

Knight Investments Limited

Attention: Mr Doyle Smith

Dear Doyle

APPLICATION FOR FAST TRACK REFERRAL GEOTECHNICAL DESKTOP ASSESSMENT

1 INTRODUCTION

1.1 Project Concept

The purpose of this Project is to deliver a regionally significant industrial and employment hub. The Project capitalises on its location surrounding (and including) Ardmore Airport its accessibility to major transport networks (particularly the planned Mill Road corridor) and its proximity to the growing residential areas of Takaanini, Manurewa, Papakura and Drury.

The Project Area is approximately 511 hectares.

Of this total, it is anticipated that:

- (a) The net developable area will be between 193-276 hectares, which excludes significant ecological areas ("SEAs"), streams, stormwater management areas and that part of the Airport either used for existing operations/runways or already under construction.
- (b) The likely gross floor area for future activities / buildings would be between 67 hectares and 136 hectares, with additional land required for yards, individual site landscaping and car parking etc.

At a broad level the Project includes:

- (a) The construction and development of a business park for light industry/service type activities.

- (b) A green / blue network providing riparian planting, stormwater management and wastewater disposal and protection of existing SEAs.
- (c) Upgrades to existing roads and intersections.
- (d) New roading connections to the Airport and the wider site.
- (e) Land modification works and infrastructure.

The sites that form part of the Project are set out in Table 1 (Appendix A) to this report. Appendix A also identifies those sites and roads for which infrastructure and/or upgrade works are required.

1.2 Project Brief and Scope

Knight Investments Limited is advancing plans to develop the site (Ardmore Business Park); described as Areas A to E (refer Appendix A) for light industrial activities under the Fast-track Approvals Act 2024. The extent of the Project Area is depicted in the Development Concept drawings (Appendix A) and spans 59 existing property titles (the Project Area).

LDE has been engaged to provide a concise high-level assessment of the Project Area's geotechnical suitability, the anticipated challenges, and how these can be effectively managed throughout development. If the referral application is accepted, then more substantive geotechnical investigations and evaluations will be undertaken.

1.3 LDE's Experience

LDE's Principal Geotechnical Engineer, Shane Lander (CPEng, CMEngNZ), has over 30 years of experience in geotechnical engineering. He has led and contributed to a wide range of land development and infrastructure projects across the Auckland region.

His work includes providing expert technical input for fast-track consenting / plan change processes - notably, the Takanini Structure Plan Areas 6A/6B (PC15) and major residential and commercial projects in the Takaanini and Papakura districts, including a light industrial subdivision at Ardmore Airport, where peat ground conditions are common. His proven track record in designing solutions for these development and soil types provides a high level of confidence that the geotechnical aspects of the Ardmore Business Park development can be effectively addressed to support safe, efficient, and resilient light industrial construction.

LDE's Associate Engineering Geologist, Kyle Meffan (PEngGeol), has over 9 years of experience in geotechnical engineering. He has led and contributed to a wide range of land development and infrastructure projects across the Auckland region.

His work includes providing expert technical input for fast-track consenting / plan change processes - notably, the Sunfield specified development and the Warkworth South plan change (PC93), as well as various residential developments in the Takaanini district where peat ground conditions are common.

1.4 Existing Reports

In preparing this memorandum, LDE has reviewed the following geotechnical reports. These documents are relevant as they relate to sites located within (or directly adjacent to) parts of the Project Area.

- Riley Consultants Limited, Geotechnical Investigation Report for Proposed Multi-Building Relocation at 396 Airfield Road, Ardmore
- Geotek Services Limited, Geotechnical Feasibility Report for Future Ardmore Airport Commercial/Industrial Development, Ref No 4894F-2015, dated 30 October 2015.
- McMillan Drilling Limited, Bore No 30027 Report at 400 Airfield Road, Ardmore, Ref No 100187, dated 6 April 2016.
- Lander Geotechnical Consultants Limited, Geotechnical Investigation Report for Ardmore Airport Development – Precinct A, Ref No J00645-Rev1, dated 21 April 2021.
- Lander Geotechnical Consultants Limited, Geotechnical Report for Proposed Extension to Office Building at 396 Airfield Road, Ref No J00373, dated 17 May 2021.
- LDE Limited, Geotechnical Assessment Report for Ardmore Airport Industrial & Commercial Development Stage 3, Ref No J00645, dated 21 December 2022.
- Stantec Limited, Ground Investigation Report – Park C: Geotechnical Factual Report Takanini 2 Renewal (Draft), Ref No 310104135, dated 3 February 2025.
- LDE Limited, Geotechnical Completion Report for Ardmore Airport Industrial Development Stage 1, Ref No J00645, dated 16 April 2022.

Additionally, available relevant records held in the New Zealand Geotechnical Database have been reviewed.

2 DEVELOPMENT CONCEPT

Earthworks concepts to develop the land will involve cuts and fills to effectively manage stormwater flows and provide flood attenuation.

The proposed development is understood to be for light industrial use, typically comprising single-storey buildings with or without timber mezzanine floors and metalised hardstand areas. Building structures would commonly feature reinforced concrete block or tilt-panel boundary walls, lightweight roofing and cladding supported by timber or steel portal/truss frames, and reinforced concrete floor slabs on grade founded on shallow strip or pad footings. For this type of end use, uniformly distributed floor loads generally do not exceed 10 kPa.

3 PROJECT AREA GEOMORPHOLOGY

The Project Area is geomorphically unremarkable, characterised by generally flat to gently undulating terrain currently used for grazing / rural activities. There is a sparse coverage of individual dwellings and ancillary farm structures.

Figures 01 to 04 (Appendix B) present aerial photographs from 1990 to the 2024-25, showing that the landform and surface conditions have remained largely unchanged over that time. Figure 08 confirms that no significant public services or infrastructure traverse the Project Area.

4 PROJECT AREA GEOLOGY

Published geological mapping indicates that the Project Area is underlain by three geological units — the Puketoka Formation, the younger Tauranga Group alluvium, and the East Coast Bays Formation (Waitemata Group) residual soils. This is shown on Figures 06 and 07 (Appendix B). The Tauranga Group alluvium covers most of the Project Area.

The Puketoka Formation, part of the broader Tauranga Group lithology, was deposited during the late Pliocene to middle Pleistocene epochs (approximately 3.5 to 0.071 million years ago). It typically comprises moderately consolidated mixtures of clay, silt, and sand, sometimes containing organic-rich layers or inclusions, and may locally include discontinuous sensitive pumiceous silt horizons.

The overlying Tauranga Group alluvium was deposited during the Holocene period (approximately 14,000 years ago to present) and consists of organic-rich alluvial and colluvial soils, typically sands, silts, and clays with localised gravel and deep fibrous peat deposits. These deposits form the younger sequence of the Tauranga Group and can extend to depths exceeding 30 metres.¹ They are 'normally' consolidated, meaning they have never experienced surcharge loadings greater than those that exist today.

The East Coast Bays Formation geology comprises interbedded extremely weak to weak sandstone and siltstone. These rocks weather to hard 'transitional' soils before forming a completely weathered residual clay and silt mantle with a typically sharp contact between materials of various weathering states.

5 GEOTECHNICAL CONSIDERATIONS

5.1 Natural Geo-Hazards

The geotechnical conditions across the Project Area are generally well understood. The land is predominantly flat to gently undulating, with no geomorphic indicators of large-scale instability, and no mapped landslides identified

¹ Source: McMillan Drilling Limited, Bore No 30027 Report – as referenced in Section 1.2 of this report.

on Auckland Council's GIS system (Figures 10 to 12, Appendix B). The hazard zoning provided in these figures is provided by Auckland Council for the purposes of Plan Changer 120 landslide susceptibility assessments, and no representation is given to their accuracy or otherwise.

We consider that the wider area has a low seismic and liquefaction hazard, although this will need to be confirmed through detailed site investigations, as the Project Area is currently mapped by Auckland Council as "undetermined" (refer Figure 07, Appendix B).

However, large areas of the Project Area are underlain by Tauranga Group (Holocene) alluvium as depicted on Figures 05 and 06 (Appendix B), which will require careful consideration in terms of bearing capacity and consolidation settlement. Similar developments within the Ardmore Airport precinct and further west in Takanini have successfully been constructed on these deposits but their characteristics will necessitate specific design of geotechnical mitigation measures for future earthworks and foundation works for proposed buildings.

5.2 Building Foundations

The Puketoka Formation and East Coast Bays Formation soils typically contain little to no peat or organic material, resulting in a lower risk of settlement under earthworks surcharge or light industrial building loads.

In contrast, the younger Tauranga Group (Holocene) alluvium, which covers much of the Project Area, is softer and peat-bearing, and therefore susceptible to significant total and differential settlements - potentially in the order of hundreds of millimetres under fill surcharges, heavier structures or larger building footprints - or drawdown of the groundwater table. While preloading may mitigate some of this settlement, rebound effects can occur once preload is removed, making outcomes less predictable.

Accordingly, and depending on applied building loads, more substantial foundation solutions are generally required in these areas, such as stiffened floor slabs, engineered ground improvement (e.g. stone columns, rigid inclusions, or soft pile rafts), or buildings fully suspended on deep piles founded in competent strata beneath the peat. The appropriate foundation strategy will ultimately depend on the specific building configuration and load regime, which will be addressed at the time of any substantive application.

Infrastructure to serve any substantive application, such as drainage networks and roading, will need to be specifically designed with long term settlement, high groundwater, and poor bearing subgrade conditions in mind.

5.3 Earthworks Fills

Bulk earthworks with engineered, certified fills are likely to be required across the Project Area to enable stormwater management and flood attenuation. However, once surcharge loads are applied, significant settlement is expected - particularly within the compressible Tauranga Group (Holocene) alluvium. These settlements will not only be substantial but will continue over very long timeframes (50+ years), albeit at reducing rates.

To quantify this properly, robust site investigations are essential. These will define subsurface conditions and allow credible estimation of both primary and secondary consolidation and their respective rates. Trial preloading is a critical element of the geotechnical strategy. Similar preload trials in the Takanini and Ardmore peat geology have underpinned successful developments, providing real-world data on ground response under simulated surcharge and end-user loads.

Such trials here will verify the Project Area's actual behaviour under foreseeable loadings, provide calibration data for settlement modelling, and enable reliable back-analysis to predict long-term secondary consolidation over the next 50+ years. These matters can be addressed at the substantive application stage, including through imposition of conditions on any resource consents obtained.

5.4 Earthworks Cuts

The Tauranga Group (Holocene) soils typically comprise a thin desiccated surface 'crust' - whether organic or inorganic – displaying relatively high vane shear strengths, effectively bridging the soft, saturated fibrous peats beneath. This crust can be anywhere from 300mm to 2m thick (more or less), and the groundwater table often sits somewhere within this same zone, fluctuating seasonally.

When cuts are made, this bridging layer may be partially or completely removed. Once that happens, the soft organic deposits are exposed. This provides bearing capacity issues, and potential for machinery 'bogging' during construction, and more onerous subbase, foundation and/ or ground improvement requirements for roading and buildings.

Where deeper, drained cuts are proposed, there is an added risk of permanent groundwater drawdown that may trigger long-term differential settlement in the surrounding land.

As noted earlier, detailed site investigations will be essential to properly define and manage geotechnical risks within cut areas to ensure effects on neighbouring land are restricted to an acceptable level. As with the proposed fills, these matters can be addressed at the substantive application stage.

5.5 Geotechnical Engineering Measures

Following site investigations, trial preloading and analyses, mitigation strategies for bearing capacity and consolidation settlement issues may include:

- Preloading and overfilling of engineered bulk fills for a designated holding period before preload removal;
- Increasing pipeline gradients or diameters to compensate for potential reductions in flow velocities over time due to 'dipping';
- Flexible service connections between pipelines and buildings to accommodate ground movement;
- Use of transition slabs at driveway-to-warehouse interfaces to manage differential settlement;
- Other site-specific measures tailored to minimise settlement impacts on infrastructure and buildings;

- Groundwater recharge and elimination of long-term groundwater drawdown; and
- A post-construction settlement and groundwater level monitoring programme spanning the anticipated duration of settlement (e.g. up to 50 years), with alert and alarm levels triggers / annual reporting (this is usually imposed as a consent condition in LDE's experience).

6 KEY GEOTECHNICAL RECOMMENDATIONS

In light of the geotechnical considerations discussed above, the following next steps will be undertaken as part of the substantive application:

- 1. Targeted Geotechnical Site Investigations and Reporting:** Further site-specific geotechnical investigations, tailored to the scale and nature of the proposed earthworks and any end user delivery standards. These investigations should confirm subsurface conditions and confirm the site-specific constraints. We anticipate that an appropriate investigation would include a combination of Cone Penetration Tests (CPTs), Dilatometer Tests (DMT's), rotary cored machine boreholes, hand auger boreholes, groundwater monitoring and representative soil sampling.
- 2. Laboratory Testing of Soil Samples:** Collected samples should undergo laboratory testing to assess key geotechnical parameters, including strength, compressibility, permeability, and expansivity. These properties will help inform foundation design, earthworks management, and long-term performance.

It is envisaged that as part of any future conditions of consent that settlement and groundwater management plans would be required, which will include parameters for (but not limited to):

- **Preload Trials:** To calibrate actual Project Area response to the applied surcharges compared to theoretical settlement estimates from the Geotechnical Site Investigations, and help inform finalised earthworks design, preload design, settlement monitoring protocols and the magnitudes / rates of long-term secondary consolidation settlement.

Based on our prior investigations in adjacent developments, undertaking these steps is necessary to confirm assumptions, predict long term ground performance and optimise design outcomes.

7 CONCLUSIONS

The above outlines the known and anticipated potential effects relating to geotechnical natural hazards. Based on our experience these effects can be appropriately managed (as addressed above) as part of any substantive application.

8 LIMITATION

This desktop report should be read and reproduced in its entirety including the limitations to understand the context of the opinions and recommendations given.

This report has been prepared exclusively for Knight Investments Limited in accordance with the brief given to us or the agreed scope and they will be deemed the exclusive owner on full and final payment of the invoice. Information, opinions, and recommendations contained within this report can only be used for the purposes with which it was intended. LDE accepts no liability or responsibility whatsoever for any use or reliance on the report by any party other than the owner or parties working for or on behalf of the owner, such as local authorities, those parties associated with assessing or decision making under the Fast Track Approvals Act 2024, and for purposes beyond those for which it was intended.

This report was prepared in general accordance with current standards, codes and best practice at the time of this report. These may be subject to change.

For and on Behalf of LDE Ltd

Report prepared by:



Shane Lander

Principal Geotechnical Engineer

NZCE (Civil), BE (Hons), CPEng, CMEngNZ



Kyle Meffan

Associate Engineering Geologist

BSc (Hons), MSc, CMEngNZ (PEngGeol)

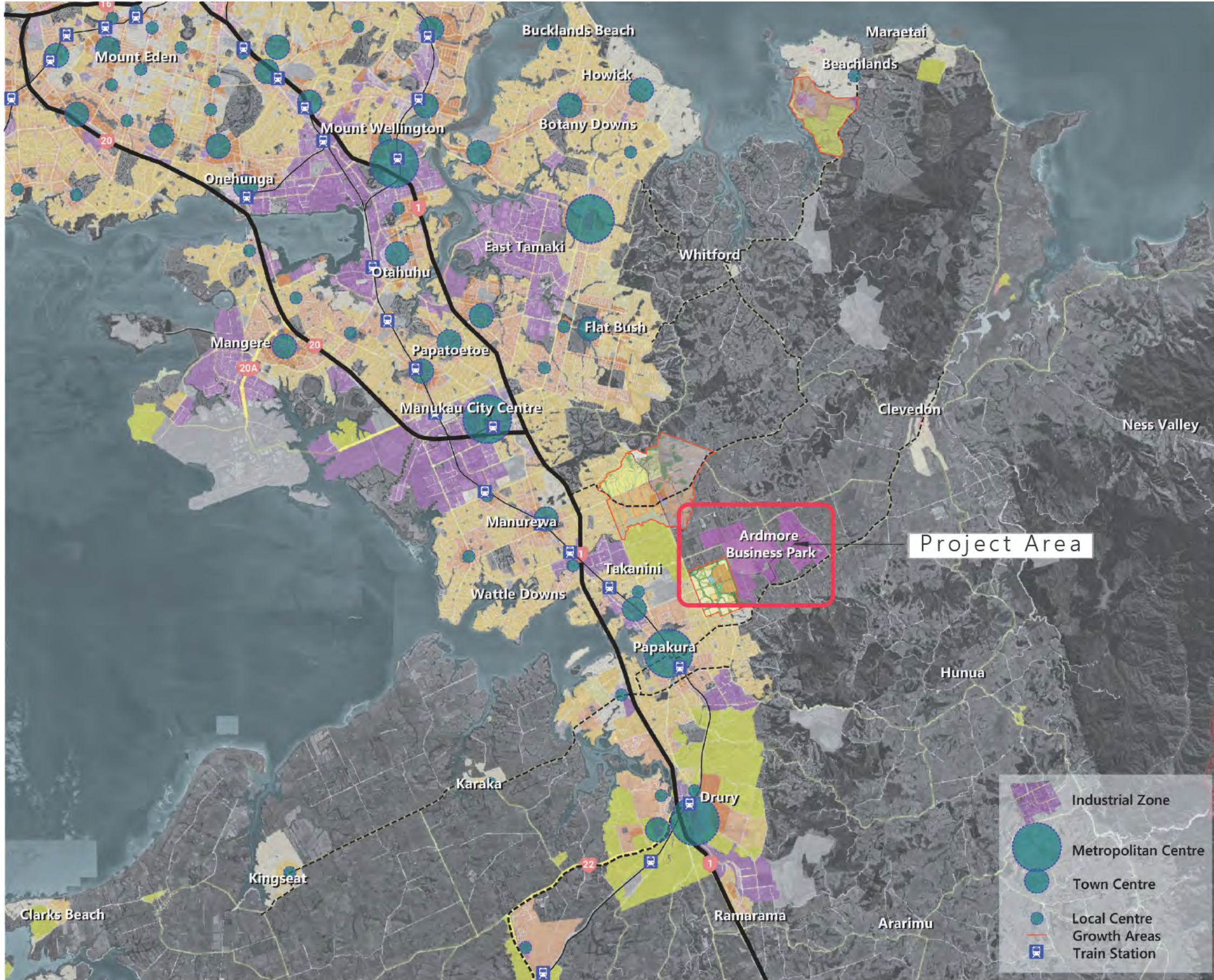
APPENDIX A

DEVELOPMENT CONCEPT



Employment into the Future

The Big Picture



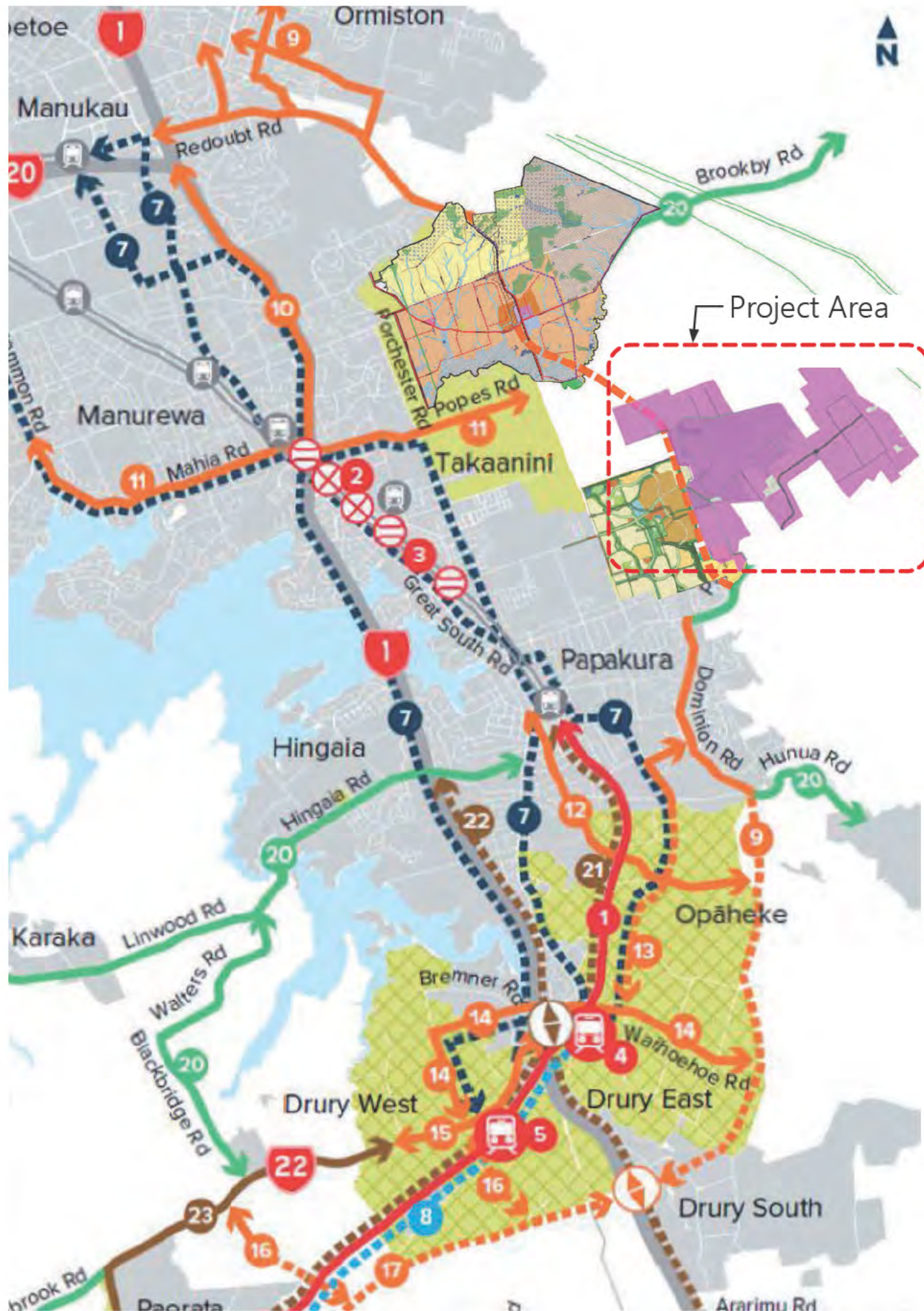
Region

- Recent rezoning in South Auckland has been residentially and retail focussed.
- Population growth forecast to increase 50% in the next 30 years in South Auckland.
- There is a significant shortage of industrial land across Auckland, particularly in South Auckland.
- The shortage will worsen without more industrial areas being developed.
- The focus on employment should be providing opportunities for jobs close to where people are choosing to live.

Site

- Ardmore Airport is one of the country's busiest general aviation airfields.
- The location enhances supply chain efficiency, complementing other industrial areas such as Drury, Auckland Airport, Wiri and East Tamaki.
- Close to existing and future labour markets.
- Capitalises on proximity to State Highway 1, Mill Road, the North Island main rail network, natural gas infrastructure, and electrical substations.

Roading & Access



Current Opportunities

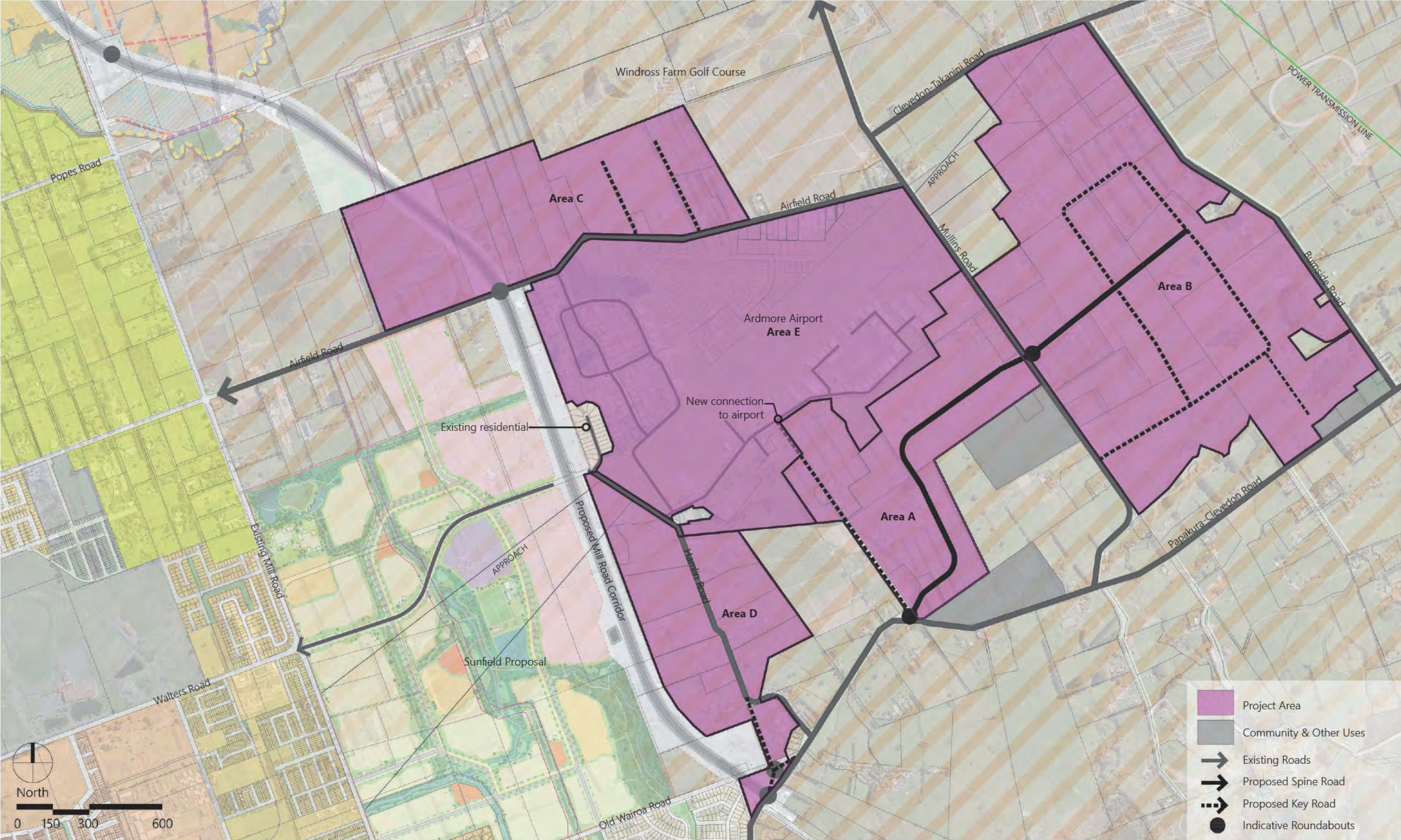
- Adjacent to over-dimension truck routes (including Mill Road and Papakura-Clevedon Road)
- Well served by the arterial road network, including Airfield Road, Papakura-Clevedon Road and Mill Road
- Supports Auckland Transport investment in infrastructure with the grade separation of Takanini Level Crossings (Committed Project) providing improved access to Great South Road and State Highway 1
- Increases employment opportunities to growing South Auckland residential catchments (Takanini, Papakura) reducing distance travelled to wider employment hubs

Future Opportunities

- Is located immediately adjacent to and supports NZTA/ Government investments in infrastructure (Mill Road – being a Road of National Significance)



Project Area



Concept Plan



Precedent

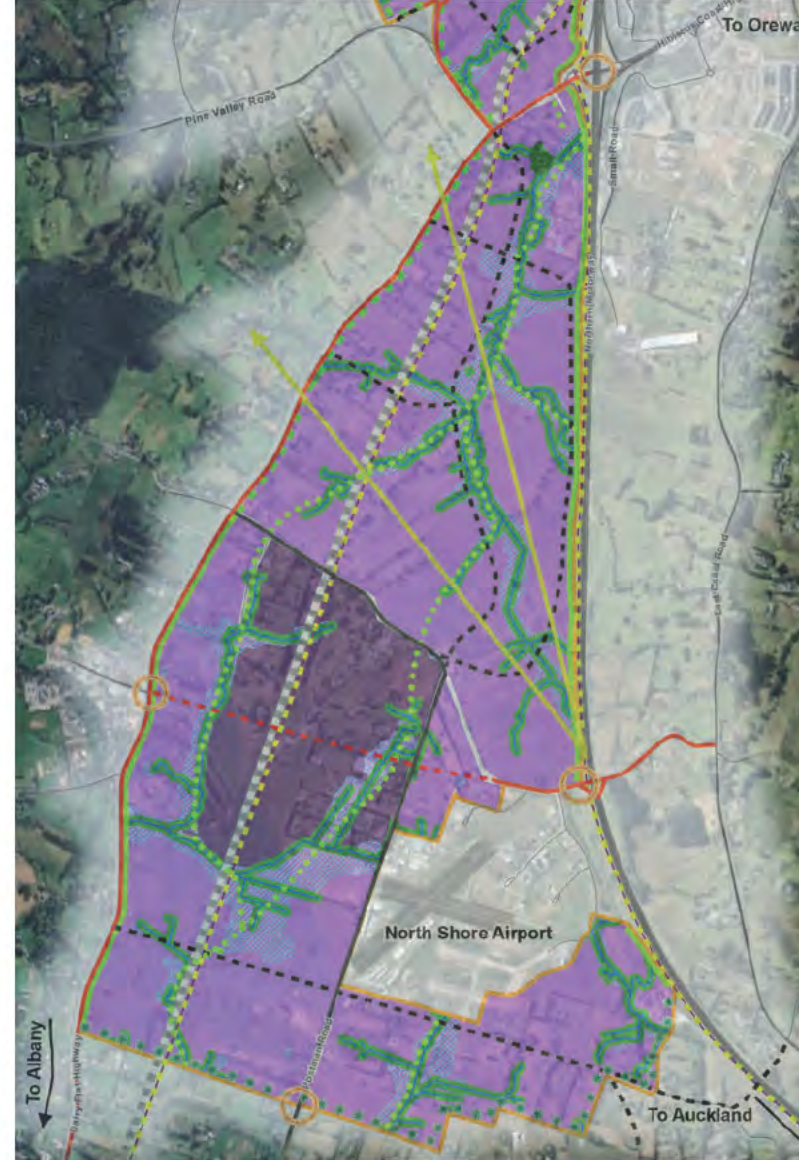
Worldwide trend

There is a notable trend of industrial activity developing around airports globally, driven by proximity to transportation networks, air freight logistics, compatible activities and economic benefits



Hamilton Airport

- Industrial development establishing around Hamilton airport



North Shore Airport

- Recent structure plan locates industrial around the airport
- A current plan change is seeking to live zone the northern portion



Archerfield Airport

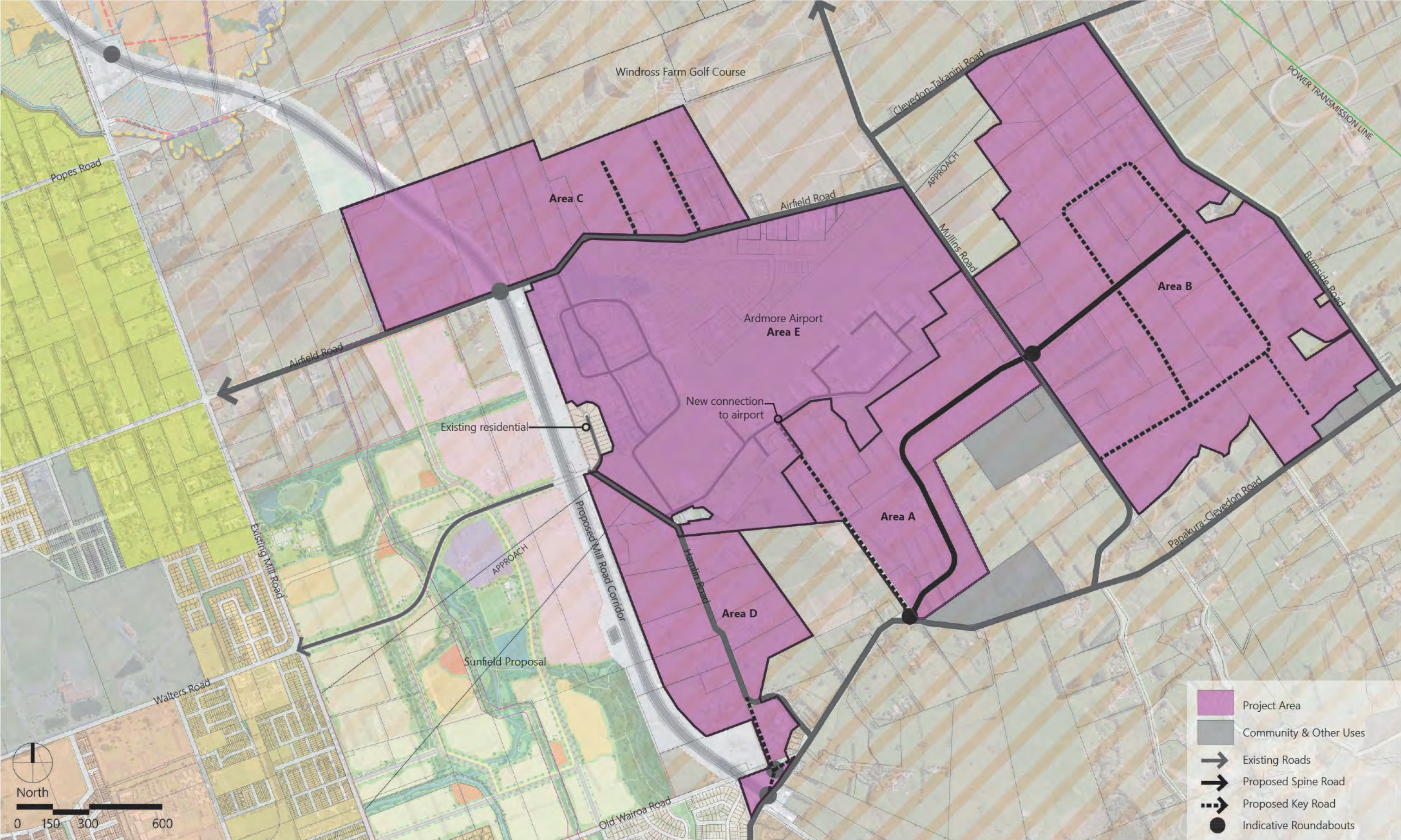
- An example of an airport in Brisbane with industrial, retail and residential around



Queenstown Airport

- Excellent mix of residential, commercial and industrial land use surrounding the airport

Project Area



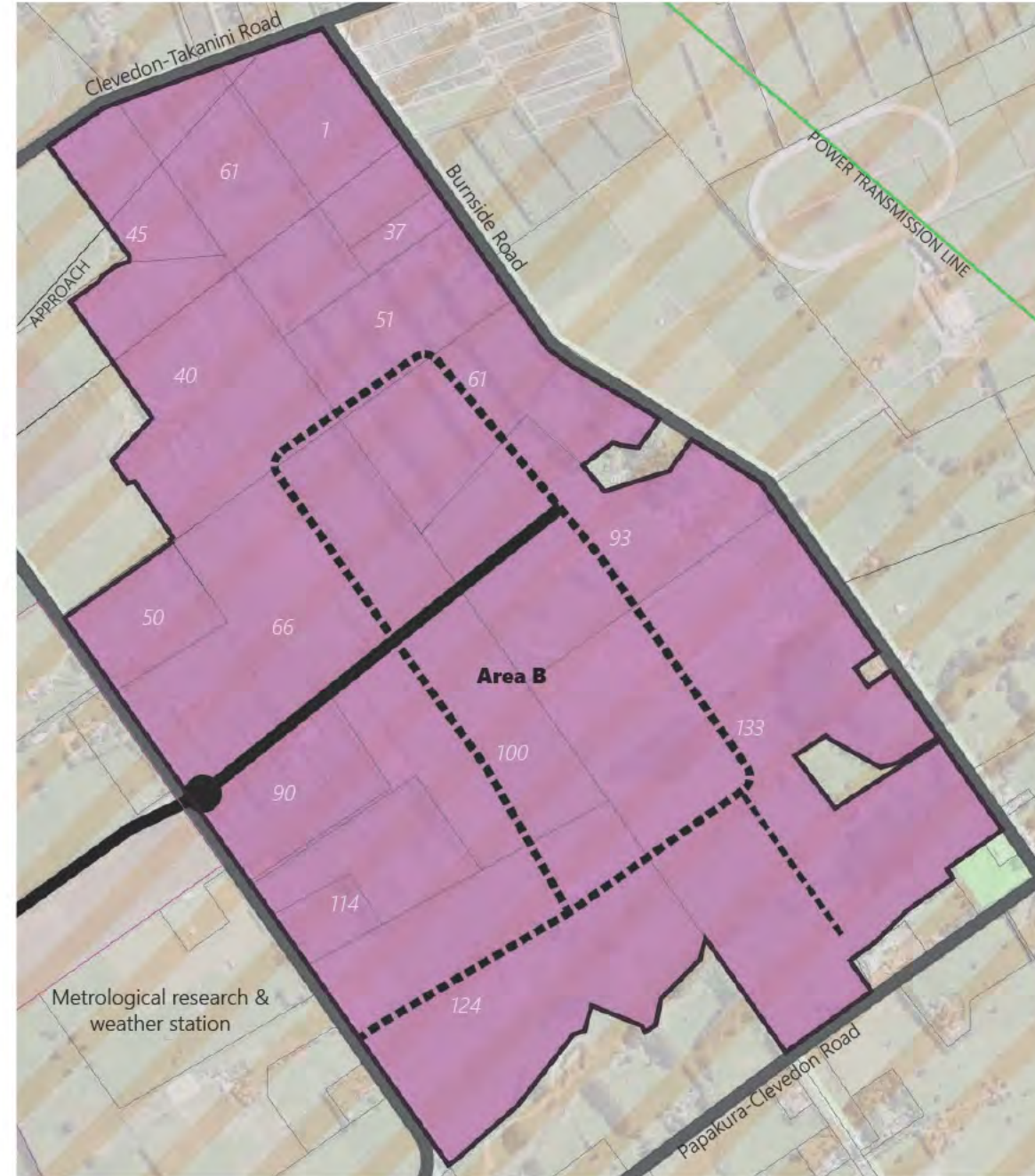
Project Areas

Area A



Site	Address	Legal Description	Area (m ²)
1	47 Mullins Road	Lot 2 DP 206430	36,987
2	53 Mullins Road	Lot 3 DP 206430	218,058
3	61 Mullins Road	Lot 1 DP 75641	16,187
4	803 Papakura-Clevedon Road	Lot 1 DP 450259	15,060
5	7 Bullens Road	Lot 1 DP 141367	12,819
6	19 Bullens Road	Lot 2 DP 450259	170,300
7	49 Bullens Road	Lot 2 DP 111591	40,620
8	51 Bullens Road	Lot 2 DP 473510	112,028
9	52 Bullens Road	Lot 1 DP 473510	4,184
Total			626,243

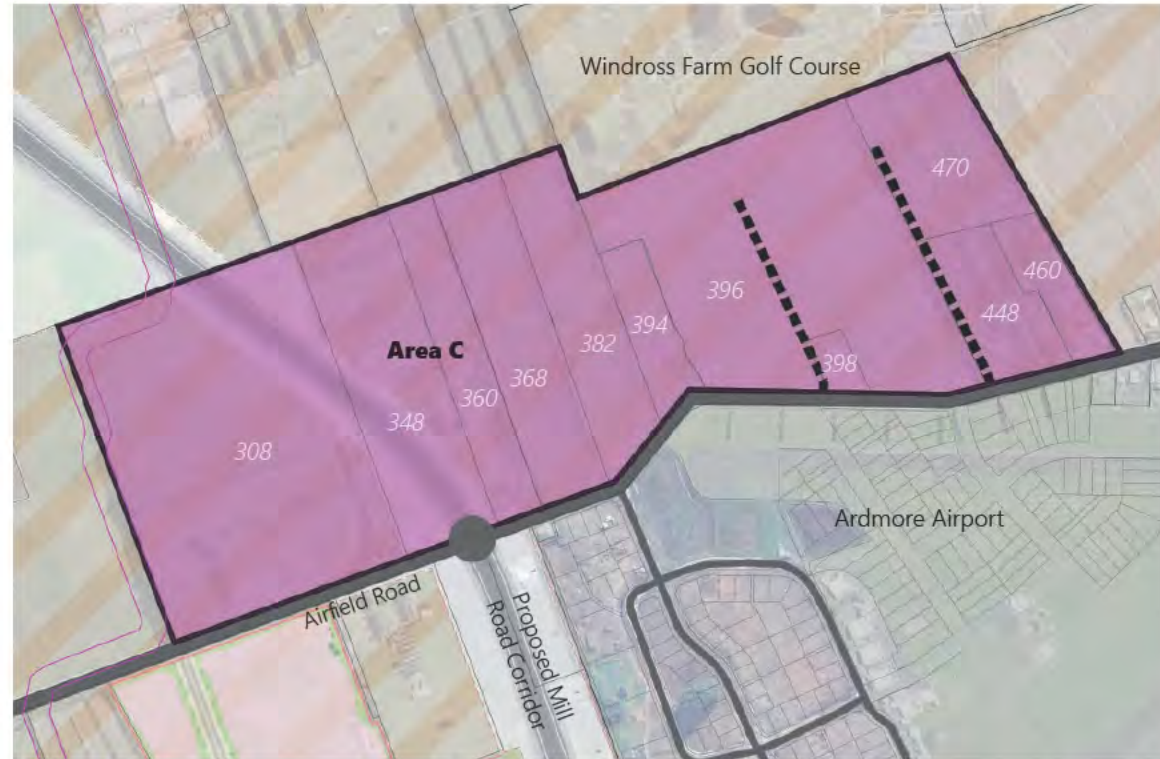
Area B



Site	Address	Legal Description	Area (m ²)
1	45 Clevedon-Takanini Road	Lot 3 DP 169281	42,200
2	61 Clevedon-Takanini Road	Lot 1 DP 112997	90,708
3	40 Mullins Road	Lot 2 DP 169281	136,208
4	50 Mullins Road	PT ALLOT 50 Parish OF PAPAKURA	40,468
5	66 Mullins Road	Lot 1 DP 22687	192,225
6	90 Mullins Road	LOT 2 DP 598608	57,569
7	100 Mullins Road	LOT 1 DP 598608	123,694
8	114 Mullins Road	Lot 1 DP 95196, Lot 1 DP 81758	50,002
9	124 Mullins Road	Lot 2 DP 129748	224,901
10	1 Burnside Road	Lot 1 DP 165259	69,782
11	37 Burnside Road	Lot 2 DP 165259	11,188
12	51 Burnside Road	Lot 2 DP 112997	67,394
13	61 Burnside Road	Lot 2 DP 311910	98,550
14	93 Burnside Road	PT ALLOT 1 DP 94470	148,013
15	133 Burnside Road	LOT 2 DP 533681	393,676
Total			1,746,578

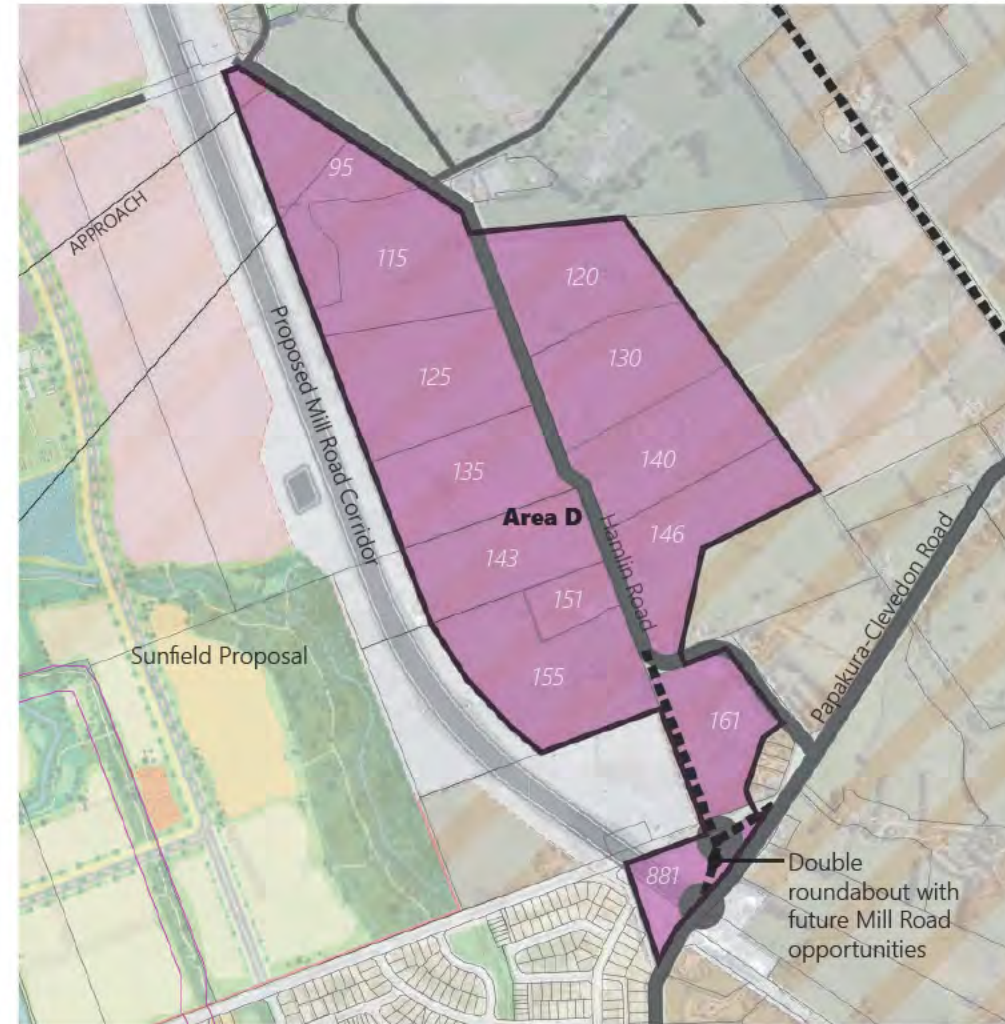
Project Areas

Area C



Site	Address	Legal Description	Area (m ²)
1	308 Airfield Road	Lot 5 BLK XV DP 20982	210,209
2	348 Airfield Road	Lot 1 BLK XV DP 192819	81,740
3	360 Airfield Road	Lot 2 DP 192819	40,105
4	368 Airfield Road	Lot 2 DP 96780	60,020
5	382 Airfield Road	Lot 1 DP 96780	52,708
6	394 Airfield Road	Lot 1 DP 198874	20,000
7	396 Airfield Road	Lot 2 DP 208957	175,205
8	398 Airfield Road	Lot 1 DP 208957	6,017
9	448 Airfield Road	Lot 1 DP 336380	32,303
10	460 Airfield Road	Lot 2 DP 336380	17,707
11	470 Airfield Road	Lot 1 DP 92845	51,799
Total			747,813

Area D



Site	Address	Legal Description	Area (m ²)
1	95 Hamlin Road	Pt Lot 1 DP 50029	30,654
2	115 Hamlin Road	Pt Lot 1 DP 50029 Pt Lot 2 DP 50029	57,230
3	120 Hamlin Road	Lot 1 BLK XV DP 53384	40,589
4	125 Hamlin Road	Lot 1 BLK XV DP 53136	51,817
5	130 Hamlin Road	Lot 2 DP 53384	40,868
6	135 Hamlin Road	Lot 2 BLK XV DP 53136	40,519
7	140 Hamlin Road	Lot 3 DP 53384	41,564
8	143 Hamlin Road	Lot 1 DP 11032	51,395
9	146 Hamlin Road	Pt Lot 4 DP 53384	43,215
10	151 Hamlin Road	Lot 1 DP 316491	11,310
11	155 Hamlin Road	Lot 2 DP 316491	91,113
12	161 Hamlin Road	Lot 6 DP 39433	32,653
13	881 Papakura-Clevedon Road	Lot 1 DP 483053	19,174
Total			552,101

Project Areas

Area E - Ardmore Airport



Site	Address	Legal Description	Area (m ²)
1	371 Airfield Road	LOT 1 DP 578804	1,181,118
2	453 Airfield Road	Lot 200 DP 319290	2,078
3	457 Airfield Road	Lot 202 DP 458277	3,685
4	463 Airfield Road	Lot 203 DP 458277	1,301
5	469 Airfield Road	Lot 204 DP 458277	4,004
6	473 Airfield Road	Lot 205 DP 458277	3,533
7	479 Airfield Road	Lot 206 DP 458277	5,161
8	487 Airfield Road	Lot 207 DP 458277	14,751
9	495 Airfield Road	Lot 208 DP 458277	4,359
10	499 Airfield Road	Lot 209 DP 458277	1,500
11	99 Corsair Lane	LOT 2 DP 578804	222,692
Total			1,444,182

Table 1: Application Sites

Address	Legal Description	Address	Legal Description
308 Airfield Road	Lot 5 BLK XV DP 20982	115 Hamlin Road	Pt Lot 1 DP 50029 Pt Lot 2 DP 50029
348 Airfield Road	Lot 1 BLK XV DP 192819	120 Hamlin Road	Lot 1 BLK XV DP 53384
360 Airfield Road	Lot 2 DP 192819	125 Hamlin Road	Lot 1 BLK XV DP 53136
368 Airfield Road	Lot 2 DP 96780	130 Hamlin Road	Lot 2 DP 53384
371 Airfield Road	LOT 1 DP 578804	135 Hamlin Road	Lot 2 BLK XV DP 53136
382 Airfield Road	Lot 1 DP 96780	140 Hamlin Road	Lot 3 DP 53384
394 Airfield Road	Lot 1 DP 198874	143 Hamlin Road	Lot 1 DP 11032
396 Airfield Road	Lot 2 DP 208957	146 Hamlin Road	Pt Lot 4 DP 53384
398 Airfield Road	Lot 1 DP 208957	151 Hamlin Road	Lot 1 DP 316491
448 Airfield Road	Lot 1 DP 336380	155 Hamlin Road	Lot 2 DP 316491
453 Airfield Road	Lot 200 DP 319290	161 Hamlin Road	Lot 6 DP 39433
457 Airfield Road	Lot 202 DP 458277	40 Mullins Road	Lot 2 DP 169281
460 Airfield Road	Lot 2 DP 336380	47 Mullins Road	Lot 2 DP 206430
463 Airfield Road	Lot 203 DP 458277	50 Mullins Road	PT ALLOT 50 PSH Papakura
469 Airfield Road	Lot 204 DP 458277	53 Mullins Road	Lot 3 DP 206430
470 Airfield Road	Lot 1 DP 92845	61 Mullins Road	Lot 1 DP 75641
473 Airfield Road	Lot 205 DP 458277	66 Mullins Road	Lot 1 DP 22687
479 Airfield Road	Lot 206 DP 458277	90 Mullins Road	LOT 2 DP 598608
487 Airfield Road	Lot 207 DP 458277	100 Mullins Road	LOT 1 DP 598608
495 Airfield Road	Lot 208 DP 458277	114 Mullins Road	Lot 1 DP 95196, Lot 1 DP 81758
499 Airfield Road	Lot 209 DP 458277	124 Mullins Road	Lot 2 DP 129748
1 Burnside Road	Lot 1 DP 165259	7 Bullens Road	Lot 1 DP 141367
37 Burnside Road	Lot 2 DP 165259	19 Bullens Road	Lot 2 DP 450259
51 Burnside Road	Lot 2 DP 112997	49 Bullens Road	Lot 2 DP 111591
61 Burnside Road	Lot 2 DP 311910	51 Bullens Road	Lot 2 DP 473510
93 Burnside Road	PT ALLOT 1 DP 94470	52 Bullens Road	Lot 1 DP 473510
133 Burnside Road	LOT 2 DP 533681	99 Corsair Lane	LOT 2 DP 578804
803 Papakura-Clevedon Road	Lot 1 DP 450259	45 Clevedon-Takanini Road	Lot 3 DP 169281
881 Papakura-Clevedon Road	Lot 1 DP 483053	61 Clevedon Takanini Road	Lot 1 DP 112997
95 Hamlin Road	Pt Lot 1 DP 50029		

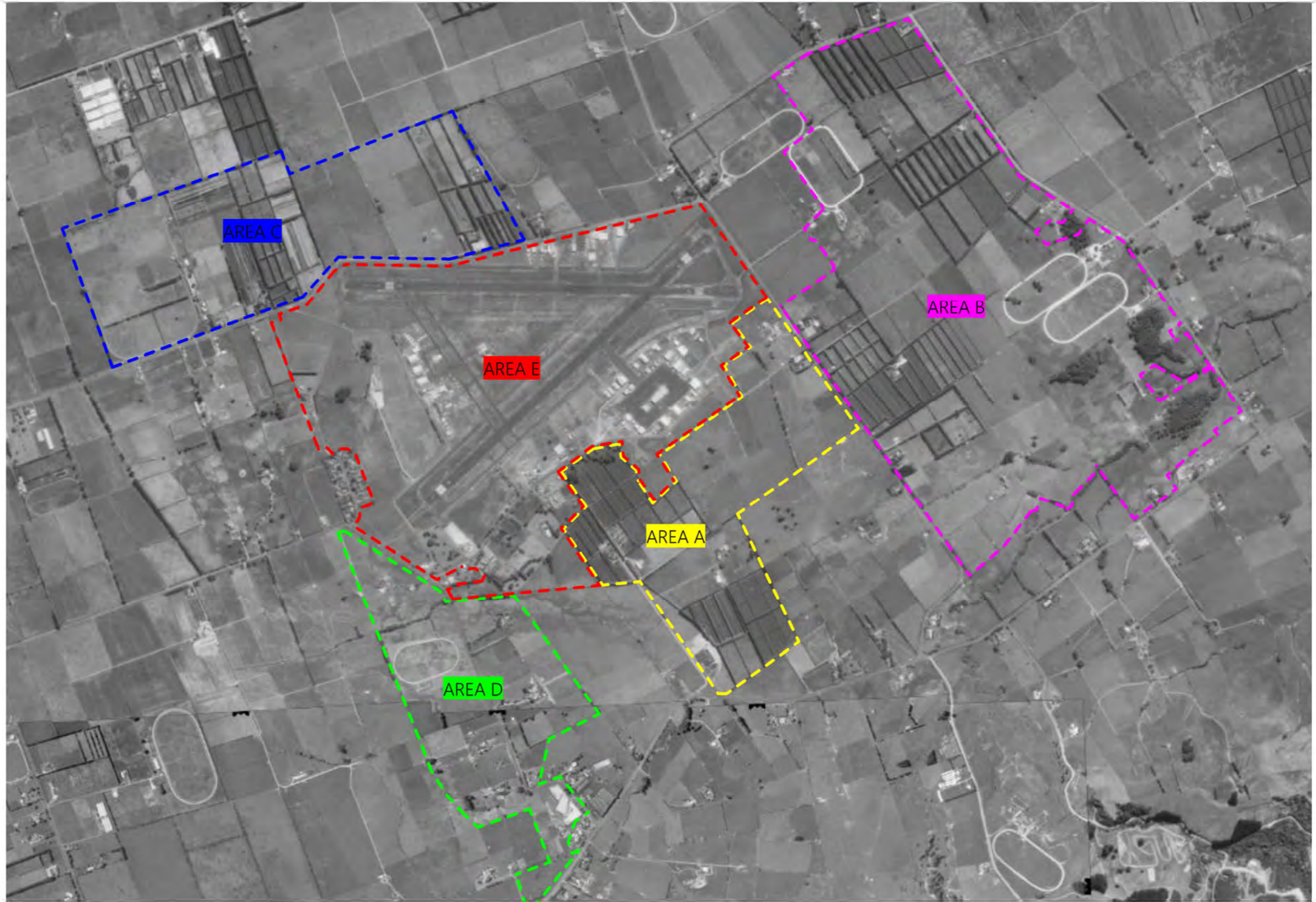
Public roads that may be subject to the required infrastructure / transport upgrades/connections:

- Airfield Road,
- Alfriston-Ardmore Road,
- Bullens Road,
- Cosgrave Road,
- Dominion Road,
- Burnside Road,
- Clevedon Road,
- Clevedon-Takanini Road,
- Hamlin Road,
- Mill Road,
- Mullins Road,
- Old Wairoa Road (including a paper road extension),
- Papakura-Clevedon Road,
- Petersons Road
- Village Way

APPENDIX B
LDE LTD
FIGURES 01 - 12

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E



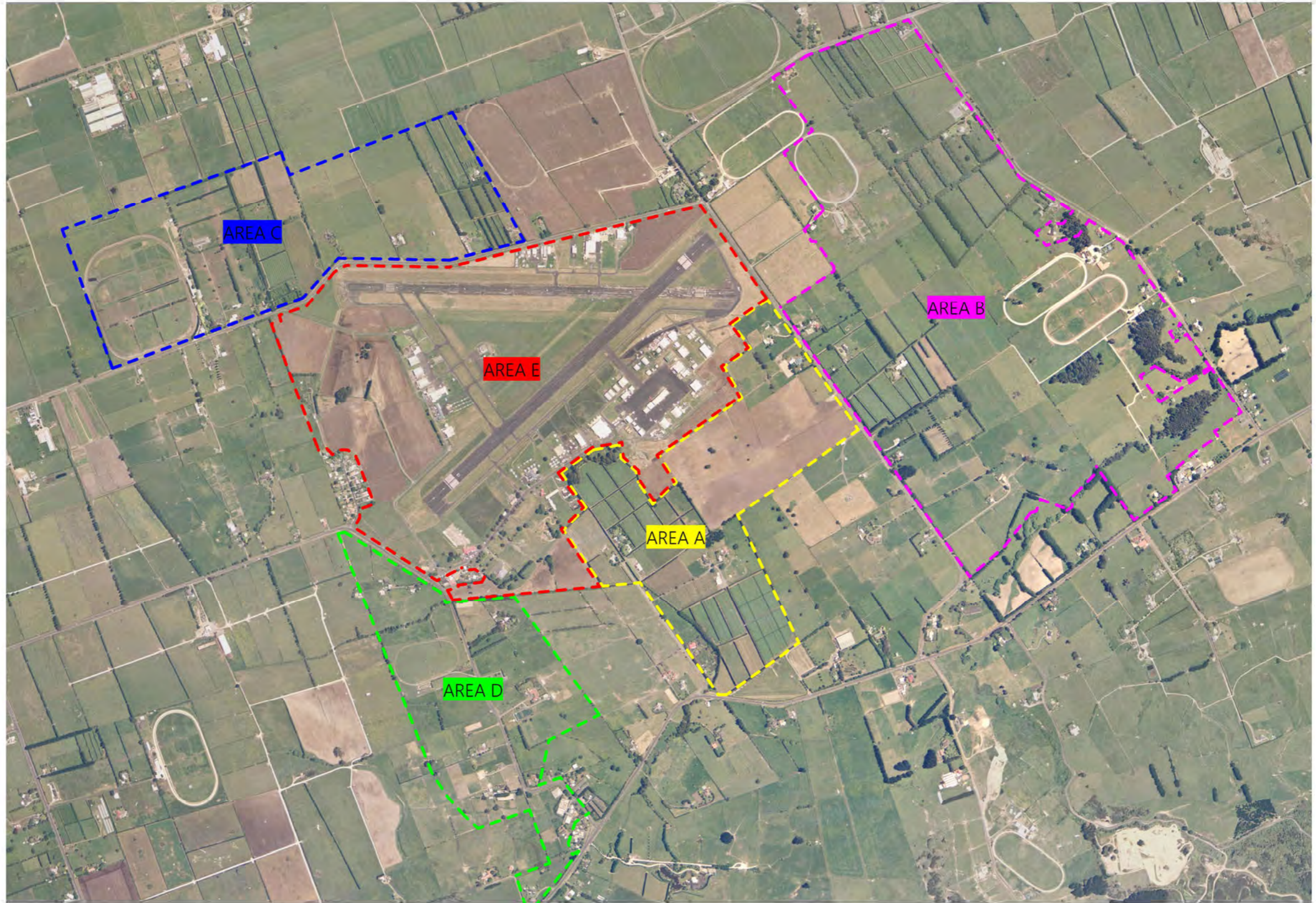
BASE PLAN: AERIAL PHOTOGRAPHY 1990s. RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision		description	drawn	approved	date	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>0 225.0 450.0 675.0 900.0</p> <p>Horizontal Scale (metres)</p> </div> <div style="text-align: center;"> <p>0 225.0 450.0 675.0 900.0</p> <p>Vertical Scale (metres)</p> </div> </div>	drawn	KM		client:	KNIGHT INVESTMENTS LIMITED		
							approved	<i>SL</i>		project:	ARDMORE BUSINESS PARK		
							date	15.12.25		title:	AERIAL IMAGERY PLAN 1990s		
							scale	1:15,000		project no:	29002	figure no:	01
							original size	A3					

Template revision: 1:2000 (10/12/14)

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E



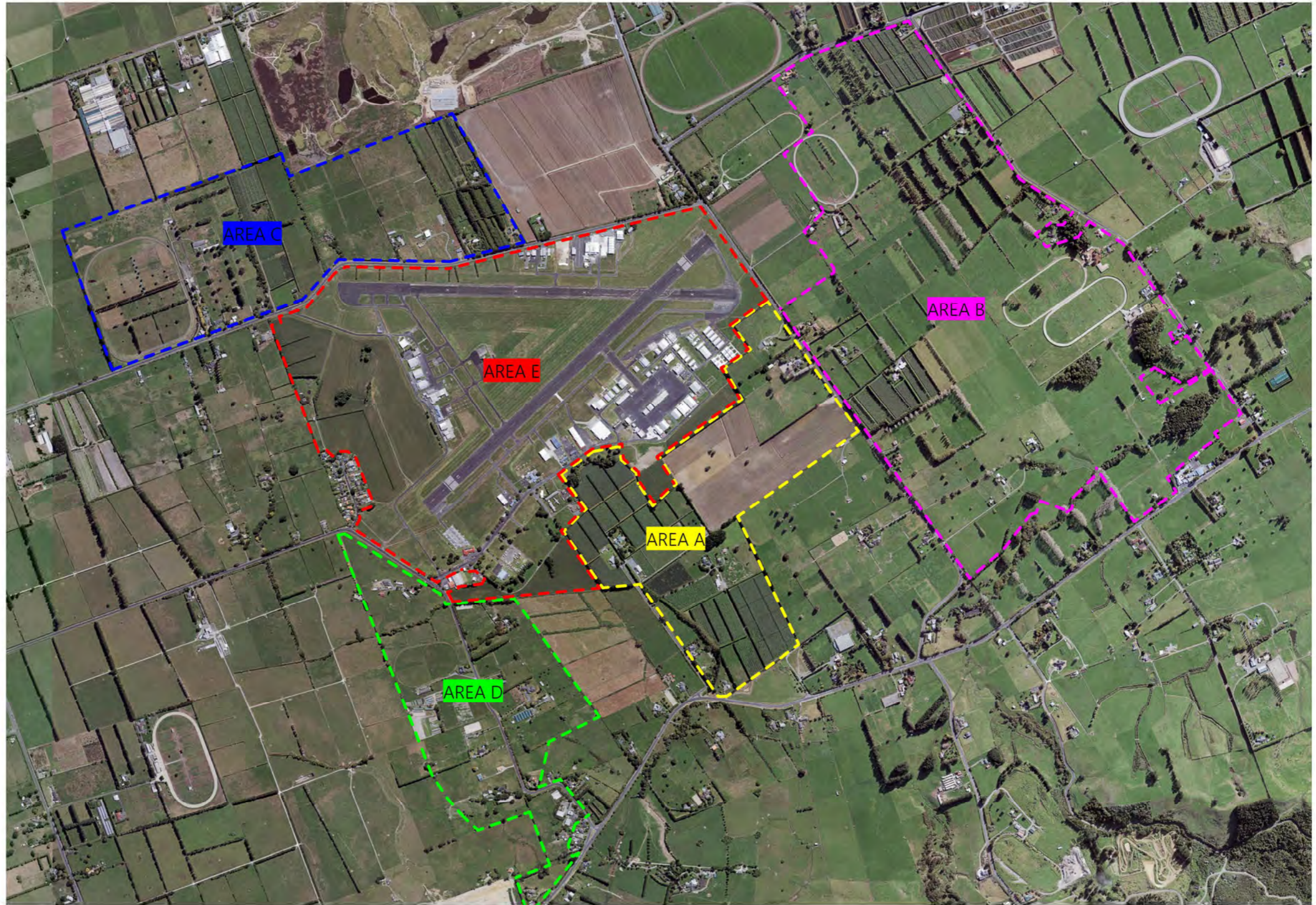
BASE PLAN: AERIAL PHOTOGRAPHY 2000-2--5. RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision		description	drawn	approved	date	 Horizontal Scale (metres) Vertical Scale (metres)	drawn	KM		client:	KNIGHT INVESTMENTS LIMITED		
							approved	<i>SL</i>		project:	ARDMORE BUSINESS PARK		
							date	15.12.25		title:	AERIAL IMAGERY PLAN 2000-2005		
							scale	1:15,000		project no:	29002	figure no:	02
							original size	A3					

Template revision: 1:2000 (10/12/14)

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E



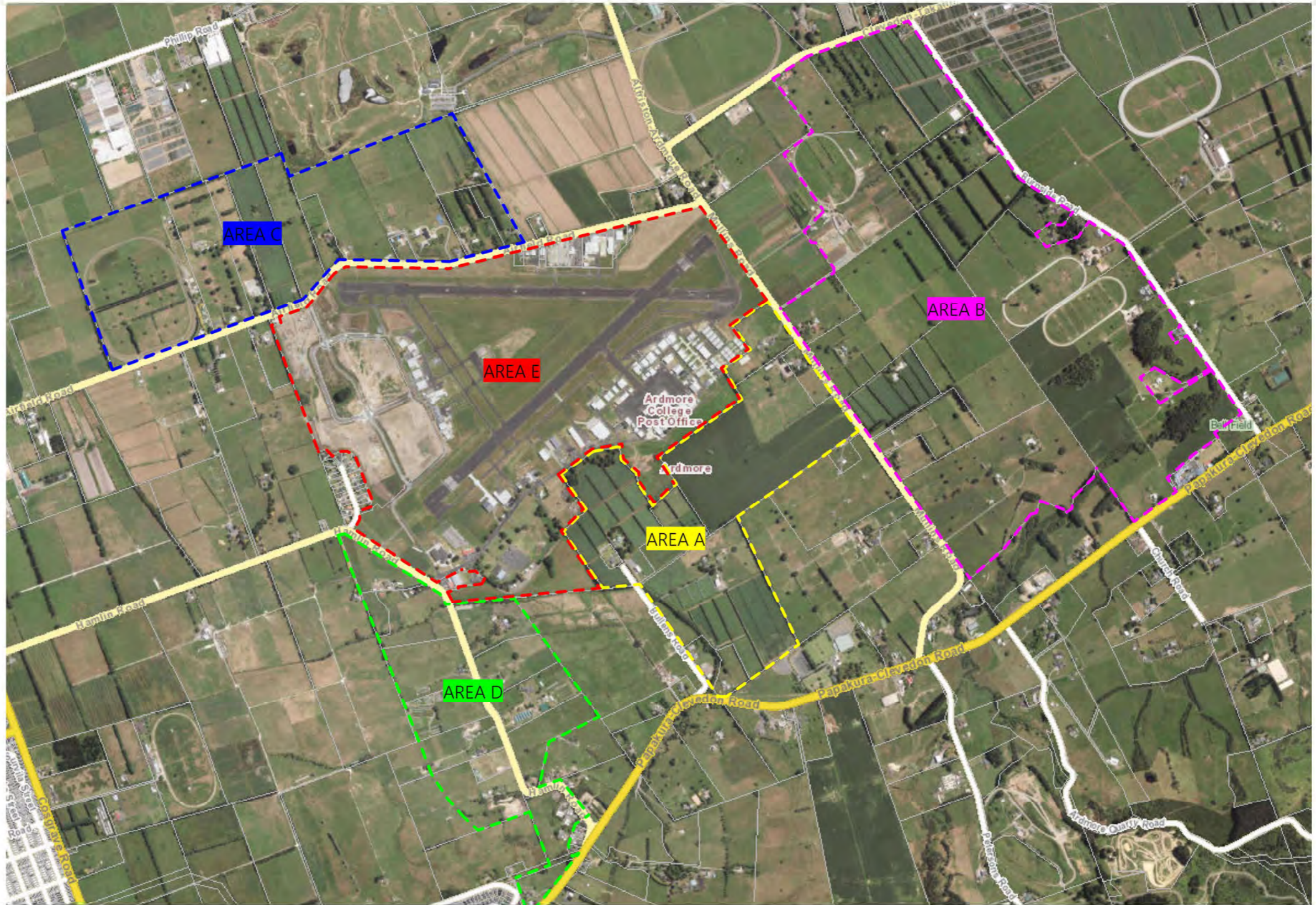
BASE PLAN: AERIAL PHOTOGRAPHY 2015-2016. RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision					 Horizontal Scale (metres)			 Vertical Scale (metres)			client:	KNIGHT INVESTMENTS LIMITED	
						drawn:	KM		project:		ARDMORE BUSINESS PARK		
						approved:	SL		date:		15.12.25		
						date:	15.12.25		scale:		1:15,000		
						scale:	1:15,000		original size:		A3		
							project no:	29002	figure no:	03			

Template revision: 1:2000 (10/12/14)

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E



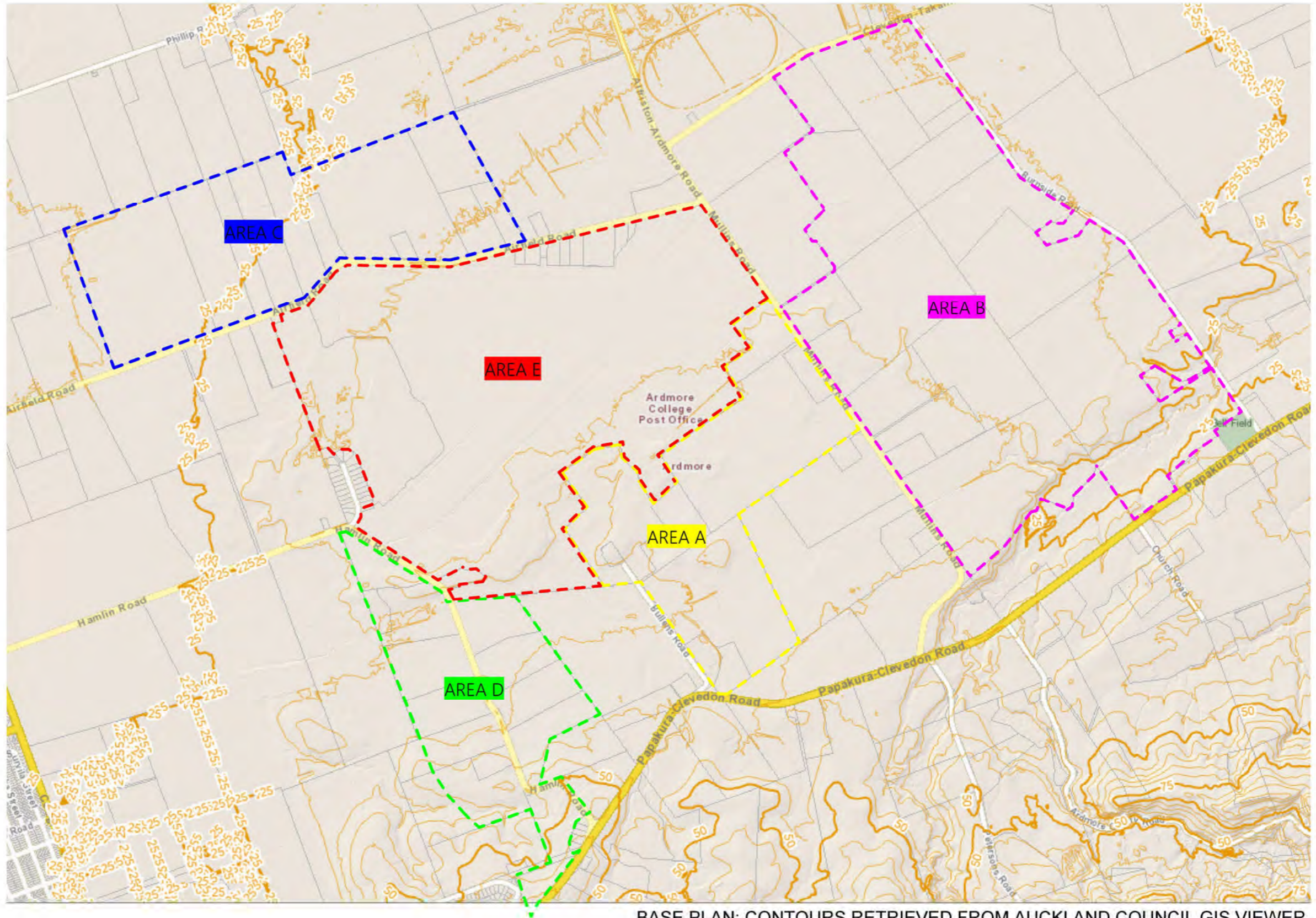
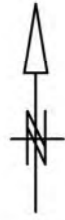
BASE PLAN: AERIAL PHOTOGRAPHY 2024-2025. RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision					 Horizontal Scale (metres)			 Vertical Scale (metres)					
						drawn	KM					client:	KNIGHT INVESTMENTS LIMITED
						approved	SL					project:	ARDMORE BUSINESS PARK
						date	15.12.25					title:	AERIAL IMAGERY PLAN 2024-2025
						scale	1:15,000					project no:	29002
				original size	A3								

Template revision: 1:2000 (10/12/14)

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E

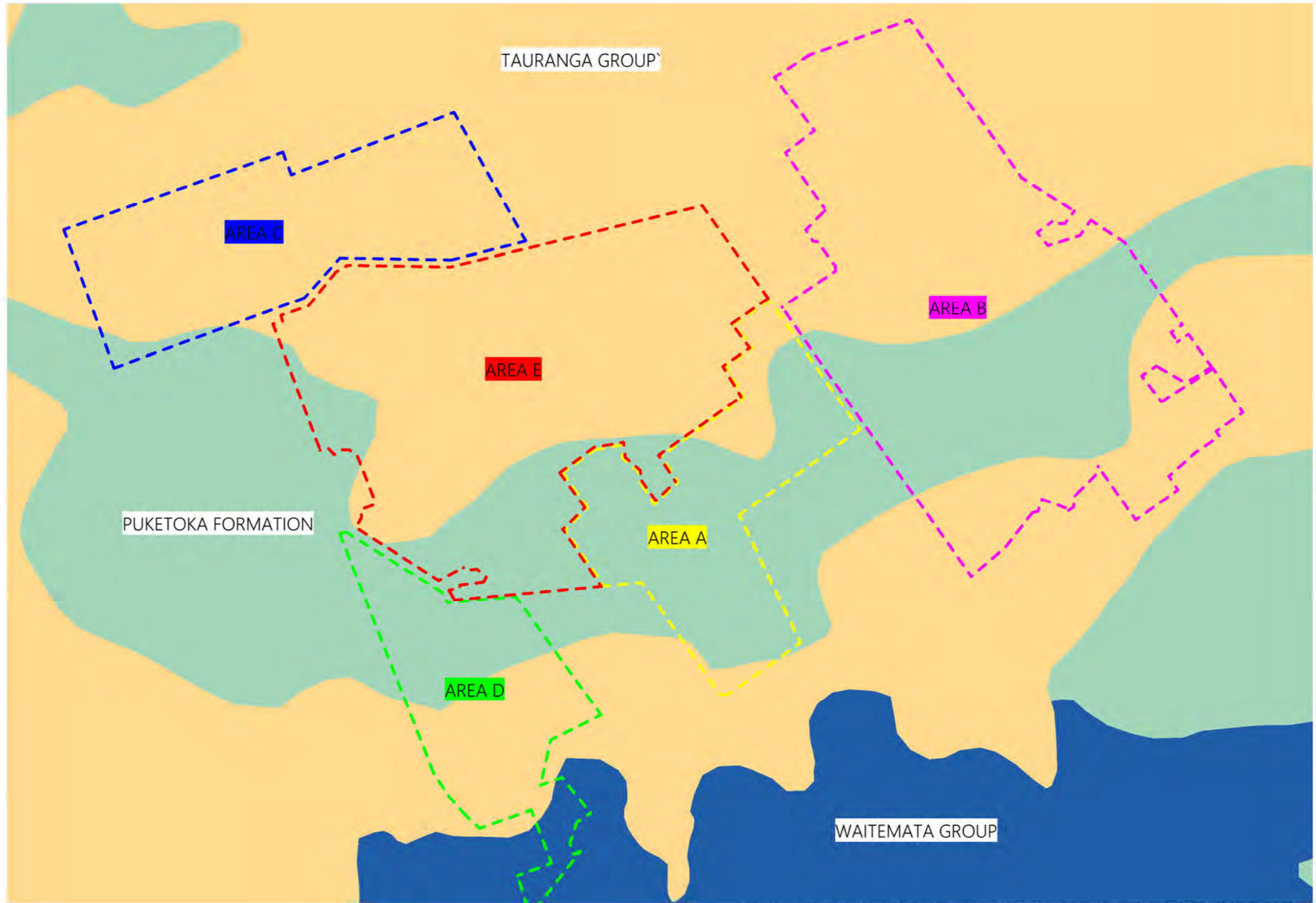
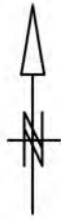


BASE PLAN: CONTOURS RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision					 Horizontal Scale (metres)			 Vertical Scale (metres)			client:	KNIGHT INVESTMENTS LIMITED		
						drawn:	KM		project:		ARDMORE BUSINESS PARK		approved:	<i>SL</i>
						date:	15.12.25		title:		CONTOUR PLAN		scale:	1:15,000
						original size:	A3		project no:		29002	figure no:	05	

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E






BASE PLAN: LEVEL A LIQUEFACTION ZONES RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision					 Horizontal Scale (metres) Vertical Scale (metres)	drawn	KM		client:	KNIGHT INVESTMENTS LIMITED		
						approved	SL		project:	ARDMORE BUSINESS PARK		
						date	15.12.25		title:	LEVEL A LIQUEFACTION PLAN		
						scale	1:15,000		project no:	29002	figure no:	06
						original size	A3					

Template revision: 1:2000 (10/12/14)

Liquefaction Vulnerability Areas

Liquefaction - Level A Basic Assessment

-  Liquefaction Damage is Unlikely
-  Liquefaction Damage is Possible
-  Very Low Liquefaction Vulnerability

Place Names

Place Name (25,000)

Place Name (25,000)

Public Open Space Names (15,000)

Public Open Space Names (15,000)

Hydrographic Place Name (25,000)

Hydrographic Place Name (25,000)

Place Name Search

Place Name Search


Rail Stations

Rail Stations (25,000)


 Rail Stations (25,000)

Railway Lines

Railway (25,000)











 Railway (25,000)

Auckland Council Boundary

 Auckland Council Boundary

Roads

Roads (15,000)

-  Motorway
-  Motorway Under Construction
-  Secondary Arterial Road
-  Secondary Arterial Road Under Construction
-  Primary Arterial Road
-  Primary Arterial Under Construction
-  Collector Road
-  Collector Road Under Construction
-  Local Road
-  Local Road Under Construction


Property

Property

Rate Assessment



Rate Assessment

Parcels


 Parcels

Coastline


Base Region (CRS)

-  Land Outside
-  Water


Region Cache Public Open Space Extent

 Region Cache Public Open Space Extent

LIDAR2006 1m DEM Hillshade

 High : 254 - Low : 0

NZ Hillshade

 High : 254 - Low : 0

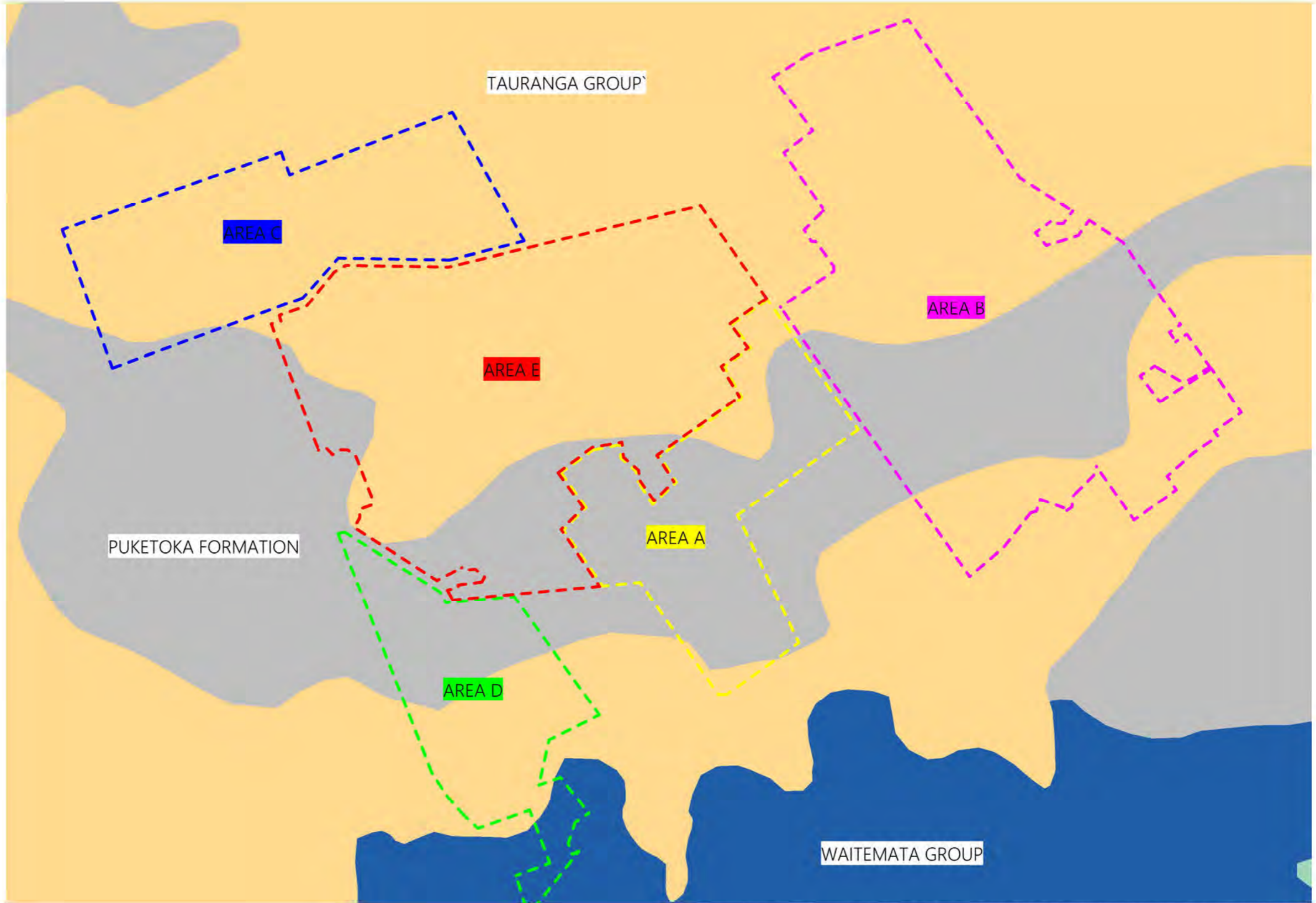
Legend

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Date Printed:
10/12/2025

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E








BASE PLAN: LEVEL B LIQUEFACTION ZONES RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision					 Horizontal Scale (metres) Vertical Scale (metres)	drawn	KM		client:	KNIGHT INVESTMENTS LIMITED		
						approved	SL		project:	ARDMORE BUSINESS PARK		
						date	15.12.25		title:	LEVEL B LIQUEFACTION PLAN		
						scale	1:15,000		project no:	29002	figure no:	07
						original size	A3					

Liquefaction Vulnerability Areas

Liquefaction - Level B Calibrated Assessment

-  Liquefaction Category is Undetermined
-  Liquefaction Damage is Unlikely
-  Liquefaction Damage is Possible
-  Very Low Liquefaction Vulnerability
-  Low Liquefaction Vulnerability

Place Names

Place Name (25,000)

Place Name (25,000)

Public Open Space Names (15,000)

Public Open Space Names (15,000)

Hydrographic Place Name (25,000)


Hydrographic Place Name (25,000)

Place Name Search

Place Name Search


Rail Stations

Rail Stations (25,000)


 Rail Stations (25,000)

Railway Lines

Railway (25,000)











 Railway (25,000)

Auckland Council Boundary

 Auckland Council Boundary

Roads

Roads (15,000)

-  Motorway
-  Motorway Under Construction
-  Secondary Arterial Road
-  Secondary Arterial Road Under Construction
-  Primary Arterial Road
-  Primary Arterial Under Construction
-  Collector Road
-  Collector Road Under Construction
-  Local Road
-  Local Road Under Construction

Property

Property

Rate Assessment


Rate Assessment


Parcels

 Parcels

Coastline

Base Region (CRS)


 Land Outside

 Water


Region Cache Public Open Space Extent

 Region Cache Public Open Space Extent

LIDAR2006 1m DEM Hillshade

 High : 254 - Low : 0

NZ Hillshade

 High : 254 - Low : 0

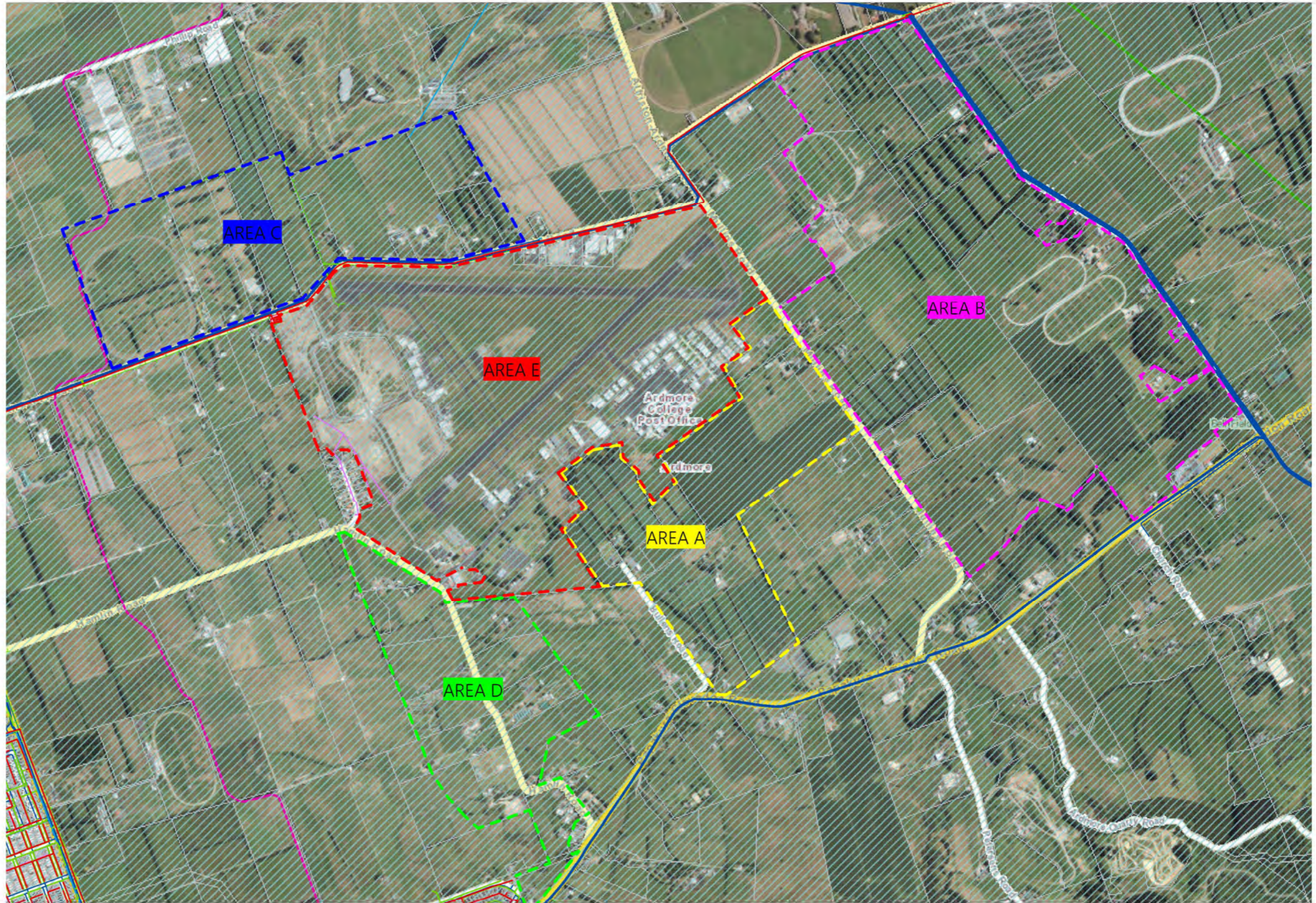
Legend

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Date Printed:
10/12/2025

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E



BASE PLAN: PUBLIC SERVICES. RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision		description	drawn	approved	date	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>0 225.0 450.0 675.0 900.0</p> <p>Horizontal Scale (metres)</p> </div> <div style="text-align: center;"> <p>0 225.0 450.0 675.0 900.0</p> <p>Vertical Scale (metres)</p> </div> </div>	drawn	KM		client:	KNIGHT INVESTMENTS LIMITED		
							approved	<i>SL</i>		project:	ARDMORE BUSINESS PARK		
							date	15.12.25		title:	PUBLIC SERVICES PLAN		
							scale	1:15,000		project no:	29002	figure no:	08
							original size	A3					

Template revision: 1:2000 (10/12/14)




Wastewater

Local Network

Wastewater Pipe COMPKEY Label (Local)


Wastewater Pipe COMPKEY Label (Local)

Wastewater Pipe (Local)

-  Operational
-  Operational Not Vested
-  Abandoned / Not Operational

Wastewater Structure (Local)

Wastewater Other Structure (Local)




-  Wastewater Other Structure (Local)

Wastewater Pump Station (Local)

-  Wastewater Pump Station (Local)

Transmission Network

Wastewater Pipe (Transmission)


-  Operational
-  Operational Not Vested
-  Abandoned/ Not Operational

Wastewater Structure (Transmission)



Stormwater

Stormwater Pond or Wetland Components



Stormwater Dam

-  Stormwater Dam



Stormwater Forebay

-  Public
-  Private

Stormwater Treatment Facility

-  Public
-  Private

Stormwater Watercourse

-  Public
-  Private



Stormwater Pipe SAP ID label

Stormwater Pipe SAP ID label



Stormwater Pipe

-  Public - Gravity Mains
-  Private - Gravity Mains
-  KiwiRail, Gravity Mains
-  Public - Culvert/Tunnel
-  Private - Culvert/Tunnel
-  KiwiRail, Culvert/Tunnel; KiwiRail, In Service, Culvert
-  Public - Rising Main
-  Private - Rising Main
-  Public - Subsoil Drain
-  Private - Subsoil Drain

Stormwater Channel

-  Public lined
-  Public Watercourse
-  Private Watercourse

Stormwater Pump Station

-  Public
-  Private


Stormwater Abandoned Assets

Stormwater Abandoned Pipe


-  Public - Gravity Mains
-  Public - Culvert/Tunnel
-  Public - Rising Main
-  Public - Subsoil Drain

Stormwater GPS

GPS Location (NorthShore)

-  GPS Location (NorthShore)



GPS Survey (North Shore)


-  GPS Survey (North Shore)


Water

Local Network

Water Pipe (Local)


-  Operational (Non-Potable)
-  Operational (Potable)

 Operational Not Vested

 Abandoned / Not Operational

Water Structure (Local)

Water Other Structure (Local)

-  Water Other Structure (Local)

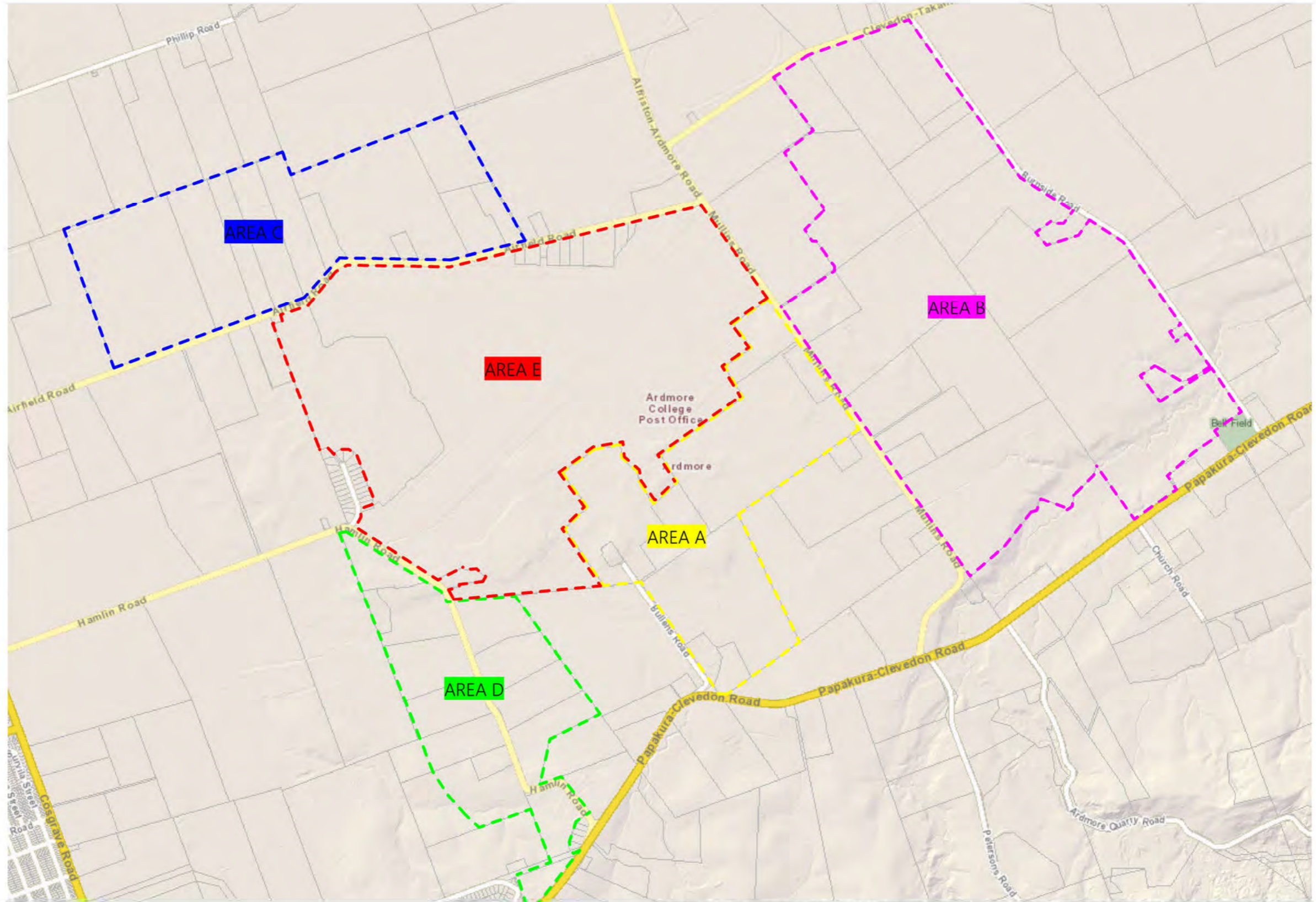
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Legend


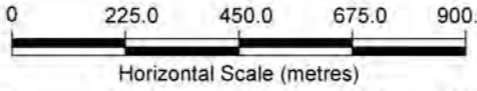
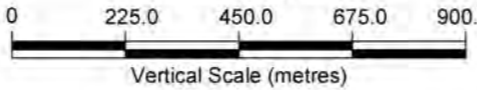
Date Printed:
10/12/2025

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E



BASE PLAN: TOPOGRAPHIC RELIEF. RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

	description	drawn	approved	date		drawn	KM		client:		
revision					 <p>Horizontal Scale (metres)</p>					KNIGHT INVESTMENTS LIMITED	
					 <p>Vertical Scale (metres)</p>					ARDMORE BUSINESS PARK	
											TOPOGRAPHIC RELIEF PLAN
											project no: 29002
										figure no: 09	

Place Names

Place Name (25,000)

Place Name (25,000)

Public Open Space Names (15,000)

Public Open Space Names (15,000)

Hydrographic Place Name (25,000)


Hydrographic Place Name (25,000)

Place Name Search

Place Name Search


Rail Stations

Rail Stations (25,000)

 Rail Stations (25,000)

Railway Lines

Railway (25,000)





 Railway (25,000)



Auckland Council Boundary

 Auckland Council Boundary

Roads

Roads (15,000)

-  Motorway
-  Motorway Under Construction
-  Secondary Arterial Road
-  Secondary Arterial Road Under Construction

-  Primary Arterial Road
-  Primary Arterial Under Construction
-  Collector Road
-  Collector Road Under Construction
-  Local Road
-  Local Road Under Construction


Property

Property

Rate Assessment



Rate Assessment

Parcels


 Parcels

Coastline


Base Region (CRS)

-  Land Outside
-  Water


Region Cache Public Open Space Extent

 Region Cache Public Open Space Extent

LIDAR2006 1m DEM Hillshade

 High : 254 - Low : 0

NZ Hillshade

 High : 254 - Low : 0

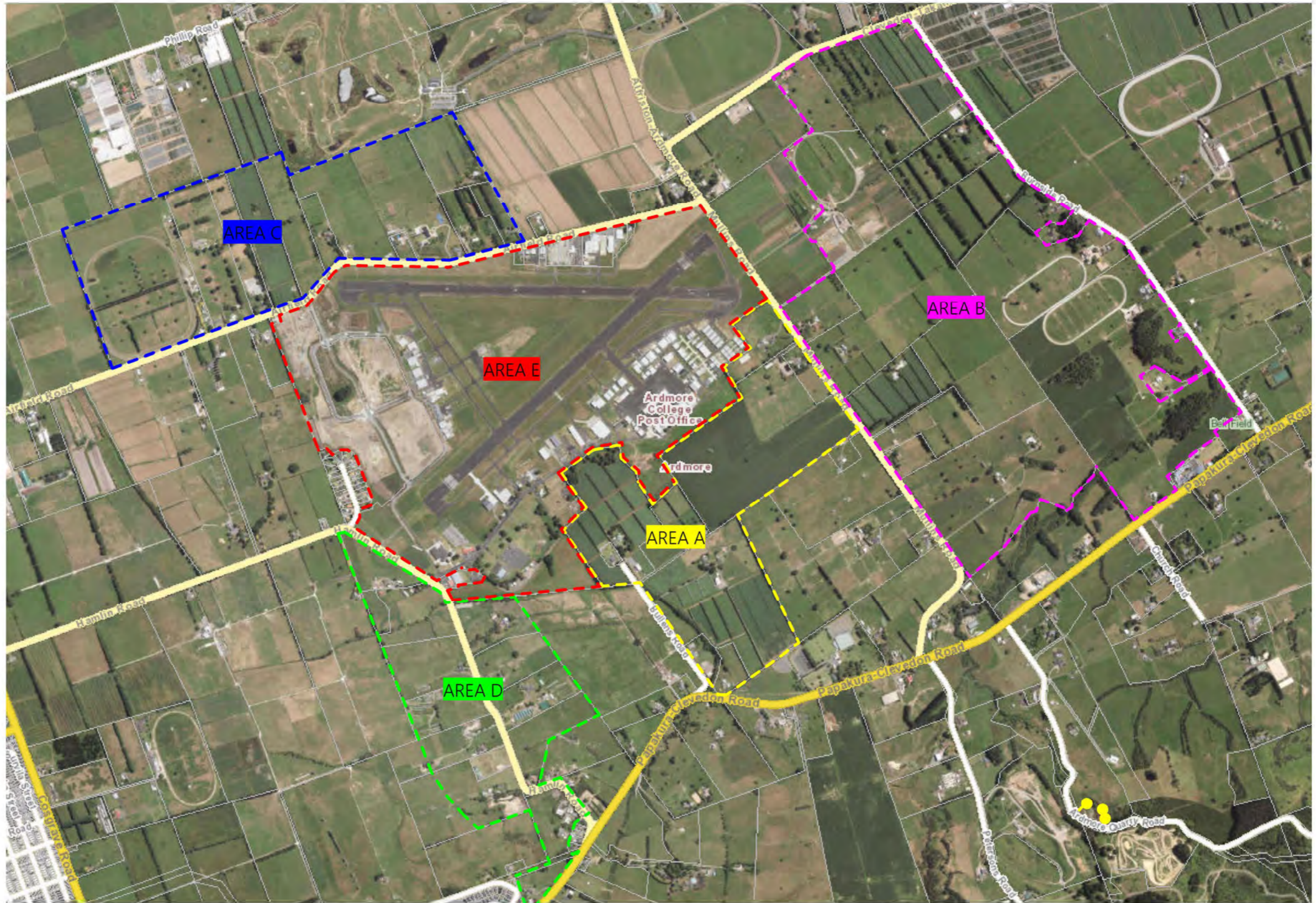
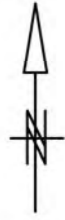
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Legend

Date Printed:
10/12/2025

General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E



BASE PLAN: MAPPED LANDSLIDES. RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision		description	drawn	approved	date	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>0 225.0 450.0 675.0 900.0</p> <p>Horizontal Scale (metres)</p> </div> <div style="text-align: center;"> <p>0 225.0 450.0 675.0 900.0</p> <p>Vertical Scale (metres)</p> </div> </div>	drawn	KM		client:	KNIGHT INVESTMENTS LIMITED		
							approved	SL		project:	ARDMORE BUSINESS PARK		
							date	15.12.25		title:	MAPPED LANDSLIDES PLAN		
							scale	1:15,000		project no:	29002	figure no:	10
							original size	A3					

Template revision: 1:2000 (10/12/14)

Landslide Inventory (Point)

-  Centre of Evacuation
-  Damaged structure
-  Sinkhole
-  Other
-  <all other values>

Landslide Inventory (Line)

-  Crown
-  Ground cracking
-  Scarp
-  Damaged structure
-  Primary debris trail
-  Other
-  <all other values>

Landslide Inventory (Polygon)

-  Damaged structure
-  Landslide area
-  Source area
-  Debris area
-  Hummocky ground
-  Unknown
-  <all other values>

Place Names

Place Name (25,000)

Place Name (25,000)

Public Open Space Names (15,000)

Public Open Space Names (15,000)

Hydrographic Place Name (25,000)


Hydrographic Place Name (25,000)

Place Name Search

Place Name Search


Rail Stations

Rail Stations (25,000)


 Rail Stations (25,000)

Railway Lines

Railway (25,000)





 Railway (25,000)




Auckland Council Boundary

 Auckland Council Boundary


Roads

Roads (15,000)

-  Motorway
-  Motorway Under Construction
-  Secondary Arterial Road
-  Secondary Arterial Road Under Construction

-  Primary Arterial Road
-  Primary Arterial Under Construction
-  Collector Road
-  Collector Road Under Construction
-  Local Road
-  Local Road Under Construction

Region Cache Large Background

 Region Cache Large Background


Property

Property

Rate Assessment

Rate Assessment

Parcels

 Parcels

Coastline

Aerial 2024 2025 Urban

Image

-  Red: Band_1
-  Green: Band_2
-  Blue: Band_3

Base Region 5m

-  Land Outside
-  Sea Outside
-  Water

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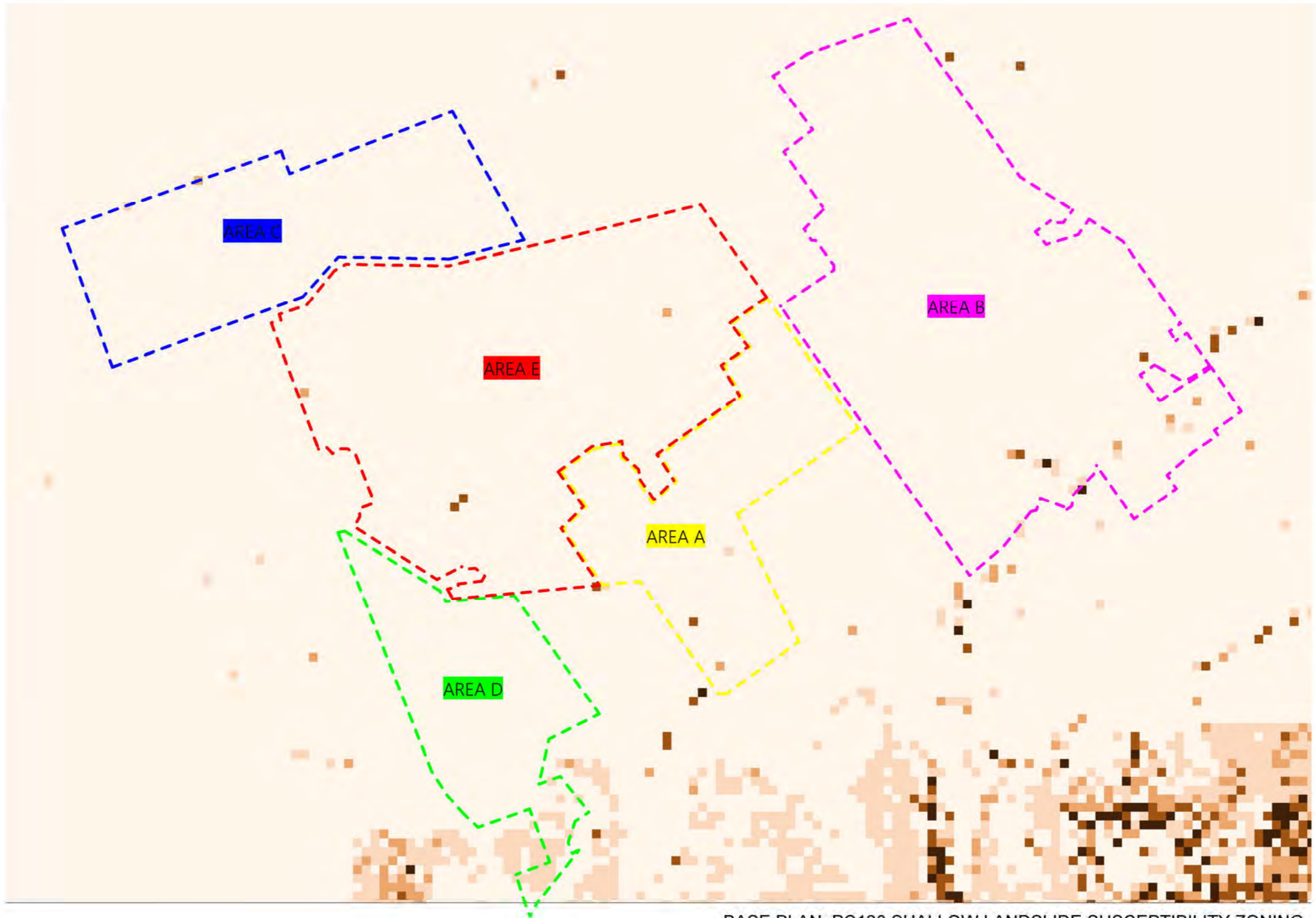
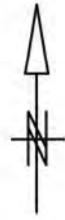
Legend

Date Printed:
10/12/2025



General:






- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E



BASE PLAN: PC120 SHALLOW LANDSLIDE SUSCEPTIBILITY ZONING.
RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision					 Horizontal Scale (metres) Vertical Scale (metres)	drawn	KM		client:	KNIGHT INVESTMENTS LIMITED		
						approved	SL		project:	ARDMORE BUSINESS PARK		
						date	15.12.25		title:	SHALLOW LANDSLIDE SUCCEPTIBILITY PLAN		
						scale	1:15,000		project no:	29002	figure no:	11
						original size	A3					

Level A Analysis - Shallow Landslide Susceptibility 2025

-  Very High
-  High
-  Moderate
-  Low
-  Very Low

Place Names

Place Name (25,000)

Place Name (25,000)

Public Open Space Names (15,000)

Public Open Space Names (15,000)

Hydrographic Place Name (25,000)


Hydrographic Place Name (25,000)

Place Name Search

Place Name Search


Rail Stations

Rail Stations (25,000)


 Rail Stations (25,000)

Railway Lines

Railway (25,000)











 Railway (25,000)

Auckland Council Boundary

 Auckland Council Boundary

Roads

Roads (15,000)

-  Motorway
-  Motorway Under Construction
-  Secondary Arterial Road
-  Secondary Arterial Road Under Construction
-  Primary Arterial Road
-  Primary Arterial Under Construction
-  Collector Road
-  Collector Road Under Construction
-  Local Road
-  Local Road Under Construction

Property

Property

Rate Assessment

Rate Assessment



Parcels

 Parcels

Coastline

Aerial 2024 2025 Urban

Image

-  Red: Band_1
-  Green: Band_2

 Blue: Band_3

Base Region 5m

-  Land Outside
-  Sea Outside
-  Water

Region Cache Large Background

 Region Cache Large Background

Legend

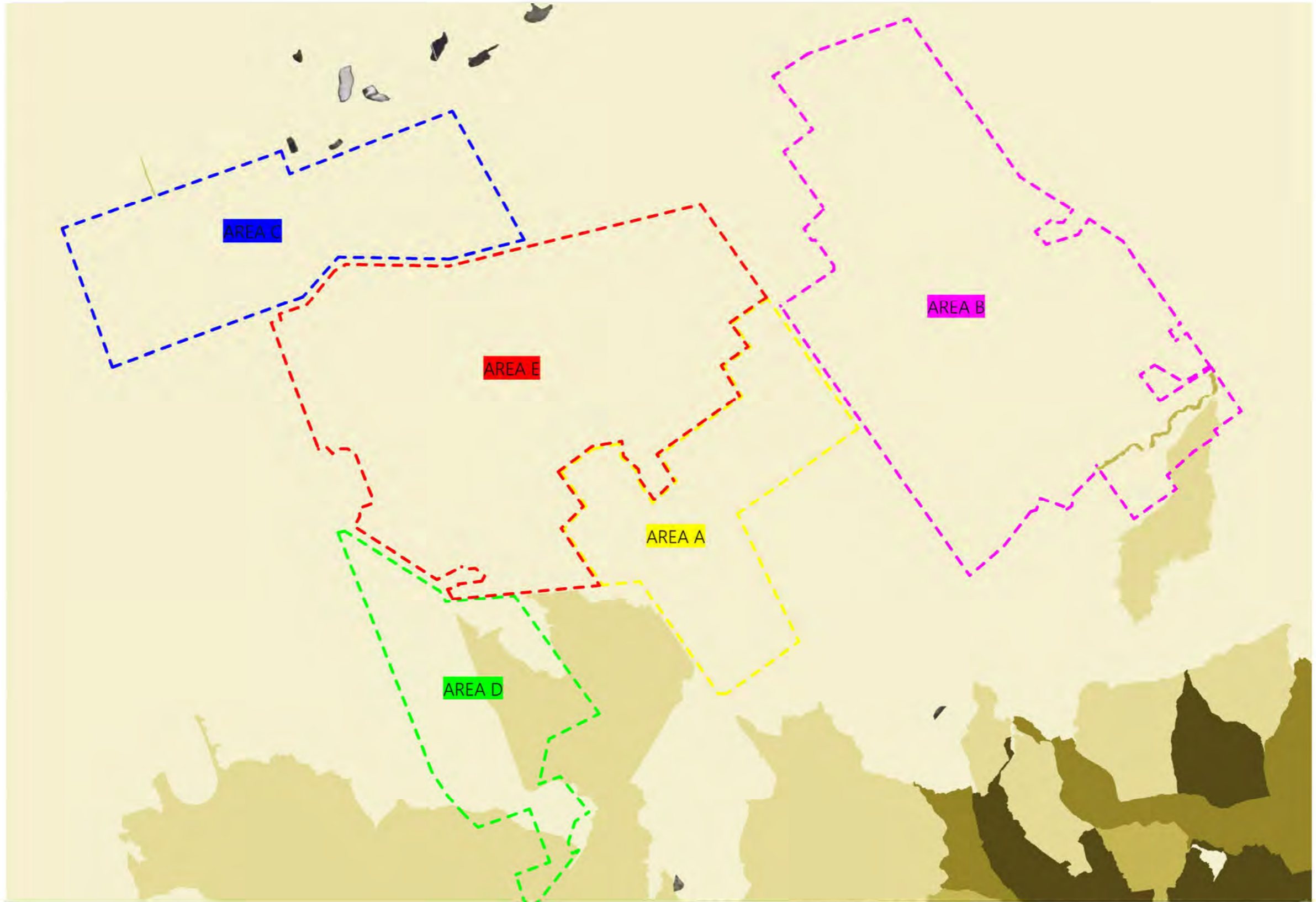
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Date Printed:
10/12/2025



General:

- Ardmore Business Park - Area A
- Ardmore Business Park - Area B
- Ardmore Business Park - Area C
- Ardmore Business Park - Area D
- Ardmore Business Park - Area E








BASE PLAN: PC120 DEEP SEATED LANDSLIDE SUSCEPTIBILITY ZONING.
RETRIEVED FROM AUCKLAND COUNCIL GIS VIEWER ON 15.12.2025.

revision					 Horizontal Scale (metres) Vertical Scale (metres)	drawn	KM		client:	KNIGHT INVESTMENTS LIMITED		
						approved	SL		project:	ARDMORE BUSINESS PARK		
						date	15.12.25		title:	DEEP SEATED LANDSLIDE SUCEPTIBILITY PLAN		
						scale	1:15,000		project no:	29002	figure no:	12
						original size	A3					

Template revision: 1:2000 (10/12/14)

Level A Analysis - Large Scale Landslide Susceptibility 2025

-  Very High
-  High
-  Moderate
-  Low
-  Very Low

Place Names

Place Name (25,000)

Place Name (25,000)

Public Open Space Names (15,000)

Public Open Space Names (15,000)

Hydrographic Place Name (25,000)


Hydrographic Place Name (25,000)

Place Name Search

Place Name Search


Rail Stations

Rail Stations (25,000)


 Rail Stations (25,000)

Railway Lines

Railway (25,000)











 Railway (25,000)

Auckland Council Boundary

 Auckland Council Boundary

Roads

Roads (15,000)

-  Motorway
-  Motorway Under Construction
-  Secondary Arterial Road
-  Secondary Arterial Road Under Construction
-  Primary Arterial Road
-  Primary Arterial Under Construction
-  Collector Road
-  Collector Road Under Construction
-  Local Road
-  Local Road Under Construction

Property

Property

Rate Assessment

Rate Assessment



Parcels

 Parcels

Coastline

Aerial 2024 2025 Urban

Image

-  Red: Band_1
-  Green: Band_2

 Blue: Band_3

Base Region 5m

-  Land Outside
-  Sea Outside
-  Water

Region Cache Large Background

 Region Cache Large Background

Legend

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Date Printed:
10/12/2025

