

EARTHWORKS REPORT

Project Name:	Ardmore Business Park (the 'Project')
Client:	Knight Investments Ltd
CP Project No:	2672-01
CP Document No:	2672-01-ER02-earthworks-aja-20251218
Date of Issue:	18 December 2025
Originator:	Anthea Abbott – Project Manager
Reviewer:	Ryan Pitkethley – Director

1. Introduction & Project Description

This report has been prepared in relation to a fast-track referral application by Knight Investments for the proposed Ardmore Business Park (the Project').

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.

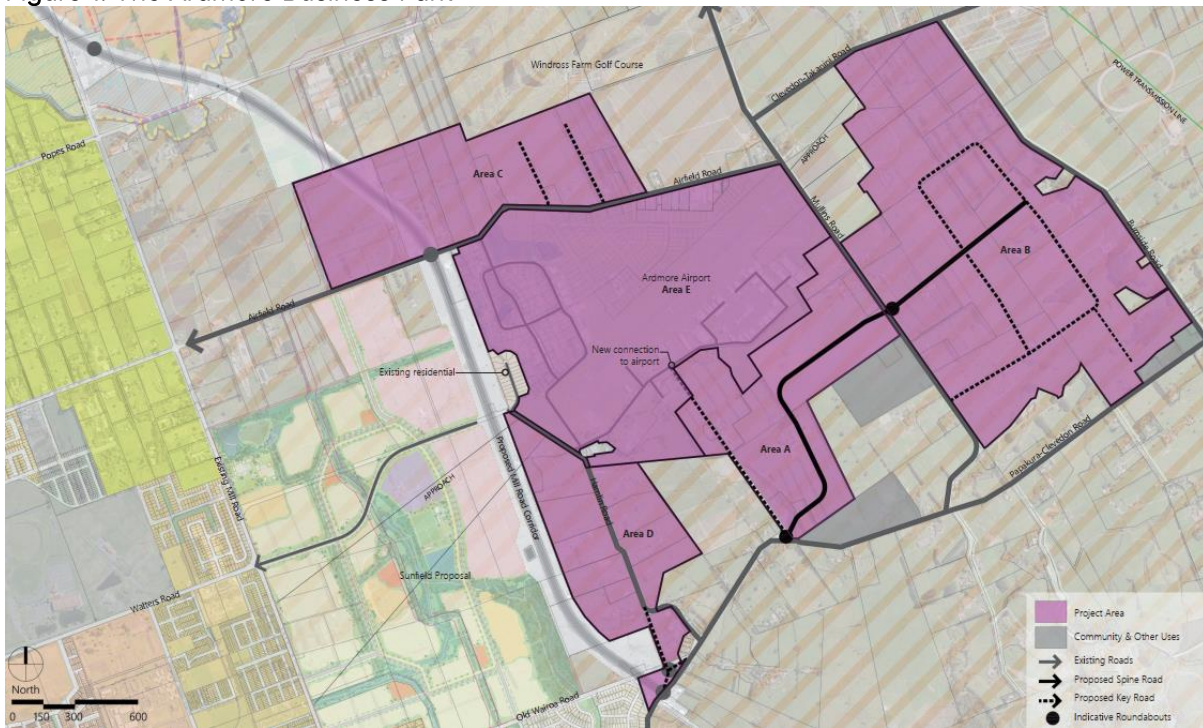
The sites that form part of the Project are set out in Appendix B to this report/assessment.

Appendix B also identifies those sites and roads for which infrastructure and/or upgrade works are required.

This report outlines the earthworks required and available options for mitigating potential impacts of the earthworks for the Project.

Our qualifications and experience are provided in Appendix A.

Figure 1: The Ardmore Business Park



2. Earthworks

2.1. General Description

Bulk earthworks will be required across a large portion of the Project Area to establish finished surface levels suitable for the Project. Given the flat terrain and likely need for attenuation devices to mitigate flood risk within the Area, the final earthworks volumes are likely to require fill volumes to be imported. Final earthworks areas and volumes will be confirmed as part of the substantive application.

The bulk earthworks will likely be required to support the formation of roads, shared JOALs, lots, and stormwater devices.

2.2. Sediment and Erosion Control

Erosion and sediment control measures will be confirmed as part of the substantive application and implemented throughout the duration of the site works. Due to the Project Area's large scale, chosen methods will reflect the need to maintain a high standard of erosion and sediment control across the site. All measures will comply with the *Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region (GD05)*.

Erosion and sediment control measures will be designed incorporating the following fundamental principles:

1. Minimise disturbance – earthworks will be required to form the industrial areas and ensure adequate runoff from the developed sites. However, disturbance particularly around natural stream areas will be minimised where practicable.
2. Staged Construction – it is anticipated that the works will be staged over 15 – 20+ years.
3. Protect Steep Slopes – The majority of the site is relatively flat with steeper areas primarily restricted to areas adjacent to stream or overland flow channels.
4. Protect Watercourses – works around natural watercourses will be minimised where possible and protected via silt fences (or super silt fences).

Proposed measures may include a combination of the following devices:

1. Stabilised construction entrances.
2. Shaker ramps or wheel wash facility.
3. Sediment retention ponds for catchments up to 5ha, flocculated if required.
4. Decanting earth bunds for catchments up to 3000m², flocculated if required.
5. Rapid stabilisation of exposed areas.
6. Silt fences/super silt fences.
7. Clean and dirty water diversions.

The substantive application will include an Erosion and Sediment Control Management Plan detailing the above and plans identifying staging, sediment control devices and their locations etc.

The substantive application will include consent conditions for the Project will align with Auckland Council's standard practice. These conditions would include the following:

1. Pre-Start Meeting to be held with Auckland Council Environmental Monitoring Officers.
2. Prior to the commencement of earthworks activity, a finalised Erosion and Sediment Control Management Plan is to be submitted to Council (which will include details on each catchment, staging and sediment control measures).
3. Prior to the commencement of any works on the site, a Chemical Treatment Management Plan (ChTMP), Construction Traffic Management Plan (CTMP) is to be submitted to Council.
4. Prior to the commencement of earthworks activity, all required erosion and sediment control measures on the subject site shall be constructed and carried out in accordance with the approved Erosion and Sediment Control Management Plan.
5. Prior to the commencement of earthworks activity, a suitably qualified and experienced person shall provide written certification to Council that the erosion and sediment control measures have been constructed in accordance with the certified ESCP and ChTMP.
6. The operational effectiveness and efficiency of all erosion and sediment control measures specifically required by the Erosion and Sediment Control Plan, must be maintained throughout the duration of earthworks activity, or until the site is permanently stabilised against erosion.
7. All perimeter controls must be operational before earthworks commence. All 'clean water' runoff from stabilised surfaces including catchment areas above the site itself must be diverted away from earthworks areas via a stabilised system, to prevent surface erosion.
8. Prior to the removal of any erosion and sediment control devices or diversion of completed areas to a Clean Water Diversion, written certification be provided to Council by a suitably qualified and experienced person to confirm that all areas of bare earth have been stabilised against erosion in accordance with GD05.
9. Earthworks must be managed to minimise the deposition of earth, mud, dirt or other debris on any road or footpath resulting from earthworks activity on the subject site.
10. The site must be progressively stabilised against erosion at all stages of the earthworks activity.
11. Erosion and sediment control measures must be constructed and maintained in general accordance with Auckland Council Guidance Document GD05; Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region.
12. All machinery associated with the earthworks activity must be operated in a way, which ensures that spillages of hazardous substances such as fuel, oil, grout, concrete products and any other contaminants are prevented.
13. All earthworks must be managed to minimise any discharge of debris, soil, silt, sediment or sediment-laden water is discharged beyond the subject site to either land, stormwater

drainage systems, watercourses or receiving waters. In the event that a discharge occurs, works must cease immediately and the discharge must be mitigated and/or rectified to the satisfaction of Council.

14. No earthworks on the subject site must be undertaken between 01 May and 30 September in any year, without the submission of a 'Request for winter works' for approval to Council.

2.2.1. Methodology

The methodology for the bulk earthworks will be confirmed as part of the substantive application; however, a typical methodology may include the following steps:

1. Installation of clean water diversions to prevent water ingress into the work area.
2. Construction of silt fences.
3. Establishment of stabilised site entrances and exits.
4. Installation of all chosen erosion and sediment control devices.
5. As-built certification of erosion and sediment control devices, followed by Council inspection.
6. Bulk excavation to subgrade level and commencement of fill operations.
7. Installation of drainage infrastructure and reuse of suitable spoil as engineered fill.
8. Construction of roads, accessways, and hardstand areas.
9. Construction of stormwater devices.
10. Stabilisation of exposed surfaces using grassing, mulching, or other approved methods.
11. Decommissioning of erosion and sediment controls once the site is stabilised and approved by Council.

Monitoring and maintenance of the devices will be undertaken throughout the earthworks activity.

All bulk earthworks will be undertaken in general accordance with NZS 4431: Code of Practice for Earth Fill for Residential Development and monitored by a suitably qualified geotechnical professional.

The substantive application will include an Erosion and Sediment Control Management Plan detailing the above.

2.3. Dust Management

Dust control will be carried out when weather conditions and the location of site works require to minimise as far as is practicable, the spread of airborne dust and any nuisance created by it. Dust control is likely to include the following:

- Staging earthworks operations to minimise the length of time that areas are exposed to drying.
- Controlling the route and speed of vehicles traversing the site. Using haul routes adjacent to down-wind neighbouring properties shall be avoided.
- The spreading of water to dampen surface layers of soil to minimise dust generation. The spreading of oil is not permitted.
- Choosing work areas to suit wind conditions.

The substantive application will include consent conditions for the Project will include a requirement for a Dust Management plan to be submitted to the Council prior to the commencement of works.

Compliance monitoring will be undertaken during the construction period to ensure that dust is being appropriately controlled, and these obligations can be secured by conditions of resource consent. Consent conditions can also ensure that in the unlikely event that standard management practices prove inadequate due to site characteristics, wind strength and direction, or the proximity of affected neighbours, then further measures can be required. Such measures could include:

- Continuous sprinkling of water
- Windbreak fences.
- Covering stockpiles with geofabric or
- Ceasing works until wind decreases in strength or changes direction.

2.4. Vegetation Disposal

The following methodologies are likely to be used to manage vegetation disposal:

- Large trees shall be felled and milled for timber or firewood. Residue shall be mulched or removed from site to the Contractor's tip site.
- Non-noxious vegetation shall generally be mulched and picked up during topsoil stripping.
- Grass shall be picked up with the topsoil stripping.
- Noxious vegetation, e.g., gorse, woolly nightshade, blackberry, etc., will be sprayed and burnt on site. A Fire Permit will be taken out for this purpose. Care shall be taken at all times to prevent the spreading of seeds from noxious plants.
- Burning shall be carried out only in suitable weather conditions, ensuring that smoke does not cause a nuisance to neighbours. Burning of non-noxious vegetation is not permitted.

2.5. Noise Control

Earthworks will be managed to minimise the emission of noise in accordance with s 16 of the Act. At the substantive consent application stage, the anticipated noise levels from the various items of earthworking machinery will be assessed against the following noise levels:

Time	Weekdays (dBA)		Saturdays (dBA)		Sundays (dBA)	
	L _{eq}	L _{max}	L _{eq}	L _{max}	L _{eq}	L _{max}
0630-0730	60	75	45	75	45	75
0730-1800	75	90	75	90	55	85
1800-2000	70	85	45	75	45	75
2000-0630	45	75	45	75	45	75
0630-0730	60	75	45	75	45	75
0730-1800	75	90	75	90	55	85

If these standards can be met, no resource consent is necessary. If they cannot be met, then a resource consent will be sought to authorise any departures from either long or short term standards.

The substantive application will include consent conditions for the Project will include a requirement for a Construction Noise and Vibration Management plan to be submitted to the Council prior to the commencement of works.

3. Conclusion

Bulk earthworks comprising of imported fill will be required to complete this project. The earthworks for this project will be planned and executed in accordance with best practice erosion and sediment control measures, ensuring that adverse effects resulting from the earthwork operations are either avoided or appropriately mitigated.

APPENDIX A

Qualifications and Experience

Ryan James Pitkethley - Senior Civil Engineer, Director and Engineering Manager at CivilPlan Consultants Limited.

Ryan James Pitkethley holds a Bachelor of Engineering (Civil, Hons) and has been a Chartered Professional Engineer (CPEng) as well as a Chartered Member of Engineering NZ (CMEngNZ) since 2008.

His professional experience encompasses project management and active participation in multi-disciplinary infrastructure and land development projects, collaborating with clients, local authorities, and contractor organisations. He possesses expertise in the planning, design, co-ordination, and delivery of projects covering earthworks, erosion and sediment control, roading, three waters, and utilities infrastructure related to land development.

Employed by CivilPlan Consultants Limited since February 2015, Ryan serves as the Engineering Manager and Director at the Manukau, Auckland office.

His previous involvement at the Yes Valley, Pokeno West, and Havelock sites includes advising on infrastructure development and design from 2018 onwards. He has also provided expert witness evidence on utilities, three waters, roading, and earthworks design and upgrades necessary to support development and proposed rezoning sought by HVL as part of the Proposed District Plan hearings. His evidence addressed infrastructure concepts and constraints as they specifically relate to the site and its servicing potential.

Ryan's previous experience includes:

- Providing land development and infrastructure evidence, which included preparing a Stormwater Management Plan, to support the rezoning of approximately 50 hectares of the Clarks Beach Special Housing Area from rural to urban and securing Stormwater Discharge Consents.
- Contributing to the large-scale residential land development project known as Riverside Grove, Escotts Road, Tuakau, where he undertook the design to obtain resource consent and engineering plan approval, and managed the implementation through to title issuance.
- Working on the large-scale residential development of over 380 lots at Pokeno, including preparing Stormwater Management Plans (used as the basis for Stormwater Discharge Consents) for various stormwater catchments in Pokeno.
- Delivering land development and infrastructure services, including the preparation of a Stormwater Management Plan, to support the rezoning of approximately 36 hectares known as the "Graham Block" from rural to urban (about 150 lots) and obtaining Stormwater Discharge Consents.

Anthea Abbott - Senior Land Development Engineer and Team Leader at CivilPlan Consultants Limited.

Anthea holds a Bachelor of Engineering (Civil, Hons) since 2002 and is a Member of Engineering NZ (MEngNZ).

Anthea has extensive knowledge and experience interacting with teams of engineers working on complex multi-disciplinary infrastructure projects. She has worked closely alongside client organisations, understanding their needs and providing cost effective technical solutions. She has also worked with many civil contractors to ensure high quality construction is completed in a timely manner.

Anthea is skilled in project management, design, and contract administration with practical experience in a broad range of civil engineering disciplines including land development, roading, transportation planning, geotechnical engineering and asset management.

Anthea's areas of expertise includes:

- Project management of land development projects;
- Contract management;
- Resource consent and engineering plan approval applications for civil works;
- Earthworks and levels design
- Erosion and sediment control design and implementation
- Roothing and pavement design
- Stormwater catchment analysis, hydrology and hydraulics, 1D/2D modelling, and stormwater management plans
- Three waters and utilities infrastructure design
- Civil contract administration and site management
- Council compliance, certification of works, and 224c applications
- 12d drainage modelling and AutoCAD drafting

Anthea has been the engineering lead responsible for the detailed design and construction management for the 50 ha Clarks Beach development adjacent to the existing rural township. This included the construction observations of the usual residential subdivision components as well as a large central amenity conveyance channel, discharging to a new coastal outfall.

Anthea completed the engineering design for the successful fast track consent application for the Te Puru Business Park located on the site of the existing quarry site at Beachlands.

Anthea is also the lead engineer for the resource consent application process for the Whangarata Road Industrial Park. This has involved 12d modelling of earthworks, flood modelling, wetland, stormwater and wastewater reticulation and roading design and utility coordination.

APPENDIX B

Ardmore Business Park Application Sites

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