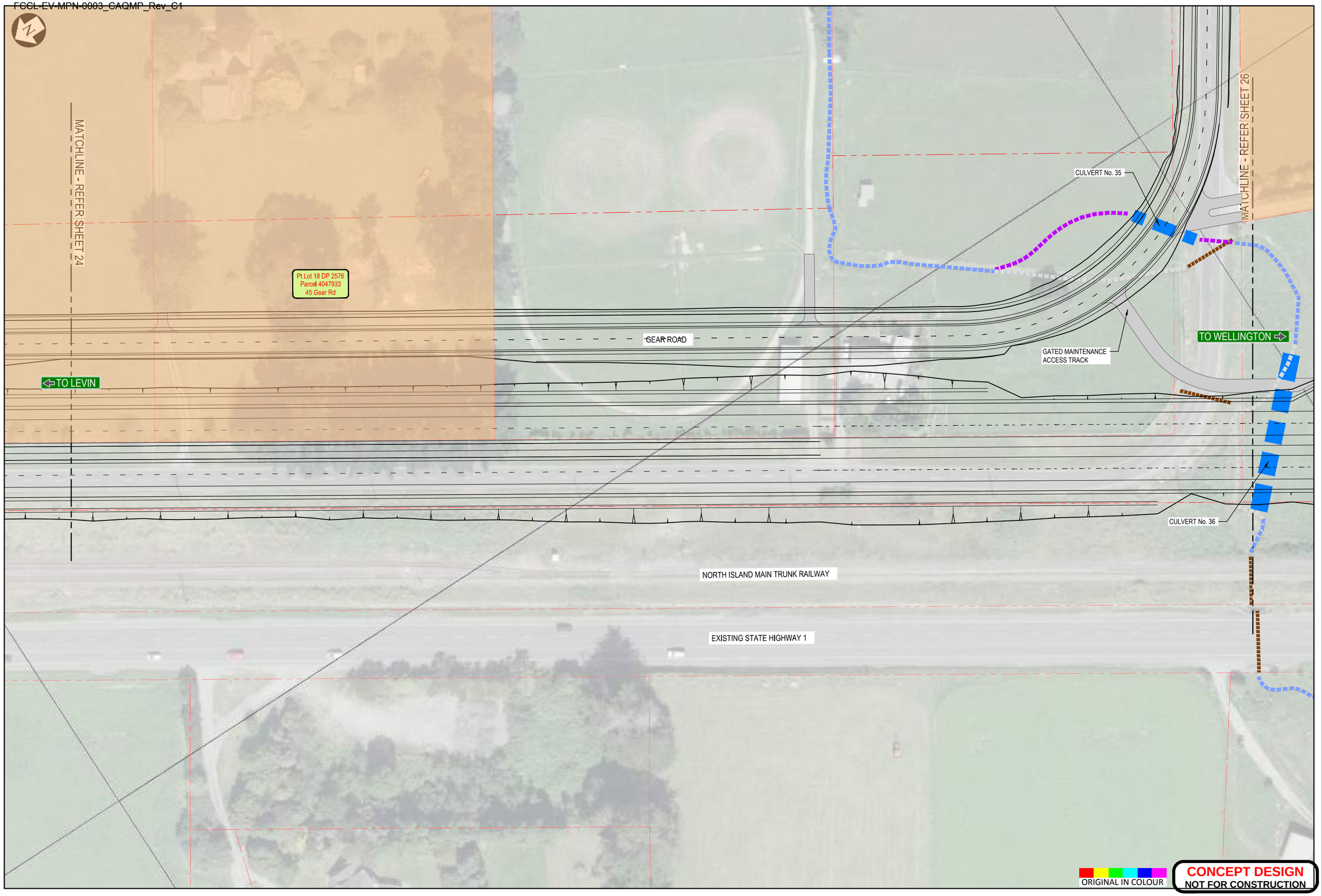

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 25 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0125

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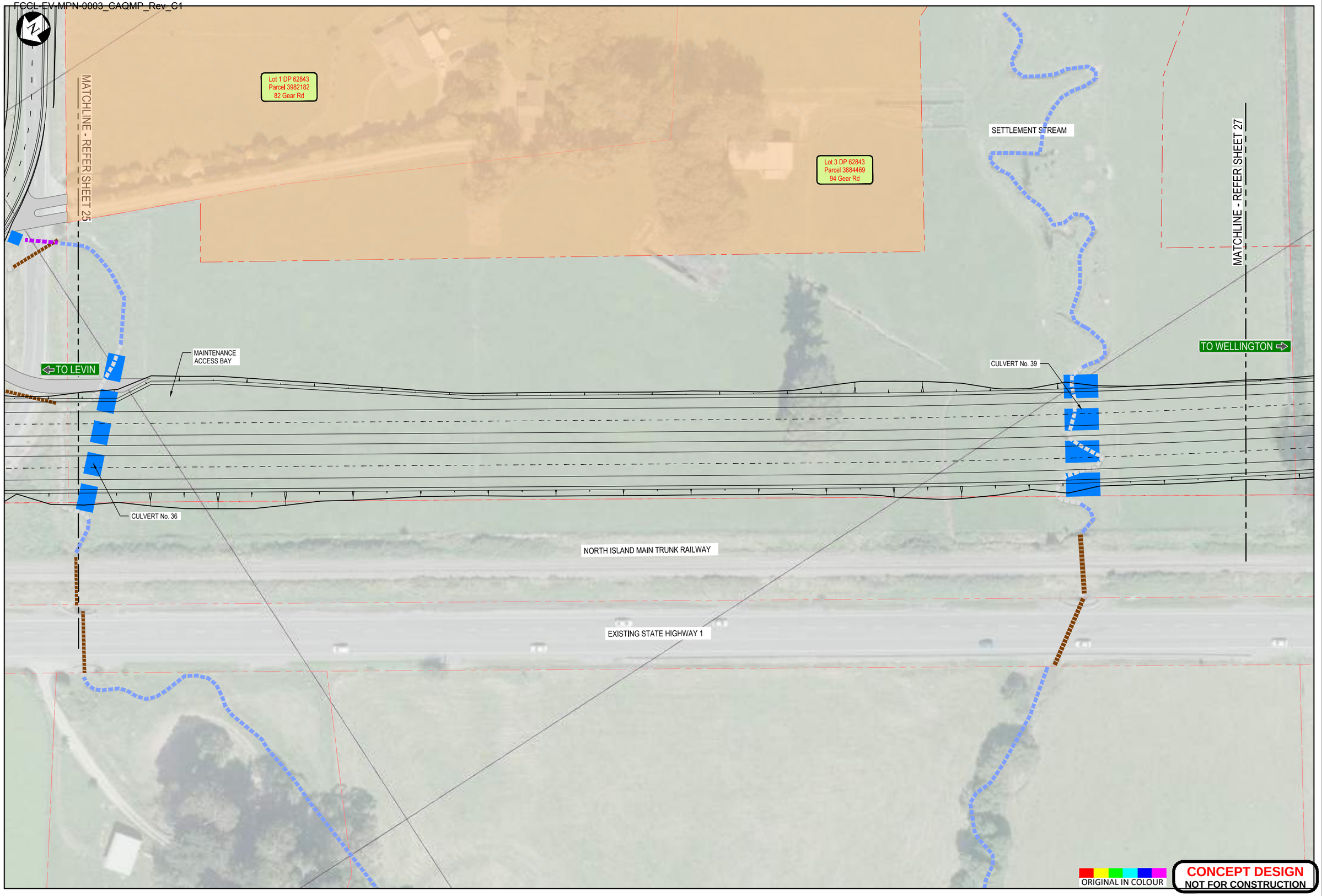

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 26 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0126

Rev.

ORIGINAL SIZE A3 : DO NOT SCALE

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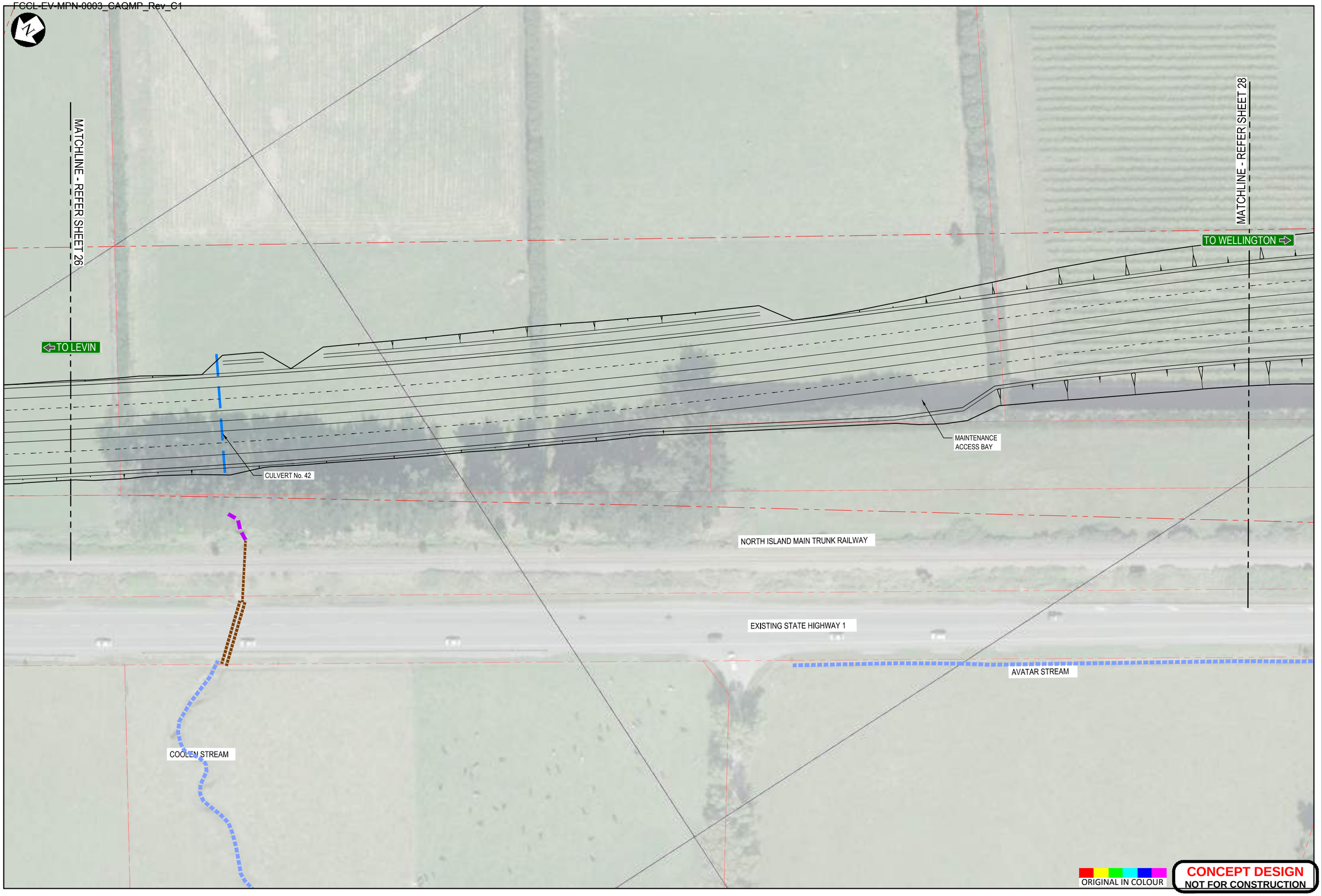

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 27 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0127

Rev.

Document No. J:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\EN\PP2O-DR-EN-0-0101-0142.DWG

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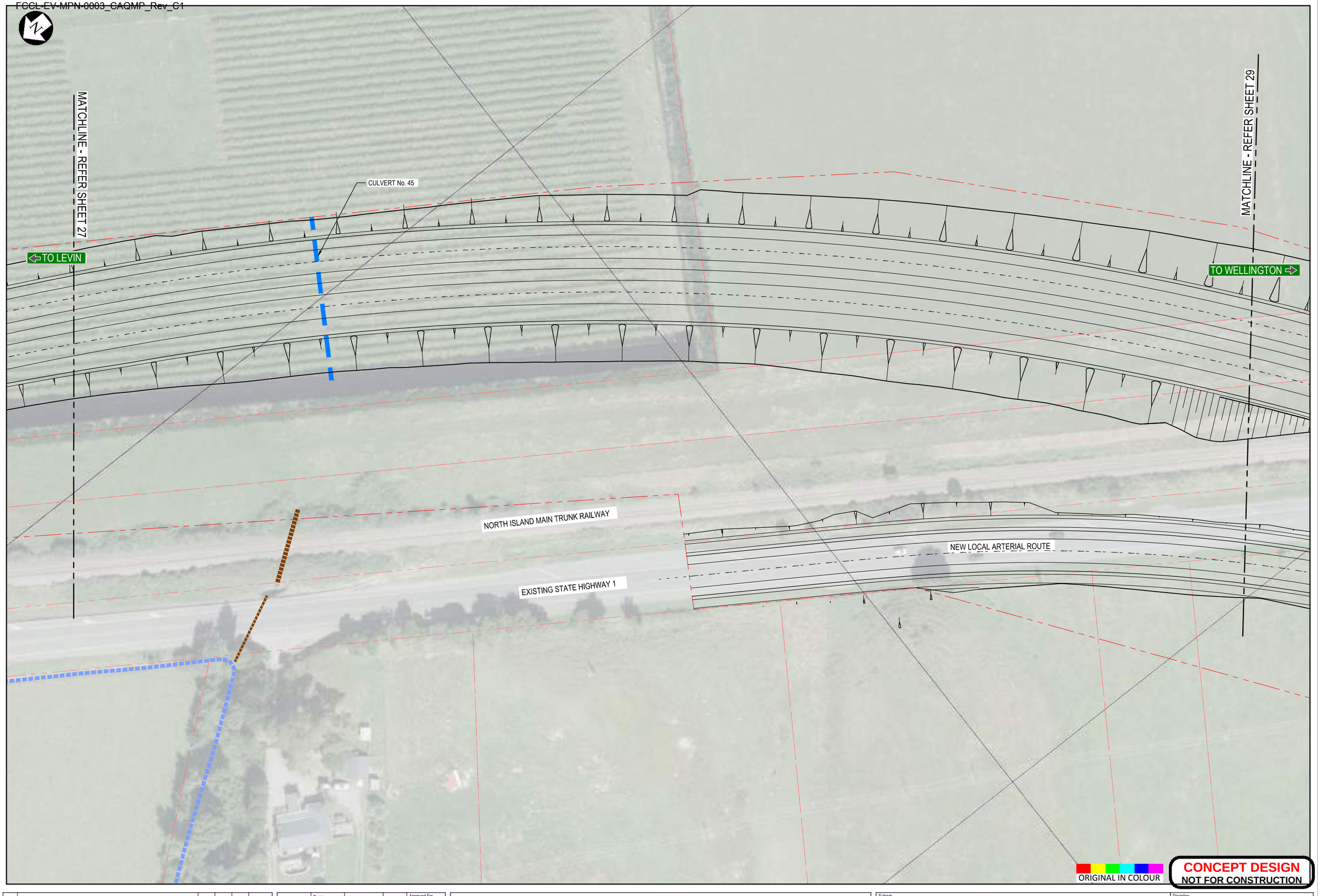

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 28 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0128

Rev.:

ORIGINAL SIZE A3 : DO NOT SCALE

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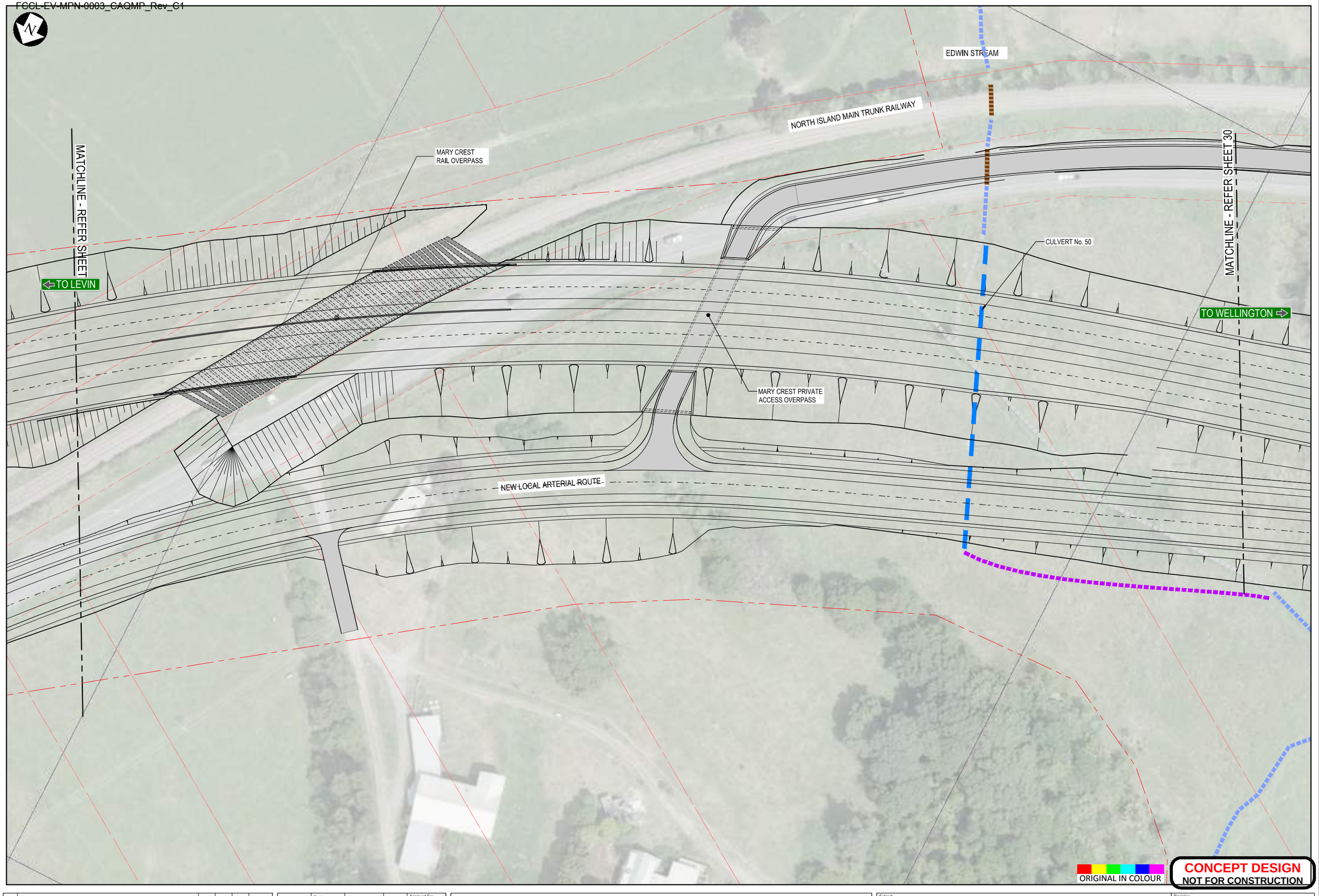

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 29 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0129

Rev.

ORIGINAL SIZE A3 : DO NOT SCALE

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JEWELL STREAM

MATCHLINE - REFER SHEET 29

NORTH ISLAND MAIN TRUNK RAILWAY

3m WIDTH OF EXISTING PAVEMENT RETAINED FOR PROPERTY ACCESS

EXISTING STATE HIGHWAY 1

MATCHLINE - REFER SHEET 31

CULVERT No 53

TO LEVIN

TO WELLINGTON

NEW LOCAL ARTERIAL ROUTE

VALENTINE BASIN

ORIGINAL IN COLOUR

CONCEPT DESIGN
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No.	Revision	By	Chk	Appd	Date

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Dsg Verifier			
Drg Check			Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 30 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0130

Rev.

ORIGINAL SIZE A3 : DO NOT SCALE

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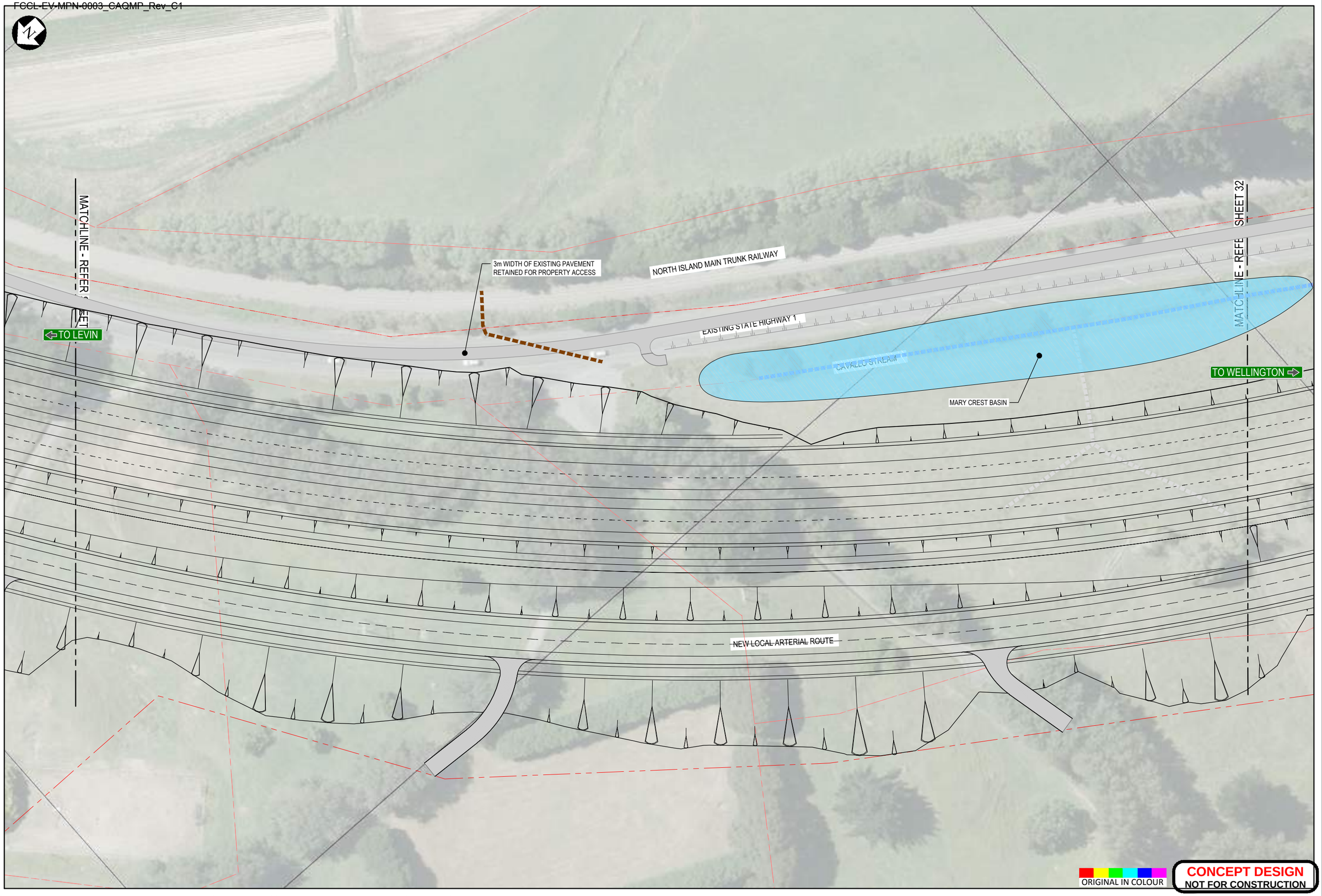

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Scale (A3) 1:1000

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Drg Check			Date

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 31 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0131

Rev.

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Scale (A3) 1:1000

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Drawn			
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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 32 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0132

Rev.

ORIGINAL SIZE A3 : DO NOT SCALE

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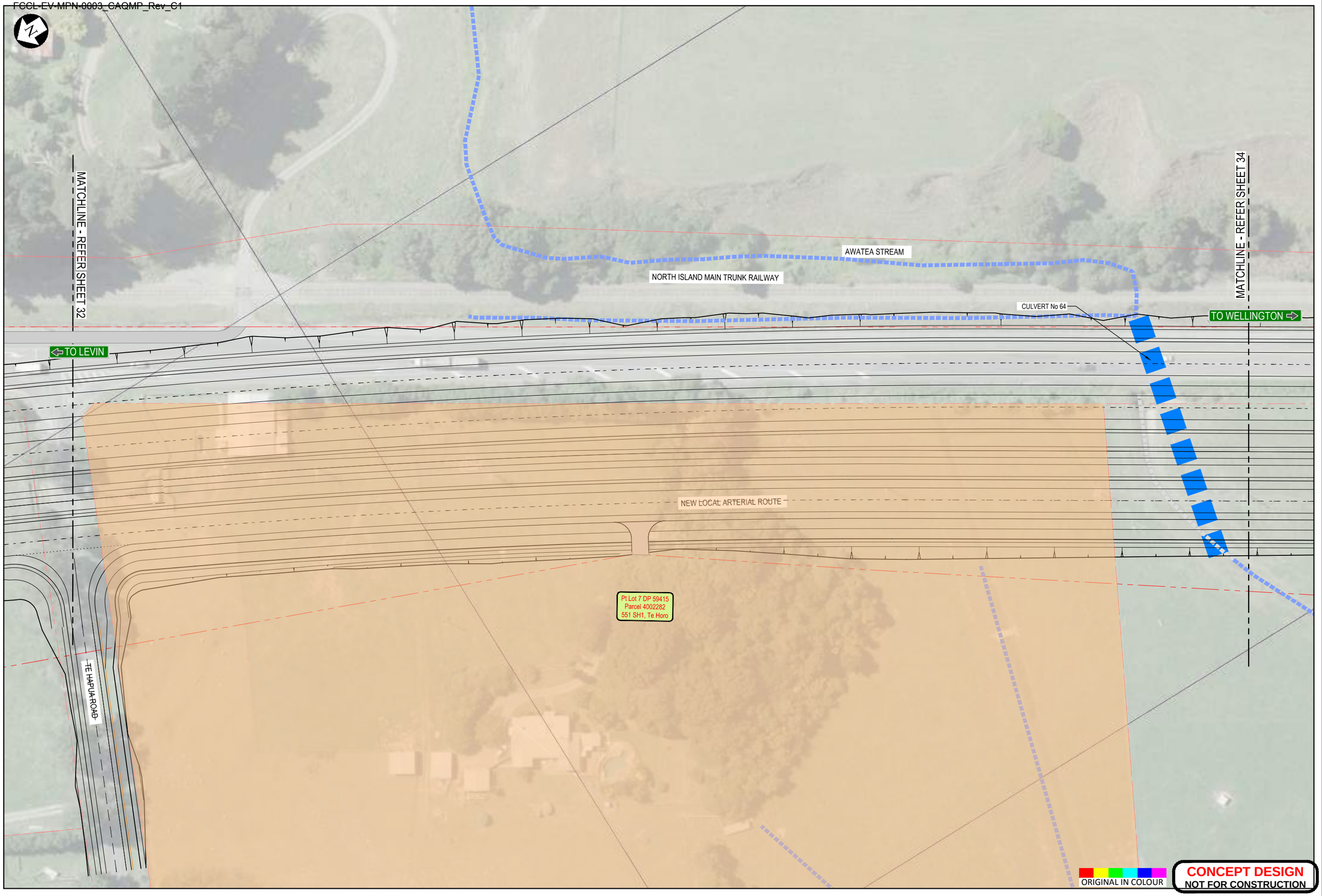

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 33 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0133

Rev.

ORIGINAL SIZE A3 : DO NOT SCALE

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KUMOTOTO STREAM

NORTH ISLAND MAIN TRUNK RAILWAY

MATCHLINE - REFER SHEET 33

MATCHLINE - REFER SHEET 35

TO LEVIN

TO WELLINGTON

CULVERT No 66

CULVERT No 64

NEW LOCAL ARTERIAL ROUTE

ORIGINAL IN COLOUR

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 34 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0134

Rev.:

ORIGINAL SIZE A3 : DO NOT SCALE

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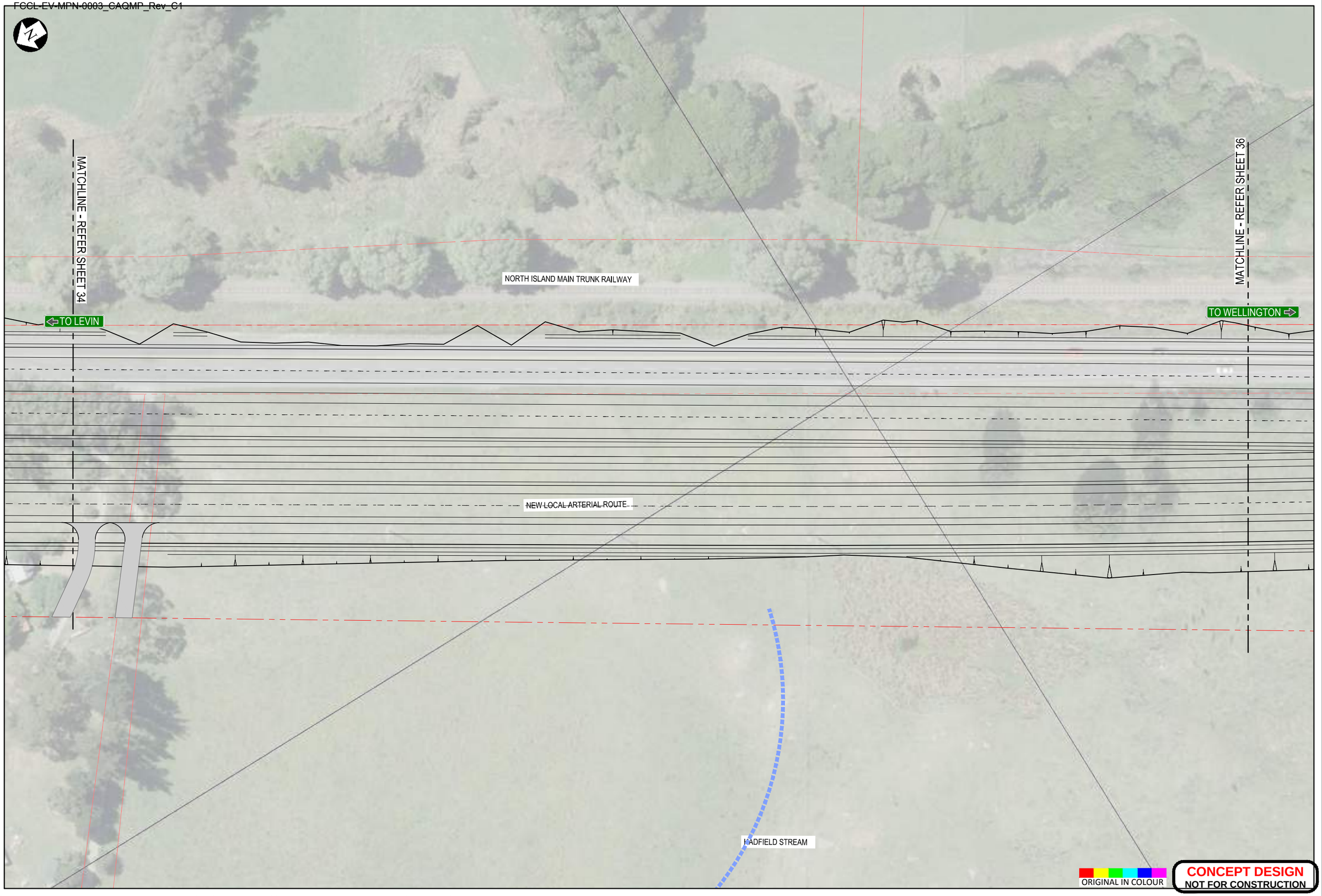

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 35 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0135

Rev.:

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MATCHLINE - REFER SHEET 36

MATCHLINE - REFER SHEET 35

TO LEVIN

NORTH ISLAND MAIN TRUNK RAILWAY

TO WELLINGTON

EXISTING STATE HIGHWAY 1

TE KOWHAI ROAD

ORIGINAL IN COLOUR

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS SHEET 36 OF 36

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0136

Rev.

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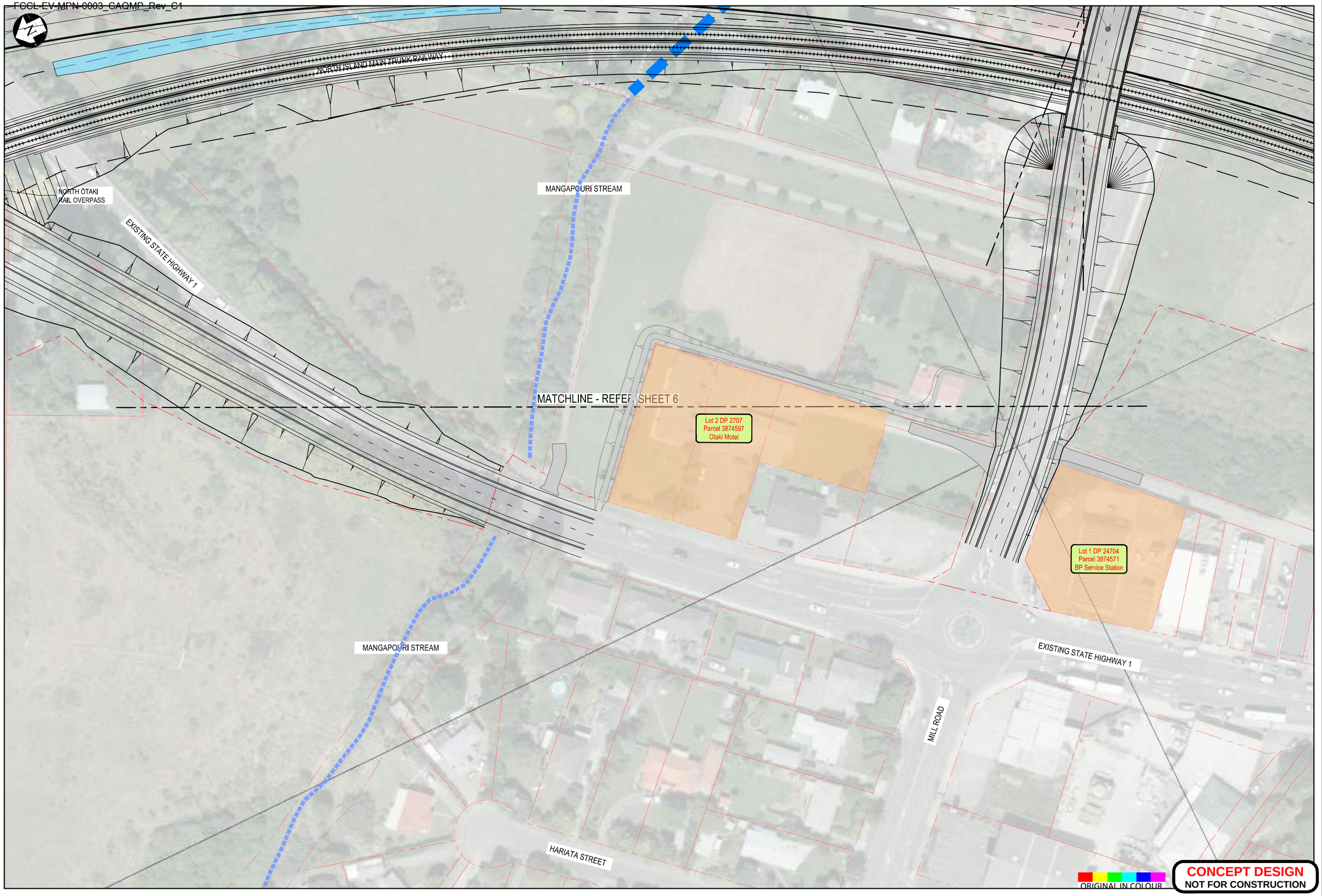

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS ADDITIONAL SHEET 6A

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0137

Rev.:

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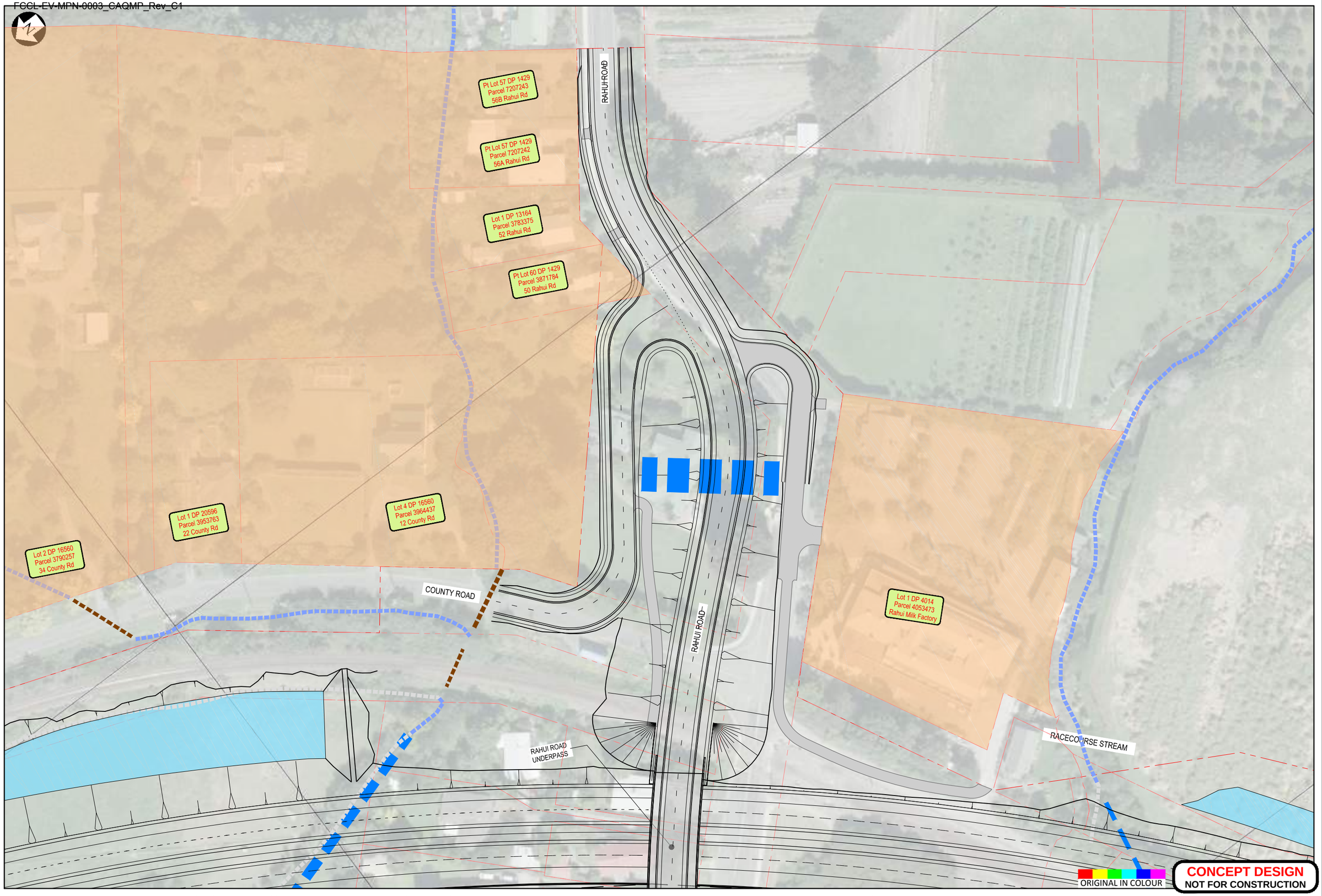

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS ADDITIONAL SHEET 7A

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0138

Rev.:

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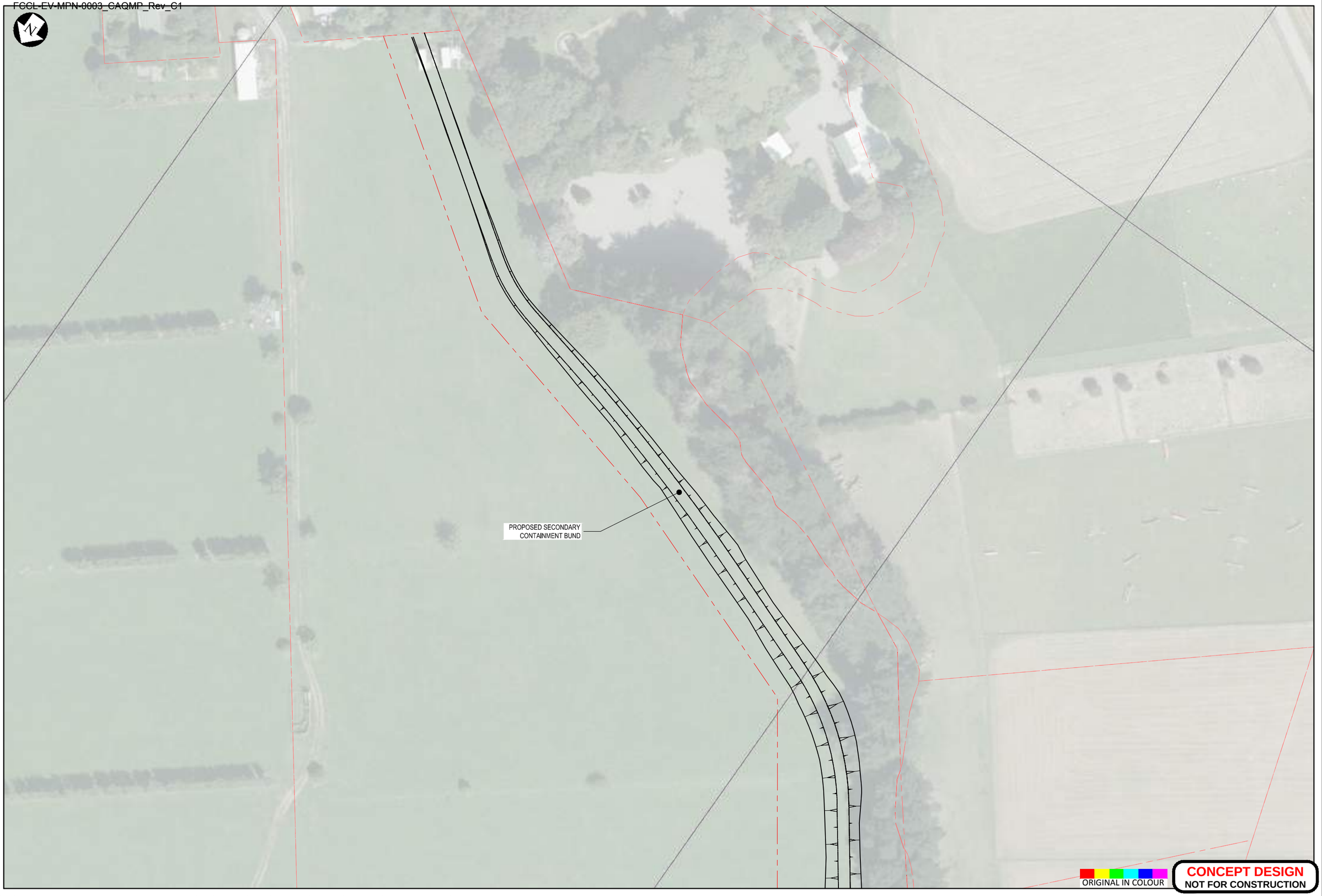

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS ADDITIONAL SHEET 8A

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0139

Rev.:

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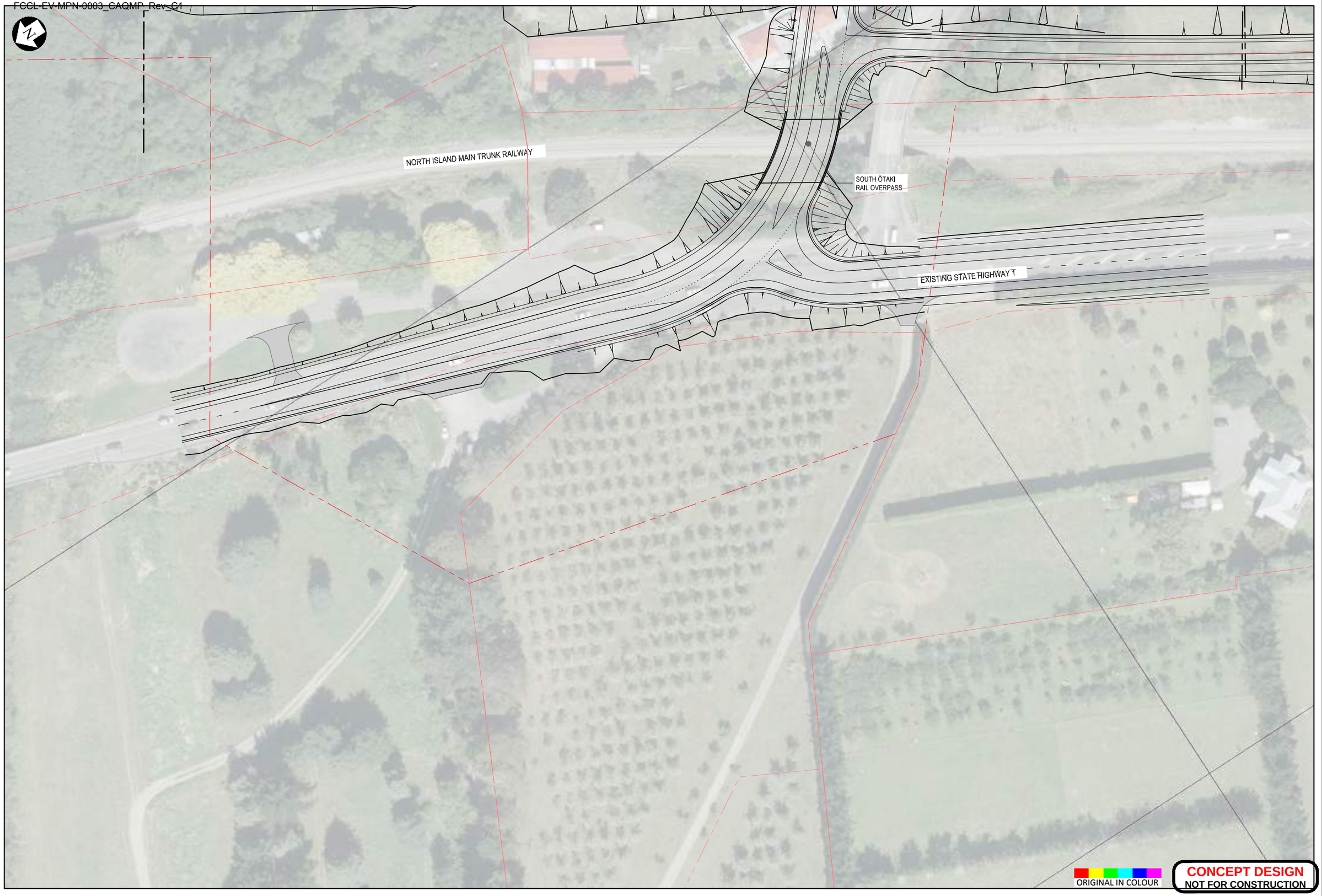

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS ADDITIONAL SHEET 12A

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0140

Rev.:

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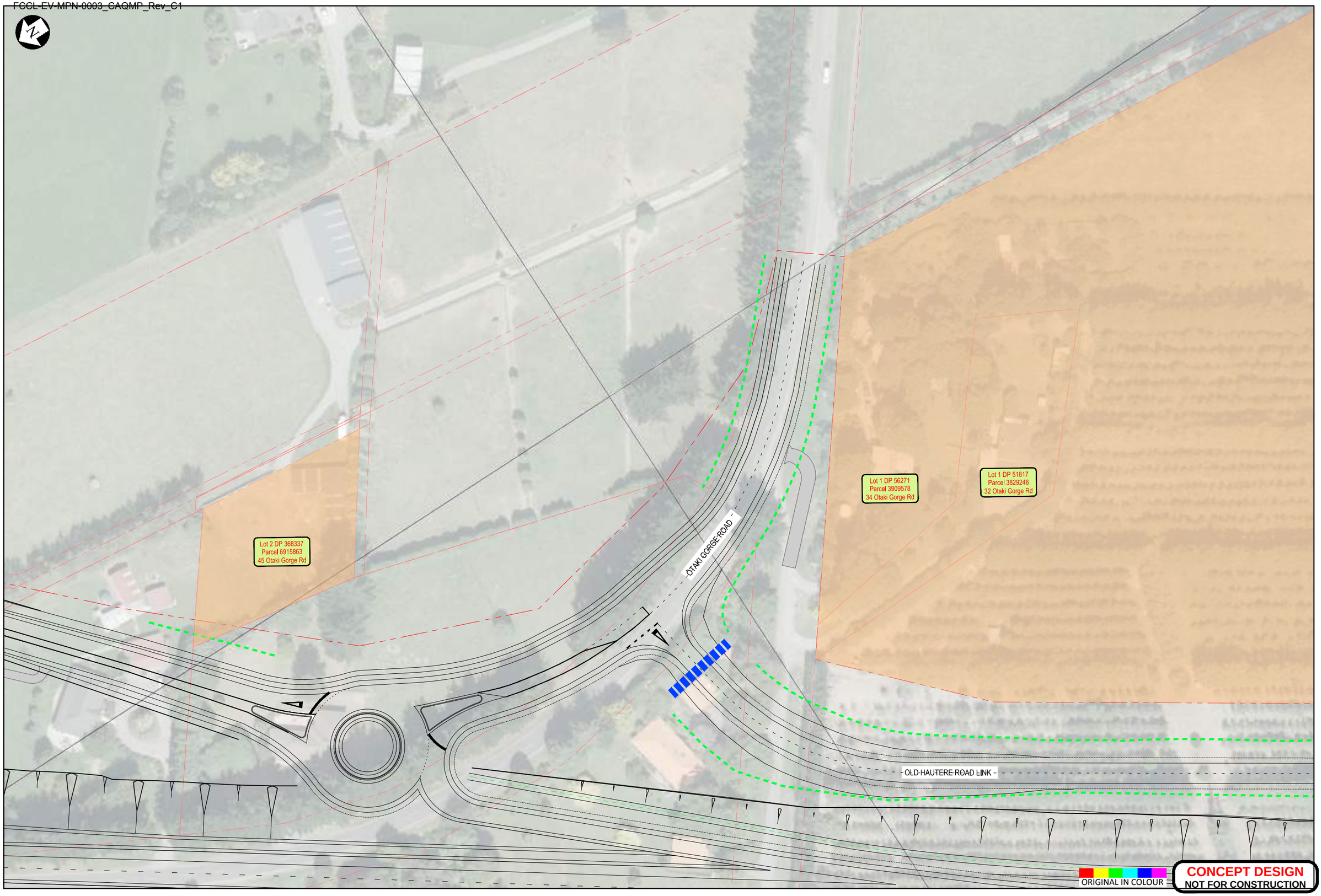

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS ADDITIONAL SHEET 13A

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0141

Rev.:

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EXISTING STATE HIGHWAY 1

Lot 2 DP 82382
Parcel 4001505
11 Te Waka Rd

Pt Lot 1 DP 66247
Parcel 4001222

Pt Lot 1 DP 54936
Parcel 4054018
961 SH1, Otaki

SCHOOL ROAD

TE HORO BEACH ROAD

Pt Lot 64 DP 2576
Parcel 7329006
3 Te Horo Beach Rd

TE HORO BEACH ROAD

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NZ TRANSPORT AGENCY WAKA KOTAHI

PEKA PEKA TO ŌTAKI EXPRESSWAY

Fletcher HIGGINS Beca Tonkin+Taylor

Subject: AIR QUALITY

Title: PLAN OF POTENTIALLY AFFECTED RECIEVERS ADDITIONAL SHEET 21A

Discipline: ENVIRONMENTAL

Drawing No.: PP2O-DR-EN-0-0142

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