

REGULATORY IMPACT STATEMENT (RIS)

Proposed new Civil Aviation Rule Part 115: Adventure Aviation – Certification and Operations

Agency Disclosure Statement

This Regulatory Impact Statement (RIS) has been prepared by the Ministry of Transport with assistance from the Civil Aviation Authority (CAA) of New Zealand.

It provides an analysis of options to more fully enable adventure aviation operators to provide commercial activities (i.e. the carriage of fare-paying passengers) within a formal safety and risk management framework to ensure a commensurate level of oversight.

In establishing the problem definition and impact of the preferred option, the underlying analysis is constrained by a current lack of safety data for commercial adventure aviation operators.

The proposal will not impair private property rights, market competition, or the incentives on businesses to innovate and invest, or override any of the fundamental common law principles. The proposal is consistent with our commitments in the Government statement *Better Regulation, Less Regulation*.

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Status quo

Definition of adventure aviation

1. In general, ‘adventure aviation’ includes commercial operation of the following aircraft¹—microlights², ex-military (warbirds), replica and vintage aircraft, gliders, hot air balloons, and tandem parachutes, hang gliders, and paragliders. Operators carry passengers for hire or reward to provide an adventure experience, as opposed to transportation or training purposes.
2. Commercial adventure aviation is distinct from commercial air transport because it is limited to flights or aerial activities that return to the same point as the departure (known as “A to A flights”) or takes place in un-motorised aircraft. Commercial adventure aviation does not include *bona fide* flying lessons, instructional ‘trial flights’ or genuine cost sharing operations conducted for private purposes.

Adventure aviation in New Zealand

3. Over the last two decades, sport and recreational aviation practitioners have grown into significant commercial operations. The Civil Aviation Authority (CAA) estimates that there are currently approximately 43 operators (see Table 1 below).

Table 1: Commercial adventure aviation operators in New Zealand (estimated)

Gliding	Microlights	Tandem hang gliding	Tandem paragliding	Hot air ballooning	Tandem skydiving	Total
1	2	5	8	9	18	43

4. While these practitioners are generally performing the same aviation activities as recreational groups, an increasing number of people now pay these practitioners to be passengers as an infrequent leisure activity rather than committing to an on-going recreational aviation hobby.

Current regulatory framework applying to adventure aviation

5. Most, but not all, adventure aviation activities are currently covered by the Civil Aviation Rule (CAR) Part 100 series. These CARs regulate the operation of aircraft, including the shared use of airspace and flight rules. For some adventure aviation activities, pilots are required to hold a valid commercial pilot licence to conduct a flight for hire or reward.
6. The Director of Civil Aviation (the Director) has also delegated specific powers to several amateur sports and recreational organisations under CAR Part 149³. Organisations certified and audited by the CAA under Part 149 act as independent umbrella organisations that oversee each sector. Membership is typically a mandatory requirement for individuals to participate in the relevant aviation activity.

¹ Also includes aerobatic flight in aircraft holding a standard category airworthiness certificate, and skydiving drop aircraft not operating under an air operator certificate.

² Microlights cover gyro copters and planes.

³ Civil Aviation Rule Part 149: Aviation Recreation Organisations—Certification

7. In some cases, commercial pilots are required to operate under the auspices of their relevant certificated aviation recreation organisation. However, Part 149 has no provisions for the continued monitoring and safety oversight of commercial activities and operators, and not all activities are represented by a Part 149 organisation (for example, hot air ballooning). Other activities (warbird operations) are not currently permitted to be offered for hire or reward.

Other requirements applicable to adventure aviation

8. Under the Health and Safety in Employment Act 1992 (HSE Act), all workplaces are subject to generic health and safety legislation, for which the CAA has the delegated authority to enforce. However, the HSE Act focuses on managing risks to employees' personal health and safety, rather than on organisational risks that could affect the safety of adventure aviation passengers.

Problem definition

Commercial adventure aviation safety record

9. There has been an increasing trend in the total number of accidents and injuries in sport aviation. A recent CAA study applied the social cost of accidents to the actual level of flying activity, estimating the average social cost for adventure aviation activities (both commercial and recreational) to be approximately \$61.00 per person per hour of exposure (significantly above a safety target level of \$13.00). In comparison, the average social cost for air transport operations is approximately \$0.10c per person per hour of exposure⁴.
10. Table 2 below shows that over the period 2004-2010, there were an estimated 37 accidents involving commercial operations in the sport and recreation category in New Zealand. These are estimates because it is very difficult to identify from the recorded statistics which accidents and incidents occurred in a commercial setting. Table 2, however, presents the best picture of the social costs based on CAA ex-post examination of flight details. The social cost of injuries (fatal, serious, and minor) arising from these accidents totalled NZ\$22.4 million—averaging NZ\$3.19 million per annum.
11. In the absence of any significant change in the approach to safety regulation of commercial adventure aviation operators, the estimated annual social cost of commercial adventure aviation is expected to rise. As the sector continues to grow, and modified or new more sophisticated aircraft types enter the market offering activities not previously envisaged, adventure aviation is likely to become more popular with a corresponding increase in the level of commercial activity and a likely increase in fatalities and injuries.
12. Although there is a low probability of accidents in the aviation sector compared to other modes of transportation, accidents have a large impact, particularly when life is lost. These impacts can be particularly serious in the adventure aviation sector. For example, hot air balloons can carry up to 24 passengers—more than some commercial air transport flights that are currently subject to certification requirements.

⁴ Aviation Industry Safety Update, July-December 2010, Civil Aviation Authority http://www.caa.govt.nz/Safety_Reports/2010-2_safety_update.pdf

Table 2: Commercial adventure aviation accidents and social costs 2004-2010 (estimated)

Details	Hot air ballooning	Gliding	Microlights	Tandem hang gliding/ paragliding	Tandem skydiving	Total
Number of accidents*	-	1	1	23	12	37
Fatal injuries	-	-	2	2	-	4
Serious injuries	-	-	-	11	10	21
Minor injuries	1	1	-	9	1	12
Social cost	\$15,900	\$15,900	\$7,157,600	\$11,415,800	\$3,756,900	\$22,362,100

Source: CAA Safety Analysis Unit and based on Ministry of Transport Statistical Value of Life (SVOL) for June 2010 (in 2010 New Zealand dollars) (excludes property damage costs) * The definition of an "accident" requires serious injury or substantial damage to aircraft.

- Although only one passenger is carried at a time for most adventure aviation activities, the CAA considers the inherent risks related to altitude and flying difficulty, including shared use of airspace, are comparable to public transport operations that are certificated under CARs. The CAA also considers that there is a social expectation that the safety standards will be higher when fare-paying passengers are involved.

Lack of regulator safety oversight

- The existing regulatory standards that apply to commercial adventure aviation were designed for recreational (non-commercial) amateur activities, where pilots generally fly for their own recreational pleasure, not commercial hire or reward activities. They do not cover activities beyond actual flying such as organisational safety management, safety briefings for passengers, or other activities that the CAA considers adventure aviation operators should undertake where the carriage of fare-paying customers takes place.
- Adventure aviation activities have an inherent risk of accidents likely to cause injuries or fatalities. The current CARs for sport and recreation aviation activities were never intended to apply to commercial hire or reward operations, and many present and proposed adventure aviation operations involve the use of aircraft and manoeuvres that were not originally contemplated. There are inconsistent requirements for different activities, resulting in different levels of competence and safety performance.
- In contrast to other commercial aviation operators, no rules exist to allow the CAA to carry out oversight with no mechanism for the Director to certificate individual operators. Adventure aviation operators therefore are not required to hold an aviation document to conduct a commercial operation. Operators therefore are not required to demonstrate to the Director that their operations are appropriately managed, staffed or resourced, before entry to the civil aviation system. There are no requirements, for instance, for individual operators to undertake risk assessments and to put in place mitigation procedures.

17. Furthermore, organisations certificated under Part 149 are not required to have the organisational capabilities or procedures that would allow them to safely oversee commercial adventure aviation operations. With no certification of operators, the Director is also limited in his ability to monitor participants and when required to exercise exit control of participants from the civil aviation system.

Adventure tourism review

18. The broader tourism sector, operators, and other parties have also identified a problem with adventure aviation regarding the lack of coordinated information and a registration system for reassuring consumers, as noted in the 2010 adventure tourism review by the Department of Labour (DoL)⁵. One of the DoL's findings was that the proposed Part 115 was "appropriate to the level of risk associated with adventure aviation activities and will adequately address the current deficiencies in the safety regulatory framework applicable to the sector".
19. The DoL's review also recognised that each time an accident occurs, New Zealand's reputation as a safe tourism destination is potentially damaged, especially when the accident results in fatalities⁶. This is particularly so for high profile incidents that may involve foreign tourists when under the management and care of a marketed tourism business and if there is an inconsistent approach to regulating aviation risks.
20. In 2010, the Transport Accident Investigation Commission (TAIC) conducted an inquiry into the regulatory context of commercial adventure aviation flights⁷ following a fatal microlight accident. TAIC's report noted that the Part 115 proposal, and the DoL's adventure tourism review, "have given the Commission confidence that the adventure aviation sector is about to enter a phase of appropriately regulated operations with improved flight safety" and one of the findings was that Part 115 "balances the expectations of the public for safe transport with the desire of some for an exhilarating aerial recreation experience that might involve a reasonable and acceptable level of risk". There have been also been a number of Coronial reports supporting the introduction of Part 115.

Enforcement

21. The absence of operator certification means the Director cannot take enforcement actions against operators whose pilots are seen to be conducting unsafe or illegal operations. The public interest requires that operators should take responsibility for the actions of their employees.

Industry not performing at full potential

22. Some commercial operations, such as vintage, warbird and microlight flights, are not currently permitted. An opportunity exists to legitimise them and encourage new business prospects to stimulate economic growth. It would be better to recognise the

⁵ Review of risk management and safety in the adventure and outdoor commercial sectors in New Zealand 2009/10, Final Report, Department of Labour, June 2010 <http://www.dol.govt.nz/consultation/adventure-tourism/final-report/review-final-report.pdf>

⁶ The DoL report noted that "Clearly, adventure tourism is an important part of the New Zealand experience for our international visitors. As such, any negative publicity associated with preventable fatalities and serious harm incidents could have a serious impact on our reputation as an attractive, high quality tourism destination".

⁷ Final Report: Aviation Inquiry 09-002, ZK-DGZ, Airborne XT-912, 9 February 2009, and commercial microlight aircraft operations, TAIC, December 2010 <http://www.taic.org.nz>

demand for such services and ensure that they are able to be provided within a regulatory framework that can provide an appropriate level of safety to passengers.

Objectives

23. The primary policy objective for government action is to enhance further improvements to aviation safety and to provide a reasonable level of safety assurance to passengers engaging in commercial adventure aviation activities. This can be achieved by requiring commercial adventure aviation operators to manage risk-based safety systems, processes and procedures with an appropriate level of monitoring and regulatory oversight by the CAA.

Regulatory impact analysis

Options analysis

24. Adventure aviation risk management strategies can be described as occupying a spectrum of institutional oversight. Appendix 1 presents a summary of a range of regulatory controls that could be implemented within those institutional strategies.
25. After careful consideration, it has been determined that development and implementation of a new civil aviation rule, Part 115, with full CAA administration will achieve the stated policy objective. The risks inherent in adventure aviation are many and varied and they are best managed through effective operator safety management systems. The CAA considers that while the sector has a relatively good safety record, it can be improved with a greater focus on organisational risk factors—as with other commercial aviation activities.

Preferred option

26. The preferred option is aligned with the Civil Aviation Act 1990 that envisages that “service providers” within the aviation system will be required to demonstrate to the Director their ability to effectively manage the safety of the operation, train their people and adequately resource the operation; and that aviation documents issued by the Director to individual operators are the best mechanism for controlling entry to, operation within, and exit from the aviation system.
27. Under the proposed new CAR Part 115, individual operators conducting fare-paying passenger adventure aviation activities will be required to hold an aviation document issued by the Director. In particular, operators will need to satisfy the Director that:
 - They have appropriate management systems, structures, and operating procedures in place to ensure compliance with relevant minimum safety standards
 - Employees are appropriately qualified and trained
 - Equipment is appropriate to the task and properly maintained
 - Key people are fit and proper to undertake their responsibilities.
28. A key part of the entry control process will be to ensure that the operator has identified and assessed the particular risks of the operation, and has developed standards and procedures for mitigating these risks.

Likely costs

29. The CAA does not have the information needed to confirm the total number of commercial adventure aviation flight operators expected to seek certification under Part 115. The estimated total of 43 existing commercial operators covers gliding, hot air ballooning, tandem hang gliding, paragliding and skydiving, and microlight flying. The estimated total compliance cost breakdown by activity is presented in Table 3 below.

Table 3: Industry compliance, certification and audit costs by activity (excluding GST)

	Balloons	Gliding	Hang gliding	Skydiving	Para-gliding	Microlights	Total
Number of Operators	9	1	5	18	8	2	43
Compliance/Certification	\$66,280	\$7,364	\$37,822	\$132,559	\$60,515	\$14,729	\$319,269
Year One Audit Cost	\$17,024	\$1,892	\$9,458	\$34,047	\$15,132	\$3,784	\$81,335
On-going (Annual) Audit	\$8,512	\$946	\$4,729	\$17,024	\$7,566	\$1,892	\$40,668

30. The CAA has not been able to ascertain the cost impact (affordability) relative to the different types of adventure aviation activities by operator associated with the proposed requirements. The public consultation encouraged affected parties to provide an indication of costs which a mandate may impose on them. Unfortunately, due to the small sample size, no useful data was received.

Initial certification and compliance costs

31. The total initial industry costs for the 43 existing adventure aviation flight operators, including compliance and certification, is estimated at \$319,269, with a calculated estimation range of \$309,100 to \$329,440 (reflecting a 10 percent range for the potential variation in time required for the CAA to certificate). This translates to approximately \$7,400 per operator.
32. For certification costs, the CAA has estimated that on average it will take 20 hours per operator to process and approve certification applications – approximately \$2,364 per operator (GST exclusive). The time this takes will largely depend on each applicant's familiarity with the CAA certification process.
33. Compliance costs will be incurred by operators achieving the necessary standards for certification. This includes the cost to the operator of developing its exposition detailing operating procedures and how compliance will be met. The estimate includes the potential cost of hiring a consultant to assist with the exposition and the application for a Part 115 certificate. It also includes the cost of instituting new systems, purchasing new equipment, hiring more qualified staff, training existing staff, or obtaining appropriate medical certificates, where required under the proposed Rules.
34. Some operators may require the assistance of a consultant to develop their exposition that details operating procedures and how compliance will be met. Operators who are not certified by any representative Part 149 organisation to assist them, might need to spend as much as \$3,500 on a consultant—for example hot air balloon operators. Per-operator costs will also vary—for example tandem hang gliding and paragliding

operators are likely to incur an additional \$200 each for aircraft marking to identify the operator.

35. The CAA believes that most operators are likely to be very close to meeting the required minimum standards, since most requirements proposed under Part 115 simply codify other operational requirements that are the responsibility of the pilot within an organisational chain of responsibility.
36. Parasailing is not intended to be covered by the proposed organisational requirements under Part 115, primarily because maritime safety frameworks already apply to the boat operation and using Part 115 would duplicate regulatory oversight of this activity. There are, however, some proposed passenger safety requirements regarding helmets that are proposed for codification in existing CAR Part 101 which will entail very limited compliance costs. The CAA estimates that the average total cost impact for each operator could be as low as \$400 or as high as \$1,880, depending on the type and quality of helmet chosen by the operator.⁸ The proposed requirement is similar to that already required for student and tandem skydiving descents.

Ongoing audit costs

37. Audit costs reflect the cost of the CAA reviewing operators' ability to maintain status as a Part 115 certificated organisation. This is conservatively estimated to take 16 hours per operator in the first year (estimated at \$81,335 for all adventure aviation operators or \$1,892 per operator) and eight hours per operator in subsequent years (\$40,668 for all adventure aviation operators or \$946 per operator).
38. The difference in initial and on-going audit costs arises because the CAA will have the discretion to extend audit periods for up to two years. On-going costs will depend on each organisation's capability to comply with Part 115, which is expected to vary by operator and activity. The CAA will review the monitoring period after operators demonstrate initial compliance in year one. Any operators not meeting the required standard will be subject to more frequent review than the standard 12-month cycle. The analysis, therefore, reflects the CAA's expectation that with close collaboration and communication, as well as the support from the broader commercial aviation system, operators will comply with a high standard.
39. Because warbird commercial operations are not currently permitted under the status quo and Part 115 will enable their activities for hire or reward, figures for warbirds have not been included. Any decisions by those operators to comply with Part 115 will be interpreted by the CAA as a new business opportunity and therefore a net benefit.

CAA costs

40. The CAA will incur administrative implementation costs for the development of the certification and audit program that will not be directly recovered from operators. This is estimated to be approximately \$124,400 to be met from within existing baselines in the first year and \$80,000 per annum in subsequent years.

⁸ The required helmets are of the same type used for water-sport activities (e.g. kayaking) and come in two general sizes, adult and child, and two basic models, half-cut and full-cut. Half-cut helmets cost between \$100 and \$150, and full-cut helmets up to \$235. The CAA estimates that the average parasail operation will require between four and eight helmets.

Total costs

41. The estimated total compliance, certification, audit and the CAA's administration costs are \$525,004 in the first year and \$120,668 per annum in subsequent years. The present value of these costs over a ten-year period is estimated at \$1.21 million. These estimates exclude the cost to operators for seeking advice from consultants, if any, and the cost of purchasing additional safety equipment.

Net benefit

42. It is not possible to estimate the number of accidents that would have been avoided by more effective regulation of commercial adventure aviation operators. However, the CAA is confident that the probability of future accidents can be reduced by ensuring that operators follow better organisational practices, such as maintaining a safety management plan and monitoring operations such as flight hours and employee capability.
43. If the proposed Part 115 could reduce the risk of injuries by 16 percent (this is equivalent to one fewer fatal injury, four fewer serious injuries, and two fewer minor injuries over a ten-year period), the benefit-cost ratio would be around 2.9 (assuming an 8 percent discount rate). Under this hypothetical scenario, the safety benefits would be almost three times higher than the total estimated compliance, certification, audit, and the CAA's administration costs (see paragraph 41). The CAA considers this to be a conservative scenario.
44. Factoring in an increase in adventure aviation operations as a result of Part 115 enabling commercial flights in warbird aircraft, the net benefit is likely to increase. It is also possible that aircraft insurance hull premiums and ACC levies currently paid by operators would reduce over time as a result of a good safety record.
45. The CAA expects that these costs can be passed on and recovered from consumers without harming the viability of existing commercial operations. Some operators may decide not to commit to offering commercial services and remain recreational in focus, being subject to a lesser standard of safety management and regulatory oversight by the CAA.

Consultation

46. The CAA developed this regulatory proposal working with the adventure aviation industry over a period of more than 10 years. The rule development project for Part 115 was undertaken in consultation with a project working group (PWG) that consisted of technical experts from each of the adventure aviation industry sectors. A Notice of Proposed Rule Making (NPRM) containing the proposed new CAR Part 115, consequential changes to other CARs, and proposed civil aviation offences and penalties, was issued for public consultation in September 2010.
47. A total of 33 written submissions were received. Of these, nine submissions were from individuals and the remainder were from recreational adventure aviation organisations. A Summary of Public Submissions was published in February 2011 setting out the CAA's response and disposition⁹.

⁹ See http://www.caa.govt.nz/rules/nprms/Part115_sum_subs.pdf

48. The submissions covered multiple subject areas with some overlap across the range of submissions. There were several suggestions detailing changes to improve the outcome. Some submitters were concerned about the appropriateness of certain proposed requirements, while some had either misinterpreted the applicability of the proposals to their own operations or the intent of the proposed rules. Where appropriate, the CAA clarified the proposed rule requirements, and removed or amended the proposed rules to accommodate industry concerns.
49. Overall, several submitters were unconvinced of the benefits of introducing a new Part 115. The CAA has also received feedback from parties that operate in the same field with opposing views—that Part 115 will enable new business opportunities and that the costs are not prohibitive.

Implementation

50. Subject to Cabinet noting, the Minister of Transport will sign the proposed new CAR Part 115 to come into force in November 2011 following notification in the *New Zealand Gazette*.
51. In order to recognise Part 115 within the broader civil aviation system, there will be consequential amendments to CAR Parts 1 (*Definitions and Abbreviations*), 12 (*Information for Accidents, Incidents, and Statistics*), 43 (*General Maintenance Rules*), 61 (*Pilot Licences and Ratings*), 91 (*General Operating and Flight Rules*), and to operating requirements under CAR Parts 101, 103 and 105.
52. Consequential amendments to the Civil Aviation (Offences) Regulations 2006 will be required to prescribe new, or amended, penalties and offences provisions for breaches of the rules.

Transitional arrangements

53. The proposed implementation period will require each operator conducting commercial adventure aviation operations prior to the new rule coming into effect, to become certificated as follows—hot air balloon, tandem hang glider, paraglider and skydiving operators will need to apply within six months, microlight operators within 12 months, and gliding operators within 18 months. New applicants (operators not conducting adventure aviation operations prior to Part 115 coming into effect) will be required to meet the Part 115 certification requirements at the time application is made for an adventure aviation operator certificate.

Guidance

54. Interested parties will be provided with guidance and information on acceptable means of compliance with the rules through Advisory Circulars published by the CAA. The CAA is currently preparing exposition matrices to assist operators to comply with the need to document their current operations against each particular requirement in Part 115. The CAA considers that many operators may already comply in their practices, but will benefit from assistance in reporting how they comply in expositions.
55. The CAA will implement a communications campaign to assist operators to comply and promote awareness. This will include a road-show in at least three centres, articles in CAA's Vector magazine (covering aviation news and safety information), and information on the CAA website. The CAA also expects Part 149 organisations to assist in promoting the new rules and sharing information on best practices.

Monitoring, evaluation and review

56. The CAA intends to monitor and evaluate the effectiveness of the new Part 115 by ongoing analysis of safety data provided through the proposed approach of monitoring commercial adventure aviation activities as part of the CAA's surveillance system.
57. The CAA will also develop a new set of safety statistics for Part 115, to clearly identify and distinguish incidents and accidents that are commercial. As part of the process of establishing the CAA's annual plan, safety targets will be set for Part 115. This will contribute to a sector risk profile specific to commercial adventure aviation, which is currently impractical due to the lack of distinction in CAA's information systems between recreational and commercial activities.
58. It would be appropriate for the CAA to undertake a complete sector risk analysis 36 months after the rule enters into force. Sector risk profiles identify where further work may be needed in terms of safety at an industry-wide systemic level.

Appendix 1: Summary of options analysis

	Approach to risk	Enables operators	Enables consumers	Compliance costs	Broader benefits
Information and best-practice guidance, or particular initiatives, such as shared funding of safety equipment or education campaigns	Identifies risks, but does not require any active management. Probable risk retention	Provides information and assists operators, but provides no active encouragement to improve performance	Would assist consumers to make informed choices, but without active management, may cause uncertainty, and create lost demand	Likely to be low-cost option as it does not require operators to invest in new practices	Could improve reputation, but not if poor performance is highlighted. Does not enable new opportunities (currently un-permitted activities)
Voluntary certification through third parties or bolstering regulation by other agencies (for example application of health and safety legislation)	Unlikely to be sufficiently focussed on aviation risks	Would improve business practices to target high-value consumers, but attention to aviation performance likely to be secondary	Without adaptation of current tourism standards, will not improve consumers' understanding of aviation risks	Low cost as system already in place. Voluntary nature means operators will invest if caters to consumers	Could improve tourism marketing, does not target aviation benefits. Does not enable any new business opportunities (such as currently un-permitted activities)
Self- or co-regulation	Focuses on identification of risks, but possibly not to a high standard as from a recreational rather than commercial perspective	Relies on capable overarching organisations, which need to be developed. Risk of fragmentation and lack of compliance	Likely to focus on practitioners rather than consumers	Transaction costs of organising each activity likely to be high	Would allow currently unpermitted activities to organise and operate commercially. May not achieve strong reputation for consumers' safety
Better specified ACC levies (to incentivise good behaviour)	Provides a strong financial incentive for improving risk management, but relates to employee risk, not necessarily consumers	Monetary incentive to improve knowledge and performance	Not a clear signal	Likely to be costly to government as would rely on CAA or other expertise to be effective	Not a clear reputation-enhancer as not directed at consumers
Direct regulation of minimum standards with certification and reporting requirements, by way of a new CAR Part 115	Work with industry groups has identified the clearest risks	Development of rule and on-going reporting is collaborative and aimed at consistency	Reassurance of regulatory backing and certification	Leverages the CAA's current activities with commercial aviation, will involve costs for certification and improving standards	Certification is a clear signal to uninformed consumers. Legitimises currently unpermitted activities with a reliable benchmark