APPENDIX 12: Obstacle Limitation Studies (Adapt Studio)

Minutes of Meeting
TE KOWHAI AIPRARK

Meeting Summary: Meeting held with Donald Sam the owner of 669 Horotiu Road to discuss the proposed changes to Te Kowhai Aerodromes OLS and any potential impact for future development of his property.

Held on 13 March 2018 at 12:30pm at Te Kowhai Aerodrome.

Present	Donald Sam (DS)	Owner of 669 Horotiu Road
	Dan Readman (DR)	Te Kowhai Airpark
	Jonathan Broekhuysen (JB)	Adapt Studio Ltd
Distribution	All above plus	
	Paul Andrew	Te Kowhai Airpark
	Regan Brown	Te Kowhai Airpark
	Leonard Gardner	Foster Develop
	Andrew Mcfarlane	BBO
	Tony McLauchlan (TM)	Foster Develop
	Kevin Stokes	Waikato District Council

Items Discussed:

1. DR gave an overview of the safety and future-proofing drivers for the proposed changes to the aerodromes OLS including ensuring the aerodrome meets current CAA AC139-7 Standards and Requirements.
2. JB gave an overview of the Te Kowhai Airpark concept and the proposed OLS via a series of plans and a cross section. Drawing reference 1702_037a, 1702_037b, 1702_037c all dated 12 March 2018.
3. DS gave an overview of his properties development potential and that larger 3,000m2 lots would most likely be the preferred outcome if it were developed. He also discussed the potential expansion of the existing rugby fields and potential partial or complete acquisition of his property by Waikato District Council.
4. JB demonstrated to DS that the side transitional surface restriction would be at a height of approximately 2.5m on his south eastern boundary and 6m on his south western boundary and that it would rise to 10m at a rate of 1m vertical for every 5m horizontal as it moves north into his property.
5. DR explained how the side transitional surface is twisting to the south to meet the OLS fan at the western end of the runway strip so that the gradient of the side transition surface gets steeper as it moves west along DS's property.
6. DS questioned whether the side transition surface would make it difficult to develop his property. JB noted that it would not hinder his ability to develop to a single storey hard up against this southern boundary and that a two-storey home could be built approximately 20m north of his south-eastern boundary and 10m north of his south-

western boundary. JB noted that currently there is a 25m building setback from this boundary under the rural zoning rules.

7. JB noted that homes are predominately single storey in Te Kowahi and it was unlikely that two storey homes would be the development typology for both market and economic reasons.
8. JB discussed that even if a residential zone was to be gained through a structure planning process and there were minimal 1.5m setbacks along the southern boundary, it would not be a logical/practical development scenario to build homes right against the southern boundary. A much more likely scenario would be having a larger back yard with a house either in the middle of the section or more towards the indicative road to the north to allow for better solar access to the south facing backyard.
9. DR asked DS if he had any further questions or issues and he replied no and thanked the Aerodrome team for meeting with him and explaining the proposal.
10. DR agreed to keep in contact with DS and that the aerodrome owners would be more than happy to answer any future questions he might have.

Minutes taken by Jonathan Broekhuysen

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY

RUGBY FIELDS

HOROTIU ROAD

RUNWAY

LIMMER ROAD (SH39)

HAWKSGRIP ROAD

Legend

- Te Kowhai Airpark Boundary
- Precinct Boundary
- Precinct A - Runway and Operations
- Precinct B - Commercial Precinct
- Precinct C - Medium Density Residential
- Precinct D - Residential Precinct
- 230m² Land acquisition for CAA compliant runway strip width of 60m
- District Plan air noise boundary
- Indicative Road Network
- 60m Runway Strip
- 3.5m height restriction - Typical single storey development
- 7.5m height restriction - Residential zone height limit

TE KOWHAI AIRFIELD

ADAPT STUDIO

N

0 100m

1:4,000 @ A3

TE KOWHAI AIRPARK

CAA AC139-7 AERODOME STANDARDS & REQUIREMENTS - Overview Plan

Date: 12 March 2018 | Revision -

Drawing Number: 1702_037a

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY

Legend

- Te Kowhai Airpark Boundary
- Precinct Boundary
- Precinct A - Runway and Operations
- Precinct B - Commercial Precinct
- Precinct C - Medium Density Residential
- Precinct D - Residential Precinct
- 230m² Land acquisition for CAA compliant runway strip width of 60m
- District Plan air noise boundary
- Indicative Road Network
- 60m Runway Strip
- 3.5m height restriction - Typical single storey development
- 7.5m height restriction - Residential zone height limit

RUGBY FIELDS

HOROTIU ROAD

CROSS SECTION A-A'
REFER NEXT PAGE

RUNWAY

10m 9m 8m 7m 6m 5m 4m 3m 2m 1m 0m

TE KOWHAI AIRFIELD

ADAPT STUDIO

N

0 50m

1:2,000 @ A3

TE KOWHAI AIRPARK

CAA AC139-7 AERODOME STANDARDS & REQUIREMENTS - Sam Property Detail Plan

Date: 12 March 2018 | Revision -

Drawing Number: 1702_037b

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY

1:500 @ A3

Cross Section A-A’
CAA AC139-7 Aerodrome Standards & Requirements

TE KOWHAI AIRFIELD

ADAPT STUDIO

TE KOWHAI AIRPARK

Sam Property Cross Section

Date: 12 March 2018 | Revision -

Drawing Number: 1702_037c

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

Minutes of Meeting
TE KOWHAI AIPRARK

Meeting Summary: Meeting held with Marshall, Christine and Jacob Stead the owners of 703b Te Kowhai Road to discuss the proposed changes to Te Kowhai Aerodromes OLS and any potential impact for future development of their property.

Held on 13 March 2018 at 2:30pm at Te Kowhai Aerodrome.

Present	Marshall Stead (MS)	Owner of 703b Te Kowhai Road
	Christine Stead (CS)	Owner of 703b Te Kowhai Road
	Jacob Stead (JS)	Son of Marshall and Christine
	Dan Readman (DR)	Te Kowhai Airpark
	Tony McLauchlan (TM)	Foster Develop
	Jonathan Broekhuysen (JB)	Adapt Studio Ltd
Distribution	All above plus	
	Paul Andrew	Te Kowhai Airpark
	Regan Brown	Te Kowhai Airpark
	Leonard Gardner	Foster Develop
	Andrew Mcfarlane	BBO
	Kevin Stokes	Waikato District Council

Items Discussed:

1. DR gave an overview of the safety and future-proofing drivers for the proposed changes to the aerodromes OLS including ensuring the aerodrome meets current CAA AC139-7 Standards and Requirements.
2. JB gave an overview of the Te Kowhai Airpark concept and the proposed OLS via a series of plans and a cross section. Drawing reference 1702_037e, 1702_037f, 1702_037g all dated 12 March 2018.
3. MS and CS discussed how they had intentions to develop their land as housing and that they have been in discussions with Waikato District Council (WDC) and had engaged a surveyor. They were also in contact with WDC about the potential access road shown on WDC's maps which would be required to gain access to their property. They were very interested to know if the OLS changes would impact their development potential.
4. JB demonstrated to the Steads that the side transitional surface restriction would be at a height of approximately 4m on their south eastern boundary and 2.5m on their south western boundary with the aerodrome and that it would rise to 10m at a rate of 1m vertical for every 5m horizontal as it moves north into their property. JB discussed that there is however an awkward wedge in the property boundary on their very southern boundary which Te Kowhai Airpark would need to

acquire a small piece of their land to accommodate the 60m wide runway strip. This piece of land would be approximately 230m2 in size.

5. The Steads were open to the possibility of a small land acquisition and everyone agreed to discuss this further at a later date.
6. JB noted that although the side transition surface would be at 0m on this boundary of acquired land, the existing Air Noise Boundary in the district plan extends 25m into their property at this point and it would not make sense to develop a new home within this overlay as it would incur additional construction costs and acoustic standards to be met.
7. DR noted that the side transitional surface would be at a height allowing a single storey building or higher along the full boundary once it is clear of the existing District Plan air noise boundary therefore not hindering their ability to develop the most logical house typology which is single storey homes on larger sections along the southern end of their property.
8. JB discussed that even if a residential zone was to be gained through a structure planning process and there were minimal 1.5m setbacks along the southern boundary, it would not be a logical/practical development scenario to build homes right against the southern boundary. A much more likely scenario would be having a back yard to the runway edge or better to develop this edge with lots that addressed the runway and had direct access to the runway. In this respect the new transitional surface would not unduly hinder the ability to develop the property in the future. Further to this there would be a daylight admission rule along this boundary should a residential zone become live which would restrict development of homes hard up against this boundary.
9. JS asked why the Aerodrome has not allowed for larger noisier aircraft and DR stated that there are noise standards which need to be met and that the Airpark will need to have some restrictions in place.
10. DR confirmed that Te Kowhai would be open to discussions around providing access to the runway for any lots on the southern edge of the runway and JB agreed this would be a better design outcome and treatment for this boundary. Under this scenario homes would need some additional space in front of their homes to allow for aeroplane movements creating more space for the building to be set back. We all agreed this could be investigated further at a later date.
11. DR asked the Steads if they had any issues with the proposal or if they needed any further questions answered. They stated that they would like some certainty that the Airpark would allow these lots to gain access to the runway and saw the value in this option. It was agreed to discuss this further at a later date, but that Te Kowhai Airpark is committed to providing access if it was seen as desirable to the Steads.
12. The Steads stated that they would run the plans past their surveyor and get back to DR if they have any further questions.
13. DR agreed to keep in contact with the Steads and that the aerodrome owners would be more than happy to answer any future questions they might have.

Minutes taken by Jonathan Broekhuysen

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY

RUGBY FIELDS

HOROTIU ROAD

RUNWAY

LIMMER ROAD (SH39)

HAWKSGRIP ROAD

Legend

- Te Kowhai Airpark Boundary
- Precinct Boundary
- Precinct A - Runway and Operations
- Precinct B - Commercial Precinct
- Precinct C - Medium Density Residential
- Precinct D - Residential Precinct
- 230m² Land acquisition for CAA compliant runway strip width of 60m
- District Plan air noise boundary
- Indicative Road Network
- 60m Runway Strip
- 3.5m height restriction - Typical single storey development
- 7.5m height restriction - Residential zone height limit

TE KOWHAI AIRFIELD

ADAPT STUDIO

N

0 100m

1:4,000 @ A3

TE KOWHAI AIRPARK

CAA AC139-7 AERODOME STANDARDS & REQUIREMENTS - Overview Plan

Date: 12 March 2018 | Revision -

Drawing Number: 1702_037e

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY

Legend

- Te Kowhai Airpark Boundary
- Precinct Boundary
- Precinct A - Runway and Operations
- Precinct B - Commercial Precinct
- Precinct C - Medium Density Residential
- Precinct D - Residential Precinct
- 230m² Land acquisition for CAA compliant runway strip width of 60m
- District Plan air noise boundary
- Indicative Road Network
- 60m Runway Strip
- 3.5m height restriction - Typical single storey development
- 7.5m height restriction - Residential zone height limit

CROSS SECTION A-A'
REFER NEXT PAGE

RUNWAY

10m 9m 8m 7m 6m 5m 4m 3m 2m 1m 0m

0m 1m 2m 3m 4m 5m 6m 7m

TE KOWHAI AIRFIELD

ADAPT STUDIO

N

0 50m

1:2,000 @ A3

TE KOWHAI AIRPARK

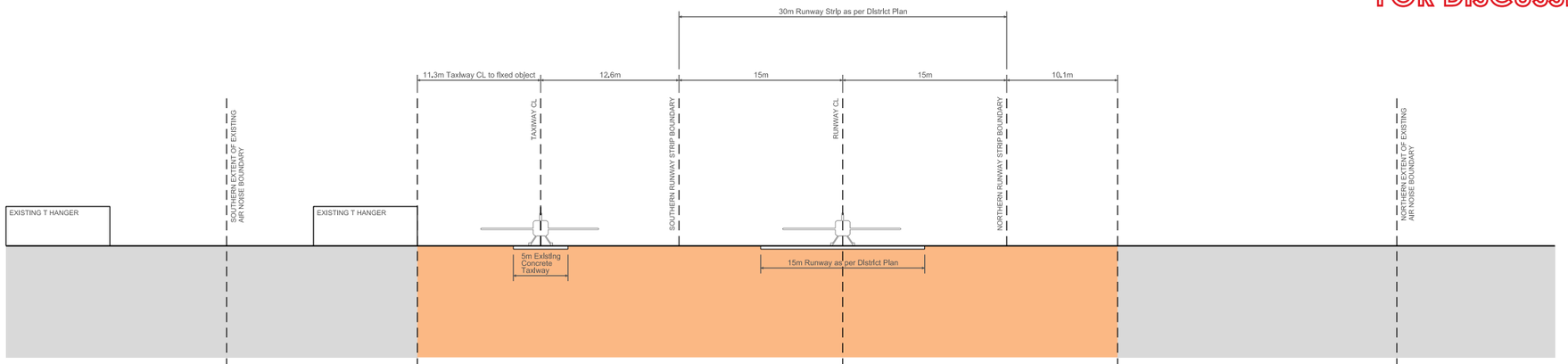
CAA AC139-7 AERODOME STANDARDS & REQUIREMENTS - Stead Property Detail Plan

Date: 12 March 2018 | Revision -

Drawing Number: 1702_037f

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY



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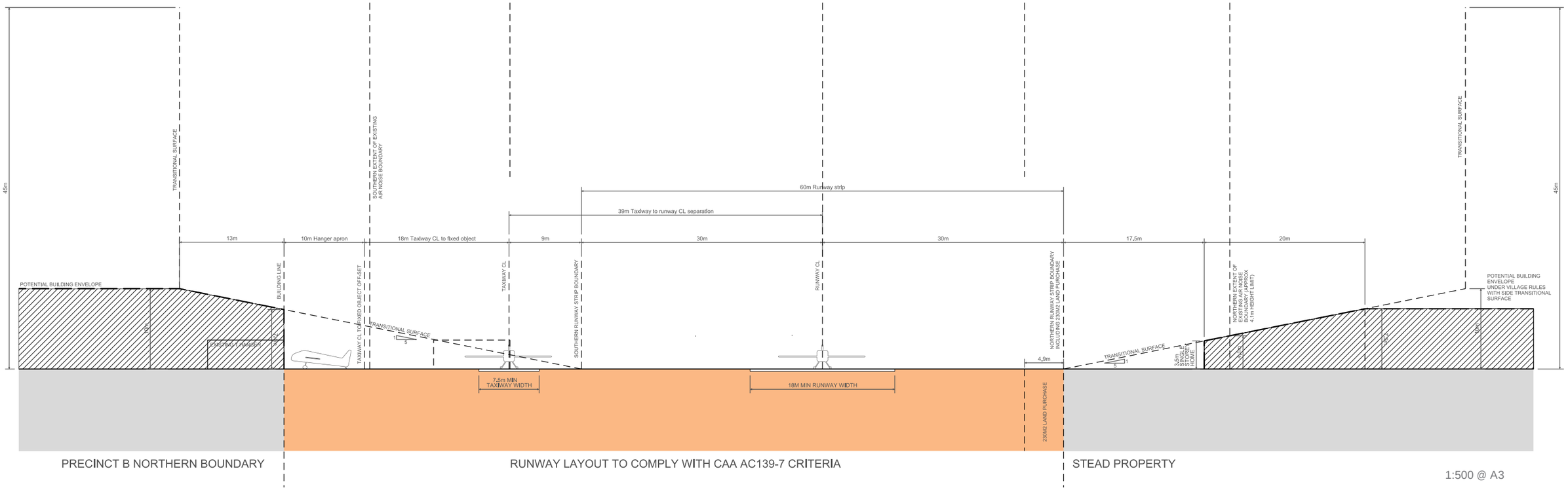
Cross Section A-A'
Existing



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Cross Section A-A'
CAA AC139-7 Aerodrome Standards & Requirements

TE KOWHAI AIRFIELD

ADAPT STUDIO

TE KOWHAI AIRPARK

Stead Property Cross Section

Date: 12 March 2018 | Revision -

Drawing Number: 1702_037g

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

Minutes of Meeting
TE KOWHAI AIPRARK

Meeting Summary: Meeting held with the owners of 703a Te Kowhai Road to discuss the proposed changes to Te Kowhai Aerodromes OLS and any potential impact for future development of their property.

Held on 13 March 2018 at 11am at Lloyd Davis Panelbeaters at 235 Kahikatea Drive, Frankton, Hamilton.

Present	Lloyd Davis (LD)	Property owner of 703A Te Kowhai Road
	Nicola Thompson (NT)	Daughter of LD
	Dan Readman (DR)	Te Kowhai Airpark
	Jonathan Broekhuysen (JB)	Adapt Studio Ltd
Distribution	All above plus	
	Paul Andrew	Te Kowhai Airpark
	Regan Brown	Te Kowhai Airpark
	Leonard Gardner	Foster Develop
	Andrew Mcfarlane	BBO
	Kevin Stokes	Waikato District Council

Items Discussed:

1. DR gave an overview of the safety and future-proofing drivers for the proposed changes to the aerodromes OLS including ensuring the aerodrome meets current CAA AC139-7 Standards and Requirements.
2. JB gave an overview of the Te Kowhai Airpark concept and the proposed OLS via a series of plans and a cross section. Drawing reference 1702_037i, 1702_037j, 1702_037k all dated 12 March 2018.
3. LD discussed how he had no immediate plans to develop his property but wanted to make sure that it could be developed in the future for the next Davis generations.
4. JB demonstrated to LD and NT that the side transitional surface restriction would be at a height of approximately 3m on their south eastern boundary and 4m on their south western boundary with the aerodrome and that it would rise to 10m at a rate of 1m vertical for every 5m horizontal as it moves north into their property.
5. JB noted that it would not hinder their ability to develop to a single storey hard up against this southern boundary and that a two-storey home could be built approximately 20m north of their southern boundary. JB noted that currently there is a 25m building setback from this boundary under the rural zoning rules.
6. JB discussed that even if a residential zone was to be gained through a structure planning process and there were minimal 1.5m setbacks along the southern boundary, it would not be a logical/practical development scenario to build homes right against the southern boundary. A much more likely scenario would be having a back yard to the runway edge or better to develop this edge with lots that

addressed the runway and had direct access to the runway for aeroplanes. In this respect the new transitional surface would not unduly hinder the ability to develop the property in the future. Further to this there would be a daylight admission rule along this boundary should a residential zone become live.

7. DR confirmed that Te Kowhai would be open to discussions around providing access to the runway for any lots on the southern edge of the runway and JB agreed this would be a better design outcome and treatment for this boundary. Under this scenario homes would need some additional space in front of their homes to allow for aeroplane movements creating more space for the building to be set back. We all agreed this could be investigated further at a later date.
8. DR asked LD and NT if they had any issues with the proposal or if they needed any further questions answered. LD responded that he wanted to ensure that the property could still be developed by future generations. JB stated that the property could still be developed and that it was very unlikely and not logical to build houses against the southern boundary and they would be better off distanced from this boundary whereby the changes to the OLS will have no effect. Further the likely homes would be single storey and as such would not be affected. Both LD and NT had no further questions.
9. DR agreed to keep in contact with LD and that the aerodrome owners would be more than happy to answer any future questions they might have.

Minutes taken by Jonathan Broekhuysen

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY

RUGBY FIELDS

HOROTIU ROAD

RUNWAY

LIMMER ROAD (SH39)

HAWKSGRIP ROAD

Legend

- Te Kowhai Airpark Boundary
- Precinct Boundary
- Precinct A - Runway and Operations
- Precinct B - Commercial Precinct
- Precinct C - Medium Density Residential
- Precinct D - Residential Precinct
- 230m² Land acquisition for CAA compliant runway strip width of 60m
- District Plan air noise boundary
- Indicative Road Network
- 60m Runway Strip
- 3.5m height restriction - Typical single storey development
- 7.5m height restriction - Residential zone height limit

TE KOWHAI AIRFIELD

ADAPT STUDIO

N

0 100m

1:4,000 @ A3

TE KOWHAI AIRPARK

CAA AC139-7 AERODOME STANDARDS & REQUIREMENTS - Overview Plan

Date: 12 March 2018 | Revision -

Drawing Number: 1702_037i

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY

Legend

- Te Kowhai Airpark Boundary
- Precinct Boundary
- Precinct A - Runway and Operations
- Precinct B - Commercial Precinct
- Precinct C - Medium Density Residential
- Precinct D - Residential Precinct
- 230m² Land acquisition for CAA compliant runway strip width of 60m
- District Plan air noise boundary
- Indicative Road Network
- 60m Runway Strip
- 3.5m height restriction - Typical single storey development
- 7.5m height restriction - Residential zone height limit

RUGBY FIELDS

CROSS SECTION A-A'
REFER NEXT PAGE

RUNWAY

10m
9m
8m
7m
6m
5m
4m
3m
2m
1m
0m

TE KOWHAI AIRFIELD

ADAPT STUDIO

N

0 50m

1:2,000 @ A3

TE KOWHAI AIRPARK

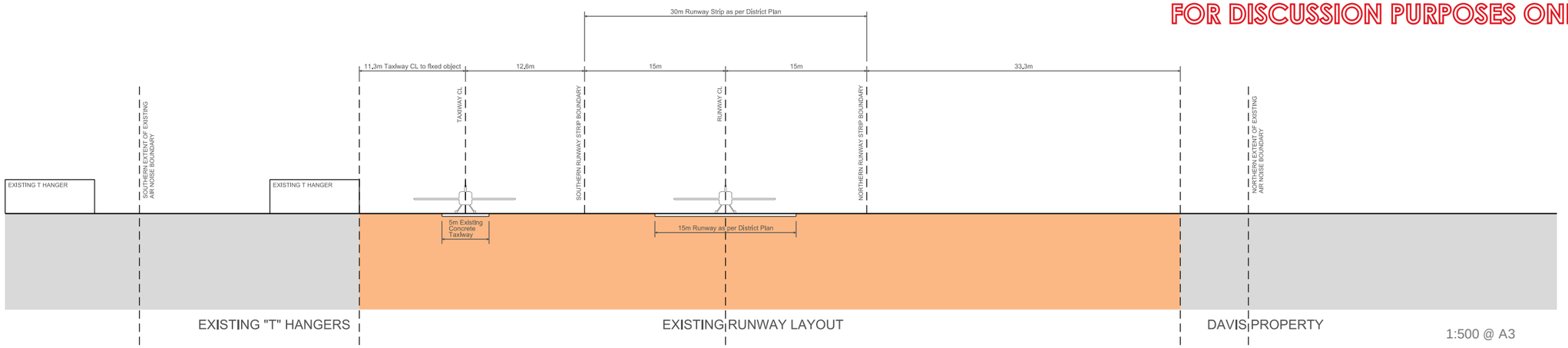
CAA AC139-7 AERODOME STANDARDS & REQUIREMENTS - Davis Property Detail Plan

Date: 12 March 2018 | Revision -

Drawing Number: 1702_037j

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY



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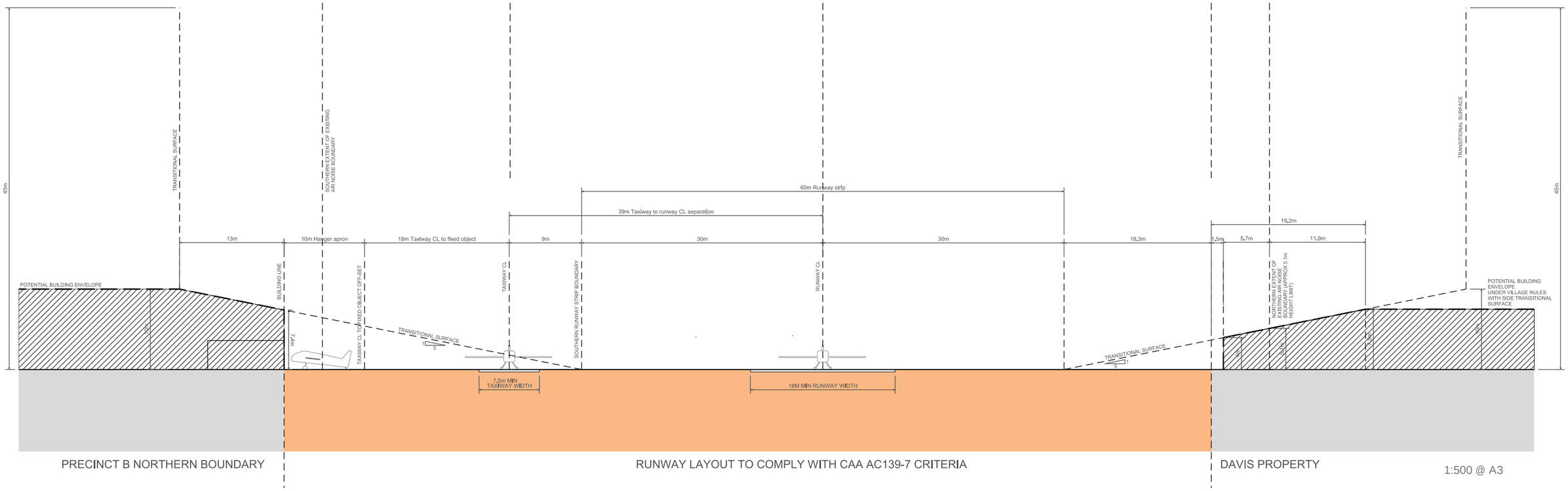
Cross Section A-A'
Existing



1:500 @ A3

Cross Section A-A'
CAA AC139-7 Aerodrome Standards & Requirements

TE KOWHAI AIRFIELD

ADAPT STUDIO

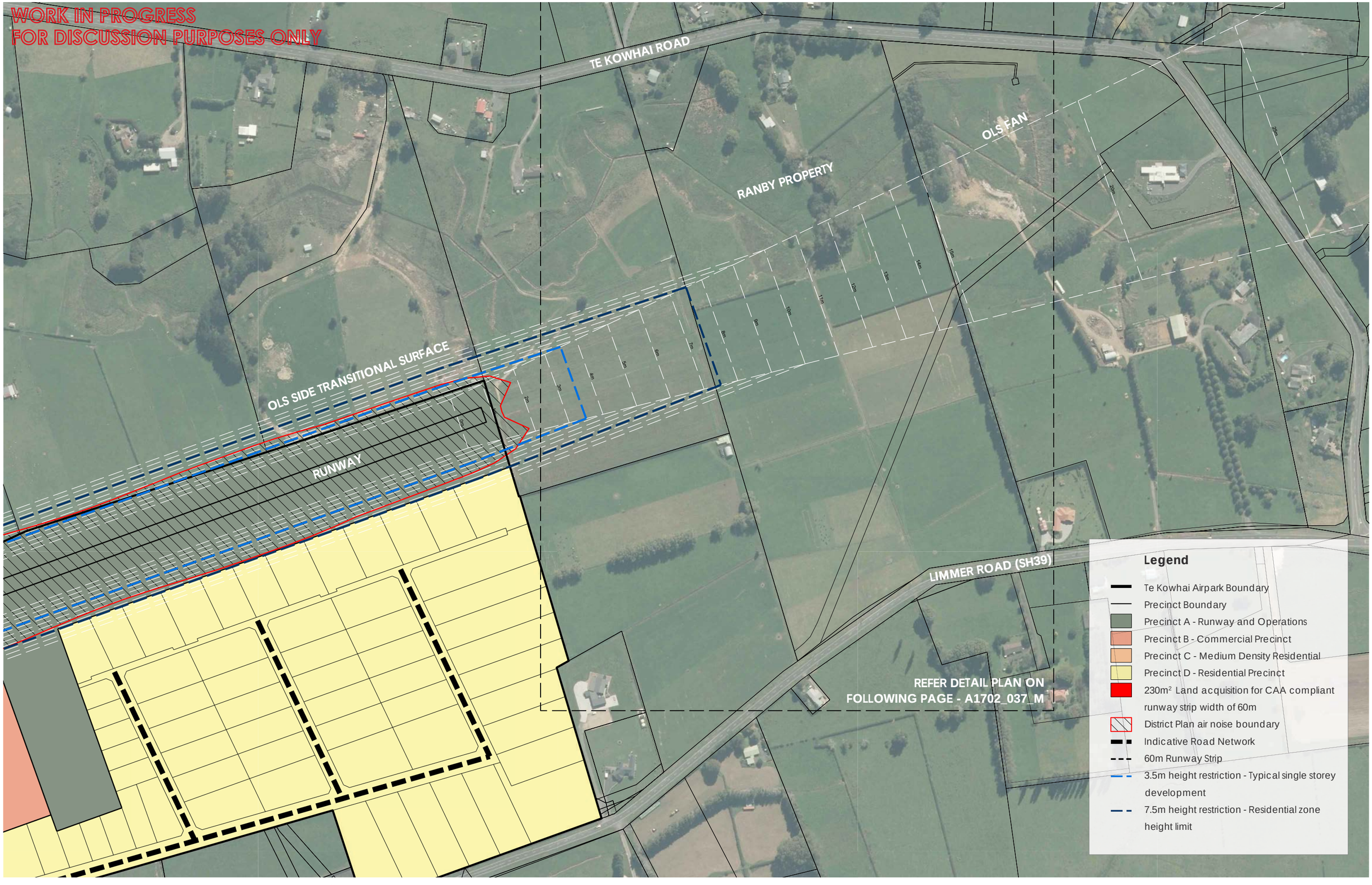
TE KOWHAI AIRPARK

Davis Property Cross Section

Date: 12 March 2018 | Revision -

Drawing Number: 1702_037k

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd



TE KOWHAI AIRFIELD

ADAPT STUDIO

N

0 100m

1:4,000 @ A3

TE KOWHAI AIRPARK

CAA AC139-7 AERODOME STANDARDS & REQUIREMENTS - Overview Plan

Date: 19 March 2018 | Revision -

Drawing Number: 1702_037l

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY

TE KOWHAI AIRFIELD

ADAPT STUDIO

N

0 50m

1:2,000 @ A3

TE KOWHAI AIRPARK

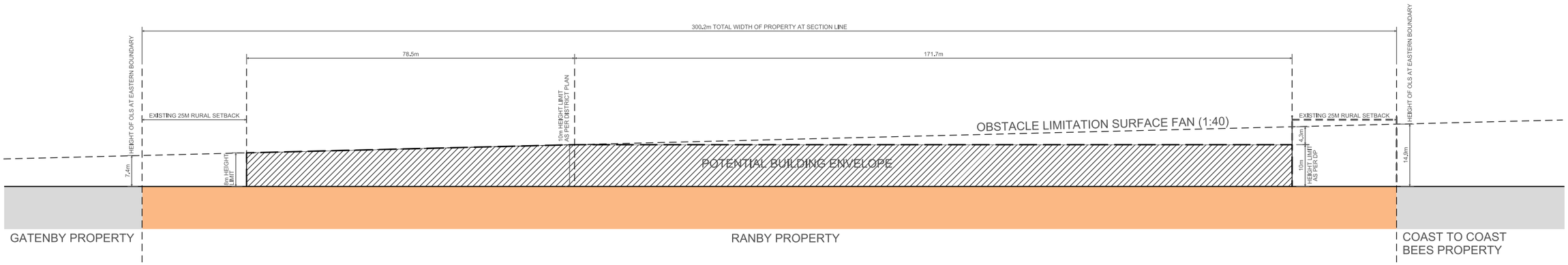
CAA AC139-7 AERODOME STANDARDS & REQUIREMENTS - Ranby Property Detail Plan

Date: 19 March 2018 | Revision -

Drawing Number: 1702_037m

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

WORK IN PROGRESS
FOR DISCUSSION PURPOSES ONLY



1:1000 @ A3

Cross Section A-A'
CAA AC139-7 Aerodrome Standards & Requirements

TE KOWHAI AIRPARK

Ranby Property Cross Section

Date: 19 March 2018 | Revision -

Drawing Number: 1702_037n

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

INDICATIVE LAYOUT SHOWN
FOR DISCUSSION PURPOSES ONLY

STEAD PROPERTY

POTENTIAL ROAD ALIGNMENT BASED ON MOST LIKELY CONNECTION LOCATION TO HOROTU ROAD

EXISTING AIR NOISE BOUNDARY

DIRECT RUNWAY ACCESS

CURRENT AIRPARK BOUNDARY

OLS SIDE TRANSITIONAL SURFACE AT 7.5M HEIGHT - SAME AS LATEST AVAILABLE WDC ZONE HEIGHT INFORMATION

20m

MINIMUM 17.5M HANGER OFFSET (ASSUMING HANGER HEIGHT OF 3.5M) - OLS SIDE TRANSITIONAL SURFACE AT 3.5M HEIGHT

17.5m

EDGE OF 60M RUNWAY STRIP (30M FROM RUNWAY CL)

30m

RUNWAY CL

H

TE KOWHAI AIRFIELD

ADAPT STUDIO

NOTES

1. Potential runway side lot. 3,000m² (assuming no reticulated sewer network and WDC structure planning process complete) dimensions vary as boundaries are not regular.
2. Potential Land purchase 230m² (TKA to purchase)
3. 10m Hanger Apron

GENERAL NOTE - OFFSETS SHOWN ARE TO COMPLY WITH CAA AC139-7 AERODROME STANDARDS AND REQUIREMENTS

0 50m

1:1,500 @ A3

TE KOWHAI AIRPARK

Stead Property Runway Interface Concept Plan
Option 1 - CAA Compliant Direct Runway Access

Date: 04 May 2018 | Revision A

Drawing Number: 1702_041

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

File Ref: 1702_041_Stead_Property_Runway_Interface_Concept.indd

INDICATIVE LAYOUT SHOWN
FOR DISCUSSION PURPOSES ONLY

STEAD PROPERTY

POTENTIAL ROAD ALIGNMENT BASED ON MOST LIKELY CONNECTION LOCATION TO HOROTIU ROAD

1

EXISTING AIR NOISE BOUNDARY

DEDICATED GRASS OR SEALED TAXIWAY

2

3

CURRENT AIRPARK BOUNDARY

10M HANGER APRON OFFSET - OLS SIDE TRANSITIONAL HEIGHT LIMIT AT 7.4M (37M HORIZONTAL @ 1:5) AT THIS POINT

18M TAXIWAY CL TO FIXED OBJECT

39M RUNWAY CL TO TAXIWAY CL SEPARATION

EDGE OF 60M RUNWAY STRIP (30M FROM RUNWAY CL)

10m
18m
9m
30m

RUNWAY CL

H

TE KOWHAI AIRFIELD

ADAPT STUDIO

NOTES

1. Potential runway side lot. 3,000m² (assuming no reticulated sewer network and WDC structure planning process complete) approx 108m deep by 28m wide.
2. Potential Land swap 995m² (TKA to purchase)
3. Potential land swap 1,445m² (Steads to purchase)

GENERAL NOTE - OFFSETS SHOWN ARE TO COMPLY WITH CAA AC139-7 AERODROME STANDARDS AND REQUIREMENTS

0 50m

1:1,500 @ A3

TE KOWHAI AIRPARK

Stead Property Runway Interface Concept Plan Option 2 - CAA Compliant Dedicated Taxiway

Date: 04 May 2018 | Revision A

Drawing Number: 1702_041

Plan prepared by Adapt Studio Ltd for Te Kowhai Airfield Ltd

NOTES:
1. CONTOURS AT 0.25 METER INTERVALS
2. CONTOUR VALUE SHOWS HEIGHT FROM GROUND TO OLS SURFACE
3. EXCLUDES HEIGHT TO OBJECTS INCLUDING TREES, HOUSES, BARNS AND OTHER MANMADE OBJECTS

GREY LINE
4.5m

1:2500 (A3) 0 50 100 150m

C	16.04.2018	ADDITIONAL TREES ADDED	JD			
B	6.2.18	TIDY UP	JD	-	-	
A	22.2.18	INITIAL ISSUE	JD		-	
	Date	Issue/revision detail	By	Chk	Appr	

Designed: JD | Checked:
Drawn: JD | Approved: -
mx model version:

BLOXAM BURNETT OLLIVER
Phone +64-7-838 0144, Fax +64-7-839 0431

CLIENT: NZTE OPERATIONS LTD

PROJECT: TE KOWHAI AIRFIELD FUTURE PROOFING

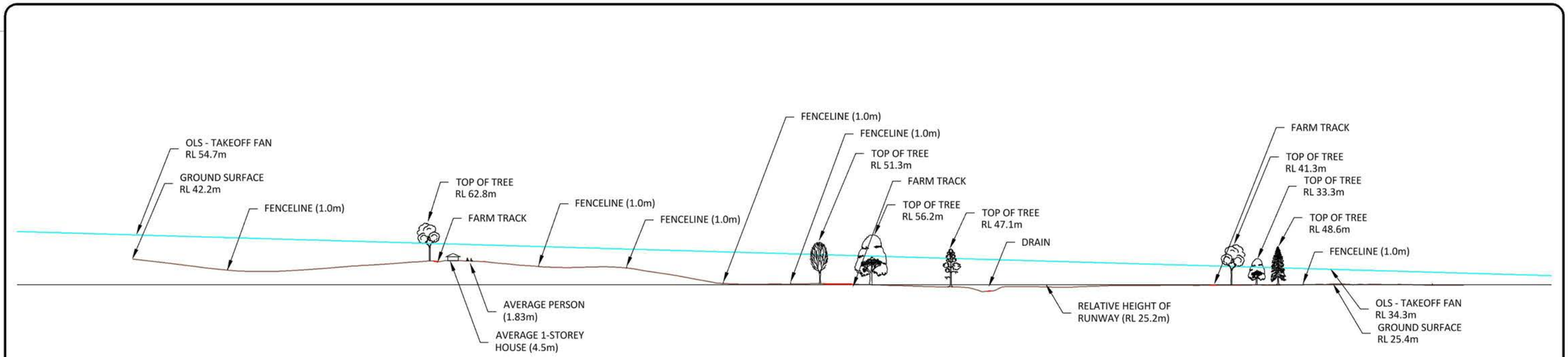
DRAWING: OBSTACLE LIMITATION SURFACE TO GROUND HEIGHT DIFFERENCE

STATUS: DRAFT COPY NOT APPROVED PRELIMINARY

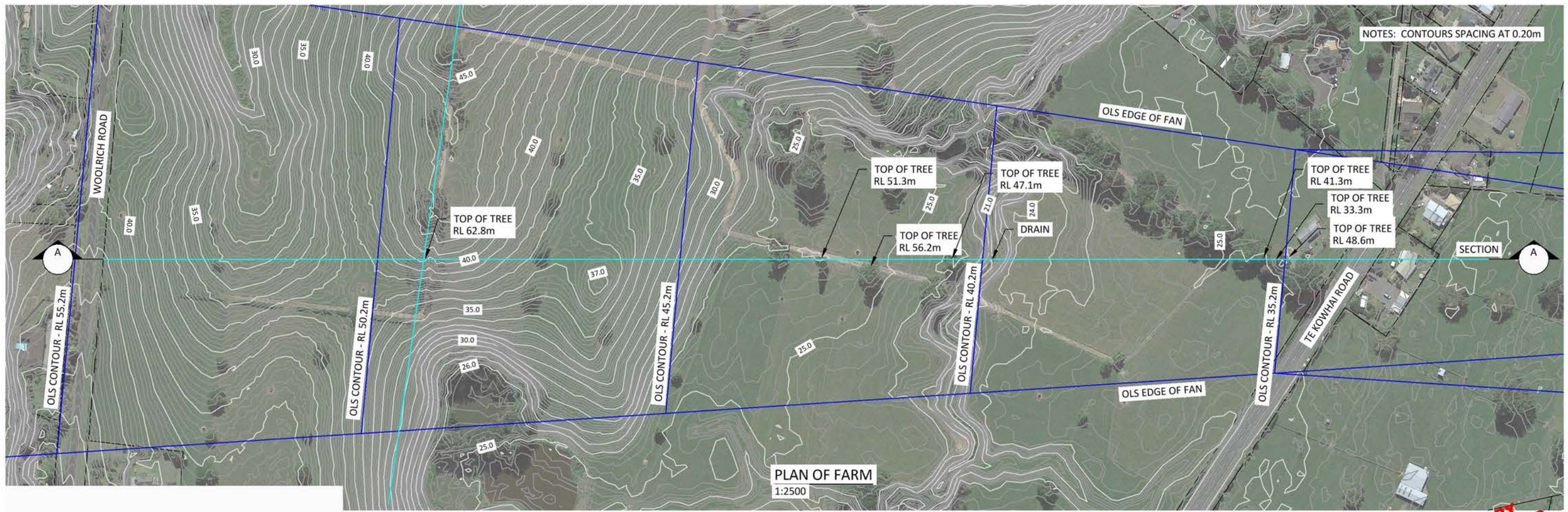
DATE: 16.04.2018 | SCALE (ORIGINAL SIZE A3): 1:2,500

DRAWING NUMBER: 144310_08_0203 | REVISION: C

Version 3.0 - September 2017



A SECTION OF FARM
1:2500



PLAN OF FARM
1:2500

						Designed: JD	Checked: AM	
						Drawn: JD	Approved: -	
A	16.04.18	INITIAL ISSUE	JD	AM	-	mx model version:		
	Date	Issue/revision detail	By	Chk	Appr			

Version 3.0 - September 2017

BLOXAM BURNETT OLLIVER
Phone +64-7-838 0144, Fax +64-7-839 0431

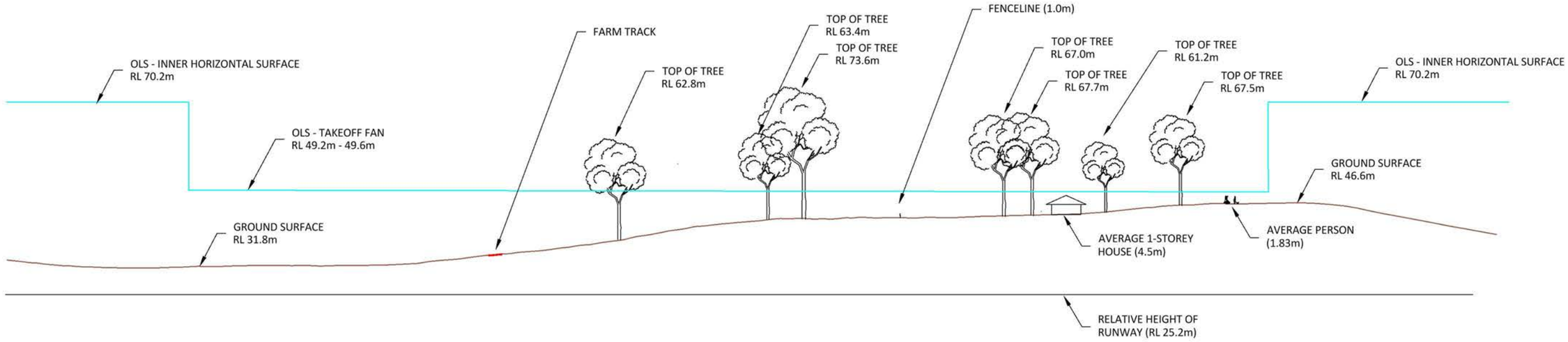
CLIENT: NZTE OPERATIONS LTD

PROJECT: TE KOWHAI AIRFIELD
FUTURE PROOFING

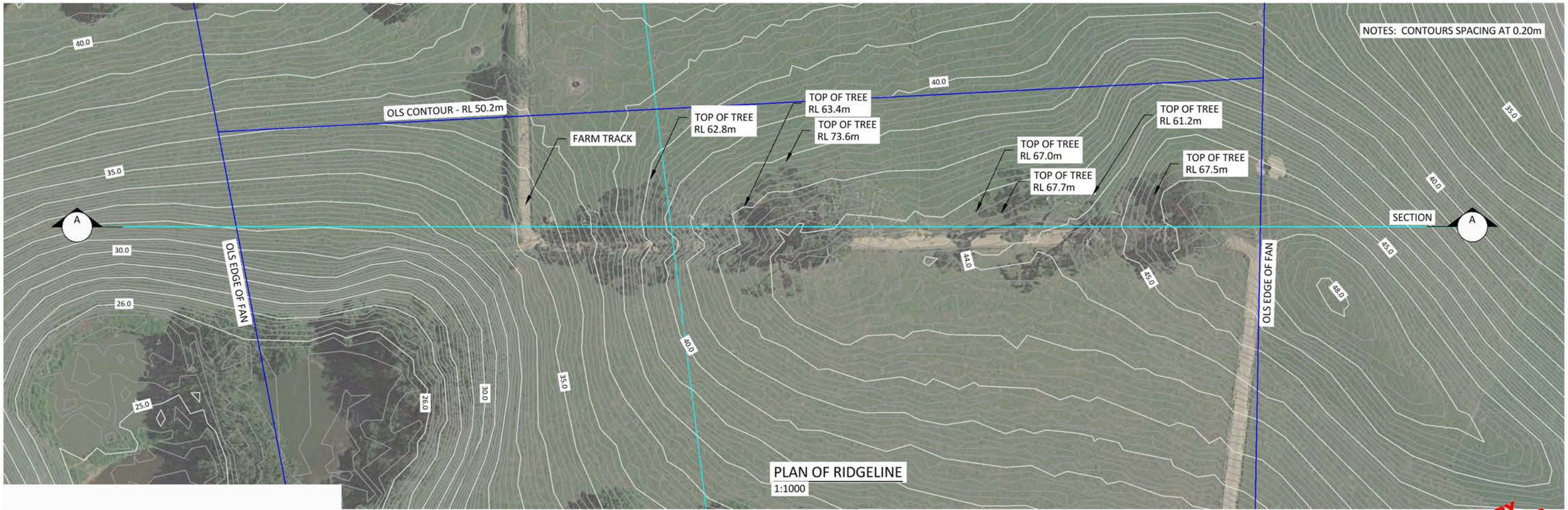
DRAWING: SHELTER HOLDINGS LTD
CROSS SECTION
OF FARM

STATUS: PRELIMINARY
DRAFT COPY NOT APPROVED

DATE	SCALE (ORIGINAL SIZE A3)
316.04.2018	1:2500
DRAWING NUMBER	REVISION
144310_08_0501	A



A SECTION OF RIDGELINE
1:1000



PLAN OF RIDGELINE
1:1000

	Date	Issue/revision detail	By	Chk	Appr
A	16.03.18	INITIAL ISSUE	JD	AM	-

Designed: JD | Checked: AM | Drawn: JD | Approved: - | mx model version:

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CLIENT: NZTE OPERATIONS LTD

PROJECT: TE KOWHAI AIRFIELD
FUTURE PROOFING

DRAWING: SHELTER HOLDINGS LTD
CROSS SECTION
OF RIDGELINE

STATUS: PRELIMINARY
DRAFT COPY NOT APPROVED

DATE: 16.04.2018 | SCALE (ORIGINAL SIZE A3): 1:1000

DRAWING NUMBER: 144310_08_0502 | REVISION: A

Version 3.0 - September 2017

K:\144310 Te Kowhai Airpark\08 OLS Survey\Drawings\144310_08_0502.DWG 16/4/2018 2:28 p.m. jfahmy

SCALE FOR VALIDATING SIZE OF A3 PLOT ONLY

West End

					1:40, 1:5 Surfaces			1:20, 1:4 Surfaces		
Object Details		Tree Top Elevation	Ground Elevation	Tree Height	Transgression Details			Transgression Details		
Code	Description	RL	RL	m	CL Dist	Takeoff	Max Tree	CL Dist	Takeoff	Max Tree
9	Broad Tree	51.3	25.1	26.2	386	16.4	9.8	366	7.8	18.4
11	Wispy tree	33.3	25.1	8.2	403	-1.9	10.2	383	-11.0	19.3
12	Pointy ever	48.6	25.0	23.6	420	12.9	10.7	400	3.4	20.2
13	Wide, pale green tree	50.6	25.1	25.5	427	14.7	10.8	407	5.0	20.5
54	Paddock Pair	36.3	24.4	11.9	505	-1.5	13.4	485		
55	Paddock Pair	36.8	24.4	12.4	511	-1.2	13.6	491		
56	skinny	40.2	21.0	19.2	609	-0.2	19.4	589		
57	skinny	51.3	25.8	25.5	705	8.5	17.0	685	-8.2	33.7
58	by path	56.2	25.4	30.8	673	14.1	16.6	653	-1.7	32.5
59	by path	48.5	24.0	24.5	626	7.7	16.9	606	-7.0	31.5
60	skinny	46.1	21.6	24.5	610	5.6	18.9	590	-8.6	33.1
61	by path	47.1	24.0	23.1	616	6.5	16.6	596	-7.9	31.0
62	skinny	43.5	31.8	11.7	1129	-9.9	21.6	1109		
63	skinny	36.5	35.0	1.5	1123	-16.7	18.3	1103	-43.8	45.4
64	largest at back	52.2	39.6	12.6	1097	-0.4	13.0	1077		
65	tree	50.4	37.0	13.4	1051	-1.1	14.5	1031	-26.3	39.8
66	tree	51.4	39.0	12.4	1032	0.4	12.0	1012		
67	tree	49.3	37.0	12.3	1008	-1.1	13.4	988	-25.3	37.6
68	tree clump	53.5	27.6	25.9	937	4.9	21.0	917		
70	Ridge	67.5	46.2	21.3	964	18.2	3.1	944		
71	ridge	61.2	44.8	16.4	965	11.9	4.5	945		
72	ridge	67.7	43.6	24.1	966	18.3	5.7	946		
73	ridge	67.0	43.6	23.4	966	17.7	5.7	946		
74	ridge - tallest	73.6	42.8	30.8	969	24.2	6.6	949	1.0	29.9
75	ridge	63.4	42.8	20.6	969	13.9	6.6	949	-9.3	29.9
76	ridge	62.8	39.2	23.6	970	13.3	10.3	950	-9.9	33.5
77	fenceline tree	49.1	38.2	10.9	887	1.7	9.2	867	-19.4	30.4
78	paddock	48.4	34.0	14.4	820	2.7	11.7	800		
79	Twin	61.2	25.2	36.0	718	18.1	18.0	698	1.1	34.9
80	Twin	61.1	25.2	35.9	717	18.0	17.9	697	1.0	34.9
81	Skinny poplar	55.0	25.2	29.8	695	12.4	17.4	675		
82	Low wide	47.2	25.4	21.8	730	3.8	18.1	710	-13.5	35.3
83	Tree	48.0	25.4	22.6	662	6.2	16.4	642	-9.3	31.9
84	Uphill	51.2	26.0	25.2	652	9.7	15.5	632		
85	Skinny south of drive	56.6	22.0	34.6	611	16.1	18.5	591		
86	Skinny north of drive	56.3	23.2	33.1	597	16.2	16.9	577		
87	Full, south of drive	51.5	23.2	28.3	585	11.6	16.6	565		
88	Evergreen	45.0	24.2	20.8	543	6.2	14.6	523		
89	Tall point	51.6	24.4	27.2	528	13.2	14.0	508		
90	Medium Height	44.7	24.4	20.3	524	6.4	13.9	504		
91	Birch wide top	43.1	24.2	18.9	519	5.0	14.0	499		
92	Dark Green Behind	44.6	24.2	20.4	519	6.5	14.0	499		
93	Evergreen	40.9	24.2	16.7	514	2.9	13.9	494		
94	Tree	48.5	24.4	24.1	496	10.9	13.2	476	-0.5	24.6
95	Scraggly	48.4	24.4	24.0	478	11.3	12.8	458	0.3	23.7
96	Tall	48.8	24.8	24.0	463	12.0	12.0	443	1.4	22.6
97	Evergreen	46.8	24.8	22.0	454	10.2	11.8	434	-0.1	22.1
98	Tall Wide Top	48.7	24.8	23.9	451	12.2	11.7	431	1.9	22.0
99	Wide with Ivy	41.3	25.0	16.3	432	5.3	11.0	412	-4.5	20.8
100	Wide Peach Color	41.8	25.0	16.8	410	6.3	10.5	390	-2.9	19.7
101	Skinny Evergreen	42.3	25.0	17.3	409	6.9	10.4	389	-2.3	19.7

Explanation:
Some of the colums relate to Moturiki Datum (RL). The ground level at the western end of the runway is 25.2m with respect to Moturiki Datum.
***Tree Top Elevation is the height at the top of the tree in terms of Moturiki Datum.
***Ground Elevation is the ground level in terms of Moturiki Datum.
***Tree height is the absolute tree height. The total height of tree 9 is 26.2m, from ground to top.
***CL Dist is the distance in meters from the OLS threshold of the runway to the point where the tree is perpendicular to the extended centreline of the r
This measurement is necessary to figure the intrustion into the takeoff surface.
***Takeoff is the amount that the tree protrudes into the takeoff surface (when positive). A negative value means it is that much below the surface.
***Max Tree is the maximum height a tree can grow in that position until it protrudes into the OLS surface.
***The 1:40, 1:5 values show the proposed OLS and respective tree intrustions. The 1:20, 1:4 values show the existing OLS and respective tree intrusti

West End

unway

ons.