Before the Expert Panel

FTAA-2504-1054

Under	**Fast-track Approvals Act 2024**
In the matter of	an application for approvals in relation to the Ryans Road Industrial Development
By	**Carter Group Limited** Applicant

Supplementary statement of evidence of Andrew Victor Shelley (Fenix)

17 March 2026

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Supplementary statement of Andrew Victor Shelley (Fenix)

Introduction

1 My name is Andrew Victor Shelley.

2 I provided a statement of evidence to the Expert Panel on 23 February 2026. My qualifications and experience are set out in that statement. I provided a further statement of evidence to the Expert Panel on 12 March 2026 in response to Minute 13.

3 I have been asked by the Applicant to prepare this supplementary statement of evidence to assist the Panel by responding to recent material filed on behalf of Airways New Zealand (**Airways**) and Christchurch International Airport Limited (**CIAL**), and to clarify the technical basis on which I have concluded that aviation effects are acceptable in aviation risk terms.

4 This statement will address:

(a) The Statement of Evidence of Robert Henry Grimm, on behalf of Airways, dated 12 March 2026.

(b) The Statement of Evidence of Ford Robertson, on behalf of CIAL, dated 12 March 2026.

(c) The Statement of Evidence of John Clifford Kyle, on behalf of CIAL, dated 12 March 2026.

(d) The scale and significance of the effects that I have assessed as being 'acceptable' and what 'acceptable' means in aviation terms.

Code of practice for expert witnesses

5 I have prepared this statement of evidence in my capacity as an expert, and I acknowledge that I have read and understand the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. I have complied with it when preparing this statement of evidence. Other than where I state that I am relying on the evidence of another person, my evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Claims made by Mr Grimm on behalf of Airways

6 In this part of my statement I address particular claims made by Mr Grimm on behalf of Airways. I do not address every matter that Mr Grimm has raised as that would be needlessly lengthy.

7 Mr Grimm indicates that Airways engineers want to conduct empirical testing to verify the modelling conducted by Cyrrus. He does not explain how one would test something that does not exist yet. He also does not acknowledge that (a) real world testing would show reflections less than a perfect reflector, (b) rotation of a flat surface is a known way to reduce radar reflections – this is the reason for the angled surfaces on the F117 stealth aircraft, (c) rough surfaces reduce reflections, and (d) surfaces such as wood and composites reduce reflections (the radar waves pass through them). For those same reasons I would be very surprised if empirical testing of reflections from a structure conforming to the proposed consent conditions would produce reflections as strong as those modelled. This is a situation where the 'perfect' assumptions of physics models creates a genuinely worst-case outcome that will not be exactly replicated in the real world.

8 In his paragraph 4.2, Mr Grimm talks about Airways' responsibilities "under the Act." In the absence of any other references to the Civil Aviation Act, Mr Grimm appears to be referring to Airways' responsibilities under Civil Aviation Rules (CAR) Parts 171 and 172, which are of course issued under that Act. I discussed Parts 171 and 172 in my supplementary statement of evidence of 23 February 2026.[1]

9 In his paragraph 4.3, Mr Grimm states that he has spoken to "the Procedure Designer for the Christchurch approach" and that "at the very least operational changes would be required to Airways systems (at its cost) as a result of this Application". If the Procedure Designer is that certain that changes would need to be made, then I would have expected that in the approximately 15 weeks since the Cyrrus safeguarding assessment was filed with the Expert Panel that there could have been, at least, a bullet point or two setting out the reason why a change was required, an indication of the type of change that might be required, and a high level statement of the operational impacts that change would have. Instead, we are presented with an unsupported assertion.

10 In his paragraph 4.6(c), Mr Grimm attempts to refute my statement that Airways moved to ADS-B because it was cheaper. I agree with the benefits

[1] Page 14 at 4.22 to page 15 at 4.24.

that Mr Grimm claims for ADS-B, it has many advantages over traditional radar. However, for clarity, my statement about cost being an underlying reason for the move to ADS-B simply reflects Airways' and the CAA's own publicly available documents describing the rationale for that transition. I further note a May 2020 Cabinet Paper prepared by the Ministry of Transport states [at 27]:[2]

> Replacing the existing radar system with ADS-B reduces capital and operating costs for Airways, the current air navigation service provider. Establishing the proposed ADS-B system will require $18.1 million less capital spending than replacing the existing radar system.

11 In his paragraph 6.2, Mr Grimm asserts that "many aircraft are expecting the DME signal through the entire approach, as published in the [AIP]". However, Mr Grimm does not state where in the AIP this is published.

12 In his paragraph 6.3, Mr Grimm states that "a planned loss of navigation signal during approach is … against the approach procedures contained in the AIP".[3] The AIP does not have the status of a Civil Aviation Rule, but the paragraph quoted by Mr Grimm does accurately paraphrase the relevant part of Civil Aviation Rule 91.413 *Take-off and landing under IFR*. The quoted paragraph refers to the point at which a pilot must execute the missed approach procedure because they do not have sufficient visibility to switch to a visual approach (or because they are instructed by Air Traffic Control to execute a missed approach). The quoted paragraph makes no comment on what instruments a pilot might refer to *after* initiating a missed approach, so it neither supports nor refutes Mr Grimm's evidence.

13 During an *approach*, the aircraft is configured with landing gear down and flaps extended allowing for flight at slower speeds. However, this configuration generates significant drag during the missed approach. For *all* approaches, once the aircraft initiates the *missed approach*, particularly close to the ground, the focus becomes initiating a climb, selecting the undercarriage up and retracting the flap in stages. At this point the pilot is not referring to the ground-based radio navigation aids because they are simply irrelevant to the task at hand. Once the aircraft has been reconfigured and the climb established then the pilot may once again

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2 https://www.transport.govt.nz/assets/Uploads/Cabinet/OC190707-Introducing-mandatory-ADS-B-below-flight-level-245-Cabinet-Paper.pdf

3 In his footnote 27, Mr Grimm references the AIP at what he refers to as [4.17]. This pinpoint should be [ENR 1.5 p. 34 at 4.17]. The significance of this is that there are multiple sections in the AIP: GEN for general, ENR for 'en-route', and AD for aerodromes.

become interested in the DME, but by this time the aircraft is well clear of the aerodrome.

14 In order to add clarity to when pilots are actually relying on the DME, it is helpful to review the approaches that actually exist at Christchurch International Airport. Given the detail required to address this matter, I have appended this to the body of my evidence in Attachments 1-7. These attachments include:

(a) **Attachment 1:** further discussion and explanation of my conclusion above on the DME;

(b) **Attachment 3:** a copy of the definition of an "instrument runway" as it appears in Part 1 of the Civil Aviation Rules; and

(c) **Attachments 4 – 7** relevant pages from the AIP that show the approaches for RWY 02 that utilise the DME.

15 In summary and as set out in detail in **Attachments 1-7**, the detailed breakdown of each approach to RWY 02 that utilises the DME support the conclusion above that there is no point at which an aircraft would be relying on the DME *and* flying through the area of interference. An aircraft may be flying a DME approach, but either (a) the aircraft will be a significant distance before the the DME when the pilot must have sufficient visibility to continue, or (b) if flying the VOR/DME approach where the pilot must make the decision to above the DME, the aircraft will be flying above the region of interference. This is also addressed in the Supplementary Statement of Evidence of Simon McPherson, 17 February 2026. At [22] Mr McPherson refers to the navaid "cone of confusion" where the readings from the DME are inaccurate when at close range. I agree with Mr McPherson's statement that:

> At this point, if the weather and visibility are suitable, pilots will fly a visual approach to land and will not use DME information. If the visibility is poor then pilots will fly a go-around procedure climbing to 4,000ft on the runway heading.

16 I also note that the conditions now proposed by the Applicant provide an additional safeguard and address any remaining matters relating to DME, including those raised by Mr Grimm, although I do not consider such conditions to be necessary. With regard to the 'seven step' process referred to in Mr Grimm's evidence, I maintain the opinion expressed in my earlier statements that the Applicant has already evaluated aviation safety risks to an appropriate and robust standard. In particular, as I previously set out, the Applicant has:

(a) accounted for and complied with the District Plan's regulatory controls and protection surfaces;

(b) engaged proactively with both CIAL and Airways; and

(c) commissioned specialist technical advice on all relevant aviation safety matters to a standard expected in a comparable consenting process (e.g. RMA).

17 The proposed consent conditions also provide further certainty regarding these matters, including by providing for further engagement between the relevant parties and for further assessment to be undertaken.

18 Accordingly, I remain of the view that the criticisms advanced by CIAL and Airways regarding the adequacy of the Applicant's aviation-safety assessments are unsubstantiated. The assessments undertaken are, in my opinion, entirely appropriate for the Panel's decision-making process and would equally be appropriate in an RMA context.

Emotive appeal to past crashes

19 Mr. Grimm concludes his statement of evidence in paragraph 7.1 with an emotive appeal to two historical aircraft crashes which involved non-precision navaid (VOR/DME) systems. Fortunately, accidents in the aviation system are well investigated, so the true causes of these accidents are readily available to us.

(a) In the case of the Korean Airlines Crash in Guam,[4] part of the instrument landing system (ILS) was known to be unserviceable and notified as such. The air traffic controller cleared the aircraft for the ILS approach and reminded the crew that the glideslope was unusable. This meant the aircraft was cleared to fly the localiser approach (non-precision approach) using azimuth (angular direction) information only. Although the crew knew that the glideslope was not useable, they intercepted what they thought was a serviceable glideslope and flew what they thought was the ILS (precision approach) procedure. The aircraft descended at night using an

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[4] National Transportation Safety Board. 2000. Controlled Flight Into Terrain, Korean Air Flight 801, Boeing 747-300, HL7468, Nimitz Hill, Guam, August 6, 1997. Aircraft Accident Report NTSB/AAR-00/01, https://www.ntsb.gov/investigations/AccidentReports/Reports/AAR0001.pdf. The National Transportation Safety Board determined that [page xi]:

> the probable cause of the Korean Air flight 801 accident was the captain's failure to adequately brief and execute the nonprecision approach and the first officer's and flight engineer's failure to effectively monitor and cross-check the captain's execution of the approach.

unserviceable glideslope in instrument meteorological conditions and collided with terrain. The crash occurred because the correct approach was not flown.

(b) In the case of the DHC-8 crash at Palmerston North it is correct that the aircraft was flying on VOR/DME approach, however it is also correct that there were two pilots in the cockpit and that the aircraft was using jet-A1 fuel. None of these factors were a causal factor in the accident. The Transport Accident Investigation Commission investigation found that the pilots were distracted by an undercarriage malfunction and failed to fly the published approach.[5]

20 In short, the accidents proferred by Mr Grimm point to bad decision making and failure to follow published instrument procedures. They do not have any relevance to the current matter.

Criticisms made by Mr Robertson on behalf of CIAL

21 The central theme of Mr Robertson's evidence is that the absence of a "full" or "structured" aeronautical study is somehow a proxy for increased risk.[6] That is, the absence of a risk assessment in the form that he expects to see it means that risk can not be assessed. That proposition is not supported by any analysis of the assessments actually completed for this proposal and Mr Robertson's evidence does not identify any specific deficiencies in the technical assessments of aviation safety provided on behalf of the applicant. Furthermore, in my experience, the use of risk assessments that rank assumed hazards in terms of likelihood and consequence are often illusory in terms of the confidence that they provide. With very low frequency events (i.e. accidents that occur very infrequently), the only way to gain insight into the likelihood of the event is to utilise computer-based modelling

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5 Transport Accident Investigation Commission. Report 95-011 de Havilland DHC-8, ZK-NEY controlled flight into terrain near Palmerston North 9 June 1995, https://taic.org.nz/sites/default/files/inquiry/documents/95-011.pdf. The Commission found that (front page of report):

> The causal factors were: the Captain not ensuring the aircraft intercepted and maintained the approach profile during the conduct of the non-precision instrument approach, the Captain"s perseverance with his decision to get the undercarriage lowered without discontinuing the instrument approach, the Captain's distraction from the primary task of flying the aircraft safely during the First Officer's endeavours to correct an undercarriage malfunction, the First Officer not executing a Quick Reference Handbook procedure in the correct sequence, and the shortness of the ground proximity warning system warning.

6 See evidence of Ford Robertson, 12 March 2026, paragraphs 11-12.

and simulation. Nothing in the modelling undertaken by the Applicant's experts indicates any unmitigated risks that would materially affect safety.

22 Although Mr Robertson outlines, in general terms, what he considers an aeronautical study prepared by an aerodrome operator such as CIAL[7] would ordinarily contain, he does not identify how the aviation safety- and risk assessments prepared for the Applicant in a consenting context fall short of those expectations. His evidence does not point to any incorrect assumptions, methodological flaws, missing inputs, or unreliable conclusions in the material provided by the Applicant's experts.

23 It is also notable that Mr Robertson does not identify any specific safety effect or operational consequence that is likely to arise from the proposal. Rather than pointing to an actual deficiency in the assessments undertaken, his concerns are framed around hypothetical scenarios and the suggestion that further assessment could be carried out.

24 Furthermore, I note that the conditions proposed by the Applicant (while not, in my view, strictly necessary) provide an additional safeguard and serve to address any remaining concerns. While I maintain my view that compliance with the District Plan provisions and the applicable CARs provides a sufficient framework to ensure aviation safety, and that the development as proposed does not give rise to aviation-safety risks, I consider that the proposed conditions offer a precautionary response to the issues identified, including Mr Robertson's comments regarding potential reductions in forced-landing area availability and possible operational changes.

25 In addition, at paragraphs [52]–[53] of his evidence, Mr Robertson provides a summary of information he considers to be "missing". Mr Robertson's evidence also suggests that further assessment is required to understand risk. In my opinion, Mr Robertson's evidence does not give rise to any inadequacy in the Applicant's aviation-safety assessment. Many of the matters he raises are in fact addressed in the Applicant's evidence, including the Navigatus safeguarding assessment. I maintain my conclusion that the level of detail provided by the Applicant is appropriate for this decision-making process and, in fact, exceeds what is typically required or expected at this stage. The conditions proposed by the Applicant also provide a further safeguard, enabling additional engagement, assessment, and identification of further mitigations

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7 Paras [37]-[38] of Mr Robertson's evidence notes that "the statutory obligation to undertake an aeronautical study rests with CIAL as aerodrome operator" and the study "is undertaken prior to [a] significant change occurring, or if that is not practicable, as soon as practicable after the change".

(although, for the reasons set out in my evidence, I do not consider such further assessment to be required).

26 In summary, I do not consider that Mr Robertson's evidence demonstrates any shortcoming in the aviation safety assessments undertaken by the Applicant's aviation safety experts or in my statements of evidence. The relevant effects and their potential scale have been appropriately identified, and the conclusion that those effects are acceptable remains sound.

Claims made by Mr Kyle on behalf of CIAL

27 Throughout his evidence Mr Kyle asserts that the aviation safety related assessments undertaken to date and associated information provided are insufficient and therefore, in his view, it is *'not plausible to conclude that aviation risks are negligible, or even that they have been adequately identified or addressed'*[8].

28 However, Mr Kyle does not identify any specific aviation safety effect arising from the proposal, nor does he identify any deficiency in the assessment methodology, assumptions, inputs, or conclusions relied upon by the applicant's aviation experts.

29 I understand Mr Kyle's concern to be that the Applicant has not provided sufficient information to provide *certainty* at the consenting stage.

30 As stated in this brief of evidence and in the evidence I have provided to date, the methodology adopted and assessments undertaken by the applicant's aviation experts (Cyrrus, Navigatus and L+R Consulting Limited) are consistent with industry and international aviation standards and best practice. Furthermore, the Conditions proposed by the Applicant ensure that the actual effects of any part of the development are within acceptable parameters. This does provide certainty that effects will not exceed those assessed by the Applicant's experts.

31 As noted above, I maintain my opinion set out in my statement of evidence dated 23 February 2026 that:

> 10.1 The particulars of the proposal and as evidenced by the technical assessments and compliance with the District Plan / protection surfaces means the proposal will be safe and appropriate from an aviation safety perspective. I consider that the information and technical assessment

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8 Evidence of John Kyle, 12 March 2026, paragraph 42.

provided by the Applicant are more than sufficient for this process, and go well beyond what would typically be expected in an RMA process, particularly given the proposal's compliance with the District Plan protection and the applicable CARs.

10.2 Further assurance of aviation safety is provided by the regulatory processes under the CAA which will be followed.

10.3 The conditions of consent proposed by the Applicant require/reinforce/support the above.

10.4 Given the above, including the evidence in the technical assessments, there will be no significant operational constraints, costs or limitations on CIAL or Airways.

32 Finally, I consider that neither the proposed conditions, nor the existence of further processes that may need to be undertaken by Airways or CIAL under its own regulatory framework indicate that aviation safety risk is presently unmanaged, nor does it imply that development approval at this stage is unsafe or premature.

Significance of Effects

33 I understand that CIAL and Airways question the *significance* of potential aviation safety effects, insofar that my evidence dated 23 February and 12 March 2026 concluded such effects will be 'acceptable'.

34 'Acceptable' is a defined and conservative risk threshold used internationally in aviation regulation, and it is materially different from a planning judgement about whether an effect is merely tolerable. In the aviation context, the term 'acceptable' means that risk is "As Low As Reasonably Practicable" (ALARP) and does not exceed defined safety targets established by international aviation standards (e.g., ICAO EUR Doc 015). At the same time, ALARP does not mean that risks are nil. To achieve nil risk in the aviation context it would be necessary to ground all flights: not a single flight would ever be allowed because there is always some level of risk. The "Reasonably Practicable" part of the ALARP definition also requires that the costs of risk controls are not grossly disproportionate to the risk – a standard that is also embodied in the Health and Safety at Work Act 2015. I stand by my conclusion that the effects I have assessed are acceptable, in that context.

35 In terms of this (Fast Track approvals) process, I understand that the assessment of effects on the environment (AEE) included with the application as originally filed, concluded in its executive summary that the proposal would have *'**no more than minor** and **acceptable** actual or potential adverse effects on the environment'*[9].

36 With reference to the classification of effects as set out in Table 1 of the AEE, and accounting for the mitigation or remediation achieved by way of the proposed consent conditions, it is my opinion that any potential adverse effects related to aviation matters will be at most be **'minor'**, insofar they 'are noticeable but not at a concerning level, and mitigation or remediation may not be necessary'. The effects may be less than minor, but I cannot be certain of this, so my statement is conservative.

Conclusion

37 In his paragraph 2.3, Mr Grimm takes exception to the statement in CGL submissions that "no credible or reliable scientific evidence on a highly technical topic that undermines the opinions of the applicant's expert witnesses". The evidence of Mr Robertson and Mr Kyle also levels similar criticisms of CGL's assessments of aviation matters.[10]. In my view, the CGL statement remains correct. The statements of evidence of Messrs Grimm, Robertson and Kyle provide assertions and opinion but they do not provide any scientific evidence. Nor do these statements of evidence provide any credible evidence that would cast doubt on the evidence provided by CGL's experts.

38 In summary, this further statement confirms the evidence provided in my statements of evidence dated 23 February 2026 and 12 March 2026. Nothing in the statements of Mr Kyle, Mr Robertson or Mr Grimm causes me to change any of the conclusions reached in that evidence. In my opinion, the Panel has sufficient, reliable technical information before it to identify, evaluate, and weigh aviation safety effects for the purposes of its decision; and I remain of the view that any potential effects will be acceptable in an aviation safety context and minor.

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9 Para 17 of AEE, dated 15 April 2025 (See: .CT-Ryans-Road-FT-AEE-20250320-AMENDED-FINAL_Redacted.pdf).

10 For example, Mr Robertson at paras 11 and 15; and Mr Kyle at para 42.

Dated this 17th day of March 2026

Andrew Victor Shelley

Attachment 1: Approaches for Christchurch RWY 02

1 In order to add clarity to some of the detail of my responses to Mr Grimm's evidence on the DME, it is helpful to review the approaches that actually exist at Christchurch International Airport. These are instrument runways that have both precision and non-precision approaches.

Precision and Non-Precision Approaches

2 I have appended as **Attachment 2** a copy of the definition of an "instrument runway" as it appears in Part 1 of the Civil Aviation Rules. The information in that definition can be summarised in the following table:

Type of approach	**Minimum Visibility**	**Decision Height (minimum)**
Non-precision	1,000m	n/a
Precision, category I	800m (or RVR 550m)	60m / 200ft
Precision, category II	RVR 300m	30m / 100ft
Precision, category IIIA	RVR 175m	lower than 30m / 100ft
Precision, category IIIB	RVR 50m	lower than 15m / 50ft
Precision, category IIIC	n/a	n/a

3 The following definitions apply to the above table:

(a) A **precision approach** is defined in Part 1 of the CARs as "an instrument approach procedure utilising azimuth and glidepath information". Azimuth is the angular direction to the runway, and glidepath is the slope for the aircraft to follow down to the runway.

(b) RVR means 'runway visual range', which is defined as the distance at which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line. This is just a more precise definition of visibility that is focussed on the direction that is important for a pilot the to complete the landing visually. The RVR is established by by counting the runway lights (there is 60m between white runway lights).

4 The reason for the minimum visibility requirement is that at a specified distance from the DME the pilot must have the specified minimum level of visibility to then continue on a visual approach. If visibility is less than the minimum then they must execute a missed approach.

Approaches at Christchurch

5 Christchurch does not have any category II or III precision approaches. The only precision approaches utilising the DME are category I.

6 I have attached (in **Attachments 3 – 7**) the pages from the AIP that show the approaches for RWY 02 that utilise the DME. Each page has a square map at the top, a rectangular cross section of the flight path below that, and a table of data at the bottom. The table of data contains the most important information for understanding the approaches that utilise the DME.

(a) The top line of the table shows the distance in nautical miles (NM) from the DME. For the purposes of analysing the impact of DME reflections on the flight path, we are typically most interested in the two or three values at the right-hand side.

(b) The second line of the table has the 'advisory' altitude for the approach path. For the most part these are genuinely just advisory and the pilot is able to fly a different approach profile. For a non-precision approach it is certain that the approach profile will differ from the advisory profile because of the lack of glideslope guidance.

(c) The right-most entry (or two entries) may specify 'DA' or 'MDA' as the advisory altitude. The meaning of these two entries is as follows:

(i) 'DA' stands for '**Decision Altitude**'. If visibility does not meet or exceed the minimum requirement when the aircraft reaches the DA then the pilot initiates a missed approach. DA applies to precision approaches and is specified in the table rows for each specific approach.

(ii) 'MDA' stands for 'Minimum Descent Altitude'. If executing a procedure that requires an MDA then the aircraft must not descend below the MDA at any stage during the approach (and during the go-round if there is a missed approach). This means that if the aircraft is descending, the missed approach must be initiated before reaching MDA because it will take some time for the aircraft to respond. MDA applies to non-precision approaches.

(d) The subsequent lines of the table provide the DA and MDA heights, plus associated visibility requirements, for the different types of approach available. This is best illustrated by reference to the examples in the following paragraph.

7 The relevant AIP pages for the approaches to Christchurch RWY 02 are as follows:

(a) **Attachment 3: ILS/DME or LOC/DME RWY 02**.

(i) The table at the bottom of this page has three procedures:

(A) ILS/DME (CAT I). This is a category I precision approach that uses the Instrument Landing System (ILS) in conjunction with the DME. The DME provides the distance from the aerodrome. The ILS provides both horizontal guidance (the direction towards the aerodrome) and vertical guidance (the height at which the aircraft should be given its distance from the aerodrome). It is the provision of vertical guidance that makes the ILS/DME approach a precision approach.

(B) ILS/DME LIH ALS U/S. This is a precision approach for when the high intensity Approach Lighting System (ALS) is unserviceable. The approach lighting system is the primary visual reference as the pilot transitions from flying under instruments to flying visually. This system gives the pilot the earliest and most reliable cue that the aircraft is aligned to the runway for landing. When this system is unserviceable the decision altitude (DA) is increased because the pilot will see the runway later.

(C) LOC/DME. This is a non-precision approach that utilises the Localiser (LOC) to provide horizontal guidance and the DME to provide the distance from the aerodrome.

(ii) For the ILS/DME approach the aircraft will descend on the glideslope. If at 323ft AMSL (200ft AGL) the pilot does not have the required visibility (either 800m or RVR of 550m), then the missed approach must be carried out. As this is a precision approach, this decision must be made by DA. The right-most column of the top two rows of the table specifies that DA is a distance of 0.6NM (1,111m) from the DME.

(iii) For the ILS/DME LIH ALS U/S approach the aircraft will descend on the glideslope. If at 373ft AMSL (250ft AGL) the pilot does not have the required visibility (1200m or RVR of 800m), then the missed approach must be carried out. As this is a precision approach, this decision must be made by DA, which as above is a distance of 0.6NM (1,111m) from the DME.

(iv) For the LOC/DME approach the aircraft will be provided with lateral guidance from the localiser. The pilot will calculate a descent rate based on the aircraft's groundspeed. The advisory altitudes may be used as a guide. If at 550ft AMSL (427ft AGL) the pilot does not have visibility of 1500m, then the missed approach must be carried out. As this is a non-precision approach, this decision must be made by MDA, which is specified as 1.3NM (2,407.6m) from the DME.

(b) **Attachment 4: VOR/DME RWY 02 & RWY 20.**

(i) For an aircraft flying the advisory altitudes, the aircraft will reach the MDA of 620ft AMSL (497ft AGL) at 0.9NM (1,667m) before the DME. The aircraft will then fly level towards the VOR/DME. If a Category A or B aircraft does not have 1500m of visibility as it crosses the DME then the pilot must execute a missed approach. A Category C or D aircraft must have 1900m of visibility.

(ii) During the 0.9NM of level approach to the DME, the aircraft will be utilising the VOR for heading information and its barometric altimeter for height information. The Cyrrus safeguarding assessment indicates that the aircraft would be above any disturbance in the DME.

(c) **Attachment 5: ILS/DME N or LOC/DME N RWY 02**. This is used when there is work in progress on the northern portion of runway 02/20. By inspection, the relevant part of the table at the bottom of the page is the same as for **Attachment 3**.

(d) **Attachment 6: LOC/DME S RWY 02, ILS/DME S**. This is used when there is work in progress on the southern portion of runway 02/20. This attachment shows that, despite the title, there is no ILS/DME approach (i.e. no precision approach) when the southern portion of the runway is closed – this is because the navigation aids required for the glideslope cannot be moved. For the non-precision LOC/DME approach, the MDA is 620ft AMSL (514ft AGL); slower aircraft must have 3,600m of visibility and faster aircraft must have 4,400m of visibility. MDA occurs at 0.9NM from the DME, and the missed approach point is at 0.5NM (926m) before the DME.

(e) **Attachment 7: VOR/DME S RWY 02**. This is used when there is work in progress on the southern portion of runway 02/20. For this non-precision approach, the MDA is 620ft AMSL (514ft AGL); slower aircraft must have 3,600m of visibility and faster aircraft must have 4,400m of visibility. MDA occurs at 0.1NM (185.2m) from the DME, and the missed approach point is at the DME. The full length of runway 02/20 is 3,288m, so the aircraft is required to be able to see more than the full length of the runway. If visibility is 3.6km or more when crossing the VOR/DME, then visibility would also be more than 3km a distance of 0.5NM prior. During the approach to the DME the pilot will be relying on the VOR for heading and the barometric altimeter for height, supplemented by visual observation. They will be able to visually determine when they cross the DME.

8 In summary, most of the approaches utilising the DME require the pilot to have significant visibility well prior to the DME. If the required visibility is not obtained by the required decision point then the pilot executes a missed approach, at which point they are no longer concerned with the DME (or the other navaids associated with the approach). The exception to this are the VOR/DME approaches, which have the decision point close overhead the DME:

(a) If the southern end of the runway is open then the aircraft has been at or above 497ft AGL on the approach to this point, above the region of disturbance, and required visibility is at least 1500m. The pilot will be relying on the VOR for heading and the barometric altimeter for height, and will be able to visually see the DME as the aircraft approaches it.

(b) If the southern end of the runway is closed then the aircraft is slightly higher (514ft AGL), again above the region of disturbance, and required visibility is more than doubled.

Attachment 2: Definition of Instrument Runway

Instrument flight time means time during which an aircraft is piloted solely by reference to instruments and without external reference points:

Instrument meteorological conditions means meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions:

Instrument runway means one of the following types of runways intended for the operation of aircraft using instrument approach procedures:

(1) *Non-precision approach runway*: A runway served by visual aids and non-visual aid(s) intended for landing operations following an instrument approach operation type A and a visibility not less than 1,000 m (metric):

(2) *Precision approach runway, category I:* A runway served by visual aids and non-visual aid(s) intended for landing operations following an instrument approach operation type B with a decision height (DH) not lower than 60 m (metric) or 200 ft (imperial) and either a visibility not less than 800 m or a runway visual range not less than 550 m (metric):

(3) *Precision approach runway, category II:* A runway served by visual aids and non-visual aid(s) intended for landing operations following an instrument approach operation type B with a decision height (DH) lower than 60 m (metric) or 200 ft (imperial) but not lower than 30 m (metric) or 100 ft (imperial) and a runway visual range not less than 300 m (metric):

(4) *Precision approach runway, category III:* A runway served by visual aids and non-visual aid(s) intended for landing operations following an instrument approach operation type B to and along the surface of the runway and:

(i) Category IIIA: intended for operations with a decision height (DH) lower than 30 m (metric) or 100 ft (imperial), or no decision height and a runway visual range not less than 175 m (metric):

(ii) Category IIIB: intended for operations with a decision height (DH) lower than 15 m (metric) or 50 ft (imperial), or no decision height and a runway visual range less than 175 m (metric) but not less than 50 m (metric):

(iii) Category IIIC: intended for operations with no decision height (DH) and no runway visual range limitations:

Instrument time includes instrument flight time and time during which a pilot is practising simulated instrument flight on an approved mechanical device:

Integrated Aeronautical Information Package means a package which consists of the following elements—

(1) AIPNZ including amendment service:

(2) supplements to the AIPNZ:

(3) NOTAM:

(4) AIC:

(5) checklists and summaries:

International aerodrome means an international airport:

International airport means any airport designated as an airport of entry and departure for international air traffic where the formalities incident to customs, immigration, public health, animal and plant quarantine, and similar procedures are carried out:

International NOTAM office means an office that is designated for the international exchange of NOTAM:

International standard atmosphere means the atmospheric standard as described in ICAO Document 7488 – Manual of the ICAO Standard Atmosphere:

Attachment 3: Christchurch ILS/DME or LOC/DME RWY 02.

AIP New Zealand NZCH AD 2 - 41.1

ELEV 123

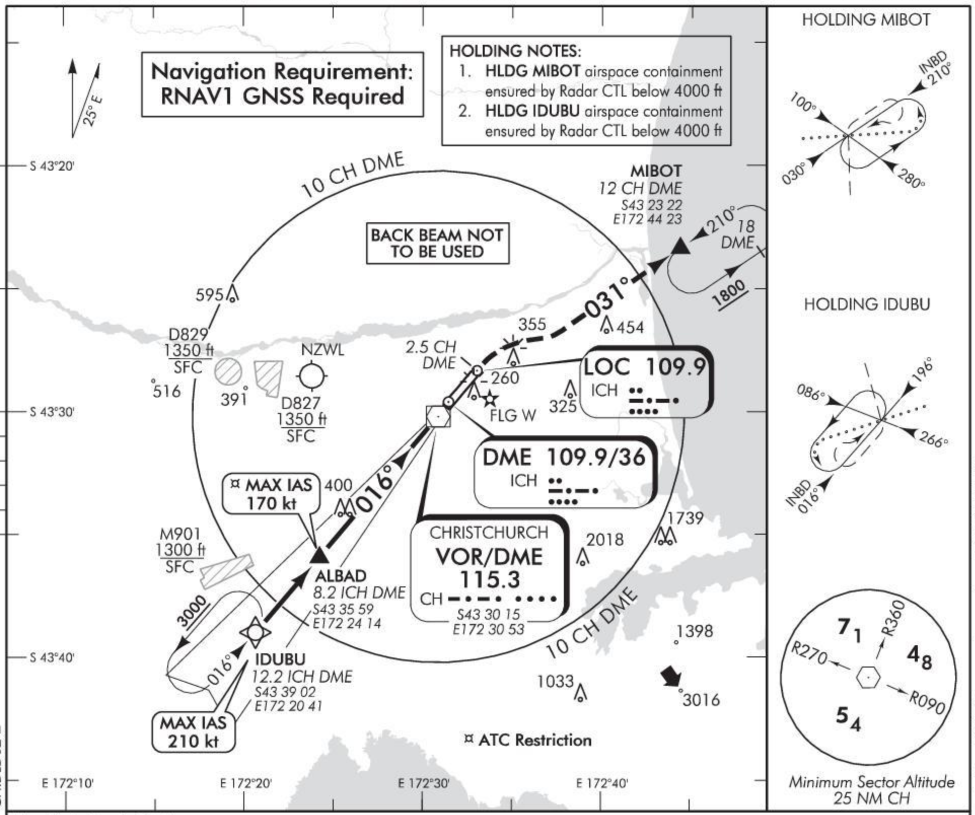
RWY 02 THR ELEV 123

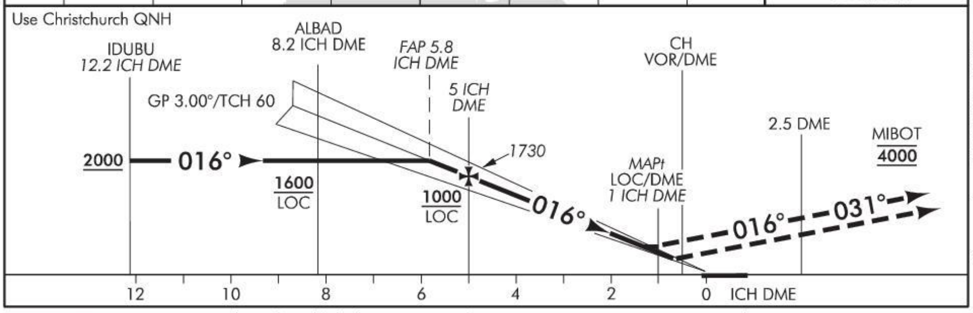
CAT A,B,C,D

CHRISTCHURCH

ILS/DME or LOC/DME RWY 02

CHRISTCHURCH APPROACH: 120.9 126.75 128.75 *TOWER*: 118.4 119.65 *ATIS*: 127.2





Changes from 13 JUN 24: 126.1 amended to 126.75, procedure reviewed, 25 NM MSA.

MISSED APCH: #MAX IAS 185 kt until established on R031. Track 016° to 2.5 CH DME, turn RIGHT track R031 to MIBOT (12 CH DME) 4000, or as instructed by ATC

ICH DME DIST	10	9	8	7	6	5	4	3	2	1.3	0.6
Advisory Altitude 3°	3390	3050	2720	2390	2060	1730	1400	1080	750	MDA	DA

Category	A	B	C	D/D$_L$
ILS/DME (CAT 1)	**323**(200) – 800 or RVR 550			
ILS/DME LIH ALS U/S	**373**(250) – 1200 or RVR 800			
LOC/DME	**550**(427) – 1500			
Circling	**650**(527) – 1900	**660**(537) – 2800	***830**(707) – 3700	***860**(737) – 4600

*** CAT C/D circling airspace containment not assured**
 # Non-jet aircraft MAX IAS 170 kt until established on R031. If unable advise ATC

Effective: 27 NOV 25

CHRISTCHURCH
ILS/DME or LOC/DME RWY 02

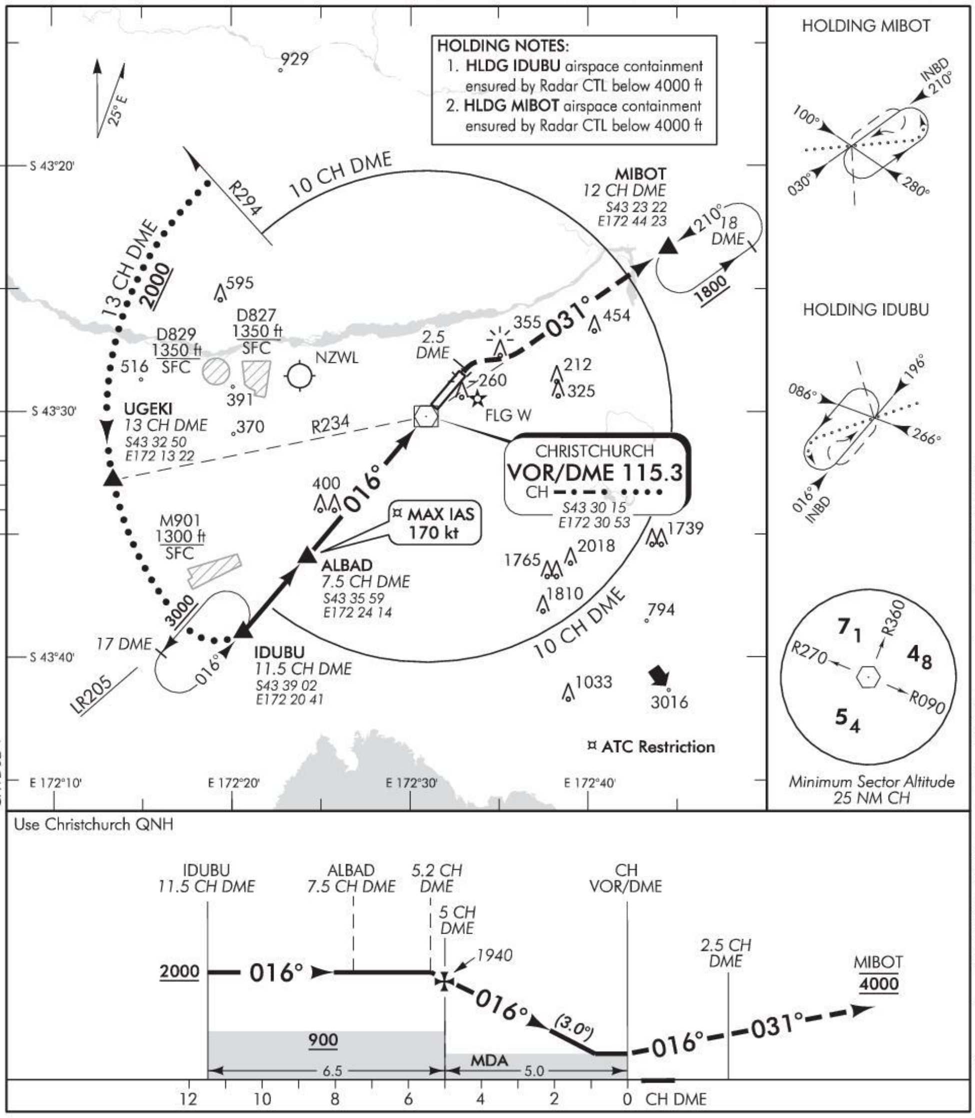
Attachment 4: Christchurch VOR/DME RWY 02 & RWY 20.

ELEV 123
RWY 02 THR ELEV 123

CAT A,B,C,D

CHRISTCHURCH
VOR/DME RWY 02

CHRISTCHURCH APPROACH: 120.9 126.75 128.75 *TOWER*: 118.4 119.65 *ATIS*: 127.2



CHVD02-V

Changes from 13 JUN 24: 126.1 amended to 126.75, procedure reviewed, 25 NM MSA.

MISSED APCH: #MAX IAS 185 kt until established on R031. Track 016° to 2.5 CH DME, turn RIGHT track R031 to MIBOT (12 CH DME) 4000

CH DME DIST	10	9	8	7	6	5	4	3	2	1	0.9	MAPt
Advisory Altitude 5.2%	3530	3210	2890	2570	2260	1940	1620	1300	980	660	MDA	MDA
Category	A			B			C			D		
VOR/DME	**620**(497) – 1500						**620**(497) – 1900					
Circling	**650**(527) – 1900			**660**(537) – 2800			***830**(707) – 3700			***860**(737) – 4600		

* CAT C/D circling airspace containment not assured
# Non-jet aircraft MAX IAS 170 kt until established on R031. If unable advise ATC

Effective: 27 NOV 25

CHRISTCHURCH
VOR/DME RWY 02

Attachment 5: Christchurch ILS/DME N or LOC/DME N RWY 02.

AIP New Zealand NZCH AD 2 - 70.1Y

ELEV 123

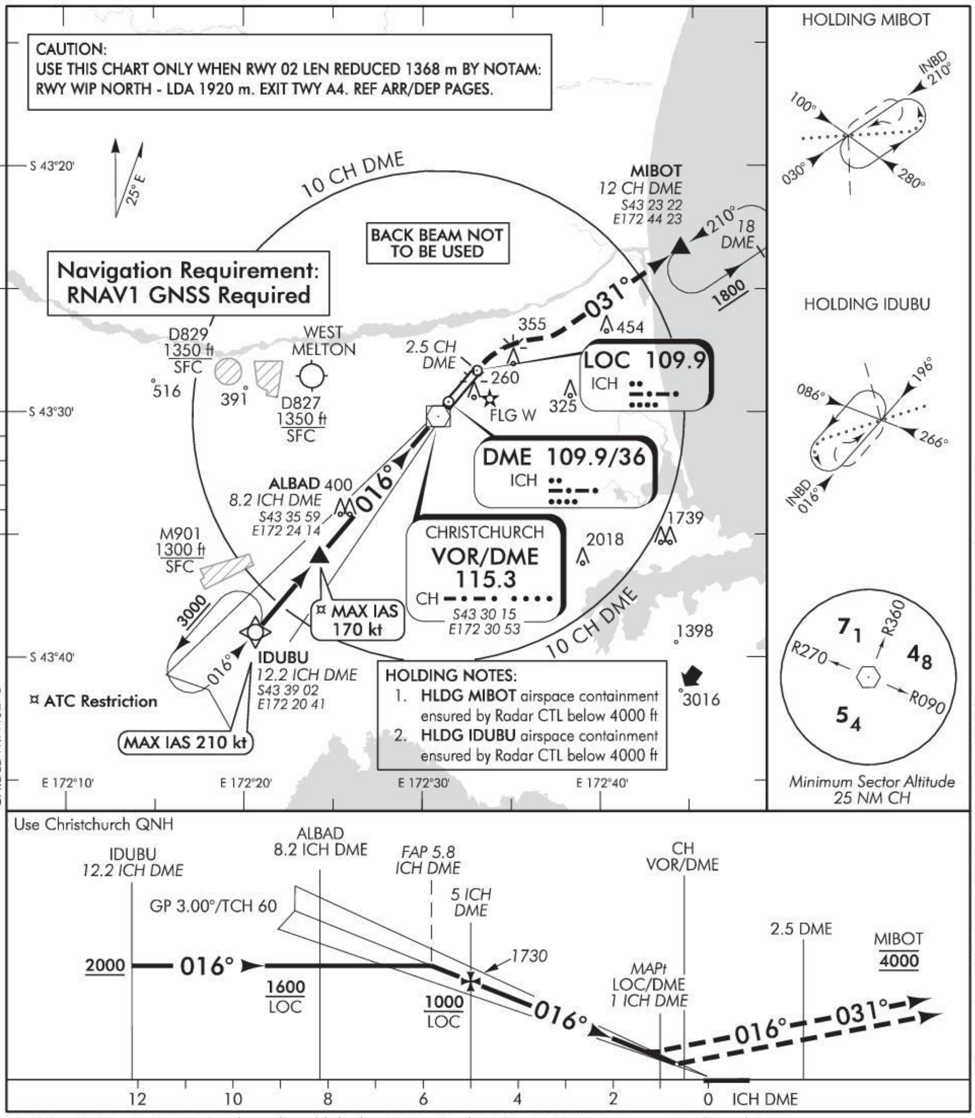
RWY 02 THR ELEV 123

CAT A,B,C,D

CHRISTCHURCH

ILS/DME N or LOC/DME N RWY 02

CHRISTCHURCH APPROACH: 120.9 126.75 128.75 *TOWER*: 118.4 119.65 *ATIS*: 127.2



Changes from 13 JUN 24: 126.1 amended to 126.75, procedure reviewed, 25 NM MSA.

MISSED APCH: #MAX IAS 185 kt until established on R031. Track 016° to 2.5 CH DME, turn RIGHT track R031 to MIBOT (12 CH DME) **4000**, or as instructed by ATC

ICH DME DIST	10	9	8	7	6	5	4	3	2	1.3	0.6
Advisory Altitude 3°	3390	3050	2720	2390	2060	1730	1400	1080	750	MDA	DA

Category	A	B	C	D/D$_L$
ILS/DME (CAT 1)	**323**(200) – 800 or RVR 550			
ILS/DME LIH ALS U/S	**373**(250) – 1200			
LOC/DME	**550**(427) – 1500			
Circling	**650**(527) – 1900	**660**(537) – 2800	***830**(707) – 3700	***860**(737) – 4600

*** CAT C/D circling airspace containment not assured**
 # Non-jet aircraft MAX IAS 170 kt until established on R031, if unable advise ATC

Effective: 27 NOV 25

CHRISTCHURCH
ILS/DME N or LOC/DME N RWY 02

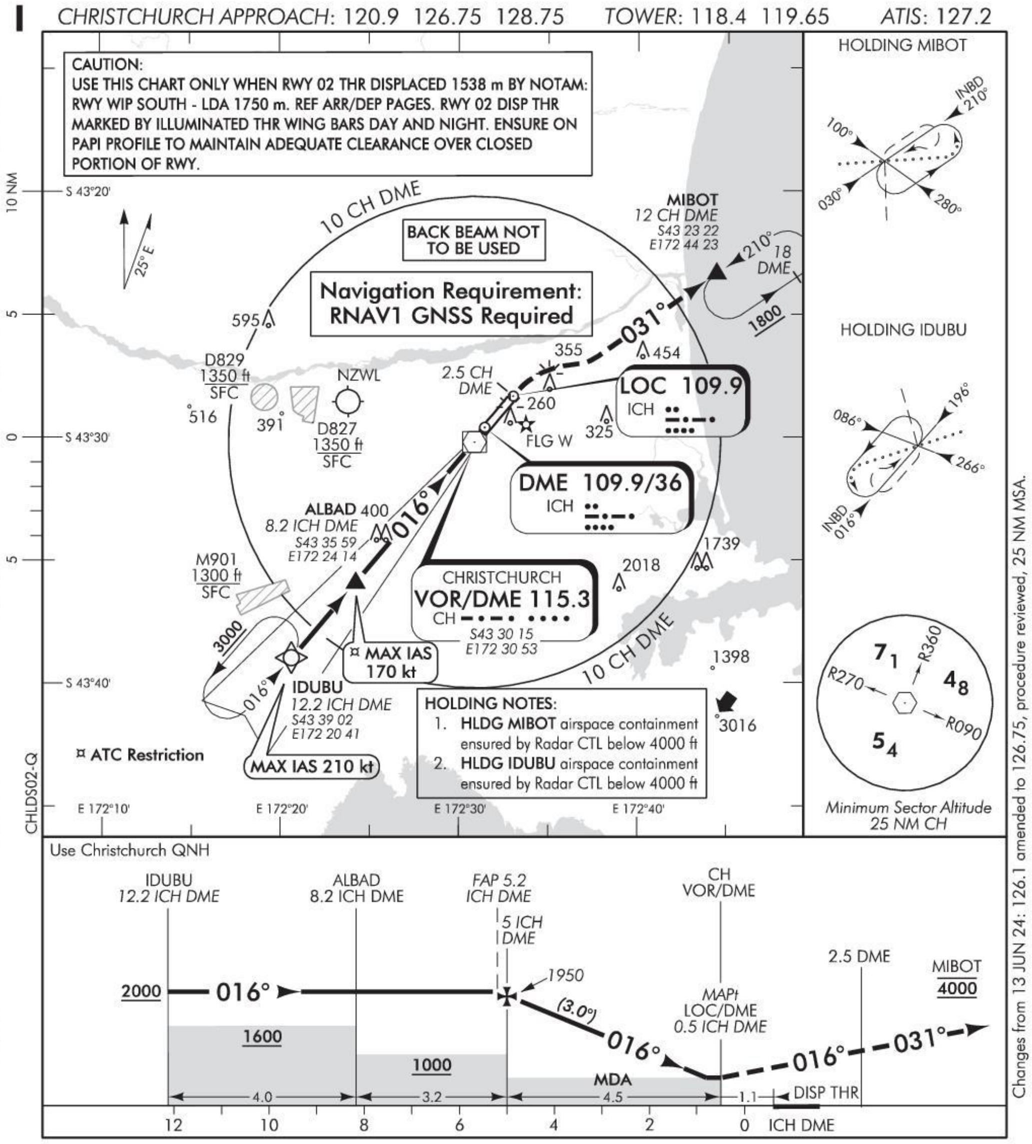
Attachment 6: Christchurch LOC/DME S RWY 02, ILS/DME S.

AIP New Zealand — NZCH AD 2 - 70.21Y

ELEV 123 — CAT A,B,C,D — **CHRISTCHURCH**

DISP RWY 02 THR ELEV 106 — **LOC/DME S RWY 02**

CHRISTCHURCH APPROACH: 120.9 126.75 128.75 *TOWER*: 118.4 119.65 *ATIS*: 127.2



MISSED APCH: #MAX IAS 185 kt until established on R031. Track 016° to 2.5 CH DME, turn RIGHT track R031 to MIBOT (12 CH DME) 4000, or as instructed by ATC.

ICH DME DIST	10	9	8	7	6	5	4	3	2	1	0.9	MAPt 0.5
Advisory Altitude 5.2%	3550	3230	2910	2590	2270	1950	1630	1310	990	670	MDA	MDA

Category	A	B	C	D
LOC/DME	**620**(514) – 3600		**620**(514) – 4400	
Circling	**660**(537) – 3600		***830**(707) – 4400	***860**(737) – 4600

* CAT C/D circling airspace containment not assured
# Non-jet aircraft MAX IAS 170 kt until established on R031. If unable advise ATC

Effective: 27 NOV 25

CHRISTCHURCH
LOC/DME S RWY 02

Attachment 7: Christchurch VOR/DME S RWY 02.

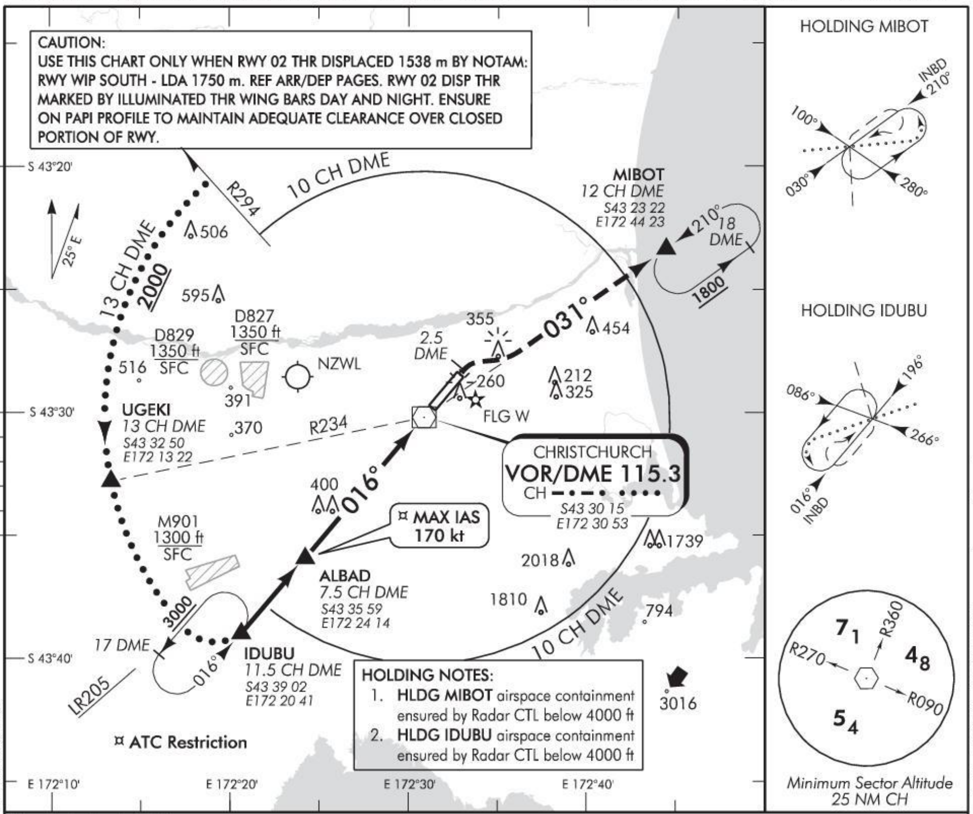
AIP New Zealand | NZCH AD 2 - 70.23Y

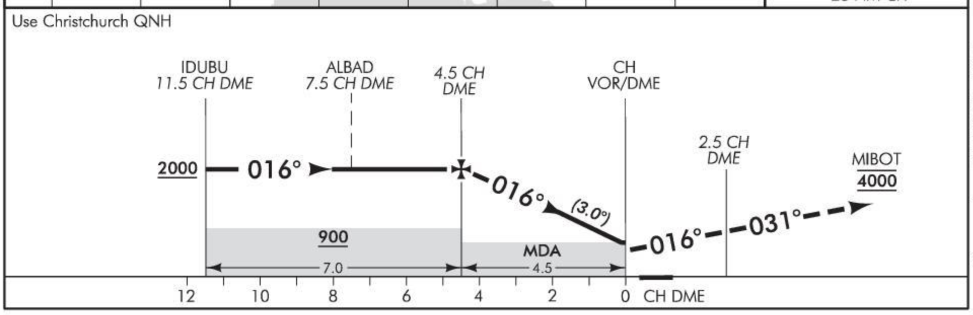
ELEV 123
DISP RWY 02 THR ELEV 106

CAT A,B,C,D

CHRISTCHURCH
VOR/DME S RWY 02

CHRISTCHURCH APPROACH: 120.9 126.75 128.75 *TOWER*: 118.4 119.65 *ATIS*: 127.2





Changes from 17 APR 25: 126.1 amended to 126.75, 25 NM MSA, procedure reviewed.

MISSED APCH: #MAX IAS 185 kt until established on R031. Track 016° to 2.5 CH DME, turn RIGHT track R031 to MIBOT (12 CH DME) 4000

CH DME DIST	10	9	8	7	6	5	4	3	2	1	0.1	MAPt
Advisory Altitude 5.2%	3770	3450	3130	2810	2490	2170	1860	1540	1220	900	MDA	MDA

Category	A	B	C	D
VOR/DME	**620**(514) – 3600		**620**(514) – 4400	
Circling	**660**(537) – 3600		***830**(707) – 4400	***860**(737) – 4600

* CAT C/D circling airspace containment not assured.
# Non-jet aircraft MAX IAS 170 kt until established on R031, if unable advise ATC

Effective: 27 NOV 25

CHRISTCHURCH
VOR/DME S RWY 02