Australian Government
Civil Aviation Safety Authority

ADVISORY CIRCULAR
AC 21-25 v5.1

Limited category aircraft - permit index

Date December 2022

File ref D22/482662

Advisory circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.

Advisory circulars should always be read in conjunction with the relevant regulations.

Audience

This advisory circular (AC) applies to owners, operators and pilots of limited category aircraft.

Purpose

This AC provides information on the process that is used by the Civil Aviation Safety Authority (CASA) or a relevant approved organisation for assigning a permit index number to an aircraft that has been granted a special Certificate of Airworthiness (CofA) in the limited category (i.e. a limited certificate).

For further information

For further information, contact CASA's Airworthiness and Engineering Branch (telephone 131 757).

Status

This version of the AC is approved by the Manager, Airworthiness and Engineering Branch.

Note: Changes made in the current version are not annotated. The document should be read in full.

Version	Date	Details
v5.1	December 2022	Administrative review only.
v5.0	January 2017	This version aligns with regulatory requirements in Part 132. Changes include: • changed restrictions applicable to permit index 1 aircraft • changed points score for multi-engine aircraft • changes to assessment of modifications, aircraft fatigue life and life limited aeronautical products.
(3)	July 2012	This version introduced a new set of risk assessment criteria to be used for determining a Permit Index number. Other amendments included: • the flow chart was replaced by a list of risk criteria used to arrive at a more comprehensive risk profile • the table of previously assigned Indexes was deleted to avoid confusion • provision was made for some aircraft to obtain a lower Permit Index by use of a safety case.

Unless specified otherwise, all subregulations, regulations, Divisions, Subparts and Parts referenced in this AC are references to the *Civil Aviation Safety Regulations 1998 (CASR)*.

Contents

1 Reference material

1.1 Acronyms

The acronyms and abbreviations used in this AC are listed in the table below.

Acronym	Description
AC	advisory circular
CAO	Civil Aviation Order
CAR	*Civil Aviation Regulations 1988*
CASA	Civil Aviation Safety Authority
CASR	*Civil Aviation Safety Regulations 1998*
IAS	indicated air speed
LPG	liquid propane gas
MOW	maximum operating weight
MTOW	maximum take-off weight
Vso	stall speed
WHR	warbird, historic and replica aircraft

1.2 Definitions

Terms that have specific meaning within this AC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this AC and the civil aviation legislation, the definition in the legislation prevails.

Term	Definition
Administering authority	For a limited category aircraft means: (a) a limited category organisation in relation to the aircraft; or (b) if there is no limited category organisation in relation to the aircraft, CASA.
Appointed person	(1) A person who is appointed, in writing, by an administering authority to assess an application and issue a special CofA on the authority's behalf. The appointed person may also apply a permit index number to an aircraft and place any conditions on a special certificate of airworthiness in accordance with the approved procedures set out in the administering authority's exposition (2) A person who has been approved by the administering authority in accordance with regulation 132.185 for the purpose of assessing a warbird that has: • exceeded its approved airframe life • exceeded the service life limit of a safety critical component of the aircraft; or • had a major modification made to it that is not an approved modification.
G-force	Force exerted on an aircraft during flight.

Term	Definition
Historic aircraft	An historic aircraft is: • an aircraft that was manufactured before 1 January 1960 • an Australian manufactured aircraft of a type that is no longer being manufactured • an aircraft listed in the Part 132 *Manual of Standards* as a historic aircraft
Major modification	A modification or combination of modifications that have a significant effect on a characteristic affecting the aircraft's airworthiness, including any of the following: • the weight and balance of the aircraft • the structural strength of the aircraft • the reliability of the aircraft • the performance of the aircraft • the operational characteristics of the aircraft.
Maximum operating weight (MOW)	The maximum take-off weight (MTOW) for ex-military aircraft, which has been adjusted to take into account the weight of any military specific equipment (i.e. armament) that has been removed for civil use. **Note:** MOW will normally be a lower weight than the MTOW of the military version.
Populous area	A well populated area, including a city or a town.
Replica aircraft	For the purpose of Part 132 and paragraph 21.189 (3) (f), an aircraft is a replica aircraft if it is built to the same dimensions as the original aircraft and its design and construction is based on the original design standards and construction methods. This does not preclude the use of substitute engines or materials if required in the interest of improved safety or if original engines or materials are no longer procurable

1.3 References

Legislation

Legislation is available on the Federal Register of Legislation website https://www.legislation.gov.au/

Document	Topic
Part 21	Certification and airworthiness requirements for aircraft and parts
Part 132	Limited category aircraft
Part 132 *Manual of Standards*	Standards, processes and procedures applicable to Part 132
Part 4A of the *Civil Aviation Regulations 1988 (CAR)*	Maintenance
Regulation 42CA of CAR	Maintenance schedule - primary, intermediate, restricted or limited category aircraft
Regulation 262AN of CAR 1988	Approved organisations

Advisory material

CASA's advisory materials are available at https://www.casa.gov.au/publications-and-resources/guidance-materials

Australian Warbirds Association Limited guidance publications and manuals are available at: http://australianwarbirds.com.au/

Document	Title
AC 21-05	Limited category aircraft - certification
AC 132-01	Limited category aircraft
Australian Warbirds Association Limited, Exposition and Self-Administration Manual	ESAM

2 Introduction

2.1 Background

Military aircraft generally do not meet the civil certification standards and are unable to qualify for a civil type certificate or a standard certificate of airworthiness. Under normal circumstances this would preclude civil use of these aircraft once their military life has ended. CASA has provided for these aircraft to be operated under a special Certificate of Airworthiness (CofA) in the limited category (limited certificate). This category is subject to a range of safety-based operational restrictions.

In addition to ex-military aircraft, CASA has also provided for operations under a limited certificate by civil aircraft of a historic nature, which are ineligible for a standard CofA. CASA has also provided for operations under a limited certificate by replica aircraft and civil aircraft that meet the requirements for issue of a standard CofA, except for those requirements that are inappropriate for the special purposes for which the aircraft is to be used.

3 Risk factors

3.1 Need for a risk assessment process

3.1.1 In the absence of regulated systems of controls throughout the design and manufacturing processes, CASA is unable to assume that limited category aircraft will meet accepted safety standards for civil use. However, CASA acknowledges that operators of Warbird, Historic and Replica aircraft (WHR) are willing to accept any risks that may be associated with these types of aircraft in order to be allowed to continue flying them.

3.1.2 CASA has therefore based the limited category around a structure in which pilots and occupants are informed of the risks associated with the operations. In framing the limited category certification and operation regulations, CASA has incorporated safeguards to ensure that the risk is confined to the occupants of the aircraft, while protecting the general public from risk of harm or property damage.

3.2 Controls and risk mitigators

3.2.1 The first part of the controls and risk mitigation process is the assessment and certification stage, during which the administering authority will inspect the aircraft and its documentation and issue a limited certificate with appropriate conditions applied.[1] The conditions that may be applied by the administering authority will vary according to the assessed risk profile of each individual aircraft and these conditions will be set out in an annex to an aircraft's limited certificate.

3.2.2 In addition to the conditions applied to a specific aircraft during the assessment and certification stage, a range of operating limitations that apply to all limited category aircraft are set out in Part 132.[2]

3.2.3 Regulation 132.075 states that flight over populous areas by limited category aircraft is not permitted unless an aircraft has been approved to do so by the administering authority, or has been assigned a permit index number that permits the flight. The permit index assessment protocols form the second part of the risk mitigation process.

3.3 Permit index - categorisation of risk

3.3.1 For a limited category aircraft to be issued with a permit index number or granted an approval that permits flight over a populous area, a risk assessment must be carried out following the processes set out in the Part 132 *Manual of Standards* (MOS).[3]

3.3.2 The process of risk assessment has been developed to provide a list of potential risk factors against which each aircraft may be assessed. In formulating the risk factors and associated benchmarks, the primary concern has been the safety of people and property in the air and on the ground. At the end of the process, a permit index number

[1] This process is discussed in detail in AC 21-05.
[2] These conditions are referenced in AC 132-01.
[3] In accordance with regulation 132.095

will be applied to the aircraft that is appropriate to the risk profile that has been determined for a particular aircraft.

3.3.3 Each permit index number is linked to a set of geographical operational restrictions (i.e. permit index 0 is the least restrictive, and permit index 3 is the most restrictive). Refer to Table 16 for an overview of permit index assignment.

3.3.4 The risk assessment process considers a variety of risk factors that can be broadly grouped under two main risk headings:

- the level of risk of a particular aircraft being involved in an accident
- the potential of the aircraft to cause injury or death to third parties or damage to property in the event of being involved in an accident.

3.3.5 The likelihood of a crash (level of risk) depends on:

- structural integrity of the airframe
- reliability of the engine
- reliability of fuel systems
- reliability of control systems
- physical condition of the aircraft
- maintenance standards applied to the aircraft.

3.3.6 Other causal factors (i.e. weather, terrain and pilot skill levels) are common to all types of aircraft and are not singled out for consideration in the Part 132 MOS or this AC.

3.3.7 The severity of the crash and its effect on the surrounding areas is affected by:

- the mass of the aircraft
- construction of the aircraft (i.e. wood, composite, metal)
- the amount of fuel on board
- the type of fuel used
- other hazardous materials on board
- the velocity of the aircraft at impact.

3.3.8 The risk factors that could affect the likelihood of an accident or the severity of the consequences of an accident have been given a weighting based on the perceived level of risk and hazard. The weightings range from minus 130 (for the highest level of risk) to plus 130 (for the lowest level of risk).

3.3.9 When all the factors have been considered against a particular aircraft, a risk points score will be used to allocate a permit index number to that aircraft.

3.4 Aircraft weighted index – points score

3.4.1 An aircraft is assessed by scoring it against each of the risk factors listed in the Part 132 MOS and reproduced in Appendix A and (where applicable) the weighted index number will be added to or subtracted from the aircraft total score. The final score will determine the permit index number for the aircraft.

3.4.2 Risk elements are described in chapters 3.5 to 3.19 and the related scores are set out in the right-hand column of the tables that follow each chapter.

3.5 Aircraft or engine civil certification

3.5.1 If the aircraft type or its engine has received civil certification in its unmodified form, then the aircraft will attract a high positive score. This reflects the higher confidence levels that can be assumed when an aircraft or engine is manufactured in accordance with standards, procedures and controls that are known to the regulating authority.

Table 1: Risk elements and scores to certification status

Risk element	Score
Aircraft with direct civil equivalent	60
Partial civil certificated equivalent – Engine or as determined by the limited category organisation in accordance with an assessment procedure in the limited category organisation's exposition that has been approved by CASA.	30
Aircraft with no civil equivalent	0

Note: An engine that is basically a civil engine which has been strengthened in some areas for military use will be treated the same as the original civil engine model provided that there is acceptable data to show that the changes to the engine have not had a negative effect on the engine's reliability.

3.6 Aircraft maximum take-off weight or maximum operating weight

3.6.1 The aircraft mass will be a significant factor in the event of a crash. For a given speed, the lighter the aircraft, the lower the level of damage likely to result from impact with objects on the ground.

3.6.2 The five maximum take-off weight (MTOW) categories and their risk weightings are listed in Table 2:

Table 2: Take-off weight scoring

MTOW	Score
Up to – 2,000 kg	10
2,001 – 4,000 kg	6
4,001 – 5,700 kg	4
5,701 - 10,000 kg	0
Greater than 10,000 kg	-30

3.7 Multi-engine aircraft

3.7.1 Multi-engine aircraft will be scored according to their ability to safely operate in the event of an engine failure. An aircraft that can continue to climb and avoid obstacles in the event of an engine failure after take-off will be scored positively to reflect the margins of safety that apply during approach and departure stages of flight.

Table 3: Multi-engine aircraft scoring

Aircraft operation description	Score
Aircraft that can continue to climb to a safe altitude while avoiding obstacles in the event of an engine failure after take-off	130
Aircraft that cannot safely continue to climb away in the event of an engine failure after take-off	-20

3.8 Aircraft stall speed

3.8.1 Stall speed is used as an indicator of the kinetic energy that will need to be dissipated in the event of a crash. At any given weight, the faster an aircraft is travelling at impact, the higher the associated risk to life and property.

3.8.2 The stall speed must be based on the aircraft's maximum operating weight (MOW).

3.8.3 For each 2 kts indicated air speed (IAS) increase in stall speed between 30 120 kts, 1 point is deducted from the point score. Anything above 120 kts IAS has a deduction of 20 points.

3.8.4 When assessing a helicopter, the autorotation airspeed is to be substituted for stall speed.

Table 4: Stall speed at MOW scoring

Stall speed	Score
Vso less than 61 kts IAS	30
Vso 62 – 80 kts IAS	29 - 20
Vso 82 – 100 kts IAS	19 - 10
Vso 102 – 120 kts IAS	9 - 0
Vso greater than 120 kts IAS	-20

3.9 Aircraft glide capability

3.9.1 The glide capability of an aircraft will determine the aircraft's ability to glide clear of a populous area from a given height in the event of an engine failure. Helicopters in autorotation are treated as 'not known' and rated 0 because of their high descent rate and steep angle of descent during autorotation.

Table 5: Glide capability scoring

Capability	Glide ratio	Score
High	greater than 14:1	10
Medium	6:1 to 14:1	6

Capability	Glide ratio	Score
Low	less than 6:1	4
Not known and helicopters		0

3.10 Aircraft airframe history

3.10.1 The operational history of the aircraft can be a critical element in the risk assessment process. In particular, an aircraft with high total flight times, high cycle numbers or one that has been regularly flown in high G-force manoeuvres may be approaching or even beyond its design airframe life.

3.10.2 In order to assess the risk of fatigue failure, the administering authority will require access to the complete operational history of the aircraft. If the history is not known, then fatigue becomes a significant risk concern.

3.10.3 If an aircraft's operational history is well documented and shows that the aircraft has not exceeded its approved airframe life limit, then the fatigue related risk is not considered to be significant.

3.10.4 If an aircraft has a well-documented history, but has exceeded its approved airframe life, it will be treated as a high-risk aircraft and rated accordingly.

3.10.5 Many small observation or basic training aircraft do not have an approved airframe life specified by the manufacturer, NAA or armed force. These kinds of aircraft, which by their nature (e.g. simplicity of design, low mass and low speeds) are not regarded as a fatigue risk with normal standards of maintenance, therefore do not have any points deducted from the score.

Note: Aircraft with expired airframe life will be subject to special conditions limiting its type of use and areas of operations.

3.10.6 An aircraft that has exceeded its approved airframe life may be treated as if it has not exceeded its airframe life for the purpose of issuing a permit index number if an appointed person has assessed the aircraft and issued a certificate stating a different airframe life for the aircraft.[4] [5]

Note: Under paragraph 132.180 (4) (d), an administering authority may issue a certificate stating an airframe life for a limited category aircraft that may be different to the existing approved airframe life.

Table 6: Operational history scoring

Type of history	Score
No verifiable operational history	-130
Airframe life exceeded	-130
Not applicable or airframe life within limits	0

[4] In accordance with paragraph (d) of the definition of approved airframe life in Part 132.
[5] In accordance with paragraph 132.110 (8) (a) an aircraft that has exceeded its approved airframe life is not permitted to fly over populous areas regardless of its permit index number.

3.11 Aircraft maintenance history

3.11.1 In order to determine the on-going mechanical and structural reliability of an aircraft, it is helpful to be able to review the aircraft's operational and maintenance history. This data is frequently unavailable when aircrafts are salvaged many years after having crashed, or having been scrapped.

3.11.2 In most cases, these aircraft will undergo extensive restoration work and will be 'like new' once completed. These aircraft may be scored between 5 and 10 (Table 7) depending on the depth of restoration work.

3.11.3 If some restoration work has been carried out or if only partial documentation is available, the person making the assessment may, at their discretion, allocate points between 0 and 5 (if appropriate).

3.11.4 When assessing restored aircraft, the assessor should consider the age of electrical wiring, hydraulic lines and fuel systems. These items could adversely affect the aircraft reliability, but may not necessarily be visible during a cursory inspection.

3.11.5 A small observation or basic training aircraft that has little or no historical records, but has had a recently overhauled engine and propeller installed, will be allocated a partial point score, provided that the engine and propeller overhauls have been properly documented.

3.11.6 The component history records of aircraft that have life limited components must be reviewed to determine whether any safety critical life limited component has exceeded its approved operational life.[6]

3.11.7 Any item that is critical for flight that has exceeded its approved operational life must be assessed by an administering authority.[7] Items that have a design life limit set down in the manufacturer's instructions include those such as, but not limited to:

- flight control servos
- helicopter rotor components
- helicopter drive shafts and masts
- hydraulic systems that drive flight or engine controls
- engine mounts or wing attach hardware.

3.11.8 An aircraft with a time expired component may continue to be flown; however, the aircraft will not be permitted to operate over a populous area.[8] [9]

Table 7: Maintenance history scoring

History type	Score
Full history and documentation (including worksheets)	10
Aircraft restored	5 - 10
Partial docs and worksheets	0 - 5

[6] In accordance with Part 4A of the *Civil Aviation Regulations 1988 (CAR)*.
[7] In accordance with regulation 132.190.
[8] Refer to paragraph 132.075 (8)(b).
[9] Refer to Part 132 for the definition of 'life limit'.

History type	Score
No proper records or data	-80
Life limited safety - critical components expired	-130

3.12 Maintenance philosophy

3.12.1 Ex-armed forces aircraft are normally subject to a rigorous system of inspection and maintenance during their service life. Some of the maintenance practices could be impractical in a civil environment and, in many cases, may be unnecessary in a non-military operational role.

3.12.2 When assessing a maintenance program for a WHR aircraft, the administering authority will need to be satisfied that the proposed levels of maintenance will provide a maintenance standard that is at least equivalent to that of a civil aircraft of similar type, size and complexity. If the maintenance program does not meet this benchmark, the aircraft will be rated as having a maintenance level 2 (refer to Table 8).

3.12.3 The owner may use a maintenance program that was developed for the military operator of the aircraft and may vary the program to suit the changed operational role of the aircraft, provided safety of flight is not compromised.

3.12.4 The owner may use an approved civil maintenance program (if one exists) for a civil version of the aircraft or for an aircraft that uses similar engines, systems and structures.

3.12.5 A maintenance program may be developed for the aircraft taking into consideration both civil and military practices for an aircraft of a similar kind, size or complexity.

Note: Any maintenance program or any change to a maintenance program for a limited category aircraft must be approved by the administering authority.[10]

3.12.6 Maintenance level 1 is specified as an aircraft whose maintenance program is any of the following:

- substantially based on a program that has been approved for an equivalent civil aircraft
- the program used by the military user or manufacturer

  or
- a maintenance schedule approved by the administering authority.

Note: Maintenance level 2 is specified as an aircraft that is not maintained to maintenance level 1.

Table 8: Maintenance philosophy

Maintenance level	Score
Maintenance Level 1	0
Maintenance Level 2	-100

[10] In accordance with regulation 42CA of CAR.

3.13 Aircraft repair and modifications

3.13.1 Repairs and modifications that have been approved in accordance with regulation 132.030 will be scored as zero to reflect that the alterations have not adversely affected the aircraft risk profile.

3.13.2 Aircraft that have had major repairs and modifications that have not been approved in accordance with regulation 132.030 will be negatively scored to the maximum value to reflect the relative risk levels.

Table 9: Modification status scoring

Repair status	Score
Major repairs and modifications approved in accordance with regulation 132.030	0
Major repairs and modifications not approved in accordance with regulation 132.030	-130

3.14 Engine type

3.14.1 Engines are scored by their type according to known reliability levels.

3.14.2 Normally aspirated and mechanically supercharged engines are scored as zero to reflect that they have a known and acceptable level of reliability subject to normal maintenance provisions.

3.14.3 Turbocharged and turbo-compound piston engines are considered to be the least reliable engine types in service and are negatively scored accordingly.

3.14.4 Turbo-prop and turbo-shaft engines have demonstrated a long history of reliable operation and are scored accordingly.

3.14.5 Turbo-fan engines are considered to be the most reliable of the turbojet family of engines and are scored higher than the pure jets. This is a reflection of the development effort that has been put into turbo-fan technology, which provides high thrust outputs with considerably lower fuel consumption than the older pure jet types.

Table 10: Engine type scoring

Engine type	Score
Turbocharged piston engines	-5
Turbo compound (piston) engines	-5
Non-turbocharged piston engines	0
Turbo-prop / turbo-shaft	10
Turbo-fan	10
Turbojet	2

3.15 Aircraft design philosophy

3.15.1 Design philosophy 1 – an aircraft with a civil equivalent or a basic trainer, transport or observation aircraft. Aircraft that fall into this category will be similar in all aspects to a civil aircraft and will not require special piloting skills, maintenance techniques or specialist support equipment.

3.15.2 Design philosophy 2 – an aircraft which has been designed for special missions, resulting in some reduction in the structural soundness, system reliability or fire safety, compared to civil aircraft of a similar class. Aircraft that fall into this category may have critical systems that require specialist knowledge or skill to operate or maintain the aircraft.

3.15.3 Design philosophy 3 – an aircraft which has been designed primarily for special missions and having limited consideration for the traditional safety values of civil aircraft in relation to failure analyses, fire protection or severely restricted design life considerations.

Table 11: Design philosophy scoring

Design philosophy	Score
Design philosophy 1	0
Design philosophy 2	-10
Design philosophy 3	-30

3.16 Fuel types

3.16.1 Avgas is more likely than turbine or diesel fuel to ignite in the event of a crash and burns with a hotter flame. In the event of a serious high impact crash with a high fuel load, the effects will be equally catastrophic and this is reflected in the low points score allocation (Table 12).

Table 12: Fuel type scoring

Fuel type	Score
Turbine/Diesel	3
Avgas/Mogas	0

3.17 Tankage design

3.17.1 External underwing type fuel tanks or tip tanks are regarded as a higher risk item than internal tanks, due to the higher likelihood of rupture in the course of a crash (Table 13).

3.17.2 Jettisonable tanks present an additional risk of accidental dropping in flight.

Table 13: Fuel tank design scoring

Fuel tank design	Score
Internal only	0
External - fixed (if usable)	-10
Jettisonable tanks	-130

3.18 Fuel capacity

3.18.1 Fuel capacity will affect the extent and ferocity of any post-crash fire or explosion. As total tank size increases, it means that there will be either more fuel to burn in a post-crash fire or, in the case of a partially empty tank, more potentially explosive vapour that could be ignited (Table 14).

Table 14: Fuel tank capacity scoring

Tank capacity	Score
Less than 250 litres	0
250 to 500 litres	-2
501 to 1,000 litres	-4
> 1,000 litres	-5

3.19 On-board explosives or flammables

3.19.1 Explosive devices could detonate during a crash or in a post-crash fire. They also present a significant hazard to emergency response personnel (Table 15).

Table 15: On-board explosives or flammables

Types of explosives or flammables	Score
Ejection seat(s)	-2
Explosive bolts	-2
Flammable gas containers (LPG/Propane)	-2
Rocket deployed parachutes/BRS	-2
Smoke generators	-1
Oxygen cylinders (operational)	-2
Detonator cord or other canopy imbedded explosives	-2

3.20 Safety case

3.20.1 Any risk assessment document, no matter how comprehensive, will not be able to encompass every possible permutation that might be encountered in the practical application. Where the levels of risk are clear cut, no further consideration is necessary and the resulting permit index number may be applied with a high level of confidence.

3.20.2 Wherever an aircraft is found to be marginally within a risk band, provision has been made for the lower permit index number to be assigned if a satisfactory safety case is provided to the assessor.

3.20.3 When preparing a safety case, it must contain the following:

- a description of the risk mitigators that will be incorporated to ensure that an acceptable level of public safety is preserved. The proposed measures may include matters such as:
  - operating weight limitations
  - altitude or flight level limitations
  - area or route restrictions
  - pilot qualification/experience requirements.
- as required, current detailed maps, aerial photographs or satellite images of the populous areas over which the flights are proposed and what tracks and altitudes are to be used (including proposed emergency landing areas)
- reliability history of the aircraft type, engine type and propeller type (as applicable).

3.20.4 A safety case must show how risks will be additionally mitigated to ensure a level of public safety that is commensurate to the lower permit index number being sought. A safety case that merely restates those factors that have already been considered during the assessment process (i.e. the aircraft has a history of safe operation) will not be accepted.

Appendix A

Aircraft safety index assessment

A.1 Permit index assessment process

A.1.1 Using the worksheet below, an assessor will assess the aircraft against each risk category by finding the associated risk element in column 2, which most closely describes that aspect of the aircraft being assessed. If an aircraft falls between two risk elements in any category, the assessor will use the lower scoring element.

A.1.2 An assessor will select only one risk element in column 2 from each risk category in column 1.

A.1.3 As each category and element is assessed, the points score in column 3 will be added to the aircraft score in column 4.

A.1.4 When all risk categories and elements have been scored and a final total has been tallied, Table 16 will be used to determine the corresponding permit index number

Risk categories and elements worksheet

Risk Category	Risk element	Points	VH-
Certification Basis	Direct civil equivalent	60	
	Partial civil certificated equivalent – Engine or as determined by the limited category organisation in accordance with an assessment procedure in the limited category organisation's exposition that has been approved by CASA	30	
	No civil certification	0	
Approved MTOW or MOW	Up to – 2,000 kg	10	
	2,001 – 4,000 kg	6	
	4,001 – 5,700 kg	4	
	5,701 - 10,000 kg	0	
	Greater than 10,000 kg	-30	
Multi-engine aircraft	Aircraft that can continue to climb to a safe altitude while avoiding obstacles in the event of an engine failure after take-off	130	
	Aircraft that cannot safely continue to climb away in the event of an engine failure after take-off	-20	
Stall speed (or helicopter autorotation speed) at MOW Deduct 1 point for each 2 kts IAS increase in stall speed between 30-120 kts. Above 120 kts IAS, deduct 20 points	Vso Less than 61 kts IAS	30	
	Vso 62 to 80 kts IAS	39 - 20	
	Vso 82 to 100 kts IAS	19 - 10	
	Vso 101 -120 kts IAS	9 - 0	
	Vso greater than 120 kts IAS	-20	
Glide capability	High (L/D greater than 14:1)	10	

Risk Category	Risk element	Points	VH-
	Medium (L/D 6:1 to 14:1)	6	
	Low (L/D less than 6:1)	4	
	Not known	0	
	Helicopters	0	
Fatigue history	History not known	-130	
	Airframe life exceeded	-130	
	Not applicable or airframe life within limits	0	
Maintenance history and documentation	Full history and maintenance records	10	
	Aircraft restored	5-10	
	Partial documentation	0-5	
	No proper records or data	-80	
	Life limited safety- critical components time expired (See paragraphs 3.10.6 to 3.10.8)	-130	
Maintenance philosophy	Maintenance level 1	0	
	Maintenance level 2	-100	
Repairs and modifications	Major repairs and modifications approved in accordance with regulation 132.030	0	
	Major repairs and modifications not approved in accordance with regulation 132.030	-130	
Engine type & configuration	Turbocharged piston engines	-5	
	Turbo compound (piston) engines	-5	
	Non-turbocharged piston engines	0	
	Turbo-prop, turbo-shaft	10	
	Turbo fan	10	
	Turbojet	2	
Design philosophy	Design philosophy 1	0	
	Design philosophy 2	-10	
	Design philosophy 3	-30	
Fuel type	Turbine/diesel	3	
	Avgas/Mogas	0	
Fuel tankage	Internal only	0	
	External-fixed (if usable)	-10	
	External Jettisonable	-130	
Fuel capacity	Less than 250 litres	0	

Risk Category	Risk element	Points	VH-
	250 to 500 litres	-2	
	501 to 1,000 litres	-4	
	More than 1,000 litres	-5	
On-board explosives	Ejection seats	-2	
	Explosive bolts	-2	
	Flammable gas containers (LPG/Propane)	-2	
	Rocket deployed parachute/BRS	-2	
	Smoke generator	-1	
	Oxygen cylinders (if operational)	-2	
	Detonator cord or other canopy jettison explosive	-2	
Total risk element score			

Table 16: Permit index assignment

Risk element score	Permit Index	Comments	Operational restrictions
100 ↑ 76	0		No airport or populous area restrictions applicable.
71 to 75	1	May be upgraded to 0 with approved safety case	Operations over populous areas are permitted for the purpose of taking off or landing at a landing area other than a landing area that is listed the Part 132 Manual of Standards (MOS) as unsuitable for permit index 1 operations. All other operations must be approved in writing by the administering authority. Flights over populous areas must be in accordance with any conditions included in a written approval for the flight(s) issued by the administering authority.
70 ↑ 41		No upgrading permitted	
36 to 40	2	May be upgraded to 1 with approved safety case	Operations over populous areas by CASA approval only. This category also applies to any limited category aircraft regardless of Permit Index number while it is being flown with jettisonable fuel tanks installed.
35 ↑ 01		No upgrading permitted	
0 to -5	3	May be upgraded to 2 with approved safety case	Approval not available for operations over populous areas.
-6 ↓ -100		No upgrading permitted	