

Major Design Change Authorisation (MDCA) FAQs

1. What is the difference between Major design change and Major Modification?

A **Major Design Change** is legally defined in 'Schedule One' of a delegation certificate. The definition is different to that of a **Major Modification** in rule Part 1 which refers to the installation or embodiment rather than the design change. A rules issue is in progress to clarify the two definitions so there is no confusion and to align with international best practice.

2. What is the regulatory mechanism of the MDCA process?

[Rule 21.73](#) provides several methods for approving a design change. Whilst 21.73 (c) states that approval of a design change for a major modification may be by via supplemental type certificate (STC), it is not the only way since 21.73 (a)(2) includes the approval of a modification and Appendix D includes "data approved by the Director under rule 21.505" (i.e. use of a Form 337 or Part 146 equivalent).

All Design Delegations include a clause which states "the delegation holder may not approve a modification classified as a 'Major Design Change' as defined by Schedule One to the delegation without the prior consent of the Director." The MDCA process provides that consent.

The MDCA process provides for effective use of industry and CAA resources. Other countries have similar processes (CASA, FAA) and ICAO acknowledges the principal in Doc 9760 7.7.9.1(c).

3. When can MDCAs be used?

The application form lays out the criteria. At a high level, a Major Design Change Authorisation is limited to either **a single aircraft; or a fleet modification for a single operator or NZ type certificate holder**. There are also some **exceptions such as** design changes which require a TCDS-level change; or a significant increase (>10%) in engine power; or a change in propulsion type; or a change in operational use (e.g. installation of agricultural equipment on type designs not already approved for agricultural operations); or new or novel features; or special manufacturing processes; or changes which affect noise or emissions certification.

The MDCA process is not intended to be used for repeat applications for the same design change for the same product type for different aircraft/operators since this increases risk exposure. A Supplemental Type Certificate (STC) should be applied for in these cases. STCs also have the advantage of being sold commercially and can be validated by some foreign countries.

4. How does the MDCA process work?

Applications are submitted by a design delegation holder (DDH) or Part 146 on form 24021-22 "Part 21 application for a one-off major design change authorisation (applicable to design delegation holders only)" by email to certification@caa.govt.nz. A CAA certification engineer will be assigned to assess the application. The DDH will be notified by email of the outcome. CAA retains a register of all past MDCA outcomes.

5. What are the factors in CAA's decision to authorise or decline?

The process relies on an assessment of two key factors: **competence** of the DDH and **risk** (complexity, novelty, safety) of the design change. These are outlined in the application form where sufficient information on the design change should be supplied to CAA to make this decision.

6. How long should it take, what will it cost?

CAA expected turnaround time from receipt of all supporting data to outcome (authorisation granted or declined) is expected to occur within 5 working days. Authorisations are given a **higher priority** than other design approvals but in general do not take much time to process (compared to a STC data review/assessment for example). MDCAs are chargeable at the hourly rate, typical review time is 2 hours but is not limited to this.

7. How are design changes that require flight testing treated?

An MDCA may be authorised in cases when flight testing is required to show compliance to the airworthiness requirements for approval of a design change. There are other CAA approvals that are likely required as well such as:

- Special Category: Experimental Airworthiness Certificate: In order to carry out an experimental, developmental or certification flight test, a valid special category - experimental airworthiness certificate is required (rule 21.193) for the test aircraft.
- Test Pilot Approval: To carry out an experimental, developmental or certification flight test, a valid test pilot approval is required (rule 19.405).

When submitting the applications for the above, please make it clear that the design change is a major design change within the following documents (if not already submitted):

- Flight Test Plan (AC21-10);
- CAA form 24021/06: Special Category – Experimental Airworthiness Certificate (AC21-3); and
- CAA form 24019/04: Test Pilot Approval (AC19-1)

8. What happens if I make a minor design change to a previously approved major design change?

Minor design changes which can be approved by a DDH do not need CAA authorisation.

In cases where a major design change is revised to change the effectivity from one aircraft serial number/registration to a different one of the same type and model, for example when equipment is transferred from one aircraft to another, the revision may be considered a minor design change if the following criteria is met:

- the criteria for single owner/operator or TC holder detailed above is still met; and
- the effective number of aircraft is unchanged; and
- the original aircraft serial number/registration is removed from the effectivity in the revised technical data and original aircraft operator is notified; and
- CAA Product Certification is notified of the change in effectivity (to update major design change authorisation records); and
- changes required to transfer the design change to the new aircraft are considered minor*.

* There may be cases where the embodiment of the design change on the new aircraft serial number/registration requires adjustment or re-substantiation due to configuration differences such

as incompatibility with previously installed modifications. For example, a cargo pod may be transferred from one rotorcraft to another, but the new rotorcraft has floats. The inflation of these floats may be affected by the cargo pod installation and requires new substantiation and/or changes to the design and limitations which makes the revision a major design change. CAA authorisation is required. In cases of modification compatibility, it is the installers responsibility to assess compatibility and obtain the necessary design approval if compatibility is affected.

9. Can a MDCA be authorised if an “equivalent level of safety” (ELOS) finding is required?

The CAA does not currently have a process which would allow authorisation of a DDH to approve a design change (iaw CAR Part 21.505) where an airworthiness requirement has not been complied with, and the Director is required to determine if compensating factors provide an acceptable level of safety (as per CAR Part 21.505(d)(3)).

- the act of determining if compensating factors provide an acceptable level of safety (as per CAR Part 21.505(d)(3)) is sometimes referred to as accepting or approving an “Equivalent Level of Safety” (ELOS).
- each Instrument of Delegation states that a DDH does not have the power contained in Civil Aviation Rule 21.505(d)(3) to accept a level of safety provided by factors that compensate for airworthiness requirements that are not complied with.
- the current MDCA process was designed to enable delegation of approval and full “Finding of Compliance” (FoC) for routine, non-complex design changes.
- the current MDCA process does not include the submission of technical data required for the assessment of compensating factors or level of safety.
- the CAA does not currently have an internal process to issue an ELOS finding outside of the STC Issue Paper process.
- the CAA advises that participants apply for the approval of an STC for any design change which requires the Director to issue an ELOS finding.
- DDHs should also seek advice from the CAA if a design change has the potential to affect the applicability or validity of any existing ELOS finding.