



Argent Lane Extension

Alternatives Assessment

30 September 2020

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
1	20 Nov 19	Sven Exeter	Devon Rollo		Draft for Internal Review
2	30 Jul 20	Devon Rollo			Draft for Internal Review
3	6 Aug 20	Devon Rollo	Aimee Barwick		Draft for Internal Review
4	7 Aug 20	Devon Rollo	Sven Exeter	Aimee Barwick	Draft Issued to AT
5	23 Sep 2020	Anna Guise	Devon Rollo	Blair Firmston	Update following comments from BG and AT
6	29 Sep 2020	Anna Guise	Devon Rollo	Devon Rollo	Update following comments from BG

Document reference: 402828-MMD-XX-XX-RP-PL-002

Information class: Standard

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Executive summary

The Argent Lane Extension project proposed by Auckland Transport (AT) is identified as the southern section of a direct arterial road link between Old Pine Valley Road in the Wainui area and the Silverdale Interchange. The purpose of the project is to provide an arterial road connection from Old Pine Valley Road through to Dairy Flat Highway and the Silverdale Interchange.

Auckland Transport's objective is to secure the road corridor to enable the interim and future construction, operation and maintenance of the arterial road including cycle and pedestrian pathways. In doing this, AT also considers that the wider objectives will be achieved.

The objectives of the project are to:

1. Provide a section of arterial road between Argent Lane (Milldale) and Pine Valley Road (Dairy Flat Highway), which is direct and future proofed for planned urban growth.
2. Provide safer and more resilient road connections to/from the existing and proposed road network.
3. Enable connections and accessibility to social and economic opportunities within Milldale, Silverdale and future development within Silverdale West Dairy Flat Structure Plan.

This southern extension of the arterial road will tie into the northern arterial works (known as Argent Lane) which are currently underway by Fulton Hogan Land Development (FHLD). Argent Lane is the key arterial connection to support the Milldale residential development which is also currently under construction for up to 4,500 households. The northern section which FHLD is responsible for connects Wainui Road to the newly consented roundabout at Old Pine Valley Road through the Milldale development and will tie into AT's proposed southern extension.

The full alignment (both the northern section (FHLD) and southern section (AT)) is part of the strategic future network identified in the Wainui Precinct Plan I544 (Figure 2) and by the Supporting Growth Alliance (SGA) for a connected arterial through the residential zoned area of Wainui (in the north of Auckland), with the alignment identified between Wainui Road in the north to Dairy Flat Highway in the south.

This alternatives assessment has been prepared by Mott MacDonald in accordance with Section 171(1)(b) (Resource Management Act 1991) on behalf of AT, and considers the Argent Lane Extension from Old Pine Valley Road through to Pine Valley Road, and the upgrades to Pine Valley Road and Dairy Flat Highway. It demonstrates AT's consideration and evaluation of the six alignment options and provides evidence of how the final alignment was selected.

A Multi Criteria Analysis (MCA) methodology was developed to assess options, based on a rationalised combination of criteria from the SGA / Supporting Growth Programme (SGP) and similar project examples, with some additional bespoke criteria to align with best practice approaches. A total of 33 criteria were scored. Through this process, alongside consultation with stakeholders and landowners, the alignment in Option 2 was chosen to be progressed for the project, as the preferred option.

Option 2 meets the three overarching project objectives set by AT and provides the most efficient and safest corridor between the intersection and the interchange. It aligns with the indicative alignment for the Argent Lane Extension which was identified in the Wainui Precinct Plan I544 (Figure 2). Option 2 will initially be constructed as a two-lane collector road, with the ability for the inclusion of two additional lanes at a later stage, when future demand requires it.

1 Introduction

Milldale in Wainui is identified as a key growth area by Auckland Council (AC), AT and Watercare Services Limited (WSL) to accommodate housing supply in an integrated manner. The investment in several infrastructure projects, including transport related infrastructure, is required to support circa 4,500 dwellings in the Milldale greenfield area zoned as a mix of residential and business zones, under the Auckland Unitary Plan (AUP) and up to 9,000 dwellings in the wider future urban area. As part of the Milldale Development being developed by FHLD, investment in transport infrastructure is required to unlock residential development through a number of transport projects namely:

- Argent Lane Extension “Project 1” which includes transport route upgrades at Old Pine Valley Road, Pine Valley Road and Dairy Flat Highway;
- Silverdale Interchange Northbound Off-ramp Slip Lane “Project 1A”, which involves the widening of the north bound off-ramp to provide additional land for left turn only vehicles and for which construction is currently underway; and
- Highgate Bridge “Project 6” which is an overbridge above state highway 1 (SH1) connecting Milldale Development to Silverdale (consents lodged with Auckland Council).

The location of these projects is shown in Figure 1.

Figure 1: Key Transport Projects



Source: Wood and Partners & Mott MacDonald.

1.1 Purpose of Report & Project Overview

This alternatives assessment considers the Argent Lane Extension from Old Pine Valley Road through to Pine Valley Road, and the upgrades to Pine Valley Road and Dairy Flat Highway (i.e. between points 1 and 1A in Figure 1). A new approximately 30m wide transport corridor is proposed for the new and upgraded link between Old Pine Valley Road and Dairy Flat Highway, which will initially be constructed as a two-lane collector road, with the ability for the inclusion of two additional lanes at a later stage, when future demand requires it. The development of the new link will unlock the development of up to 4,500 houses within the Milldale development and support future urban growth of up to an estimated 9,000 dwellings in the wider area.

FHLD is responsible for undertaking the consenting and construction of the Argent Lane (northern section) within the land controlled by FHLD through the Milldale development and from Weiti Bridge to Old Pine Valley Road (see Figure 3). This does not form part of this alternatives assessment; however, it is inherently linked as it forms part of the overall road alignment and the wider transport network required.

AT is responsible for the southern section of the arterial known as the Argent Lane Extension project. AT is responsible for obtaining approvals as the requiring authority for the provision of a 30m arterial corridor which enables a two-lane collector road with off-carriageway cycle and pedestrian pathways, with the capability to upgrade in the future to a four-lane arterial road. The project also includes the upgrade of Dairy Flat Highway to connect to the Silverdale Interchange with provision for signalisation of the intersection at Pine Valley Road and Dairy Flat Highway to provide for an efficient intersection which will taper back into two lanes along Dairy Flat Highway (refer to cross section shown on drawing in Appendix A).

1.1.1 Project Objectives

A long list of objectives (six) were initially set for the project (February 2019) (refer to Appendix C Multi Criteria Analysis Scoring Sheet) which were consolidated later (July 2019) by AT to three overarching objectives:

1. Provide a section of arterial road between Argent Lane (Milldale) and Pine Valley Road (Dairy Flat), which is direct and future proofed for planned urban growth.
2. Provide safer and more resilient road connections to/from the existing and proposed road network.
3. Enable connections and accessibility to social and economic opportunities within Milldale, Silverdale and future development within Silverdale West Dairy Flat Structure Plan.

1.2 Wainui Precinct Plan

The Wainui Precinct I544 (Figure 2) is detailed in the AUP and is described below:

“The Wainui Precinct is located to the west of Millwater, Silverdale, Orewa and the Northern Motorway. The precinct includes the Wainui East (Argent Lane) Special Housing Area that was established by Order in Council dated January 2016, together with the surrounding land that has been purchased since the Special Housing Area was established. The single ownership of all of the land within the precinct provides logical and defensible boundaries based on the location of roads and physical constraints and also enables the integrated development of the entire area...”

The key considerations to be addressed through the Wainui Precinct are the servicing of the development, including water, wastewater and integration with the wider transport network, and details on how servicing will be staged and funded and provided in a timely manner.”

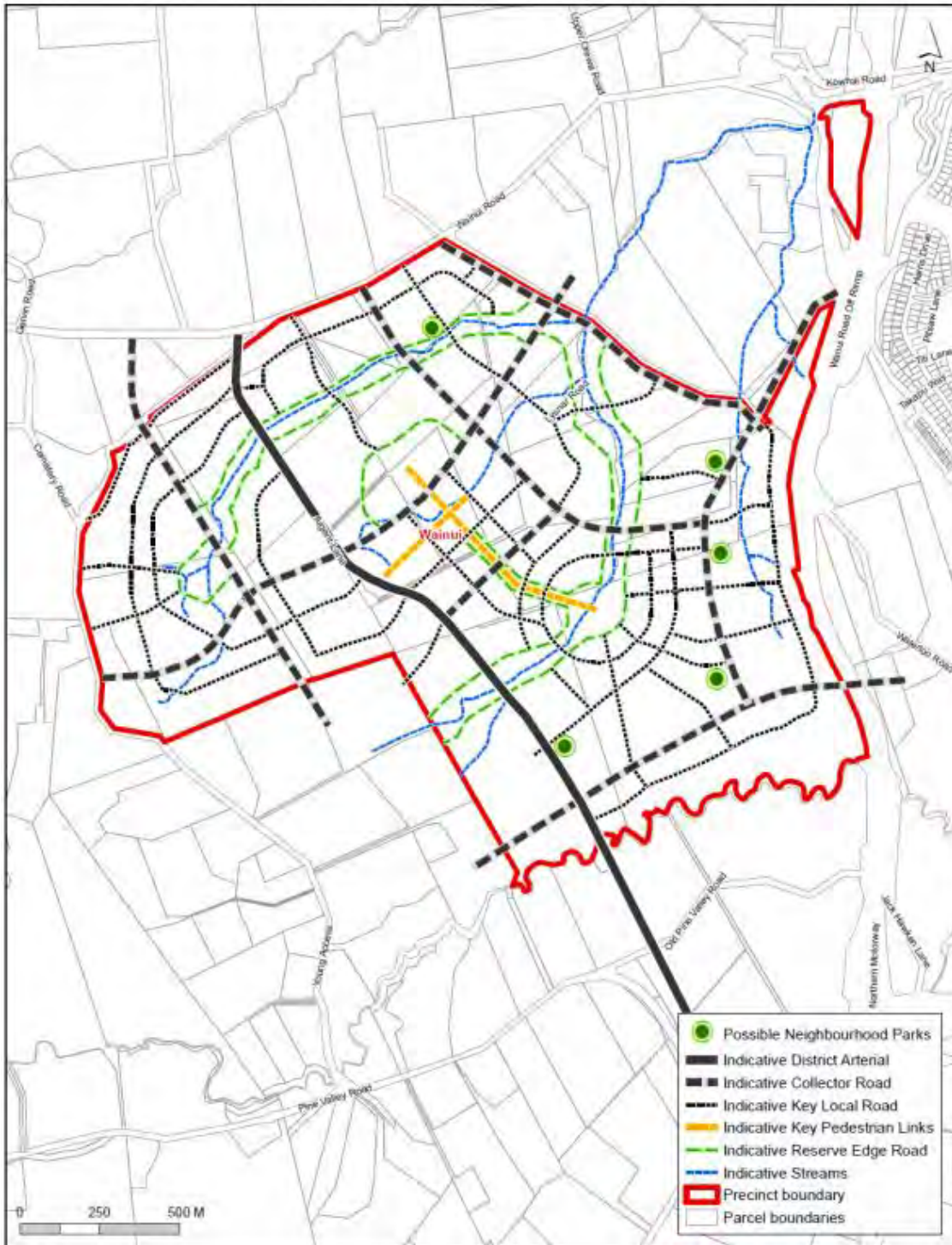
The key overarching objective of Wainui Precinct is provided below:

I544.2. Objectives

(1) Subdivision and development occurs in a manner which reflects the coordination and delivery of open space and infrastructure including transport, wastewater, water and stormwater services.

As per Figure 2 below, the indicative alignment for the Argent Lane Extension has been considered in the Wainui Precinct I544:

Figure 2: I544.10.1 Wainui: Precinct Plan 1



Source: AUP

1.3 Milldale Integrated Transport Assessment

The Milldale development, in accordance with the Wainui Precinct Plan 1 shown in Figure 2, has been designed with the extension of Argent Lane as a spine through the development from

Wainui Road in the north to Dairy Flat Highway in the south. This project seeks to deliver the southern portion of the direct link enabled by Argent Lane Extension from the Milldale Development between Old Pine Valley Road and Dairy Flat Highway. The Milldale Integrated Transport Assessment (ITA) (01/10/2019) has been prepared by Stantec to assess the implications on the wider transport network as a result of the buildout of the Milldale development and recommend mitigation measures. The ITA incorporates into the assessment future connectivity and linkages within the wider road network, including proposals from the SGA's proposed road network, which indicates a need for improved north-south connection between Albany and Silverdale, via upgrades to Dairy Flat Highway. The ITA recommends measures to mitigate the effects of the proposed future movements associated with the Milldale development on the transport network, including identifying the need to upgrade the connection from Milldale to Dairy Flat Highway, the upgrade of the Dairy Flat Highway and Pine Valley Road intersection, and the upgrade of Dairy Flat Highway to the Silverdale interchange.

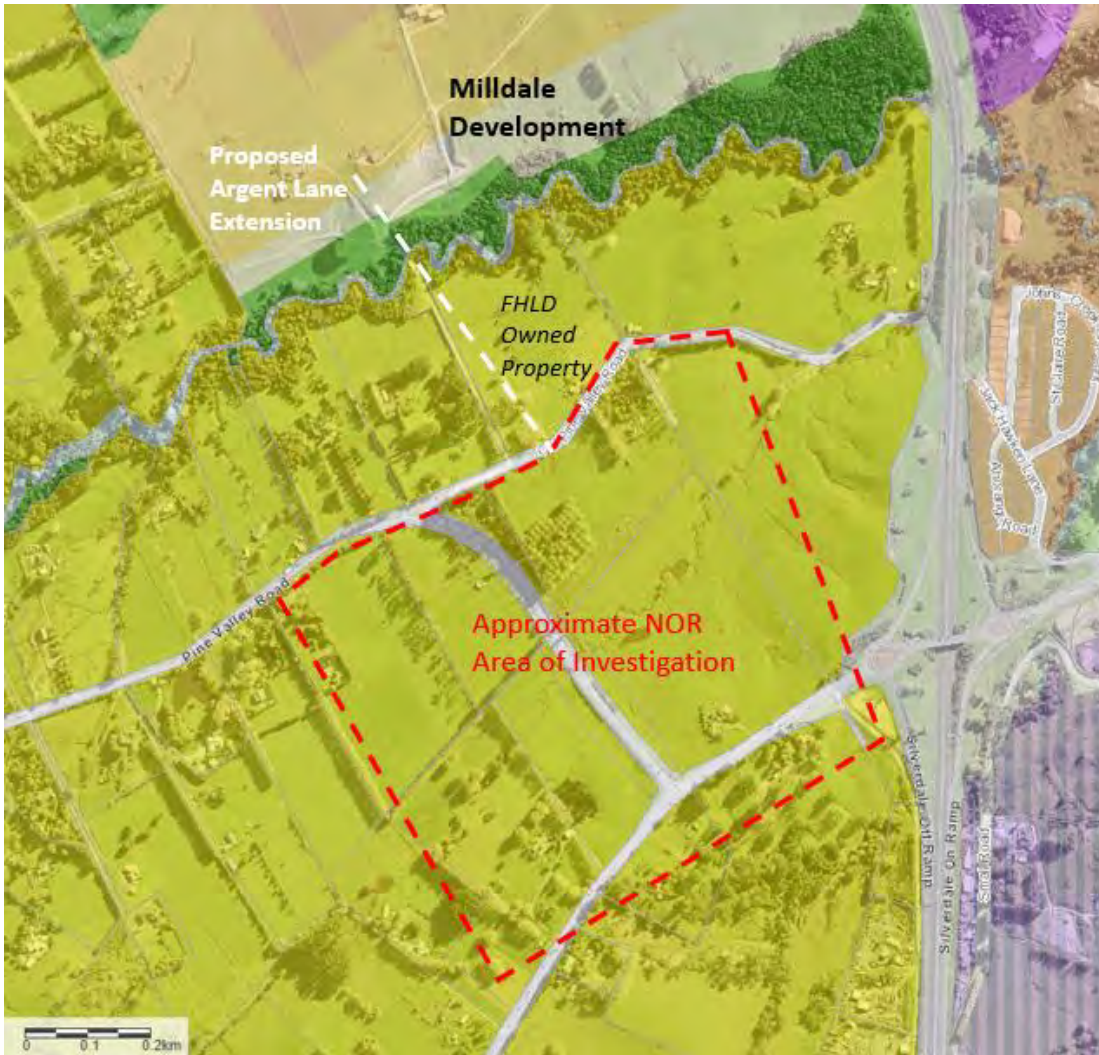
The justification for the direct link from Milldale to the Silverdale Interchange via the Argent Lane Extension proposal includes the upgrade of the Dairy Flat Highway and Pine Valley Road intersection, and the upgrade of Dairy Flat Highway to the Silverdale Interchange, which is the subject of this alternatives assessment. The associated notices of requirement (NoR), rely on the ITA and its recommended mitigations as determining the strategic need for the project. Where further evidence is required to justify the proposed sites, routes, or methods of undertaking the work, it is considered in this report.

1.4 Purpose of Report & RMA Requirements

This project provides a direct link from Milldale to the Silverdale Motorway via the extension of Argent Lane to Pine Valley Road and Dairy Flat Highway intersection through land zoned Future Urban (refer to Figure 1). The notices of requirement (NoRs) and resource consent applications are the recommended Resource Management Act 1991 approval pathway for the project. The proposed NoRs for the road corridor alignment tie-in with the road alignment within the resource consent prepared by Wood and Partners on behalf of FHLD for the portion of Argent Lane from Weiti Bridge to Old Pine Valley Road, in order to provide for network integration and safety. As part of the project, widening of Dairy Flat Highway to provide for an additional eastbound lane to the Silverdale Interchange is also proposed and considered in this alternatives assessment. This alternatives assessment has been prepared to support the Argent Lane Extension NoRs and is a requirement under the Resource Management Act under Section 171(1)(b):

“... when considering a requirement and any submissions received, a territorial authority must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard ... whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work...”

Figure 3: Argent Lane Extension NOR Project Area for Old Pine Valley Road to Dairy Flat Highway

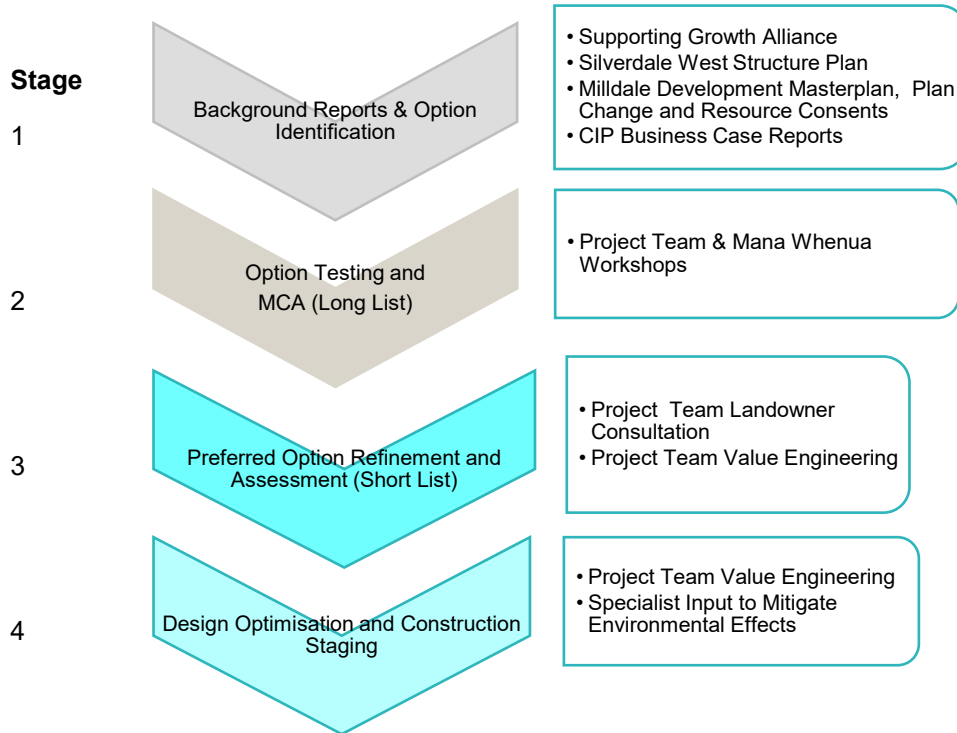


Source: Auckland Council with Mott MacDonald annotations. Note the white dotted line shows the Argent Lane chainage covered by Woods / FLHD consents package.

1.4.1 Alternatives Methodology

The proposed alignment involves land outside of AT's current ownership thus consideration has been given to alternatives, including a "do-nothing" scenario. Alternative routes and a "do-nothing" option have been investigated to identify the most practical option and, in the case of alternative routes the most appropriate alignment to achieve the project objectives. This occurred at both the project feasibility stage and at the project planning stage. Figure 4 below sets out the high-level methodology that was used in the assessment of alternatives.

Figure 4: Alternatives Assessment Methodology



Source: Mott MacDonald

2 Argent Lane Extension Alignment Options

2.1 Introduction

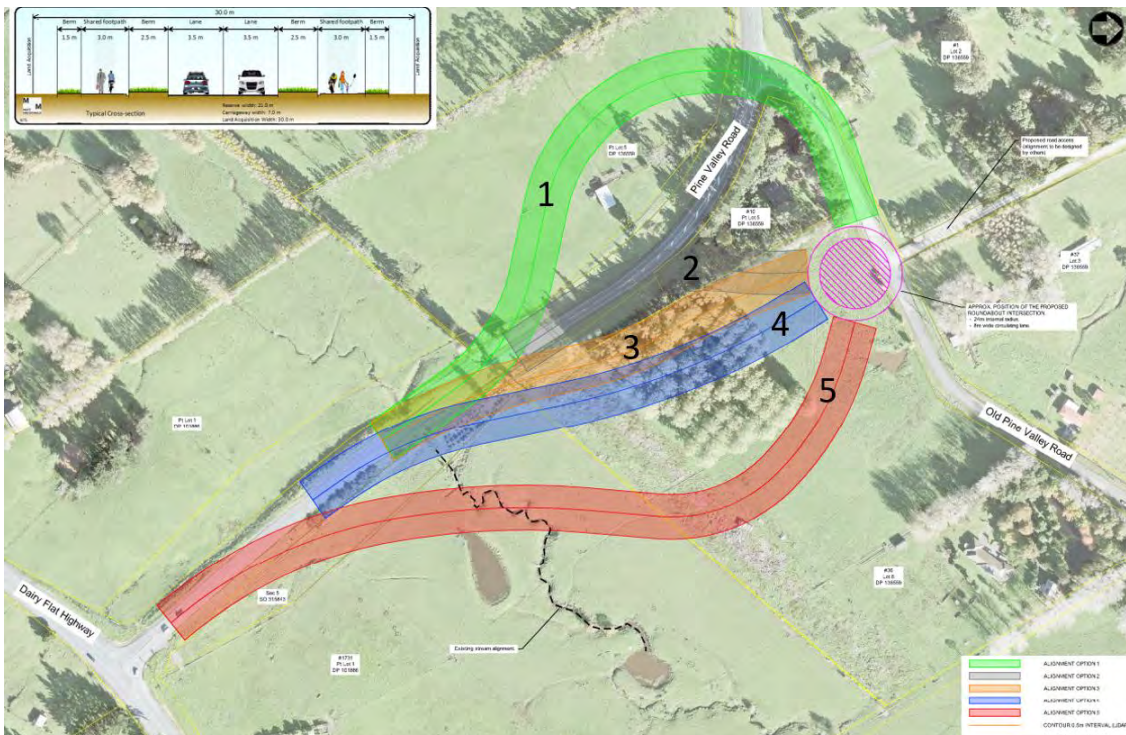
Within the following sections of this report, unless specifically referred to otherwise, ‘Argent Lane Extension’ refers to the new section of road from a proposed roundabout on Old Pine Valley Road to a tie in on Pine Valley Road. From the tie in point to the intersection with Dairy Flat Highway will be referred to as ‘Pine Valley Road’. The new alignments have been chosen to meet the requirements of a 60km/h operating speed, the limiting factor being the vertical alignment as all new alignment options tie into Pine Valley Road, which is steepest at the Dairy Flat Highway intersection. It may be that this could be regraded at this intersection once more detail about the planned AC Silverdale West Structure Plan alignment from the south is known. However, currently there is no certainty on this aspect and the options analysis has been undertaken based on no regrade.

2.2 Long List Options

2.2.1 Alternative Sites, Routes and Alignment Options

The “do nothing” approach along with five new alignments have been considered (refer to Figure 5 and Appendix A):

Figure 5: Five Long List Options – Argent Lane Extension



Source: Mott MacDonald

2.2.1.1 Do Nothing

The “do nothing” approach has been considered as being the road network operating via the existing road alignments of Old Pine Valley Road and Pine Valley Road, as proposed in the FHLD resource consent application for the extension of Argent Lane from Milldale to Old Pine Valley Road.

As an integrated north-south connection the route is required to be future proofed for four-lanes to operate as an arterial road. The current two-lane road network and alignment at Old Pine Valley Road is unlikely to achieve an adequate level of service as the development of Milldale progresses.

Currently there are safety concerns at the existing Pine Valley Road and Old Pine Valley Road intersection where traffic calming or slowing is considered necessary to ensure efficient and safe operation. For this reason, a roundabout has been proposed at the corner of Old Pine Valley Road and Pine Valley Road in the FHLD resource consent application for the extension of Argent Lane from Milldale to Old Pine Valley Road.

While this interim safety mitigation will provide a safer connection than what currently exists, the “do nothing” approach is not preferred as it does not appropriately provide an integrated connection of Argent Lane from Milldale to Dairy Flat Highway.

2.2.1.2 New Alignment Options

Five options were initially considered for the Argent Lane Extension, each having varying impacts on both private property and the area and volume of earthworks required. The road corridors shown in Figure 5 for the options outlined below allow for a 30m arterial corridor providing for a two-lane road as an interim measure, which is future proofed for a four-lane arterial road, including off-carriageway footpaths and cycleways, when traffic movements require the additional capacity. This is a high-level assessment based on LiDAR information rather than specific onsite survey data. The five new alignment options are described below and the drawings¹ are appended (Appendix A).

Option 1

This option follows Old Pine Valley Road then enters a left-hand curve to tie back into Pine Valley Road. This section of new road traverses gentle terrain. The tie into Pine Valley Road occurs before the existing stream culvert crossing. This option affects three property owners.

Option 2

This is the shortest of all the options and affects two properties. It impacts some exotic trees at 10 Old Pine Valley Road. The terrain is gentle and the alignment ties into Pine Valley Road prior to the existing culvert crossing.

Option 3

Option 3 has been aligned alongside the west boundary of the property at 36 Old Pine Valley Road to reduce the impact on this property. However, it does pass through an exotic tree plantation and some planted native flax/harakeke in the road reserve near the Pine Valley Road culvert. This option ties into Pine Valley Road at the culvert, likely requiring the culvert to be widened in advance of the works in the future for the additional widening.

¹ Note that at the time of preparing the drawings the proposed roundabout was to be located at 36 Old Pine Valley Road. Subsequently, the location of this roundabout was shifted onto FLHD owned property at 37 Old Pine Valley Road.

Option 4

This alignment passes through the middle of the exotic tree plantation to avoid the 10 Old Pine Valley Road property. It ties into Pine Valley Road after the existing culvert and therefore would have potentially more impact on the existing stream and some planted native flax/harakeke.

Option 5

The longest of the options and involves significant fill. This option avoids most vegetation (apart from one exotic tree and one harakeke) however requires a new stream crossing position and culvert/bridge.

Summary of Options

Table 1 summarises the options and provides a high-level assessment of the prominent features of each.

Table 1: Options Summary Table

Option	Properties Affected	New Bridge / Culvert	Length (m)	Earthworks (m ³)	Effects Native Flora	Effects Exotic Tree Stand at 36 Old Pine Valley Road
1	3	No	520	Cut 2,300 Fill 4,500	Negligible at Pine Valley Road culvert	No - but may involve some exotic tree removal along Old Pine Valley Road.
2	2	No	230	Cut 1,500 Fill 2,500	Yes – “moderate”	Yes – “negligible”
3	4	Partial	330	Cut 300 Fill 2,300	Yes – “negligible”	Yes – “moderate”
4	2	Yes	400	Cut 1,800 Fill 3,500	Yes – “moderate”	Yes – “moderate”
5	2	Yes	570	Cut 500 Fill 62,000	Yes – “negligible”	Yes – “negligible”

Source: Mott MacDonald

2.3 Workshops and multi criteria assessment

Two workshops were held on 14 and 18 March 2019 (refer to meeting minutes in Appendix B). The workshops included the AT and consultant project team, and mana whenua representatives. At the workshops the project objectives, multi criteria assessment (MCA) scope and MCA scoring were discussed and agreed to. At the 14 March 2019 workshop, the initial five road alignment options were provided for assessment and then a sixth high level option was included for consideration in the MCA as raised by one of the workshop participants from Ngati Maru.

Figure 6: Option 6 Map



Source: Auckland Council Online GIS with Mott MacDonald Annotations

Option 6

The Option proposed alignment follows a straight-line route from Weiti Bridge to connect to the Silverdale Interchange. The proposed alignment has significantly more earthworks and requires the construction of a new road connecting directly into the Silverdale Interchange which is controlled by Waka Kotahi New Zealand Transport Agency (Waka Kotahi). To provide for this connection it would require the approval of Waka Kotahi and the removal of some established native trees at the Silverdale Interchange.

2.3.1.1 MCA

The MCA was based on a rationalised combination of criteria from the SGA / SGP and the previous AT Matakana Link Road MCA as requested by AT, with some additional bespoke criteria to align with best practice (i.e. carbon equivalent totals). A total of 33 criteria were scored under the themes of:

- Heritage
- Mana Whenua
- Socio-Economics
- Environmental Impacts

- Environmental and Sustainability Opportunities
- Transport
- Cost and Construction Risk
- Urban Development Opportunities

A copy of the full MCA is provided in Appendix C.

A summary of the MCA options total scores is shown in Table 2.

Table 2: Summary MCA

Option	1	2	3	4	5	6
Total	-13	10	4	-1	-1	-37

Source: Mott MacDonald

As shown in Table 2, Option 2 scored the highest and Option 6 scored the least. In summary Option 2 was noted as the preferred road alignment as it was the best fit to meet the project objectives and:

- Scored the highest for mana whenua values;
- Had the highest score on socio-economics;
- Provided the shortest route;
- Provided the least impact on the environment, ecology and waterways; and
- Cut and fill earthworks were closely balanced.

Options 3 and 4 were the next most favoured options.

2.4 Short List Option Assessment

Options 2, 3 and 4 were presented to the landowners of the properties at 10 and 36 Old Pine Valley Road for discussion, as they were identified as the properties that would be most impacted by the new alignments of these options. The short list options are shown in Appendix D.

Based on the stakeholder feedback and alignment with project objectives, Option 2 was then taken forward to an optimisation and consultation ‘Short List’ optioneering phase. In this, the landowners of affected properties at 10 and 36 Old Pine Valley Road had the opportunity to provide comment on different short-listed variations of Option 2, in order to mitigate impacts at a property level scale whilst still meeting the project objectives.

From this feedback the alignment in Option 2 was chosen to be progressed for the project.

2.5 Alternative Methods

AT’s objective is to secure the road corridor to enable the interim and future construction, operation and maintenance of the arterial road connection including cycle and pedestrian pathways. As such, alternative methods of providing a link, such as a pedestrian and cycle only or public transport only do not provide the appropriate mitigation for the additional vehicle movements and therefore can be dismissed as inappropriate alternative methods.

Alternative methods for the construction of the road link are not considered to significantly impact on the extent of impact of the project in terms of land requirement or environmental impacts. Due to the requirement for the road link to have a relatively flat and trafficable surface, the method of construction of roads requires significant earthworks, which are unable to be avoided by use of an alternative method.

3 Pine Valley Road Widening

3.1 Alternative Sites and Routes

3.1.1 Do Nothing

The 'do nothing' approach has been considered and will not meet the project objectives to provide for an arterial road and future proof for planned urban growth. The future widening of Pine Valley Road is considered necessary to fulfil the traffic capacity requirements arising from the Milldale Development and to deliver an adequate level of service and to meet the project objectives.

3.1.2 Other Routes

Option 6 in the long list options discussed in section 2.2 explores the option of undertaking a more direct route to link directly with the Silverdale Intersection. This option scored worst in the MCA and when considered against the existing route of Pine Valley Road up to the existing intersection with Dairy Flat Highway, it is considered that the existing route is favoured as it has less land requirements, construction impacts and doesn't provide the significant challenges in relation to tying into the Silverdale Intersection.

3.2 Alternative Methods

As discussed above in section 2.2.1 there are no feasible alternative methods to the construction of the roading link other than to provide for a trafficable surface, which therefore requires earthworks to enable it. Options in providing for the future four lane upgrade to Pine Valley Road would be to enable widening on both sides of the existing road or greater extent of widening on either one side or the other. Given that the road geometry is already existing, it was assessed that the method with the least overall impact was to provide widening on both sides of the existing road alignment. This enables the retention of the existing culvert in Stage 1 and minimised works required to the intersection and road geometry.

4 Dairy Flat Highway Widening

4.1 Alternative Sites and Routes

4.1.1 Do Nothing

The Milldale ITA notes that *“there is a relatively high traffic demand heading eastbound towards the Silverdale interchange during both peak periods. In the morning peak much of this demand is from Milldale itself and in the evening peak there is a relatively high general traffic demand coming from the south.”* As a result, a second eastbound lane between the Pine Valley Road and Dairy Flat Highway intersection and the Silverdale Interchange is identified as required mitigation. As such a ‘do nothing’ option has been dismissed as it would result in a failure to provide the adequate level of mitigation to the road network, resulting in inadequate road safety and traffic efficiency.

4.1.2 Other Routes

As discussed above, Option 6 in the long list options discussed in section 2.2 explores the option of undertaking a more direct route to link directly with the Silverdale intersection. This option would avoid the need for widening on Dairy Flat Highway but scored worst in the MCA. When considered against the existing route of Dairy Flat Highway it is considered that the existing route is favoured as it has less land requirements, less construction impacts and did not require the approval of Waka Kotahi.

4.2 Alternative Methods

The proposed additional eastbound lane is designed to integrate with the current Silverdale Interchange. Consideration was given to how the road would be widened to accommodate the additional lane and required stormwater management upgrades, including widening on one side, the other or both. The current centre line was reviewed and was considered to provide the most efficient and safest corridor between the intersection and the interchange. As such, the centreline location of Dairy Flat Highway has been retained and widening to the road corridor has been proposed, on the north side to accommodate the additional lane and stormwater management network and on the south side to accommodate the stormwater management devices.

5 Conclusion

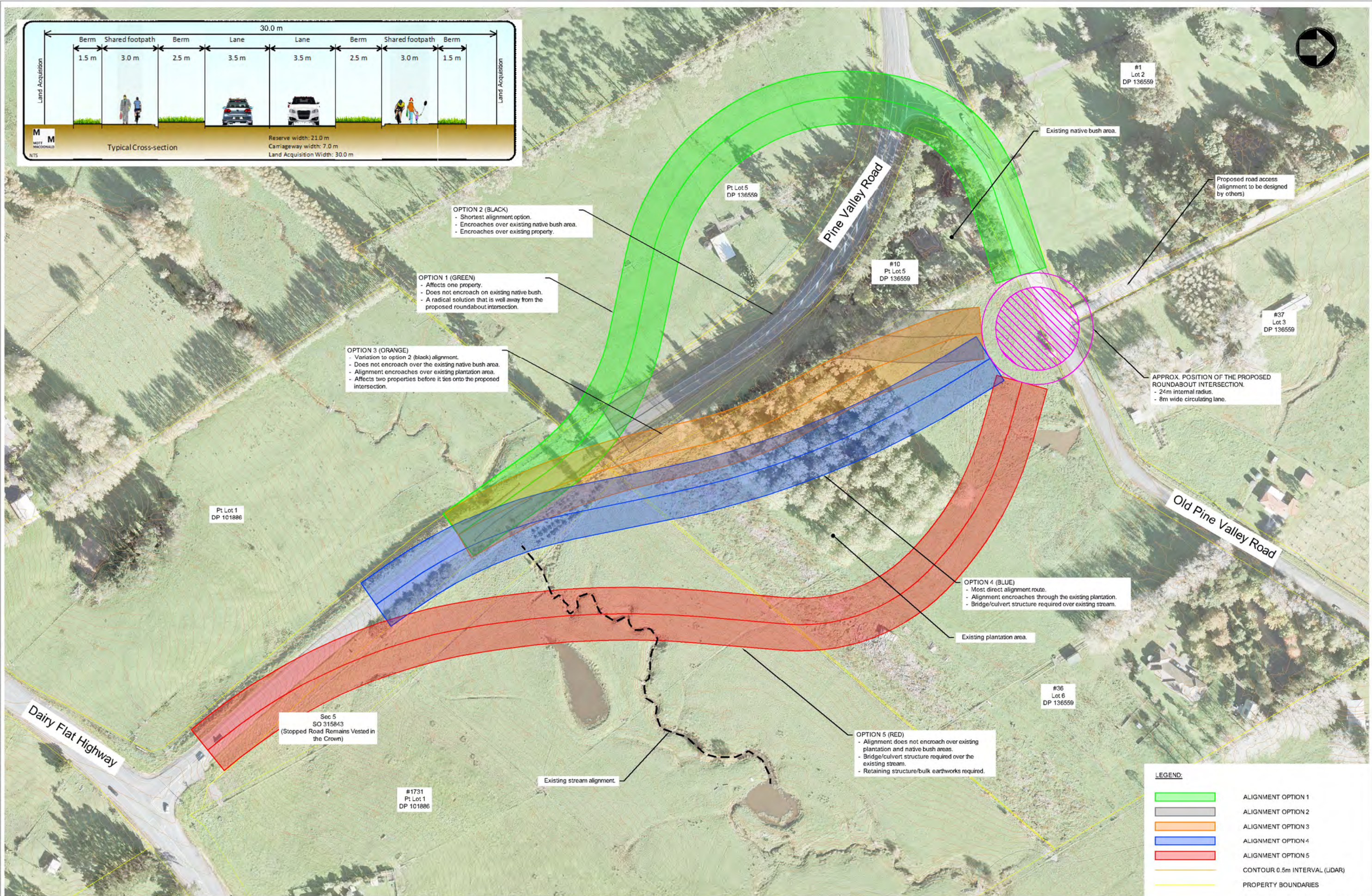
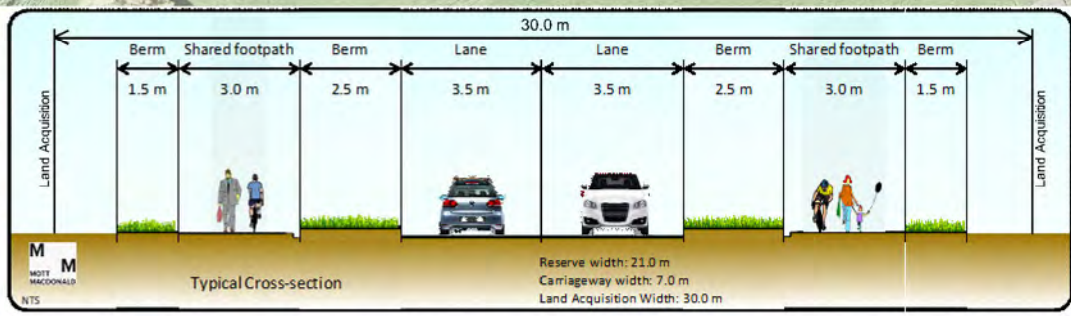
Six options for the development of the direct link from Milldale to the Silverdale Motorway via the extension of Argent Lane to Pine Valley Road and Dairy Flat Highway intersection, were considered and evaluated. Based on an MCA process, and through consultation with stakeholders and landowners, the alignment in Option 2 was chosen to be progressed for the project, as the preferred option.

This option meets the three overarching project objectives set by AT and provides the most efficient and safest corridor between the intersection and the interchange. It aligns with the indicative alignment for the Argent Lane Extension which was identified in the Wainui Precinct Plan I544 (Figure 2).

The preferred Option selected also meets the future requirements outlined as mitigation in the Milldale ITA to manage the increasing demand for traffic movements at the Dairy Flat Highway and Pine Valley Road intersection. The ITA concluded that an upgrade to the Dairy Flat Highway and Pine Valley Road intersection is required as mitigation for increased traffic volumes arising from the Milldale Development as development increases. Option 2 allows future road widening to provide an additional eastbound lane between this intersection and the Silverdale Interchange, as well as future four lane capacity along Pine Valley Road to connect to Argent Lane. It is proposed to enable these upgrades through the designation and associated resource consents.

This Alternatives Assessment provides evidence that the AEE, which will accompany the NOR and Resource Consent application for the project, complies with the Resource Management Act under Section 171(1)(b). This document demonstrates how AT and the project team have considered alternative options and provides evidence of how the final alignment was selected.

A. Long List Options



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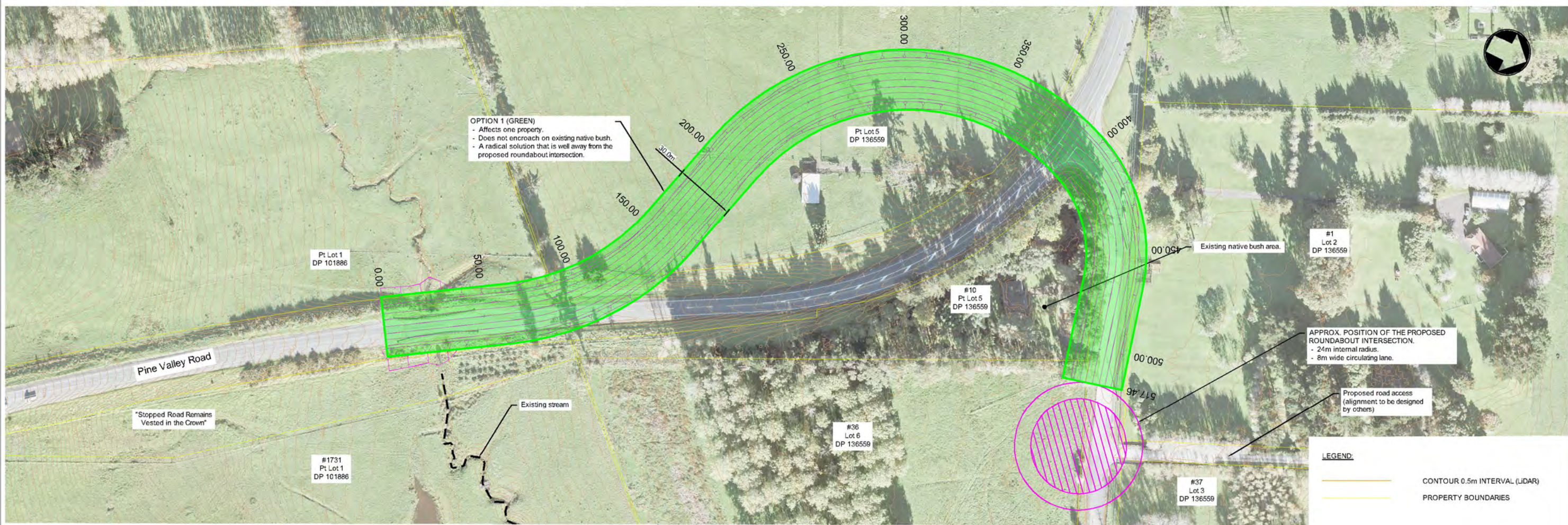
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 PROJECT PHASE: DETAILED DESIGN
 CONSULTANT PROJECT NO.: 402828 Milldale

DRAWING
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 Sketch Plan

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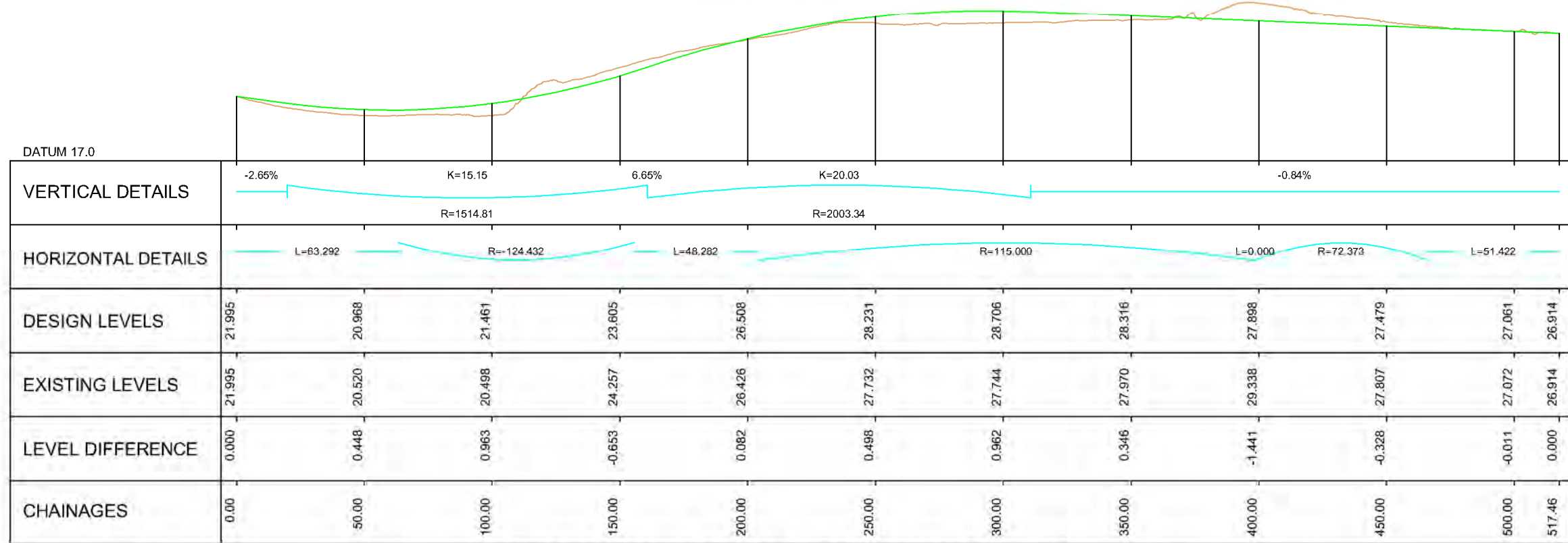
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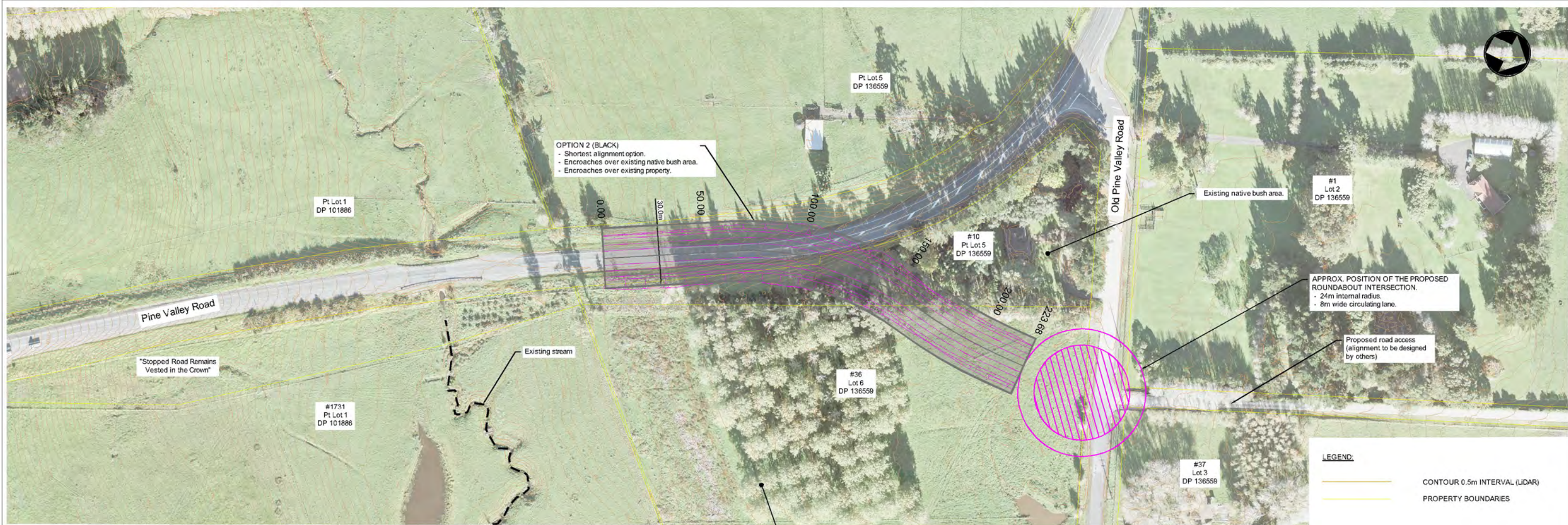
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HORIZONTAL - 1 : 1000 VERTICAL - 1 : 200

CONSULTATION

REV DESCRIPTION A	DATE	DRAWING Q/L DRAWN CHECKED APPROVED	CONSULTANT PROJECT NO. MOTT MACDONALD: 402828	CONSULTANTS: M M MOTT MACDONALD	CLIENT: Auckland Transport	PROJECT: MILLDALE DEVELOPMENT INFRASTRUCTURE PROJECTS	PROJECT TYPE: NEW CONSTRUCTION	PROJECT PHASE: DETAILED DESIGN	DRAWING: Milldale Development - Argent Lane Alignment Option 1	DRAWING NO: 402828-MMD-DRW-CV-SKT-5001	REVISION: A
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OPTION 2 (BLACK)
 - Shortest alignment option.
 - Encroaches over existing native bush area.
 - Encroaches over existing property.

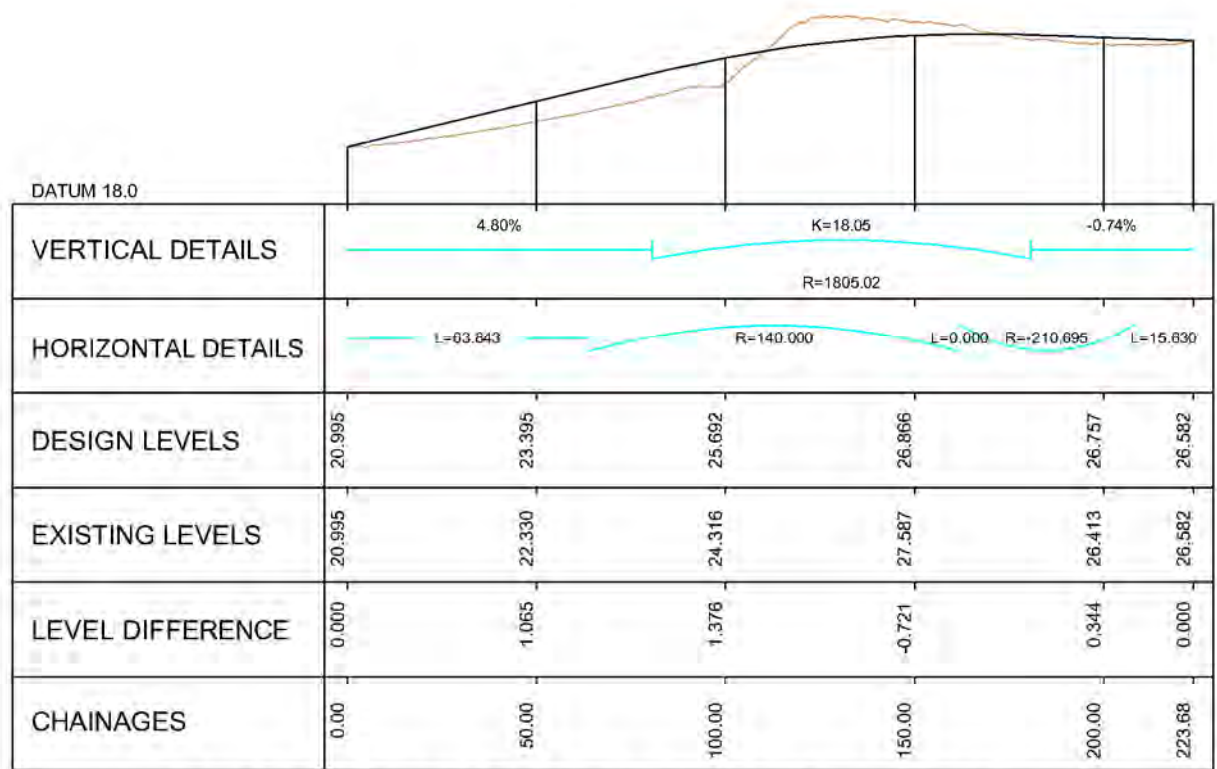
APPROX. POSITION OF THE PROPOSED
 ROUNDABOUT INTERSECTION.
 - 24m internal radius.
 - 8m wide circulating lane.

Proposed road access
 (alignment to be designed by others)

LEGEND:
 ——— CONTOUR 0.5m INTERVAL (LIDAR)
 ——— PROPERTY BOUNDARIES

PLAN VIEW

SCALE - 1 : 1000

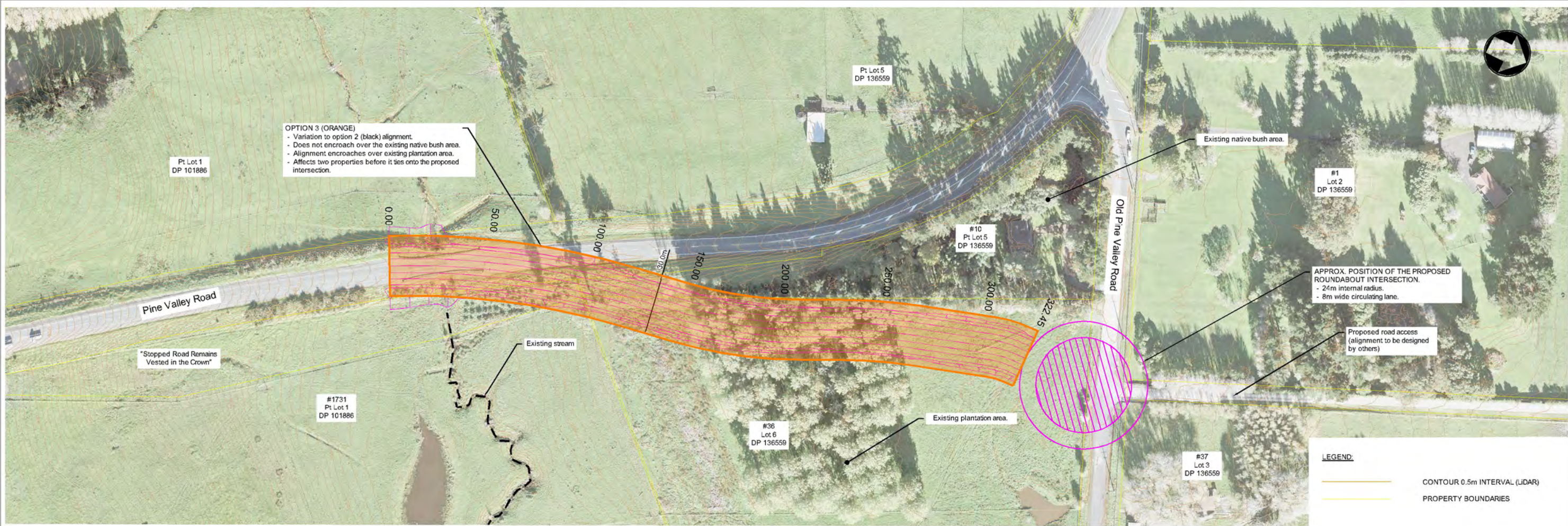


LONGSECTION - OPTION 2 (BLACK) CENTRELINE HORIZONTAL - 1 : 1000 VERTICAL - 1 : 200

CONSULTATION

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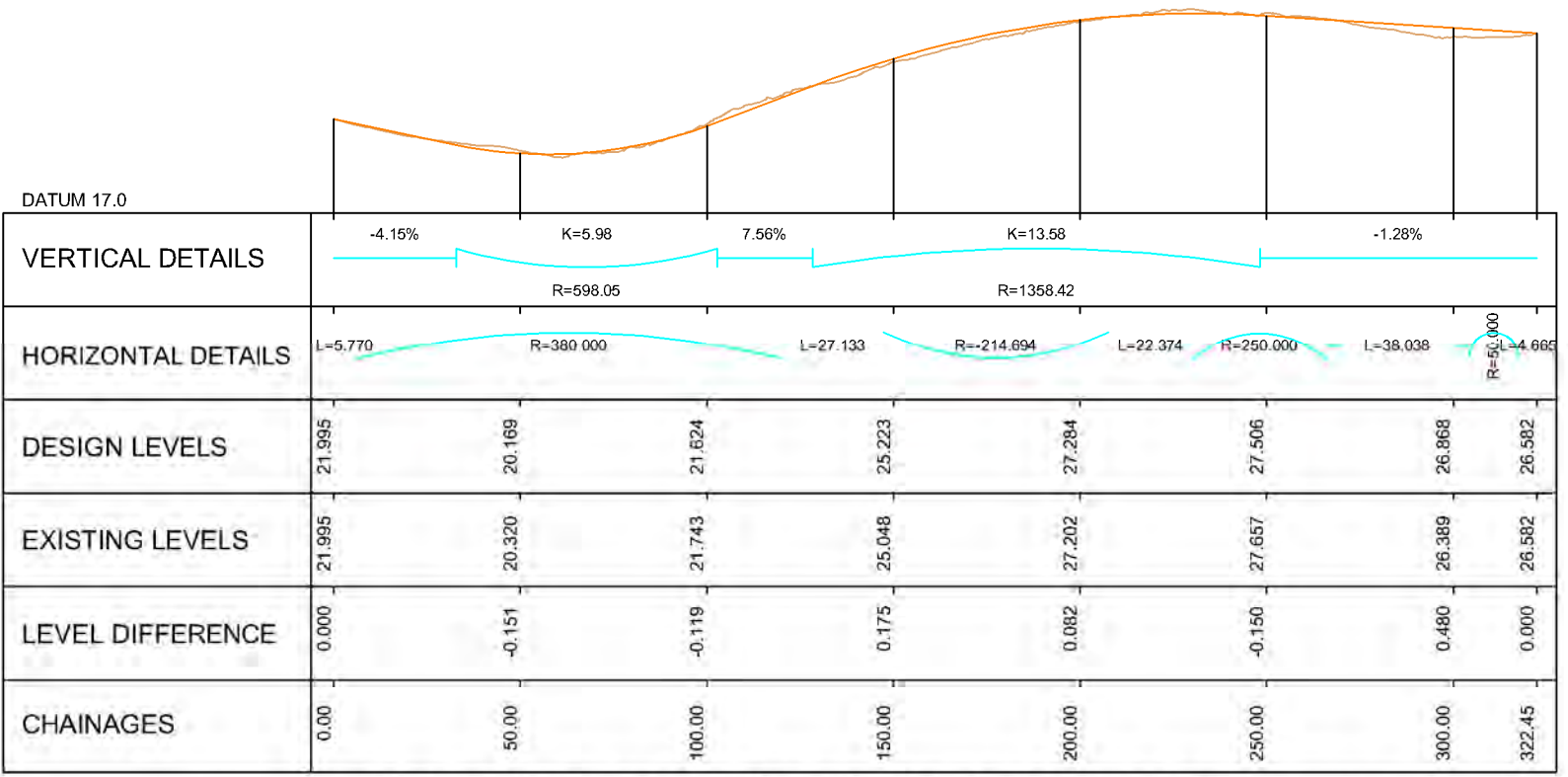


OPTION 3 (ORANGE)
 - Variation to option 2 (black) alignment.
 - Does not encroach over the existing native bush area.
 - Alignment encroaches over existing plantation area.
 - Affects two properties before it ties onto the proposed intersection.

APPROX. POSITION OF THE PROPOSED ROUNDABOUT INTERSECTION.
 - 24m internal radius.
 - 8m wide circulating lane.

LEGEND
 ——— CONTOUR 0.5m INTERVAL (LIDAR)
 ——— PROPERTY BOUNDARIES

PLAN VIEW
 SCALE - 1 : 1000

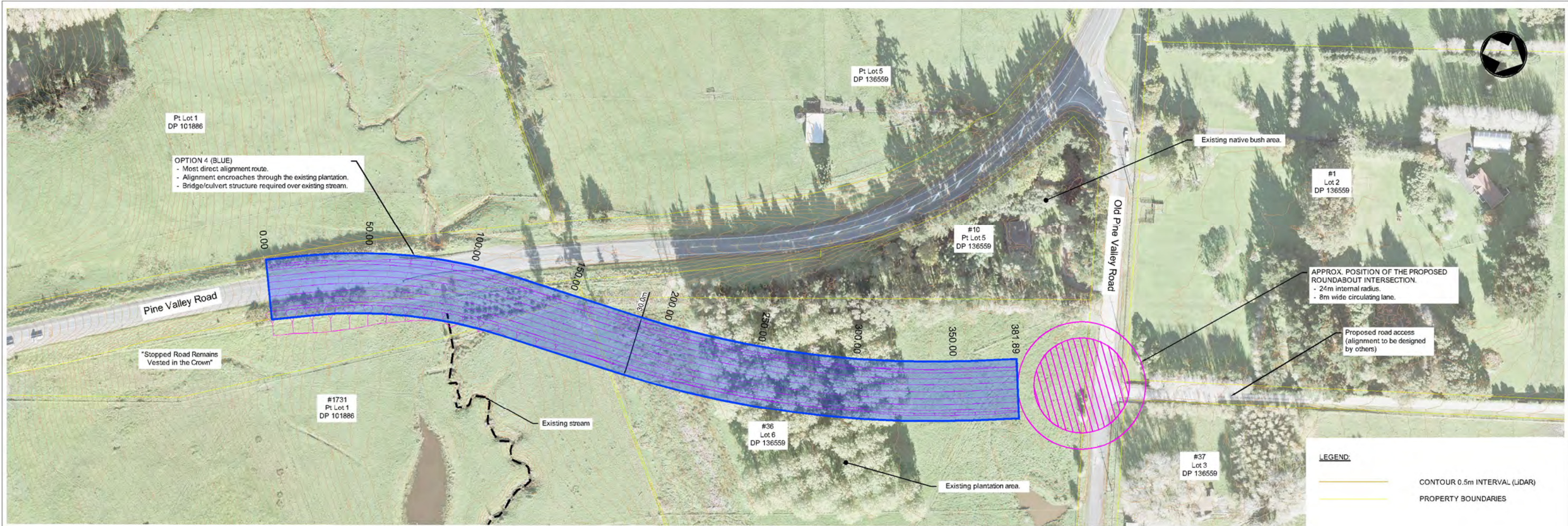


LONGSECTION - OPTION 3 (ORANGE) CENTRELINE HORIZONTAL - 1 : 1000 VERTICAL - 1 : 200

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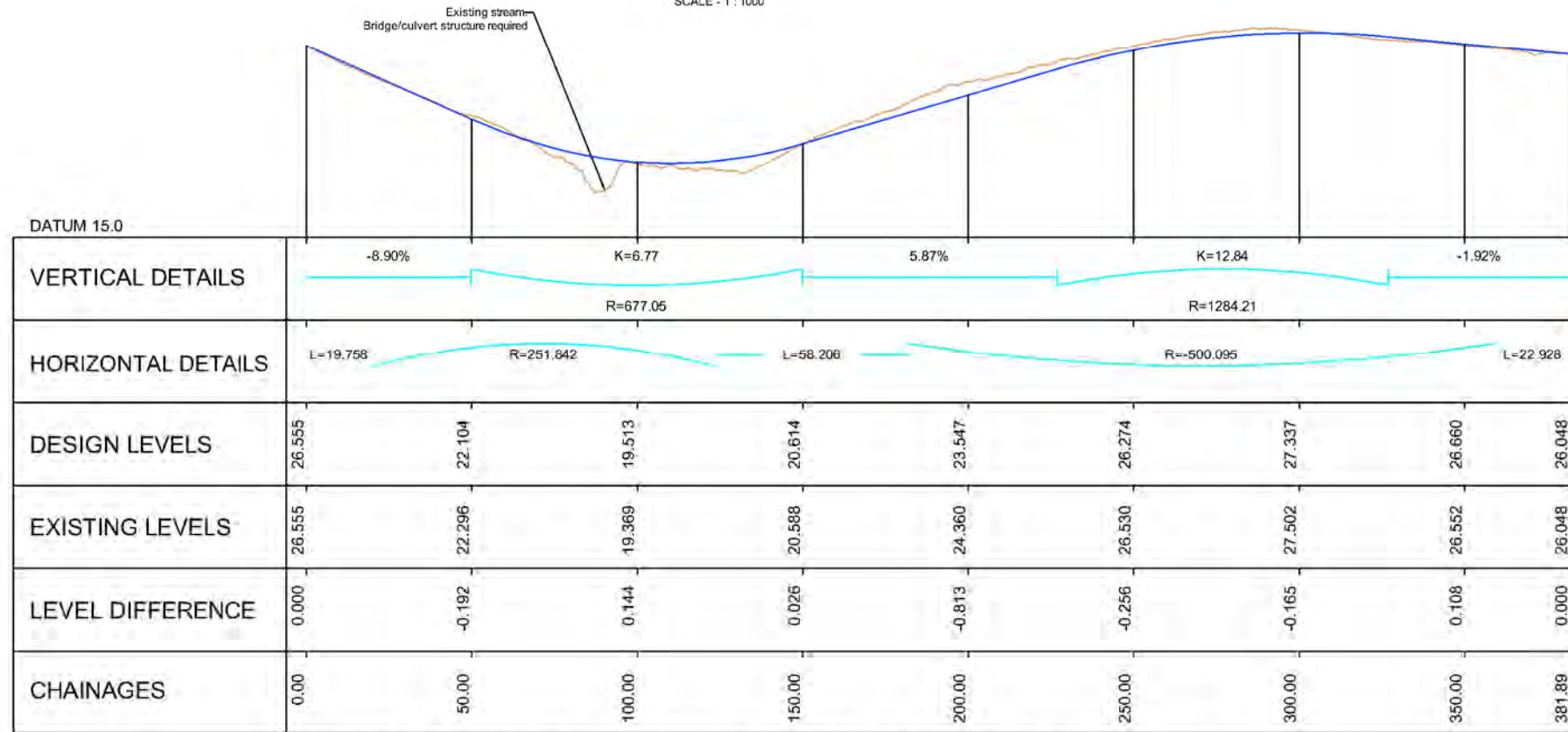
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CONSULTATION



PLAN VIEW

SCALE - 1 : 1000



LONGSECTION - OPTION 4 (BLUE) CENTRELIN

HORIZONTAL - 1 : 1000 VERTICAL - 1 : 200

CONSULTATION

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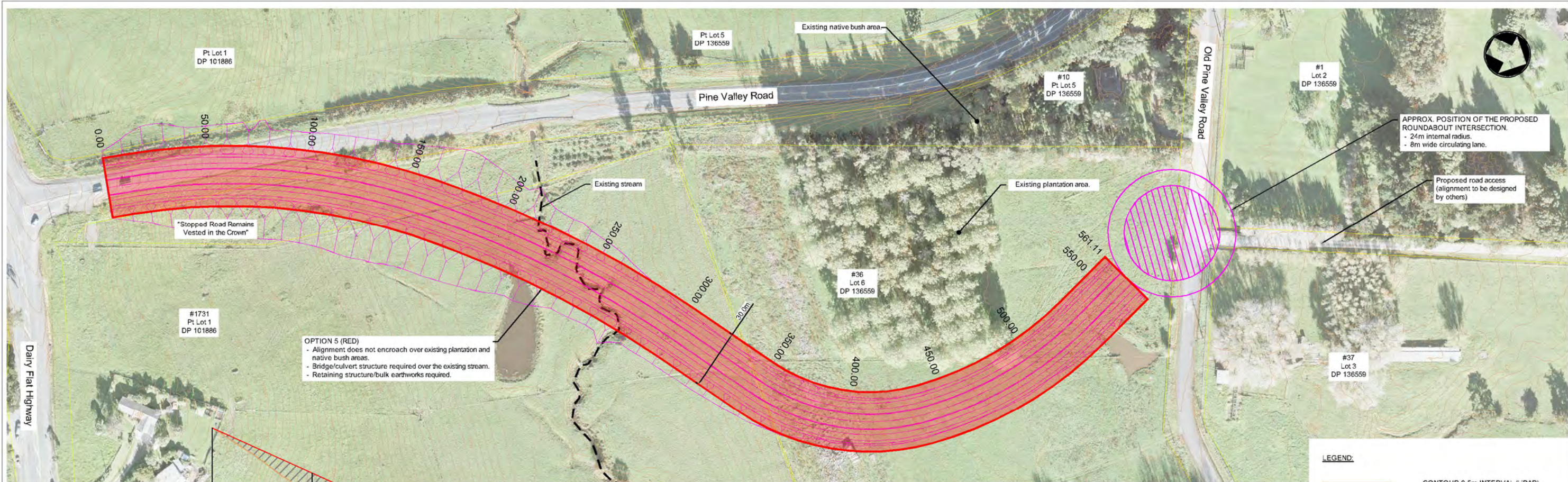
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MOTT MACDONALD: 402828	M M MOTT MACDONALD

CLIENT	PROJECT
Auckland Transport	MILLDALE DEVELOPMENT INFRASTRUCTURE PROJECTS
	PROJECT TYPE: NEW CONSTRUCTION
	PROJECT PHASE: DETAILED DESIGN
	CONSULTANT PROJECT NO: 402828 Milldale



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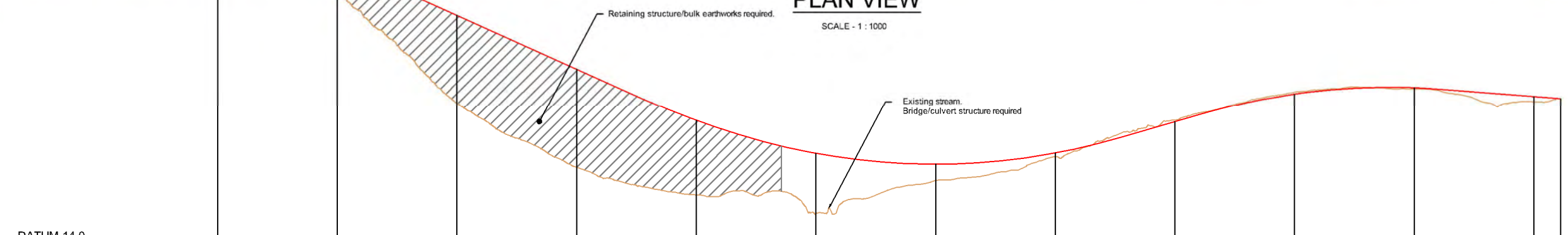
OPTION 5 (RED)
 - Alignment does not encroach over existing plantation and native bush areas.
 - Bridge/culvert structure required over the existing stream.
 - Retaining structure/bulk earthworks required.

APPROX. POSITION OF THE PROPOSED ROUNDABOUT INTERSECTION.
 - 24m internal radius.
 - 8m wide circulating lane.

LEGEND
 ——— CONTOUR 0.5m INTERVAL (LIDAR)
 ——— PROPERTY BOUNDARIES

PLAN VIEW

SCALE - 1 : 1000



	DATUM 14.0												
VERTICAL DETAILS	-9.00% K=13.54 5.77% K=13.64 -1.56% R=1353.86 R=1363.54												
HORIZONTAL DETAILS	L=11.019 R=305.975 L=10.653 R=603.377 L=49.126 R=101.301 L=0.000 R=180.000 L=31.024												
DESIGN LEVELS	42.096	37.596	33.096	28.596	24.282	21.594	20.632	21.576	24.182	26.508	27.044	26.307	26.134
EXISTING LEVELS	42.096	34.930	25.744	20.374	18.073	16.512	19.268	21.264	24.315	26.661	26.931	25.873	26.134
LEVEL DIFFERENCE	0.000	2.666	7.352	8.222	6.209	5.021	1.364	0.312	-0.133	-0.153	0.114	0.434	0.000
CHAINAGES	0.00	50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	561.11

LONGSECTION - OPTION 5 (RED) CENTRELINE

HORIZONTAL - 1 : 1000 VERTICAL - 1 : 200

CONSULTATION

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B. Workshop Minutes



Minutes

- What:** Auckland Transport Options Workshop – Extension of Argent Lane from Old Pine Valley Road to Dairy Flat Highway, Wainui, Auckland.
- Where:** Mott MacDonald Office, Wynyard Quarter, Auckland
- When:** 14 March 2019
- Attendees:** Sonya McCall (AT), Marion Forman (AT), Huia Kingi (AT), Marion Forman (AT), Crystal Chan (AT), Mitra Prasad (AT), Josy Peita (AT)
 Fiona McKenzie (Ngati Manuhiri), Geoff Cook (Ngati Maru)
 Aimee Barwick (MM), Greg Booth (MM), Ivan Ho (MM), Sven Exeter (MM), Emma Hammond (MM), Sam Tasman-Jones (MM),
- Apologies:** Alistair Lovell (AT), Tame Te Rangi (Ngati Whatua), Phil Donnelly (AT), Adrian Pettit (Te Ākitai Waiohua)

<i>Decisions and Action Points & Outcomes</i>	<i>By Whom</i>	<i>Due</i>
Minute Taker	Sam Tasman-Jones	
Karakia Josy Peita		
Welcome & introduction Round of welcomes around the table and our connection/ origin		
Background Background to provide to context to enable review of options. Options are in alignment with SGA, wider network plan for the future urban zone. Argent Lane extension to run through “privately owned sites”, will be arterial (30 m width) in the future, connecting to the Silverdale development.		

<p>Existing bridge is key to the alignment and will remain the only corridor across Weiti Stream.</p> <p>The project has been accelerated to support growth and the network. Through the advancement and funding of infrastructure under a new model. Pilot project for new model of three-way partnership between AC, AT and FHLD.</p> <p>Road corridor will have a 30m envelope.</p> <p>Private land holding not council land holding.</p>		
<p>Objective Assessment Criteria</p> <p>Sven, Sonya gave an overview of the objective criteria and how they were developed.</p> <p>Run through of the MCA as drafted in alignment with MLR and SGA MCAs, refined to align with project. Needs further review to ensure fit for purpose.</p> <p>Review of MCA. Check of Heritage criteria for heritage homestead.</p> <p>Scoring reviewed to check fit for purpose. Can be scored for consistency with SGA.</p> <p>All agreed scoring will remain as per the tailored SGA MCA that MM provided.</p>		
<p>Options Review</p> <p>Greg provided an overview of options. Background to area and why we have aligned the options to the Pine Valley Rd, Dairy Flat highway intersection.</p> <p>Query as to why alignments to the interchange have not been considered. Not considered due to increased complexity of the intersection, capacity issues, integration of bus network.</p>		

<p>Roundabout may shift slightly along Old Pine Valley Road to reduce the requirement for property land take to the North.</p> <p>Concerns regarding 9% gradient and influence on heavy vehicles. Potential options to lower intersection or increase platform leading into the intersection.</p> <p>New bridge or bridge upgrades may positively impact flood risk. 20m riparian margin in SGA (10m either side).</p>	<p>6th Option to be incorporated and reviewed. Direct connection to SH interchange. Greg to draft alignment</p>	<p>Week of 18 March 2019</p>
<p>Query as to what parts of the AUP are currently under review.</p> <p>Option 1: Very little cut or fill required. Existing bridge use/ upgrade</p> <p>Option 2: Small amount of cut and fill, shortest distance to tie into existing corridor. Existing bridge use/ upgrade</p> <p>Option 3: similar but longer tie in. Existing bridge use/ upgrade</p> <p>Option 4: Small cut and fill but longer tie in again. New bridge</p>	<p>Crystal to check</p>	<p>Week of 18 March 2019</p>
<p>Option 5: Requires significant cut and fill but avoids vegetation. New bridge.</p> <p>New Option "6": Geoff has suggested that a direct link to the Silverdale interchange is investigated to reduce time to get to interchange. Greg suggested that this would mean that traffic that wishes to head south would need to go all the way to the interchange and</p>	<p>Marion – check number of properties affected vs owners vs titles need consistency</p> <p>Option 6 to be plotted on map – high level 2D drawing. Further investigations can be</p>	<p>18 March 2019</p> <p>22 March 2019</p>

<p>then head back along Dairy Flat Road (west) so unlikely to work. May not fit with proposed Silverdale Structure Plan or meet project objective 4. Proposed connector roads in structure plan will link to interchange. Purpose of Argent Lane is to provide an arterial road that runs north-south.</p> <p>Option 6 to be scored in MCA after drawn.</p>	<p>undertaken if needed. Ivan/Greg</p> <p>All</p>	<p>22 March 2019</p>
<p>Individual Option Assessment</p> <p>Options 1 and 5 would generate the greatest visual impacts. 2-4 have reduced impacts.</p> <p>Construction disruption impacts to be reviewed more closely later due to complexity.</p> <p>Option 1, 4 and 5 have the greatest property severance. Options 2, 3 have little to no severance. They reduce the severance of the western property by the removal of the existing road.</p> <p>MCA for property impacts to be possibly split out based on m², location and severance.</p> <p>Social cohesion to score the same as SGA, as has been measured by SGA.</p> <p>Health and wellbeing to be the same across the board as no sensitive uses.</p> <p>Stormwater, the road will be improved from the connection to the intersection. 100% treatment suggested. Will improve current standards. More direct options score higher as they reduce the amount of semi/impermeable surfaces.</p> <p>Option 1, 2 requires some native tree removal. 3, 4 require exotic vegetation removal. Option 5 would have little to no tree removal but a wide area of grass.</p> <p>Terrestrial Flora & Fauna reflects sequestration impacts.</p>	<p>Marion to assess</p>	<p>Week of 18 March 2019</p>

<p>Option 5 has significant cut, fill. 1 has less cut and fill but more than 2, 3.</p> <p>Building a bridge on a new site increases the negative impacts as opposed to upgrading current. (e.g. Option 4,5 versus 1,2,3)</p> <p>Mana whenua to do site visit before scoring MCA.</p>	<p>Sonya/Aimee to help arrange visit</p>	<p>Week of 18 March 2019</p>
<p>Summary/ Wrap up</p> <p>Options to be reviewed further by individual team members due to time restrictions.</p>	<p>AT to review the transport section of the options assessment. Mott MacDonald to assess environmental and transport safety measures. (See MCA spreadsheet for who does what – attached).</p> <p>Geoff to undertake mana whenua historical review and site visit.</p> <p>Property/land take assessment to be refined for meeting with AT Monday 18th March to further review options.</p> <p>Fiona, Tame & Geoff to be sent options assessment once updated and completed by MM & AT for their review, comments and completion.</p>	<p>Week of 18 March 2019</p> <p>Week of 18th March 2019</p> <p>Monday 18th March 2019</p> <p>Tuesday 19th March 2019</p>

M **Minutes**
M
MOTT
MACDONALD

What: Auckland Transport Options Workshop #2 – Extension of Argent Lane from Old Pine Valley Road to Dairy Flat Highway, Wainui, Auckland.

Where: Mott MacDonald Office, Wynyard Quarter, Auckland

When: 18 March 2019

Attendees: Sonya McCall (AT), Marion Forman (AT), Crystal Chan (AT), Aimee Barwick (MM), Greg Booth (MM), Sven Exeter (MM).

<i>Decisions and Action Points & Outcomes</i>	<i>By Whom</i>	<i>Due</i>
Minute Taker	Sven Exeter	
Scored all outstanding options criteria (other than mana whenua criteria) including Option 6 indicative alignment – 3 options now shortlisted (2, 3 & 4) (preliminary pending mana whenua input and AT review)	All	N/A
Disseminate updated draft MCA to AT	Sven	18 March 2019
Develop Options summary report for landowners to assist with AT letters to landowners	Sven/Aimee	22 March 2019
Draft land take drawings for 3 short listed options	Greg/Ivan	29 March 2019

C. Multi Criteria Analysis Scoring Sheet

<p>Argent Lane Extension Draft MCA Framework</p>
<p>Problem 1: Connectivity and Accessibility - Inadequate north-south connections through and within Milldale (Wainui) does and will continue result in poor network performance for all road users Problem 2: Capacity & Accelerated Growth - Inadequate transport system will inhibit development of Milldale (Wainui) and the area's future urban growth</p> <p>Problem 3: Health & Safety - Safety issues at Old Pine Valley Road, Pine Valley Road and Dairy Flat Road intersections, unsafe speeds and multiple transport modes with no dedicated PT and cycle lanes.</p>
<p>Objective 1: Health & Safety - Vision Zero is central to the design, construction and operation of the connection to enable a safe network for all modes. Objective 2: Health & Safety - Provide safe connections to the existing transport system and support safety improvements through design while considering proposed transport networks. Objective 3: Transport, Connectivity & Accessibility and Socio-Economics - Provide an efficient, resilient and future-proofed north to south connection. Objective 4: Transport, Connectivity & Accessibility and Socio-Economics - Enable connections and accessibility to social and economic opportunities within Milldale, Silverdale and future development within Silverdale West Dairy Flat Structure Plan area. Objective 5: Transport, Connectivity & Accessibility and Socio-Economics - Design for all modes and users to be implemented at appropriate stages to provide for a reliable network that demonstrates value for money. Objective 6: Environment, Social & Cultural - Avoid, manage and mitigate adverse effects on local residents, Mana Whenua and the environment.</p>
<p>Outcome: Consistency with all relevant plans and policies including Auckland Unitary Plan, ATAP, TFUG, PAUP, Roads and Streets Framework & ATCOP.</p>

-5	Very High Adverse Impact	National or Greater = May impact on a nationally significant resource (e.g. offends Section 6 of the RMA and / or National Policy Statement) / or may be experienced by a national scale audience; and / or May have a substantial / complete impact on the feature / resource / community identified; and / or Long Term / Permanent = 20+ years.
-4	High Adverse Impact	Regional = May impact on a regionally significant resource or may be experienced by a regional or wider audience (e.g. not consistent with Section 6 of the RMA and / or National Policy Statement) ; and / or May have a high extent of impact on features / resource / community identified; and / or Long Term / Permanent = 10 – 20+ years.
-3	Moderate Adverse Impact	Local Area Level Impact (1) = May impact on a locally significant resource (e.g. significant within an ecological district or within a catchment) or may impact on a local board community / geographic scale; and / or May have a moderate extent of impact on the feature / resource / community identified; and / or Medium term = 5 – 10 years.
-2	Low Adverse Impact	Local Area Level Impact (2) = May impact on a locally significant resource (e.g. significant within an ecological district or within a catchment) or may impact on a local board community / geographic scale; and / or May have some extent of impact on the feature / resource / community identified; and / or Short Term = 1 – 5 years.
-1	Very Low Adverse Impact	Individual level impact = May impact on resources not otherwise identified for their values or with otherwise innominate value or may impact a limited number of households (i.e. 20 households / 50 people); and / or May have a low extent of impact on the feature / resource / community identified; and / or Very Short Term = < 1 years.
0	Neutral Impact	Negligible impact or change from current situation / neutral
1	Very Low Positive Impact	Individual level benefit = Benefits may be experienced for resources not otherwise identified for their values or with otherwise innominate value. Benefits may be experienced by a limited number of households (i.e. 20 households / 50 people); and / or May have a low or small extent of benefits on the feature / resource / community identified; and / or Very Short Term = < 1 years.
2	Low Positive Impact	Local Level Benefit (2) = Benefits may be experienced by defined local environment or sub-catchment. Benefits may be on Census Area Unit or experienced by a limited number of households (i.e. 20 – 50 people); and / or May have a low extent of benefits on the feature / resource / community identified; and / or Short Term = 1 – 5 years.
3	Moderate Positive Impact	Local Level Benefit (1) = Benefits may be experienced for values of an ecological district or within a catchment, or at a local board community / geographic scale; and / or May have some extent of benefits on the feature / resource / community identified; and / or Medium Term = 5 – 10 years.
4	High Positive Impact	Regional Benefit = Benefits may be experienced for a sub-regionally significant resource / experienced by a sub-regional audience; and / or May have a high extent of benefits on the feature / resource / community identified (and confident of benefit being realised); and / or Long Term / Permanent = 10 – 20+ years.

5	Very High Positive Impact	Regional or Greater Benefit = Benefits may be experienced by a whole region or across regions (including national) or may be to a regionally or nationally significant resource; and / or May have substantial benefits on features / resources / community identified. High degree of confidence of benefits being realised; and / or Long Term / Permanent = 20+ years.
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MCA Topic	#	Criteria	Measure	Assessor	1	2	3	4	5	6	Rationale/Notes
Investment Objective											
1. Heritage	1a	Heritage	Extent of effects on: - sites and places of valued heritage buildings, trees (with heritage value) and places. - sites and places of archaeological value. - sites and places of European cultural heritage value.	Sonya McCall (AT) & Sven Exeter (Mott MacDonald)	0	0	0	0	0	0	AUP & Arch Sites show no sites. Historic Heritage Topic Report Silverdale West Dairy Flat Business Area Structure Plan December 2017 report shows "preliminary places of interest" (houses) at 1732 and 1744 Dairy Flat Highway which are set back far from the road so are unlikely to be affected.
2. Mana Whenua	2a	Mana Whenua Customary Practice	Access to resources and places of traditional practice (i.e. planting of bush, build accessways to food bowl areas)?	Mana Whenua	0	0	0	0	0	0	None of the alignments will significantly impact existing access to resources and places
	2b	Māori communities and wellbeing	Extent of effects on the relationship of Māori to their culture and traditions with their ancestral lands, water, sites of significance, waahi tapu, and other Taonga (tangible and intangible).	Mana Whenua	0	0	0	0	0	0	None of the alignments will significantly impact this over the existing alignment
	2c	Māori land	Effects on access to marae, papakāinga and Maori land.	Mana Whenua (as stated at 14 March 2019 Workshop)	0	0	0	0	0	0	Marae, papakainga & Maori land not within study area.
	2d	Whenua (land) & Ngahere (vegetation)	Effects on land and vegetation	Mana Whenua	-2	-1	-2	-2	-3	-3	Option 2 has the least impact in terms of ground disturbance and vegetation removal. It is expected all options will provide the appropriate mitigation/enhancement
	2e	Wai/awa - wairua, mauri & mahinga kai	Effects on waterways/water (e.g. best stormwater practice, stream crossings). (N.B: AUP E1.2. Objective (2) The mauri of freshwater is maintained or progressively improved over time to enable traditional and cultural use of this resource by Mana Whenua.)	Mana Whenua	-2	-1	-2	-2	-3	-2	All options will require and upgraded or new bridge over the stream. It is expected all options will provide an improved bridge and stormwater treatment for runoff from the road. Option 2 is the shortest route = less surface generating stormwater runoff
3. Socio-economic impacts	3a	Visual Impact	Visual effects on the existing and likely future landscape i.e. - - An inviting, pleasant and high amenity public realm - Open space integration - Active interface between public and private realm - Scale of long term impact on the amenity and character of the surrounding environment	Project Team Workshop (14 March 2019)	-2	-1	-1	-1	-2	-2	All options will have an impact on the existing environment but the longer the road and more bulk (e.g. more fill) the greater the impact.
	3b	Construction Disruption	Scale of impact on community and business due to temporary construction activity	Mott MacDonald (Greg & Ivan)	-2	-1	-1	-1	-3	-3	Options 5 and 6 significantly more earthworks ~65,000 m3 vs 5,000 m3 for other 4 options
	3c	Severance	Severance - minimising amount of non-developable severance land, maximise developable severance land	Project Team Workshop (14 March 2019)	-2	1	1	-1	-2	-2	Options 2 and 3 do not have any additional severance whereas all other options increase severance.

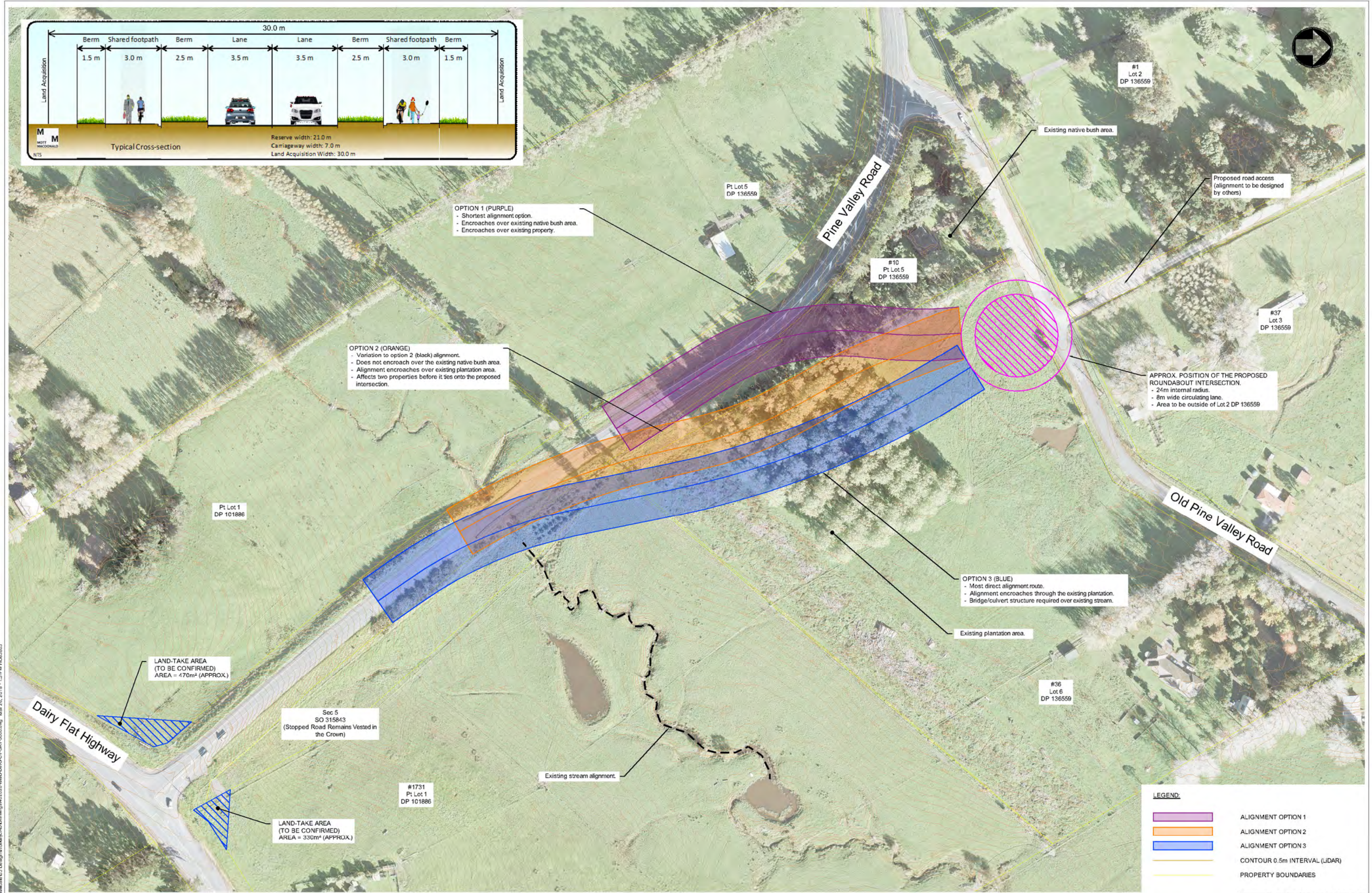
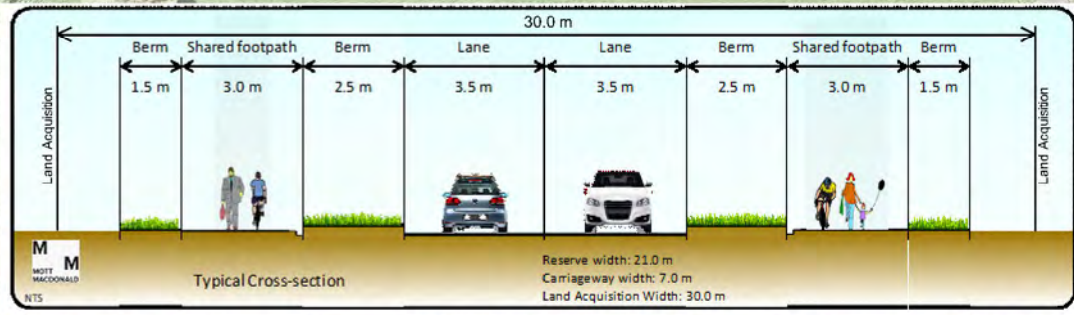
	3d	Land Requirement	Scale of private land (m2 / number of properties / unique status of impacted property)	Project Team* Workshop (18 March 2019)	-2	-1	-1	-2	-3	-3	Options 2 and 3 land requirement and number of properties (i.e. in common ownership) less than the other options.
	3e	Social Cohesion	Impact on connectivity / accessibility for the existing urban areas including access to: - Employment - Other communities or within the same community - Shops / services / other community and cultural facilities / 'attractors' - Severance of the existing community (including consented) - Scale of effect on existing community facilities and open space - Public access to the coast, rivers and lakes	Project Team Workshop (14 March 2019)	2	2	2	2	2	-1	All options except for Option 6 provide connectivity north-south. Positive impact may be actually higher (~3-4) than scored as it is a long term solution at a sub-regional level. Option 6 may not allow for north-south connectivity.
	3f	Human Health and Wellbeing	Will the option potentially affect any sensitive land uses nearby? particularly relating to: - Air Quality - Contaminated Land - Noise and vibration	Project Team Workshop (14 March 2019)	0	0	0	0	0	0	No sensitive land uses nearby.
4. Environmental Impacts	4a	Stormwater	Impact of operational stormwater (both quantity and quality) on the receiving environment, including: - Life supporting capacity - Potential flooding effects of the option within the catchment - Extent and consequences of likely mitigation measures (N.B. AUP E8.6.1 has a number of requirements such as "(4) The diversion and discharge must not cause or increase nuisance or damage to other properties.")	Project Team Workshop (14 March 2019)	1	2	2	2	1	1	Existing environment (roads) does not treat stormwater. Shorter length options would have less impact than longer options as event with 100% treatment there will be times in rainfall/flood (above design level) that may not get 100% treated.
	4b	Vegetation Carbon Sequestration	Extent of effects: - carbon sequestration loss (note even grassland sequesters carbon)	Project Team Workshop (14 March 2019 - adjusted 10 April 2019 by Sven based on Ngati Manuhiri observations)	-1	-1	-2	-2	-1	-2	The more trees affected, the higher the impact. Note: a quantitative assessment has not been undertaken comparing grassland removal vs tree species - scoring on this measure will need to be revisited should there not be a clear preferred option.
	4c	Terrestrial Fauna	Extent of effects: - habitats of indigenous fauna AUP Objective 15.2 (2) "Indigenous biodiversity is restored and enhanced in areas where ecological values are degraded, or where development is occurring."	Project Team Workshop (14 March 2019 - adjusted 10 April 2019 by Sven based on Ngati Manuhiri observations)	-1	-1	-2	-2	0	-3	The more trees affected, the higher the impact - assumes that trees required for fauna to be present. This is in the absence of any ecological/herpetological assessment being undertaken. Option 6 scores the worst due to cutting through native trees.

5. Environmental & Sustainability Opportunities	4d	Terrestrial Flora	Extent of effects: - indigenous flora and trees Refer AUP Objective 15.2 (2) & Objective E17.2: (2) <i>There is an increase in the quality and extent of tree cover in roads, particularly within areas identified for intensified living.</i> (3) <i>The safe and efficient development, maintenance, operation and upgrading of the transport system and utilities is enabled while ensuring that the overall ecological and amenity values provided by trees in roads are maintained.</i>	Project Team Workshop (14 March 2019 - adjusted 10 April 2019 by Sven based on Ngati Manuhiri observations)	-1	-1	-2	-2	0	-3	The more trees affected, the higher the impact. Note from Ngati Manuhiri. We would recommend Option 2 is changed to -1 because following our site visit it was established that the vegetation behind the dwelling was predominantly exotic. Sven - this has been adjusted. Note that initial information was that there are native trees at 10 Old Pine Valley Road but this does not appear to be correct. If simply scoring on native vegetation then options 1-5 could be scored equally as 0 as no significant natives affected. Option 6 route runs through native bush consisting of primarily manuka and cabbage tree.
	4e	Earthworks and land	Earthworks volumes range estimate and land footprint (N.B AUP Objective E11.2 (2) " <i>Sediment generation from land disturbance is minimised.</i> ")	Project Team Workshop (14 March 2019)	-2	-1	-1	-1	-3	-3	All options require earthworks with Option 5 and Option 6 fill volumes being significantly higher than the other 4 options.
	4f	Waterways and waterway crossings	Length and number of waterway crossings (culvert, bridge) / utilisation of existing waterway crossings (N.B AUP E3.2. Objectives (2) <i>Auckland's lakes, rivers, streams and wetlands are restored, maintained or enhanced.</i> (5) <i>Activities in, on, under or over the bed of a lake, river, stream and wetland are managed to minimise adverse effects on the lake, river, stream or wetland.</i>)	Project Team Workshop (14 March 2019)	-1	-1	-1	-2	-2	-2	Options 1-3 connect to the existing bridge on Pine Valley Road (bridge still will need upgrade/replacement) and options 4-6 need new crossing / does not connect at existing bridge.
	4g	Aquatic Ecology & Water Quality	Extent of effects: - Stream / water ecology / water quality (N.B AUP E1.2. Objective (1) <i>Freshwater and sediment quality is maintained where it is excellent or good and progressively improved over time in degraded areas.</i>)	Project Team* Workshop (18 March 2019)	1	1	1	1	-1	1	Construction effects may have a minor impact but long term impact may be better than current road - scored on effects of waterway. Comment from Ngati Manuhiri: While we acknowledge the routes are indicative, on the information given, Route 5 would see a longer stretch of stream impacted by the realigned road.
5. Environmental & Sustainability Opportunities	5a	Climate Change Outcomes	- Opportunities to improve requirement for adaptation e.g.: flooding, sea level rise, storm events, drought/heat waves - Ability to mitigate GHG emissions - construction and operational; - Access to renewables; ability to use renewable - Ability to be carbon neutral or better (i.e. offset with tree planting / use renewables) - Emissions trading scheme considerations (n.b. plantation) - Paris Agreement (" <i>reduce greenhouse gas emissions by 30 per cent below 2005 levels by 2030</i> ".)	Project Team* Workshop (18 March 2019)	0	0	0	0	0	0	Will be considered in NOR process. All options similar impact.
	5b	Landfill	Ability for zero waste to landfill	Project Team* Workshop (18 March 2019)	0	0	0	0	0	0	Will be considered in NOR process. All options similar impact as there is no excessive cut. N.B: Contaminated land investigations have yet to be undertaken.
	5c	Earthworks volume neutrality	Ability for cut/fill neutrality	Project Team* Workshop (18 March 2019)	0	0	0	0	-2	-2	Options 1-4 are mostly cut/fill neutral but options 5 and 6 require significant volumes of fill.

	5d	Ecological Opportunities	Can the option achieve the following outcomes: - Ecological restoration & enhancement - Implement green infrastructure opportunities - Improve ecological corridors / connectivity	Project Team* Workshop (18 March 2019)	1	1	1	1	1	1	All options have same potential which would be investigated through the NOR technical assessment phase.
	5e	Use of existing infrastructure	Can the option achieve the following outcomes: - re-use existing assets & reduce environmental footprint	Project Team* Workshop (18 March 2019)	-1	1	0	0	-2	-2	Option 1 utilising greatest length of existing road (Pine Valley Road) compared to all other options.
6. Transport	6a	Extension, Integration & Intersection Performance	Level of Service / Delay associated with intersection (Base being PPP minimum performance criteria if available) at AM and PM Peak and meets Milldale ITA AUP Objective E26.2.1 (5) <i>"The resilience of infrastructure is improved and continuity of service is enabled."</i>	Project Team* Workshop (18 March 2019)	1	2	2	2	1	-2	Options 1, 5 and 6 have longer routes and Option 6 may cause queue issues at interchange/Dairy Flat Road and is a longer route for persons trying to travel from Milldale in the north to Silverdale West in the south or if trying to travel west as may need to travel the entire way to the interchange.
	6b	Walking provision	Ease of use of facility - length of facility provided, linkages to destinations, gradients, catchment served. AUP Objective E27.2 (2) <i>"An integrated transport network including public transport, walking, cycling, private vehicles and freight, is provided for."</i>	Project Team* Workshop (18 March 2019)	-1	2	2	2	1	-1	Option 1 walking route has additional intersection at Old Pine Valley Road and Pne Valley Road to contend with. Walking facility at interchange would not be provided for Option 6.
	6c	Cycling provision	Ease of use of facility (LOS) - length of facility provided, linkages to destinations and compatibility to cycle network (if available), gradients, catchment served.	Project Team* Workshop (18 March 2019)	-1	2	2	2	1	-1	Option 1 cycling route has additional intersection at Old Pine Valley Road and Pne Valley Road to contend with. Cycling facility at interchange would not be provided for Option 6.
	6d	Public Transport provision / future proofing	Options to allow for width for PT facilities and integration with wider network connections	Project Team* Workshop (18 March 2019)	-1	1	1	1	1	-2	Option 6 likely to cause issues at interchange. Option 1 has additional intersection and less integrated.
	6e	Consistency with Supporting Growth Plans & Integration	Alignment with TFUG Programme Business Case AUP Objective E27.2 <i>"(1) Land use and all modes of transport are integrated in a manner that enables: (a) the benefits of an integrated transport network to be realised"</i>	Project Team* Workshop (18 March 2019)	2	2	2	2	2	-3	Option 6 does not fit with TFUG.
	6f	Consistent with Safe System Approach	Provision of an safe urban road corridor & Vision Zero AUP Objective E27.2 <i>"(5) Pedestrian safety and amenity along public footpaths is prioritised."</i>	Mott MacDonald (Greg & Ivan)	2	2	2	2	2	2	All options able to be safely designed.
	6g	Geometrics	Safety of alignment and intersections measured by number of departures from standards (from Auckland Transport's Transport Design Manual, sight distance) e.g. complies with Silverdale Interchange setbacks AUP Objective E26.1 <i>"(3) Safe, efficient and secure infrastructure is enabled, to service the needs of existing and authorised proposed subdivision, use and development."</i>	Mott MacDonald (Greg & Ivan)	-1	0	0	-1	-2	0	All options will be designed to comply with AT's transport design manual. Options 1 and 5 is less efficient i.e. alignments are less direct and options 4 and 5 includes a longer steep vertical grade that is less desirable for heavy commercial vehicles. Options 2 and 3 are maintained at existing grade.
7. Cost and Construction Risk	7a	Whole of life cost	Operational and Maintenance cost of options as a whole of life cost.	Mott MacDonald (Greg & Ivan)	-2	-1	-1	-1	-2	-3	All options will include either upgrading of the existing bridge or a new bridge structure over the existing stream. Option 5 includes major earthworks and will require additional open drainage that will require on-going maintenance. All options will require additional

8. Urban Development Opportunities	8a	Economic opportunities	Ability for the option to contribute / facilitate economic opportunities that are desired with future development (e.g. enabling transport nodes / transport orientated development).	Project Team* Workshop (18 March 2019)	2	2	2	2	2	2	maintenance, therefore the shorter route will require less. All options are likely to aid economic opportunities compared to the existing environment.	
												*Sonya McCall (AT), Marion Forman (AT), Crystal Chan (AT), Aimee Barwick (MM), Greg Booth (MM) & Sven Exeter (MM). ^ Option 6 scored on indicative alignment as discussed at 14 March 2019. Scoring is preliminary only. Cross sections and further analysis to be undertaken to confirm scoring.
				Total	-13	10	4	-1	-17	-38		

D. Short List Options



OPTION 1 (PURPLE)

- Shortest alignment option.
- Encroaches over existing native bush area.
- Encroaches over existing property.

OPTION 2 (ORANGE)

- Variation to option 2 (black) alignment.
- Does not encroach over the existing native bush area.
- Alignment encroaches over existing plantation area.
- Affects two properties before it ties onto the proposed intersection.

OPTION 3 (BLUE)

- Most direct alignment route.
- Alignment encroaches through the existing plantation.
- Bridge/culvert structure required over existing stream.

APPROX. POSITION OF THE PROPOSED ROUNDABOUT INTERSECTION.

- 24m internal radius.
- 8m wide circulating lane.
- Area to be outside of Lot 2 DP 136559

LAND-TAKE AREA (TO BE CONFIRMED)
AREA = 470m² (APPROX.)

LAND-TAKE AREA (TO BE CONFIRMED)
AREA = 330m² (APPROX.)

Sec 5
SO 315843
(Stopped Road Remains Vested in the Crown)

Existing stream alignment.

LEGEND:

- [Purple Box] ALIGNMENT OPTION 1
- [Orange Box] ALIGNMENT OPTION 2
- [Blue Box] ALIGNMENT OPTION 3
- [Yellow Line] CONTOUR 0.5m INTERVAL (LIDAR)
- [Black Line] PROPERTY BOUNDARIES

CONSULTATION

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DO NOT SCALE OFF THIS DRAWING.
VERIFY ALL DIMENSIONS ON SITE
BEFORE COMMENCING ANY WORK.

CONSULTANT PROJECT NO.
MOTT MACDONALD: 402828

CONSULTANTS

MOTT MACDONALD

CLIENT

Auckland Transport

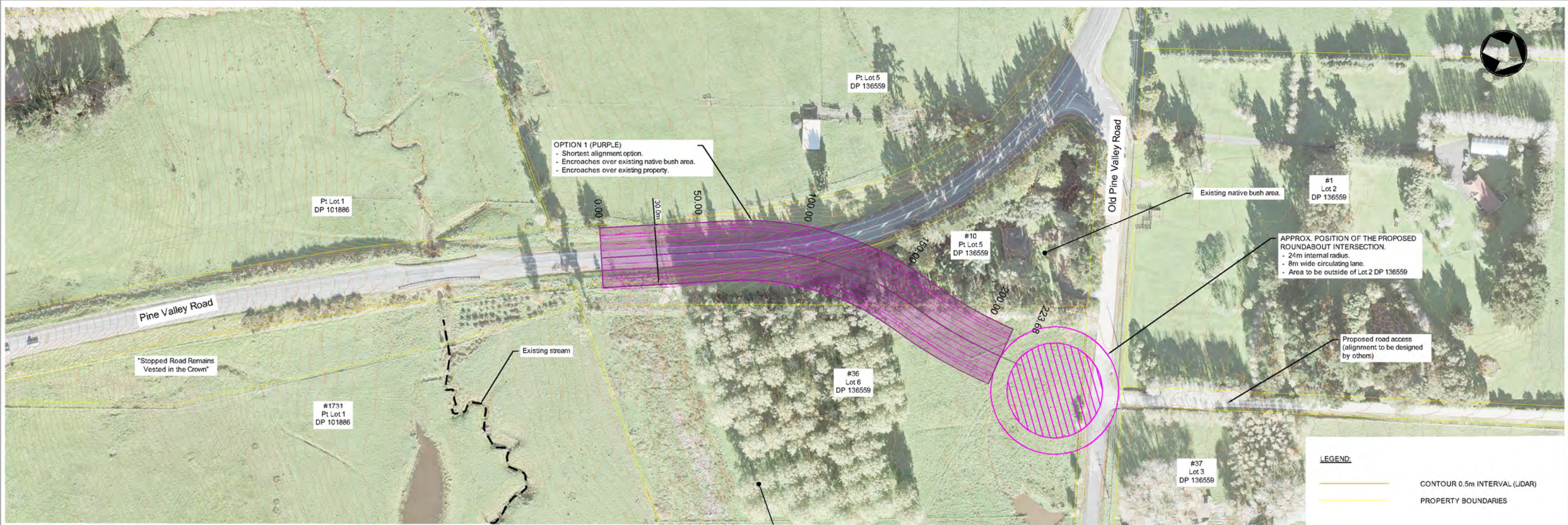
PROJECT
**MILLDALE DEVELOPMENT
INFRASTRUCTURE PROJECTS**

PROJECT TYPE: NEW CONSTRUCTION
PROJECT PHASE: DETAILED DESIGN
CONSULTANT PROJECT NO.: 402828 Milldale

DRAWING
Milldale Development - Argent Lane
Sketch Plan

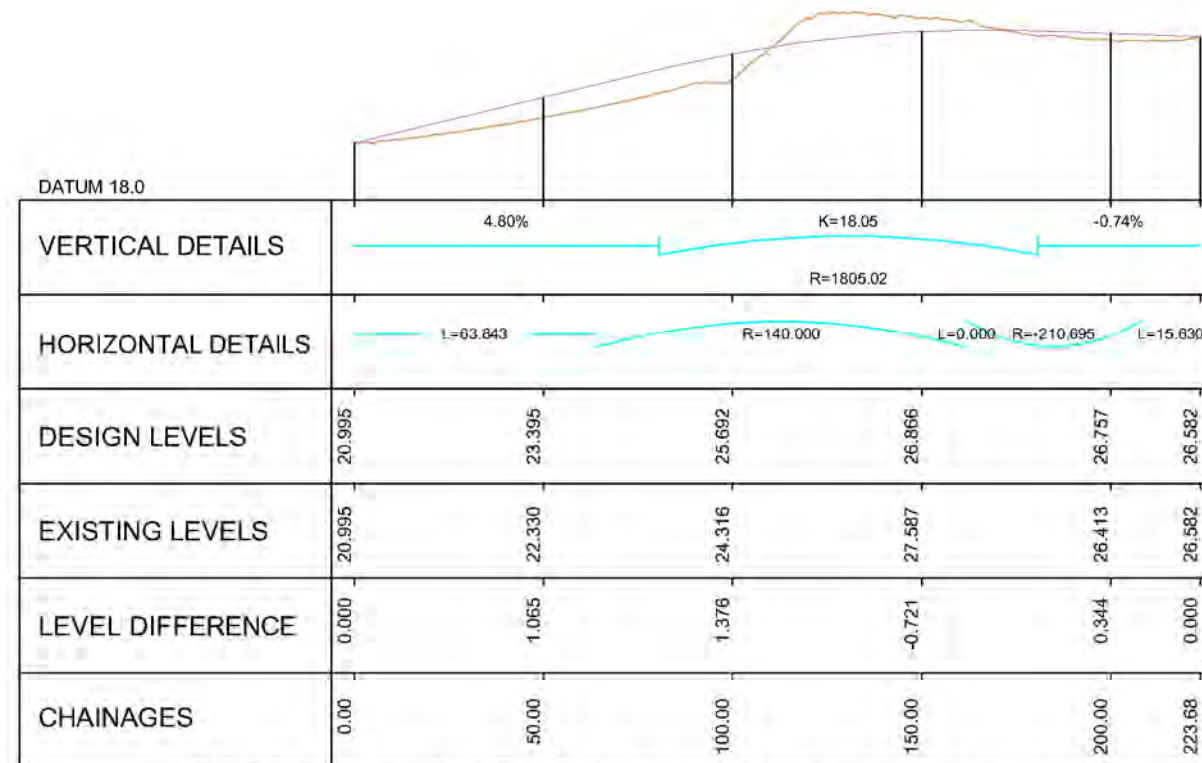
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REVISION A

SKETCH SCALE (A1) 1:1000



PLAN VIEW

SCALE - 1 : 1000

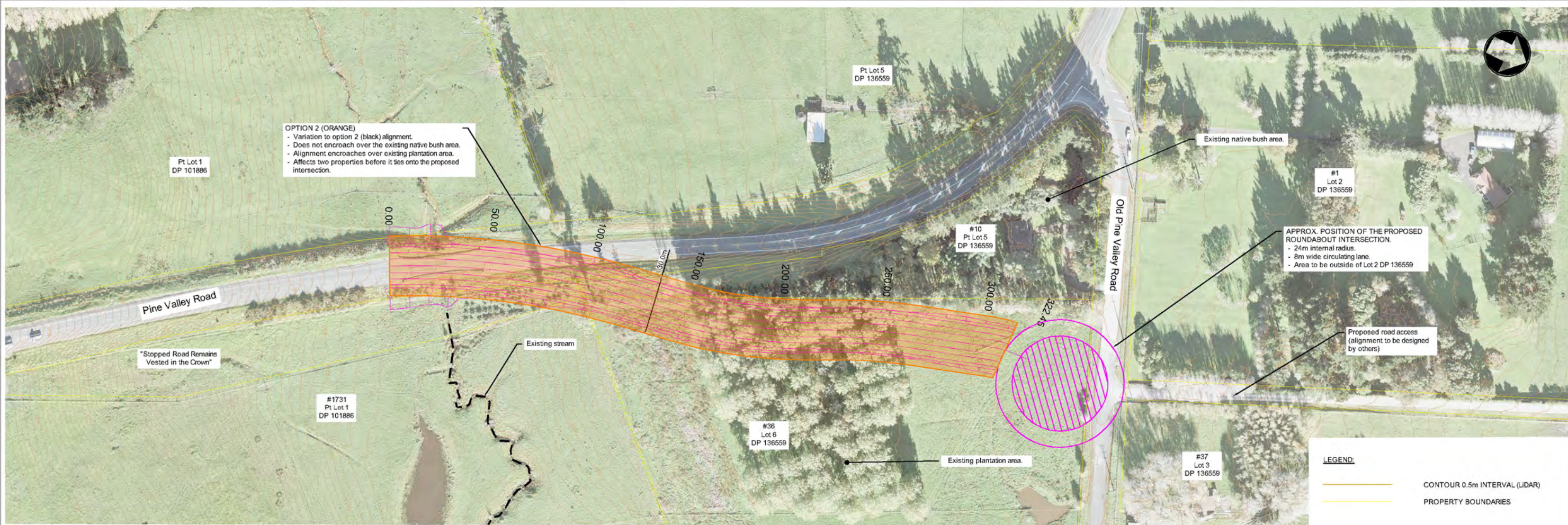


LONGSECTION - OPTION 2 (BLACK) CENTRELINE HORIZONTAL - 1 : 1000 VERTICAL - 1 : 200

CONSULTATION

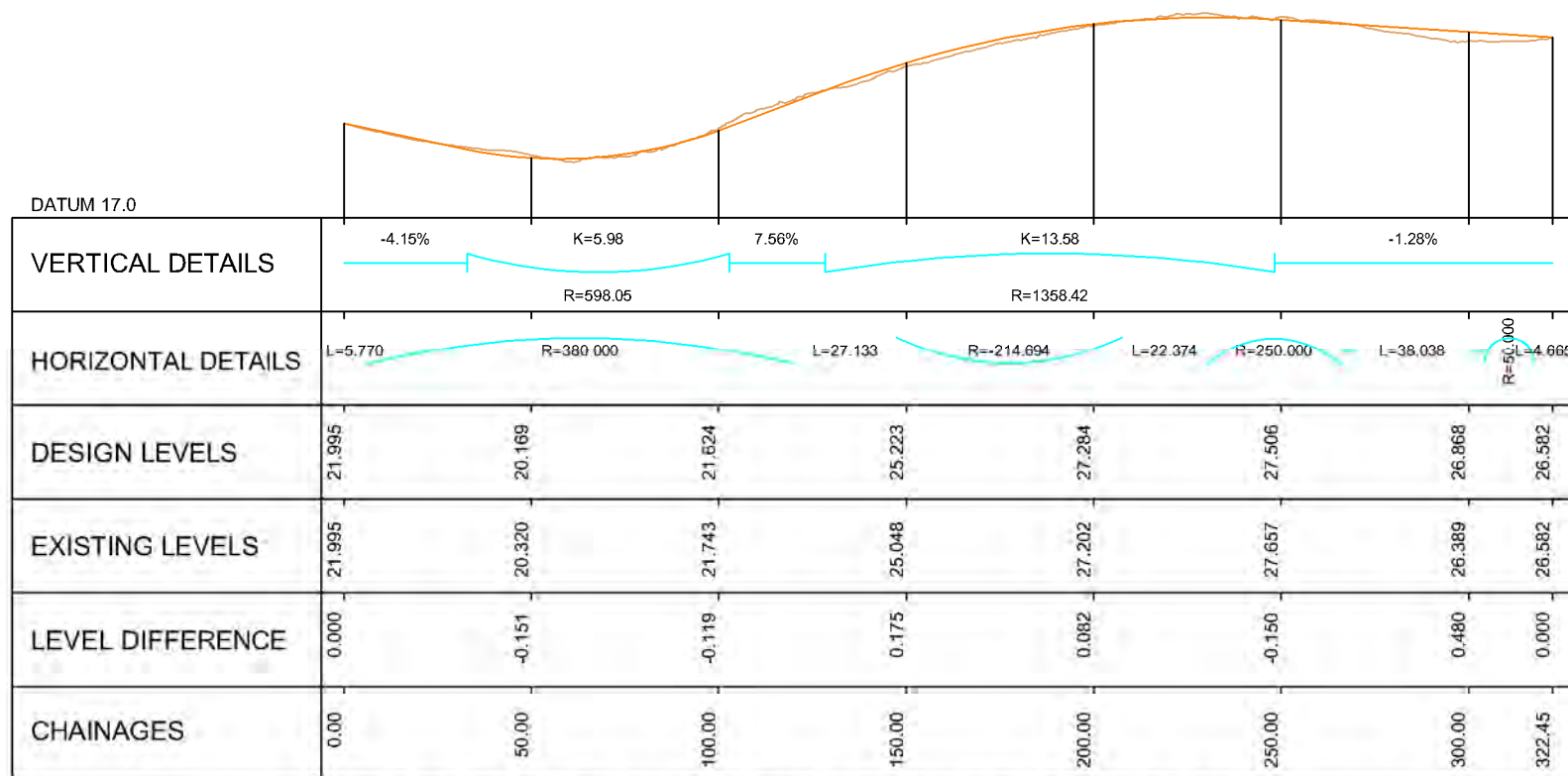
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PLAN VIEW

SCALE - 1 : 1000



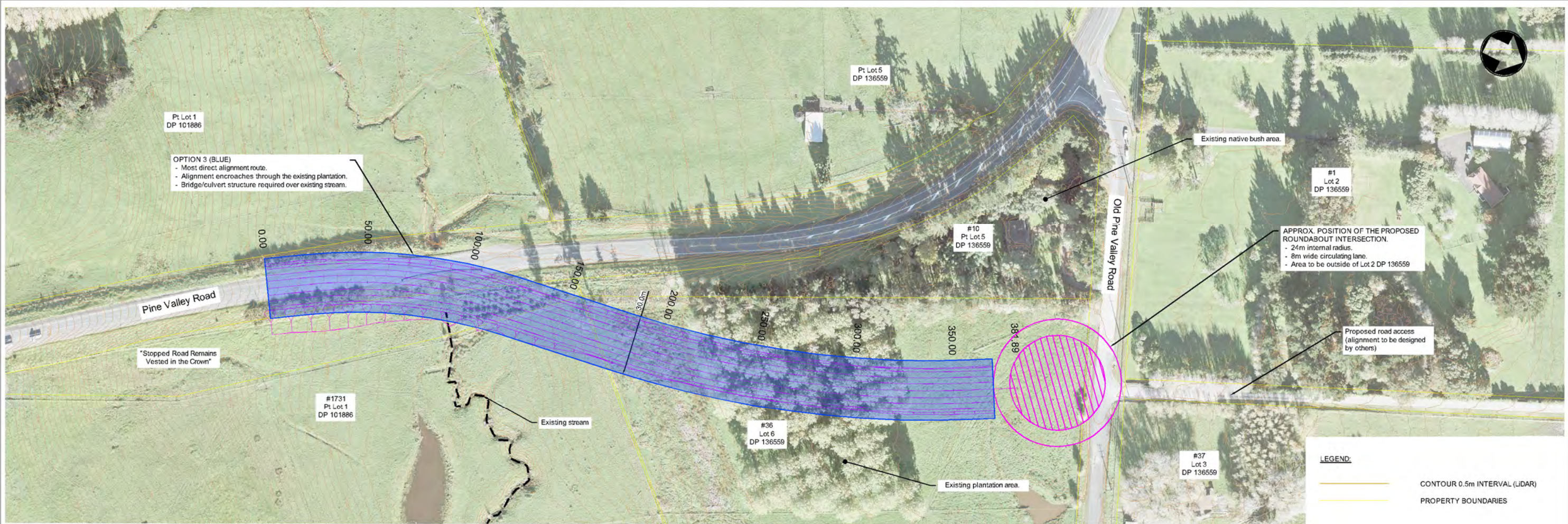
LONGSECTION - OPTION 3 (ORANGE) CENTRELINE

HORIZONTAL - 1 : 1000 VERTICAL - 1 : 200

CONSULTATION

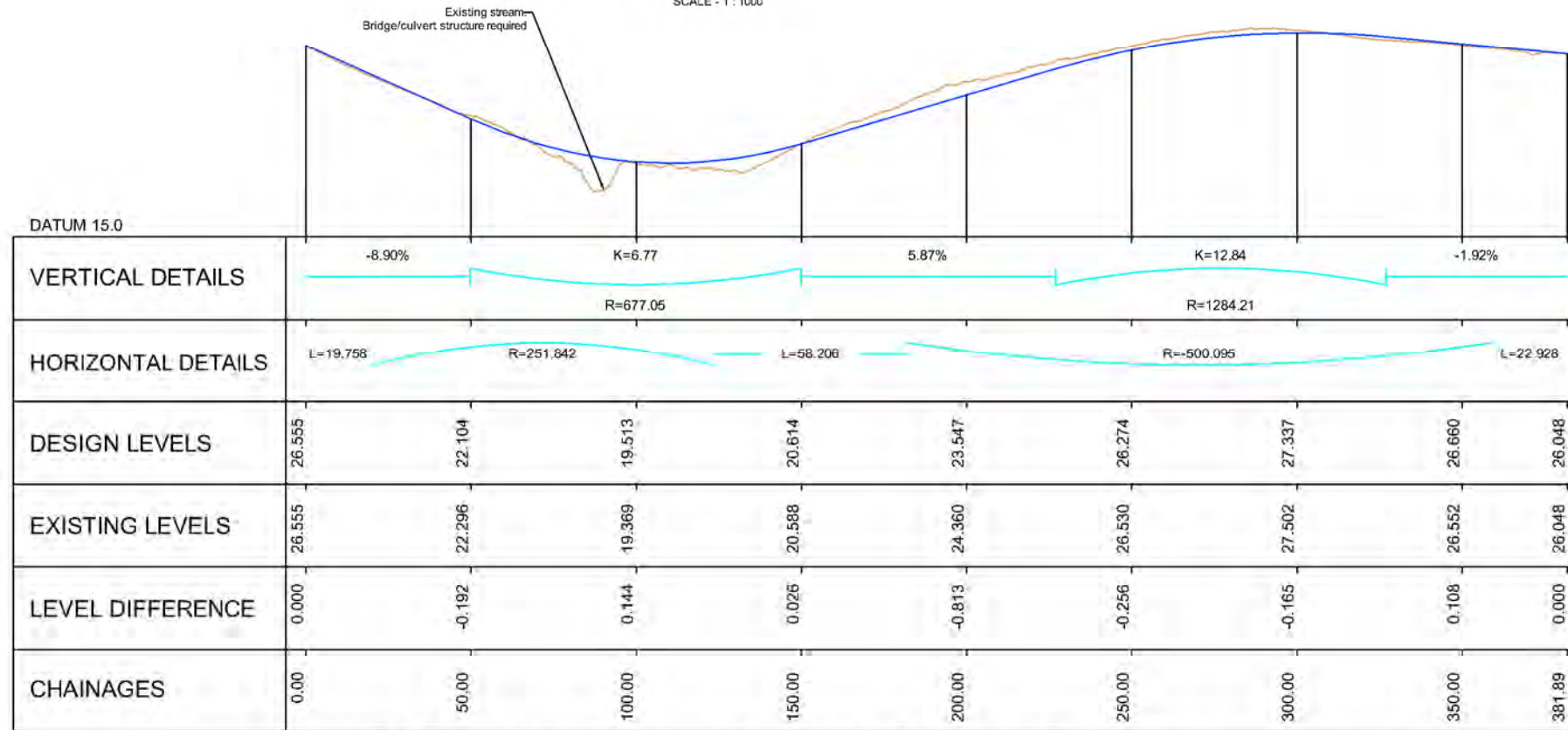
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PLAN VIEW

SCALE - 1 : 1000



LONGSECTION - OPTION 4 (BLUE) CENTRELINE

HORIZONTAL - 1 : 1000 VERTICAL - 1 : 200

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